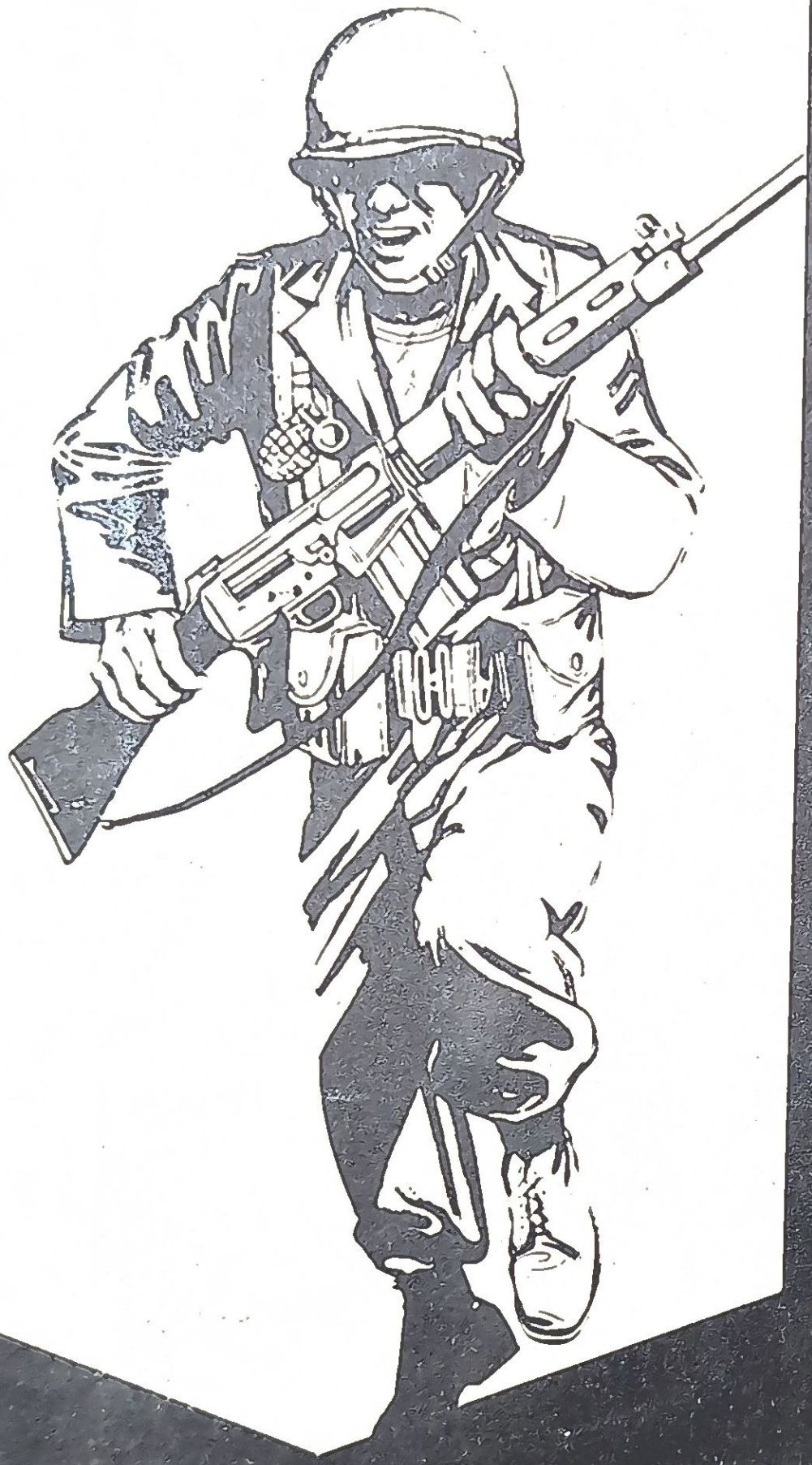
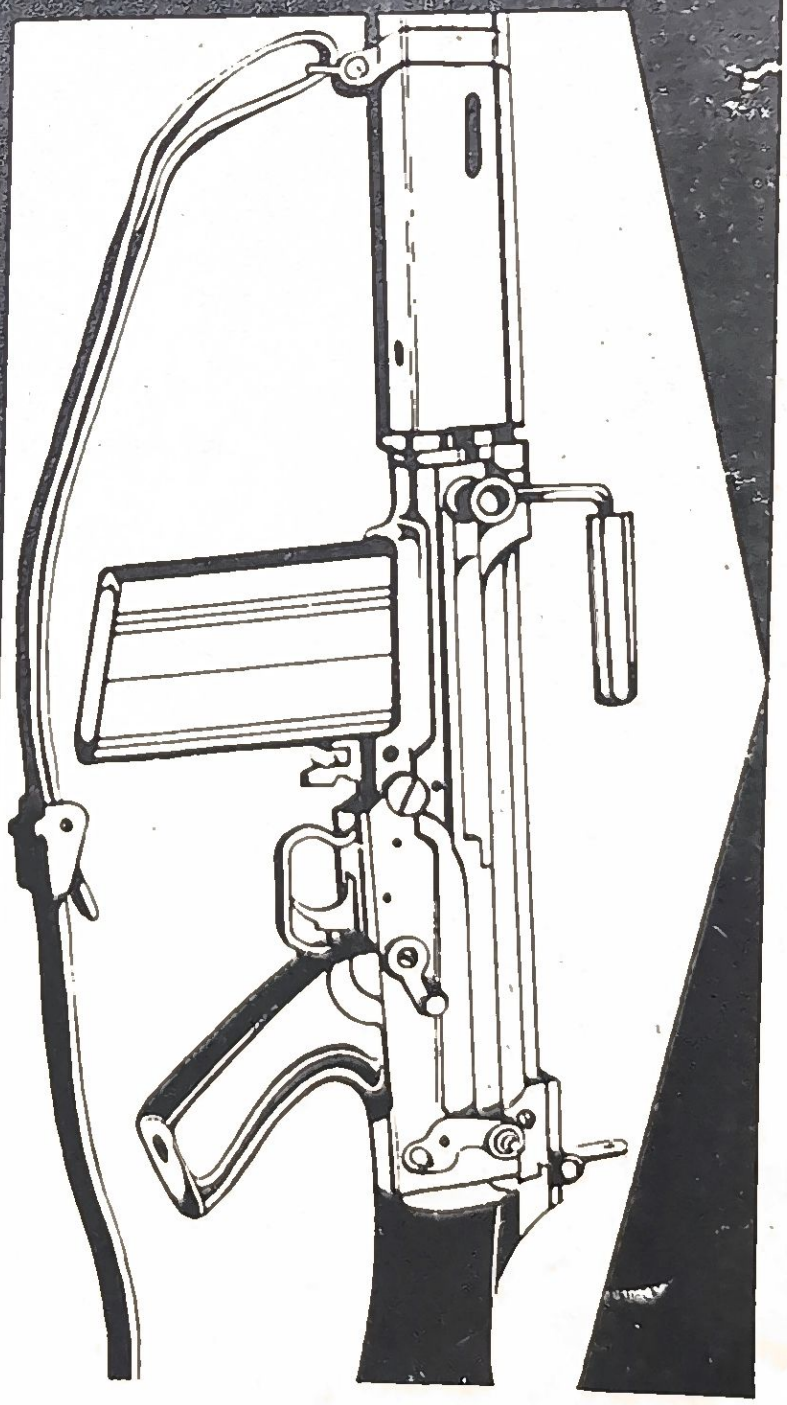
FOR OFFICIAL USE ONLY



T-48 RIFLE

U.S. ARMY



SPECIAL TEXT
23-4-1
JANUARY, 1955

THE INFANTRY SCHOOL
FORT BENNING, GA.

FOREWORD

The arms and tactics of Infantry are under continual study and development. Critical research has directed us to a new rifle which may become the Infantryman's basic weapon.

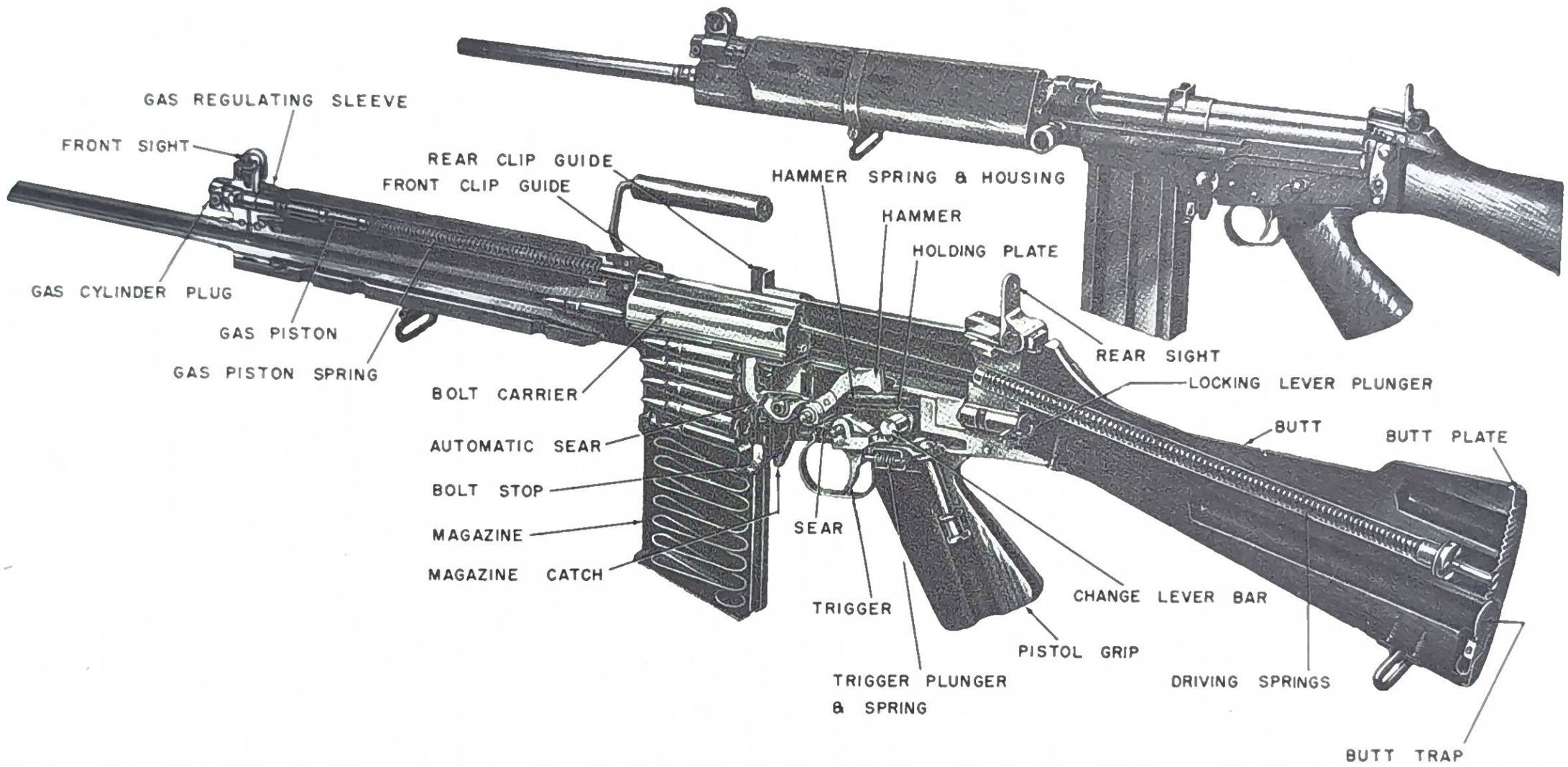
This rifle is made in two models of one basic design: one model takes the place of our present rifle; the other replaces our current automatic rifle. The two models use the same parts and the same ammunition magazine. This will simplify training and will permit every Infantryman to assume the role of rifleman or automatic rifleman as the combat situation dictates.

The new rifle is lighter than the M1 and BAR, and initial test indicate that it is more dependable and capable of delivering a greater volume of accurate fire. It is hoped that further testing will show that the rifle is simpler to operate, more flexible under tactical conditions, and easier to maintain in the field.

This manual has been written to assist you to fully test the new rifle. The success or failure of these tests will depend as much on your use of the rifle as on its mechanical excellence, just as success in battle depends on how weapons are employed as well as on the weapons themselves.

Joseph H. Harper

JOSEPH H. HARPER
Major General, USA
Commandant
The Infantry School


GAS REGULATING SLEEVE
FRONT SIGHT
REAR CLIP GUIDE
FRONT CLIP GUIDE
HAMMER SPRING & HOUSING
HAMMER
HOLDING PLATE
GAS CYLINDER PLUG
GAS PISTON
GAS PISTON SPRING
BOLT CARRIER
REAR SIGHT
LOCKING LEVER PLUNGER
BUTT
BUTT PLATE
AUTOMATIC SEAR
BOLT STOP
MAGAZINE
MAGAZINE CATCH
SEAR
TRIGGER
CHANGE LEVER BAR
PISTOL GRIP
TRIGGER PLUNGER & SPRING
DRIVING SPRINGS
BUTT TRAP

CONTENTS

	Paragraph	Page
CHAPTER 1. INTRODUCTION	1-4	1
CHAPTER 2. MECHANICAL TRAINING		
Section I. Disassembly and Assembly	5-15	4
II. Functioning	16-21	18
III. Operation	22-31	24
IV. Stoppages and Immediate Action	32-36	27
V. Care and Cleaning	37-43	30
CHAPTER 3. MARKSMANSHIP TRAINING		
Section I. General	44-46	33
II. Preparatory Marksmanship Training	47-84	34
III. Range Firing	85-97	67
IV. Pit Operation	98-99	76
V. Equipment and Targets	100-101	77
CHAPTER 4. ADVICE TO INSTRUCTORS		
Section I. General	102-105	78
II. Subject Schedules and Training Notes for T48 and T48E1 Rifles	106-120	79
III. Training Aids	121-123	90
CHAPTER 5. SCHOOL OF THE SOLDIER WITH ARMS		
Section I. Manual of Arms, T48	124-136	111
II. Manual of Arms, T48E1	137-138	123
CHAPTER 6. BAYONET TRAINING	139	126

Chapter 1
INTRODUCTION

1. PURPOSE AND SCOPE

This special text tells you how to fire the T48 rifle and how to take care of it in the field and in garrison. It tells you first about the rifle itself—how it works, how to take care of it, and what it can do. Then it tells how to fire at a fixed target on the range and how to fire under battlefield conditions. The text also includes information on the bayonet and how to do the manual of arms with the T48 rifle.

This text does not include all the details on pit operations, safety precautions, conduct of range firing, and technique of rifle fire. Additional information on these matters can be found in FM 23-5 for the T48 rifle and in FM 23-15 for the T48E1. Where there is conflict between the information contained in this text and in the field manuals, the special text applies.

Instructors and coaches should also study the fundamentals of marksmanship contained in TIS Special Text 23-5-1, "Hits Count."

2. IMPORTANCE OF RIFLE TRAINING

When your unit goes into battle, it will be supported by other weapons, most of them of larger caliber than your rifle and capable of firing at longer ranges. The main purpose of those weapons is to destroy or pin down as many of the enemy as possible before you and your rifle close with him on the objective. But the final success of your squad or platoon will depend on how well you and the men next to you can shoot your rifles. The T48 and T48E1 rifles can deliver a large volume of fire when necessary, but recent wars have proved that one well-aimed shot is more valuable than a full magazine sprayed in the general direction of the enemy.

A poorly-trained rifleman lacks confidence and is of no help to the rest of his squad. In combat he does one of two things: he either doesn't fire at all or he fires wildly in the general direction of the enemy. The well-trained rifleman, on the other hand, has confidence in himself and his weapon. He is the one who gets hits and earns the respect of the rest of his unit.

The marskmanship training you get is battle-tested and thorough. If you learn and practice the right shooting habits, you will become a good shot. Begin your training by remember-

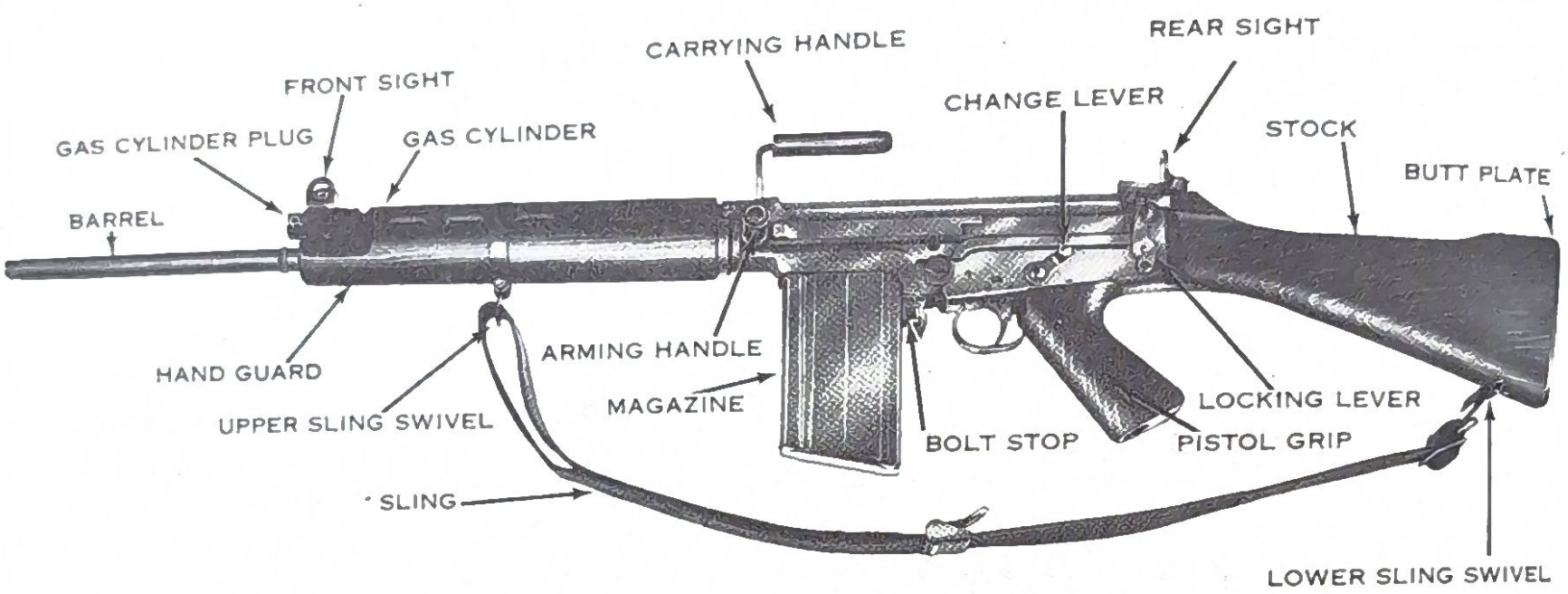


Figure 1a. The T48 Rifle

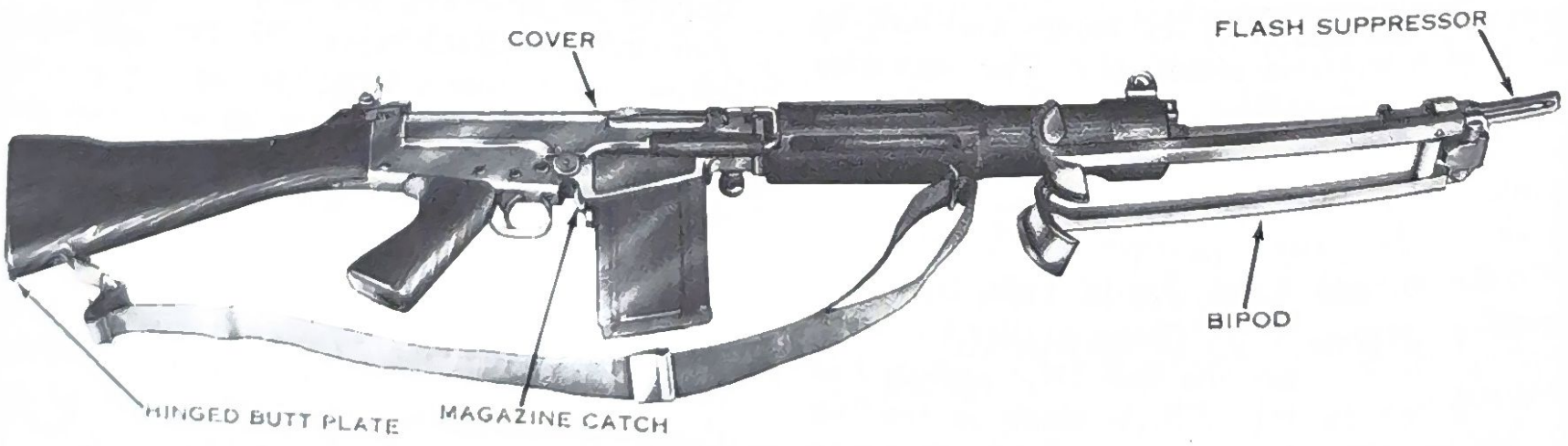


Figure 1b. The T48E1 Rifle

ing that no part of shooting is *about right*. You either HIT or you MISS, and in combat that may spell the difference between life and death for you and the other men of your unit.

3. DESCRIPTION OF THE T48 RIFLE

There are two models of the T48 rifle. One, having a light barrel is called the T48 (fig. 1a). The second, the T48E1, has a heavy barrel, a bipod, a hinged butt plate, and an automatic change lever (fig. 1b). Both are caliber .30, magazine fed, gas-operated, air-cooled weapons. The T48 is a semiautomatic shoulder weapon and the T48E1 is a semiautomatic or automatic weapon. The hinged butt plate makes it possible for the T48E1 to be fired from the bipod or from the shoulder. The T48 can be fired automatically when fitted with a change lever of the same design as the lever that is standard equipment with the T48E1. Remember these differences in the T48E1: it has a heavy barrel, bipod, hinged butt plate, and an automatic change lever.

Both models have a front sight that can be adjusted when you are zeroing your rifle (par. 78). It is mounted at the forward end of the gas cylinder. The rear sight, which is an aperture ramp type, is the same on both models. It is mounted on the stock group. The rear sight is marked off in 100-yard measurements from 100 to 600 yards. You can change the strike of the bullet to the right or left by loosening the deflection screws and moving the rear sight in the desired direction (par. 78).

Here are some facts you will want to know about both models:

	T48	*T48E1*
Weights (approximate):		
Rifle without magazine	9 lbs	11½ lbs
Empty magazine	½ lb	½ lb
Full magazine (20 rounds)	1½ lbs	1½ lbs
Bipod		1½ lbs
Firing weight with flash suppressor and sling	11 lbs	14½ lbs
Lengths (approximate):		
Rifle, overall, with flash suppressor	44½″	45″
Barrel	21″	21″

Method of operation—gas.

Method of feeding—magazine, 20 round capacity.

Cyclic rate of fire (automatic)—650 to 700 rounds per minute.

Muzzle velocity—2,800 to 2,850 feet per second.

Maximum range—3,500 yards (ball ammunition).

Maximum effective range—500 yards.

Ammunition:

Ball (M59)—for use in marksmanship training.

Armor piercing (M61)—for use against lightly armored vehicles, protective shelters, and personnel.

Tracer (M62)—for observation of fire, incendiary and signaling purposes.

Grenade Launcher (M64)—for use in launching grenades.

4. FIREPOWER

When you squeeze the trigger the round is fired, the empty case is ejected, the hammer is cocked, a new round is inserted into the chamber, and the rifle is ready to fire again—all in about one eight-hundredth of a minute. This rapid mechanical action allows each rifleman to deliver a large number of aimed shots in a short time.

Chapter 2
MECHANICAL TRAINING

Section I. DISASSEMBLY AND ASSEMBLY

5. GENERAL

Although the T48 rifle is a rugged weapon, it can be damaged if it is not handled properly. Worn or damaged parts can cause your rifle to malfunction and, although you may be given an "alibi" on the range when your rifle fails to fire, the enemy will not give you an "alibi."

To help *keep your rifle in firing condition,* follow these rules when taking it apart or putting it together:

Do not use force.

Do not hurry. Haste can lead to damaged parts.

As you take the rifle apart, *lay the parts out in the order of disassembly.* This will help you put your rifle back together.

You are permitted to *disassemble only certain parts* because constant dissassembly causes extra wear and some parts require special tools for disassembly. The disassembly chart on the following page shows which groups and parts you may disassemble alone, under supervision, or not at all. You may disassemble those parts indicated by "s" only when supervised by an NCO or an officer.

Learn the names of the groups and parts as you disassemble and assemble your rifle, and also learn their functions. The names of the important visible parts of the rifles are shown in figures 1a and 1b.

6. DISASSEMBLY OF THE BARREL AND RECEIVER GROUP

To remove the magazine, hold the pistol grip with your right hand and place the butt of the rifle on your right hip or thigh, with the sights pointing to the right. Loosen the sling. Grasp the magazine with your left hand so that your thumb is against the magazine catch and your fingers are extended around the front of the magazine. With the thumb of your left hand, push in on the magazine catch, rotate the magazine forward and out, and remove it from the receiver (fig. 2).

Before disassembly, be sure your rifle is cocked, the safety is on, and the rear sight is at its lowest (100-yard) setting. Cock the rifle by pulling the arming handle all the way to the rear with your left hand and releasing it. Do not squeeze the trigger, because the hammer must be cocked to remove the bolt and bolt carrier. Place the change lever on "S" (safe) setting. Depress the rear sight lock with your thumb and forefinger and slide the sight all the way to the rear (fig. 3).

DISASSEMBLY CHART

GROUPS AND PARTS	Disassembly by		When supervised by		AFF Board #3 Only
	Individual Soldier	Armorer	NCO	Officer	
1. Barrel and receiver group	X				
Except:					
Front sight		X			
Driving rod from bolt carrier					X
Handguard	S		X		
Carrying handle					X
Arming handle					X
Bolt stop	S		X		
Magazine catch	S		X		
2. Stock and trigger housing groups from barrel and receiver group	X				
3. Stock and trigger groups including rear sight	S			X	
Except:					
Automatic sear spring from automatic sear		X			
Trigger spring and plunger		X			
Pistol grip		X			
Hammer spring guide from hammer					X
Holding plate					X
Locking lever, spring and plunger					X

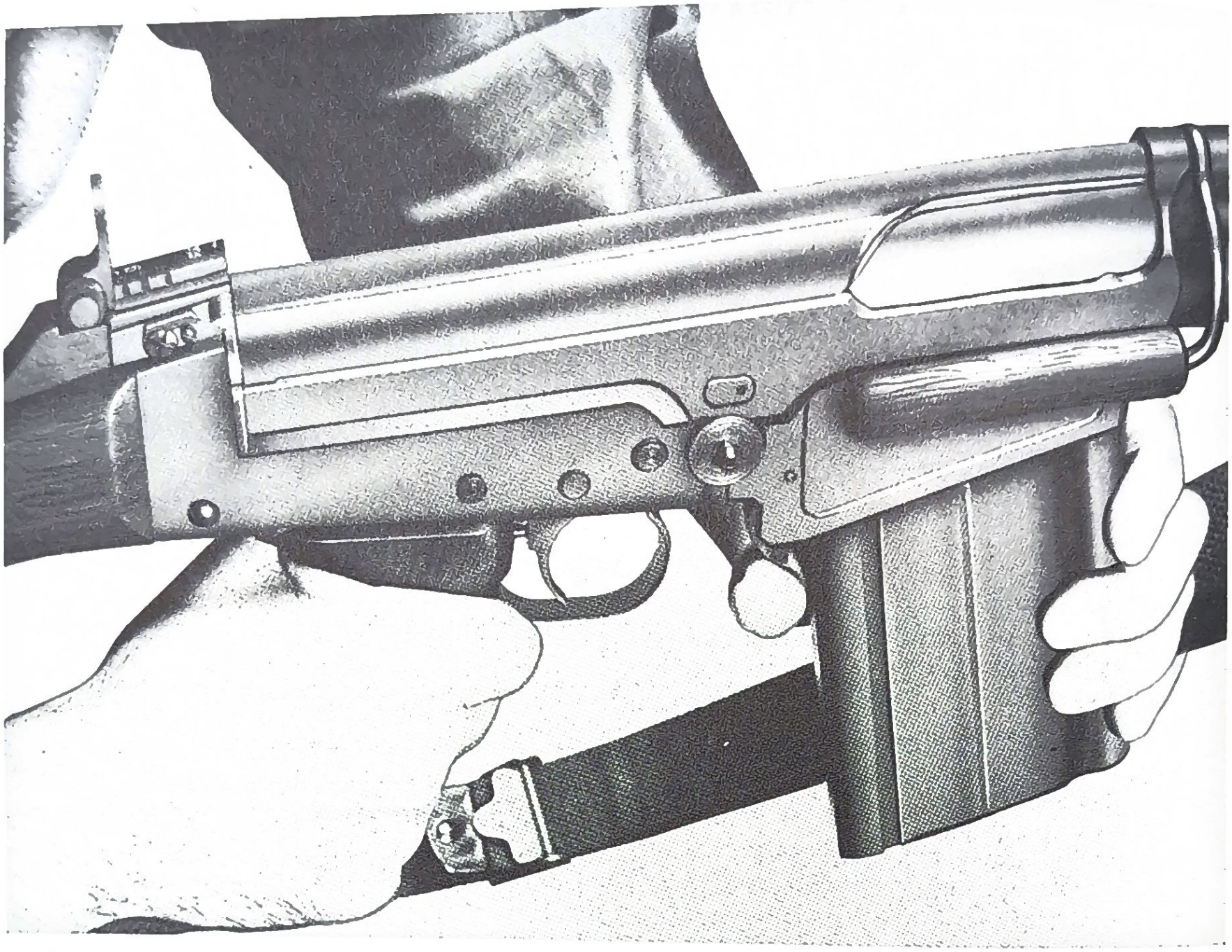


Figure 2. Removing the magazine.

With your left hand, palm up, grasp the handguard below the upper sling swivel. Grasp the small of the stock with your right hand. *Lower the muzzle of the rifle below the horizontal* to prevent the bolt and bolt carrier from falling out of the receiver when the receiver is opened. Press the locking lever toward the rear with the thumb of your right hand and open the receiver by applying pressure downward on the top of the stock with your right forearm (fig. 4). This breaking action will cause the rifle to open like a shotgun.

Pull the driving rod up and to the rear, sliding the bolt and bolt carrier from the receiver.

To remove the bolt from the bolt carrier, hold them in the palm of your left hand so the driving rod is toward your body and the open face of the bolt is up. The head of the firing pin should protrude through its hole in the bolt carrier. Grasp the bolt with your right hand so that your thumb is against the head of the firing pin and your second finger is against the face of the bolt (fig. 5). Squeeze in on the head of the firing pin, compressing the firing pin spring, and rotate the face of the bolt upward and toward your body.

To remove the firing pin from the bolt group, grasp the bolt in your left hand with your left thumb over the head of the firing pin. Depress the firing pin with your left thumb. Remove the firing pin retainer by drifting it out with the point of a dummy round (fig. 6). Release the pressure on the firing pin slowly with your left thumb, allowing the firing pin spring to expand. Lift out the firing pin and the firing pin spring. Separate these two parts.

To remove the extractor and extractor spring, hold the bolt firmly in your left hand with the face of the bolt up and the extractor to the left. Place the point of a dummy cartridge under the claw of the extractor and press outward. Pry up, unseating the undercut shoulders of the extractor (fig. 7), and remove the extractor and extractor spring from the bolt. Separate these two parts. (The extractor and extractor spring are not removed from the bolt for normal care and cleaning.)

Grasp the end of the receiver cover with your right hand, thumb inserted under the top of the receiver cover, and pull toward the rear, sliding it from the receiver. Grasp the small of the stock with your right hand and the handguard with your left hand. Close the receiver with a snapping motion.

To disassemble the gas system, place the rifle on a table, muzzle to the left and sights up. Hold the rifle in position with your right hand. With the thumb of your left hand, fully depress the gas cylinder plug lock, rotate the gas cylinder plug away from you approximately 90°, and allow the gas piston spring to *expand slowly*. Remove the gas piston and gas piston spring from the gas cylinder by sliding them toward the muzzle. To complete the disassembly of the barrel and receiver group, separate these two parts.

The disassembled parts of the rifle, laid out from right to left in the order in which they were disassembled, are shown in figure 8.

7. ASSEMBLY OF THE BARREL AND RECEIVER GROUP

Place the rifle on a table with the muzzle to the left and the sights toward your body. Replace the gas piston spring on the gas piston. Be sure to place the smallest end of the gas piston spring on the gas piston because reverse assembly will cause the rifle to function improperly. Slide these two parts into the gas cylinder, spring end first.

With your right hand, hold the rifle muzzle to the left with the sights up. To replace the gas cylinder plug, grasp it with your left thumb and fingers so that the "A" is toward the muzzle. In this position, place the gas cylinder plug in contact with the face of the gas piston (fig. 9).

Figure 3. Setting the rear sight.

Holding the rifle in place with the right hand, press the gas cylinder plug into the gas cylinder, fully depress the gas cylinder plug lock, and rotate the plug toward you until the plug lock reseats itself in the locked position. In this position, the "A" is upside down (fig. 10).

Break open the rifle and replace the receiver cover, rear clip guide first, by engaging its guide ribs with the guide grooves in the receiver and sliding it forward into position.

Place the extractor spring into the extractor with the short end of the extractor spring in the hole of the extractor. The long end fits along the groove on the outside of the extractor. Replace the extractor and extractor spring in the bolt with the claw of the extractor facing the center of the bolt. Grasp the bolt in your

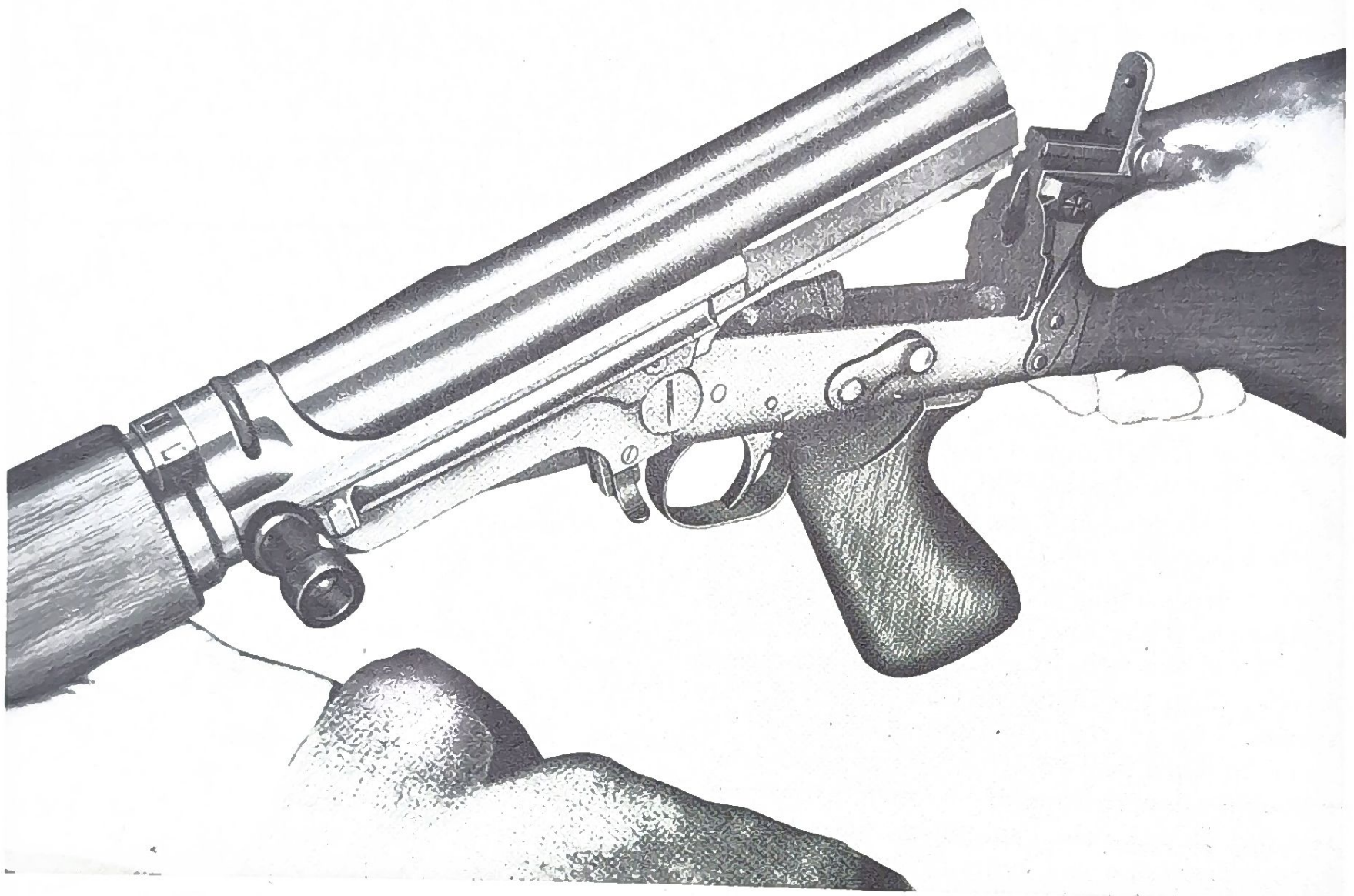


Figure 4. Opening the receiver.

left hand with the extractor to the left; place your right thumb on top of the extractor; press out and down on the extractor and seat it into the bolt (fig. 11).

Replace the firing pin spring on the firing pin. Hold the bolt with your left hand. Insert the firing pin and firing pin spring into the bolt so that the guide lug of the firing pin fits into its recess in the bolt. Depress the firing pin with the thumb of your left hand, compressing the firing pin spring. Replace the firing pin retainer (fig. 12).

To seat the bolt into the bolt carrier, place the bolt carrier in the palm of your left hand with the open face up and the driving rod toward your body. Holding the bolt in your right hand, with the bottom up, seat the head of the firing pin into its hole in the bolt carrier. Regrasp the bolt with your right hand, placing your right thumb on the head of the firing pin, and your middle finger on the face of the bolt. Squeeze with these fingers, and at the same time, rotate the bolt downward, allowing it to drop into position in the bolt carrier.

To replace the bolt and bolt carrier, set the rear sight on its lowest setting (100 yards). Hold the rifle at the balance in the palm of your left hand and depress the muzzle 45° or more below the horizontal. With your right hand, grasp the end of the driving rod, pick up the bolt and bolt carrier and allow them to hang down. Engage the guide ribs of the bolt carrier with the guide grooves in the rear of the receiver. Release the driving rod and depress the muzzle sufficiently to allow the bolt and bolt carrier to slide forward independently into the receiver.

With a snapping motion, close the receiver. To check the assembly, pull the arming handle all the way to the rear and release it. If the bolt goes forward, the rifle is correctly assembled.

Figure 5. Removing the bolt from the bolt carrier.

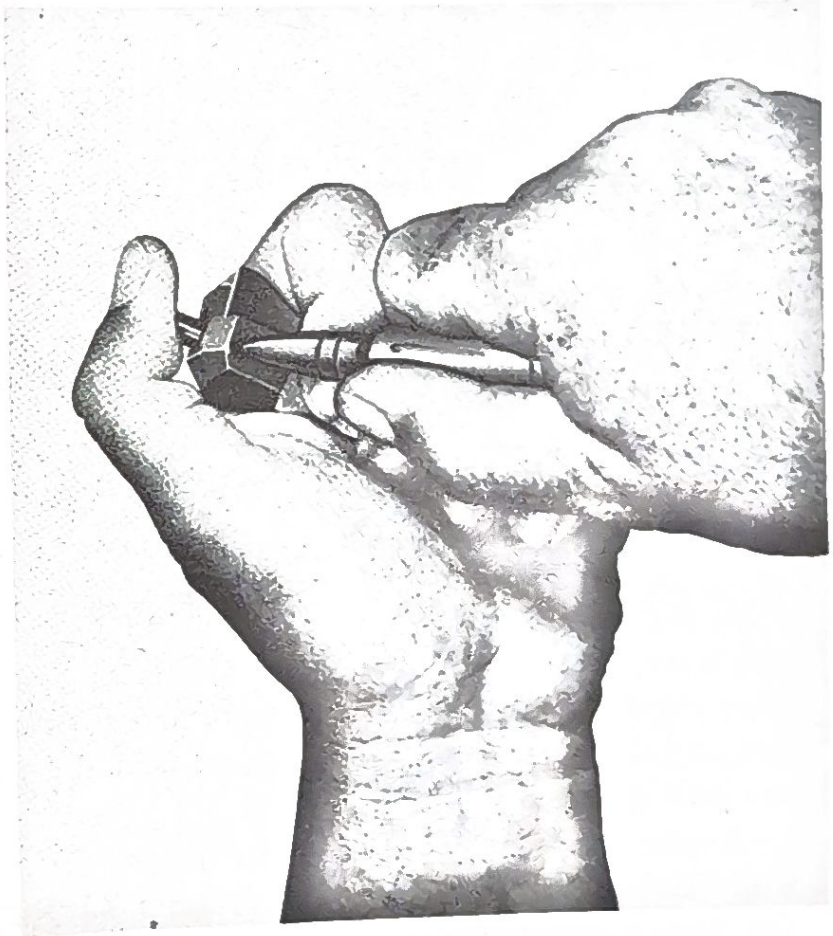


Figure 6. Removing the firing pin retainer.

Figure 7. Removing the extractor.

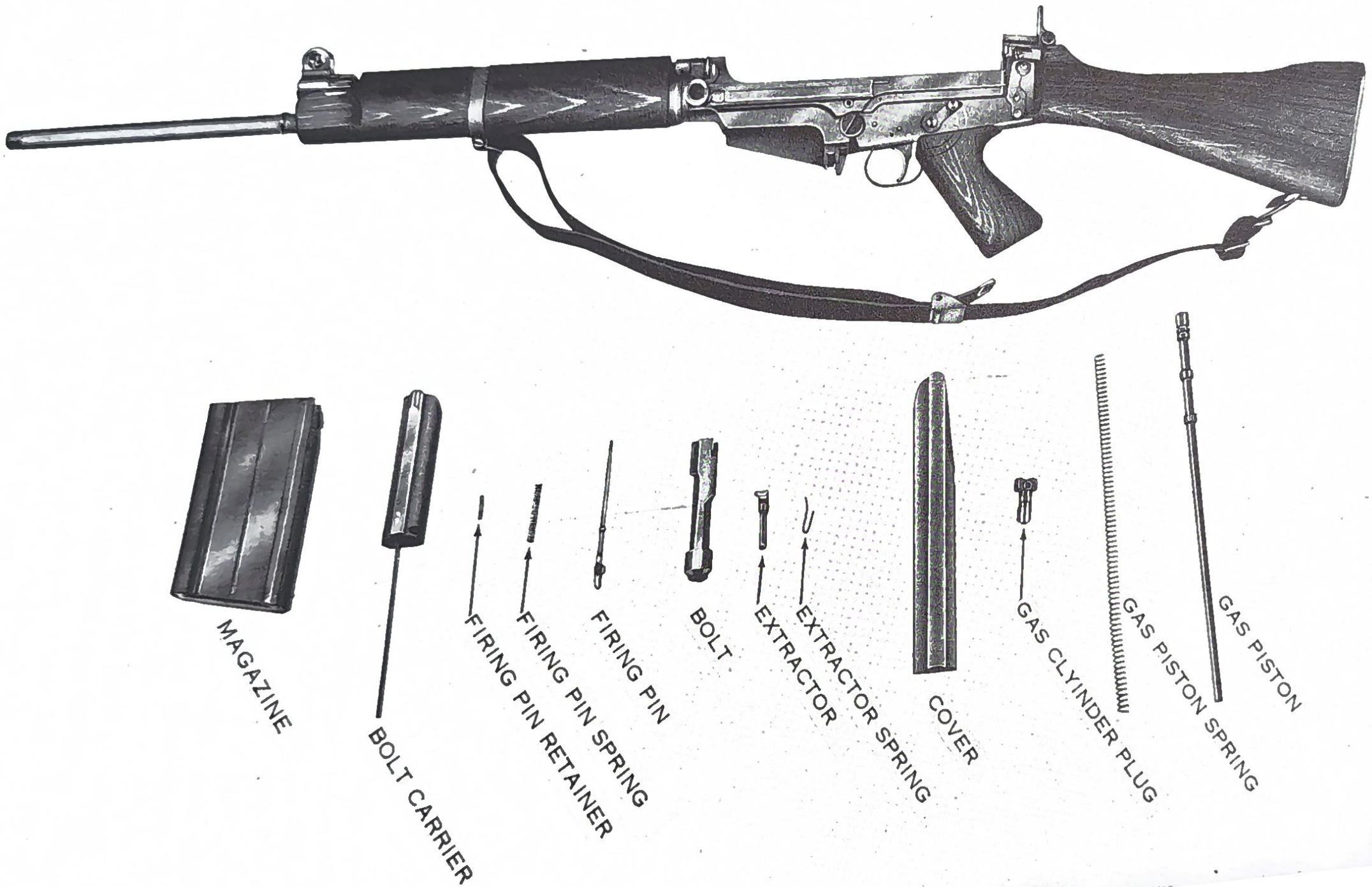


Figure 8. Disassembly, barrel and receiver.

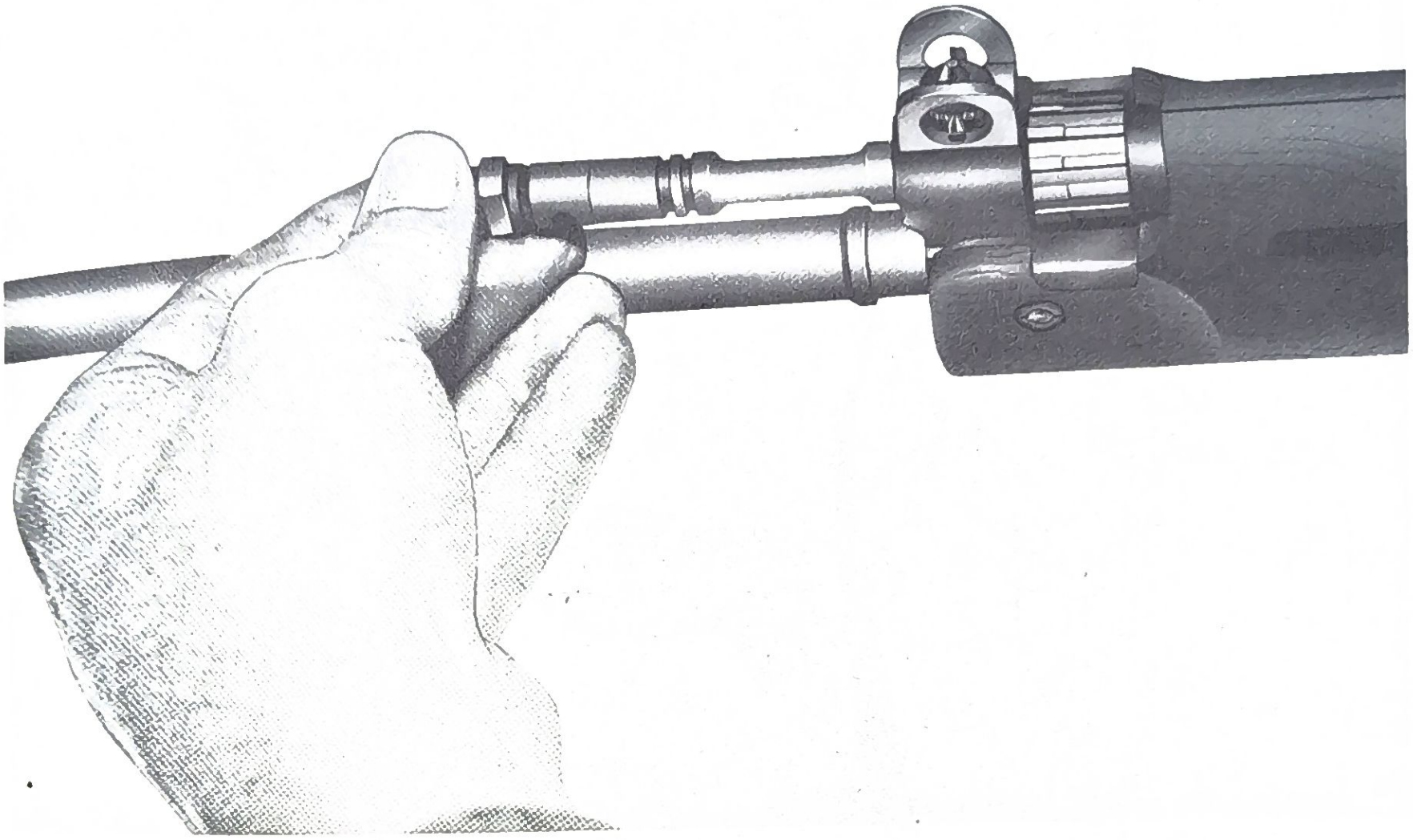


Figure 9. Replacing the gas cylinder plug.

8. DISASSEMBLY OF THE BOLT STOP AND THE MAGAZINE CATCH

You may disassemble the bolt stop and magazine catch only when supervised by a noncommissioned officer. Place the rifle on a table, muzzle to the left and sights away from you. With a screwdriver, remove the bolt stop and magazine catch retaining pin, which is located above the bolt stop, by turning counterclockwise. The bolt stop may then be removed by sliding it toward you.

To remove the magazine catch and the magazine catch spring, grasp the magazine catch with the thumb and forefinger of your right hand. Place your left thumb against the forward surface of the magazine catch. With your right hand, pull the catch out and toward the butt of the rifle. At the same time keep the spring seated in its well in the catch. To complete the disassembly, separate the magazine catch spring from the magazine catch.

9. ASSEMBLY OF THE BOLT STOP AND MAGAZINE CATCH

Place the rifle on a table with the muzzle to the left and the sights away from you. Seat the magazine catch spring into its well in the magazine catch. Hold the magazine catch between your right thumb and forefinger, so that the spring is to the left and the nose is forward. Partially insert the magazine catch into its recess so that it forms an angle of 45° with the rifle. Push the end of the spring forward into the rifle with your left thumb, and push the magazine catch into the rifle until the spring is seated in the recess in the trigger housing.

Slide the bolt stop assembly forward into its recess and then insert the retaining pin. Maintain a moderate pressure on the retaining pin and aline the bolt stop by alternately pushing it all the way into its recess and pulling it out a short distance. Aline the magazine catch and fully seat the retaining pin, screwing it in until it is moderately tight.

Figure 10. Position of "A."

Figure 11. Replacing the extractor.

Figure 12. Replacing the firing pin retainer.

10. DISASSEMBLY OF THE TRIGGER HOUSING GROUP

Remove the bolt and bolt carrier as described in paragraph 6.

To separate the barrel and receiver group from the stock and trigger housing groups, place the rifle on a table with the carrying handle down, receiver open, muzzle to the left and sights away from your body. Remove the sling from the lower sling swivel. With the thumb of either hand, or the rim of a dummy cartridge, unscrew and remove the trigger housing spindle by rotating it counterclockwise. Using the point of a dummy round, push down on the trigger housing pivot and partially drift it out. Turn the rifle over and with your right thumb and forefinger, remove the trigger housing pivot from the right side of the rifle. Separate the barrel and receiver group from the stock and trigger housing groups. With the muzzle to the left and the sight away from you, remove the automatic sear and spring assembly with your right thumb and forefinger by sliding it to the right and rotating it counterclockwise. Do not attempt to separate the spring from the automatic sear.

Grasp the pistol grip with your right hand and place the butt against your right hip. With your left hand move the change lever to the "R" setting. Place the palm of your left hand firmly against the hammer, squeeze the trigger, and allow the hammer spring to expand *slowly*. With your left hand, rotate the change lever up to the vertical and remove it by pulling it out from the trigger housing.

Reposition the stock and trigger housing groups so that the sight is up and the butt is away from you. Grasp the pistol grip in your left hand, with your fingers around the back of the pistol grip, and your thumb over the tip of the hammer spring housing. Place the point of a dummy round, held in your right hand, under the hammer spring housing and against the bridge of the trigger housing. Pry up on the tip of the hammer spring housing, unseating it from its notch (fig. 13). Continue to pry up until the tip clears the bridge of the trigger housing, allowing the hammer spring to expand. Remove the hammer spring housing and the hammer spring.

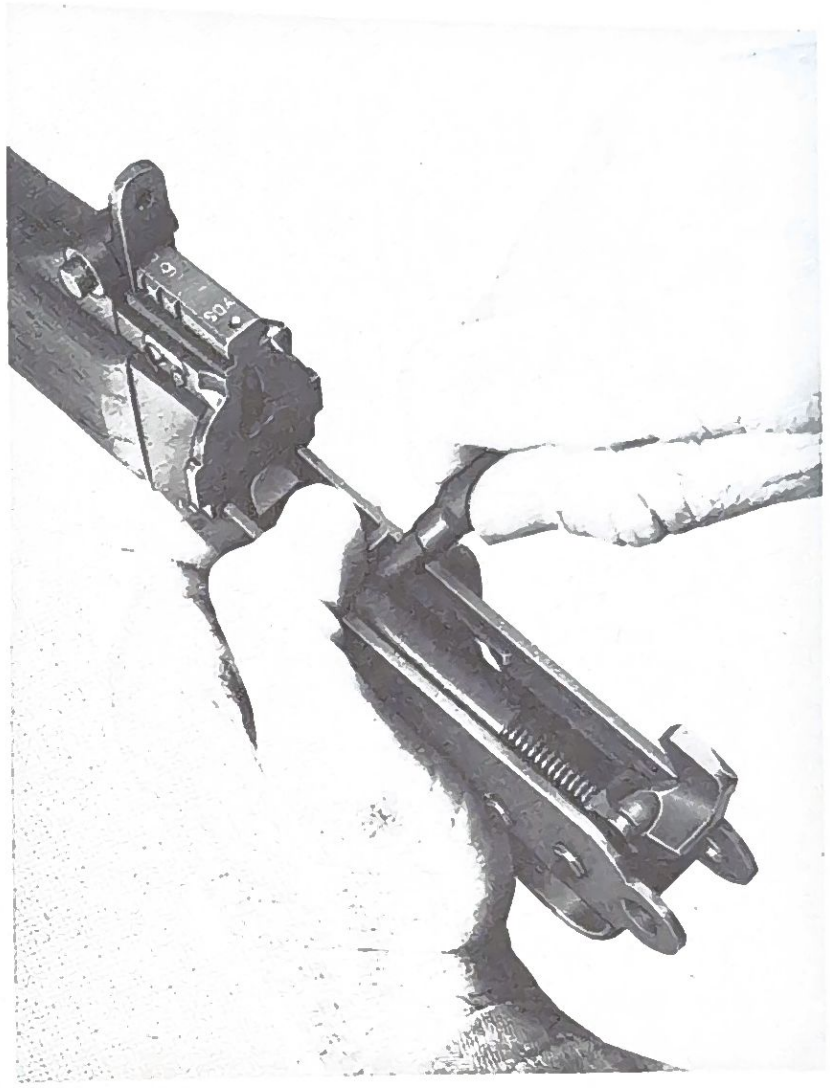


Figure 13. Removing the hammer spring housing.

Holding the groups in the same position, place the point of a dummy round through the large change lever hole and pry up on the ring of the holding plate. With your fingers, pull up on the end of the holding plate until it extends from the housing. With a dummy round in your right hand, drift the hammer pin out and remove the hammer pin and hammer (fig. 14).

Regrasp the trigger housing with your left hand, palm down, so that your thumb is against one side of the trigger housing, and your fingers against the other side; the stock is toward your front.

Push the front of the sear down with your left forefinger, and with your right hand drift the sear pin out, maintaining pressure on the sear. Remove the sear, sear spring and sear spring plunger from the housing. Do not remove the sear spring from the sear spring plunger (fig. 15).

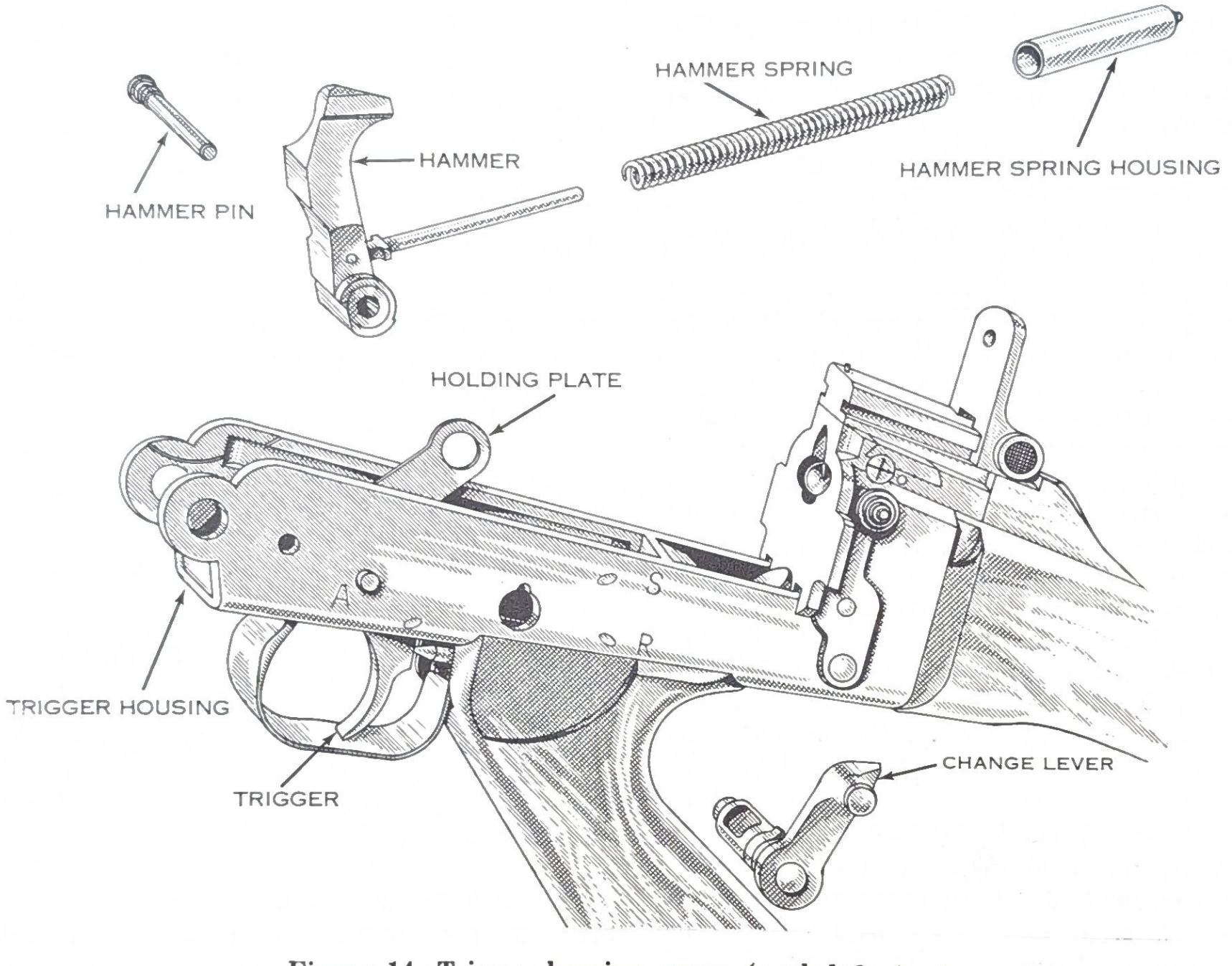


Figure 14. Trigger housing group (exploded view).

With your right forefinger against the back of the trigger, pull up on the trigger, disengaging the trigger spring plunger from its recess in the trigger. Remove the trigger from the trigger housing.

The disassembled parts are shown in figure 16.

11. ASSEMBLY OF THE TRIGGER HOUSING GROUP

Grasp the pistol grip with your right hand. Place the butt against your right hip with the rear sight to the left. Replace the trigger into the trigger housing so that the trigger spring plunger is engaged in its recess in the trigger and the base of the trigger is lined up with the base of the trigger housing.

Turn the stock so that the rear sight is up. With the spring end first, reseat the sear spring and sear spring plunger fully into its well in the trigger. Squeeze the trigger lightly with the second finger of your right hand.

With your left thumb and forefinger, hold the forward nose of the sear so that the sear spring plunger recess is down and facing the plunger. With the second finger of your right hand, hold the trigger in place by squeezing slightly to the rear. Lower the sear between the wings of the trigger and engage the sear spring plunger into its recess in the sear.

With your left hand, place the sear pin through its hole in the right side of the trigger housing and through the right wing of the trigger, until it comes into contact with the sear. Hold the pin in place with your right forefinger, while continuing to grasp the pistol grip with your right hand. Grasp the forward nose of the sear with your left thumb and forefinger. Lift the sear up *slightly* and push it to the rear (compressing the sear spring), un-

til the sear moves into alinement with the sear pin. Seat the sear pin through its hole in the sear by pressing in with your right forefinger. Aline the sear pin with its holes on both sides of the trigger housing and drift the sear pin fully into position.

With the group in the same position, hold the hammer in your left hand with the polished surface up and the hammer spring guide to the rear and replace it into the housing so that it alines approximately with its holes in the trigger housing. Be sure that the holding plate is still up and extending from the housing. Hold the stock in position with the last fingers of your left hand. With your right hand, place the hammer pin into its hole in the right side of the trigger housing. Aline the hammer by pushing downward on the sear and seat the hammer pin fully into the trigger housing.

Push the end of the holding plate downward into the trigger housing until its hole alines with the change lever hole in the right side of the trigger housing. Insert the point of a dummy round through the small change lever hole to assist in alining the holding plate.

Rotate the hammer forward and replace the hammer spring on the hammer spring guide. Replace the hammer spring housing over the hammer spring. Rotate these parts to the rear and downward until they come in contact with the bridge of the trigger housing.

To seat the hammer spring housing, hold the group on a table with the sight up and the rifle butt against your hip. Extend the fingers of your left hand around the forward surface of the pistol grip, and place your left thumb on top of the hammer spring housing. Place your right thumb over the tip of the hammer

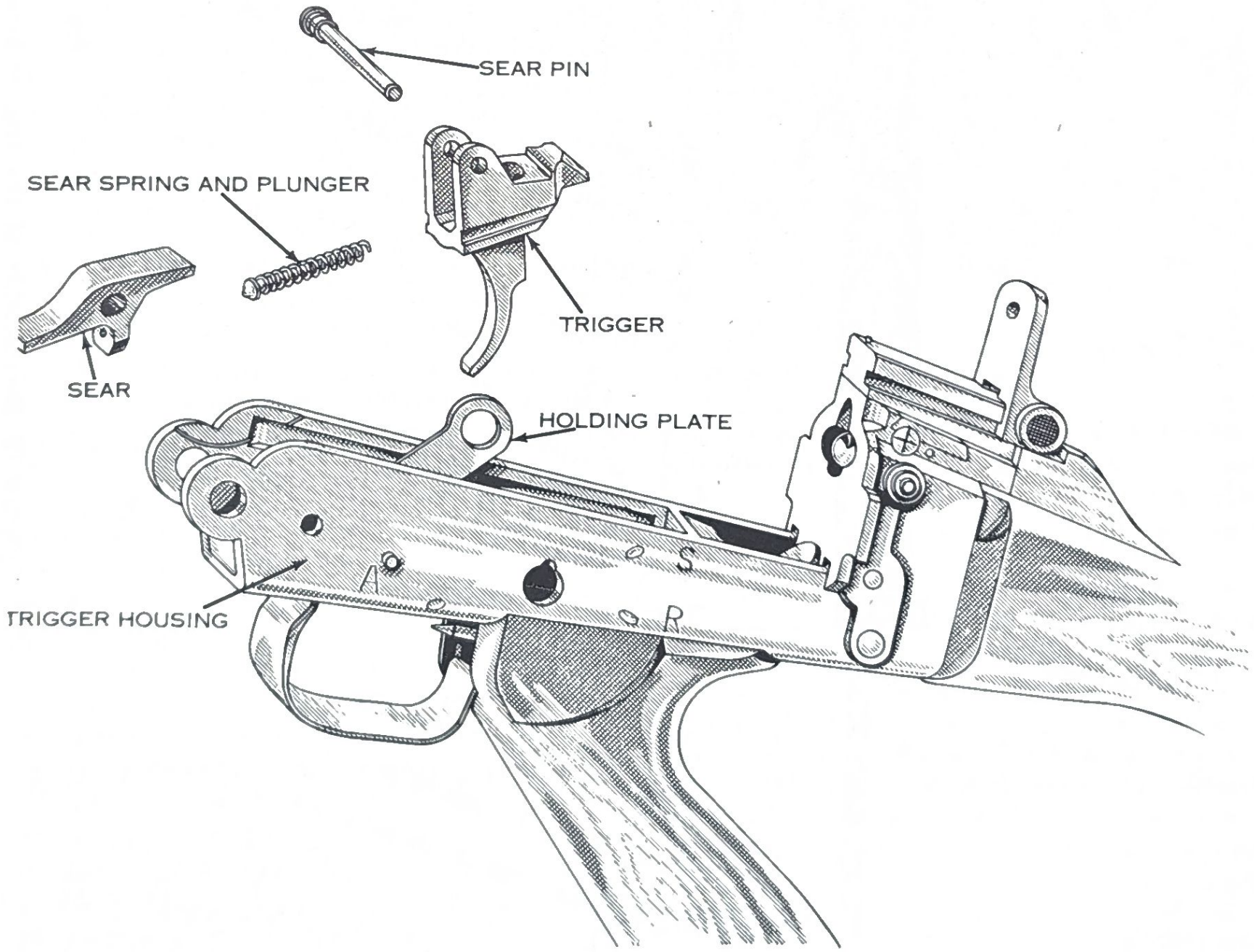


Figure 15. Trigger assembly (exploded view).

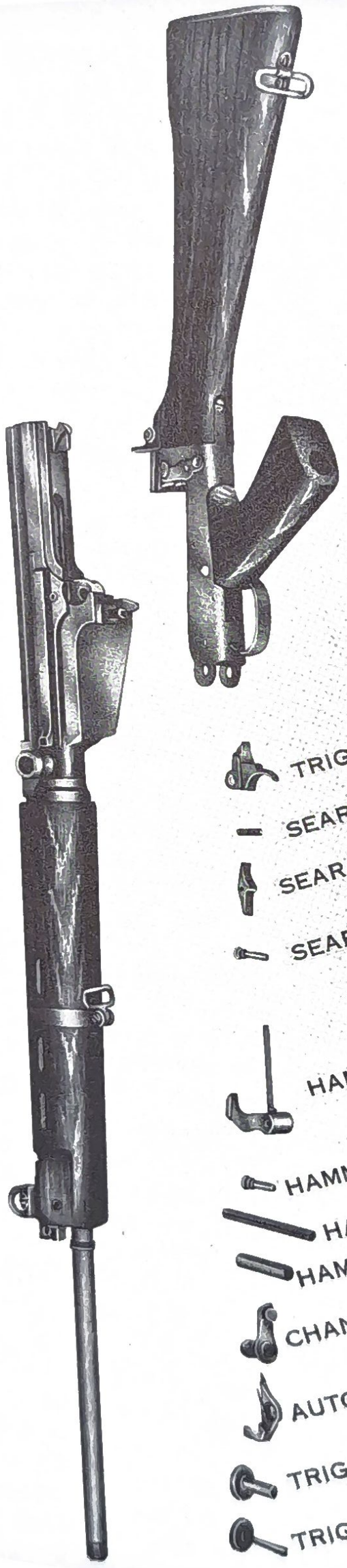


Figure 16. Disassembly of the trigger housing group.

spring housing (fig. 17) and push forward until the housing is just forward of the bridge. At this point, press downward with both thumbs, seating the tip of the hammer spring housing into its recess in the bridge of the trigger housing.

Replace the change lever through its hole in the left side of the trigger housing by realining its stud with the dismount notch in the change lever hole. Press the change lever bar firmly into the receiver and at the same time, rotate the change lever to the rear and downward.

Place the change lever on the "S" setting, and cock the hammer.

Place the barrel and receiver group on the table with the muzzle to the left and the the sight away from you. With your right thumb and forefinger, hold the automatic sear and spring so that the sear spring is up and the toe is to the left. With a sliding and clockwise rotary motion, replace the automatic sear so that its hole is alined with the pivot hole in the base of the receiver. At this time, inspect the automatic sear to make certain that the spring is lying flush with the side of the sear.

To join the two groups, hold the barrel and receiver group in the same position with your left hand, and grasp the stock and trigger housing groups at the small of the stock with your right hand. Aline the pivot holes in the forward wings of the trigger housing with the pivot hole in the base of the receiver. With your right hand, reach under the rifle and place the trigger housing pivot into the pivot hole. Insert the point of a dummy round into the left side of the pivot hole and realine the automatic sear. Push the trigger housing pivot until it is fully seated. Replace the trigger housing spindle and rotate it clockwise until thumb tight.

The remaining assembly is performed as described in paragraph 7.

12. DISASSEMBLY OF THE STOCK GROUP AND REAR SIGHT

You may disassemble the stock group and rear sight only when supervised by an officer and when the proper tools are available. Place the muzzle of the rifle on the floor with the butt vertical. Remove the butt plate screw by turning counterclockwise with a screwdriver. Remove the butt plate by pulling it upward. Engage the screwdriver blade of the stock group tool with the slot in the stock retaining nut, which is now exposed. Hold the tool stationary and pivot the rifle clockwise around it, loosening the stock retaining nut. *Maintain a firm pressure downward on top of the tool* because the driving springs are compressed and they will come out with considerable force if released too quickly. Completely unscrew the stock retaining nut and allow the driving springs to expand *slowly*. Remove the stock retaining nut, its washer, the driving springs, and the driving spring plunger. Separate the inner spring from the outer spring but do not remove the driving spring plunger from the outer driving spring.

Figure 17. Replacing the hammer spring and hammer spring housing.

Remove the stock retaining screw, located immediately behind the pistol grip, by turning it counterclockwise. Remove the stock by pulling it to the rear.

The rear sight may now be removed from the rear sight base. Depress the rear sight lock (fig. 3) and move the rear sight to the rear. Remove the rear sight lock by sliding it from the side of the rear sight. Next, remove the rear sight lock spring from its well in the side of the rear sight. To disassemble the rear sight without disassemblying the stock group see paragraph 14.

13. ASSEMBLY OF THE REAR SIGHT AND STOCK GROUP

Reseat the rear sight lock spring into its well in the side of the rear sight. Insert the rear sight lock into the rear sight so that the serrated end appears on the outside. Aline the rear sight lock with the rear sight so that the locking lug is vertical. Depress the rear sight lock with your thumb and forefinger and replace the rear sight on the rear sight base so that the serrated end of the rear sight lock is to the left.

To assemble the stock group, place the muzzle of the rifle on the floor as in disassembly and slide the stock back into position over the driving spring tube. Replace the stock retaining screw and tighten it with a screwdriver. Place the small driving spring inside the large driving spring. Insert the driving springs into the driving spring tube so that the plunger enters first. Replace the washer over the outer driving spring and allow it to fall fully into the stock. Make sure that the washer is not seated at an angle but lies flat in the stock. Slip the stock retaining nut over the long guide of the stock group tool, so that the screwdriver blade of the tool fits into its slot in the nut. Hold the nut in place and insert the guide of the tool down through the driving springs. Press down on the tool, compressing the driving springs, and tighten the stock retaining nut by rotating the rifle counterclockwise around the tool.

Replace the butt plate and insert the butt plate screw, tightening it with a screwdriver.

14. REMOVAL OF THE REAR SIGHT BASE

The rear sight base may be removed from the rifle independently of the stock group, however, you must be supervised by an officer. It will be removed only when the rifle has been used excessively or it has been immersed in salt water. Remove one deflection screw by turning it counterclockwise with a screwdriver. Remove the rear sight and the rear sight base from the rifle by drifting the rear sight base in the direction from which the screw was removed. This can best be accomplished by gentle taps on the rear sight base with the wooden end of the screwdriver. Do not remove the other deflection screw from the rear sight base because this may ruin your zero. The rear sight may now be removed from the rear sight base as described in paragraph 12.

15. REPLACE THE REAR SIGHT BASE

Assemble the rear sight and rear sight base as described in paragraph 13. Reseat the dove tail into its slot and replace the deflection screw. Tighten the screw with a screwdriver.

Section II. FUNCTIONING

16. GENERAL

By taking your rifle apart and putting it together, you become familiar with its parts. Now you will learn how these parts function. If you understand how your rifle works, you will be able to clear any stoppages that may occur, with a minimum loss of time. This knowledge will also assist you in keeping your rifle in good working order.

Each time a cartridge is fired, many parts inside the rifle work in a given order. When the rifle is ready to be fired again, a cycle of operation, or functioning, has occurred. This cycle is almost the same in all small arms.

To help you understand the cycle of functioning, it is broken down into eight basic steps. Keep in mind that more than one step may happen at the same time. The steps of functioning are defined and listed below:

1. Feeding—moving the cartridge into the path of the bolt.
2. Chambering—moving the cartridge into the chamber.

3. Locking—locking the bolt in the receiver.
4. Firing—driving the firing pin forward to strike the primer cap, which sets off the cartridge.
5. Unlocking—unlocking the bolt from the receiver.
6. Extraction—pulling the empty cartridge case from the chamber.
7. Ejection—throwing the empty cartridge from the rifle.
8. Cocking—pushing the hammer into the cocked position.

17. PHASES OF FUNCTIONING

The functioning cycle is divided into four phases, with certain steps taking place in each phase. Assume that one round is in the chamber and that the powder in the cartridge is being ignited. The four phases of functioning and the steps taking place in each phase are listed below.

The *first phase* is the REARWARD MOVEMENT OF THE BOLT CARRIER.

Action of the gas.
Action of the bolt carrier.
Unlocking.
Extraction.
Ejection.
Cocking.
Feeding.
Termination of the rearward movement.

The *second phase* is the FORWARD MOVEMENT OF THE BOLT CARRIER.

Chambering.
Locking.
Termination of the forward movement.

The *third phase* is the ACTION OF THE TRIGGER GROUP.

Semiautomatic fire.
Automatic fire.

The *fourth phase is* the ACTION AFTER FIRING THE LAST ROUND.

Action of the bolt stop.

18. REARWARD MOVEMENT OF THE BOLT CARRIER

Action of the gas. When a round is fired, pressure of approximately 50,000 pounds per square inch is generated in the chamber and the bullet is propelled forward through the bore. As the bullet passes the gas port, a small portion of the gas, seeking the easiest means to escape, passes through the gas port into the gas cylinder where it strikes the gas piston, driving it to the rear. As the gas piston moves to the rear it compresses the gas piston spring, and a portion of the remaining gas, not required to operate the mechanism, passes through the gas escape port (fig. 18 and 19a). After the gas piston spring has been compressed, it expands and repositions the gas piston in the gas cylinder.

Action of the bolt carrier. The rearward movement of the gas piston drives the bolt carrier and driving rod to the rear. The driving rod compresses the driving springs, located in the stock of the rifle (fig 19b). The bolt carrier moves to the rear approximately five-sixteenths of an inch before the bolt group begins to unlock. During this initial movement of the bolt carrier, enough energy is built up to allow the bolt carrier to overcome the inertia of the locked bolt. Sufficient time elapses to allow the bullet and remaining gasses to escape from the muzzle before unlocking begins. This action is a safety feature which prevents a blowback of hot gases into the firer's face. As the bolt carrier moves to the rear, it causes the hammer to rotate to the rear and downward. As the hammer moves away from the head of the firing pin, the firing pin spring expands and moves the firing pin to the rear, withdrawing the striker from the face of the bolt. At the same time, the bolt carrier moves behind the head of the firing pin, protecting it from any forward movement of the hammer.

Unlocking. As the bolt carrier continues to the rear, the camming lugs of the bolt carrier contact the cams of the bolt and lift it up and out of its locking recess. This unlocks the bolt (fig. 19c).

Extraction. The pressure created during firing causes the cartridge case to expand in the chamber. Before the cartridge case can be

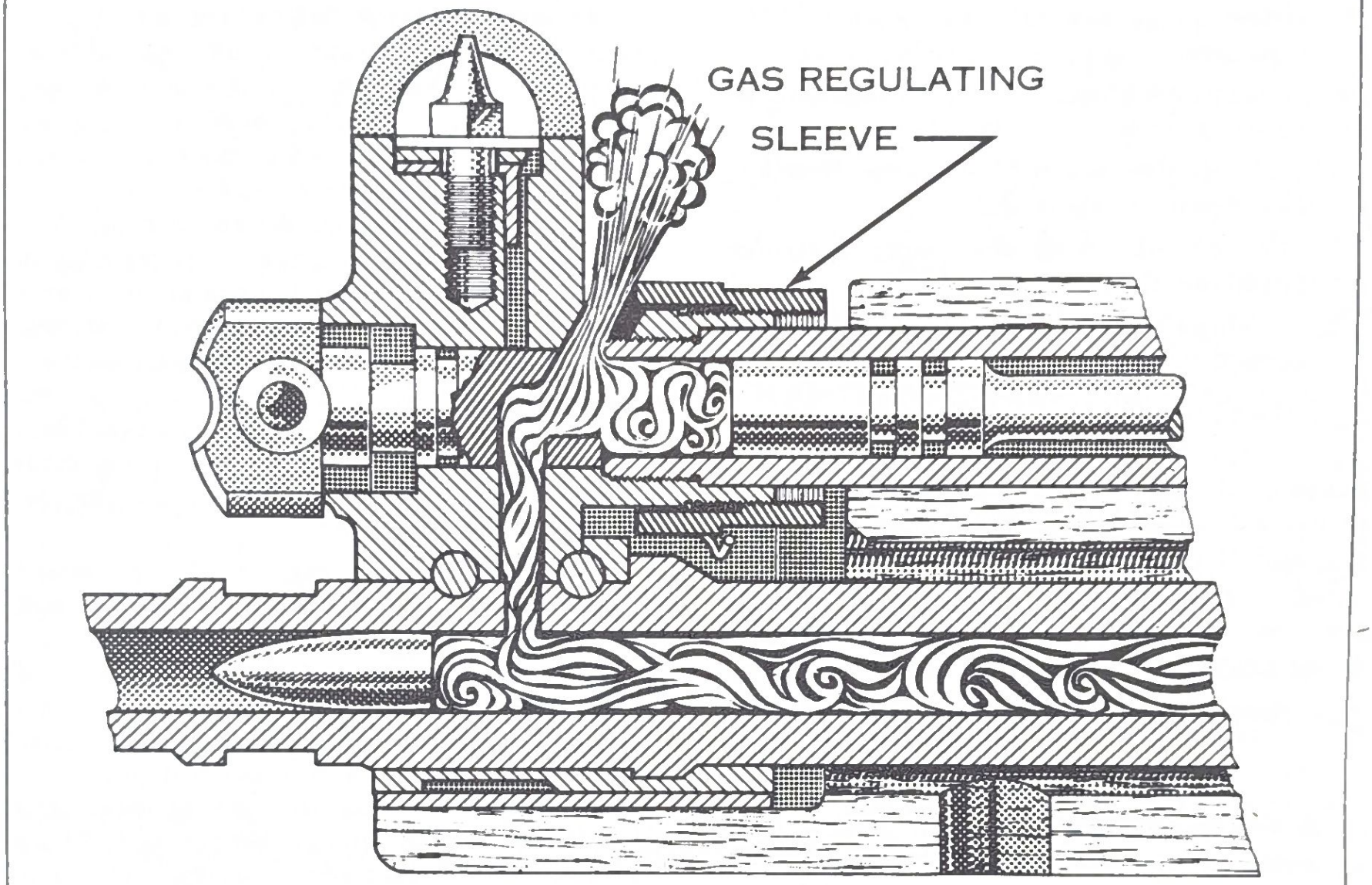


Figure 18. Action of the gas.

extracted, it must be loosened. This is done during the unlocking action of the bolt. Sufficient time elapses before the bolt is completely unlocked to allow the cartridge case to contract slightly. The extractor claw is gripping the rim of the cartridge, and when the bolt is lifted out of its locking recess, it exerts a strong lever action on the cartridge case, loosening it in the chamber. This is called slow initial extraction. After the bolt is unlocked and starts to the rear, the extractor pulls the empty cartridge case from the chamber (fig. 19d).

Ejection. After the front of the empty cartridge case clears the chamber, the base of the cartridge case strikes the ejector. This causes the cartridge case to pivot about the extractor, strike the receiver cover and rebound to the right front (fig. 19d).

Cocking. As the bolt carrier moves to the rear it causes the hammer to rotate to the rear and downward, cocking the hammer.

Feeding. As the bolt clears the top round in the magazine, the magazine follower, through the action of the compressed magazine spring, pushes the top round up into the path of the bolt.

Termination of the rearward movement. The rearward movement ends when the base of the bolt carrier contacts the forward part of the stock group. In this position the driving rod has compressed the driving springs, storing up energy for the forward movement.

19. FORWARD MOVEMENT OF THE BOLT CARRIER

Chambering. The driving springs expand, moving the bolt carrier and bolt forward. The

bolt strips the top round from the magazine and pushes it into the chamber (fig. 20a).

Locking. When the bolt is all the way forward, the rearmost (top) camming surface of the bolt carrier comes in contact with the camming surface of the bolt. This causes the bolt to be cammed down into engagement with the locking recess, locking it in the receiver (fig. 20b). As locking begins, the rim of the cartridge is gripped by the claw of the extractor and the base of the cartridge is pressed firmly against the face of the bolt.

Termination of the forward movement. After the bolt is fully locked in the receiver, the bolt carrier continues to move forward a short distance. As the bolt carrier moves the last five-sixteenths of an inch, the head of the firing pin protrudes through its hole in the bolt carrier (fig. 20c). During this last movement the built-up portion of the bolt carrier strikes the toe of the automatic sear, causing it to rotate and disengage the automatic sear from its notch in the hammer. When the bolt carrier is completely forward, the head of the firing pin is exposed so that it may be struck by the hammer. The forward movement terminates when the forward end of the bolt carrier strikes the forward end of the receiver.

20. ACTION OF THE TRIGGER GROUP

Trigger action—T48 (semiautomatic). The change lever provides a mechanical safe position ("S"), and a position for semiautomatic firing ("R"). It also has a position ("A") for automatic firing when the rifle is equipped with a special change lever. The change lever for the T48 rifle has two cut-away portions of equal depth.

When the hammer is cocked, the sear nose, engaging the lower sear notch on the hammer, holds the hammer in position against the action of the compressed hammer spring. The hammer forces the sear back until the tail of the sear is over the shoulder of the trigger. The sear spring is compressed (fig. 21a).

When the change lever is placed on the "R" setting, a cut-away portion of the change lever is exposed to the shoulder of the trigger.

When the trigger is squeezed, the shoulder of the trigger moves upward and contacts the tail of the sear. This causes the sear to rotate about the sear pin, disengaging the nose of the sear from the lower sear notch on the hammer. The hammer then moves forward, under

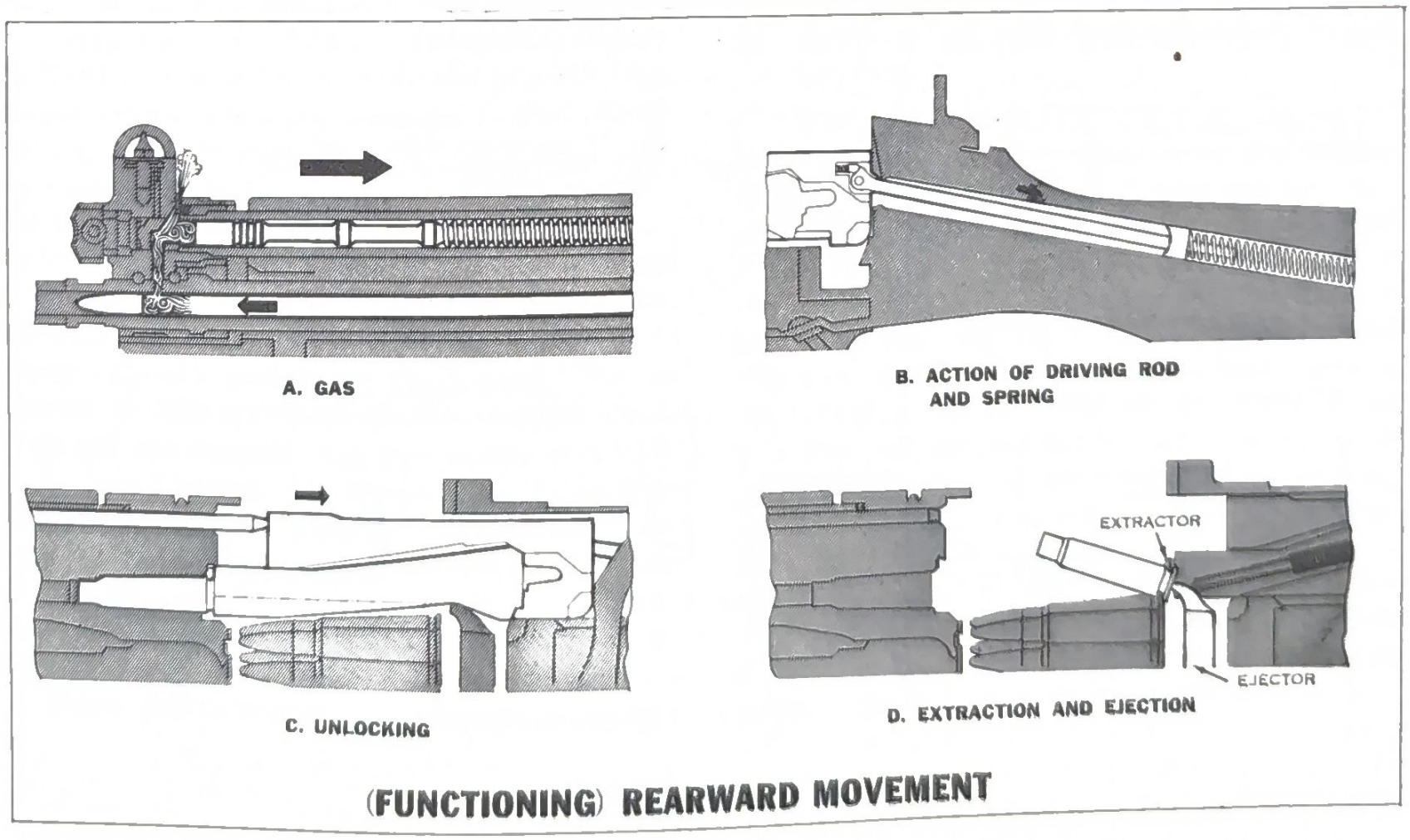


Figure 19. (Functioning.) Rearward movement.

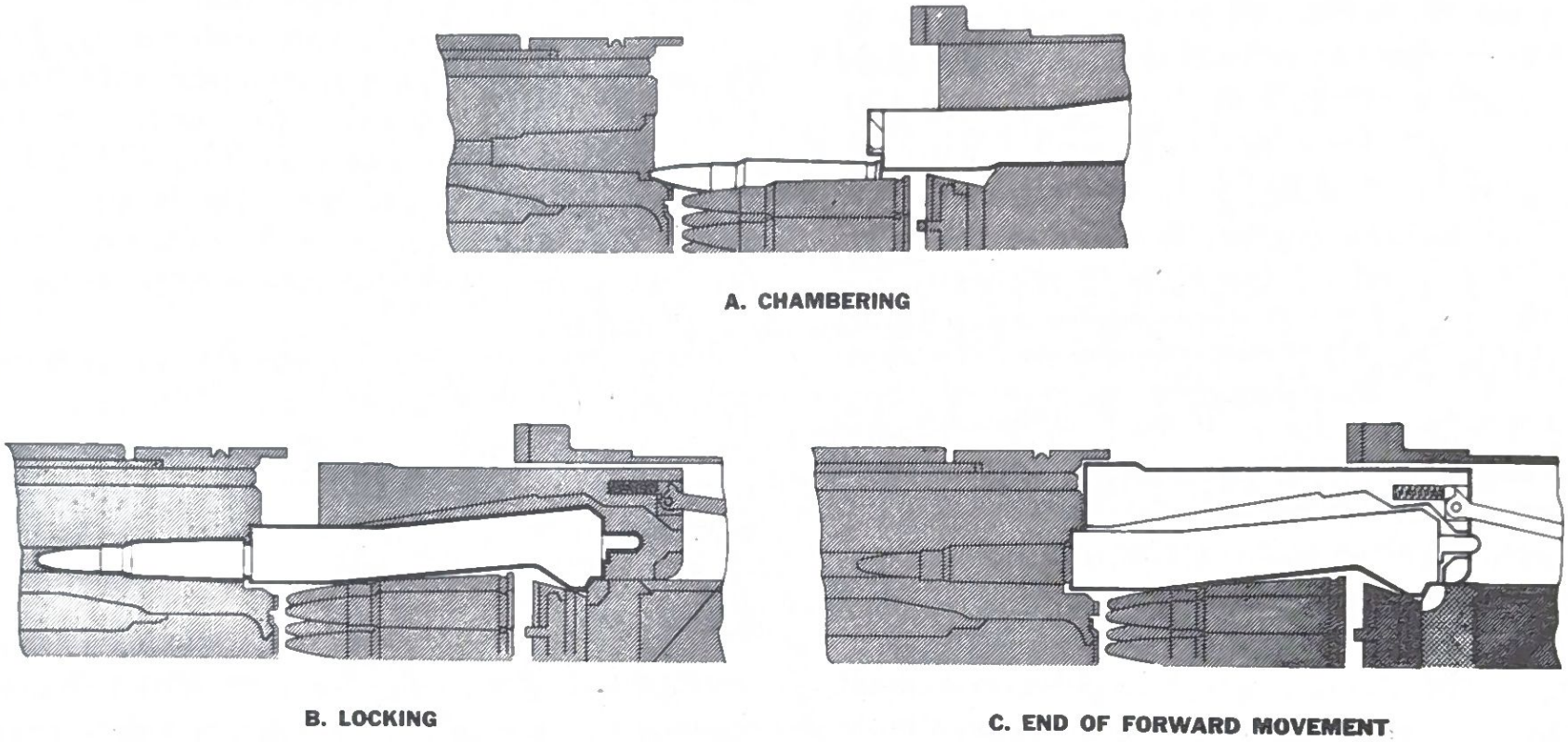


Figure 20. (Functioning.) Forward movement.

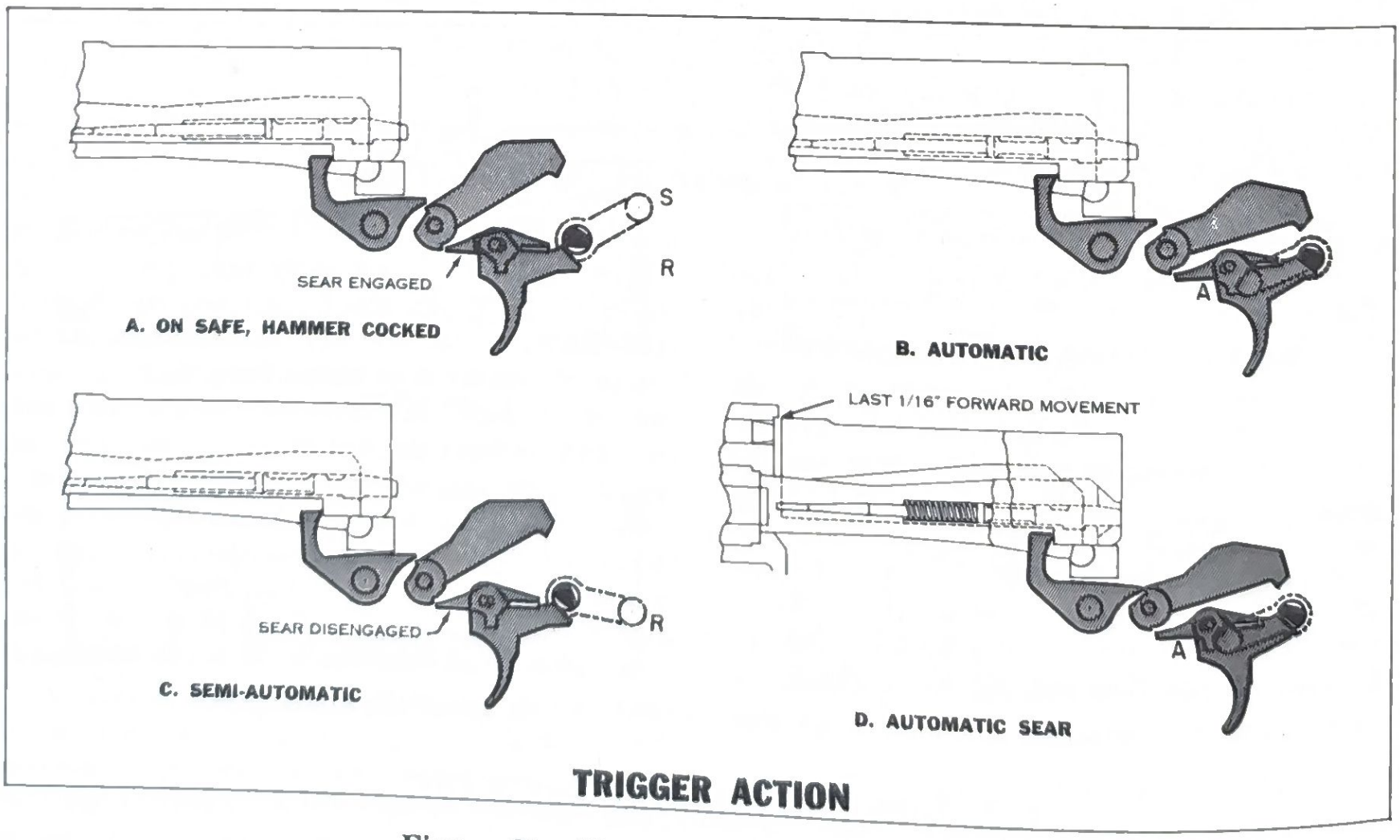


Figure 21. (Functioning.) Trigger action.

pressure of the hammer spring, and strikes the firing pin (fig. 21c).

As the hammer goes forward, the sear spring expands and forces the sear forward slightly, allowing the tail of the sear to drop in front of the shoulder of the trigger. As the tail of the sear drops down, the sear nose moves upward and presses against the underside of the hammer.

Pressure is still being maintained on the trigger. As the hammer is again cocked, by the rearward movement of the bolt carrier, the automatic sear engages its notch on the hammer while the sear engages the sear notch. (The bolt carrier, in its last one-sixteenth of an inch forward movement, will force the automatic sear to pivot, thereby releasing the hammer and allowing only the sear to hold the hammer in the cocked position.)

When the trigger is released, the shoulder of the trigger drops and allows the hammer to rotate forward slightly. This forward rotation of the hammer forces the sear rearward and repositions it above the shoulder of the trigger. As the sear is repositioned, the sear spring is compressed. The parts of the trigger group are now in the same position as they were before the trigger was squeezed.

Trigger action—T48E1 (automatic). When the T48E1 rifle is fired semiautomatically, the trigger group functions the same as that of the T48 rifle. The change lever for the T48E1 also has two cutaway portions. One is of the same size as on the T48 and is used for semiautomatic fire. The other cutaway portion is deeper and is used for automatic fire. When the change lever is placed on the "A" setting, the deeper cutaway portion of the change lever is exposed to the shoulder of the trigger.

When the trigger is squeezed, the shoulder of the trigger rises into the deep notch on the change lever (fig. 21b and 22). As long as pressure is maintained on the trigger in this position, the nose of the sear is held down where it cannot become engaged with the lower sear notch on the hammer.

When the bolt carrier forces the hammer back to the cocked position, the automatic sear engages its notch in the hammer and holds the hammer in position until the bolt is locked. This is just like semiautomatic fire. As the bolt carrier moves forward its last one-sixteenth of an inch, it strikes the toe on the automatic sear, causing it to rotate and release the hammer (fig. 21d). The hammer is then forced forward by the compressed hammer spring.

As long as pressure is maintained on the trigger, the rifle will continue to fire automatically. When pressure is released from the trigger, the rifle will cease firing.

Safety features. When the change lever is on the "S," or safe setting, the solid portion of the change lever bar is exposed to the shoulder of the trigger, blocking its upward movement. The sear nose cannot be disengaged from the lower sear notch of the hammer and the rifle will not fire (fig. 21a). The automatic sear also acts as a safety by preventing premature firing. The bolt group must be fully locked in the receiver before the automatic sear will release the hammer. If the toe of the automatic sear is broken, the rifle will not fire because the automatic sear cannot become disengaged from its notch in the hammer.

21. ACTION AFTER FIRING THE LAST ROUND

When the last round in the magazine has been chambered, the projection on the follower strikes the bolt stop and forces the bolt stop against the bottom of the bolt. When the round is fired and the bolt moves to the rear, clearing the bolt stop, the follower rises moving the bolt stop into the receiver under pressure of the bolt stop spring. The face of the bolt contacts the bolt stop and the forward movement of the bolt and bolt carrier is stopped. The bolt will remain open, against the tension of the driving springs, until the bolt stop is disengaged (fig. 22). To hold the bolt open when there is no magazine in the receiver, pull the bolt all the way to the rear, press upward on the bolt stop, and allow the bolt to move forward against the bolt stop.

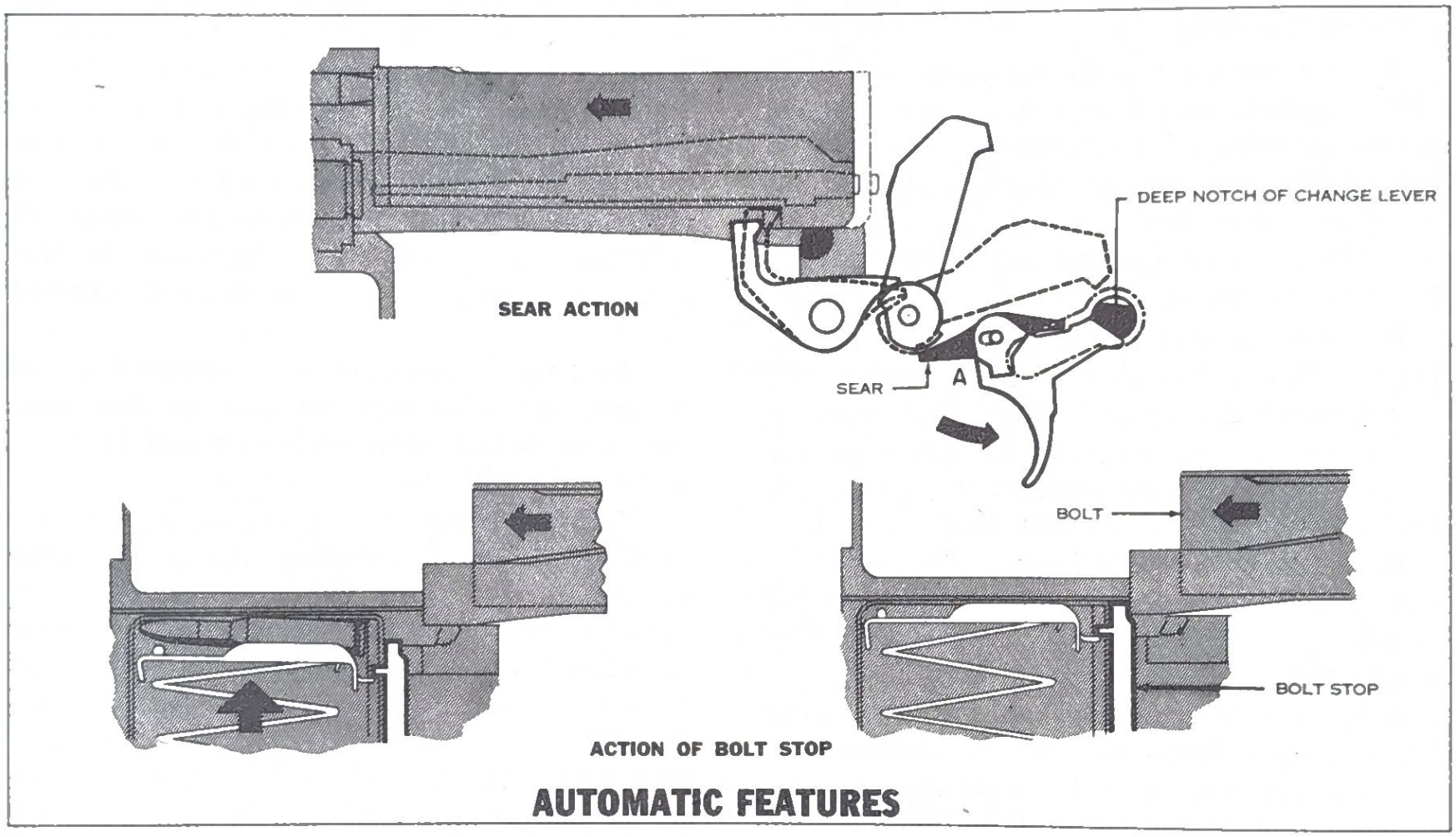


Figure 22. Automatic features.

Section III. OPERATION

22. GENERAL

This section contains instructions for loading the magazine; loading and unloading the rifle; clearing the rifle; setting the change lever; safety precautions; and adjustment of the gas.

23. LOADING THE MAGAZINE

Examine each round before loading it into the magazine to make sure it is not dirty, oily, or gritty, because a dirty round may cause a stoppage during firing. Place the front of the magazine against the palm of your left hand with your fingers gripping the side of the magazine, the follower up and your left thumb over the follower. With your right hand, place the cartridge under your left thumb, cartridge pointing to the left. Grip the right side of the magazine in your right palm, with the thumb of your right hand also on top of the cartridge. Squeeze down with both thumbs, seating the cartridge in the magazine. Follow the same procedure until 20 rounds are in the magazine. If your rifle is equipped with a cutaway receiver cover, the magazine can be loaded while in the rifle (paragraph 70). To load the magazine while it is in the rifle, the bolt must be to the rear and engaged by the bolt stop.

24. LOADING THE RIFLE

When walking, or in the assault, the T48 rifle is loaded and unloaded with the left hand, while the right hand grips the pistol grip. To load the magazine into the rifle, hold the base of the magazine in the palm of your left hand and rotate the bottom of the magazine forward so that it makes an angle of approximately 45° with the rifle. Retaining this angle, insert the magazine into the magazine-well so that the projection on the leading edge of the magazine engages the notch in the face of the magazine-well. Rotate the bottom of the magazine toward the butt of the rifle until the magazine catch snaps into place. Tap upward on the bottom of the magazine with your left hand. If the bolt is to the rear, release it by pressing down on the bolt stop. If the bolt is not to the rear, pull the arming handle all the way back and release it. The bolt will chamber the top round as it goes forward.

25. UNLOADING THE RIFLE

To unload the rifle, place the change lever on the "S" setting and grasp the magazine in your left hand with your fingers around the front of the magazine and your thumb on the magazine catch. Press the magazine catch and rotate the magazine down and forward, removing the magazine. Pull the arming handle all the way to the rear. If a round is in the chamber, place your right hand over the cover opening and catch the round as it comes out. While the bolt is in its rearmost position, press upward on the bolt stop, locking the bolt to the rear.

26. SETTING THE CHANGE LEVER

To set the rifle on the safe position, engage the change lever with its notch at the letter "S".

To fire the T48 semiautomatically, engage the change lever at either the "R" or "A" notch. To fire the T48E1 semiautomatically, rotate the change lever until it engages the "R" notch.

To fire the T48E1 automatically, engage the change lever at the "A" notch.

27. TO CLEAR THE RIFLE

To clear the rifle, place the change lever on "S" and remove the magazine. Pull the arming handle fully to the rear, extracting and ejecting the cartridge from the chamber. Press upward on the bolt stop, locking the bolt to the rear, and inspect the receiver and chamber to be sure they are empty.

28. SAFETY PRECAUTIONS

You cannot practice safety too much when handling weapons. Your own safety and that of others around you will depend on how well you observe all safety regulations. The following list covers some of the safety precautions for you to observe. You should also understand and practice the precautions contained in FM 23-5.

Never consider a rifle with its bolt closed as safe until it has been properly inspected. Do not playfully or carelessly point your rifle at anyone. Always consider the rifle loaded.

Be sure the barrel is free of any obstruction. Consider your rifle cleared only when the safety is on; the magazine is out; the bolt is to the rear; and the chamber has been inspected.

29. GAS ADJUSTMENT

The gas regulating sleeve (fig. 23) must be correctly adjusted before the rifle will function properly. To prevent stoppages, it is particularly important that the correct adjustment is made on each rifle before firing on the range. The following steps tell you how to obtain the correct adjustment for your rifle, and how to remember it.

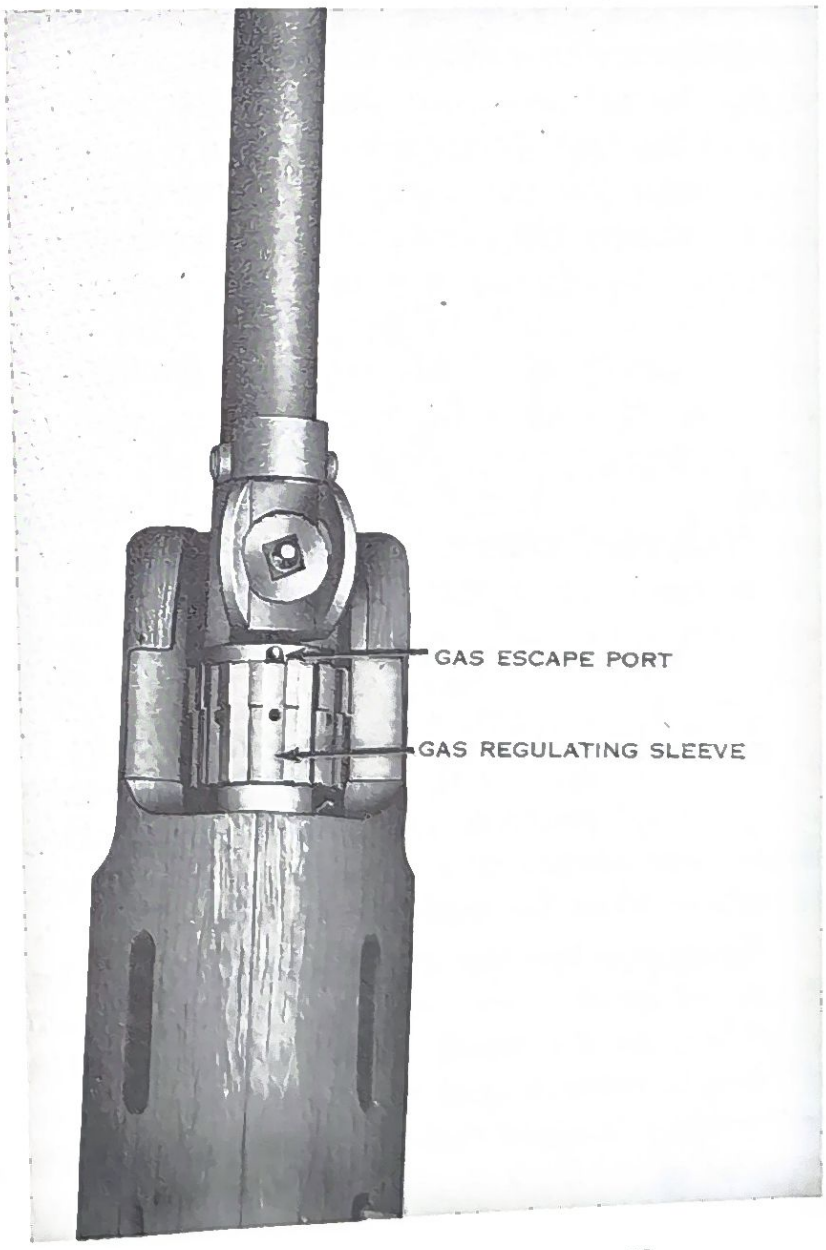


Figure 23. Gas Regulating Sleeve.

First, you must find out the absolute minimum amount of gas required to operate your rifle. It is the amount necessary to drive the bolt to the rear just far enough for the empty cartridge case to be ejected and the bolt stop to hold the bolt to the rear. To determine this, close the gas regulating sleeve by turning it from left to right with your combination tool

or the rim of an empty cartridge. Then open the gas regulating sleeve 20 clicks by rotating it from right to left. With the rifle pointing down range, load an empty magazine into the rifle, and one round into the chamber. Hold the rifle loosely on the palm of your left hand and hold the pistol grip between the thumb and fingers of your right hand. Do not grip the rifle with either hand. The rifle should be approximately horizontal with the butt out and away from your body. Squeeze off the round. The rifle will recoil, swinging your arms. At this time the bolt should *not* stay open; however if it does remain to the rear, open the gas regulating sleeve five additional clicks, fire another round in the same way, and repeat the process until the bolt does not remain to the rear. Next, close the gas regulating sleeve until the bolt remains to the rear. Do this by closing the gas regulating sleeve several clicks, test-firing a round, and repeating the procedure until the bolt barely stays open and the empty cartridge case is ejected from the rifle. If your rifle is greatly in need of gas (underpowered), close the gas regulating sleeve four clicks after each test. As the rifle approaches the point where the bolt nearly remains open, close the gas regulating sleeve only two clicks with each test, until the bolt just remains to the rear.

To be sure that your rifle will function if it should get dirty while you are on the range or on a field problem, close the gas regulating sleeve four additional clicks. This is the proper gas adjustment for your rifle.

To remember the gas adjustment so that it can be reset after cleaning, or if it should ever become disturbed, count the clicks that it takes to close the gas regulating sleeve. Then by opening the gas regulating sleeve the same number of clicks, you will have the proper gas adjustment.

After you have fired 500 or 600 rounds with a new rifle, the working parts become smooth and the rifle "loosens" up. You may then find the rifle using too much gas with your original adjustment. Simply readjust the gas regulating sleeve in the same way as just described.

If you should be in a cold climate where the weather causes the oil to become thick and your rifle operates sluggishly, close the gas regulating sleeve a few clicks. If, during a patrol action or river crossing, your rifle should get dirty and you do not have time to clean it, close the gas regulating sleeve a few clicks to keep the rifle functioning properly. In either case, clean your rifle at the first opportunity.

30. GUN BOOK

When your rifle is issued, you will also receive a gun book. It is important that you fill out this book properly and keep it up to date at all times.

As you open your book you will see certain abbreviations. Use them to save time and space when placing information in the book. Your gun book will then be a record of the number of rounds fired by your rifle, the stoppages encountered, the action you took to clear the stoppages, and other pertinent information. At the completion of the troop test, this information will be carefully studied to assist in evaluating the T48 rifle.

31. GRENADE LAUNCHER

The rifle grenade launcher for the T48 rifle is used essentially the same as the M7A3 launcher for the M1 rifle. It will fire the same grenades that the M7A3 launcher will fire, but with greater accuracy and increased range when using the M64 grenade launcher cartridge. The barrel and sight leaf are identical to that on the M7A3. The maximum range is from 260 to 270 yards with the M28 (Energa) rifle grenade. There is no indirect fire sight for the T48 rifle.

The grenade launcher fits over the end of the flash suppressor and is held in place by a spring latch that engages the bayonet stud on the flash suppressor (fig. 24). A clip-type grenade retainer spring on the muzzle end of the launcher holds a grenade at any desired position. The nine annular grooves on the launcher are used to vary the range while maintaining the same angle of elevation on the rifle. All low-angle, direct fire is performed with the grenade fully seated on the launcher.

Prior to firing a grenade from the launcher, rotate the gas cylinder plug 180° until the "A" is next to the barrel. This closes

the gas port in the barrel, preventing the rifle from completing a full cycle of operation. If you fail to turn the gas cylinder plug 180°, your rifle will still fire a grenade from the launcher, but some unburned powder may blow back into your face and temporarily blind you.

Your rifle will fire ball ammunition while the grenade launcher is attached, but the zero of your rifle will differ from its normal zero. This difference is the result of "barrel whip" which is caused by the added weight of the launcher on the muzzle. For this reason, zero your rifle, firing ball ammunition, both with and without the launcher attached.

Marksmanship training, including sighting and aiming, positions, and firing courses is about the same as for the M7A3 launcher with the sight leaf. Detailed instructions are contained in FM 23-30.

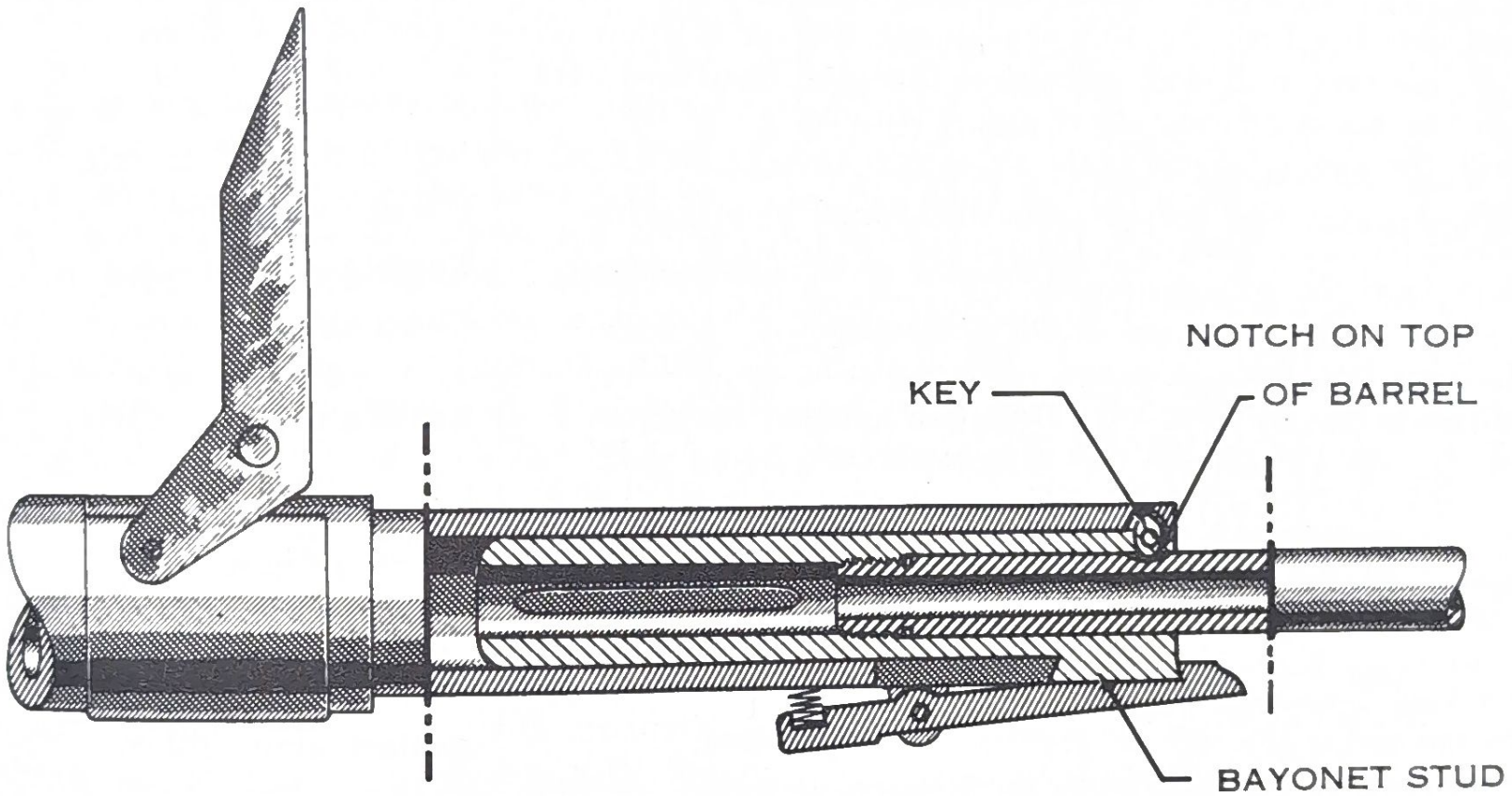


Figure 24. Grenade Launcher

Section IV. STOPPAGES AND IMMEDIATE ACTION

32. GENERAL

When, through no fault of your own the rifle fails to fire, you have a *stoppage*. It may be caused by faulty ammunition, a faulty magazine or by improper functioning of the rifle (a *malfunction*). When a stoppage occurs, you immediately take certain steps to reduce it, without even considering what caused the stoppage. This is known as *immediate action*.

33. STOPPAGES

Most stoppages occur because of dirty, worn, broken, or maladjusted parts. You must watch for these defects and correct them *before* they cause a stoppage. It is particularly important that the gas regulating sleeve be properly adjusted at all times and that you handle the magazine carefully because they are the two main causes of stoppages. The T48

STOPPAGE	CAUSE	REMEDY
Failure to feed.	Dented magazine.	Replace magazine.
	Weak or broken magazine spring.	
	Worn magazine notches.	
	Broken or worn magazine catch.	Replace parts.
	Broken or worn magazine catch spring.	
	Magazine not fully inserted.	Tap up on magazine.
	Insufficient gas to drive bolt far enough to rear to allow follower of magazine to feed next round.	*Close gas regulating sleeve until stoppage is relieved.
Failure to chamber.	Snubbed round in magazine.	Change magazine.
	Corroded or bent ammunition.	Replace ammunition.
	Dirty chamber.	Clean chamber.
Failure to fire.	Defective hammer spring.	Replace defective part.
	Worn or broken firing pin.	
	Broken automatic sear.	
	Bent hammer or hammer spring guide.	
	Bolt not fully forward.	Clean parts or *close gas regulating sleeve if parts are dirty.
	Defective ammunition.	Replace ammunition.
Failure to extract.	Insufficient gas.	*Close gas regulating sleeve until stoppage is relieved.
	Dirty chamber.	Clean chamber, examine the ammunition, or *close gas regulating sleeve until stoppage is relieved.
	Broken or worn extractor.	Replace defective parts.
	Broken or weak extractor spring.	
Failure to eject.	Insufficient gas.	*Close gas regulating sleeve until stoppage is relieved.
	Broken or bent ejector.	Replace defective part.
	Dirty chamber or operating parts.	Clean chamber or parts or *close gas regulating sleeve until stoppage is relieved.
	Spin back.	Check cover for worn lips.

*As soon as possible, you should clean the parts because excess friction from dirt may be the primary cause of the stoppage.

rifle will function when properly cared for. Some of the common stoppages, their usual causes, and remedies are shown on page 28.

34. APPLYING IMMEDIATE ACTION

Many stoppages can be prevented before they occur if your rifle, magazine, and ammunition are cared for properly. However, some stoppages may still occur. Immediate action is taught so that you will be able to take the necessary steps to reduce those stoppages. Immediate action is performed in two phases.

The first phase of immediate action is taught as a drill. It must be applied quickly and without thought as to the cause of the stoppage. Most stoppages can be eliminated by applying the first phase of immediate action. The key words used to help you learn and remember the first phase of immediate action are TAP, PULL, RELEASE AIM, and FIRE.

Tap up firmly on the bottom of the magazine. If the magazine is not fully seated, this should seat it, provided the magazine notch or the magazine catch are not worn or broken.

Pull the arming handle all the way to the rear with the left hand, palm up. This action should eject any empty cartridges remaining in the chamber, provided the extractor, extractor spring, or the ejector are not worn or broken.

Release the arming handle, allowing the operating parts to move forward and lock.

Aim at your target.

Attempt to *fire*.

35. SECOND PHASE OF IMMEDIATE ACTION

If the first phase of immediate action does not reduce the stoppage, make a more detailed examination of the rifle. The five key words used to help you remember the second phase of immediate action are TAKE, LOOK, PULL, LOCATE, AND REDUCE.

Take the rifle from your shoulder.

Look into the cover opening.

Pull the arming handle all the way to the rear.

Locate the stoppage by observation. As the arming handle is pulled to the rear, observe what is in the ejection opening, what is in the chamber, or what is ejected.

Reduce the stoppage and attempt to fire the rifle.

36. SECOND PHASE STOPPAGES

While applying the second phase of immediate action, you will observe certain stoppages. Some of the more common stoppages, their causes and remedies are listed below.

PARTIAL FEEDING

Description: The rifle stops firing with a live cartridge fed part way into the chamber, the bolt is riding over the cartridge, and the base of the cartridge is still in the magazine. This stoppage is known as partial feeding and is caused by a faulty magazine. The magazine may have a weak spring, it may be dented or dirty, or the magazine notch may be worn. The magazine catch on the rifle may be damaged or worn. In any case, the magazine is not all the way up in the magazine-well or the cartridges are not all the way up in the magazine. The bolt cannot contact the base of the top cartridge in the magazine; instead, the bolt slides over the base of the top cartridge and catches on its top, pushing it part way into the chamber.

Remedy: Replace or clean the magazine, or replace the magazine catch on the rifle.

DOUBLE FEEDING

Description: The rifle stops firing when the bolt attempts to feed two cartridges into the chamber at the same time. Double feeding occurs when the first phase of immediate action is applied to a stoppage caused by partial feeding. This stoppage is due to magazine trouble.

Remedy: Replace or clean the magazine, or replace the magazine catch.

SPIN BACK

Description: The rifle stops firing as an ejected cartridge case rebounds from the receiver cover back into the receiver, and prevents the bolt from chambering the next round. The empty cartridge case is usually found in a reversed position.

Remedy: Replace the receiver cover, if worn lips result in frequent "spin backs."

BROKEN EXTRACTOR

Description: The rifle stops firing when an empty cartridge case that was not extracted blocks the entry of a live cartridge into the chamber. This stoppage is caused by a worn or broken extractor or extractor spring. If the rim of the empty cartridge case is ripped off, the stoppage is caused by a dirty chamber.

Remedy: Replace either the extractor or extractor spring. If the stoppage is caused by a dirty chamber, remove the empty cartridge case and clean the chamber.

BOLT NOT FULLY FORWARD

Description: The rifle fails to fire because the bolt or bolt carrier is not fully forward. Usually this stoppage is caused by the rifle being underpowered (insufficient gas) which, in turn, is frequently the result of excess friction developed by dirty operating parts, or a dirty chamber.

Remedy: The immediate remedy is to close the gas regulating sleeve until the rifle cycles again, however the operating parts should be cleaned as soon as the situation permits.

Section V. CARE AND CLEANING

37. GENERAL

One of your most important responsibilities is to properly care for your rifle. Experience has shown that more rifles have become unusable through lack of care and cleaning than for any other reason.

38. CLEANING MATERIALS

You will be better prepared to care for your rifle if you understand how to use the cleaning material issued to you. Some of these materials are:

Special preservative lubricating oil—a thin oil used for lubricating at normal and low temperatures and for providing temporary protection against rust. Use this oil for cleaning and preserving the bore and to provide a protective finish for other metal parts.

Raw linseed oil—apply this oil to all wooden parts with long strokes of your hand. It prevents the wooden parts from drying and improves their appearance. Do not apply linseed oil to the metal parts.

Medium preservative lubricating oil—a non-hardening mineral oil containing a rust inhibitor. It forms a relatively heavy film which resists the action of salt spray. Use it in preference to special preservative lubricating oil only when your rifle will be exposed to salt water, high humidity, or high temperatures.

39. CARE AND CLEANING WHEN NO FIRING IS DONE

To prevent damage to the bolt, it is important to remove the bolt and bolt carrier from the receiver before cleaning the bore. Run a dry patch back and forth completely through the bore. Repeat this several times, using a new patch each time, until a patch comes out clean. Inspect the rifle, then run an oiled patch through the bore to leave a coating of oil. If you use a cleaning rod, do not allow it to bear against the bore at the muzzle end. Clean the gas cylinder the same way as the bore. Clean the metal parts with a dry cloth, then wipe them with an oil-dampened cloth to provide a protective finish. Wipe the wooden parts with a dry cloth, and then rub in linseed oil with your hand. DO NOT use a muzzle plug or cover after cleaning your rifle. They collect moisture, causing the bore to rust, and there is always the danger of forgetting to remove them before firing.

40. CARE AND CLEANING BEFORE FIRING

Before firing, disassemble the barrel and receiver group and clean the chamber with the wire chamber cleaning brush, which is part of your combination tool. Run a dry patch back and forth completely through the bore until the *bore is dry*. Clean and *dry* the gas cylinder (with the cleaning rod and patches), gas cylinder plug, and gas piston. Clean and apply a light coat of oil to all other moving metal parts that do not come in contact with the ammunition.

41. CARE AND CLEANING AFTER FIRING

After firing, a small residue of powder ashes, metal fouling, and carbon will be left in your rifle. If not removed, this residue will

result in corrosion and rust. It is very important, therefore, that your rifle be cleaned as soon as possible after firing.

Disassemble the barrel and receiver group.

Clean the bore by running several oily patches back and forth through it. Since the ammunition contains noncorrosive primers, bore cleaner is not used in cleaning the T48 rifle. Run a rifle bore brush back and forth through the bore and then run several more oily patches through. Run several dry patches through the bore and inspect each patch as it comes out. The bore is clean when a dry patch comes out clean and no evidence of fouling can be seen in the bore. When the bore is clean, run an oily patch through to leave a coating of oil on the inside surface.

Clean the chamber by placing patches on the chamber cleaning brush of the combination tool and following the same sequence you used in cleaning the bore. To inspect the chamber, insert a dry patch into the chamber with your little finger, twist it, and remove it. When it comes out clean, oil the chamber lightly.

Clean the gas assembly by using the cleaning rod and patches. Remove excess carbon deposits by scrubbing with a wet patch. DO NOT use abrasive materials to remove carbon deposits. After drying the parts, wipe them clean and oil them lightly.

Clean the bolt and the bolt carrier by using an oily patch. After the parts are clean, dry and oil them lightly.

Wipe the other metal parts and exterior surfaces with a dry cloth to remove dampness, dirt and perspiration. Oil all metal parts with special preservative lubricating oil. Rub linseed oil into the wooden parts.

Disassemble and clean your rifle each day for at least three days after it has been fired. This will insure removal of all carbon deposits and will prevent any rust from forming. Never place a muzzle cover or plug on your rifle. If the rifle has been subjected to extremely adverse conditions, it may be necessary to disassemble the trigger group for care and cleaning. You may do this only under the supervision of an officer.

42. CARE AND CLEANING DURING FIELD EXERCISES

During field exercises a rifle receives much rougher treatment. Cleaning materials may be partially or completely lacking and conditions for maintenance may be much more difficult. Yet, it is at this time that your rifle must operate efficiently. Observe the following points to keep your rifle in firing condition during these exercises.

Make sure the rifle bore is clean. If a cleaning rod is not available, use a thong, heavy cord, stiff wire, or any slender rod to draw a patch through the bore. Keep the bore clean and lightly oiled.

Keep the chamber clean and lightly oiled to prevent rust.

If your rifle operates sluggishly, apply oil to the parts that need it, or close the gas regulating sleeve. If it becomes so dirty that it will not operate properly, disassemble the rifle and clean it.

Handle the magazines carefully so that they do not become dented or dirty. Never leave a magazine loaded for a long period of time. This causes the magazine spring to become weak and will result in a failure to feed. A dented magazine will not allow the follower to move up in the magazine, and will also cause a failure to feed.

43. SPARE PARTS, APPENDAGES AND ACCESSORIES

Some parts of your rifle may in time become unserviceable through breakage or from wear. At this time, spare parts are not available for the T48. However, additional rifles are being provided and spare parts may be obtained from them. These rifles should be kept clean and lightly oiled. If a damaged rifle cannot be repaired, it should be returned immediately to Army Field Forces, Board No. 3, Ft Benning, Georgia.

The bayonet blade is sharpened along the entire lower edge and partially along the upper edge. It is made to fit securely into the scabbard or onto the bayonet stud on the flash suppressor. A hand grip on its base makes it a suitable hand weapon or utility tool.

The grenade launcher is a short tube-like device that is attached to the muzzle of the rifle to fire various types of grenades.

The cleaning rod M3, used with the M1 rifle, is also used with the T48 rifle.

Takes up the slack promptly.

Squeezes the trigger properly.

Calls each shot.

Fills out the firing data card for each shot.

Observes the safety precautions.

How well your firer learns to shoot will depend to a great extent on how well you do your job as a coach. Don't let him down.

46. PROGRESS CHART

Normally each platoon keeps a progress chart similar to the one discussed in FM 23-5. The platoon leader can tell by a glance at this chart how far you have progressed in your rifle marksmanship training.

Section II

PREPARATORY MARKSMANSHIP TRAINING

47. SIGHTING AND AIMING

In aiming the rifle you will be concerned with sight alinement and the sight picture. Sight alinement is the relationship between the front sight post and the rear aperture, while the sight picture includes sight alinement and the bull's-eye, or any other aiming point. To obtain the correct sight alinement, the front and rear sights should be alined as shown in figure 27a. If you were to draw an imaginary horizontal line through the center of the rear aperture, the top of the front sight post would touch this imaginary line. If you were to draw an imaginary vertical line through the center of the rear aperture, this line would cut the front sight post in half. After you have obtained the correct sight alinement, you complete the sight picture by adding the bull's-eye. The bottom of the bull's-eye appears to be just touching the front sight post (fig. 27b). If you were to draw an imaginary vertical line through the rear aperture, you would cut the bull's-eye and the front sight post in half.

The relationship between the front sight post and the rear sight, or sight alinement, is more important to good shooting than the relationship between sight alinement and the bull's-eye. An error in sight alinement will cause the distance by which the bullet misses the target to increase as the range increases, while with correct sight alinement, an error in the placement of the bull's-eye will be the same at all ranges.

When aiming the rifle, there are three objects that your eye can see—the rear aperture, the front sight, and the bull's-eye. During aiming your eye should alternately focus on the front sight post and on the bull's-eye. However, the last focus of the eye prior to firing the weapon must be on the front sight. The front sight post should appear clear, distinct, and correctly centered in the rear aperture. As you squeeze the trigger, this insures that your sight alinement is correct. When your eye is focused on the front sight post, the bull's-eye will appear to be "fuzzy" or hazy (fig. 27c).

The three sighting and aiming exercises with the T48 rifle are taught the same as with the M1 rifle, with one exception. During the second and third sighting and aiming exercises, when using the T48 rifle, the rear sight is placed on the 200-yard setting. All exercises are then carried out the same as described in FM 23-5.

48. POSITIONS

You will learn to fire the T48 rifle with the aid of a sling. In order to obtain confidence in your rifle, you should learn what the rifle can and will do under the best conditions. Using a sling helps present those ideal conditions. A good sling, properly adjusted, will aid even the best marksman. You will use the sling throughout your 1000-inch and known-distance range firing. When you reach the transition stage of marksmanship, you will learn that use of the sling in combat will depend upon the situation. For this reason, you are taught two methods for assuming the prone position, with and without the sling.

There are two types of sling adjustments when using the T48. The loop sling is used

Figure 27. Sight alinement and sight picture.

for all firing positions except standing, and the hasty sling is used with the standing position.

49. ADJUSTMENT OF THE LOOP SLING

The sling is very simple in design and is constructed from a web material very much like the belt you are now wearing around your waist. It has a hook, a buckle, and a metal clamp or keeper which holds the sling at the desired adjustment.

To adjust the loop sling, place the butt of the rifle on your right hip and cradle the rifle in the crook of your right arm. Both hands are now free to work. Release the hook from the lower sling swivel. While using the loop sling, the hook is never attached to the butt of the rifle. Now you are ready to form the loop, which is formed from the *top* of the buckle. Hold the buckle with your right hand and pull the loop through the top of the buckle with your left hand. Make the loop large enough to fit your left arm (fig. 28).

When the loop is large enough to accommodate your left arm, straighten out the sling. With your left hand, twist the loop a half turn to the left and hold it in position with your right hand. Insert your left arm through the loop and pull the loop well up on your upper arm above the bicep and then tighten it. With

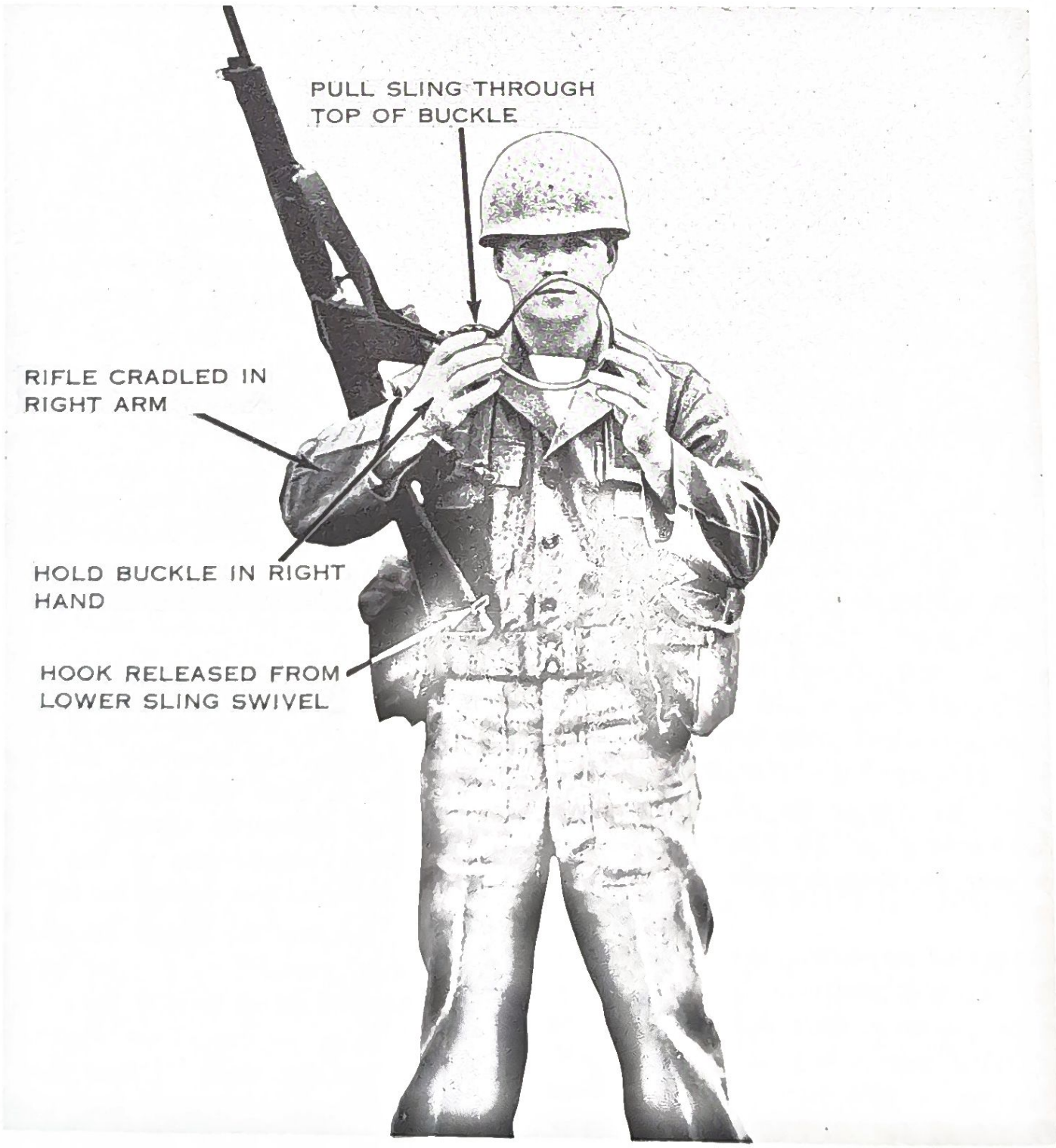


Figure 28. Loop sling.

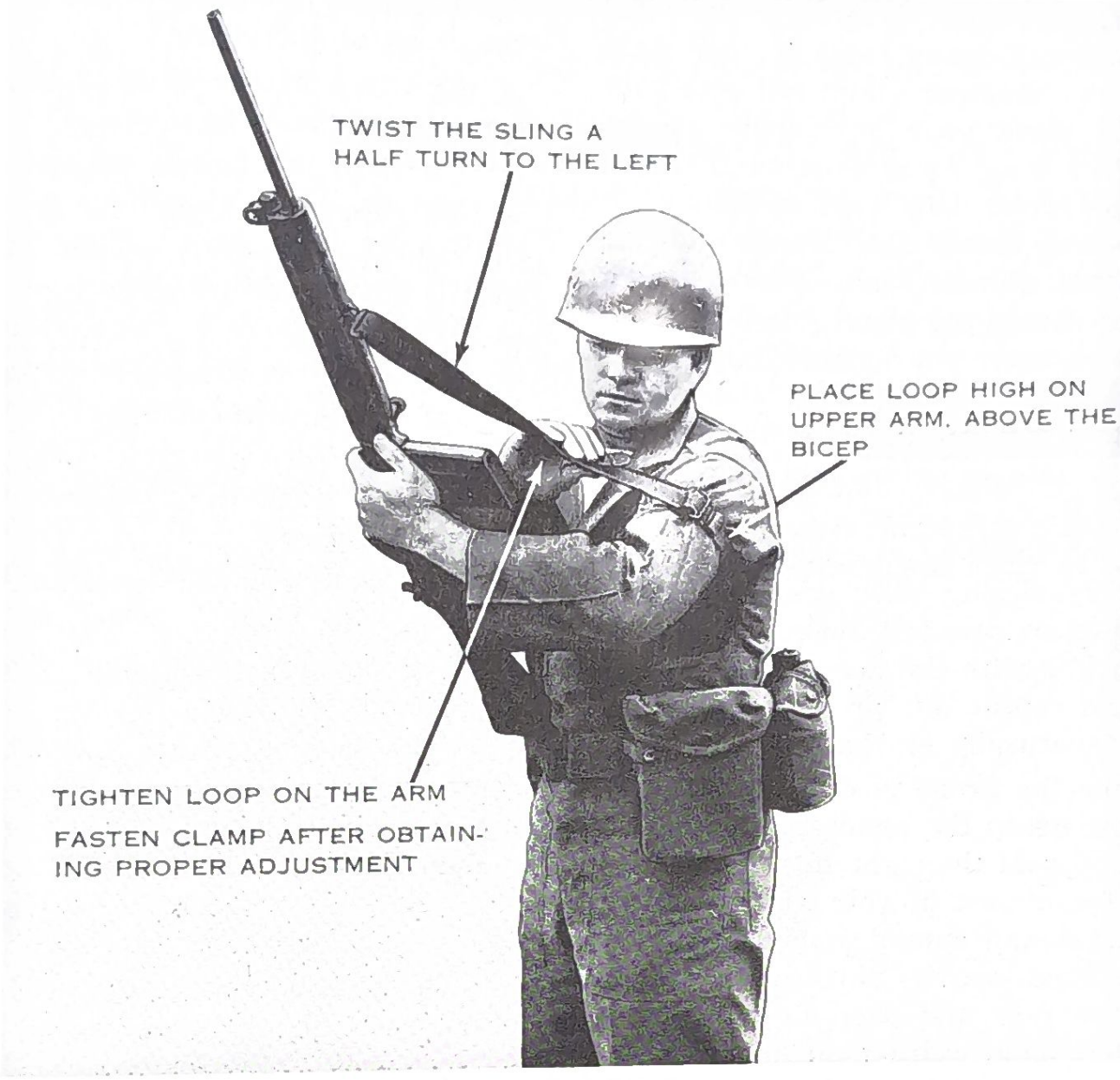


Figure 29. Loop sling.

your right hand, loosen the clamp and pull the feed end of the sling toward the butt of the rifle until the proper adjustment is obtained. (This adjustment will depend upon the conformation of your body and must be determined through experimentation.) Hold the sling in position with your left hand and slide the clamp toward your body with your right hand; refasten the clamp (fig. 29). Place your left hand over the sling and under the rifle, positioning the "V" formed by your left thumb and forefinger against the upper sling swivel.

The manner of adjusting the sling for the kneeling and sitting positions is the same as for the prone position, except that the sling will be adjusted somewhat shorter. Experience will determine just how much the sling must be shortened for each of the positions. For each position, the sling must be adjusted so that the rifle has to be forced into your shoulder. This gives maximum support to the rifle.

50. PRONE POSITION—T48

The prone position is most frequently used. This position presents a small silhouette and enables most of your body to be placed behind the rifle. The prone position is the most natural to assume, the steadiest and the most comfortable. In each position strive for bone support and muscular relaxation. The bones of your body must support the weight of the rifle, allowing your muscles to be relaxed.

To assume the prone position when using the sling, stand facing your target. The "V" of your left hand is well forward against the upper sling swivel. Your right hand grasps the heel of the stock. Spread your feet a comfortable distance apart and then shift the weight of your body slightly to the rear and drop to your knees. Draw an imaginary line

from the target to your right knee. Place the toe of the butt well out in front of your right knee and on the imaginary line; roll onto your left side and place your left elbow on the same line. With your right hand on the butt, force the rifle forward in front of your right shoulder. Remove your right hand, allowing the sling to pull the rifle into the hollow of your shoulder. Grasp the pistol grip with your right hand and lower your right elbow to the ground so that your shoulders are about level. Position your right forefinger on the trigger, relax forward into the sling and aim at the target (fig. 30).

Check your position to make sure it is a natural one by closing your eyes for a few seconds and then opening them. The rifle should lie on line with the target; if not, shift your body and repeat this procedure until the rifle remains naturally on the target.

To assume the prone position without the use of a sling, grasp the pistol grip with your right hand and hold the right side of the stock against the lower part of your right forearm. Face the target and spread your feet a comfortable distance apart. Shift your weight slightly to the rear and drop to your knees. Place your left hand well out to the front and on line with your right knee. Continue to move downward and at the same time place the butt of the rifle into your right shoulder. Position your right elbow on the ground and place your left elbow as far under the receiver as the magazine will allow. Grasp the hand guard with your left hand and pull the rifle back into your right shoulder. Aim at the target.

The important features of the prone position apply equally whether the sling is used or not, except for those characteristics which pertain to the sling only.

The important features of the prone position are listed below. These features will be checked by the coach.

The rifle rests in the "V" formed by the thumb and forefinger of the left hand. The fingers of the left hand are relaxed.

The wrist is as straight as possible.

The left hand is forward against the upper sling swivel.

The left elbow is placed as far under the rifle as the magazine will permit.

Daylight is visible between the sling and the crook of the elbow.

The loop of the sling is high on the left arm, above the bicep.

The left shoulder is relaxed forward.

The angle made by the firer's spine and the rifle should be 30° or less. This will enable the firer to recover his position rapidly after each shot.

The spine is straight; the legs are spread a comfortable distance apart.

The toes are pointing outward; the heels, if possible without discomfort, should touch the ground.

The right elbow is positioned so that the shoulders are level.

The pistol grip is held firmly with the right hand.

The trigger finger contacts the trigger so that there is daylight between the finger and pistol grip when viewed from above. The middle finger contacts the bottom of the trigger guard, insuring a firm grip and straight squeeze toward the rear.

The neck is relaxed, the eyes are level. The cheek rests firmly against the stock forming a "spot weld." However, the eye is far enough to the rear so that the rear sight will not strike the eye as the rifle recoils. The "spot weld" is the solid contact made by the firer's cheek and the stock of the rifle. As the rifle recoils to the rear, the firer's head and eye will move at the same time and will be repositioned at the same time. It is important for the cheek to be positioned on the stock in the same place each time the rifle is fired. This will put the eye the same distance from the rear sight each time and will insure a duplication of the sight picture.

The weight of the upper body is relaxed forward against the tension of the sling.

51. PRONE POSITION—T48E1

When firing in short bursts with the rifle on the automatic setting, you must depend upon your grip and position. They are the *most important* factors in this type of rifle marksmanship and must be correct to get all the rounds of a burst into the target.

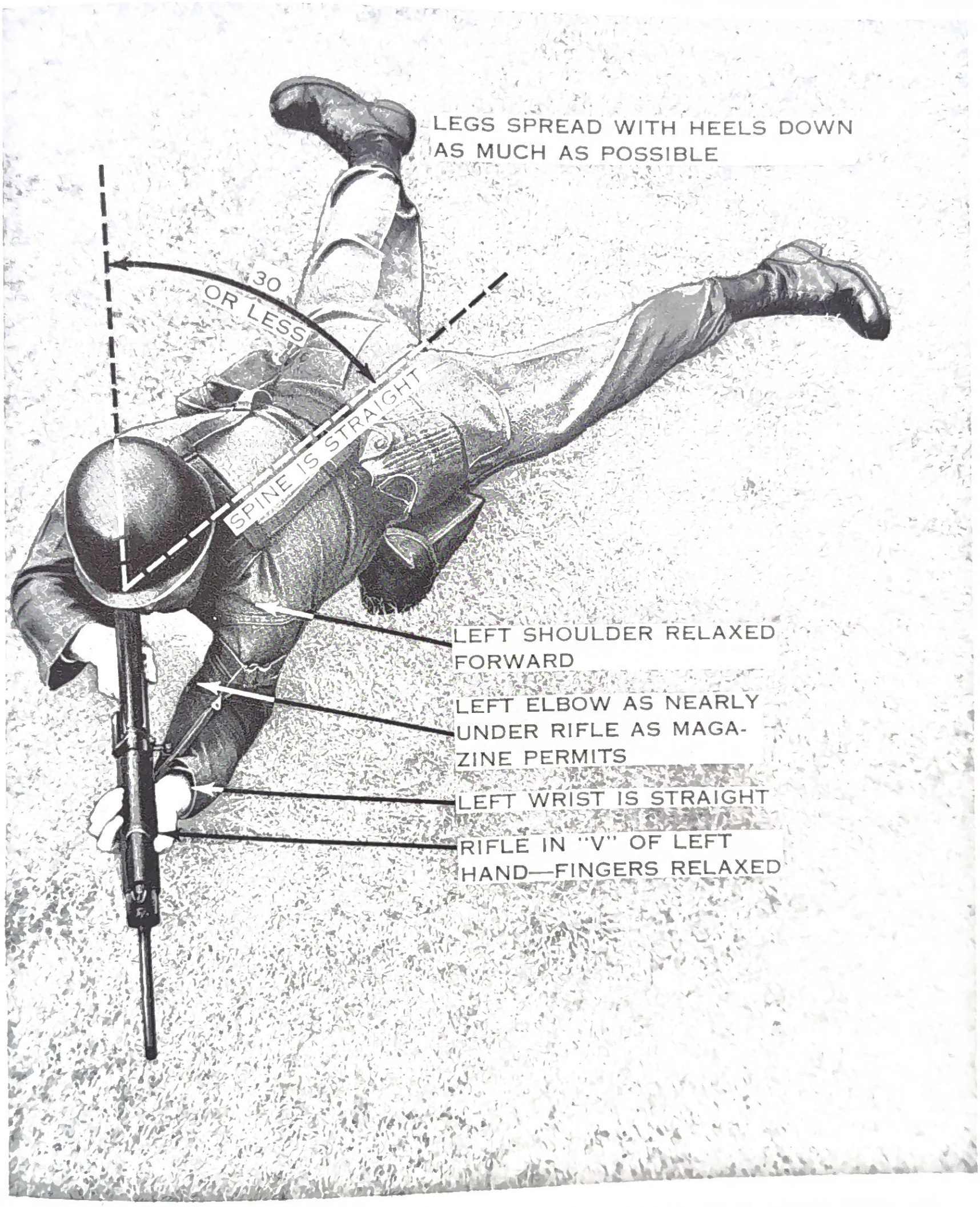


Figure 30. Prone position.

Place the rifle on the ground with the sights up and the muzzle pointing to the front. Prior to assuming the prone position, check to be sure—

The sling is loose and out of the way of the magazine feedway. (The sling is not used.)

The gas plug is positioned properly with the "A" on the gas plug upward.

The bipod legs are in the locked position.

To assume the prone position, stand facing down range and aline your body directly to the rear of the rifle. Take two steps to the rear, drop to your knees and into the prone position. Raise the hinged butt plate and place the butt of the rifle to your shoulder. Spread your legs a comfortable distance apart and, if possible, place your heels on the ground.

Grasp the pistol grip with your right hand. Your left hand grasps the small of the stock, with the thumb under the stock and your fingers curled over the top (fig. 31). Pull the rifle down and to the left with your left hand. This forces the hinged butt plate to the left and down into your shoulder, counteracting the pressure of your cheek against the stock. A firm grip must be applied to the rifle. Position your trigger finger on the trigger so that, when viewed from above the rifle, there is daylight between the pistol grip and forefinger. Curl your remaining fingers around the pistol grip and pull the rifle back and down into your shoulder.

The coach takes his position five paces to the rear of the firer. From this position he tells the firer which way to move his body in order to be directly behind the rifle. The coach moves forward and checks the firer's feet and legs. His toes are out and, when possible, the heels should contact the ground. His legs are spread a comfortable distance apart.

He checks the shoulders, which should be level. The most common error is a low right shoulder. To correct this error the firer moves his right elbow inward, or his left elbow forward and out.

The coach checks the firer's grip on the rifle after making sure that the firer's chest is up and off the ground.

The coach checks to see that the sling is loose and out of the way of the magazine feedway and that the gas plug is positioned properly. He adjusts the bipod legs by grasping the hand guard with one hand and adjusting the bipod legs to the height desired by the firer with the other hand.

He moves to the rear and rechecks the firer's position. He then assumes the proper coaching position. In this position, he is on the firer's left side and is far enough forward so he can see the firer's eye. The coach rests on his left hip and left elbow (fig. 41).

52. SITTING POSITION—T48 and T48E1

For steadiness, this position is second only to the prone position. The sitting position may be used when you do not have time or space to assume the prone position, or when your view of the target would be obscured in the prone position—such as firing in an area with high grass. It is also suitable for firing down hill.

Before assuming the sitting position, stand facing the target, holding the rifle with the "V" of your left hand against the upper sling swivel. Execute approximately a half right face and spread your feet far apart. Sit down, breaking the fall with your right hand, far enough to the rear so the undersides of your knees are about a hand span off the ground. Your feet should be farther apart than your knees. Relax your ankles so that your toes point forward and slightly inward. Bend your body well forward at the waist and place your left upper arm on the flat part of your left shinbone so the tip of your elbow is crossed over the shinbone. There should be several inches of contact between your left upper arm and left shin. With your right hand at the heel of the butt, force the rifle into your right shoulder and take the correct grip on the pistol grip. Block your right elbow on the inside of your right knee. Relax into the sling (fig. 32).

These are the important features of the sitting position:

The rifle rests in the "V" formed by the thumb and forefinger and on the heel of the left hand.

The left elbow is as nearly under the rifle as the magazine will permit; the left wrist is straight.

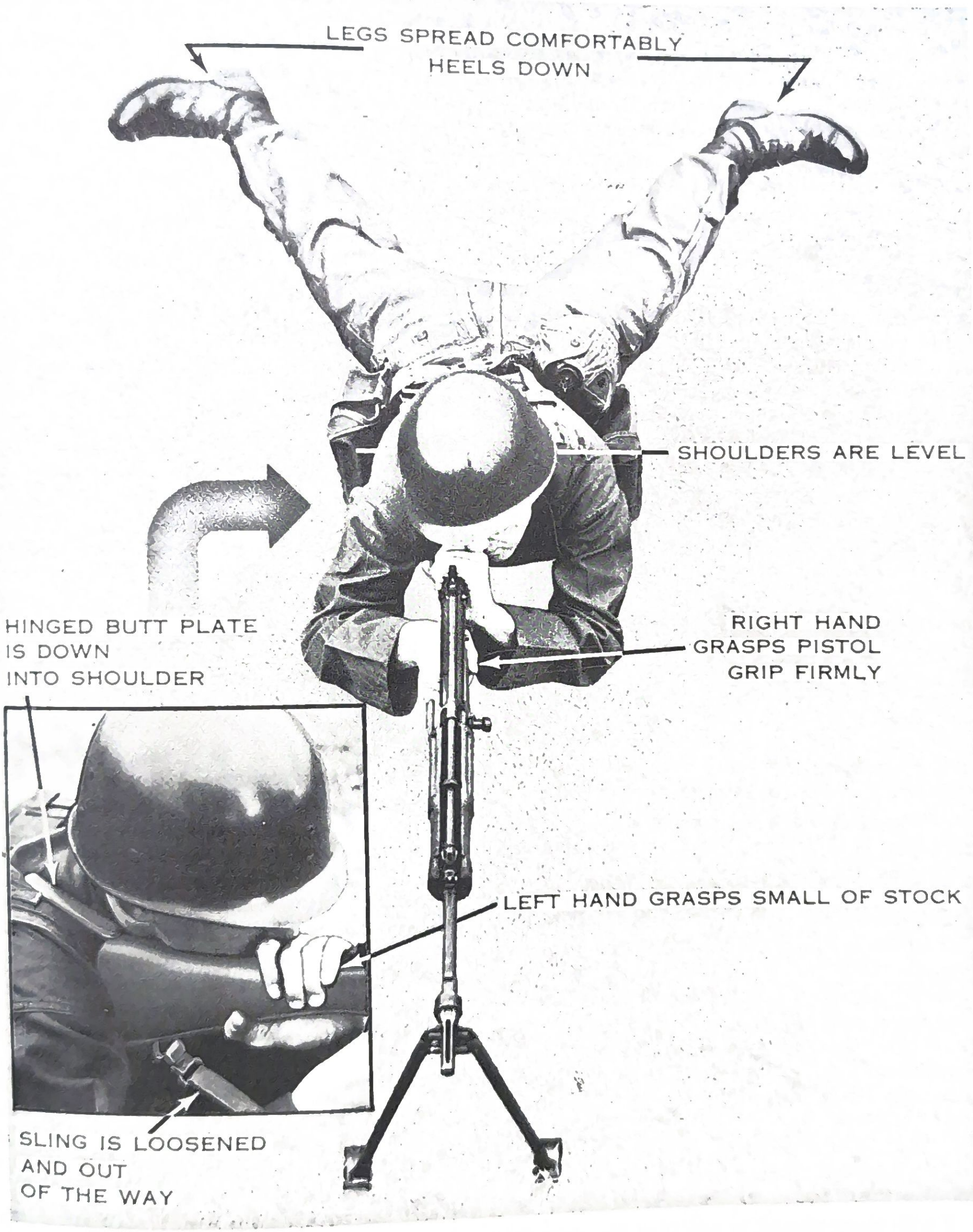


Figure 31. Prone position (T48E1).

Daylight is visible between the sling and the crook of the left elbow.

The left upper arm is forward and down over the left knee, having several inches of contact with the inside (flat part) of the left shin; the tip of the elbow is crossed over the shinbone.

The weight of the body is relaxed forward at the waist.

The feet are farther apart than the knees, with the feet relaxed forward at the ankles. The toes are turned in.

The weight of the upper part of the body is forward on the legs.

The butt of the rifle is held in the pocket of the right shoulder by the tension of the sling.

The right arm is blocked on the inside of the right knee.

The grip on the pistol grip, the position of the trigger finger, and the spot weld between the cheek and the stock are the same as in the prone position.

When taking the sitting position with the T48E1, lock the bipod legs back along the barrel and use the hinged butt plate. You may use the hasty sling instead of the loop sling. All other features of the sitting position are the same.

53. ALTERNATE SITTING POSITIONS

The alternate positions are not so stable as the open-legged sitting position and should be used only if the conformation of your body

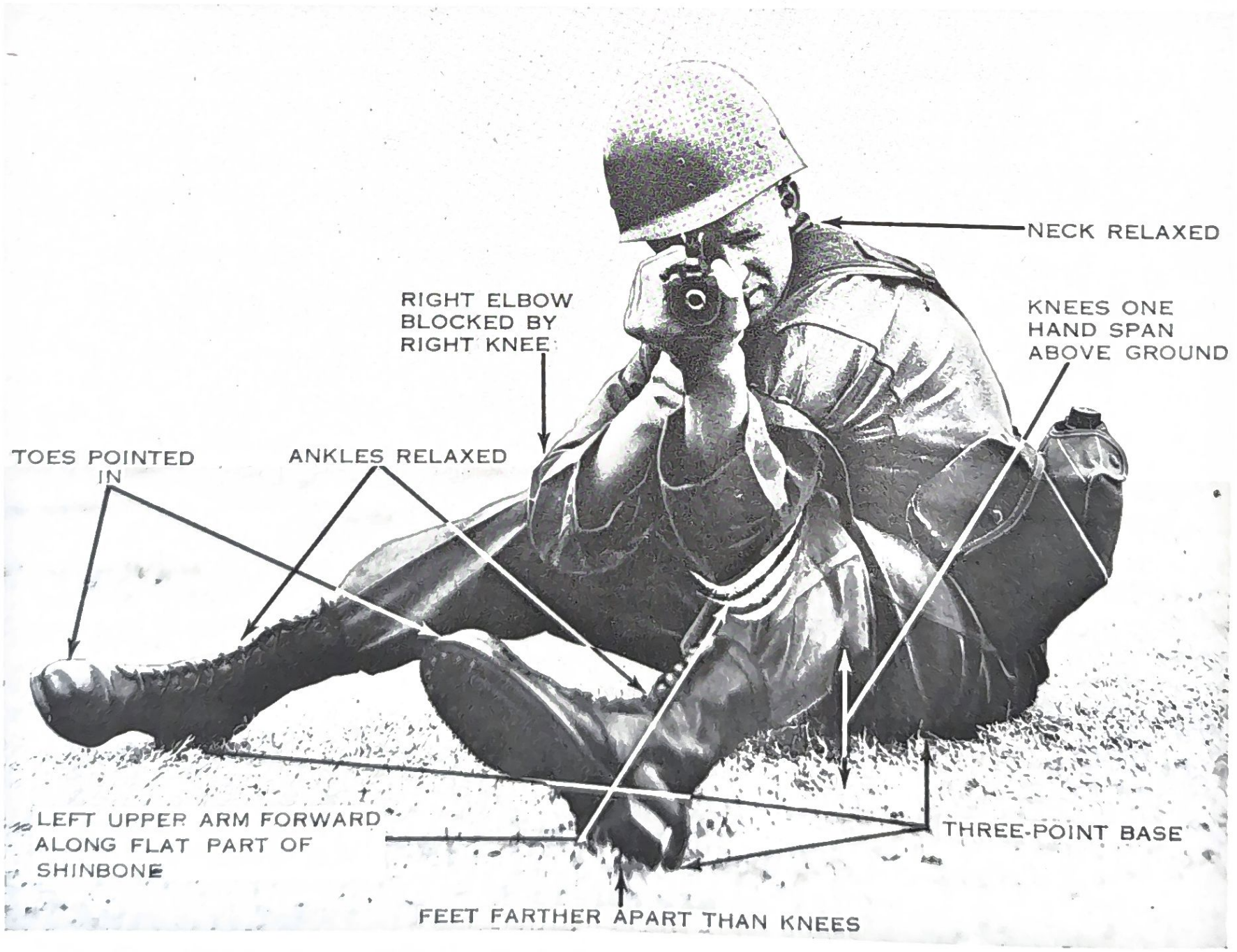


Figure 32. Open-legged sitting position.

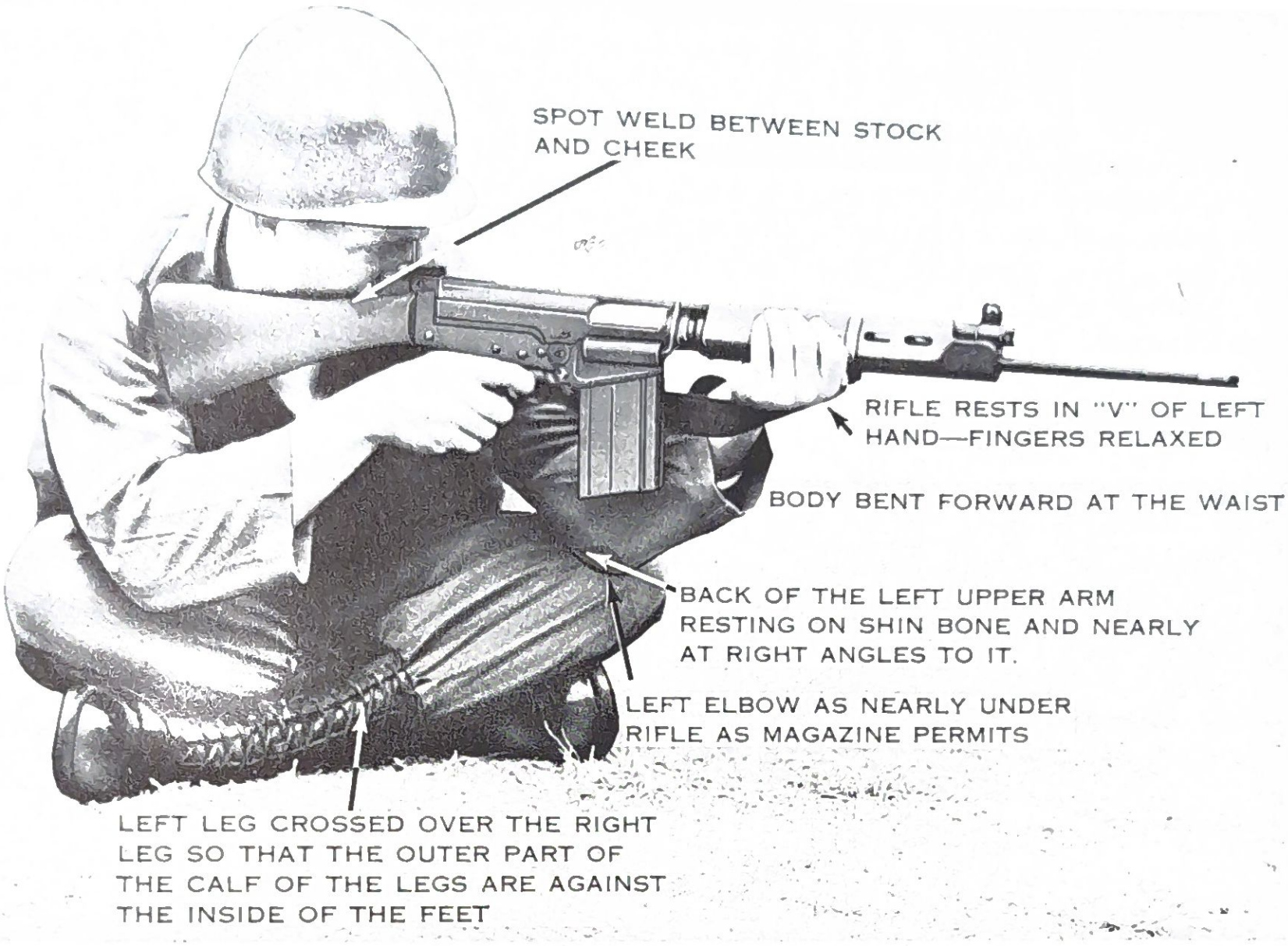


Figure 33. Cross-legged sitting position.

prevents you from using the open-legged position.

In the cross-legged position (fig. 33), sit with your left leg crossed over your right leg. Draw your feet up close to your body so the outer part of the calf of each leg rests on the inside of the opposite foot. The backs of your upper arms are supported against your shinbones and are very nearly at right angles to them. The rest of the position is the same as for the normal sitting position.

In the cross-ankled sitting position (fig. 34), cross your left ankle over your right ankle, and extend your legs well away from your body. Be sure that your knees are not held up by sheer muscular effort. Here, as in the cross-legged position, your upper arms are supported by your shins. The rest of this position is the same as for the normal sitting position.

The cross-ankled position provides only a two-point base of support and is less stable than the cross-legged position, which has a three-point base. If you weigh less than 170 pounds you should avoid the cross-ankled position because you will rock while firing.

54. KNEELING POSITION

This position is frequently used on level ground or ground that slopes upward. It is a steady position and can be used to great advantage when you don't have enough time to assume the prone position, or when the target would be obscured if you were in the sitting position. It can be used when you do not have enough space to assume the prone position.

To assume the kneeling position, face the target. Hold the rifle with the "V" of your left hand against the upper sling swivel and your right hand at the heel of the butt. Execute a right face and then place your left foot about 18 inches to the front with your toe pointing in the general direction of the target. Kneel down onto your right knee and sit with your right buttock on your right heel. Place your

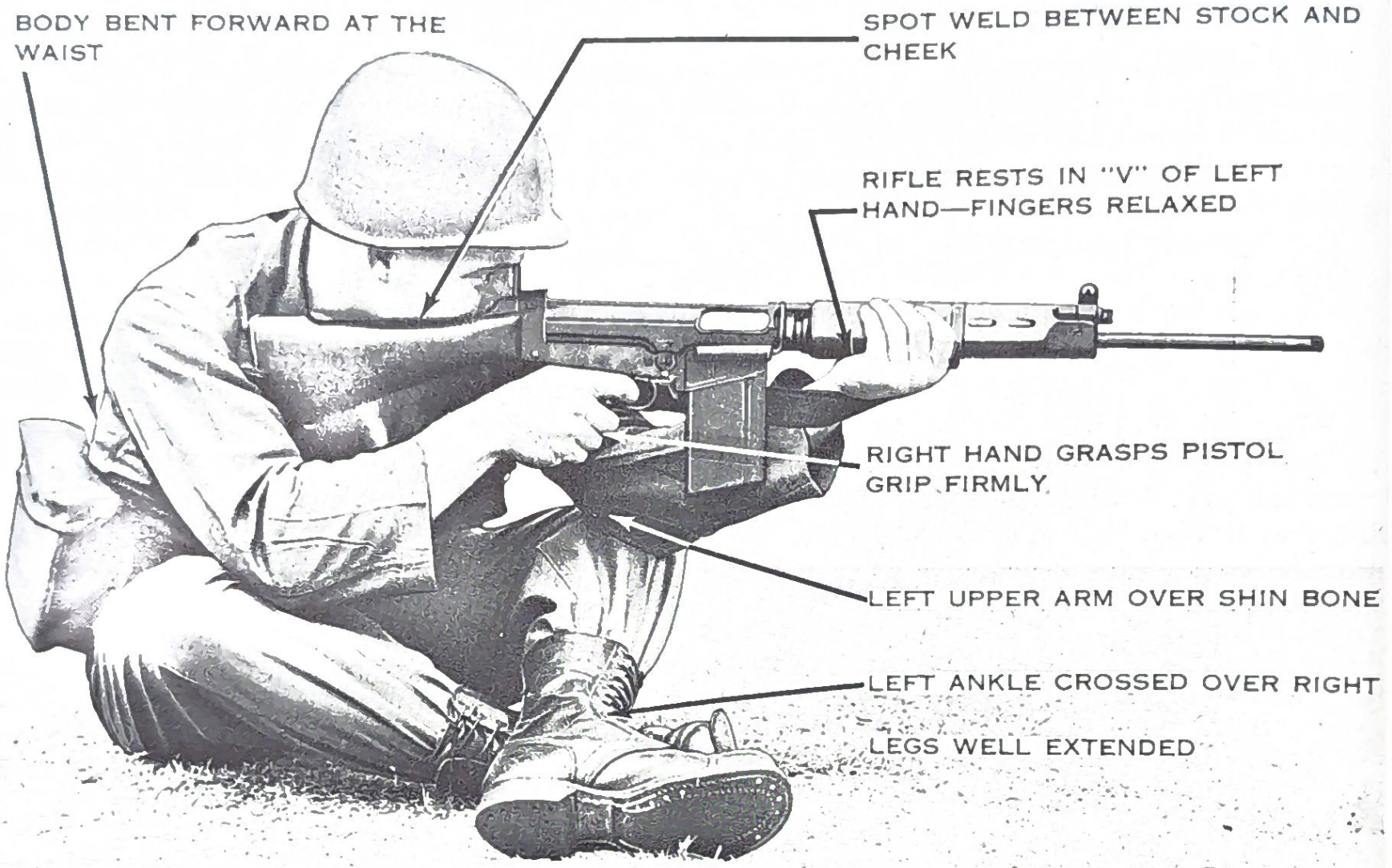


Figure 34. Cross-ankled sitting position.

left elbow several inches forward of your left knee. Cam the butt of the rifle into your right shoulder and position your right hand at the pistol grip. Hold your right elbow just below the horizontal, forming a pocket in your shoulder to hold the rifle in place. To complete the position, shift your weight forward, placing approximately 60 percent of your weight on your left leg. Relax into the sling (fig. 35). Check your position by aiming at the target and closing your eyes as you did in the prone position.

These are the important features of the kneeling position:

The rifle rests in the "V" formed by the thumb and forefinger and on the heel of the left hand.

The left wrist is straight.

The left elbow is as nearly under the rifle as the magazine will permit.

The left elbow is several inches forward of the left knee. The weight of the body is forward and point-to-point contact between the left elbow and knee is avoided.

Daylight can be seen between the sling and the crook of the left elbow.

The left lower leg is vertical, as viewed from the front.

The toe of the left foot points generally at the target.

The left foot is drawn back, and the body weight is relaxed forward so that solid contact is made between the calf of the left leg and the left thigh.

The grip by the right hand, the position of the cheek against the stock of the rifle, and the finger on the trigger are the same as for the prone position. The right elbow is slightly below the horizontal.

The right knee is positioned so that the right thigh forms an angle of 90° with the line of aim. The entire surface of the lower leg,

from knee to toe, is in contact with the ground. With the body weight shifted forward, most of the weight is off the right leg and on the left leg. The right leg now completes a solid three-point base. If the right leg forms an angle of less than 90°, the three-point base is reduced in size. If the angle is greater, the firer is straining his thigh muscles.

The firer sits firmly on his right heel. If at first this puts too much strain on the instep, he may dig a small hole for his toe. Practice in this position will eliminate the need for this hole.

When assuming the kneeling position with the T48E1, lock the bipod legs back along the barrel and use the hinged butt plate. The hasty sling may be used instead of the loop sling. All other features of the kneeling position remain the same.

55. ADJUSTMENT OF THE HASTY SLING —WEB

To adjust the hasty sling, place the rifle on your right hip and cradle it in the crook of your right arm so that both hands are free to make the adjustment. The hook is fastened to the lower sling swivel at all times when the hasty sling is used. Unfasten the keeper and loosen the sling until the proper adjustment is obtained. This adjustment varies with the conformation of each man's body and will have to be determined through experimentation. Move the keeper toward the feed end of the sling and lock the keeper. Give the sling a half turn to the left and pass your left arm through the sling so that the sling is high on your upper arm. Move your left hand over the sling and grasp the rifle slightly to the rear of the upper sling swivel. The sling should lie flat along

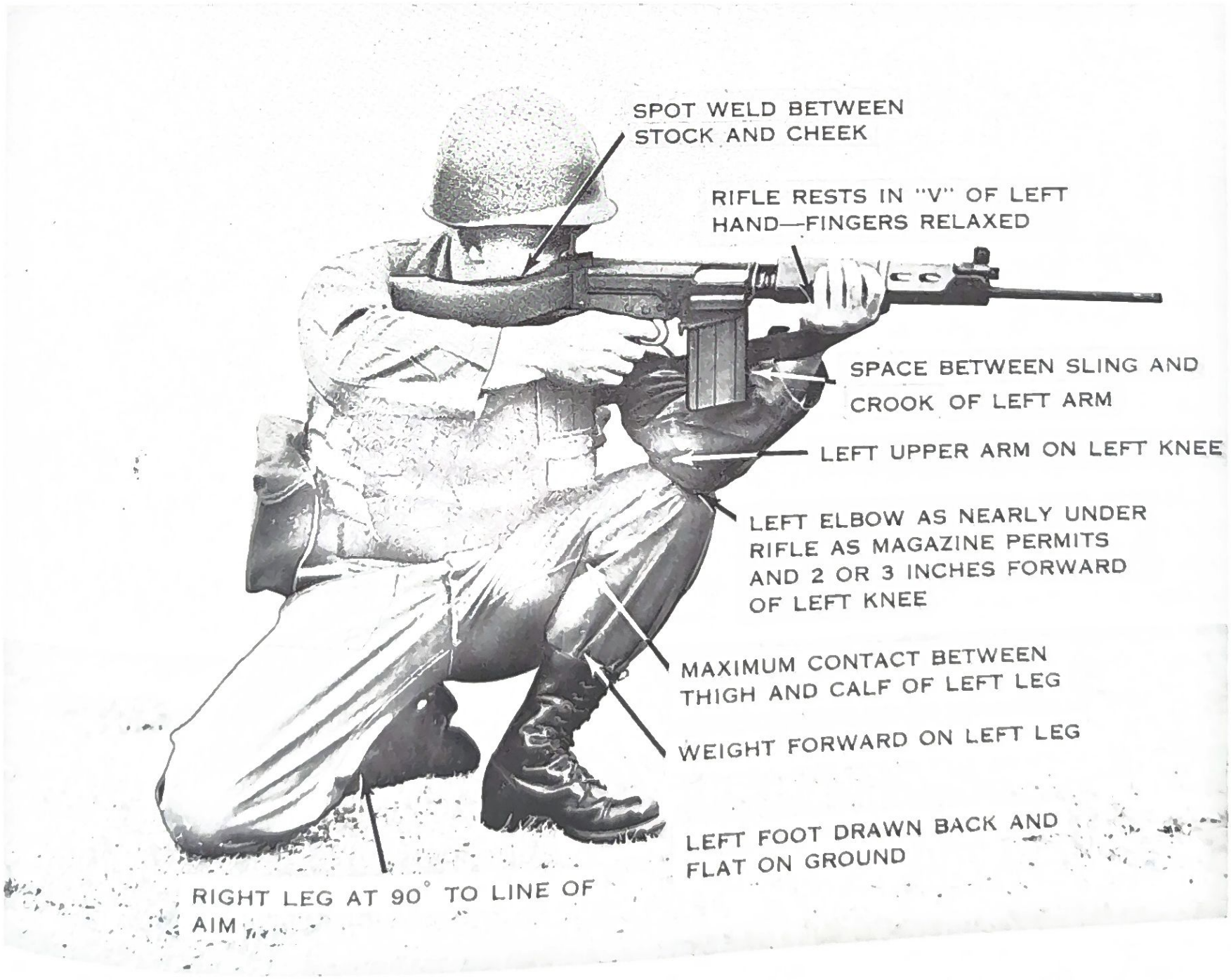


Figure 35. Kneeling position.

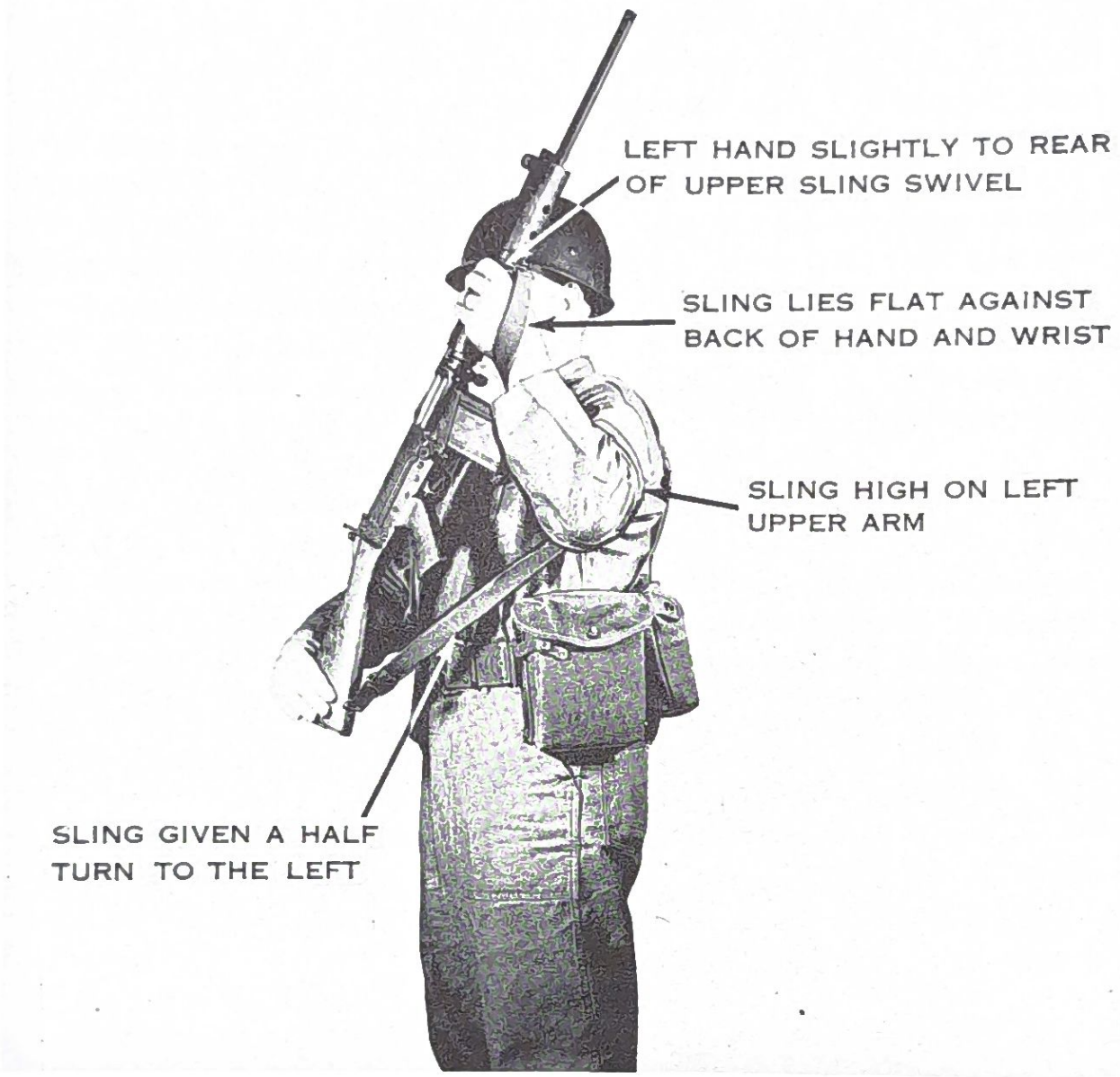


Figure 36. Hasty sling.

the back of your left hand and wrist. Grasp the butt of the rifle with your right hand (fig. 36).

56. STANDING POSITION

The standing, or off-hand position is normally used in the assault for ranges of 100 yards or less. During the assault, the rifleman quickly assumes the position, fires, and then moves forward.

To assume the standing position, stand facing the target. Do a half right face and spread your feet a comfortable distance apart. Raise the rifle butt upward with your right hand until the sights are approximately level with your eyes. Put the toe of the butt against your right shoulder so that one-fourth of the butt is visible from the rear. Grasp the pistol grip with your right hand. Pull the rifle straight to the rear and hold it against your shoulder by the force of your *right hand*. Raise your right elbow just high enough to form a pocket in the right shoulder, and to enable you to apply force straight to the rear. Your cheek forms a spot weld with the stock of the rifle. Relax your weight straight down onto your waist, keeping your weight equally distributed on both feet (fig. 37). If you are not aiming at the target, move your feet until the rifle rests naturally on the target.

These are the important features of the standing position:

The firer is aiming naturally on his target.

The feet are spread a comfortable distance apart.

The weight of the body rests equally on both feet.

The left hand is positioned slightly to the rear of the upper sling swivel, with the rifle resting in the "V" and on the heel of the left hand.

The left elbow is as nearly under the rifle as the magazine permits.

The butt of the rifle is high on the right shoulder.

The right elbow is nearly horizontal.

The spot weld is the same as for the other positions.

The trigger finger is contacting the trigger so there is daylight between the finger and pistol grip, when viewed from above.

The firer is relaxed, allowing his weight to be evenly distributed on both hips.

The standing position is not taught with the T48E1.

57. HIP FIRING POSITION—T48

The hip firing position with the T48 rifle is used to place well-directed fire on suspected enemy positions at extremely short ranges (up to 30 or 35 yards). It is effective during the final stages of an assault, in jungle and street fighting, or in any situation where the enemy can be located only by flash, sound, or vague outline.

To assume the hip firing position (fig. 38), place your feet far enough apart to provide balance, with one foot slightly forward as in a boxer's stance. Point your feet in the general

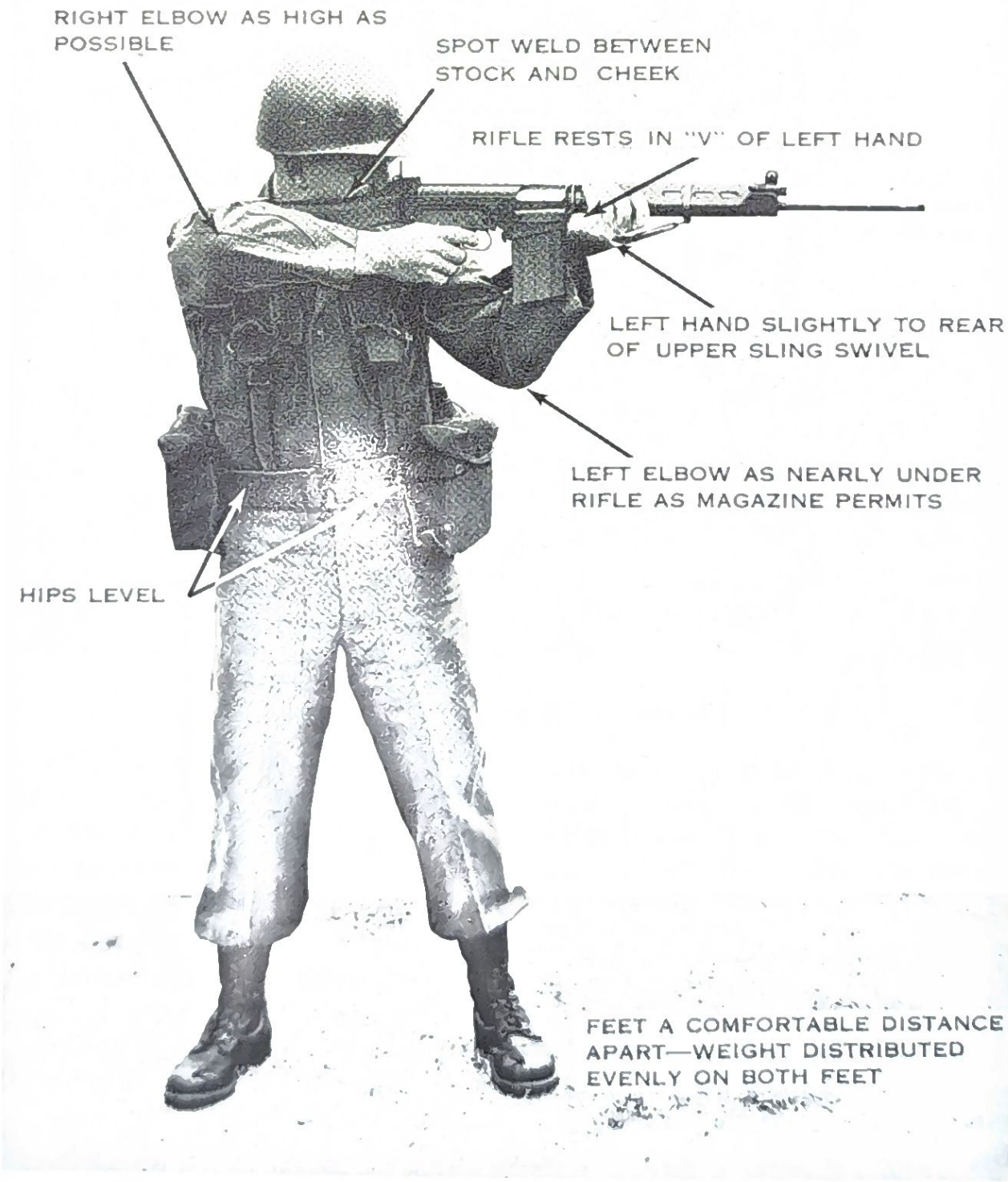


Figure 37. Standing position.

ST 23-4-1 BIG 4

Figure 38. Hip firing position.

direction of the target, just as if you had suddenly stopped walking. Bend your knees slightly with your body leaning forward from the hips, to provide a comfortable firing position.

Hold the rifle with your right hand grasping the pistol grip and your right forearm along the right side of the stock. Hold the butt of the rifle tightly against the side of your right hip. Your left hand grasps the rifle near the upper sling swivel with the thumb over the top of the rifle. Bend your left arm slightly. The sling should swing loosely and not interfere with your grip.

In aiming, point the rifle in the direction of the target with the barrel horizontal or slightly depressed. It is much better to get a ricochet shot on the target than a high miss that gives no indication of its strike. You should be able to keep both the muzzle of the rifle and the target within your field of vision. Your eyes, however, should be focused on the target. By doing this you increase your ability to aim the rifle properly, and a target in a new direction can be readily engaged by pivoting your entire body.

When practicing or firing from this position the coach must insure that:

The position has stability.

The position is natural and well balanced to eliminate awkwardness.

The butt of the rifle is pressed against the right hip.

The barrel is pointing at the proper angle.

The firer keeps his eyes on the target.

58. CROUCH FIRING POSITION—T48E1

The crouch firing position is used to fire the T48E1 accurately when on the automatic (A) setting (fig. 39). This position is designed for use in close-in fighting or in the assault, when the rifleman is within 35 yards of his objective. A special sling adjustment is used. Since one standard sling is not long enough to assume the correct position, two web slings can be joined together. The bipod legs are locked in the firing position so that the firer may immediately drop into the prone position to engage a target of opportunity at greater ranges.

To adjust the sling to the proper length, loosen it and refasten the keeper. Pick up the rifle by grasping the sling so that the sights are down, muzzle pointing to your front. Place

Figure 39. Crouch position.

the sling over your head on your left shoulder and allow the rifle to hang freely at your right side. Loosen the sling until the rifle hangs from 8 to 10 inches below your waist. Grasp the hand guard with your left hand and turn the rifle so the sights are up. The sling will tend to cant the rifle away from your body. To offset this, place the other end of the sling around the butt of the rifle. This tends to cant the weapon toward your body and keeps it in a stable position.

These are the important features of the crouch firing position:

The feet are spread a comfortable distance apart, with one foot leading, as if the firer had suddenly stopped walking.

Both legs are bent slightly.

The firer is in a crouch position with his head up.

The rifle is grasped firmly at the pistol grip with the right hand.

The right forearm is along the right side of the stock, forcing the stock in front of the right hip.

The left arm is straight and holds the barrel of the rifle horizontal or lower. The left arm is used to adjust fire by raising or lowering the muzzle. The weight of the body is evenly balanced on both feet, allowing the firer to pivot on the ball of the leading foot in order to engage a target in any direction.

Both eyes are kept on the target.

59. THE IMPORTANCE OF TRIGGER SQUEEZE

You have learned how to hold and aim the rifle. The next step in rifle marksmanship is the most important single act in shooting—the trigger squeeze. Unless you learn and practice the proper trigger squeeze, you might as well forget the other steps, because you'll place more lead in the butts than in the target.

Trigger squeeze begins the moment your forefinger takes up the slack on the trigger. From that point you move the trigger straight to the rear with an evenly increasing pressure of your forefinger until, suddenly, the rifle fires. You should squeeze so that you never know what instant the rifle will fire.

60. APPLYING TRIGGER SQUEEZE

Grasp the pistol grip comfortably and firmly in your right hand with your forefinger touching the trigger in a natural position. For the average rifleman, the trigger will contact the forefinger between the first and second joints.

You will notice that when you apply pressure and squeeze the trigger to the rear, it moves easily for a short distance until you feel a stronger resistance. This movement is called the "slack." It is the movement of the trigger to the rear until the shoulder of the trigger contacts the tail of the sear. The remainder of the movement required to overcome this stronger resistance is known as the squeeze. A heavier pressure must be applied during the "squeeze" to move the trigger until the nose of the sear disengages its notch in the hammer. To properly squeeze the trigger, take up the slack and part of the squeeze with a firm initial pressure. Continue the steady movement of your trigger finger straight to the rear until the rifle fires. To obtain surprise shots, vary the heavy initial pressure so the rifle does not always fire at the same time.

61. COMBINING TRIGGER SQUEEZE WITH OTHER STEPS

Although trigger squeeze is the most important single factor in marksmanship, it must be combined with your aim and position to produce the best results. Since the prone position is the most stable, it should be used when beginning trigger squeeze exercises. Follow this sequence:

Assume your position. Be sure that you have bone support and your muscles are relaxed.

Inhale a deep breath of air, expel half of it, and hold the remainder by closing your throat. Keep your muscles relaxed.

Aline your sights and get the correct sight picture.

As you continue to concentrate on your sight picture, take up the slack and part of the squeeze with a heavy initial pressure. Continue to squeeze the trigger with a smooth, steadily increasing pressure until the hammer falls.

After the hammer falls, follow through.

This means that you remain in position for a few seconds, and continue to do everything just as though your rifle had not fired.

Call your shot. If you have squeezed the trigger properly, and concentrated on the front sight, you will know what your sight picture was when the rifle fired and will be able to call out, at once, where you think the bullet will hit. If you cannot predict where your shot will hit, something is wrong with your trigger squeeze or aiming technique. Terms to use when calling your shots are shown in figure 40.

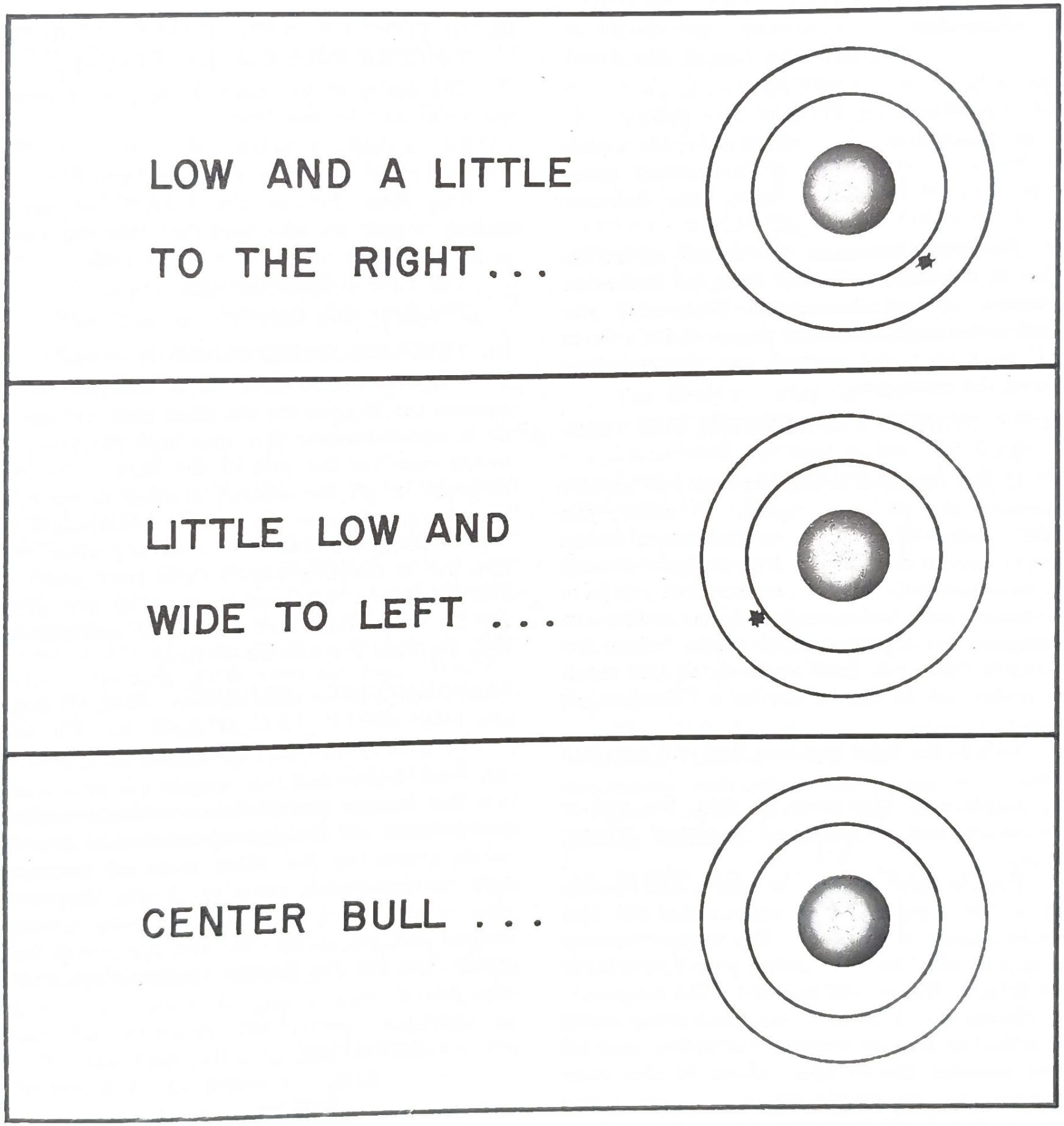


Figure 40. Call your shot.

Call your shots even when "dry firing" to develop the habit of concentrating on accurate aiming while squeezing the trigger.

To help you remember the proper sequence of trigger squeeze, use the word BRASS.

B—*Breathe* (Inhale, and expel half a breath of air).

R—*Relax* (keep muscles relaxed).

A—*Aim* (your last focus should be on the top of the front sight).

S—*Slack* (take up free play).

S—*Squeeze* (continue to apply a uniformly increasing pressure until the hammer falls).

The whole sequence of BRASS should be done in ten seconds or less, with no hesitation between slack and squeeze. Naturally, you "follow through," so that you will be able to call your shot and correct any errors before firing the next shot.

62. FLINCHING AND JERKING THE TRIGGER

If you flinch, it is evident that you haven't squeezed the trigger properly. Usually, you won't detect flinching until you begin firing live ammunition, and it will probably be noticed by your coach first. He may see that you have contorted your facial features, your eyelids are flickering, and your body is tense before the hammer falls. A good method for the coach or instructor to use in curing a "flincher" is to—

Talk to the firer in a way that will help him relax.

Explain to him, step by step, the proper procedure and sequence of applying trigger squeeze.

Put the firer in position again, and squeeze off a few rounds of live ammunition for him while talking him through the trigger squeeze sequence. Do this by placing your finger over his trigger finger and squeezing the trigger.

Have the firer turn his head away while you load a live or dummy cartridge, and let him squeeze the trigger. Now if the firer flinches, he will easily detect it. Repeat this process until his tendency to flinch has been eliminated.

Jerking the trigger will disturb your position and sight alinement, resulting in a poor shot. Usually, jerking the trigger is caused by an unsteady position. The firer jerks the trigger as soon as the sight picture appears to be correct, impatiently hoping to get a bull's-eye. To overcome this tendency, use the same methods as in curing flinching.

63. DUTIES OF THE COACH DURING TRIGGER SQUEEZE EXERCISES

The duties of the coach in trigger squeeze exercises are to see that—

The sights are blackened.

The firer is in a good, steady position.

The firer follows the BRASS sequence during trigger squeeze, and that this sequence is accomplished in ten seconds or less.

The firer follows through.

The firer calls his shot.

64. TRIGGER MANIPULATION—T48E1

When you fire your rifle automatically, squeeze the trigger for the first shot the same as in semiautomatic fire and hold the trigger to the rear for the rest of the burst. The art of pressing off the desired number of rounds in a burst is known as trigger manipulation. When firing automatically, accuracy after the first round depends largely upon your position and grip. For this reason, position and grip are the most important factors of marksmanship training for automatic fire.

65. COMBINING TRIGGER MANIPULATION WITH THE OTHER STEPS OF PREPARATORY MARKSMANSHIP TRAINING

The trigger manipulation exercise teaches you to press off the desired number of rounds while practicing the other steps of preparatory marksmanship training. Begin the exercise in the prone position, with your weapon cocked and the safety off. The key words and commands for the trigger manipulation exercise are:

HOLD.
BREATHE.
AIM.
PRESS.
FOLLOW THROUGH.
CALL THE SHOT.

On the command HOLD, take a good tight grip. Hold down and to the left with your left hand and pull the rifle back into your shoulder with your right hand. On the command BREATHE, take a normal breath, release part of it and hold the remainder by closing your throat. On the command AIM, take the correct sight picture. On the command PRESS, press the trigger to the rear and release it quickly when you have fired the desired number of rounds. FOLLOW THROUGH with your aim and CALL YOUR SHOT.

66. DUTIES OF THE COACH DURING TRIGGER MANIPULATION EXERCISES

The duties of the coach during trigger manipulation exercises are to see that—

The sights are blackened.

The firer is in a good steady position.

The firer has the correct grip.

The firer follows through.

The firer calls his shot.

67. SUSTAINED FIRE

All the principles of slow fire apply with equal importance to sustained fire. Sustained fire is nothing more than a series of slow fire shots, fired with a minimum loss of time between each round. The sling adjustment, position, sighting and aiming, and trigger squeeze are at least as important as in slow fire. The only difference between slow and sustained fire is that in slow fire, you remove your finger from the trigger after each shot and during sustained fire you leave it in contact with the trigger. Let the trigger move forward only far enough for the sear to ride over the shoulder of the trigger before you begin to squeeze the next shot.

During a sustained fire run you will fire 16 rounds within a time limit of 83 seconds, using 1 magazine of 6 rounds and a clip of 10 rounds. Load the magazine of 6 rounds before the exercise starts and, during the exercise, recharge the empty magazine by using the 10-round clip. The 83 seconds are broken down as follows:

10 seconds—Take your position and fire 1 round.

20 seconds—Fire the 5 remaining rounds in the magazine, using a cadence of 4 seconds per shot.

15 seconds—Recharge the empty magazine, using the 10-round clip, and fire the seventh round.

36 seconds—Fire the 9 remaining rounds, using a cadence of 4 seconds per shot.

2 seconds—For applying immediate action in case of a stoppage.

Because you fire against time, you naturally want to finish within the prescribed limit and may concentrate more on the passage of time than on accuracy. Worrying about the time is something that must be conquered; NEVER SACRIFICE ACCURACY FOR SPEED. Speed will come with training and practice, but accuracy must always be first.

You practice sustained fire in the prone and sitting positions, using five progressive exercises.

The first is a cadence exercise to develop a steady rhythm for firing sustained fire.

The second exercise is practice in taking positions rapidly and firing the first shot of a sustained fire run.

The third exercise is practice in reloading and firing the seventh shot.

The fourth exercise is practice in taking positions rapidly, firing the rounds in the magazine, simulating reloading the magazine, and firing the remaining rounds within 83 seconds.

The fifth exercise is practice in taking positions rapidly, firing the rounds in the magazine, recharging the magazine with 10 dummy rounds, and firing the remaining rounds within 83 seconds.

68. FIRST SUSTAINED FIRE EXERCISE

The first sustained fire exercise teaches you a rhythm or firing cadence. Your ultimate goal is to fire a series of shots using 4 seconds for each shot. However, during the initial phase of training, do not hurry. Start with a cadence of 5 or 6 seconds and gradually decrease the time to a 4-second cadence. The development of correct timing depends on your position. If it is correct, the sights will

Figure 41. Coaching, prone position.

return automatically to the aiming point after you fire each shot. You can then concentrate on the sight picture and instantly begin to squeeze the trigger for the next shot.

Before the exercise begins, load a magazine, fitted with a metal clamp, into the rifle. This prevents the bolt from locking to the rear. Assume a good prone position. The coach checks your position for any errors, then lies alongside of you, supporting his head with his left hand. He holds his right hand near the arming handle of the rifle so he can pull it sharply to the rear and release it (fig. 41).

The commands to execute the exercise are —"FIRER IN POSITION; AIM AT YOUR TARGET; BOLT FORWARD; HAMMER DOWN." "BOLT." When you have simulated firing 9 rounds, the command "CEASE FIRING" is given. The command "BOLT" is repeated every 5 or 6 seconds for the first series of runs. When you are able to get the shots off at this interval without hurrying, the time will be reduced to 4 seconds.

Call out the number of each shot as you fire it, preceding each number by the letter *"h,"* such as *"hone," "htwo,"* etc. In calling the shots in this manner, you expel what air you have in your lungs and must breathe again before the next shot. The coach cocks the rifle and simulates the recoil by striking the arming handle sharply to the rear each time the hammer falls, provided the command "BOLT" has been given. If you fail to squeeze off a shot before the command "BOLT" is given by the instructor, the coach simply skips a beat. Throughout the entire exercise the coach watches your eye and trigger-finger to detect any tendency to jerk the trigger.

In the sitting position, the exercise is done the same as in the prone position, with one exception: the coach sits on your left side and strikes the arming handle with his left hand.

69. SECOND SUSTAINED FIRE EXERCISE

The second sustained fire exercise consists of taking positions rapidly and firing the first round within 10 seconds. To do this, you first take the position by the numbers and later perform the exercise without count. Finally, you do the exercise in 10 seconds.

To take the prone position rapidly, first assume the correct position and sight on your target. The coach checks your position for any errors. Drop the butt of your rifle from your shoulder and mark the spot where it strikes the ground. Then mark the spots where your right and left elbows touch the ground. Stand up, supporting your weight with your right hand, keeping your feet in place. You are now in the ready position, with your left hand forward against the upper sling swivel and your right hand grasping the heel of the stock.

You first practice taking the prone position by the numbers in the following five steps:

At the count of ONE, drop to your knees.

At TWO, fall forward. Support your weight on the butt of the rifle, placing it on the spot you marked for it.

At THREE, using your rifle as support, roll onto your left side. Place your left elbow on the spot marked for it.

At FOUR, cam the butt of the rifle into the hollow of your shoulder with your right hand.

At FIVE, grasp the pistol grip with your right hand, place your right elbow on its mark, and complete your position. Sight on the target and fire the first round.

To take the sitting position rapidly, follow the same general procedure as in the prone position. Assume the correct position and sight on the target. Mark a "U" or "V" on the ground in front of you, outlining the area between your legs. Stand up, supporting your weight on your right hand, with your feet in place. On command, sit down, breaking your fall with your right hand. Use the mark on the ground to guide you to your previous position. Complete the sitting position, aim at your target, and fire the first round. When you move into position, the coach will check for any errors and then assume his position on your left side.

The commands for this exercise, given while you are in the ready position, are, "LOCK; ONE MAGAZINE OF SIX SIMULATED ROUNDS, LOAD." When you have completed loading, the coach takes two steps to the rear, which indicates to the ofifcer in charge that your rifle is loaded. This is also a safety measure because your rifle will be unlocked when you assume your position. The next commands are, "READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE. TARGETS UP." At the command, "READY ON THE FIRING LINE," unlock the rifle with your right hand. At "TARGETS UP," quickly assume your position and fire the first shot.

70. THIRD SUSTAINED FIRE EXERCISE

In the field you are normally equipped with two magazines of 20 rounds each with the remainder of your ammunition in ten-round clips. The T48 rifle and the ten-round clip are designed so that you may reload an empty or partially empty magazine without removing the magazine from the rifle. During your tactical exercises you may have to reload quickly. You learn this by practicing the third sustained fire exercise. At the completion of your training you should be able to recharge the magazine with a clip of 10 rounds and fire 1 round within 15 seconds. Before the exercise begins, load an empty magazine into your rifle. Place a clip of ten dummy rounds in the pouch on your right side. Assume the prone position and open the bolt just as it would be if you had fired your last round.

The commands to execute the exercise are:

"FIRER IN POSITION."

"AIM AT YOUR TARGET."

"BOLT TO THE REAR."

"RELOADING EXERCISE."

"RELOAD."

At the command, "RELOAD" drop the butt of the rifle from your shoulder. Reach back with your right hand and obtain a ten-round clip from the pouch of your rifle belt. Place the clip into the front and rear clip guides, seating the clip into the receiver as far as it will go. Ball your right hand into a loose fist, with your thumb extended, and right elbow held high. Place your right thumb over the top round with the thumb touching the rear guide of the clip (fig. 42). Exert a sharp downward pressure on the round, loading ten rounds into the magazine. Remove the clip and

press the bolt stop, allowing the bolt to go forward. Re-assume your position, sight on the target and fire. As soon as the hammer falls the coach will strike the arming handle to the rear.

If you were in the open-legged sitting position, you would recharge the rifle in the same way as in the prone position. If you were in one of the alternate sitting positions, you would place the rifle butt on your right thigh instead of on the ground.

At the completion of this exercise the command "UNLOAD" is given. At this command lower the butt of the rifle to the ground. Reach forward with your right hand and grasp the magazine so that your fingers extend around the forward portion. The right thumb is positioned against the magazine catch. Press the magazine catch and rotate the bottom of the magazine forward toward the muzzle, removing the magazine. Rotate the rifle approximately 45° to the right and regrasp the rifle with your left hand, palm up, at the right side of the receiver so that your fingers extend over the bolt. Grasp the arming handle with your right hand and draw it to the rear, extracting the dummy round. Catch this round with your left hand. Press up on the bolt stop with your right thumb, locking the bolt to the rear.

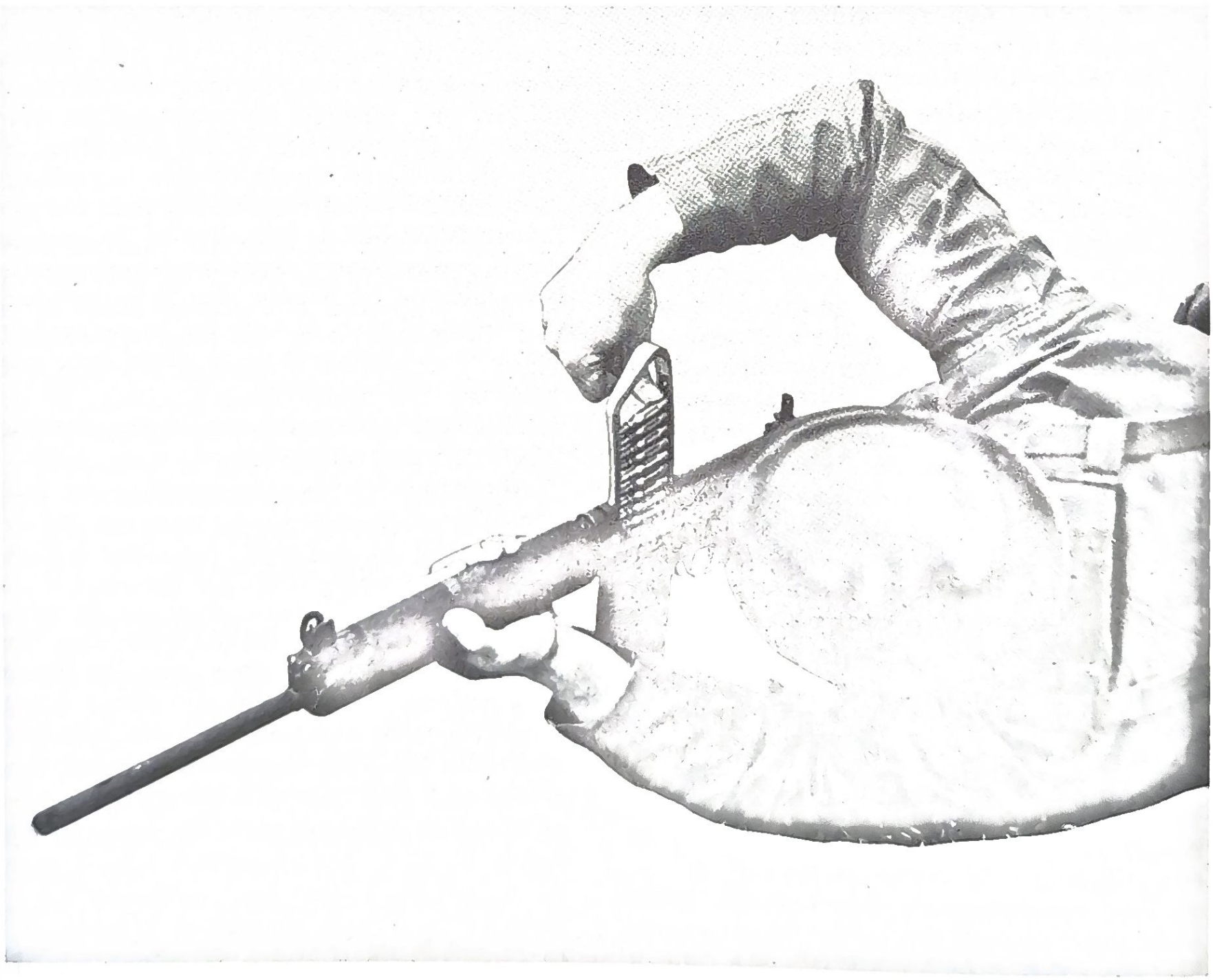


Figure 42. Reloading the magazine.

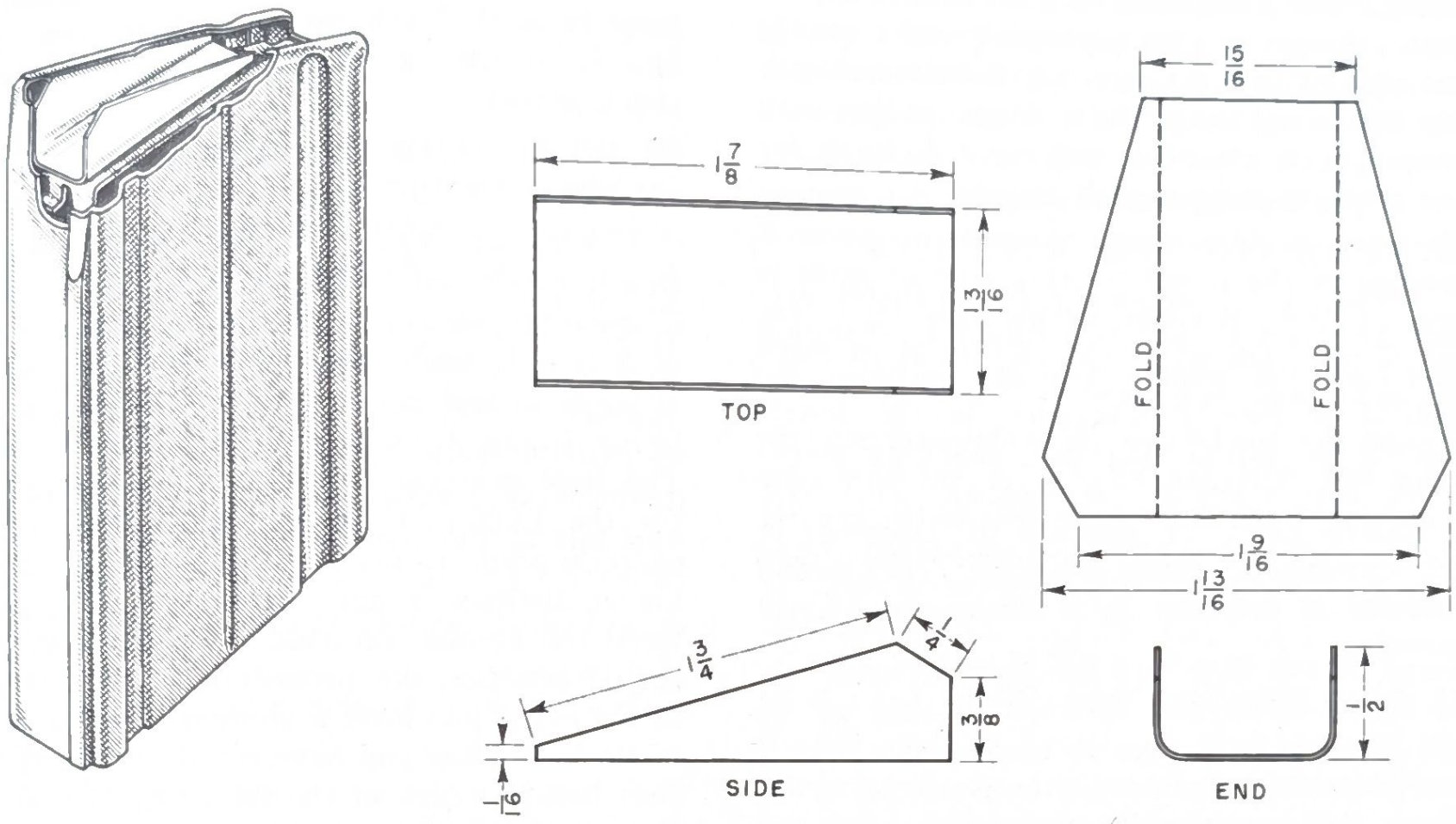


Figure 43. Metal clamp.

71. FOURTH SUSTAINED FIRE EXERCISE

During this exercise you combine all previous sustained fire exercises. You must take your position, simulate firing the first 6 rounds, simulate recharging the magazine and fire the remaining rounds, all within 83 seconds. You practice the exercise in both the prone and sitting positions.

The coach simulates the action of the gas by striking the arming handle sharply to the rear. Before the exercise begins, fit one magazine with a metal clamp (fig. 43) to prevent the bolt from locking to the rear as the coach strikes the arming handle. Count each shot just as you did during the first sustained fire exercise.

You have 10 seconds to take your position and fire the first shot; 20 seconds to fire the remaining 5 shots; 15 seconds to simulate recharging and fire the seventh shot, and 36 seconds to fire the remaining 9 shots. Use the additional 2 seconds if you have to apply immediate action.

Assume a good position, which the coach checks for any errors. Stand up, keeping your feet in place. At the command "LOCK; ONE MAGAZINE OF SIX SIMULATED ROUNDS, LOAD," insert the magazine fitted with the metal clamp. As soon as you have loaded, your coach takes two steps to the rear. "READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE." At this command, unlock the rifle. At "TARGETS UP," quickly assume your position. The coach checks your position for any errors and takes his position to your left. As soon as the hammer falls for the first round the coach will strike the arming handle to the rear. After firing six rounds, lower the butt of the rifle to the ground, simulate recharging, reassume your position, and resume firing. The command "CEASE FIRING, CLEAR ALL RIFLES," will be given at the end of 83 seconds.

72. FIFTH SUSTAINED FIRE EXERCISE

The fifth sustained fire exercise is done the same as the fourth sustained fire exercise except that dummy rounds are used. Instead of using the metal clamp, load the magazine with 6 dummy rounds and the clip with 10 dummy rounds. You must now actually re-

charge the magazine. At the completion of each exercise be sure that the dummy rounds are cleaned of any sand or grit before reloading the magazine or clip. Dirty rounds will cause a dirty chamber, making it difficult for the coach to extract each round.

73. AUTOMATIC FIRE EXERCISES

Training for automatic fire includes preliminary training and two magazine changing exercises. Preliminary training includes the method of placing magazines in the pouch, loading the initial magazine, changing magazines, and clearing the weapon. The first magazine changing exercise is training in an 8-magazine, timed exercise. The second exercise is training in a 3-magazine, timed exercise.

74. PRELIMINARY TRAINING

You can save time in loading the rifle if you place the magazine in the pouch correctly. Place the magazine in the pouch with the open end down and the long portion to the rear. To remove the magazine from the belt, grasp it with your thumb on the side nearest your body and your fingers on the other side of the magazine. Remove the magazine from the pouch and move your hand forward. Turn your hand, palm up, and insert the magazine into the feedway of the magazine well. Rotate the base of the magazine up and to the rear, seating the magazine catch. After firing one magazine, you must replace it with another one from your belt. To do this, grasp the magazine in your left hand, with your thumb on the magazine catch. Press in on the magazine catch and rotate the empty magazine towards the muzzle, removing it from the weapon. Bring another magazine forward from your belt and insert it into the well; rotate the magazine base to the rear to insure proper connection with the magazine catch. When the magazine is firmly in place, press downward on the bolt stop, allowing the bolt to go forward, chambering a cartridge. Place the old magazine in the pouch with the open end down, long portion to the rear.

To clear the rifle, place the change lever on "S." Remove the magazine, and pull the arming handle to the rear. At the same time press up on the bolt stop to hold the bolt to the rear. The rifle is "clear" when the change lever is on "S," the magazine is removed, the bolt is to the rear, and you have inspected the chamber.

75. FIRST AND SECOND AUTOMATIC FIRE EXERCISES

There are two automatic fire exercises. One is conducted in 1¾ minutes and consists of loading and simulating firing 8 magazines of 3 rounds each. The other is conducted in 40 seconds and consists of loading and simulating firing 3 magazines of 5 rounds each. The first exercise is designed to prepare you for the 1,000-inch range course. The second exercise prepares you for automatic fire on the known-distance range. After you have mastered the second automatic fire exercise, you should practice the procedure to be followed in the event you have a stoppage during automatic fire. After you have simulated firing the first burst in each of the first two magazines, the coach calls "stoppage" and you apply the first phase of immediate action, which reduces the stoppage. On the third magazine, the coach calls "stoppage," and you apply the first phase of immediate action; however, this time the coach again calls "stoppage," indicating the first phase of immediate action failed to reduce the stoppage. At this time, you raise your right hand and call "time." The officer or assistant instructor in your section of the firing line will check your weapon and determine if you have a mechanical stoppage. He then will allow you two seconds to fire each remaining round, plus four seconds to change each magazine. Should you reduce the stoppage before it is checked, you will be told to clear your weapon and move off the firing line. The fire commands for these exercises are:

Eight-magazine exercise—"ONE MAGAZINE OF THREE ROUNDS, SIMULATE LOAD; FIGURE NUMBER FIVE TO FIGURE NUMBER SIX; THREE ROUNDS PER FIGURE IN SHORT BURSTS; READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE. COMMENCE FIRING."

Three-magazine exercise—"ONE MAGAZINE OF FIVE ROUNDS, SIMULATE LOAD; IN SHORT BURSTS; READY ON THE RIGHT? READY ON THE LEFT?

READY ON THE FIRING LINE. COMMENCE FIRING."

In both exercises you simulate pressing off a second burst in each magazine. The empty magazines are actually changed. Replace the old magazine in the pouch after you insert a new magazine in the weapon. In the 8-magazine exercise, shift your body as necessary to engage each scoring space.

In addition to his previously assigned duties, the coach makes sure that you—

Simulate firing each burst in the magazine.

Traverse from left to right during the eight-magazine exercise, engaging each figure.

Reload quickly without fumbling, and keep the weapon to your shoulder during reloading.

Keep your eyes on the target while you reload.

Cease firing on command from the officer in charge of firing.

Replace the empty magazine in your belt after loading a new magazine into the rifle.

76. SHOT GROUP ANALYSIS

After the first shot goes into the bull's-eye, you must depend on your grip and position to ensure the succeeding rounds of a burst strike the target. Checking the location of the shot groups on a target after firing several bursts will determine any errors in your grip or position which are being committed. This process is called SHOT GROUP ANALYSIS. Some faulty shot groups, caused by a poor position or grip, and the action necessary to correct the position or grip are shown in figure 44.

77. ZEROING—GENERAL

Both the T48 and T48E1 rifles have a conical, post type, movable front sight mounted on the forward end of the gas cylinder. On both weapons the front sight post is protected by an open type guard. The front sight post is graduated in clicks and can be raised or lowered by means of a special wrench (fig. 26). The front sight is normally adjusted only when zeroing the rifle at the range of 1,000 inches, or on the 300-yard range. The wrench for the front sight is currently being issued at a ratio of one per ten rifles.

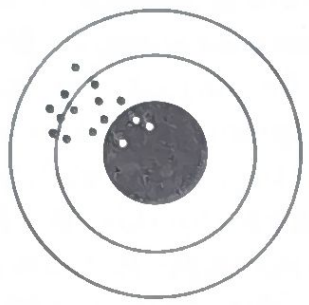
The rear sight is a ramp type aperture sight mounted on the stock group. It is graduated in 100-yard measurements from 100 through 600 yards. To adjust the sight for range, compress the spring lock and slide the aperture forward or to the rear, to the desired range. The range is visible on the ramp immediately behind the aperture slide. (Figure 3 shows the sight at 300 yards.) The one exception to this rule is the 100-yard setting. When the rear sight is set for 100 yards the aperture is all the way to the rear and at the lowest sight setting. The rear sight does not have a windage knob. Changes in deflection can be made by unscrewing and tightening the two deflection screws located on the rear sight. Adjust these screws only when zeroing at 1,000 inches or at 300 yards when no wind is blowing.

The sights of the T48 rifle are designed to be used in combat. The rifle should be zeroed at one specific range, preferably at 300 yards when there is no wind blowing. Place the rear sight at the 300-yard setting, or at the range you are firing and adjust the rifle for elevation by moving the front sight up or down. When the rifle is zeroed for elevation at this one range, it should be approximately zeroed at any other range when the rear sight is set at that range. The front sight should not be changed for each range. If the elevation setting does not correspond to the range, use hold-off or move the rear sight to another range setting. It takes a special wrench to move the front sight and this wrench is not part of your individual equipment.

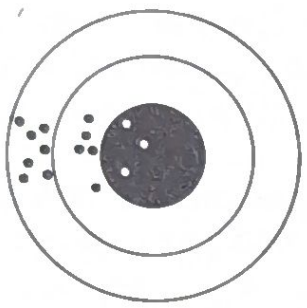
The deflection adjustment should be made only one time at 1,000 inches, where the wind has no effect. If, when you move to 300 yards, there is no wind blowing, you may recheck and, if necessary, readjust the setting. The adjustment on the rifle *must* be for a day when no wind is blowing, so you can compensate for known winds by using hold-off (paragraph 79).

78. ADJUSTING THE SIGHTS

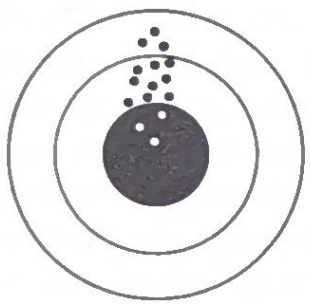
The T48 rifle is first zeroed while you are on the 1,000-inch range. This will adjust the rifle for windage since the wind does not affect the bullet at a range of 1,000 inches. It will also allow you to adjust for elevation and



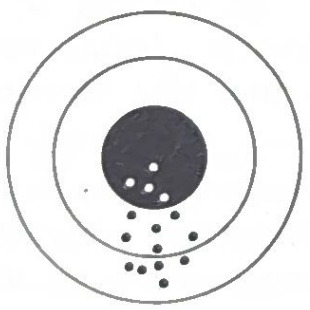
HIGH AND LEFT. CAUSED BY LOW RIGHT SHOULDER. TO CORRECT, LEVEL SHOULDERS BY PULLING RIGHT ELBOW IN OR LEFT ELBOW FORWARD.



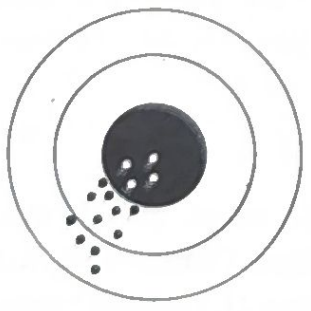
LEFT OF BULL'S-EYE, HORIZONTAL ALINEMENT. FAILURE TO PULL TO THE LEFT WITH THE LEFT HAND. PULL TO THE LEFT WITH THE LEFT HAND IN ORDER TO OVERCOME PRESSURE OF CHEEK AGAINST SIDE OF STOCK.



HIGH, VERTICAL ALINEMENT. CAUSED BY ALLOWING ELBOWS TO SLIP OUT DURING FIRING OR EXHALING AFTER FIRST ROUND IS FIRED. TO CORRECT, PULL ELBOWS IN CLOSER TO BODY. HOLD BREATH DURING FIRING. ALSO MAY BE CAUSED BY HAVING BIPOD LEGS ADJUSTED TOO HIGH. TO CORRECT, ADJUST BI-POD LEGS TO CORRECT HEIGHT.



LOW VERTICAL ALINEMENT. CAUSED BY NOT HOLDING BUTT OF WEAPON DOWN INTO SHOULDER, OR INHALING AFTER FIRST ROUND IS FIRED. TO CORRECT, PULL DOWN WITH LEFT HAND. HOLD BREATH DURING FIRING. ALSO MAY BE CAUSED BY HAVING BIPOD LEGS ADJUSTED TOO LOW. TO CORRECT, ADJUST BIPOD LEGS TO CORRECT HEIGHT.



LOW LEFT. CAUSED BY HUNCHING SHOULDER FORWARD TO CATCH THE RECOIL. TO CORRECT, PULL WEAPON IN CLOSER TO NECK AND TAKE TIGHTER GRIP ON WEAPON, AND APPLY PROPER TRIGGER MANIPULATION.

Figure 44. Shot group analysis.

fire the 1,000-inch course, obtaining practice with the weapon. Since the target on the 1,000-inch range corresponds to the "A" target at 200 yards, set the rear sight at 200 yards. Move the front sight all the way down by turning the front sight clockwise with a front sight wrench.

Adjust the gas as described in paragraph 29.

After adjusting the gas, you zero by firing shot groups of three rounds each. Make the necessary sight changes to move the center of the shot group into the center of the bull's-eye by adjusting the deflection screws and the front sight. Repeat this process until the center of the shot group hits the center of the bull's-eye. When your rifle is zeroed, count clockwise the number of clicks remaining on the front sight post and record it. That is your front sight setting for elevation at this range. Once the rifle is adjusted, the deflection screws should not be touched. The rifle is now adjusted for a day when there is no wind blowing; when there is a wind, you will have to compensate for it by using hold-off.

Vertical adjustment of the sights is done by raising or lowering the front sight post with the special front sight tool. Turn the front sight post in a counter-clockwise direction to lower the shot group and clockwise to raise it. As the front sight goes up, the shots go down; as the sight goes down, the shots go up. Since the front sight post is graduated in clicks, you can use an approximate formula for adjustment. The elevation formula is $\frac{I \times 3}{R}$ = the number of clicks on the front sight post. "I" stands for the vertical distance in inches that the center of the shot group must be moved to get into the center of the bull. "R" stands for the range in hundreds of yards. The figure 3 is always constant. If, in working out the formula, a whole number of clicks is not obtained, then use the next higher whole number. Remember that turning *clockwise* raises the shot while turning *counter-clockwise* lowers the shot. This formula is for general information only. You don't have to memorise it. You *should* remember that 3 clicks will move the strike of the bullet 1 inch for each 100 yards of range—at 300 yards 1 click will move the bullet on the target 1 inch; at 1,000 inches 3 clicks will move the bullet one-fourth of an inch.

Figure 45 shows a shot group 12 inches too high. The rifleman is firing at a range of 300 yards and therefore should *add* 12 clicks on the front sight by rotating it *counter-clockwise*. This will *raise* the front sight. Notice that as the front sight is raised the shot group is *lowered*.

To move the shot group laterally, move the rear sight in the same direction that you want to move the shot group by adjusting the two deflection screws on the sight base. Using a screwdriver, loosen the screw on the side of the rifle corresponding to the direction the shot group is to be moved and tighten the screw on the opposite side. For example, if the shot group is to be moved to the right, loosen the screw on the right side of the rifle the desired number of turns and tighten the screw on the left side of the rifle. To make certain that the sight remains in its new position, retighten both screws. One complete turn of the deflection screws moves the shot group laterally 4½ inches for each 100 yards of range; or, a quarter turn on the rear sight moves the strike of the bullet on the target approximately 1 inch for each 100 yards of range. At 1,000 inches, a quarter turn moves the bullet one-fourth of an inch. An approximate formula can be used for this adjustment, which, however, is general information only and need not be memorized. The deflection formula is: $\frac{I}{R}$ = the number of quarter turns on the deflection screw. "I" stands for the lateral distance in inches from the center of the shot group to the center of the bull's-eye. "R" stands for the range in hundreds of yards. If, in using the formula, you don't obtain a whole number of quarter turns, do not take the next higher whole number; instead, use the answer obtained from the formula, since it is possible to place less than quarter turns on the sight.

Figure 46 shows a shot group 6 inches to the right of center. The firer is at a range of 300 yards. At this range a quarter turn on the deflection screw moves the strike of the bullet 3 inches, therefore two quarter turns

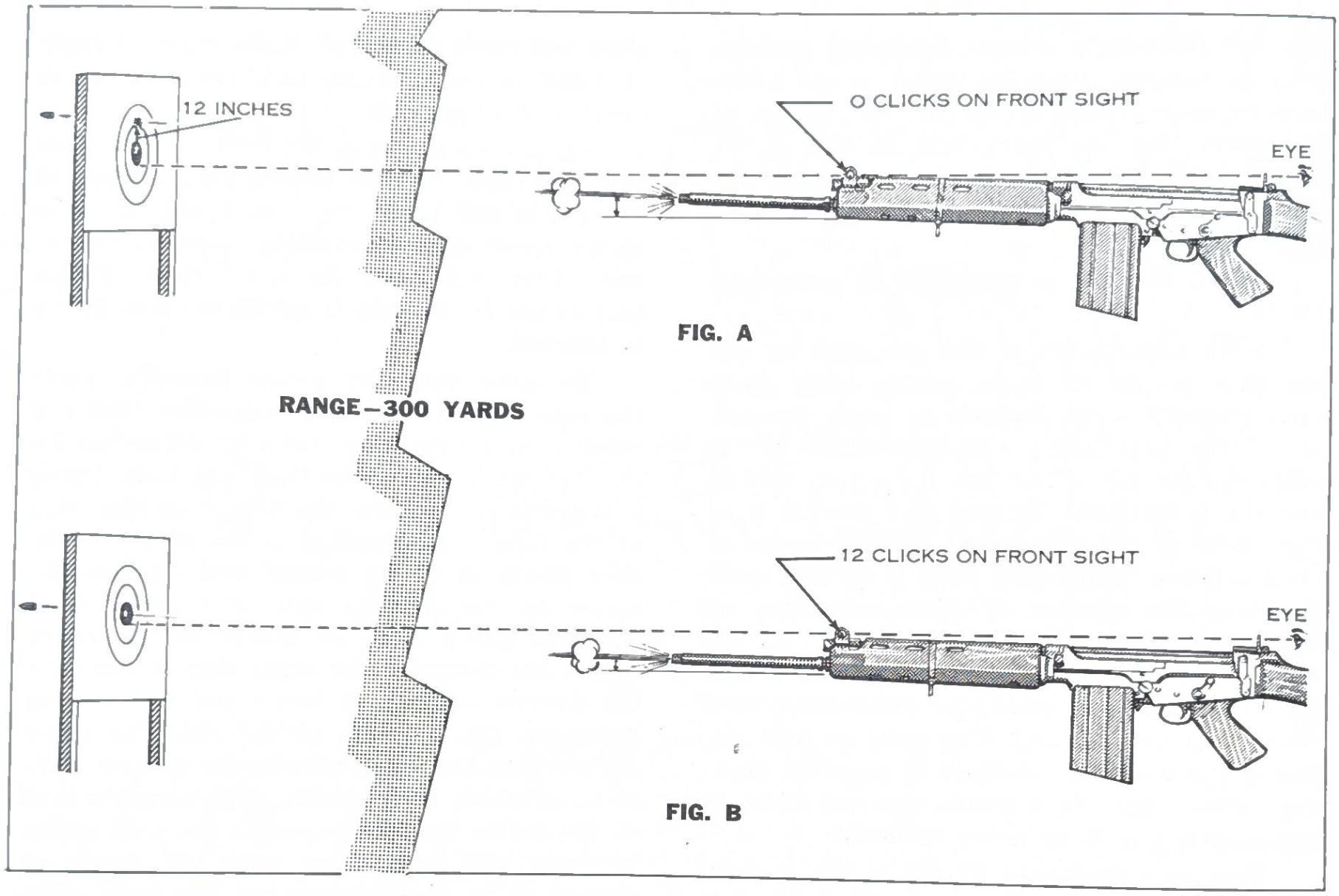


Figure 45. Zeroing.

on the rear sight are required to get the next shot group in the center of the bull's-eye. To move the group to the left the firer must loosen the left deflection screw one-half turn and tighten the right screw one-half turn.

79. EFFECT OF WIND

The rear sight on your rifle is adjusted for a day when no wind is blowing. Do not change this adjustment during known-distance firing even though the wind is blowing. However, the wind may affect the flight of the bullet and you will have to compensate for it. Since you cannot make sight changes you must use the only means available—*hold-off*. If your sights have been adjusted accurately, you can compensate for the wind by using this method:

Always think of yourself as being in the center of an imaginary clock. Your target, which is straight to the front, is at 12 o'clock; directly to your rear is 6 o'clock.

A wind blowing directly into your face is called a 12 o'clock wind; winds blowing from other directions are called by the hour of the face of the imaginary clock. If a wind can be felt on your face or hands it must be compensated for unless it is blowing from 12 o'clock or 6 o'clock, which will not affect the bullet. A wind that you can feel on your face or hands is blowing 5 miles per hour or greater and, if it is blowing from the right or left, you must use hold-off. You can get your first shot into the bull's-eye, or very close to it, by using a calculated hold-off. Initially the amount of hold-off depends on the range at which you are shooting. If you are firing at 100 yards, you can forget about the wind on the first shot, since you zeroed your rifle for no wind at 1,000 inches. The first shot should be in the bull's-eye and you can hold off enough to bring the next shot into the *center* of the bull's-eye.

If you are firing at 200 yards and feel a wind blowing from the right or left, hold off on the first shot in the direction from which

the wind is blowing. To compensate for a wind from the right, at 200 yards, take a sight picture similar to figure 47a. This should place your first shot in the bull's-eye, or very close to it. Now you can hold off just enough to adjust the next shot into the *center* of the bull.

If you are firing at 300 or 500 yards and feel a wind blowing from the right, take a sight picture similar to figure 47b for your first shot. After you have hit the target, use the amount of hold-off necessary to adjust the next shot into the *center* of the bull's-eye.

During all firing you will use the firing data card described in paragraph 82.

80. VELOCITY OF THE WIND

Before firing, estimate the velocity of the wind and enter the velocity and direction on your firing data card.
Estimating wind velocity is discussed in FM 23-5. Also record your point of aim on the firing data card. Using the card as a *reference* helps you to aim and compensate for various wind velocities and their direction during future firing.

81. LIGHT

Bright, hazy, or dull daylight does not affect the flight of the bullet, but it does affect your aim. Study FM 23-5 for the effects of light.

82. THE FIRING DATA CARD

The ability of a rifleman to engage a target accurately is influenced by many things. Among these are position, ability to get a correct and consistent sight picture, and ability to squeeze the trigger. Only by keeping an accurate account of all your firing can you rapidly develop habits that result in good shooting. The firing data card (fig. 48) is your record of progress with the rifle. By carefully analyzing this card, you can determine any of the errors you are making. The firing data card also reflects your ability to call shots accurately. Comparing the call target on the card with the hit target will help you to zero or determine the appropriate hold-off. You will be issued a firing data card before firing on the range and must make your own entries on it with a black lead pencil. Do not make entries in ink because the information may be

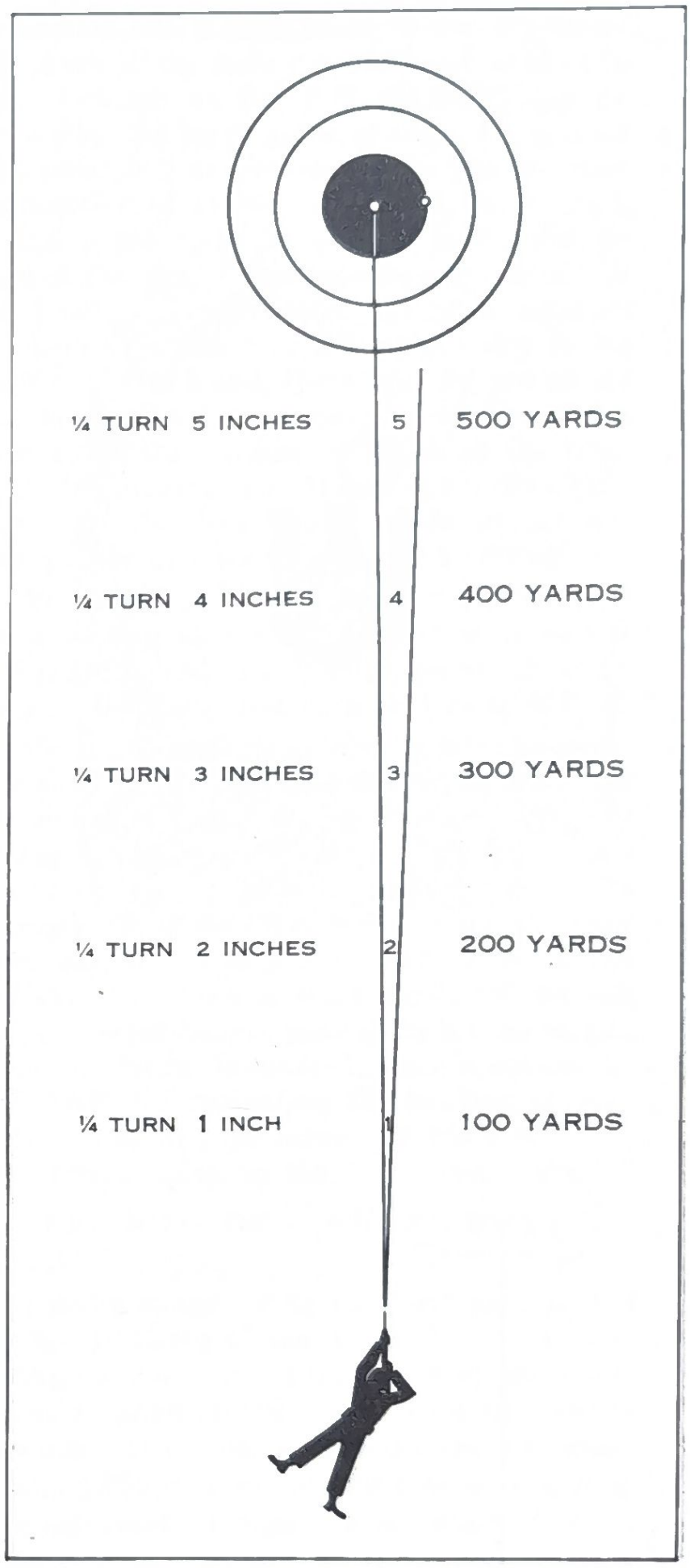
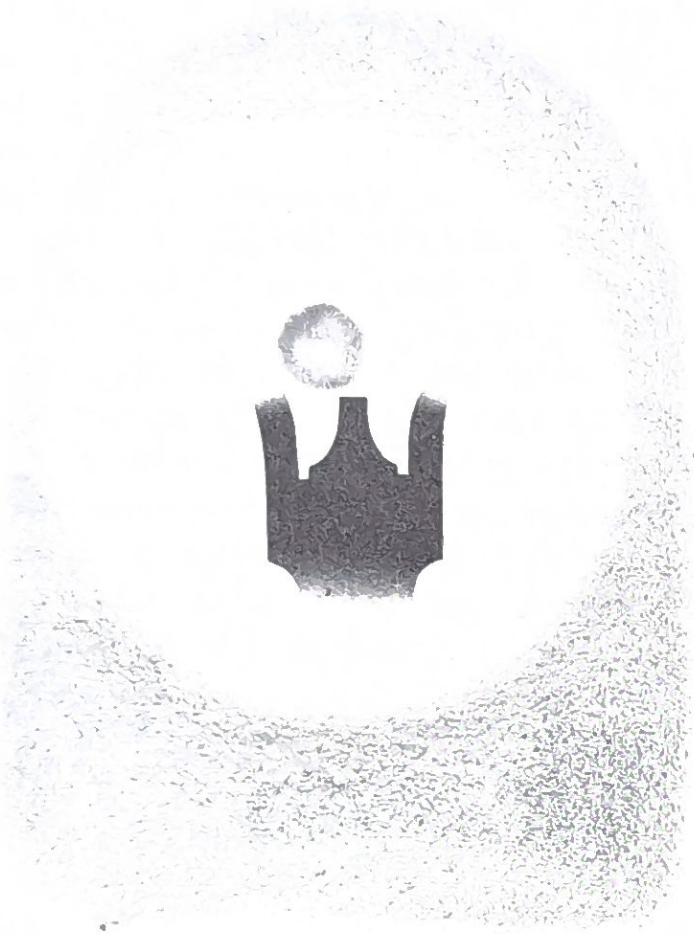
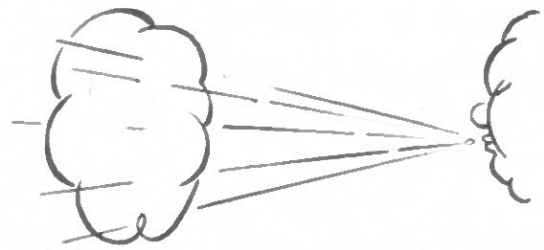


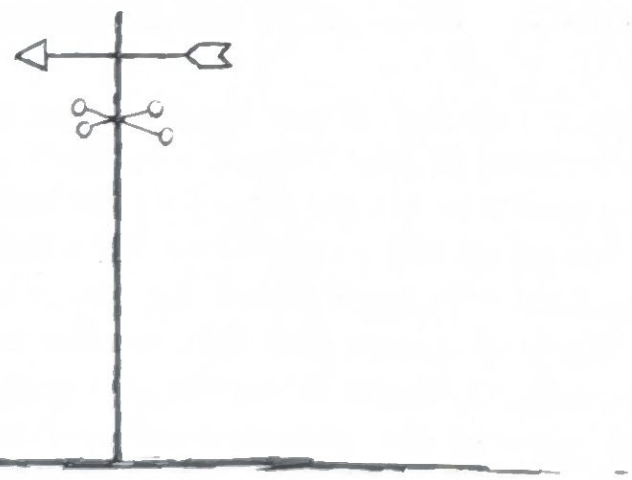
Figure 46. Deflection Rule.

lost if the card becomes wet. Although the firing data card is designed for the M1 rifle, it can be used with the T48. The front side of the firing data card has a place for your name, rank, serial number, and organization. The





A



B

Figure 47. Hold off.

zero block may be crossed out since it does not pertain to the T48 rifle. The card may be folded for convenience. Now refer to the upper left recording block of the firing data card in figure 48. Range is the range to the target, which in this case is 300 yards. The position is the prone position, for zeroing. The weather and the light are filled in by using words of your own choosing. However, you should use words that describe the condition—the weather is cloudy, clear, etc., the light is bright, dull, etc. Draw a line through computation and RV/10 since this does not apply to the T48 rifle. Estimate the wind velocity and place it in the proper space; draw an arrow through the clock showing the direction from which the wind is blowing. You will fire three shot groups of three rounds each, so shot number 10 may be scratched out. Draw an X through total score, because you are not firing for record. The rear sight is placed at the 300-yard setting; under elevation place 300. You do not adjust for the wind, so strike out WIND; under this column place the setting in clicks used to adjust the front sight. The first three rounds the front sight is at its lowest setting. Using a front sight wrench, rotate the front sight clockwise until it is all the way down, and place a zero in the appropriate column on your card. To compensate for wind, you must *hold off* and record your aiming point by placing the numbers 1-3 at this point, with a circle around the numbers. As you fire each shot, record your call by placing the number, corresponding to the shot, at the spot you *thought* the round would strike the target. Then record the *exact location* of the first three shots on the HIT TARGET. In the example shown, these shots were high and to the left. To compensate for elevation the firer must use the elevation rule and raise the front sight 12 clicks. He recorded this setting on the firing data card. To compensate for the wind he had to hold off more than for the first three shots and marked this point of aim for shots 4, 5, and 6. As he fired each of the next three rounds he called and plotted each shot; he flinched on shot number 6 and therefore was not sure where the shot would strike the target. The figure 6 was placed in a corner with a question mark next to it. When the target was marked, the firer recorded each shot at its exact location on the HIT TARGET. In determining the next sight change, he ignored shot number 6 and computed the change from the location of numbers 4 and 5. For shots 7, 8, and 9 the elevation on the rear sight remained the same; three clicks were added on the front sight, however, giving a total of 15 clicks. He aimed at the same point as for shots 4, 5, and 6 and, therefore, did not record this again. At the completion of firing you must count the number of clicks on the front sight by moving the front sight clockwise; then reset the front sight at the proper setting and record your final sight setting.

The firing data card is kept the same when you are firing slow fire for practice or record. You must record your aiming point whenever you change it and plot each shot as it is fired.

For sustained and automatic fire the firing data card is filled out as indicated in the lower left recording block of figure 48. The sight setting is recorded only once since all rounds will be fired with the same sight setting. The aiming point is shown as when firing for zero. Upon completion of a sustained or automatic fire exercise, draw a small circle in the call bull where you believe your shots hit the target. When the target is marked, place a dot on the HIT TARGET indicating the location of each shot. Total up your score and place it in the appropriate space on the firing data card.

83. ZEROING ON KNOWN-DISTANCE RANGE

During range firing you first zero at 300 yards. The zero of the T48 rifle is the sight setting necessary to hit the center of the bull's-eye at a range of 300 yards when no wind is blowing. The rifle is adjusted for deflection on the 1,000-inch range and this setting may be readjusted, if there is no wind blowing, when you zero at the 300-yard range. If a wind is blowing do not readjust the setting. In either case, place the rear sight at the 300-yard range setting and turn the front sight clockwise, all the way down. After firing each shot group of three rounds, adjust the front sight using the elevation formula, until the rifle is zeroed for elevation. Use this front sight

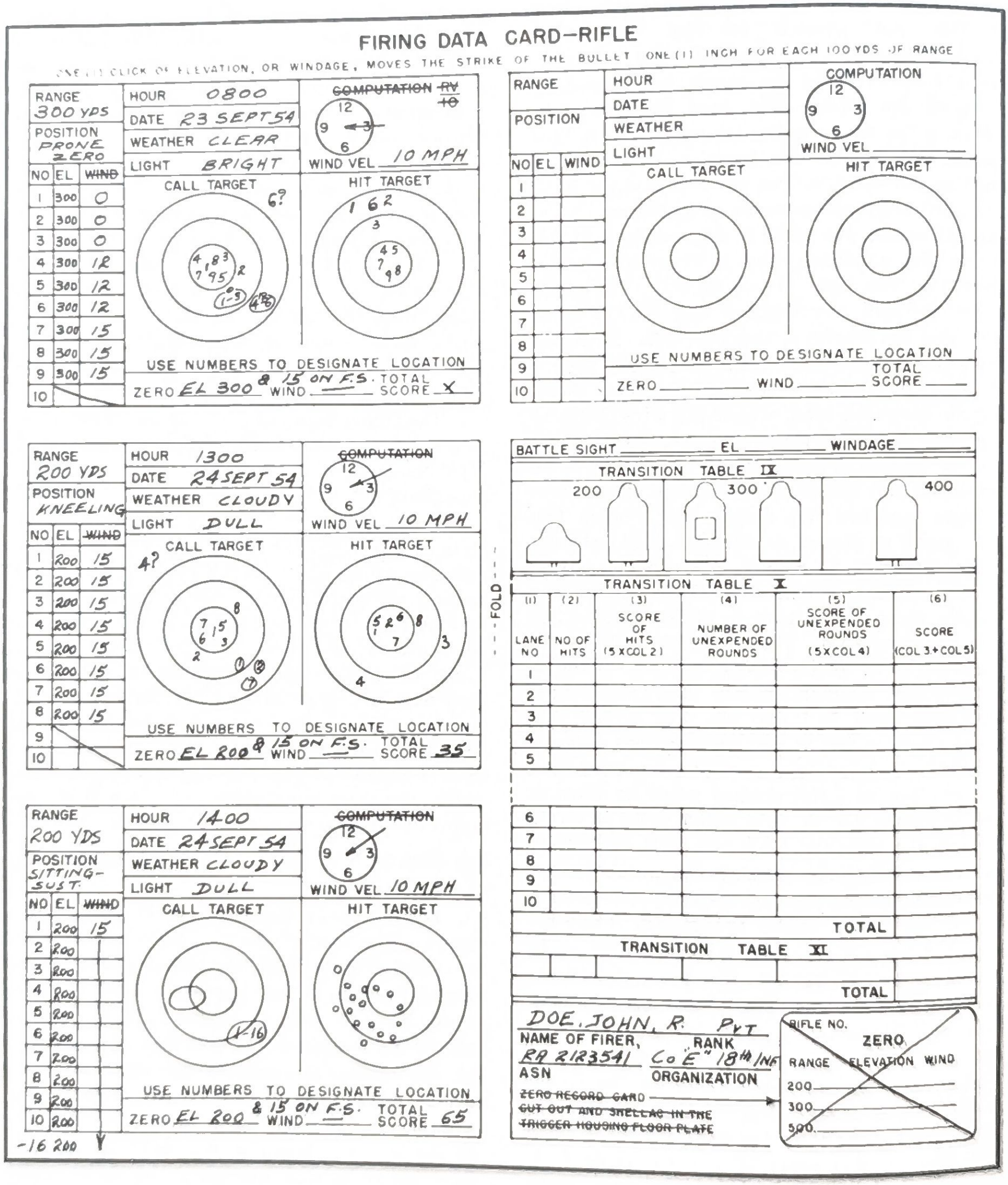


Figure 48. Firing data card.

setting for all other ranges. Adjust the rear sight by placing it at the appropriate range setting. If the elevation is not correct, use hold-off or move the rear sight to another range

setting in order to lower or raise the strike of the bullet.

84. EXAMINATION BEFORE RANGE FIRING

The examination before range firing with the T48 rifle is conducted the same as the examination in FM 23-5 for the M1 rifle.

The examination with the T48E1 rifle should be conducted the same as the examination in FM 23-15 for the automatic rifle.

Section III. RANGE FIRING

85. GENERAL

Range firing is begun as soon as you complete preparatory marksmanship training. It may consist of instruction firing and record firing, or familiarization firing. Refer to FM 23-5 for a discussion of these terms, duties of the range officer, noncommissioned officer, and unit range personnel, and the organization of the firing line.

86. INSTRUCTIONS COMMON TO INSTRUCTION AND RECORD FIRING

Blacken the sights during all range firing. Although the T48 rifle is used to fire the record course, you do not receive a classification for this firing. For qualification you must fire the M1 rifle.

The trigger pull of the rifle must be at least 7 and not more than 8 pounds.

Use only the ammunition issued by the Ordnance Department. During record firing no one will be issued more than the prescribed number of rounds.

Adjust the sling on your arm before taking your position on the firing line. Do not tie a knot in the sling.

Observe the safety regulations in paragraph 28 and in FM 23-5.

The firing data card serves as a firing record of your rifle. You must keep your own firing data card during all firing.

For information concerning clothing, pads and gloves, instruments, shelters, damaged or broken rifles, loading, and telephones refer to FM 23-5.

For the T48 rifle the coaching position is on the left side of the firer. This position prevents empty cartridge cases from being ejected onto the coach and enables him to strike the arming handle to the rear during sustained fire exercises. Since, as a coach, you must detect flinching and see that the firer properly squeezes the trigger, position your head close to the rifle and just far enough forward so you can clearly see the firer's right eye and trigger finger. Be careful not to get close enough to the muzzle to receive the shock or blast effect as the rifle fires. You should wear ear plugs or patches in your ears during all live firing. The coaching position is similar to that of the firer. Here is the correct way to aasume each position:

Prone — Lie in a prone position on your left side, with your feet pointing to the rear. Support your head with your left hand, leaving your right hand free (fig. 41).

Sitting — Sit facing the firer so that your feet are pointing to the rear and out of the firer's way.

Kneeling — Kneel facing the firer.

Standing — Stand facing the firer.

During slow fire, observe the firer carefully and correct all errors. When necessary, use the trigger squeeze method in paragraph 62 to detect and prevent any flinching. Be sure the firer—

Has blackened and set his sights at the correct elevation.
Has ammunition that is free from dirt.
Has adjusted the sling properly and taken the correct position.
Holds his breath properly. Check this by watching his back.
Takes up the slack promptly and decisively in one motion.
Fires without flinching.
Accomplishes the BRASS sequence in 10 seconds or less.
Calls his shot each time he fires.
Keeps his firing data card correctly.

During sustained fire, observe the firer carefully and correct all errors. Operate the arming handle during the appropriate sustained fire exercise, and watch the firer's back from time to time to see whether he holds his breath properly. Look for any improper timing, and if necessary, recommend to the officer in charge of firing that additional preparatory sustained fire practice be given. As the firer's target is marked, make sure that he plots his shot group accurately and records everything pertaining to his shots. Check the firer for each item listed for slow fire, above, except that the BRASS sequence will be done in much less than 10 seconds. In addition, be sure that the firer counts his shots aloud and reloads properly.

87. INSTRUCTION FIRING

Dummy cartridges are highly effective in detecting and correcting flinching, when used in conjunction with live ammunition. To use dummy cartridges during instruction firing, slow fire, have the pupil look away from the rifle. Then load either a dummy or live cartridge, or let the bolt close on an empty chamber. In this way the pupil does not know how the rifle is loaded and if he should flinch or jerk the trigger you and he can easily detect it. If the firer flinches, continue to use the dummy cartridge until he squeezes the trigger properly.

Instruction firing in sustained fire should include firing live and dummy cartridges mixed in a magazine. Apply the first phase of immediate action each time you fire a dummy round. Because of the slower rate of manual operation, additional time should be allowed in this firing.

88. BATTLE SIGHT

The 300-yard zero of your rifle is also the setting for your *battle sight.* Once your rifle has been zeroed at 300 yards, just place the rear sight on the 300 yard setting and your battle sight is adjusted. This adjustment is used from ranges of 0 to 400 yards when you do not have time to set the rear sight for the appropriate range.

89. RECORD FIRING

Firing will be conducted as prescribed in FM 23-5 and FM 23-15 except that, when firing for record, coaching is not authorized. The fire commands and time allocations in paragraph 184, FM 23-5 do not apply to the T48 rifle. The record classification cards (FM 23-5) and pit score cards (par. 99) will be used.

90. FIRE COMMANDS—T48

Sample fire commands for slow and sustained fire on the known-distance ranges are listed below. Additional information may be given during these commands such as the target number, if you are on the 1,000-inch range, or the command to use ball or dummy ammunition.

Fire commands for the 1,000-inch range, slow fire, are: (Insert an empty magazine into the receiver before firing.)
"LOCK; ONE ROUND, LOAD; COMMENCE FIRING. CEASE FIRING."

Fire commands for the 1,000-inch range, sustained fire, are:
"LOCK; ONE MAGAZINE OF SIX ROUNDS, LOAD. READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE. TARGETS, UP. CEASE FIRING."

Fire commands for the known-distance range, slow fire, are: (Insert an empty magazine into the receiver before firing.)
"LOCK, ONE ROUND, LOAD; COMMENCE FIRING. CEASE FIRING."

Fire commands for the known-distance range, sustained fire, are:
"LOCK; ONE MAGAZINE OF SIX ROUNDS, LOAD. READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE."
(Appearance of your target is the signal to commence firing; disappearance of the target is the signal to cease firing.)

An explanation of the fire commands is given in FM 23-5.

91. FIRE COMMANDS—T48E1

Each fire command you receive on the range follows a set form. Sample fire commands for slow and automatic firing on the 1,000-inch and known-distance ranges are listed below.

For zeroing: (Insert an empty magazine into the receiver.)

"LOCK; ONE ROUND, LOAD; FIGURE NUMBER ONE; COMMENCE FIRING. CEASE FIRING."

For slow fire:

"LOCK; ONE MAGAZINE OF FIVE ROUNDS, LOAD; FIGURE NUMBER TWO; COMMENCE FIRING. CEASE FIRING."

For automatic fire:

"LOCK; ONE MAGAZINE OF FIVE (FIFTEEN) ROUNDS, LOAD; IN SHORT (LONG) BURSTS. READY ON THE RIGHT? READY ON THE LEFT? READY ON THE FIRING LINE. CEASE FIRING."

READY ON THE FIRING LINE means that all men on the firing line are prepared for the firing exercise. On this command unlock your rifle. To the officer in charge of the pit detail, this command is a signal to wave the red flag from the center of the line of target frames.

CLEAR WEAPONS is given at the conclution of a firing exercise and in all other cases when it is necessary for safety. On this command, *put the safety on, remove the magazine, pull the arming handle to the rear* and *push up on the bolt stop* to hold the bolt to the rear. The assistant instructors on the firing line will then check to see that each rifle is clear on those firing points they control.

For a further explanation of fire commands refer to FM 23-15.

92. SAFETY PRECAUTIONS, RANGE FIRING

Safety precautions are important during all training, and especially on the range. Do not relax your observance of safety precautions or assume that a weapon is unloaded until you have checked it carefully.

The safety precautions for range firing prescribed in FM 23-5 apply equally as well with the T48 rifle.

93. KNOWN-DISTANCE FIRING — T48 RIFLE

The standard course is prescribed in 11 tables. This course is designed to teach you how to shoot the rifle and how to use the battle sight in firing at field targets at various ranges. The standard course includes known-distance firing and transition firing. When you complete the standard course, you are qualified to advance to the team phase.

The known-distance part of the standard course is prescribed in eight tables. Tables I through VI are fired at least once during instruction for practice, tables VII and VIII are fired once for record. During known-distance firing you will use the sling and apply all the principles of rifle marksmanship taught during preparatory training.

Transition firing, prescribed in tables IX, X, and XI, includes firing at field targets from combat type positions as well as firing at surprise targets from very short ranges. It is preceded by preliminary marksmanship training in the theory and use of the battle sight at ranges up to 400 yards.

The total of your record firing scores for tables VII and VIII determines your classification as a rifleman. The minimum standard course qualifying scores for the three classifications are—

Expert rifleman	272 points
Sharpshooter	240 points
Marksman	205 points

Table I. Standard Course, Instruction Firing, 1000" Slow Fire For Zezo.

Range (inches)	Time	Rounds	Position
1000	No limit	*9	**Prone

* The rifle is zeroed in 3-round groups.

** The sandbag is optional. If used, it should be limited to the first two shot groups except where the firer has a strong tendency to flinch.

Table II. Standard Course, Instruction Firing, 1000" Slow Fire.

Range (inches)	Time	Rounds	Position
1000	No limit	8	Prone
1000	No limit	8	Sitting
1000	No limit	8	Kneeling
1000	No limit	8	Standing

Scoring note — Score only the fives, fours, and threes.

*Table III. Standard Course, Instruction Firing, 1000".**

Range (inches)	Time (seconds)	Rounds	Position
1000	83	**16	Prone from Standing
1000	83	**16	Sitting from Standing

* Fired twice during practice firing.

** Sustained fire with the T48 begins with a magazine of 6-rounds loaded in the rifle and a clip of 10-rounds in the rifle belt.

Scoring note — Score only the fives, fours, and threes.

Table IV. Standard Course, Instruction Firing, Known-Distance, Slow Fire For Zero.

Range (yards)	Time	Rounds	Position
100	No limit	*9	**Prone
200	No limit	*9	Prone
300	No limit	*9	Prone
500	No limit	*9	Prone

* The rifle is zeroed in 3-round groups.

** The sandbag is optional. If used, it should be limited to the first two shot groups except where the firer has a strong tendency to flinch.

Table V. Standard Course, Instruction Firing, Known-Distance Slow Fire.

Range (yards)	Time	Rounds	Position
100	No limit	8	Standing
200	No limit	8	Sitting
200	No limit	8	Kneeling
300	No limit	8	Prone
500	No limit	8	Prone

*Table VI. Standard Course, Instruction Firing, Known-Distance Sustained Fire.**

Range (yards)	Time (seconds)	Rounds	Position
200	83	**16	Sitting from Standing
300	83	**16	Prone from Standing

* Fired twice during practice firing.

** Sustained fire with the T48 begins with a magazine of 6-rounds loaded in the rifle and a clip of 10-rounds in the rifle belt.

*Table VII. Standard Course, Record Firing, Known-Distance Slow Fire.**

Range (yards)	Time	Rounds	Position
100	No limit	8	Standing
200	No limit	8	Kneeling
300	No limit	8	Prone
500	No limit	8	Prone

* Fired once during practice firing and once for record.

*Table VIII. Standard Course, Record Firing, Known-Distance Sustained Fire.**

Range (yards)	Time (seconds)	Rounds	Position
200	83	**16	Sitting from Standing
300	83	**16	Prone from Standing

* Fired once during practice firing and once for record.

** Sustained fire with the T48 begins with a magazine of 6-rounds loaded in the rifle and a clip of 10 rounds in the rifle belt.

94. TRANSITION FIRING—T48 RIFLE

The transition phase of the standard course is fired as prescribed in FM 23-5. If your total score for record on transition is 165 or more, you have confirmed your classification made on the known-distance range. If you fail to make this score, you may fire transition once more, ammunition and other circumstances permitting.

95. COURSES A, B, C AND D

Wherever facilities are available, the standard course should be fired. However, all the facilities required to fire the standard course may not be present. Four other courses, in order of preference, are prescribed to meet such conditions:

Course A—100, 200, and 300 yards.

Course B—100 and 200 yards.

Course C—200 yards only.

Course D—1,000 inches only.

If Course A, B or C is chosen, and if transition facilities are available, your commander will incorporate transition firing into the chosen courses. It will be conducted the same as in the standard course. Transition firing is not prescribed for Course D.

In firing courses A, B, or C, the total of your record firing scores for tables VII and VIII will determine your classification as a rifleman. In firing Course D, your total record firing score for tables IV and V will determine your classification. The minimum qualifying scores for each course are:

Course A—

Expert 272
Sharpshooter 240
Marksman 205

Course B—

Expert 237
Sharpshooter 209
Marksman 179

Course C—

Expert	225
Sharpshooter	197
Marksman	165

Course D—

Expert	237
Sharpshooter	209
Marksman	179

Table I. Instruction Firing For Zero, 1,000-Inch Range.

Course	Position	No. of Rounds
A	Prone	*9
B	Prone	*9
C	Prone	*9
D	Prone	*9

*The rifle is zeroed in 3-round groups. The sandbag is optional.

Table II. Instruction Firing, Slow Fire, 1,000-Inch Range.

Course	Position and Number of Rounds Prone	Sitting	Kneeling	Standing
A	8	8	8	8
B	8	8	8	8
C	8	8	8	8
D	8	8	8	8

*Table III. Instruction Firing, *Sustained Fire, 1,000-Inch Range.*

Course	Position and Number of Rounds Prone	Sitting
A	16	16
B	16	16
C	16	16
D	16	16

*Sustained fire begins with a magazine of 6 rounds loaded in the rifle and a clip of 10 rounds in the rifle belt. Each run must be completed within 83 seconds.

*Table IV. Instruction Firing for *Zero, Known-Distance Range.*

Course	Range, Position and Number of Rounds			
	Prone 100	Prone 200	Prone 300	Prone 500
A	9	9	9	--
B	9	9	--	--
C	--	9	--	--

*The rifle is zeroed in 3-round groups. The sandbag is optional.

Table IV. Record Firing, Slow Fire, 1,000-Inch Range.

Course	Position and Number of Rounds		
	Prone	Kneeling	Standing
D	8	8	8

Table V. Instruction Firing, Slow Fire, Known-Distance Range.

Course	Range, Position and Number of Rounds						
	Standing 100	Prone 200	Sitting 200	Kneeling 200	Standing 200	Prone 300	Prone 500
A	8	8	8	8	--	8	--
B	8	8	8	8	--	--	--
C	--	8	8	8	8	--	--

*Table V. Record Firing, *Sustained Fire, 1,000-Inch Range.*

Course	Position	Time (seconds)	No. of Rounds
D	Prone	83	16
	Sitting	83	16

*Sustained fire begins with a magazine of 6 rounds loaded in the rifle and a clip of 10 rounds in the rifle belt.

*Table VI. Instruction Firing, *Sustained Fire, Known-Distance Range.*

Course	Range, Position and Number of Rounds			
	Prone 200	Sitting 200	Prone 300	Time (seconds)
A	....	16	16	83
B	16	16	....	83
C	16	16	....	83

*Sustained fire begins with a magazine of 6 rounds loaded in the rifle and a clip of 10 rounds in the rifle belt.

Table VII. Record Firing, Slow Fire, Known-Distance Range.

Course	Range, Position and Number of Rounds				
	Standing 100	Prone 200	Kneeling 200	Standing 200	Prone 300
A	8	8	8	..	8
B	8	8	8	..	..
C	..	8	8	8	..

*Table VIII. Record Firing, *Sustained Fire, Known-Distance Range.*

Course	Range, Position and Number of Rounds			
	Prone 200	Sitting 200	Prone 300	Time (seconds)
A	....	16	16	83
B	16	16	....	83
C	16	16	....	83

*Sustained fire begins with a magazine of 6 rounds loaded in the rifle and a clip of 10 rounds in the rifle belt.

96. KNOWN-DISTANCE FIRING—T48E1

Tables I and II of the standard course in FM 23-15 will be fired on the 1,000-inch range with the T48E1 rifle. The target presently used for 1,000-inch firing with the automatic rifle will be used. Where single shots are indicated, place the change lever on the "A" setting and use trigger manipulation.

Tables III, IV, and V of the standard course in FM 23-15 will be fired for known-distance instruction and record practice with the T48E1. The firing will be conducted the same as for the automatic rifle. Where single shot firing is indicated in the above tables, place the change lever on the "A" setting and get single shots through trigger manipulation.

The total of your record firing scores for tables IV and V determines your classification as an automatic rifleman. The minimum standard qualifying scores for the three classifications are:

Expert automatic rifleman 215
Sharpshooter automatic rifleman 190
Marksman automatic rifleman 150

To maintain your classification you must score a minimum of 130 points on the transition range.

97. TRANSITION FIRING—T48E1

Tables VI, VII and VIII of the standard course in FM 23-15 will be fired for transition instruction and record practice with the T48E1 rifle. The firing will be conducted the same as for the automatic rifle. Where single shot firing is indicated, place the change lever on the "A" setting and use trigger manipulation.

Section IV. PIT OPERATION

98. INSTRUCTION FIRING

During this phase of your training, the pit operation for the T48 is as prescribed in FM 23-5, and in FM 23-15 for the T48E1.

99. RECORD FIRING

During record firing the pits are operated the same as during instruction firing except that pit score cards are used. There will be one target operator for each target. In addition to the scorers prescribed for the firing line, pit scorers, from units other than those firing, will be assigned on a basis of one scorer for two targets. One officer (or qualified NCO) for a maximum of eight targets will be stationed in the pits to supervise marking and scoring.

Firing line and pit scores are compared by telephone at the conclusion of each order of firing, or as required during firing. The supervisory officer on the firing line rules on any discrepancies.

Personnel detailed to operate, mark, and score targets in the pits are not informed of the identity of the firers. Pit score cards are identified by target and order number only. At the conclusion of the day's firing, the pit scores are turned over to the organization commander for verification of firing line records. In the event of discrepancies which cannot be resolved, the pit score card governs.

Record scores are recorded on DA Form 83, Rifle Score Card.

Pit score cards are provided locally. DA Form 83, modified to include only order and target numbers, may be used.

In addition, the pits may be operated during slow fire by having the scoring NCO keep a score card on each of his two targets by the target number and the order firing. As the target operator pulls his target the scoring NCO checks the target and places a small circle around the bullet hole and numbers the shot on the target. If it is shot number 2 he places a small 2 by the bullet hole. The scoring NCO then fills in his score card for that shot and allows the target operator to MARK the target. However, during slow fire the target operator does not paste the bullet holes, but leaves them in the target until the firer has completed the prescribed number of shots.

When the firer has completed firing, the target operator pulls the target. The officer or NCO in charge of eight targets checks the target against the score card and insures the proper score on the card. As he checks each target he picks up the score card. After checking all eight score cards he compares the cards with the corresponding cards on the firing line by telephone. The cards are then returned to the scoring NCO. As soon as each target has been checked, the target operator pastes his target.

At the completion of sustained fire or automatic fire exercises all targets are marked and lowered into the pits. As soon as the target has been lowered, the scoring NCO checks each target and fills out the score card by placing the number of fives, fours, threes or misses in the proper spaces. The targets are not pasted until they have been checked by the assistant pit officer. After the targets have been marked the assistant pit officer checks each target and score card and then allows the target to be pasted. When the targets are checked the pit score cards are com-

pared with the firing line score cards and the supervisory officer on the firing line rules on any discrepancies. At the completion of the days firing, the pit officer is responsible for obtaining the pit score cards. These score cards are given to the officer in charge of firing.

Section V. EQUIPMENT AND TARGETS

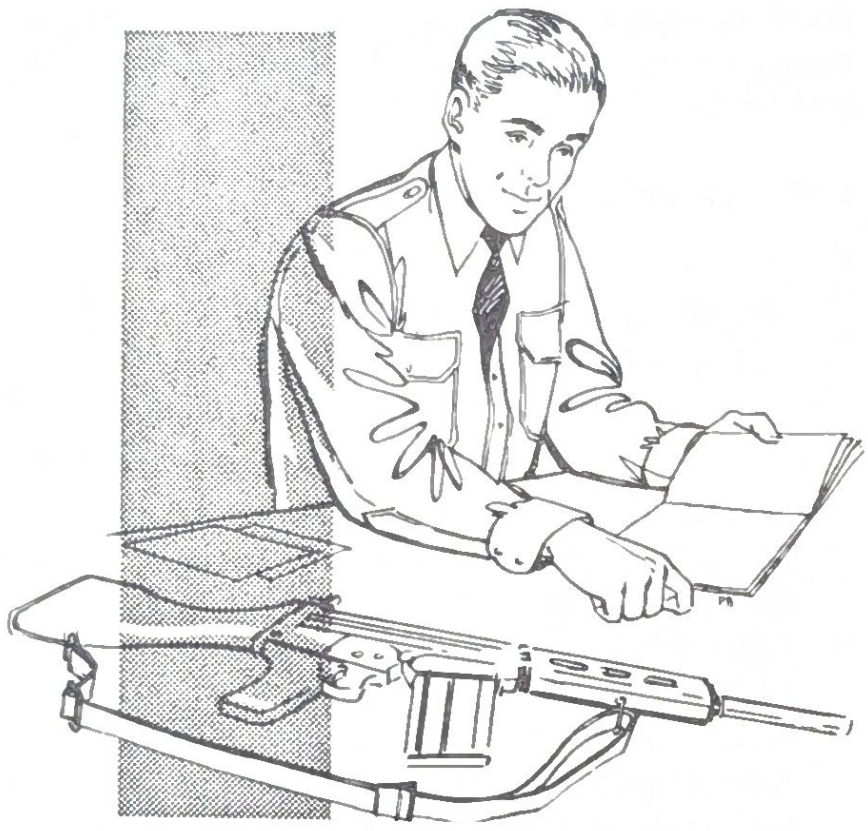
100. T48

A great amount of equipment is needed to teach you how to shoot your rifle. There is equipment for the preparatory field, the range, the firing line, and the pit. A list of the equipment that can be used for the T48 rifle is contained in FM 23-5.

101. T48E1

The equipment required for preparatory marksmanship training and known-distance range firing with the T48E1 may be found in FM 23-15.

Chapter 4— ADVICE TO INSTRUCTORS



Section I. GENERAL

102. PURPOSE

The material contained in this chapter is advisory and should be considered as a guide only. Instruction on the T48 and T48E1 rifles is based to a large extent on the instructional methods and techniques developed over several years with the M1 rifle and the automatic rifle. The contents of this text should therefore not limit your imagination and initiative, or the scope of your instruction.

Many of the points covered in FM 23-5 and FM 23-15 are applicable to your presentation of instruction on the T48 and T48E1 rifles. Use the information contained in those manuals fully in preparing your instruction.

103. SUBJECT SCHEDULES

To aid in the individual training phase, subject schedules and training notes for a course in rifle marksmanship training are contained in section II. The subject schedules are based on the desirable number of training hours for a rifle course. Use them as a guide in preparing lesson plans. Conditions may require a longer or shorter period to complete the training. When available, more training time should be added to the subject schedules. This will help develop efficient and fully trained riflemen. When suggested references, equipment, and training aids are not available, improvise or substitute the best you can obtain.

104. TRAINING NOTES AND TRAINING PROGRAM

Training notes supplement the subject schedules and provide detailed procedure to be followed for each period. During training, supplement your conferences with demonstrations. Teach at a speed that enables the individual to clearly grasp the material presented. Allot most of the training time to applying the principles brought out in the conferences and demonstrations. For this practical work, organize the unit into small groups and place an assistant instructor in charge of each group.

The training program meets the requirement for training riflemen quickly and thoroughly in the basic essentials of rifle marksmanship. *Use this program as a guide.* For training purposes, an hour is considered to be 50 minutes except for range firing, when an hour is 60 minutes.

105. ALLOTMENT OF TRAINING HOURS FOR A T48 RIFLE MARKSMANSHIP COURSE

	Hours
Mechanical training	4
Preparatory marksmanship training	24
Range firing:	
Instruction firing, 1,000-inch	8
Instruction firing, known-distance	16
Practice record firing, known distance	8
Record firing, known-distance	8
Preliminary transition firing	6
Transition instruction and record firing	12
Total	86

Section II. SUBJECT SCHEDULES AND TRAINING NOTES FOR RIFLE MARKSMANSHIP TRAINING

106. MECHANICAL TRAINING—4 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
1	1	Describe the T48 Rifle: Disassemble and assemble the barrel and receiver group.	Par. 6-7	Preferably a large classroom with chairs and tables; otherwise any suitable training area.	For Instructor: T48 and T48E1 rifle, combination tool, blackboard, dummy round, GTA 6.70/1. For Soldier: T48 rifle, combination tool or dummy round, plus one T48E1 rifle per setup.
2	1	Functioning of the barrel and receiver group (1st and 2d phase).	Par. 17-19	Classroom with chairs, tables & suitable training area for using a Vu-graph.	For Instructor: Same as for period 1 plus plastic working model, Vu-graph & screen, GTA 6.70/1. For Soldier: Same as for period one.
3	½	Functioning: Barrel and receiver group (3d & 4th phase).	Par. 20-21	do	For Instructor: Same as for period two. For Soldier: Same as for period one.
4	½	Operation, spare parts, ammunition, care and cleaning gas adjustment.	Par. 3, 22-31, 37-43	Same as for period one.	For Instructor: T48 rifle, combination tool, dummy rounds, blackboard, and chalk, cleaning and lubricating materials. For Soldier: Same as for period one.
5	1	Stoppages and immediate action.	Par. 32-36	do.....	For Instructor: Rifle, combination tool, dummy round, Vu-graph and screen, slides, plastic working model. For Soldier: Rifle and combination tool.

P—*Period*
H—*Hours*

107. TRAINING NOTES, MECHANICAL TRAINING, T48 RIFLE

FIRST PERIOD—1 HOUR

The object of this lesson is to teach the characteristics and general data of the T48 and T48E1 rifles, and the disassembly and assembly of the barrel and receiver group. Nomenclature is not scheduled as a separate subject but is learned during mechanical training.

With the men seated at tables, have the rifles checked for safety and all ammunition checked for the presence of live rounds (*5 min.*). No live rounds are to be used.

Explain and describe the characteristics and general data of the rifle. Talk an assistant instructor through the dissassembly of the barrel and receiver group, including the bolt (*10 min.*).

Explain, demonstrate, and conduct practical work in disassembling and assembling the barrel and receiver group and the bolt (*35 min.*).

SECOND PERIOD—1 HOUR

During this period the soldier is introduced to the functioning of the barrel and receiver group, including the rearward and forward phases of functioning.

Introduce functioning of the barrel and receiver group (*10 min.*).

Explain and demonstrate the first and second phases of functioning of the barrel and receiver group (*40 min.*).

THIRD PERIOD—½ HOUR

The object of this period is to teach the third and fourth phases of functioning.

Explain and demonstrate the third phase of functioning (*15 min.*).

Explain and demonstrate the fourth phase of functioning (*5 min.*).

For practical work, have the assistant instructors review the phases of functioning with the members of their groups (*10 min.*).

FOURTH PERIOD—½ HOUR

The object of this lesson is to teach the soldier how to operate his rifle; explain the availability of spare parts; describe the types of ammunition used; instruct him in caring for and cleaning his rifle and teach him how to adjust the gas so his rifle operates properly.

Explain and demonstrate the operation of the T48 rifle (*5 min.*).

Discuss the availability of spare parts (*5 min.*).

Explain the importance of care and cleaning. Discuss and demonstrate authorized cleaning materials, lubricants and the accessories used. Explain care and cleaning in garrison, before firing, during firing, and after firing. Care and cleaning under unusual conditions is normally taught before these conditions are actually encountered (*15 min.*).

Explain how to adjust the gas regulating sleeve. This adjustment must be made if the rifle is to function properly (*5 min.*).

FIFTH PERIOD—1 HOUR

The object of this lesson is to teach the causes of stoppages, how to clear them and how to apply immediate action.

Name the different types of stoppages and explain each one by a series of Vu-Graph slides. Each man should be able to identify each of the stoppages before the class is concluded (*35 min.*).

Explain and demonstrate how to apply immediate action when a stoppage occurs (*15 min.*).

108. PREPARATORY MARKSMANSHIP T48 RIFLE

P	H	Lessons	Text References	Area	Training Aids and Equipment
6	1	Marksmanship in general, sighting and aiming, 1st sighting and aiming exercise.	Par. 44, 47; FM 23-5; TIS Special Text 23-5-1 (Hits Count).	Drill field or any suitable training area.	For Instructor: 1 sighting bar for each two soldiers, 1 sight picture device, 1 blackboard w/chalk, or chart. For Soldier: T48 rifle, combination tool, rifle belt, notebook and pencil.
7	1	1st and 2d sighting and aiming exercises.	Par. 47 and FM 23-5.	do.....	For Instructor: Same as period six plus material for blackening sights, and one of following for every four soldiers: rifle rest, sighting disk, and small box w/paper, pencil and thumb tacks. For Soldier: Same as period six.
8	1	3d sighting and aiming exercise.	Par. 47 and FM 23-5.	Drill field or any suitable area.	For Instructor: Material for blackening sights, one of following for every 4 soldiers: rifle rest, sighting disk, small box with paper, pencil and thumb tacks. For Soldier: Same as period six.
9	1	Adjustment of loop sling, prone position.	Par. 49-50	do.....	For Instructor: One rifle with sling, one stake or box with 1,000-inch target. For Soldier: Same as period six.
10	1	Kneeling position.	Par. 54	do.....	For Instructor: Same as period nine. For Soldier: Same as period six.
11	1	Sitting position.	Par. 52-53	do.....	For Instructor: Same as period nine. For Soldier: Same as for period six.
12	1	Adjustment of hasty sling and standing position.	Par. 55-56 and ST 23-5-1 (Hits Count).	Drill field or any suitable training area.	For Instructor: Same as period nine. For Soldier: Same as period six.
13	1	Trigger squeeze in prone, kneeling, sitting and standing positions.	Par. 59-65	do.....	For Instructor: Same as period nine. For Soldier: Same as period six.
14	1	Sustained fire exercises, first sustained fire exercise in the prone and sitting positions.	Par. 67-68	do.....	For Instructor: Same as for period nine plus one magazine fitted with metal clamp, stop watch, and sustained fire chart or blackboard. For Soldier: Same as for period six plus one magazine with metal clamp for each two soldiers.
15	1	Second sustained fire exercise in prone and sitting positions.	Par. 69	do.....	For Instructor: Same as period fourteen. For Soldier: Same as period fourteen.

P—Period
H—Hours

P	H	Lessons	Text References	Area	Training Aids and Equipment
16	1	Third sustained fire exercise in prone and sitting positions.	Par. 70	do.....	For Instructor: One T48 rifle with sling; 1,000-inch target on stake; 1 magazine; stop watch; sustained fire chart or blackboard; 1 clip of 10 dummy rounds. For Soldier: Same as for period six plus one magazine and one clip of ten dummy rounds.
17	2	Fourth and fifth sustained fire exercises in the prone and sitting positions.	Par. 71-72	Drill field or any suitable training area.	For Instructor: Same as period sixteen. For Soldier: Same as for period sixteen.
18	2	Zeroing; sight adjustment; effect of wind; firing data card.	Par. 77-82	Class room, or outdoors with bleachers.	For Instructor: Blackboard: eraser and chalk; 1,000-inch and "A" targets; spotters; firing data card; pencil. For Soldier: Rifle; combination tool; firing data card; paper and pencil.
19	1	Range procedure and safety precautions.	Par. 85-92 and SR 385-310-1	do.....	For Instructor: Blackboard, eraser and chalk. For Soldier: Same as period eighteen.
20	8	Review, examination before range firing, and retraining.	Par. 84 and all previous references.	do.....	For Instructor: All previous equipment. For Soldier: Same as for period eighteen.

P—*Period*
H—*Hours*

109. TRAINING NOTES, PREPARATORY MARKSMANSHIP TRAINING, T48 RIFLE

Preparatory instruction in marksmanship follows mechanical training. At this point in training, the trainee must be taught the importance of accurate rifle fire; why he must do everything exactly right; and to acquire good shooting habits, that he must practice and continually try to improve. Once good habits are formed, speed and smoothness can be developed with practice.

Preparatory marksmanship training steps are taught in the order listed in paragraph 44. Each step includes the principles covered in the preceding steps. *Example*: to squeeze the trigger correctly, the firer should have a steady position and a correct sight picture. The fifth step, which includes the effect of wind, sight changes, and use of the firing data card, may be taught at any time after sighting and aiming and before the examination prior to range firing.

SIXTH PERIOD—1 HOUR

The object of this lesson is to teach each man why he must practice before he begins to shoot; to show him the importance of correct sight alinement and sight picture; to have him go through the first sighting and aiming exercise; and to show him how to act as a coach and as a pupil.

Explain preparatory marksmanship training and its importance (*15 min.*).

Explain and demonstrate correct sight alinement and sight picture. Show why sight alinement is more improtant than sight picture (*10 min.*).

Explain and demonstrate the first sighting and aiming exercise (*10 min.*).

Conduct practical work in the first sighting and aiming exercise (*15 min.*).

SEVENTH PERIOD—1 HOUR

This lesson is to review the first sighting and aiming exercise and to teach the second sighting and aiming exercise.

Review the first sighting and aiming exercise (*5 min.*).

Explain and demonstrate the second sighting and aiming exercise (*10 min.*).

Conduct practical work in the second sighting and aiming exercise (*35 min.*).

EIGHTH PERIOD—1 HOUR

During this lesson, demonstrate the importance of maintaining accurate sight alinement and sight picture and determine whether the principles of sighting and aiming are thoroughly understood.

Explain and demonstrate the third sighting and aiming exercise (*10 min.*).

Each man should make at least two plotted shot groups which are small enough to be covered by the unsharpened end of a lead pencil. Each shot group must be examined and discussed before permitting the soldier to make another shot group (*40 min.*).

NINTH PERIOD—1 HOUR

The object of this lesson is to teach the individual to make the loop sling, adjust it to his arm, and to assume the correct prone position.

Explain and demonstrate the loop sling and its adjustment (*5 min.*).

Explain and demonstrate the prone position and common errors found in this position (*10 min.*).

Conduct practical work in adjustment of the loop sling and in the prone position (*35 min.*).

TENTH PERIOD—1 HOUR

This lesson is to teach the kneeling position.

Explain and demonstrate the kneeling position and common errors found in this position (*10 min.*).

Conduct practical work in the kneeling position (*40 min.*).

ELEVENTH PERIOD—1 HOUR

The object of this lesson is to teach the sitting position.

Explain and demonstrate the sitting position and common errors found in this position (*10 min.*).

Conduct practical work in the sitting position (*40 min.*).

TWELFTH PERIOD—1 HOUR

This lesson is to teach the hasty sling adjustment and the standing position.

Explain and demonstrate the hasty sling and its adjustment (*5 min.*).

Explain and demonstrate the standing position. Emphasize the need for a steady, well-balanced position to reduce the natural wobble of the muzzle (*10 min.*).

Conduct practical work in the adjustment of the hasty sling and in the standing position (*35 min.*).

THIRTEENTH PERIOD—1 HOUR

The object of this lesson is to teach the correct principles of trigger squeeze, to develop the individual's ability to squeeze the trigger properly, and to provide additional practice in assuming all positions.

Explain and demonstrate trigger squeeze. Emphasize its importance in shooting (*15 min.*).

Conduct practical work in trigger squeeze in all positions (*35 min.*).

FOURTEENTH PERIOD—1 HOUR

The object of this lesson is to teach principles of firing at the sustained rate.

Explain the principles of and the reasons for sustained fire. Give an explanation of the time breakdown. Explain and demonstrate the first sustained fire exercise (*15 min.*).

Conduct practical work in the first sustained fire exercise in the prone and sitting positions (*35 min.*).

FIFTEENTH PERIOD—1 HOUR

The object of this lesson is to teach the second sustained fire exercise.

Explain and demonstrate taking the prone and sitting positions rapidly (*15 min.*).

Conduct practical work in taking the prone and sitting positions rapidly (*35 min.*).

SIXTEENTH PERIOD—1 HOUR

This lesson is to teach the third sustained fire exercise.

Explain and demonstrate how to recharge an empty magazine in the prone and sitting positions (*15 min.*).

Conduct practical work in recharging the magazine in the prone and sitting positions (*35 min.*).

SEVENTEENTH PERIOD—2 HOURS

The object of this lesson is to teach the individual to fire 16 rounds in 83 seconds, from standing to the prone and sitting positions.

Explain and demonstrate the fourth sustained fire exercise in the prone and sitting positions (*10 min.*).

Conduct practical work in the fourth sustained fire exercise in the prone and sitting positions (*40 min.*).

Explain and demonstrate the fifth sustained fire exercise in the prone and sitting positions (*10 min.*).

Conduct practical work in the fifth sustained fire exercise in the prone and sitting positions (*40 min.*).

EIGHTEENTH PERIOD—2 HOURS

This lesson is to teach sight adjustments on the rear and front sight; to explain the effect of wind on the flight of a bullet; and the use of the firing data card.

Describe the theory of the sights on the T48 rifle. Describe the rear sight. Explain how to adjust the declination screws, and how adjustment will affect the strike of the bullet at 1,000 inches and 300 yards (*30 min.*).

Explain the front sight adjustment (*20 min.*).

Describe the 1,000-inch, A, and B targets. Explain how to determine the velocity of the wind and wind directions (*15 min.*).

Explain and conduct practical work with the firing data card (*35 min.*).

NINETEENTH PERIOD—1 HOUR

The object of this lesson is to teach range procedure and safety precautions.

Explain range procedure and safety precautions (*50 min.*). (SR 385-310-1).

TWENTIETH PERIOD—8 HOURS

The object of this lesson is to review the important points of preparatory marksmanship and to test the men in all steps of preparatory marksmanship prior to range firing. Conduct an examination in all steps of preparatory marksmanship. All men who fail to meet the requirements of this examination must be given additional instruction in the required phases.

110. RANGE FIRING—40 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
21	8	Instruction firing Tables I, II, and III, standard course. Use 1,000-inch "A" target throughout. Table III to be fired twice with each run preceded by a dry run.	Par. 85-87, 93; FM 23-5; TIS Special Text 23-5-1.	1,000-inch range.	For Instructor: 1,000-inch range equipment. For Soldier: Rifle, combination tool, firing data card and pencil. (Shooting coat if available.)
22	16	Zeroing and instruction firing. Slow fire, Tables IV and V, standard course, are fired once. Table VI is fired twice.	Par. 83, 85-87, 93.	Known-distance range.	For Instructor: All equipment listed in FM 23-5, par. 199b, c. (except M2 aiming device). For Soldier: Same as period twenty-one.
23	8	Practice record firing course, standard course, Tables VII and VIII.	Par. 93.	do	For Instructor: Same as period twenty-two. For Soldier. Same as period twenty-one.
24	8	Record firing, standard course, Tables VII and VIII. Qualification course.	do.....	do.....	For Instructor: Same as period twenty-two plus scorecards, pencils, and pit scoring details. For Soldier: Same as period twenty-one.

111. TRANSITION FIRING—18 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
25	6	Instruction firing, Table IX, standard course.	FM 23-5.	Known-distance range.	For Instructor: Known-distance range equipment and binoculars for each firing point. For Soldier: Same as period twenty-one.
26	6	Instruction firing, Table X and XI, standard course.	do.....	Transition range.	For Instructor: Transition range equipment. For Soldier: Same as period twenty-one.
27	6	Record firing, Tables X and XI, standard course.	do.....	do.....	For Instructor: Same as period twenty-six. For Soldier: Same as period twenty-one.

P—*Period*
H—*Hours*

112. TRAINING NOTES, RANGE FIRING, T48

TWENTY-FIRST PERIOD—8 HOURS

The object of this lesson is to familiarize the individual with firing live ammunition and to apply the principles of good shooting.

Explain and demonstrate the value of using dummy cartridges during 1,000-inch firing (*20 min.*).

Conduct instruction firing, Tables I, II and III, standard course. Table III is to be fired twice, with each run preceded by a "dry" run. Use 1,000-inch "A" targets throughout.

TWENTY-SECOND PERIOD—16 HOURS

This lesson requires the soldier to zero his rifle with live ammunition and perfect his shooting ability before firing for qualification.

Slow fire, Tables IV and V, standard course, are fired once. Table VI is fired twice.

TWENTY-THIRD PERIOD—8 HOURS

The object of this lesson is to perfect shooting ability on the course to be fired for qualification. Fire for practice, standard course, Tables VII and VIII.

TWENTY-FOURTH PERIOD—8 HOURS

During this period the soldier is tested for qualification in rifle marksmanship. Fire standard course, Tables VII and VIII for record. Use pit scoring system.

113. TRAINING NOTES, TRANSITION FIRING, T48

TWENTY-FIFTH PERIOD—6 HOURS

This lesson familiarizes the individual with the use of a common aiming point while using the battle sight at 200, 300 and 400 yards. Conduct instruction firing, Table IX, standard course.

TWENTY-SIXTH PERIOD—6 HOURS

The object of this lesson is to perfect the individual's ability to engage field type targets at unknown ranges, using the battle sight, before firing for qualification. Conduct instruction firing, Tables X and XI, standard course.

TWENTY-SEVENTH PERIOD—6 HOURS

This lesson is to test for qualification in transition firing. Fire for record Tables X and XI, standard course.

114. ALLOTMENT OF TRAINING HOURS FOR A RIFLE MARKSMANSHIP COURSE, T48E1 RIFLE

	Hours
Mechanical training	2
Preparatory marksmanship training	6
1000-inch firing	4
Known-distance instruction firing. Tables III, IV, and V, FM 23-15	8
Known-distance record firing. Tables IV and V, FM 23-15	6
Preparation for transition firing. Table VI, FM 23-15	4
Transition firing for record practice. Tables VII and VIII, FM 23-15	6
Total	36

115. MECHANICAL TRAINING—2 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
1	2	Review functioning on the automatic setting; stoppages and immediate action.	Par. 17-21, 32-36.	Classroom or suitable training area equipped with tables and chairs.	For Instructor: T48E1 rifle; dummy cartridges; magazine; table; GTA 6.70/1; Vu-Graph w/screen; stoppage slides; gas system and feeding charts. Also large wooden working model if Vu-Graph is not available. For Soldier: T48 rifle; dummy cartridge; magazine.

P—*Period*
H—*Hours*

116. PREPARATORY MARKSMANSHIP TRAINING—6 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
2	1	Introduction to preparatory marksmanship. Review sighting and aiming exercises.	Par. 44, 47.	1,000-inch range or other training area suitable for preparatory marksmanship training.	For Instructor: T48E1 rifle; T48E1 rifle belt; sighting and aiming bar; aiming stake; T48E1 rifle rest (box); box with sheet of white paper attached; bull's-eye disk; pencil; sight blackening equipment; sight picture model; first aid box; public address system (if available); and a table. For every 2 Soldiers: sighting and aiming bar.
3	1	Preparatory marksmanship, position exercise.	Par. 51-54, 58. TIS Spl. Text 23-5-1 (Hits Count).	do.....	For Instructor: T48E1 rifle, T48E1 rifle belt, 1,000-inch target, magazine, table, sight blackening equipment, first aid box, public address system (if available). For Soldier: T48E1 rifle, T48E1 rifle belt. For every 2 Soldiers: 1,000-inch target.
4	1	Preparatory marksmanship: trigger manipulation exercise.	Par. 64-66.	1,000-inch range or other training area suitable for preparatory marksmanship training.	For Instructor: T48E1 rifle, T48E1 rifle belt, magazine, chart on trigger manipulation, 1,000-inch "A" target, table, first aid box, sight blackening equipment, and a public address system (if available). For each Soldier: T48E1 rifle, T48E1 rifle belt, magazine. For every 2 Soldiers: 1,000-inch target.
5	1	Preparatory marksmanship: automatic fire exercise.	Par. 73-75.	do.....	For Instructor: Same as for period four, plus one magazine. For every 2 Soldiers: Same as for period four, plus one magazine.
6	1	Preparatory marksmanship: review zeroing, effect of the wind, firing data card, range procedure, safety precautions.	Par. 77-82, 85-92; SR 385-310-1.	do.....	For Instructor: Rifle, "B" target in frame with spotters, firing data card and clock system, pencil, table, blackboard w/chalk and eraser, public address system (if available). For Soldier: Pencil, firing data card, T48E1 and belt.
7	1	Examination	Par. 84 and all previous references.	do.....	For Instructor: Sighting and aiming bar; 9 T48E1 rifles; 9 T48E1 rifle belts; 2 tables; sight picture device; 4 aiming stakes; 4 1,000-inch targets; 1 chair. For Soldier: Same as for period six.

P—*Period*
H—*Hours*

117. RANGE FIRING—28 HOURS

P	H	Lessons	Text References	Area	Training Aids and Equipment
8	4	Marksmanship training range procedure, safety regulations, 1,000-inch instruction firing. Tables I and II, standard course. (FM 23-15).	Par. 85-92, 96; FM 23-15; SR 385-310-1.	1,000-inch range complete.	For Instructor: Instructor stand; sight blackening equipment; ammunition; firing data card; cleaning and preserving materials; dummy cartridges; cleaning rod; whistles; stop watches; spare rifles; public address system (if available). For Soldier: T48E1 rifle; T48E1 rifle belt; 4 magazines; cleaning rod; firing data card; pencil. For every ten Soldiers: Front sight wrench and screw driver.
9	8	Marksmanship training: range procedure; safety regulations; instruction firing, Tables III, IV, and V, standard course (FM 23-15).	Par. 135, 146, 147, 231-235, of FM 23-15.	Known-distance range complete.	For Instructor: Same as for period eight plus binoculars and telephones. For each Soldier: T48E1 rifle; T48E1 rifle belt; 4 magazines; cleaning rod; firing data card; pencil. For every ten Soldiers: Front sight wrench and screw driver.
10	6	Marksmanship training: range procedure; safety regulations; record firing, Tables IV and V, standard course (FM 23-15).	Par. 135, 146, 147, 231-235, of FM 23-15.	do.....	For Instructor: Same as for period nine plus indelible pencils; pit scorecards and scoring detail. For Soldier: Same as for period nine.
11	4	Marksmanship training: range procedure; safety regulations; preliminary instruction in the use of the battle sight; using aiming point; instruction firing, Table VI. (FM 23-15.)	Par. 135, 146, 147, 165-171, of FM 23-15.	Known-distance range complete. *Note.* Special target preparation, FM 23-5.	For Instructor: Same as for period nine plus chart to show aiming point with battle sight. For Soldier: Same as for period nine.
12	6	Marksmanship training: record practice fire, Tables VII and VIII.	Par. 135, 146, 167, 219, 220, 231-235 of FM 23-15.	Field target ranges, FM 23-5.	For Instructor: Instructor stand; sight blackening equipment; ammunition; cleaning and preserving equipment; cleaning rod; whistles; stop watches; spare rifles; first aid kit; public address system (if available). For Soldier: T48E1 rifle; 4 magazines; cleaning rod; firing data card; pencil.

P—*Period*
H—*Hours*

118. TRAINING NOTES, MECHANICAL TRAINING, T48E1 RIFLE

FIRST PERIOD—2 HOURS

Review the functioning of the T48E1 when on the automatic setting.

Discuss the various stoppages which are likely to occur and the methods for reducing them. These stoppages can be more effectively presented by the use of plastic working models and plastic slides used with the Vu-Graph.

Explain, demonstrate, and supervise practical work on the first and second phases of immediate action.

119. TRAINING NOTES, PREPARATORY MARKSMANSHIP, T48E1 RIFLE

Organize the class into small groups under the supervision of qualified assistant instructors. Emphasize and closely supervise practical work. Effective use of appropriate charts and other training aids will facilitate this training. Rehearsal and orientation of assistant instructors should be accomplished prior to each instruction period.

SECOND PERIOD—1 HOUR

The purpose of this lesson is to introduce preparatory marksmanship, and to emphasize correct sight alinement and its importance in the sight picture.

The sight picture model is an excellent training aid for use in the conference portion of instruction on sighting and aiming.

Practical work should be closely supervised.

THIRD PERIOD—1 HOUR

This lesson is to teach firing positions for the T48E1 rifle.

Explain and demonstrate the prone, sitting, kneeling, and crouch fire positions.

Conduct and supervise practical work in the prone position.

Conduct and supervise practical work in adjustment of the loop and hasty slings in conjunction with the sitting and kneeling positions.

FOURTH PERIOD—1 HOUR

The purpose of this lesson is to teach trigger manipulation.

Stress the importance of proper trigger manipulation in controlling the number of rounds in a burst.

Explain and demonstrate the trigger manipulation exercise.

Conduct and supervise practical work on the trigger manipulation exercise.

FIFTH PERIOD—1 HOUR

The purpose of this lesson is to teach the rifleman the proper method of loading and changing magazines to maintain his rate of fire.

Explain and demonstrate the correct method for placing magazines in the belt.

Conduct and supervise practical work on the correct method of placing magazines in the belt.

Conduct and supervise practical work on loading the initial magazine, changing magazines, and clearing the rifle.

Conduct and supervise practical work on the two magazine changing exercises, including the procedure followed if a stoppage occurs.

SIXTH PERIOD—1 HOUR

This lesson is to teach zeroing, adjustment of the sights, effect of the wind, use of the firing data card, range procedure and safety precautions.

Review the method of adjusting the sights when zeroing.

Explain and demonstrate the use of the firing data card, and how to determine the velocity of the wind in zeroing.

Review range procedure and safety precautions.

SEVENTH PERIOD—1 HOUR

In this period give an examination to determine retention of the material covered during preparatory marksmanship training.

Explain the procedures to be followed in the examination.

Give the examination. Include questions on all material covered during the preceding six periods.

Retrain where necessary.

120. TRAINING NOTES, RANGE FIRING, T48E1 RIFLE

There should be at least one trained assistant instructor for every four or five firing points. Whenever possible, assistant instructors should be assigned to the same students they supervised during preparatory marksmanship training.

Give an orientation before firing. Emphasize the need for continuously applying what wa learned in preparatory marksmanship training. Review range regulations and safety precautions.

EIGHTH PERIOD—4 HOURS

The purposes of this lesson are to continue the instruction presented during the previous periods; to acquaint the soldier with the T48E1 rifle before firing on the known-distance range; to enable the firer to zero his rifle; and to conduct and supervise the firing of Tables I and II, standard course, FM 23-15.

NINTH PERIOD—8 HOURS

This lesson permits the soldier to obtain his 300 yard zero, and to become familiar with known-distance firing procedures.

Explain the importance of marksmanship training and discuss the course to be fired.

Review range procedures and safety precautions.

Conduct and supervise the firing of Tables III, IV, and V of the standard course, FM 23-15.

TENTH PERIOD—6 HOURS

The purpose of this lesson is to determine the soldier's ability to fire the T48E1 rifle and to provide him the opportunity to fire the known-distance portion of the record course.

Discuss the record course. Review range procedures and safety precautions.

Conduct and supervise the firing of Tables IV and V, standard course, FM 23-15.

ELEVENTH PERIOD—4 HOURS

This lesson reviews the use of an aiming point and the method of engaging field-type (silhouette) targets.

Discuss the theory and use of the battle sight in firing at targets within 400 yards.

Review range procedure and safety precautions.

Conduct and supervise the firing of Table VI of the standard course, FM 23-15, in preparation for transition firing.

TWELFTH PERIOD—6 HOURS

In this lesson the soldier fires the transition portion of the record course.

Review range procedure and safety precautions.

Conduct and supervise the firing of Tables VII and VIII of the standard course, FM 23-15, for records.

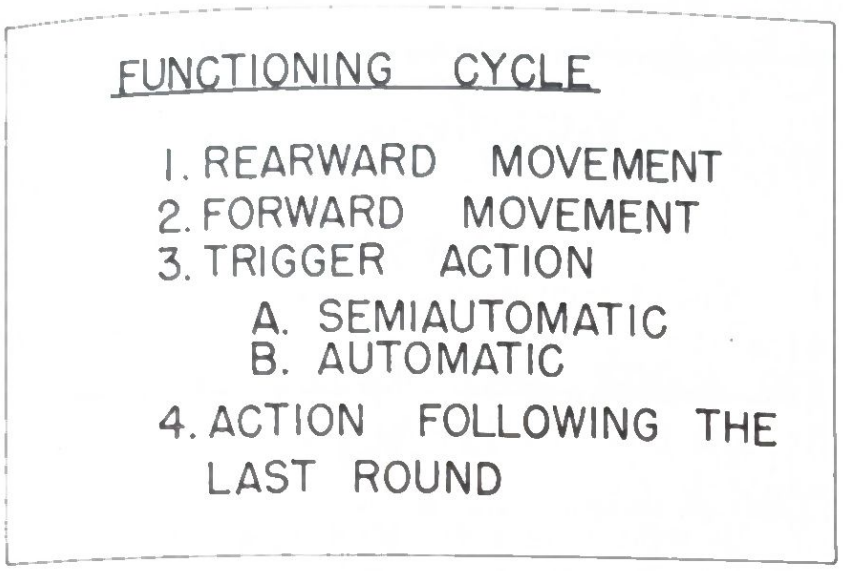
Section III. TRAINING AIDS

121. As a guide in the construction and use of training aids it is recommended that models or charts used for mechanical training be painted with contrasting colors to assist the class in locating the various parts. Before using a multicolored chart or working model, explain the significance of the various colors. Models and charts should be mounted on stands so they can be seen by the the entire class.

All lettering on charts, models and other training aids must be large enough to be read easily. Lettering 2½ inches high can be read at a distance of 75 feet.

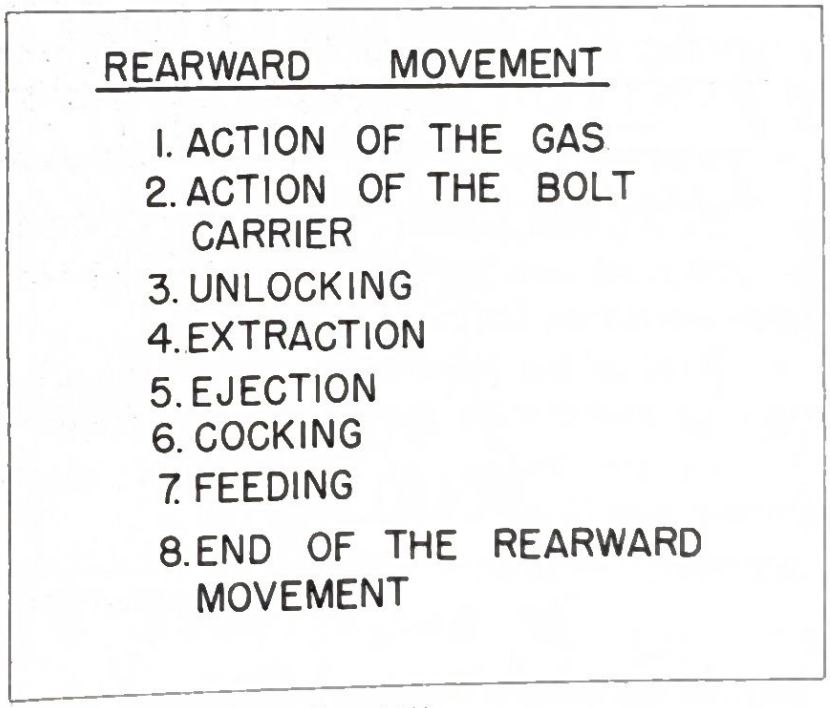
Charts painted or drawn on heavy paper are as satisfactory as those painted on wood, however, wooden charts will withstand harder usage than paper.

A blackboard will be useful both indoors and outdoors for certain parts of the instruction.



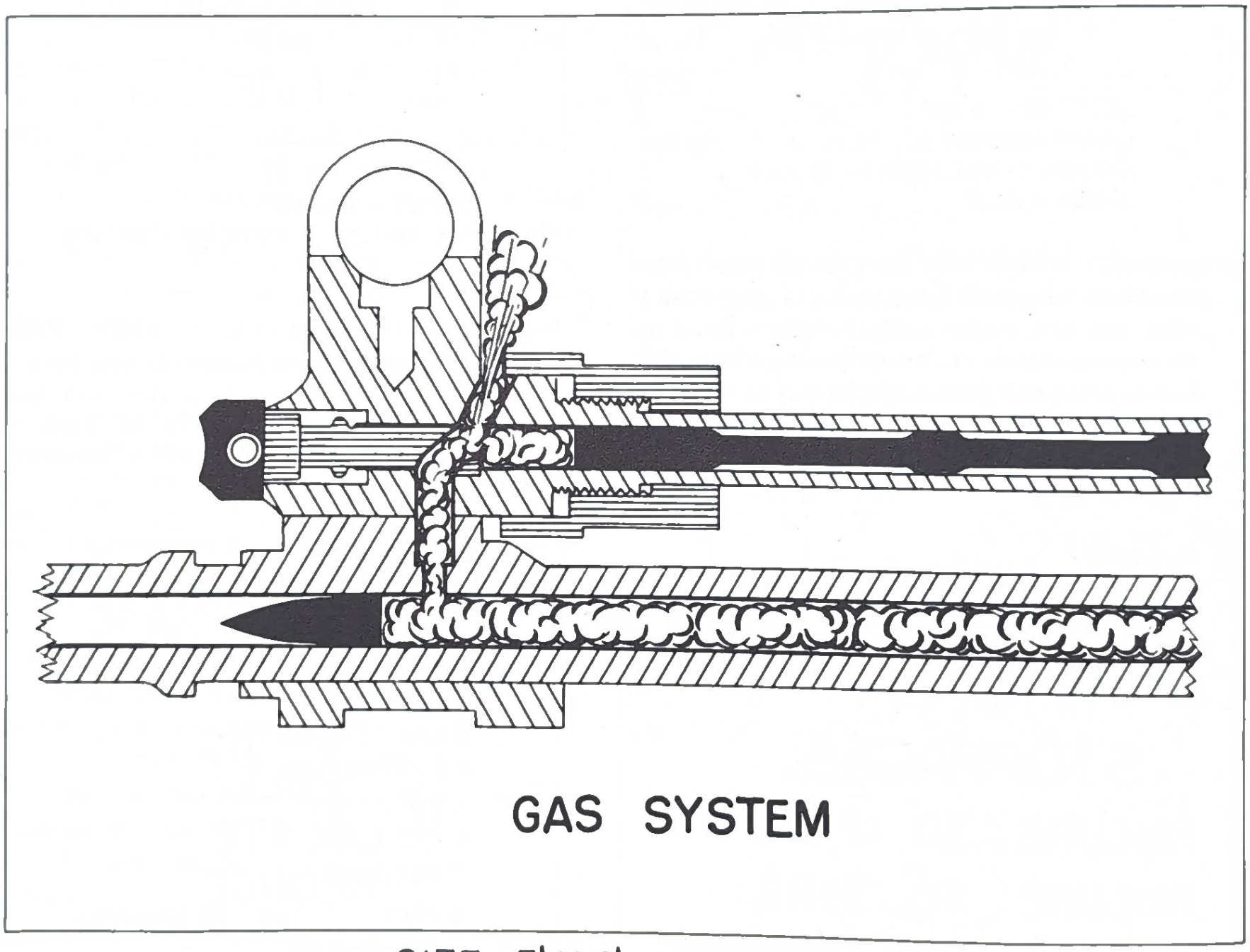
LETTERS–BLACK, 4 IN.
CHART- PAPER
SIZE - 4'X 4'

Figure 49. FUNCTIONING CYCLE. The four phases of functioning of the T48 and T48E1 rifles are listed above. This chart is used in the introduction to functioning. Explain that each phase will be divided into steps of functioning and briefly, what is contained in each of the phases of functioning.



LETTERS – 4 IN.
CHART– PAPER
COLOR OF LETTERS– BLACK
SIZE– 4' X 6'

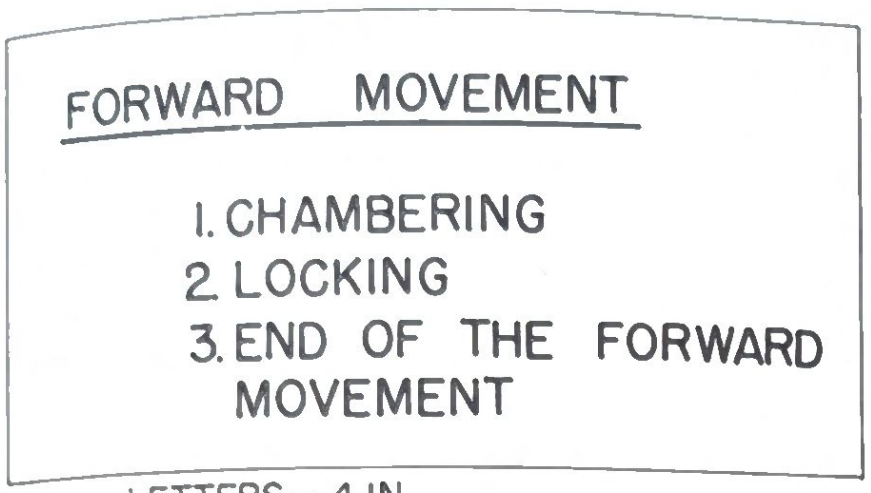
Figure 50. REARWARD MOVEMENT. The eight steps that occur in the first phase of functioning are listed above. Explain that the steps are listed in the order in which they begin, although some of the actions are occurring at the same time.



GAS SYSTEM

SIZE 3' X 4'

Figure 51. GAS SYSTEM. This chart is utilized during instruction in the first step of functioning in the rearward movement. Explain the parts of the gas system and the action that takes place when the cartridge has been fired.



LETTERS – 4 IN.
CHART – PAPER
COLOR OF LETTERS – BLACK
SIZE – 4' X 4'

Figure 52. FORWARD MOVEMENT. Listed are three steps of functioning that occur in the forward movement. Explain that the steps are listed in the order in which they begin although some of the actions are occurring at the same time.

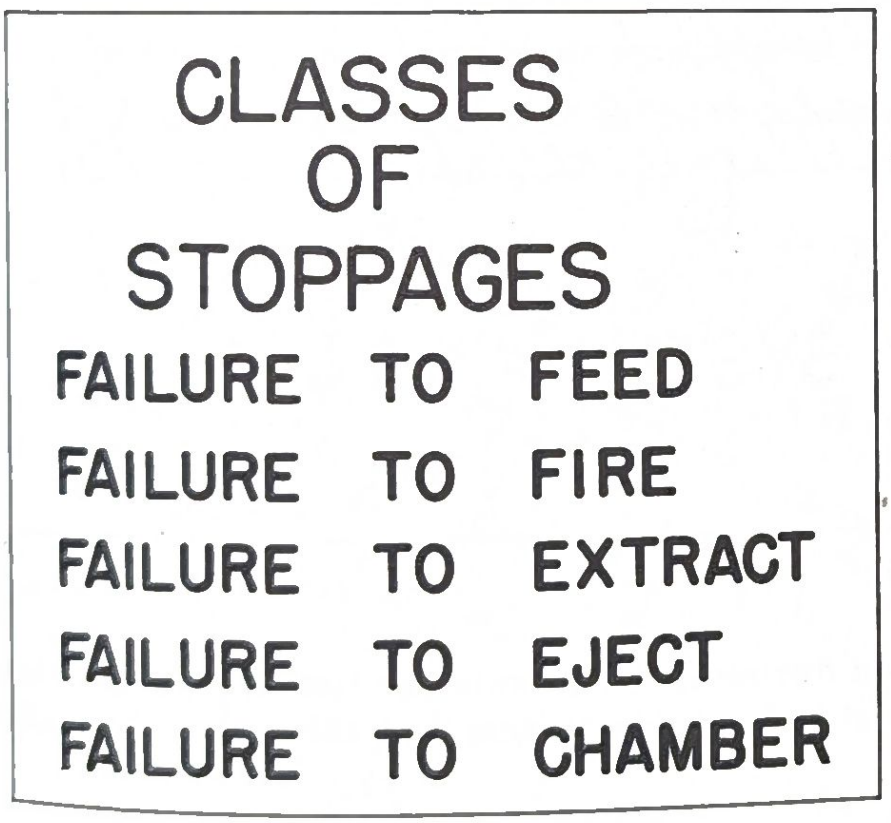
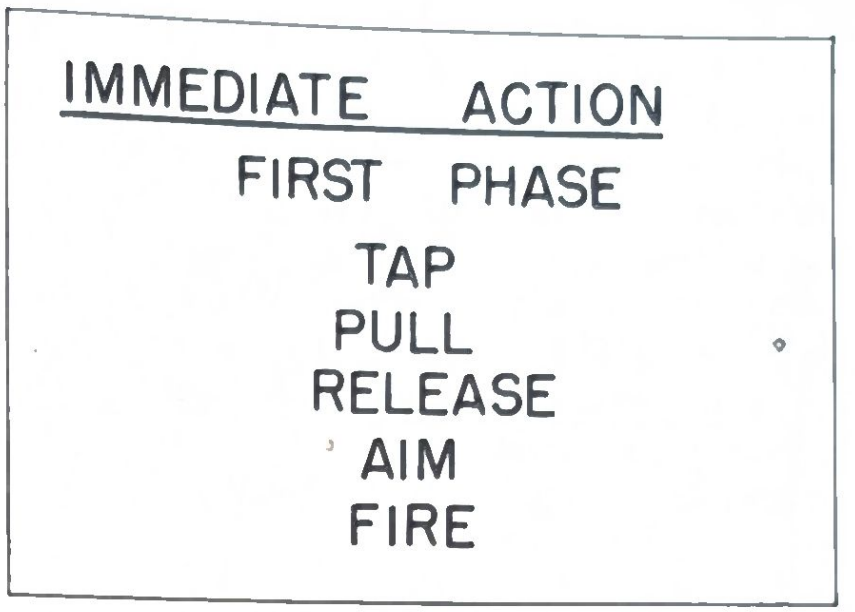
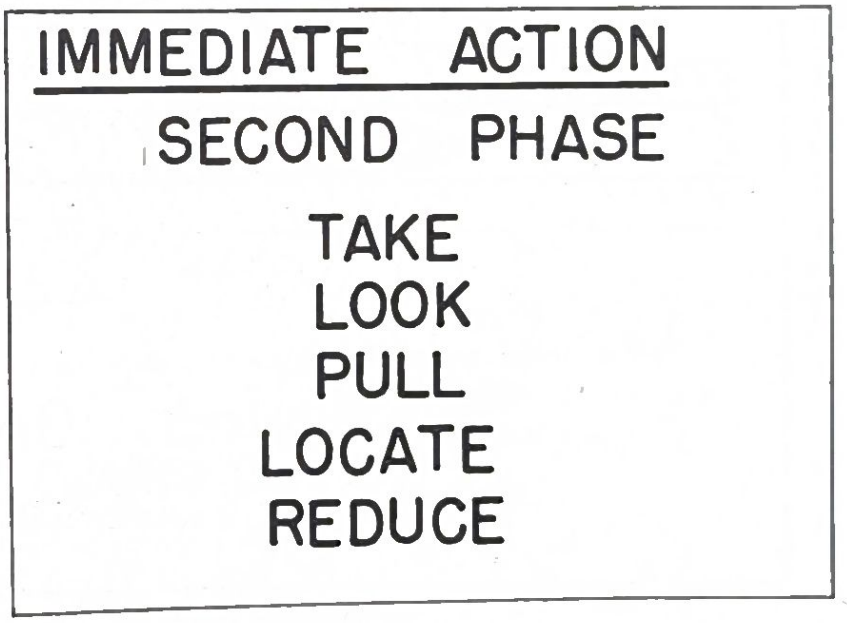


Figure 53. CLASSES OF STOPPAGES. These are the five classes of stoppages with the T48 and T48E1 rifles. Use this chart during the introduction to stoppages and immediate action. Explain each stoppage and its cause.



LETTERS – 4 IN.
CHART – PAPER
COLOR OF LETTERS – BLACK
SIZE – 4' X 4'

Figure 54. IMMEDIATE ACTION FIRST PHASE. The key words used in teaching the first phase of immediate action are listed above. Explain the meaning of each key word, to teach the first phase of immediate action as a drill.



LETTERS – 4 IN.
CHART – PAPER
COLOR OF LETTERS – BLACK
SIZE – 4' X 4'

Figure 55. IMMEDIATE ACTION SECOND PHASE. Listed are the key words used in teaching the second phase of immediate action. Explain the meaning of each key word to teach the method of applying the second phase of immediate action. This phase of immediate action is not taught as a drill.

122. SLIDES

Figures 56 to 65 illustrate some of the most common stoppages that occur with the T48 rifle. These illustrations may be made into slides for use with a Vu-Graph. They may be produced at your army area training aids center and subcenters, or wherever facilities are available. These slides can be used when teaching stoppages, their causes, and remedies. Stoppage slides should be made in color with black used to represent the magazine, receiver, and ejection opening; blue for the cartridge or cartridge case; red for the bolt or bolt carrier. An explanation of each slide as it is used should be made to the students.

The Vu-Graph working model may also be used in the teaching of stoppages. The instructor sets up various stoppages just as they would occur on a rifle. He then explains the cause of the stoppage and the remedy.

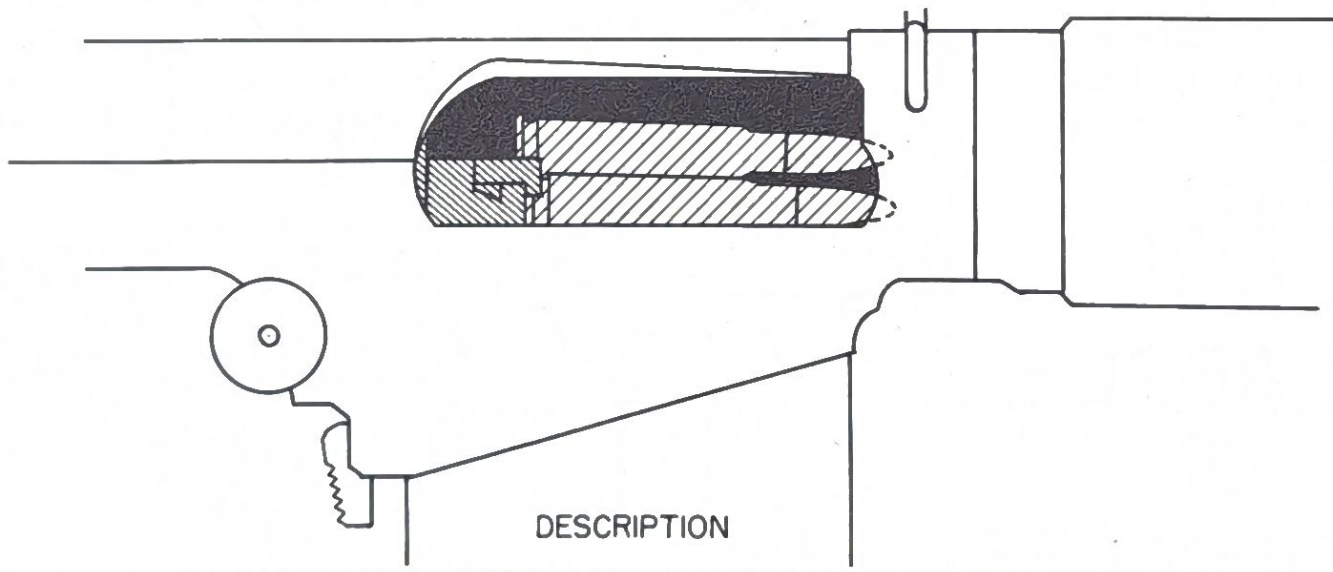
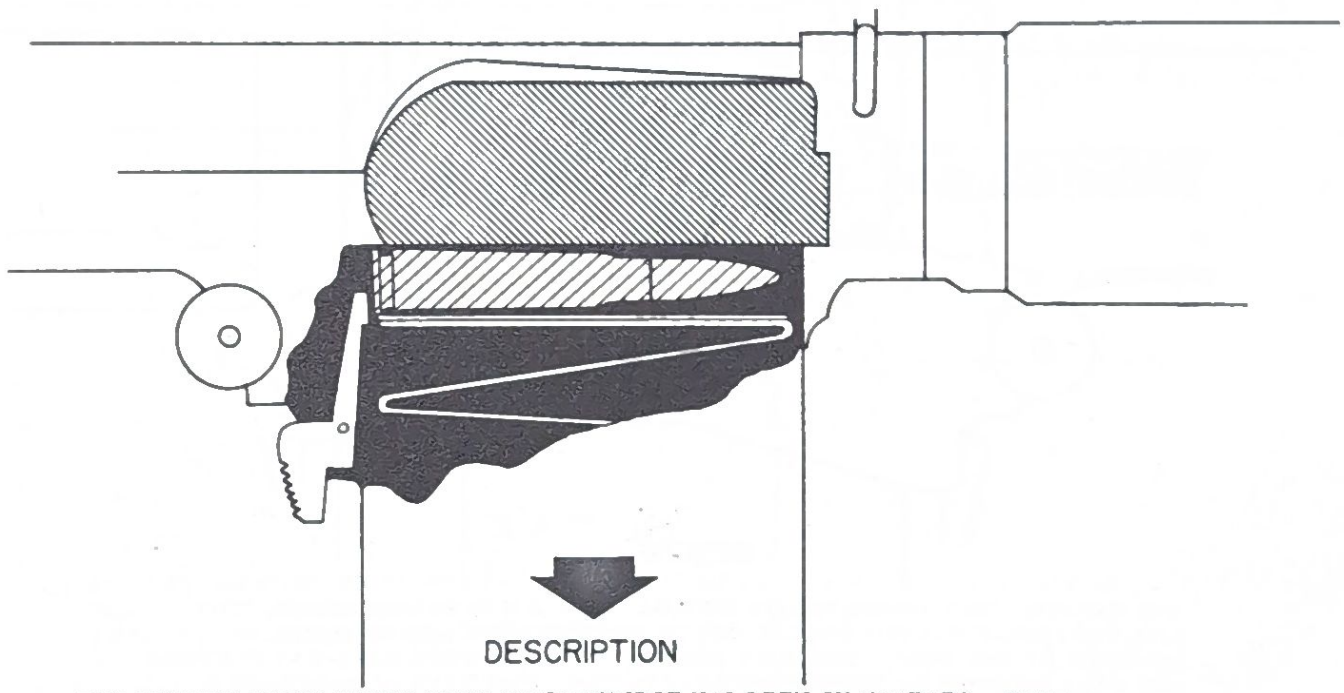


Figure 56. Failure to feed.

FAILURE TO FEED



DESCRIPTION

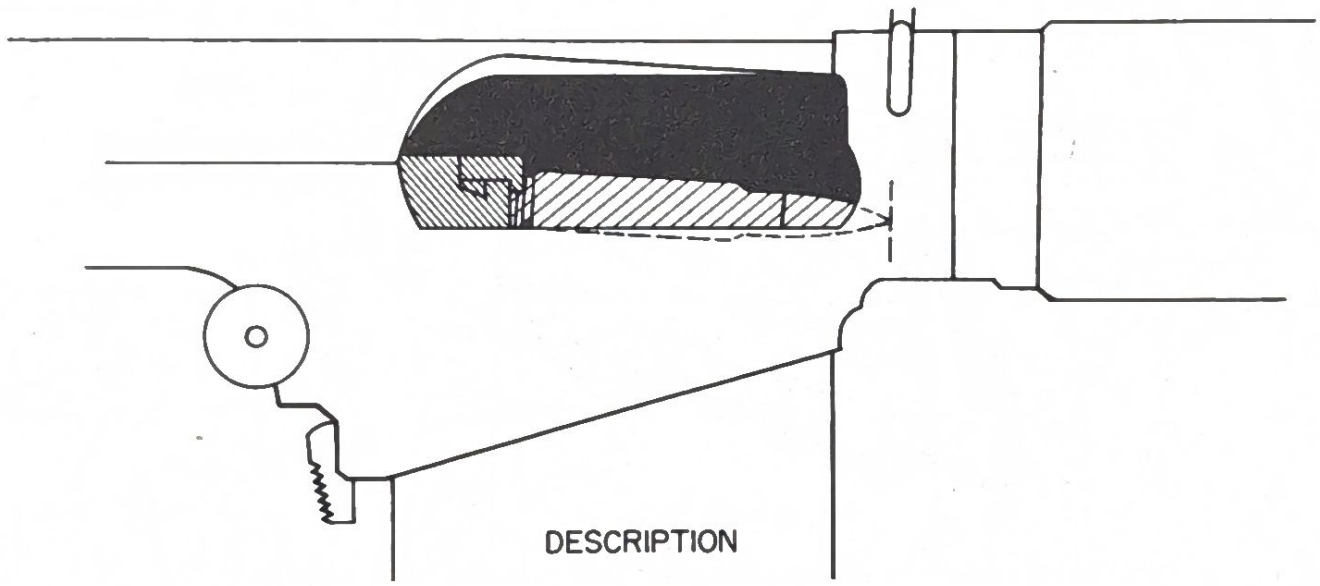
THE WEAPON STOPS FIRING WHEN NO CARTRIDGE HAS BEEN CHAMBERED. THIS TYPE OF STOPPAGE IS KNOWN AS A FAILURE TO FEED, AND IS CAUSED BY A FAULTY MAGAZINE. THE MAGAZINE MAY HAVE A WEAK SPRING, IT MAY BE DENTED OR DIRTY, THE MAGAZINE NOTCH MAY BE WORN, OR THE MAGAZINE CATCH ON THE RIFLE MAY BE DAMAGED OR WORN. IN ANY CASE THE MAGAZINE IS NOT ALL THE WAY UP IN THE MAGAZINE FEED WAY OR THE CARTRIDGES ARE NOT ALL THE WAY UP IN THE MAGAZINE. THE BOLT PASSES OVER THE TOP CARTRIDGE AND FAILS TO CHAMBER IT.

REMEDY

CHANGE OR CLEAN THE MAGAZINE. REPLACE THE MAGAZINE CATCH OR MAGAZINE CATCH SPRING.

Figure 57. Failure to feed.

FAILURE TO CHAMBER



DESCRIPTION

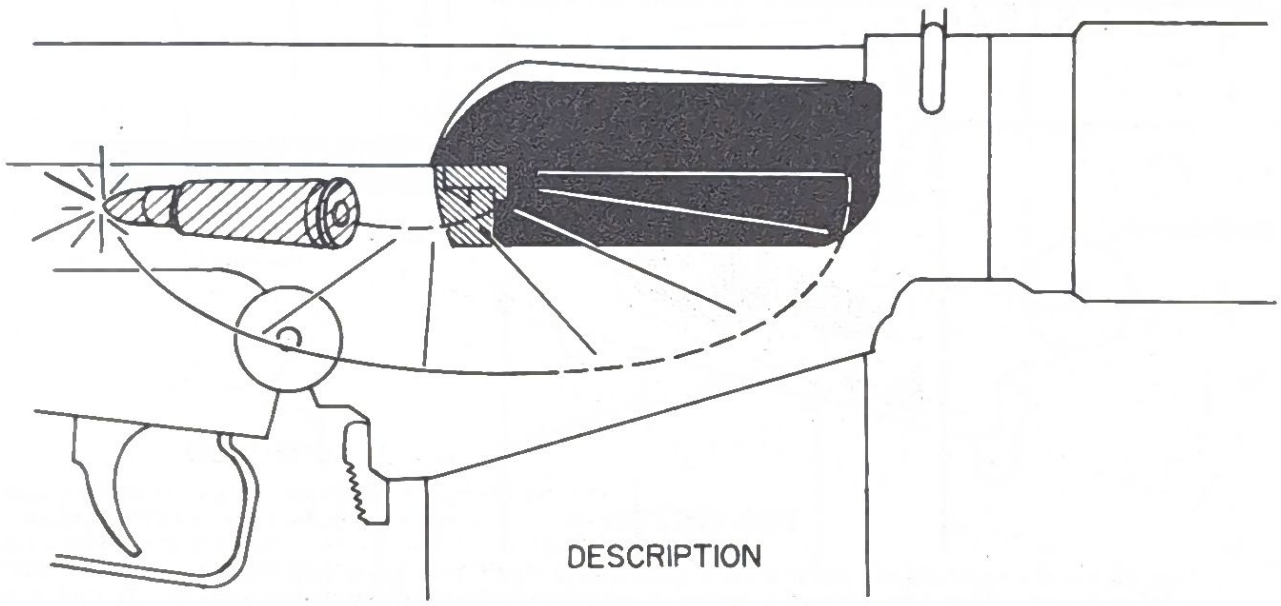
THE WEAPON STOPS FIRING WHEN A LIVE CARTRIDGE IS IN THE MAGAZINE. THE LIVE CARTRIDGE WAS NOT FORCED OUT OF THE MAGAZINE AND INTO THE CHAMBER BY THE BOLT. THE BOLT AND BOLT CARRIER WERE PART-WAY FORWARD AND WERE STOPPED BY THE SNUBBED CARTRIDGE. THIS TYPE OF STOPPAGE IS CAUSED BY A FAULTY MAGAZINE; EITHER THE LIPS OF THE MAGAZINE ARE PRESSED TOGETHER,HOLDING THE CARTRIDGE IN THE MAGAZINE, OR THE DRIVING SPRING MAY BE WEAK OR BROKEN.

REMEDY

CHANGE THE MAGAZINE, OR REPLACE THE DAMAGED PARTS.

Figure 58. Failure to chamber.

FAILURE TO FIRE



DESCRIPTION

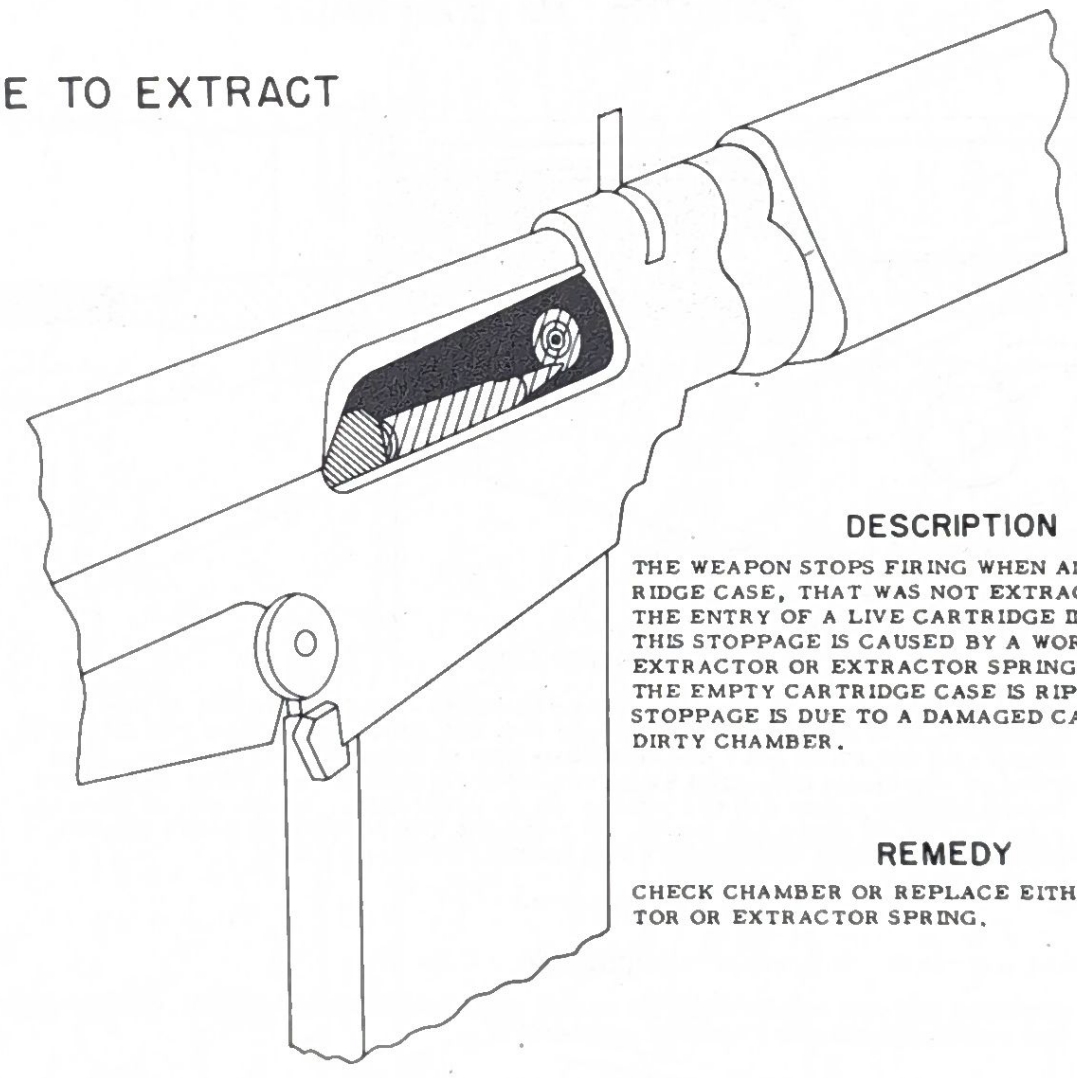
THE WEAPON FAILS TO FIRE, THE SECOND PHASE OF IMMEDIATE ACTION HAS BEEN APPLIED AND A LIVE CARTRIDGE HAS BEEN EJECTED. THE PRIMER HAS NOT BEEN DENTED. THIS TYPE OF STOPPAGE IS KNOWN AS A FAILURE TO FIRE, AND MAY BE CAUSED BY A BROKEN FIRING PIN, BOLT NOT FULLY FORWARD, DAMAGED HAMMER, OR A WORN OR BROKEN HAMMER SPRING. IF THE PRIMER HAS BEEN SLIGHTLY DENTED THE FIRING PIN IS WORN, THE DRIVING SPRINGS MAY BE WEAK, OR THE OPERATING PARTS MAY BE DIRTY CREATING EXCESSIVE FRICTION.

REMEDY

REPLACE THE WORN OR BROKEN PARTS. FULLY CLOSE THE BOLT.

Figure 60. Failure to fire.

FAILURE TO EXTRACT



DESCRIPTION

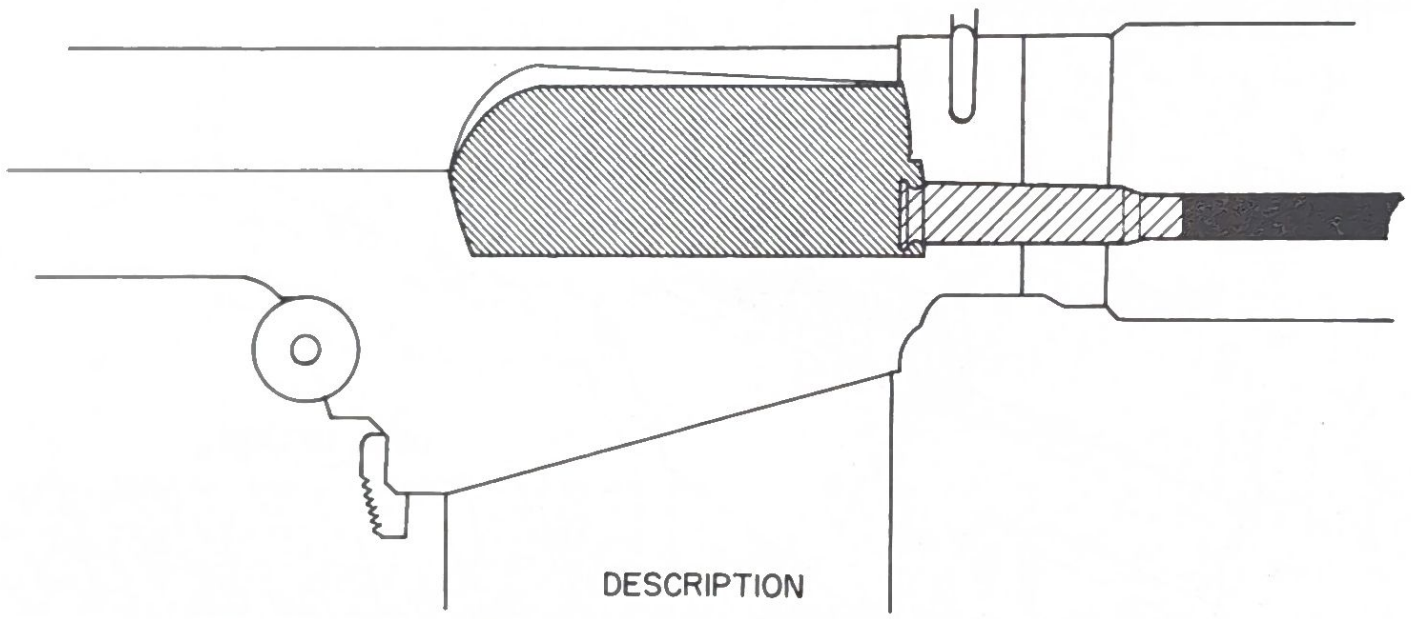
THE WEAPON STOPS FIRING WHEN AN EMPTY CARTRIDGE CASE, THAT WAS NOT EXTRACTED, BLOCKS THE ENTRY OF A LIVE CARTRIDGE INTO THE CHAMBER. THIS STOPPAGE IS CAUSED BY A WORN OR BROKEN EXTRACTOR OR EXTRACTOR SPRING. IF THE RIM OF THE EMPTY CARTRIDGE CASE IS RIPPED OFF, THE STOPPAGE IS DUE TO A DAMAGED CARTRIDGE OR A DIRTY CHAMBER.

REMEDY

CHECK CHAMBER OR REPLACE EITHER THE EXTRACTOR OR EXTRACTOR SPRING.

Figure 61. Failure to extract.

FAILURE TO EXTRACT



DESCRIPTION

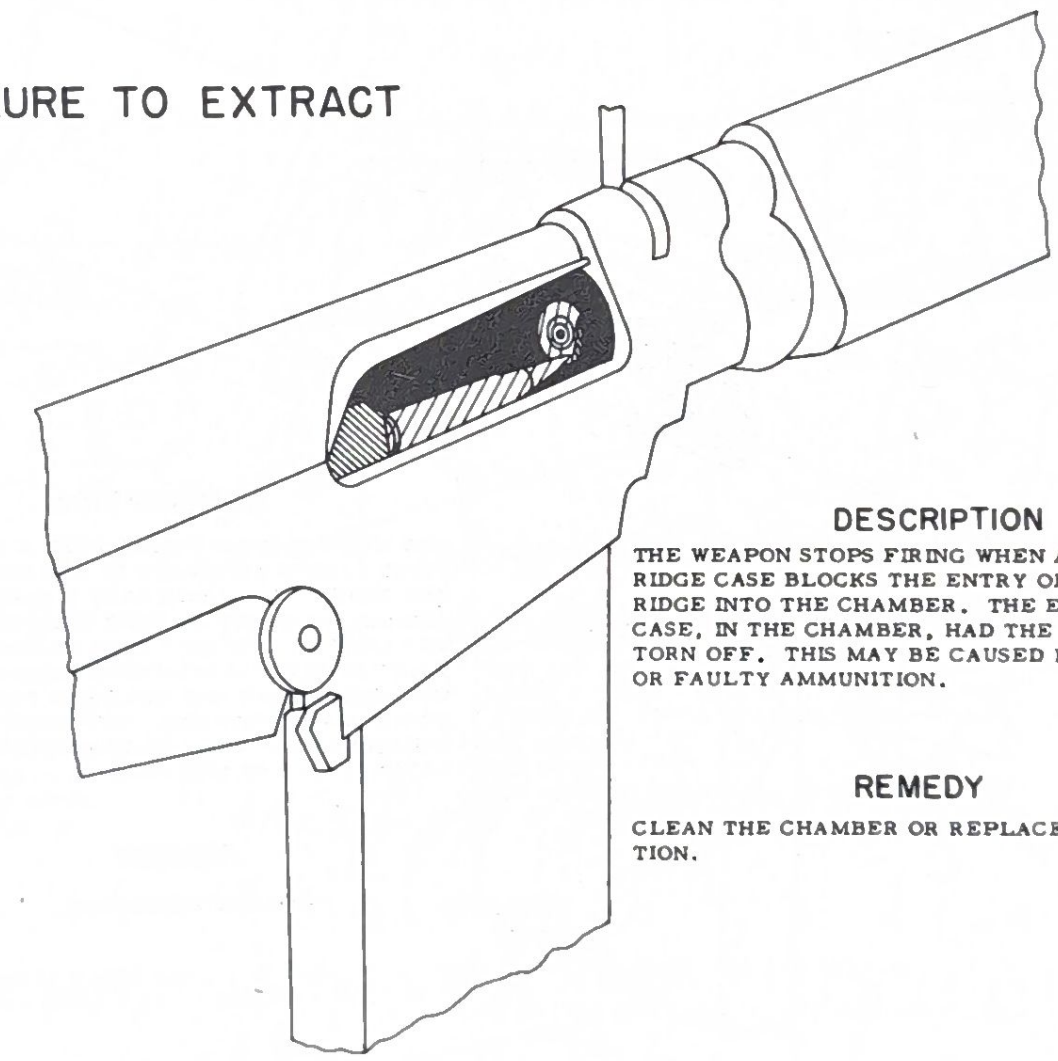
THE WEAPON STOPS FIRING WHEN AN EMPTY CARTRIDGE CASE IS STILL IN THE CHAMBER. THE EMPTY CARTRIDGE CASE WAS NOT EXTRACTED FROM THE CHAMBER WHILE THE BOLT AND BOLT CARRIER REMAINED IN THE FORWARD POSITION. THIS TYPE OF STOPPAGE IS CAUSED BY EITHER INSUFFICIENT GAS, OR DIRTY OPERATING PARTS. INSUFFICIENT GAS IS A RESULT OF AN IMPROPERLY ADJUSTED GAS REGULATING SLEEVE OR DIRTY GAS PORTS. IN ANY CASE THE OPERATING PARTS DID NOT MOVE TO THE REAR, TO EXTRACT THE EMPTY CARTRIDGE CASE.

REMEDY

CORRECT THE GAS ADJUSTMENT OR CLEAN THE GAS PORTS AND PARTS. (CHECK THE GAS PISTON SPRING FOR CORRECT ASSEMBLY.)

Figure 62. Failure to extract.

FAILURE TO EXTRACT



DESCRIPTION

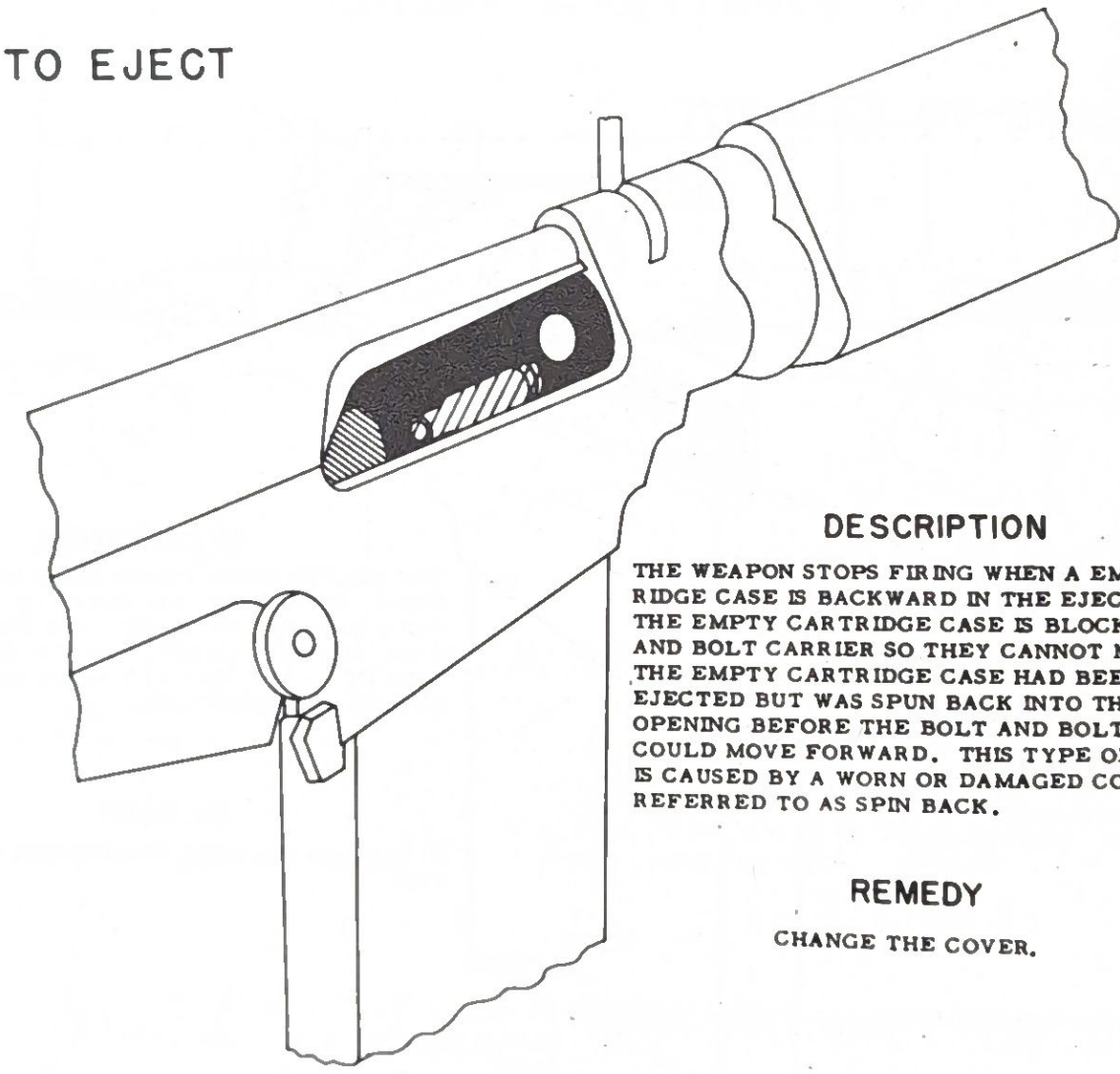
THE WEAPON STOPS FIRING WHEN AN EMPTY CARTRIDGE CASE BLOCKS THE ENTRY OF A LIVE CARTRIDGE INTO THE CHAMBER. THE EMPTY CARTRIDGE CASE, IN THE CHAMBER, HAD THE EXTRACTOR RIM TORN OFF. THIS MAY BE CAUSED BY A DIRTY CHAMBER OR FAULTY AMMUNITION.

REMEDY

CLEAN THE CHAMBER OR REPLACE THE AMMUNITION.

Figure 63. Failure to extract.

FAILURE TO EJECT



DESCRIPTION

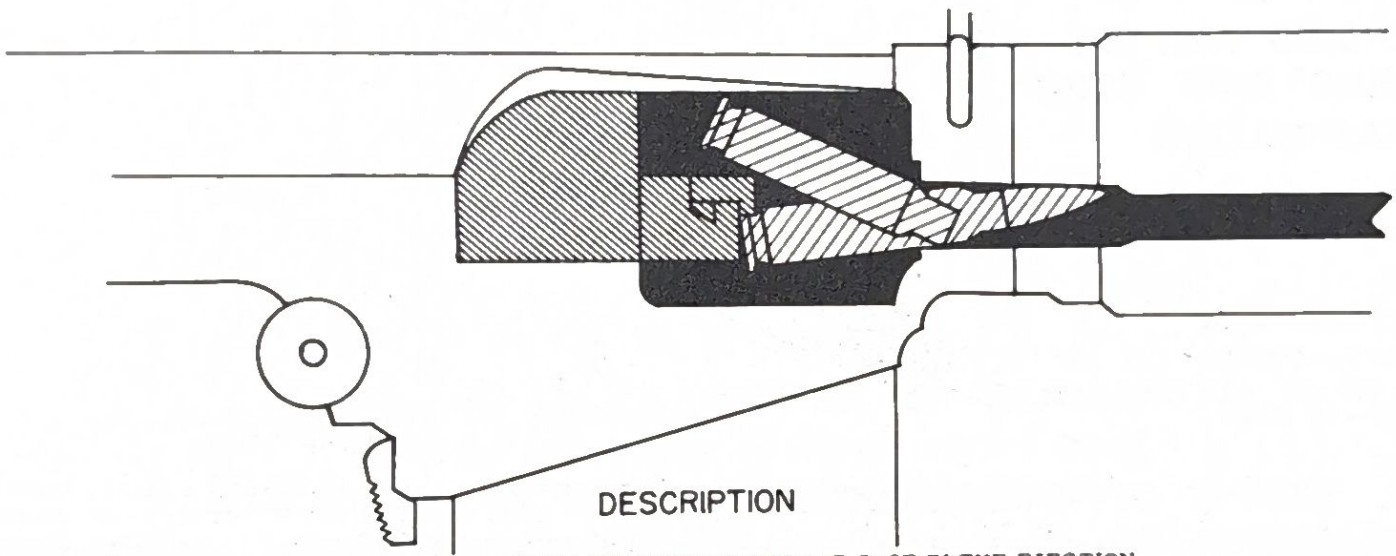
THE WEAPON STOPS FIRING WHEN A EMPTY CARTRIDGE CASE IS BACKWARD IN THE EJECTION OPENING. THE EMPTY CARTRIDGE CASE IS BLOCKING THE BOLT AND BOLT CARRIER SO THEY CANNOT MOVE FORWARD. THE EMPTY CARTRIDGE CASE HAD BEEN COMPLETELY EJECTED BUT WAS SPUN BACK INTO THE EJECTION OPENING BEFORE THE BOLT AND BOLT CARRIER COULD MOVE FORWARD. THIS TYPE OF STOPPAGE IS CAUSED BY A WORN OR DAMAGED COVER, AND IS REFERRED TO AS SPIN BACK.

REMEDY

CHANGE THE COVER.

Figure 64. Failure to eject.

FAILURE TO EJECT



DESCRIPTION

THE WEAPON STOPS FIRING WHEN AN EMPTY CARTRIDGE CASE IN THE EJECTION OPENING BLOCKS A LIVE CARTRIDGE ATTEMPTING TO CHAMBER. THE EMPTY CARTRIDGE CASE WAS NOT COMPLETELY EJECTED DURING THE REARWARD MOVEMENT OF THE OPERATING PARTS; CONSEQUENTLY, IT WAS WEDGED IN THE EJECTION OPENING AS THE OPERATING PARTS CAME FORWARD. THIS TYPE OF STOPPAGE MAY BE CAUSED BY INSUFFICIENT GAS, IMPROPER ASSEMBLY OF THE GAS SYSTEM, AN IMPROPERLY ADJUSTED GAS REGULATING SLEEVE, OR DIRTY OPERATING PARTS. THE OPERATING PARTS DO NOT MOVE TO THE REAR WITH SUFFICIENT FORCE TO EJECT THE EMPTY CARTRIDGE CASE FROM THE RECEIVER.

REMEDY

CORRECT THE GAS ADJUSTMENT, ASSEMBLE THE PARTS OF THE GAS SYSTEM CORRECTLY, OR CLEAN AND OIL THE PARTS.

Figure 65. Failure to eject.

123. RIFLE MARKSMANSHIP TRAINING AIDS

STEPS

PREPARATORY MARKSMANSHIP

T-48

1. SIGHTING, AIMING
2. POSITIONS
3. TRIGGER SQUEEZE
4. SUSTAINED FIRE
5. ZEROING AND USE OF FIRING DATA CARD
6. EXAMINATION

LETTERS - 4 IN.
CHART - PAPER OR 1/4" PLYWOOD
COLOR OF LETTERS - BLACK
SIZE - 4' X 4'

Figure 66. STEPS OF PREPARATORY MARKSMANSHIP. The six steps of preparatory marksmanship for the T48 rifle are listed above. Use this chart in the introduction to preparatory marksmanship. Explain briefly what is contained in each step of preparatory marksmanship training.

STEPS

PREPARATORY MARKSMANSHIP

T-48 E1

1. SIGHTING AND AIMING
2. POSITIONS
3. TRIGGER MANIPULATION
4. AUTOMATIC FIRE
5. ZEROING AND USE OF FIRING DATA CARD
6. EXAMINATION

LETTERS - BLACK, 4 IN.
CHART - PAPER OR 1/4" PLYWOOD
SIZE - 4'X 4'

Figure 67. STEPS OF PREPARATORY MARKSMANSHIP. The six steps of preparatory marksmanship for the T48E1 rifle are outlined above. Use this chart in the introduction to preparatory marksmanship. Explain briefly what is contained in each step of preparatory marksmanship.

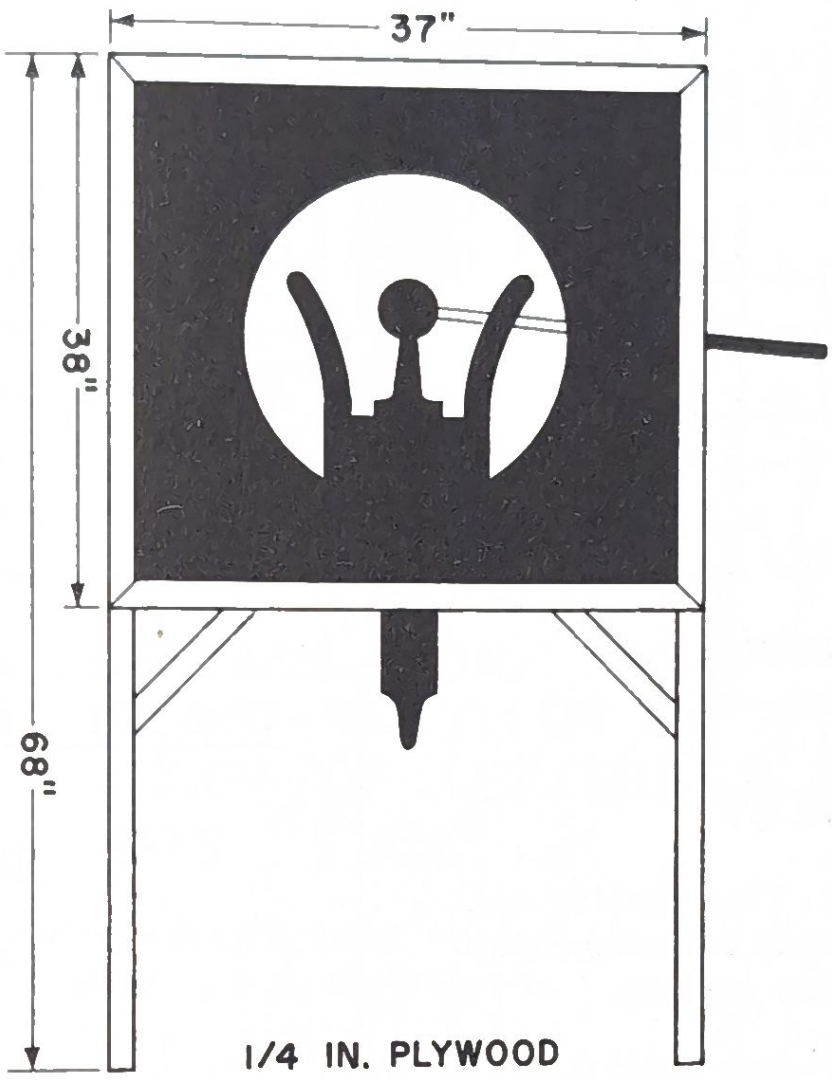


Figure 68. SIGHT PICTURE MODEL. This training aid is used to teach correct sight alinement and the correct sight picture.

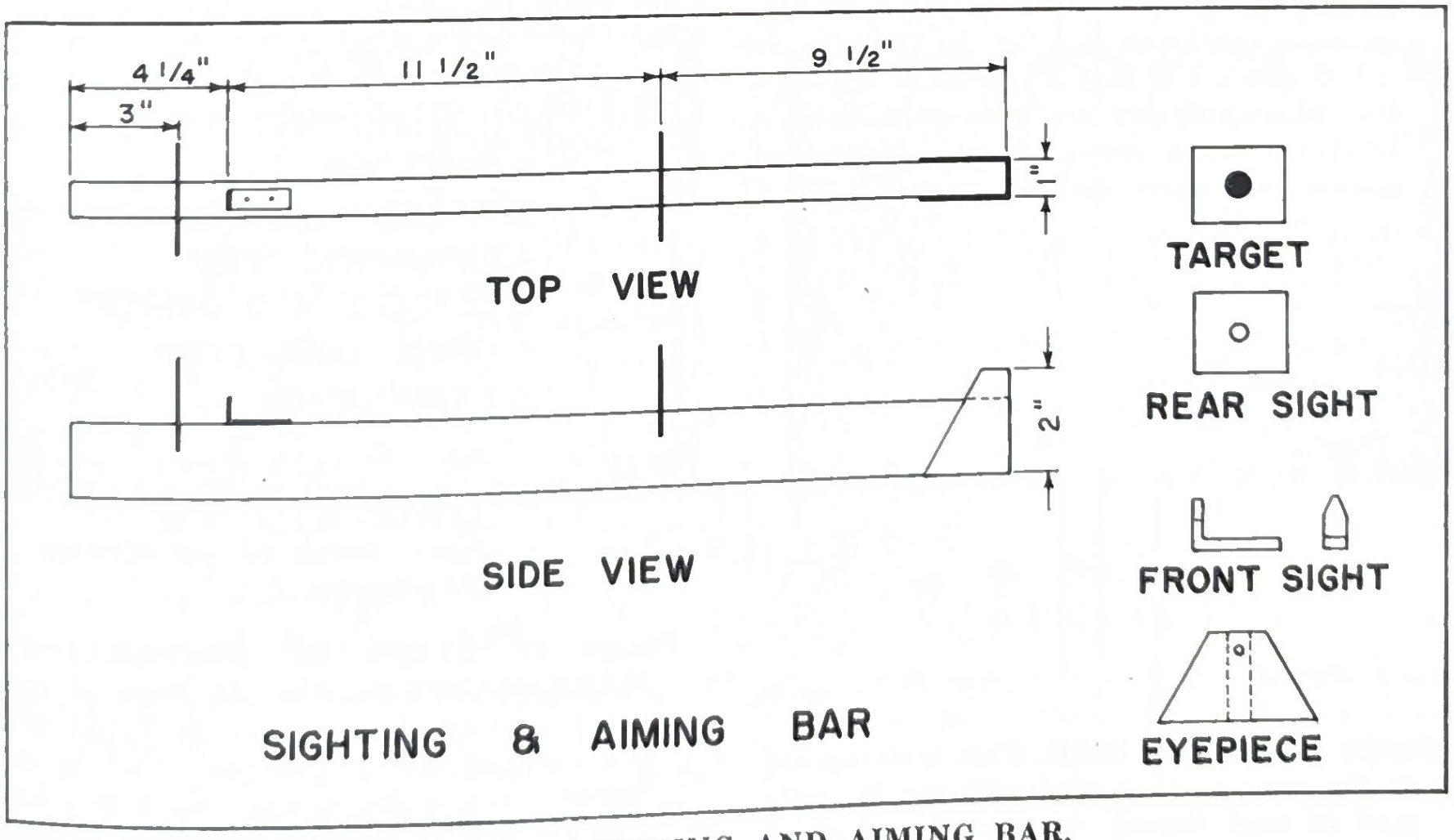
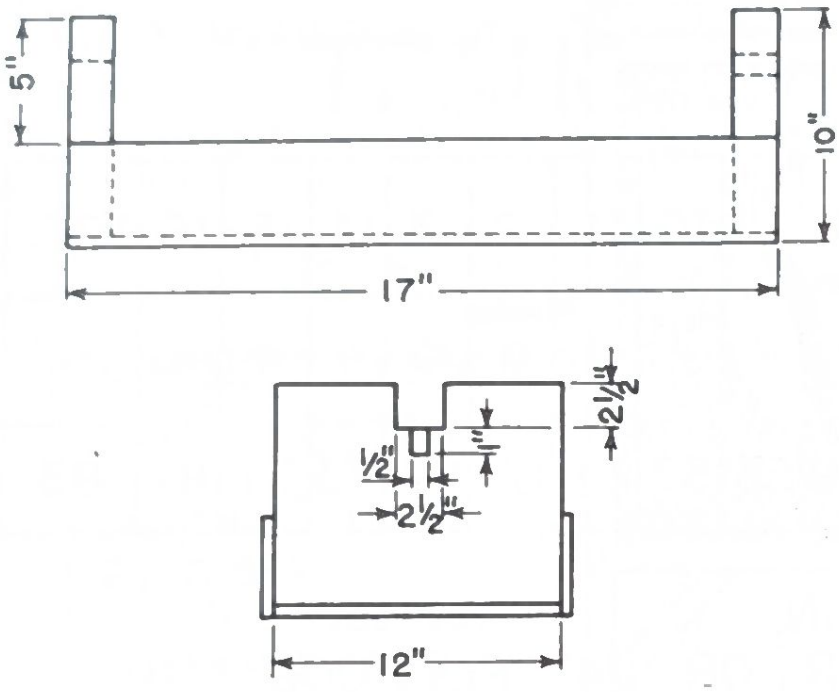


Figure 69. SIGHTING AND AIMING BAR.
This training aid is used to teach the first sighting and aiming exercise.



RIFLE REST

Figure 70. RIFLE REST. This training aid, modified, is used to teach the second and third sighting and aiming exercise.

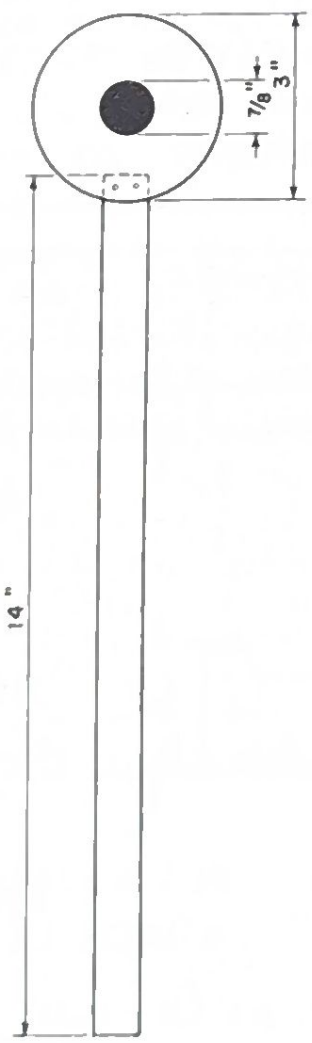


Figure 71. AIMING DISK. This training aid is the same as that used with the M1 rifle and is used during the second and third sighting and aiming exercises.

TRIGGER MANIPULATION

HOLD
BREATH
AIM
PRESS
1. SINGLE SHOT
2. BURSTS
FOLLOW THRU
CALL THE SHOT

LETTERS – 4 IN.
PAPER OR 1/4" PLYWOOD
COLOR OF LETTERS – BLACK
SIZE – 4' X 5'

Figure 72. TRIGGER MANIPULATION. This chart is a list of the key words used to teach the third step of preparatory marksmanship with the T48E1 rifle.

SUSTAINED FIRE CHART

NO. OF SHOTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOT.
NO. OF SECONDS	10	4	4	4	4	4	15	4	4	4	4	4	4	4	4	4	
TIME	10	14	18	22	26	30	45	49	53	57	61	65	69	73	77	81	83

LETTERS – 4 IN.
CHART – PAPER OR 1/4" PLYWOOD
COLOR OF LETTERS – BLACK
SIZE – 2' X 6'

Figure 73. SUSTAINED FIRE CHART. Used to teach the time breakdown during the fourth step of preparatory marksmanship with the T48 rifle.

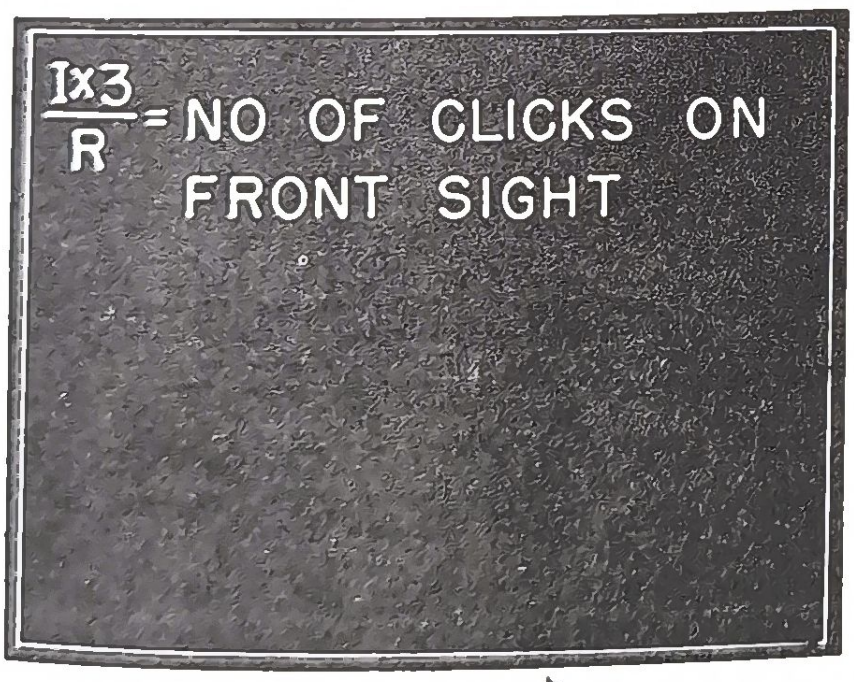


Figure 74a. FRONT SIGHT CHANGES. Used to teach zeroing of the rifle; how to make changes on the front sight to move the shot group to the center of the bull's-eye in elevation.

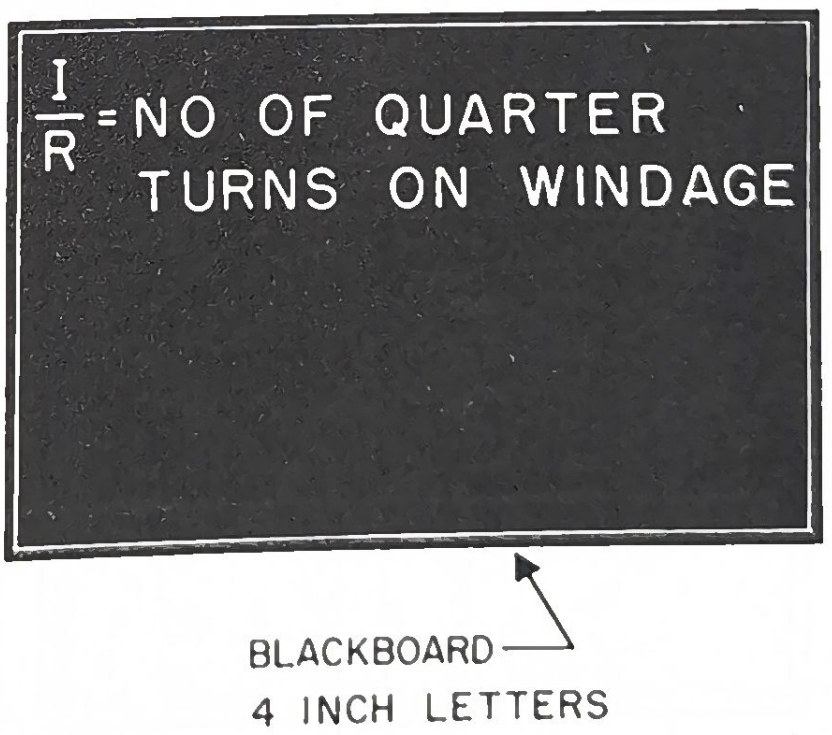
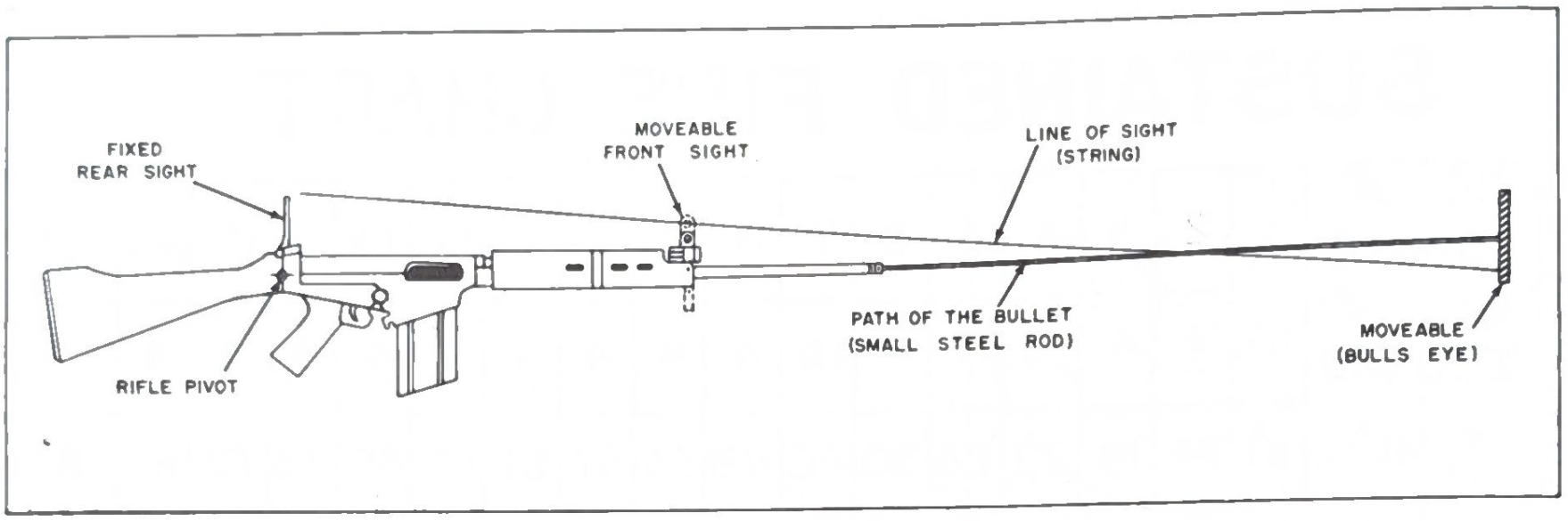


Figure 74b. REAR SIGHT CHANGES. Used to teach the method of changing the rear sight during zeroing, to determine the deflection necessary to move the center of the shot group into the center of the bull's-eye.



TRAJECTORY CHART

Figure 75. SIGHTING MODEL. Used to teach what happens when the front sight is moved up or down, and how this affects the strike of the bullet on the target. If the front sight is moved up, the strike of the bullet will be lowered on the target, if the sight is lowered the strike will be higher on the target.

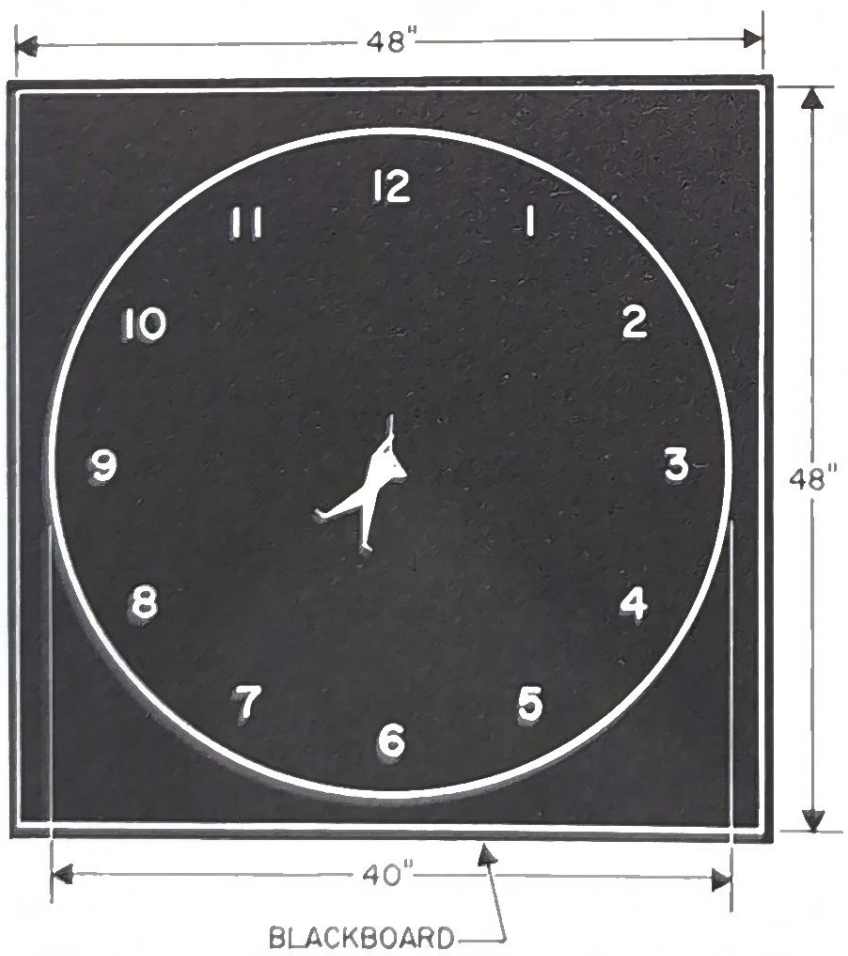


Figure 76. CLOCK SYSTEM. Used to teach the direction and value of the wind, during the fifth step of preparatory marksmanship.

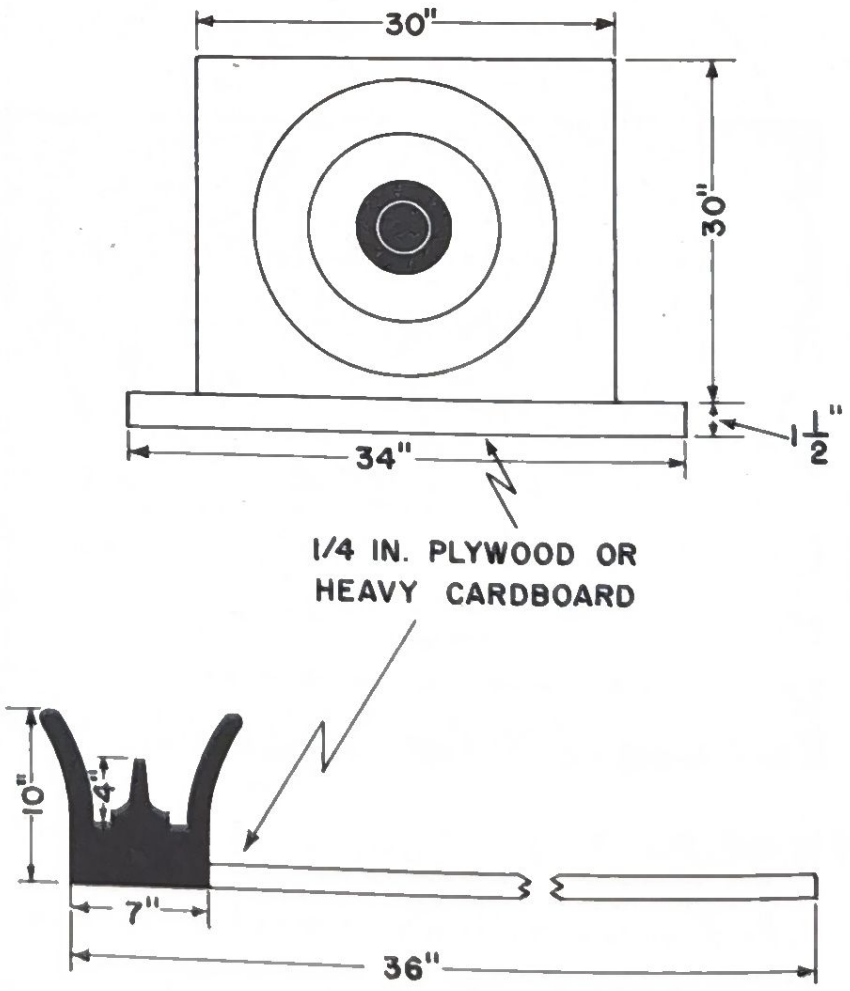
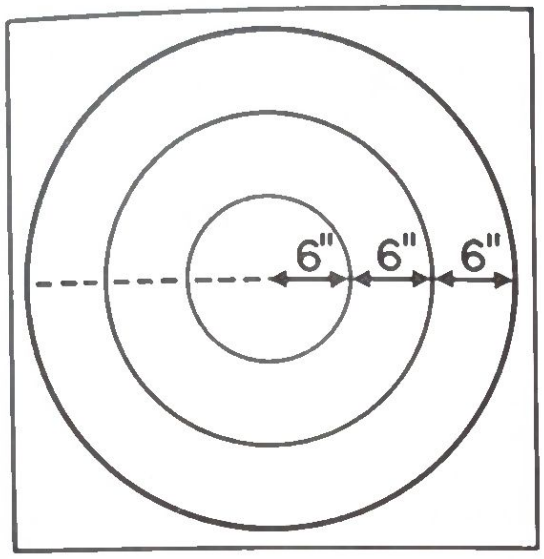
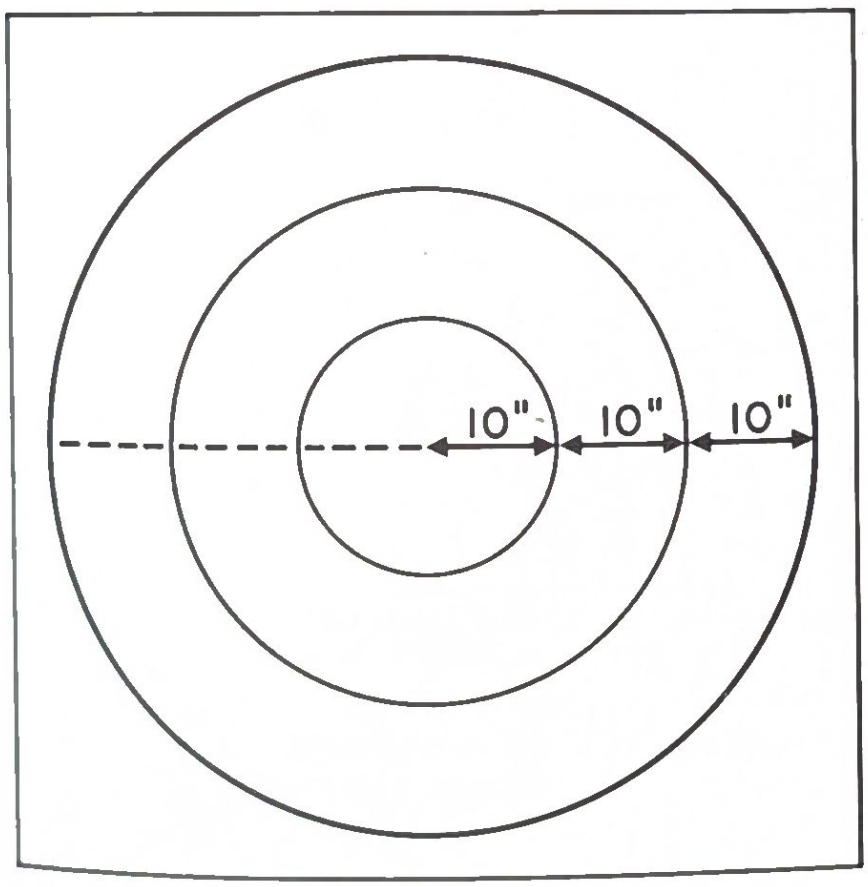


Figure 77. SLING SHOT DEVICE. This training aid is used to demonstrate the method of compensating for the effect of the wind after the rifle has been zeroed.



RIFLE "A" TARGET



RIFLE "B" TARGET

Figure 78. TARGET DIMENSIONS. This chart is used to teach the dimensions of the target so the firer can determine the number of inches necessary to move the shot into the center of the target. Targets "A" and "B." The target may be a target from the pits, with the dimensions outlined with a grease pencil.

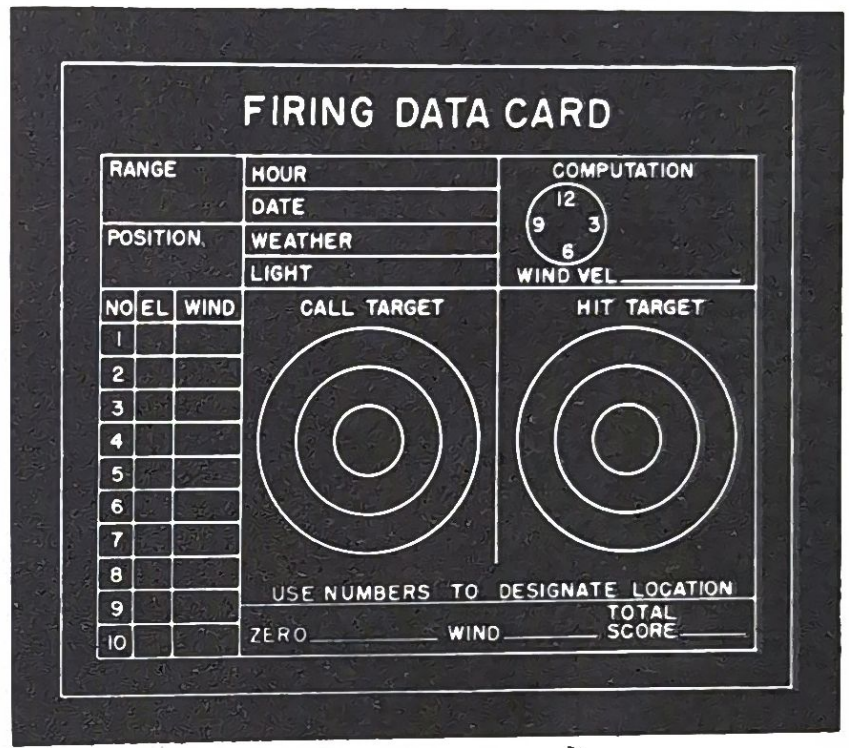
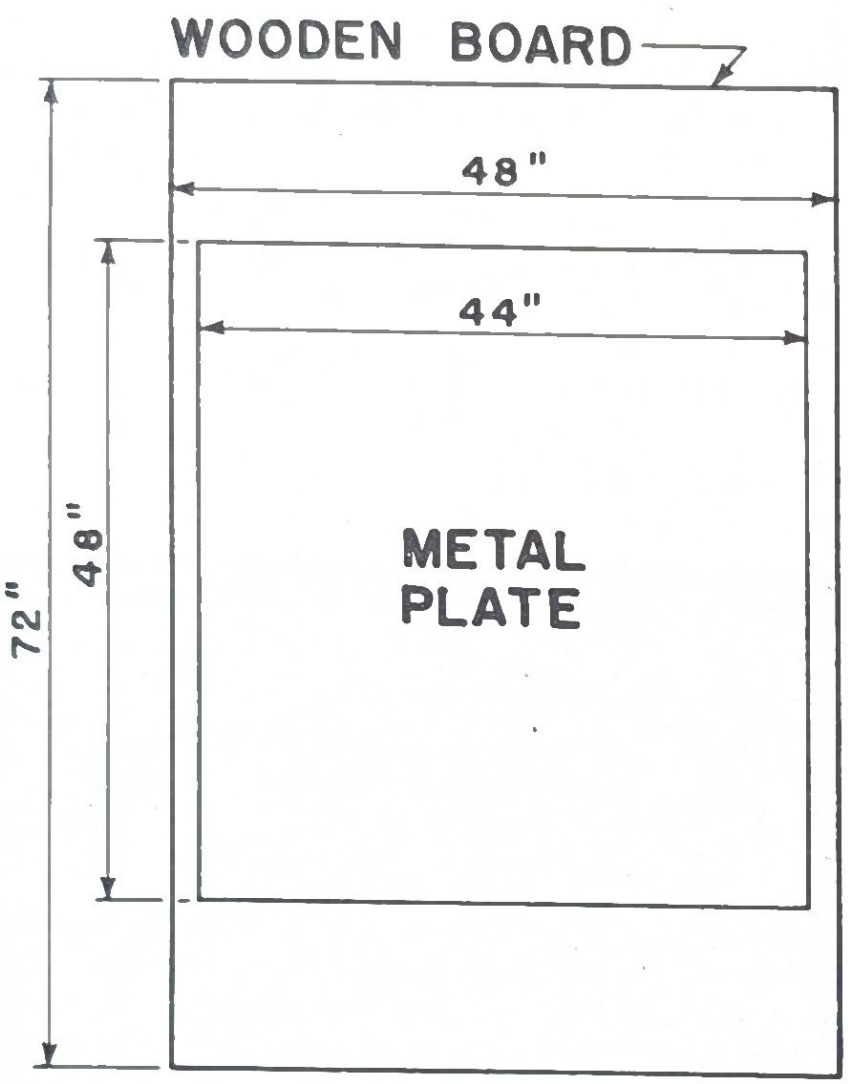


Figure 79. FIRING DATA CARD. Used during the fifth step of preparatory marksmanship to teach the use of the firing data card.



MAGNETIC TARGE

Figure 80. MAGNETIC TARGET. Used during the fifth step of preparatory marksmanship in conjunction with magnetic spotters, to teach sight changes. This may be replaced with regular target and spotters.

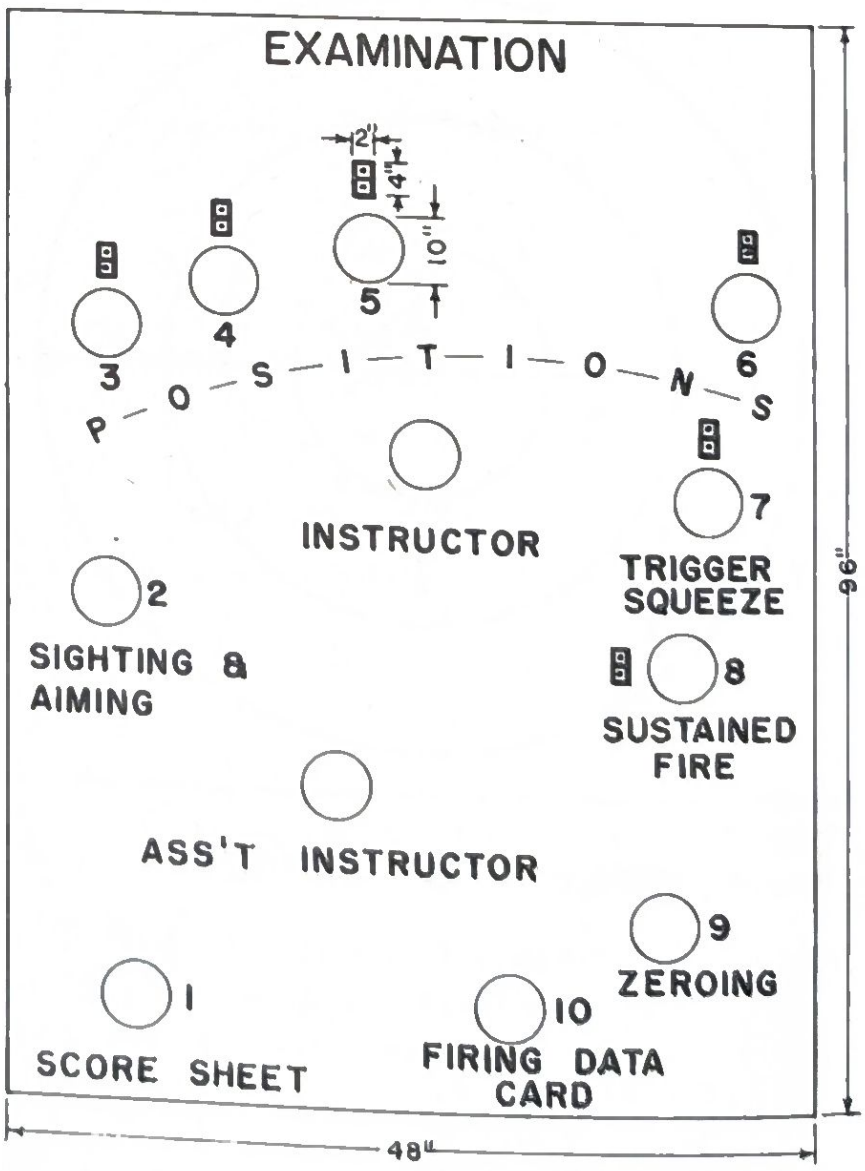


Figure 81. EXAMINATION. Used during the sixth step of preparatory marksmanship to teach the examination phase of training.

Chapter 5— MANUAL OF ARMS

Section I. MANUAL OF ARMS T48

124. GENERAL

You will normally carry your rifle without the magazine except in combat or when otherwise directed. The manual of arms will be executed only without the magazine. When the magazine is in the rifle, carry it at sling arms.

Execute FALL IN with your rifle at order arms.

The position of right shoulder arms is for use of Honor Guards, Guard Mounts, and other ceremonies. Troops are not marched for long distances at right shoulder arms. In parades and reviews, troops will normally march at sling arms.

The normal method of carrying the rifle while walking post is sling arms; however, any of the following ready positions can also be used: carry on the right shoulder, carry on the left shoulder, carry under the right arm, or port arms.

Facings and alinements, open and close ranks, close, and extend are normally commanded from order arms. When these movements are commanded while you are at order arms, come automatically to trail arms on the command of execution for the movement. You execute trail arms by lifting the rifle straight up about three inches with your right hand. Movements for short distances and side step and back step are also executed at automatic trail arms. Return your rifle to order arms on halting.

Before the leader starts any marching movement of armed troops, he faces them in the direction of march first and has the weapon brought to right shoulder, port, or sling arms by the appropriate command. When a marching movement has been completed and he wants to have a facing movement executed, he has the weapons brought to order arms or unsling arms first, then has the facing movement executed.

When at a position other than sling arms, come to port arms for double time. When in formation, the commander gives the appropriate commands.

To salute when you are not in ranks and at sling arms, give the rifle salute at sling arms.

125. RULES FOR MANUAL OF ARMS

The term "at the balance" refers to a point on your rifle just forward of the trigger housing.

Include the sling in your grasp when holding the rifle at the balance.

When the sling is tightened it will be on the right side of the pistol grip.

The position of the rifle known as "diagonally across the body" (fig 82) is done with the sights up, the heel of the butt on line with your right hip, and the barrel at an angle in front of the juncture of your neck and left shoulder. Hold the rifle at the small of the

stock with your right hand. Your right forearm is horizontal and your right elbow against your side. Grasp the rifle at the balance with the left hand. How far out you hold the rifle depends on the conformation of your body.

Figure 82. Rifle held diagonally across the body.

The cadence for rifle movements is quick time. However, in the early stages of instruction, you will learn to execute the movements more slowly and precisely before acquiring the proper cadence.

The manual of arms is taught to be executed while standing at a halt.

Any position of the manual of arms may be ordered from another position with the appropriate commands, except the position of inspection arms. Inspection arms can be commanded from port arms only; port arms is the only movement that may be commanded from inspection arms. Sling and unsling arms and fix and unfix bayonets are not considered as part of the manual of arms for this purpose.

126. ORDER ARMS

Order arms is the position of the soldier at attention with the rifle. It is assumed on the command SQUAD (PLATOON), ATTENTION from any of the rest positions except *fall out.* Order arms is assumed on the command FALL IN and on the command ORDER, ARMS from any other position in the manual except inspection arms.

At order arms, you are at the position of attention except for your right arm and the rifle. Rest the butt of the rifle on the ground with the sights to the rear and the toe of the rifle butt against your right shoe and on line with your right toe. Grasp the rifle above the front sight with your right hand in a "V" formed by your fingers extended and joined, and your thumb. The tip of your index finger and thumb are about on line with the forward edge of the handguard. Hold your right hand and arm behind the rifle so that your thumb is along your trouser seam and the barrel of the rifle is vertical (fig. 83).

Figure 83. Order arms.

Figure 84. Parade rest.

127. REST POSITIONS

The rest positions with the rifle are commanded and executed as without arms, with the following exceptions and additions:

On the command PARADE, REST keep the toe of the butt on line with your right toe and hold the butt against your right shoe. Regrasp the rifle at the barrel slightly above the front sight and straighten your right arm so the muzzle of the rifle is inclined toward the front. Place your left hand behind your back, just below the belt line, fingers and thumb extended and joined, with palm flattened and to the rear. Thrust your rifle out, at the same time you move your left foot smartly 12 inches to the left (fig. 84).

On the command AT EASE or REST, keep your right foot in place. Hold the rifle as in parade rest, except that your arm may be relaxed slightly.

Armed troops must be at attention at order arms, port arms, or unsling arms before FALL OUT may be given.

128. RIGHT SHOULDER ARMS

The command is RIGHT SHOULDER, ARMS. This is a *three count* movement. At the command ARMS, raise the rifle vertically along your right side with your right hand until the front sight is near your armpit. At the same time bring your left arm horizontally across your body and grasp the handguard with your left hand *(count one)* (1 of fig. 85). In the *second count,* regrasp the rifle at the pistol grip with your right hand, knuckles to the right and thumb around the pistol grip (2 of fig. 85). In the *third count,* cut your left hand smartly back to its position by your side as at attention (3 of fig. 85). At right shoulder arms, your right arm is fully extended downward and the rifle is in a vertical position with the barrel against your right shoulder.

Figure 85(1). Right shoulder arms.

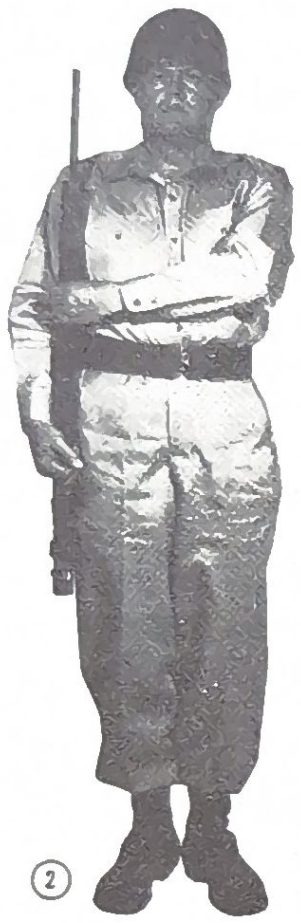


Figure 85(2). Right shoulder arms.

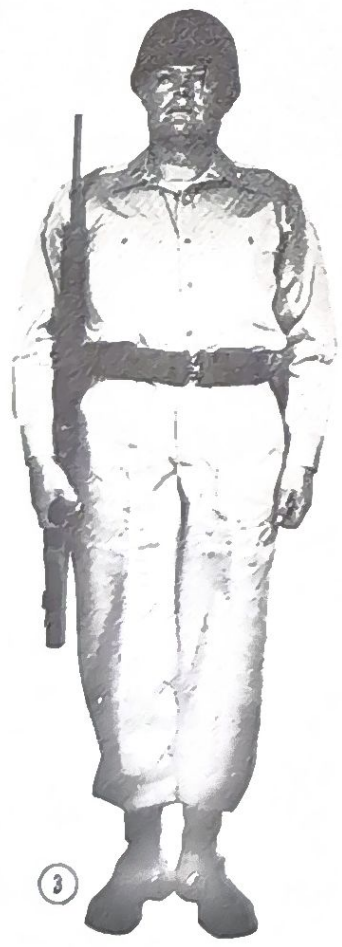


Figure 85(3). Right shoulder arms.

The return to order arms is a *four count* movement. On the command ARMS, bring your left arm horizontally across your body and grasp the handguard with your left hand *(count one)*. In the *second count,* release the pistol grip with your right hand and bring your right hand up and grasp the rifle above the front sight as in count one of right shoulder arms. Do not move your rifle. In the *third count,* release your left hand from the handguard and lower the rifle along your right side with your right hand until the butt is approximately 3 inches from the ground. Steady the rifle with your left hand on the barrel, fingers and thumb extended and joined, palm to the rear, and hold the barrel vertical (fig. 86). In the *fourth count,* lower the rifle gently to the order with your right hand and cut your left hand smartly to your side.

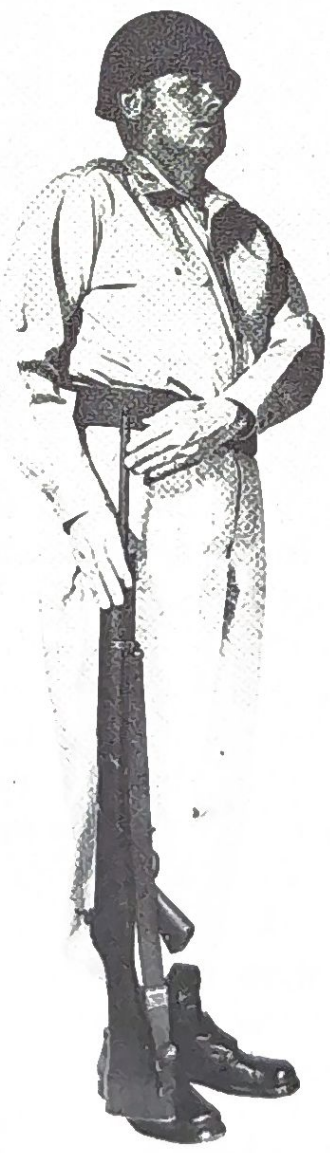


Figure 86. Next to last count in order arms.

129. PORT ARMS

The command is PORT, ARMS. This is a *two count* movement from order arms. At the command ARMS, raise the rifle diagonally across your body with your right hand, grasping it at the balance with your left hand *(count one)* (1 of fig. 87). Hold your right elbow down without strain. In the *second count*, regrasp the rifle with your right hand at the small of the stock (2 of fig. 87). At port arms, your right forearm is horizontal with the right elbow against your side and the rifle is held diagonally across your body.

Order arms from port arms is executed in *three counts*. At the command ARMS, move your right hand up and across your body and grasp the handguard. Do not move the rifle *(count one)*. In the *second count*, release your left hand from the balance and lower the rifle to your right hand so the butt is approximately

Figure 87(2). Port arms from order arms.

Figure 87(1). Port arms from order arms.

Figure 88. First count of right shoulder arms from port arms.

Figure 89(1)(2). Port arms from right shoulder arms.

3 inches from the ground. Steady the rifle with your left hand on the barrel, fingers and thumb extended and joined, palm to the rear, and hold the barrel vertical (fig. 86). In the *third count*, lower the rifle gently to the order with your right hand and cut your left hand smartly to your side.

Right shoulder arms from port arms is a *two count* movement. In the *first count*, release your right hand from the small of the stock and move the rifle across your body with your left hand to the position of right shoulder arms. Regrasp the pistol grip with your right hand as at right shoulder arms (fig. 88). On the *second count*, cut your left hand smartly to your side.

Port arms from right shoulder arms is a *two count* movement. In the *first count*, move the rifle out slightly from the position of right shoulder arms with the right hand and at the same time bring your left hand across your body and grasp the rifle at the balance with your left hand (1 of fig. 89). In the *second count*, release your right hand from the pistol grip and move your rifle across your body with your left hand to the position of port arms. Regrasp the small of the stock with your right hand (2 of fig. 89).

130. PRESENT ARMS

The command is PRESENT, ARMS. The movement from order arms to present arms is in *two counts*. In the *first count*, carry the rifle to the center of your body with your right hand. The sights are to the rear and the barrel is vertical. Grasp the rifle at the balance with your left hand, forearm horizontal, and elbow against your body (1 of fig. 90). In the *second count*, grasp the small of the stock with your right hand. The barrel should be vertical. The distance of the rifle from your body will depend on your build (2 of fig. 90).

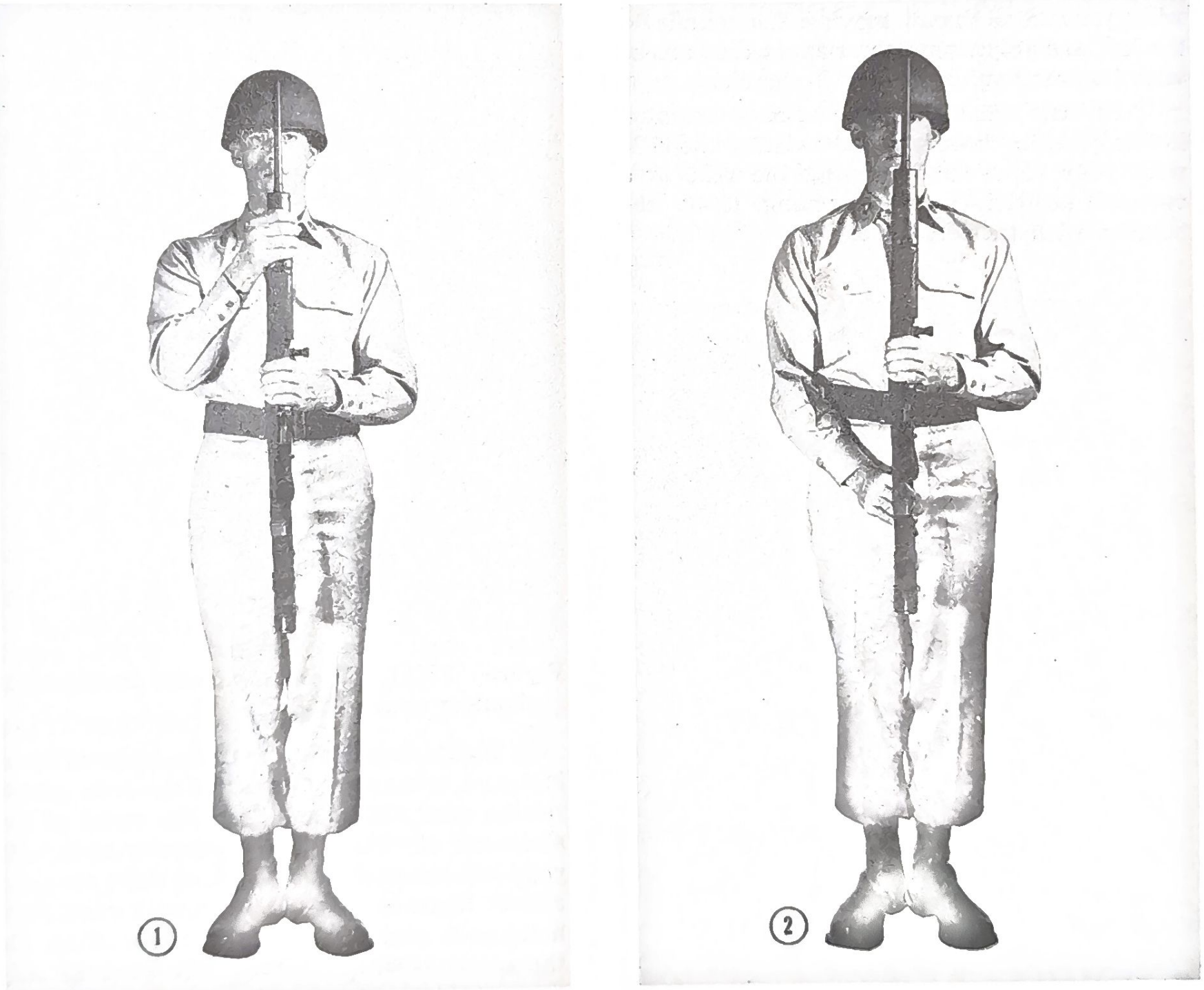


Figure 90(1)(2). Present arms from order arms.

Order arms from present arms is a *three count* movement. At the command ARMS, move your right hand up and grasp the hand guard. Do not move the rifle *(count one)*. In the *second count* lower the rifle with your right hand and complete the *second and third counts* as in order arms from port arms.

Port arms from present arms is executed in one count by lowering and twisting the rifle with your right hand, moving the muzzle to the left and regrasping the rifle at the balance with the left hand.

Present arms from port arms is executed in one count by lowering and twisting the rifle with your right hand, moving the rifle to a vertical position and regrasping it at the balance with the left hand.

Figure 91. First count of right shoulder arms from present arms.

Figure 92(1). Present arms from right shoulder arms.

Right shoulder arms from present arms is a *two count* movement. In the *first count*, release your right hand from the small of the stock and move the rifle across your body with your left hand to the position of right shoulder arms. Regrasp the pistol grip with your right hand as at right shoulder arms (fig. 91). On the *second count*, cut your left hand smartly to your side.

Present arms from right shoulder arms is a *two count* movement. In the *first count*, carry the rifle to the center of your body with your right hand. The sights are to the rear and the barrel vertical. Grasp the rifle at the balance with your left hand, forearm horizontal, and elbow against your body (1 of fig. 92). In the *second count*, grasp the small of the stock with your right hand (2 of fig. 92).

Figure 92(2). Present arms from right shoulder arms.

131. INSPECTION ARMS

The command is INSPECTION, ARMS and will be commanded only from the position of port arms. At the command ARMS, take a half step forward with your left foot. At the same time swing the muzzle of your rifle to the right and place the butt between your right elbow and side. Release your right hand from the small of the stock and regrasp the pistol grip. The rifle is now pointing up to your front at an angle of approximately 45°. Release your left hand from the balance and put the change lever on safe(s) if it is not already on safe. Next, pull the arming handle all the way back with your left thumb and forefinger, and with your left middle finger, press up on the bolt stop to hold the bolt open. With your left hand, slide the arming handle forward and regrasp the rifle at the handguard. Lower your head and eyes enough to look into the receiver. Having found the receiver empty, or having emptied it, raise your head and eyes to the front (fig. 93).

PORT, ARMS is the only command that may be given from inspection arms. On the preparatory command of PORT, release your left hand from the handguard and move the change lever from "S" to "R." Then with your left thumb, release the bolt stop allowing the bolt to go forward. Pull the trigger with your right forefinger. With your left hand move the change lever to safe, then regrasp the rifle at the balance. At the command ARMS, step back with your left foot and smartly move your rifle back to the position of port arms, regrasping the small of the stock with your right hand.

Figure 93. Inspection arms.

132. RIFLE SALUTE

This movement may be executed from order, right shoulder, or sling arms. For instructional purposes, the command RIFLE, SALUTE may be used. The rifle salute is a *two count* movement.

When at *order arms*, on the *first count*, move your left arm across your body, and with the forearm and wrist straight, fingers and thumb extended and joined, palm down, touch the rifle with the first joint of your forefinger approximately halfway between the front sight and the muzzle (fig. 94). If you are not in ranks, turn your head and eyes toward the person or color saluted. On the *second count*, cut your left hand smartly away to your side and turn your head and eyes to the front.

Figure 94. Rifle salute at order arms.

At *right shoulder arms*, move your left arm across your chest and touch the first joint of your forefinger to the rifle barrel between the front sight and muzzle. Hold your left elbow so that the lower edge of your left forearm is horizontal. Your fingers are extended and joined. Your wrist is straight and the palm down (fig. 95). On the *second count*, cut your left hand smartly away to your side.

Figure 95. Rifle salute at right shoulder arms.

At *sling arms*, move your left arm across your chest, in the same manner as the rifle salute at right shoulder arms, and touch your right shoulder with your forefinger. Your left forearm is horizontal and the palm is down (fig. 96). On the *second count*, cut your left hand smartly away to your side.

133. SLING AND UNSLING ARMS

The command SLING, ARMS, is given from order arms only. This movement is not executed in cadence. If the sling is not adjusted, at the command of execution, place the butt of the rifle on your right hip and cradle the rifle in the crook of your right arm. Adjust the sling with both hands and then sling your rifle on your right shoulder in the most convenient manner. When at sling arms, your right forearm is horizontal and your right hand is grasping the sling. The barrel of the rifle is held vertical (fig. 97). If the sling is already adjusted at the command ARMS, sling your rifle in the most convenient manner.

Figure 97. Sling arms.

Figure 96. Rifle salute at sling arms.

The command UNSLING, ARMS is given only at the sling arms position. At the command of execution, unsling your rifle and bring it to order arms in the most convenient manner, steadying it with the left hand.

Before precise movements of the manual are given, the command ADJUST, SLINGS is given. At the command SLINGS, tighten your sling.

At the command ARMS, of PRESENT, ARMS, execute the rifle salute at sling arms. At the command ARMS, of ORDER, ARMS, move your left hand and arm smartly to your side then resume the original position of sling arms.

Parade rest and at ease are executed while at sling arms in the same way as at order arms except the rifle remains slung and the sling is held with the right hand. When the command REST is given, the rifle may be unslung. However, at the preparatory command of SQUAD or PLATOON take the position of parade rest at sling arms.

134. FIX AND UNFIX BAYONETS

The command FIX, BAYONETS is given at order arms. At the command BAYONETS, when the bayonet scabbard is on your belt, move the muzzle of your rifle to your left front and regrasp the rifle below the bayonet stud with your right hand. Then grasp the bayonet handle with your left hand and draw the bayonet from the scabbard. Glancing down, turn the point of the bayonet upward and fix the bayonet on the rifle by guiding the ring over the end of the flash suppressor and seating the bayonet catch over the bayonet stud. Resume the position of order arms.

The command UNFIX, BAYONETS is given at order arms. At the command BAYONETS, when the bayonet scabbard is on your belt, move your rifle to your left as when fixing bayonets. Glancing down, grasp the handle of the bayonet and flash suppressor with your left hand. With your right forefinger and thumb, release the bayonet catch by pressing it out and up. Regrasp the barrel with your right hand. With your left hand raise the bayonet until it is free of your rifle. Then, keeping your eyes on the bayonet point, return the bayonet to its scabbard with your left hand. Resume the position of order arms.

When the bayonet is on your haversack, fix and unfix bayonets in the most convenient manner, upon receiving the commands.

The movements are not executed in cadence.

135. GROUND ARMS AND TAKE ARMS

The command GROUND, ARMS, is given at order arms and open ranks. This is not executed in cadence. At the command ARMS, step forward with the left foot, bend over and place your rifle on the ground in front of your right foot. The butt against your right toe and the muzzle straight out. The pistol grip is to the right and the arming handle down. Step back with your left foot and resume the position of attention.

The command TAKE, ARMS is given at the position of attention and is not executed in cadence. At the command ARMS, step forward with your left foot, bend over and pick up your rifle with your right hand. Step back with your left foot and resume the position of order arms.

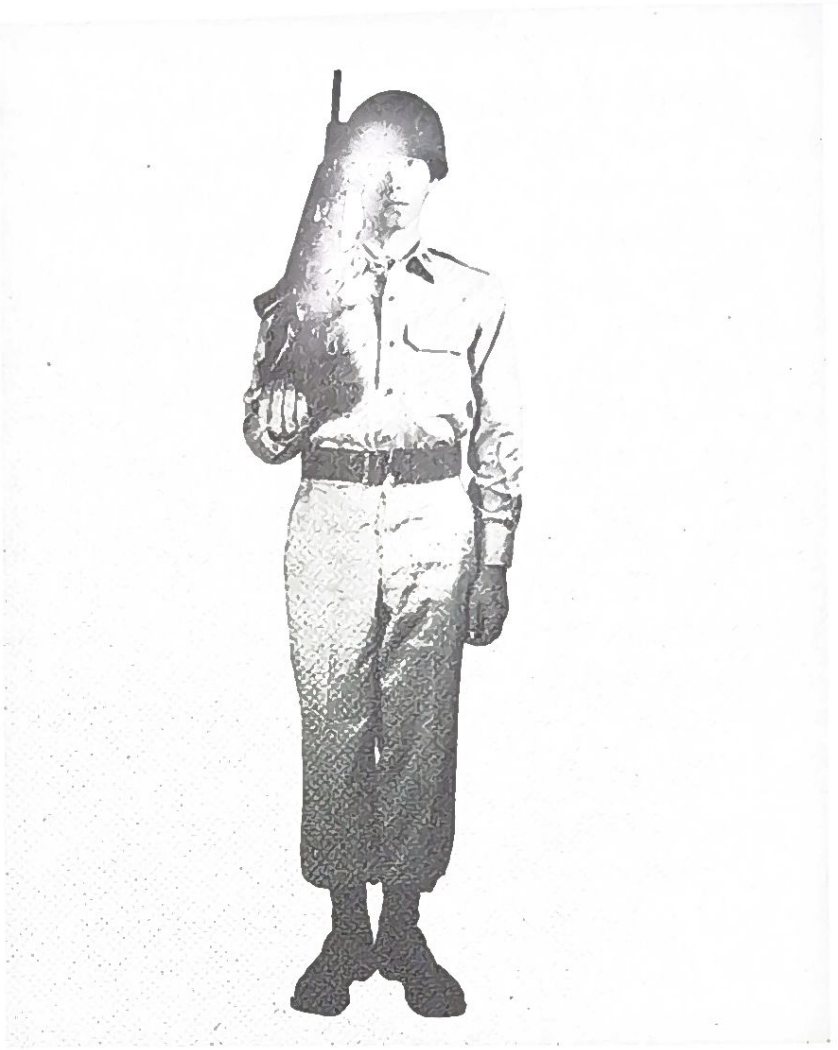


Figure 98. Carry on the right shoulder.

Figure 99. Carry on the left shoulder.

136. READY POSITIONS

The following ready positions are not formal positions of the manual of arms, but can be used as rest positions on marches to lessen fatigue and while on guard.

In the ready position of *carry on the right shoulder*, the rifle is carried flat on the right shoulder, muzzle to the rear and pistol grip to the right (fig. 98).

In the ready position of *carry on the left shoulder*, the rifle is carried flat on the left shoulder, muzzle to the rear and pistol grip to the left (fig. 99).

In the ready position of *carry under the right arm*, the butt of the rifle is placed under the right arm between the elbow and side with the muzzle pointing to the front and down. Without the magazine grasp the rifle at the balance with the right hand. With the magazine in the rifle place your right hand at the handguard.

In the ready position of *port arms*, carry the rifle diagonally across your body as at PORT ARMS.

In field exercises and when directed, the rifle can also be carried in either hand with the *carrying handle*.

Section II. MANUAL OF ARMS T48E1

137. GENERAL

Except when otherwise prescribed, the T48E1 rifle is carried slung over your right shoulder in a position similar to that prescribed for the T48 rifle (fig. 100).

During marches and field exercises, left shoulder arms may be commanded to ease fatigue. Change your rifle to your left shoulder without cadence. Otherwise, remain at sling arms during the manual.

When you are given AT EASE, keep your rifle slung unless otherwise ordered.

When you are given REST, you may unsling your rifle. When the preparatory command SQUAD or PLATOON is given, sling your rifle and come to parade rest.

Parade rest is executed with the rifle at sling arms. Execute the remainder of the position as with the T48 rifle.

When you are armed with the T48E1 rifle, give the rifle salute at sling arms when PRESENT, ARMS is given.

Figure 100. Sling arms, T48E1.

138. INSPECTION ARMS

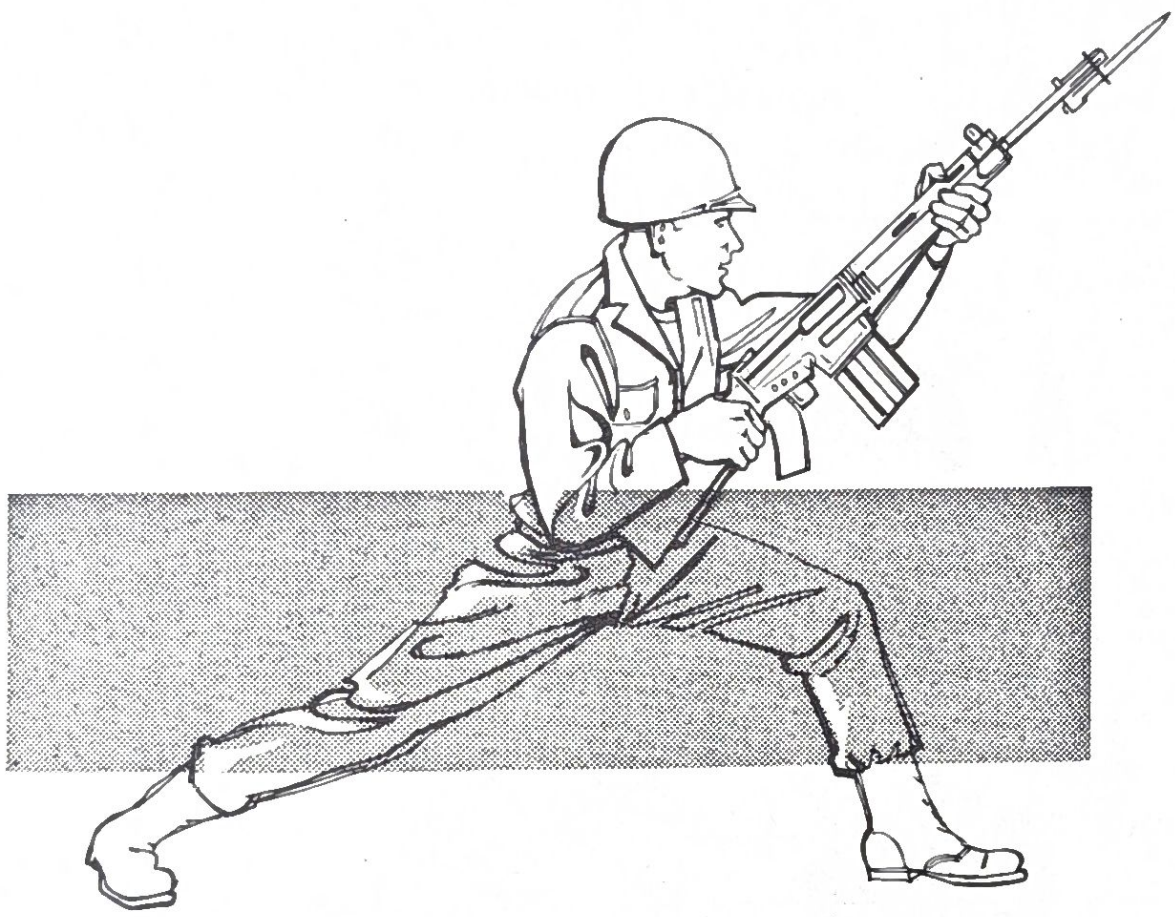
INSPECTION, ARMS is commanded when you are at sling arms. At the command ARMS, grasp and release the magazine with your left hand, withdraw it and place it in your belt, open end down, the front of the magazine facing toward the right. Pull back the arming handle with your left hand to cock the rifle and press the bolt stop with your left forefinger to hold the bolt open. Then slide the

arming handle forward with your left hand. Regrasp the magazine and hold it in the palm of your left hand (fig. 101).

On the preparatory commands INSERT or PORT of INSERT, MAGAZINE or PORT, ARMS, release the bolt stop with your left hand, allowing the bolt to go forward, and pull the trigger with your left forefinger. Replace the magazine with your left hand. On the command of execution resume the position of sling arms.

When the T48E1 rifle is carried without the magazine, execute inspection arms as described above execept for the movements of removing and replacing the magazine.

Figure 101. Inspection arms, T48E1.



Chapter 6
BAYONET

139. GENERAL

Bayonet training with the T48 rifle will be conducted as prescribed in FM 23-25.

The positions and movements for bayonet training with the T48 rifle are the same as for the M1 rifle, however, the movements from the GUARD position to the AT EASE position and from the AT EASE position to the GUARD will be slower and more deliberate because of the construction of the T48 rifle.

INDEX

	Paragraph	*Page*
Action:		
After firing last round (functioning)	21	23
Gas	18	19
Trigger group (functioning)	20	21
Adjustment of hasty sling	55	45
Adjusting the sights	78	59
Aiming disk (training aid)	123	106
Alternate sitting positions	50	37
Ammunition, description	3	3
Assembly:		
Automatic sear	11	14
Barrel and receiver group	7	7
Bolt and bolt carrier	7	7
Bolt stop	9	10
Butt plate	13	18
Change lever	11	14
Cover, receiver	7	7
Driving spring	13	18
Extractor and spring	7	7
Firing pin	7	7
Gas cylinder plug	7	7
Gas piston and spring	7	7
Hammer	11	14
Hammer spring housing	11	14
Magazine catch	14	18
Rear sight lock	15	18
Sear and sear spring	11	14
Stock	13	18
Stock group and rear sight	13	18
Trigger	11	14
Trigger housing group	11	14

	Paragraph	*Page*
Automatic:		
Fire exercises	74	58
First and second	75	58
Preliminary training	74	58
Firing (functioning)	20	21
Sear:		
Assembly	11	14
Disassembly	10	13
Barrel and receiver group:		
Assembly	7	7
Disassembly	16	18
Functioning	17	19
Battle sight	88	68
Bayonet	43	31
Training	139	125
Bipod	3	3
Bolt and bolt carrier:		
Assembly	7	7
Cleaning	41	30
Disassembly	6	4
Functioning	18, 19	19, 20
Bolt stop:		
Assembly	9	10
Disassembly	8	10
Functioning	21	23
Bore, cleaning of	39-42	30
Butt plate:		
Assembly	13	18
Disassembly	12	17
Care and cleaning	37	30
After firing	41	30
Before firing	40	30
Cleaning materials	38	30
During field exercises	42	31
When no firing is done	39	30

	Paragraph	*Page*
Chamber:		
Cleaning	40-42	30
Pressure	18	19
Chambering (functioning)	19	20
Change lever:		
Assembly	11	14
Description	3	3
Disassembly	10	13
Setting	26	25
Cleaning rod	43	31
Clearing the rifle	27	25
Clock system (training aid)	123	108
Coaching, marksmanship training	45	33
Cocking (functioning)	18	19
Combination tool	43	31
Cover, receiver:		
Assembly	7	7
Disassembly	6	4
Courses A through D:		
Transition firing T48	95	72
Crouch firing position, T48E1	58	49
Cyclic rate (automatic)	3	3
Deflection formula	78	59
Descriptions and characteristics	3	3
Disassembly:		
Automatic sear	10	13
Barrel and receiver group	6	4
Bolt and bolt carrier	6	4
Bolt stop	8	10
Butt plate	12	17
Change lever	10	13
Chart	5	4
Cover, receiver	6	4

	Paragraph	*Page*
Disassembly (cont):		
Driving springs	12	17
Extractor	6	4
Firing pin	6	4
Gas system	6	4
Hammer	11	14
Hammer spring house	10	13
Magazine catch	8	10
Rear sight	12	17
Rules, general	5	4
Sear	10	13
Stock	12	17
Stock group and rear sight	12	17
Trigger	10	13
Trigger housing group	10	13
Driving springs:		
Assembly	13	18
Disassembly	12	17
Effect of wind	79	62
Effective range (maximum)	3	3
Elevation formula	78	59
Ejection (functioning)	18	19
End of forward movement (functioning)	19	20
End of rearward movement (functioning)	18	19
Equipment and targets:		
T48	100	77
T48E1	101	77
Extraction (functioning)	18	19
Extractor:		
Assembly	7	7
Disassembly	6	4
Failure to (training aid):		
Chamber	122	96
Eject	122	102, 103

	Paragraph	*Page*
Failure to (training aid) ; (cont) :		
Extract	122	99, 101
Feed	122	94, 95, 97
Fire	122	98
Feeding (functioning)	18	19
Method	3	3
Fifth sustained fire exercise	72	57
Fire commands:		
T48	90	68
T48E1	91	68
Firepower	4	3
Firing:		
Commands	90, 91	68
Data card	82	63
Training aids	123	104
Instructor	86, 87	67
Known-distance:		
T48	93	69
T48E1	96	75
Pin:		
Assembly	7	7
Disassembly	6	4
Record	86,89	67,68
Transition:		
T48	94	72
T48E1	97	76
First sustained fire exercise	68	53
Fix and unfix bayonets	136	123
Flinching	62	52
Forward movement:		
Bolt carrier	19	20
Training aid	121	93
Fourth sustained fire exercise	71	57

	Paragraph	*Page*
Front sight:		
Changes (training aid)	123	107
Wrench	43	31
Zeroing	77	59
Functioning:		
Bolt stop	21	23
Cycle of	16	18
Cycle (training aid)	121	91
Forward movement	19	20
Phases of	17	19
Rearward movement	18	19
Rifle	18-21	19
Trigger group	20	21
Gas:		
Adjustment	29	25
Cylinder:		
Cleaning	39-42	30
Plug:		
Assembly	7	7
Care and cleaning	40, 41	30
Disassembly	6	4
Piston:		
Assembly	7	7
Care and cleaning	40, 41	30
Disassembly	6	4
Functioning	18	19
System (training aid)	121	92
Grenade launcher	31, 43	26, 31
Gun book	30	26
Hammer:		
Assembly	11	14
Disassembly	10	13

	Paragraph	*Page*
Hammer (cont):		
Spring housing:		
Assembly	11	14
Disassembly	10	13
Hasty sling adjustment	55	45
Hinged butt plate	3	3
Hip firing position (T48)	57	47
Immediate action	32, 121	27
First phase	34	29
Second	35	29
Inspection arms (manual of arms):		
T48	133	121
T48E1	138	123
Instruction firing	86, 87	67
Kneeling position	54	43
Known-distance firing:		
T48	93	69
T48E1	96	75
Left shoulder arms (manual of arms)	131	119
Length of rifle	3	3
Light, effect of	81	63
Linseed oil	38	30
Loading the rifle	24	24
Locking (functioning)	19	20
Magazine:		
Care and cleaning	42	31
Catch:		
Assembly	9	10
Disassembly	8	10
Loading	23	24
Weight and capacity	3	3
Magnetic target (training aid)	123	110
Manual of arms:		
T48	124, 125	111
T48E1	137	123

	Paragraph	*Page*
Marksmanship training:		
Coaching	45	33
Phases	44	33
Progress chart	46	34
Maximum range	3	3
Mechanical training	106	79
Training notes:		
T48	107	79
T48E1	115, 118	86, 89
Medium preservative lubricating oil	38	30
Muzzle velocity	3	3
Operation (method)	3	3
Order arms (manual of arms)	126	112
Phases of functioning	17	19
Pit:		
Operation	98	76
Record firing	99	76
Score cards	99	76
Port arms (manual of arms)	130	117
Preparatory marksmanship	47,84	34
T48	108, 109	81, 82
T48E1	116, 119	87, 89
Present arms (manual of arms)	132	120
Progress chart	46	34
Prone position	50	37
Qualification score:		
Known-distance:		
T48	93	69
T48E1	96	75
Transition:		
T48	95	72
T48E1	97	76

	Paragraph	*Page*
Range firing	110	85
Training notes:		
T48	112	85
T48E1	117, 120	88, 90
Rear sight:		
Assembly	13	18
Base:		
Removing	14	18
Replacing	15	18
Changes (training aid)	123	107
Disassembly	12	17
Zeroing	77	59
Rearward movement (training aid)	121	91
Bolt carrier	18	19
Record firing	86, 89	67
Removing the rear sight base	14	18
Replacing the rear sight base	15	18
Rest positions (manual of arms)	127	113
Rifle:		
Marksmanship training aids	123	104
Rest (training aid)	123	106
Salute (manual of arms)	134	122
Right shoulder arms (manual of arms)	129	115
Safety:		
Features:		
Bolt carrier	18	19
Setting	20	21
Precautions	28, 92	25, 69
Sear:		
Assembly	11	14
Disassembly	10	13
Second sustained fire exercise	69	54
Semiautomatic firing (functioning)	20	21

	Paragraph	*Page*
Shot groups analysis	76	59
Sight:		
Adjustment	78	59
Alinement	47	34
Description	3	3
Picture	47	34
Model	123	105
Sighting and aiming:		
Bar (training aid)	123	105
Exercises	47	34
Sitting position	52	40
Alternate positions	53	42
Slides, use of	122	94
Sling	48	34
Crouch position, adjustment for	58	49
Hasty	55	45
Loop	49	36
M1, web	43	31
Shot device (training aid)	123	108
Sling and unsling arms:		
T48	135	122
T48E1	137	123
Spare parts	43	31
Special preservative lubricating oil	38	30
Spot weld	50	37
Standard course:		
Tables I through VIII	93	69
Standing position	56	46
Steps of preparatory marksmanship:		
T48 and T48E1 training aid	123	104
Stock:		
Assembly	13	18
Disassembly	12	17
Group and rear sight:		
Assembly	13	18
Disassembly	12	17
Group tool	13	18

	Paragraph	*Page*
Stoppages	32	27
Second phase	36	29
Training aid	121, 122	93, 94
Types and courses	33	27
Subject schedules	103	78
Sustained fire	67	53
Chart (training aid)	123	107
Exercises	68-72	53
Preliminary training	74	58
Tables I through VIII:		
Known-distance firing:		
T48	93	69
T48E1	96	75
Target dimensions (training aid)	123	109
Third sustained fire exercise	70	55
Trail arms (manual of arms)	128	113
Training:		
Aids	121	90
Hours	105	78
T48	105	78
T48E1	114	86
Mechanical	106, 107	79
Notes and program	104	78
Range firing	112	85
Preparatory marksmanship:		
T48	108, 109	81, 82
T48E1	116, 118, 119	87, 89
Transition firing	111	85
Courses A through D (T48)	95	72
Training notes (T48)	113	86
Trigger:		
Assembly	11	14
Disassembly	10	13

	Paragraph	*Page*
Trigger (cont) :		
Housing group:		
Assembly	11	14
Cleaning	41	30
Disassembly	10	13
Manipulation (T48E1)	64, 65	52
Duties of coach	66	53
Training aid	123	106
Squeeze	59, 61	50
Duties of coach	63	52
Unloading the rifle	25	24
Unlocking (functioning)	18	19
Velocity of wind, effect of	80	63
Weight of rifle	3	3
Zeroing	77	59
Known-distance range	83	65

12842 ARMY—FT. BENNING, GA. 8 DEC 54 1500