TM 9-1005-206-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATION AND ORGANIZATIONAL MAINTENANCE

CALIBER .22 RIFLE M13

REMINGTON RIFLE M513T

STEVENS RIFLE M416-2T

AND

WINCHESTER RIFLE M75T

HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1958

This technical manual is correct to 2 June 1958

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TECHNICAL MANUAL
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HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *15 July 1958*

CALIBER .22 RIFLE M13: REMINGTON RIFLE M513T, STEVENS RIFLE M416–2T, AND WINCHESTER RIFLE M75T

***This manual supersedes TM 9–280, 16 March 1944, and TB 9–280–1, 10 February 1949.**

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual contains instructions for the use of personnel to whom this materiel is issued. It contains information on the operation and organizational maintenance of the cal. .22 Remington rifle M513T (fig. 1), the

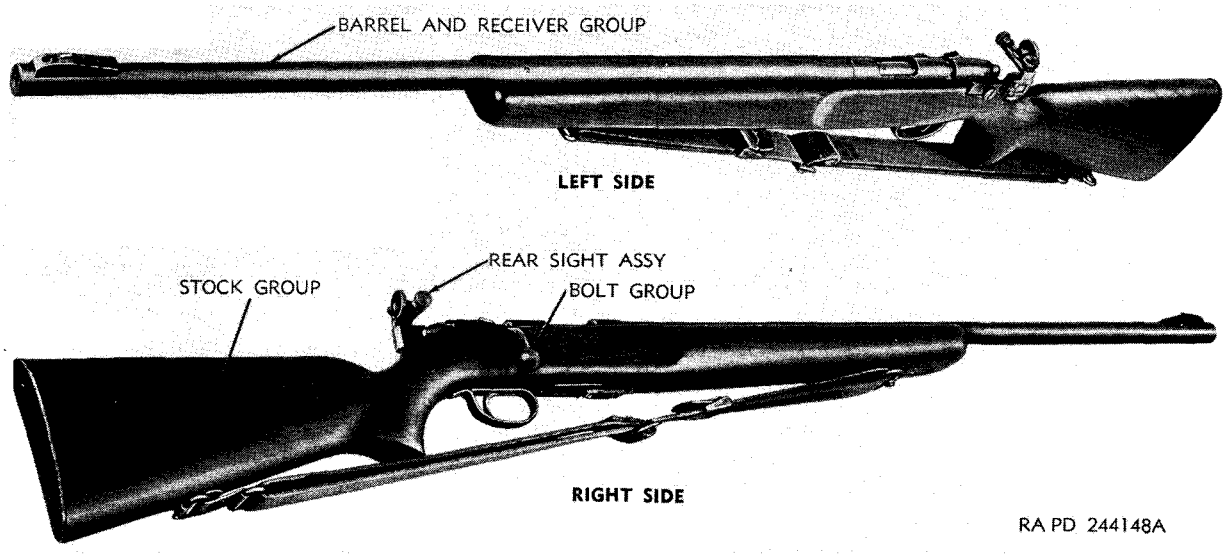


Figure 1. Cal. .22 Remington rifle M513T—left and right side views.

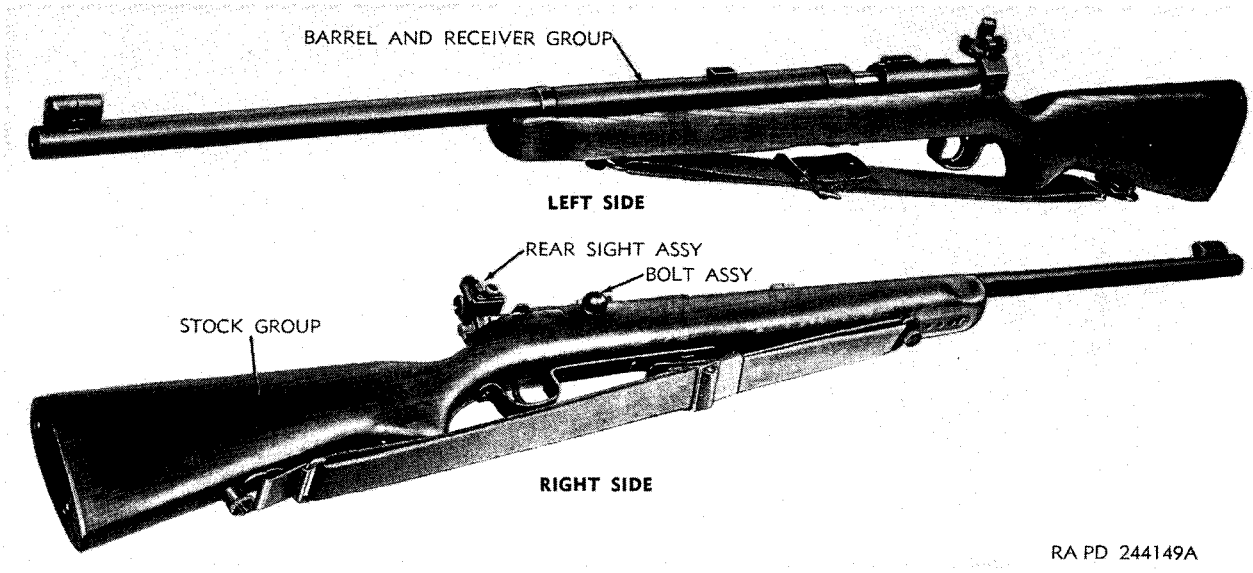


Figure 2. Cal. .22 Stevens rifle M416-2T—left and right side views.

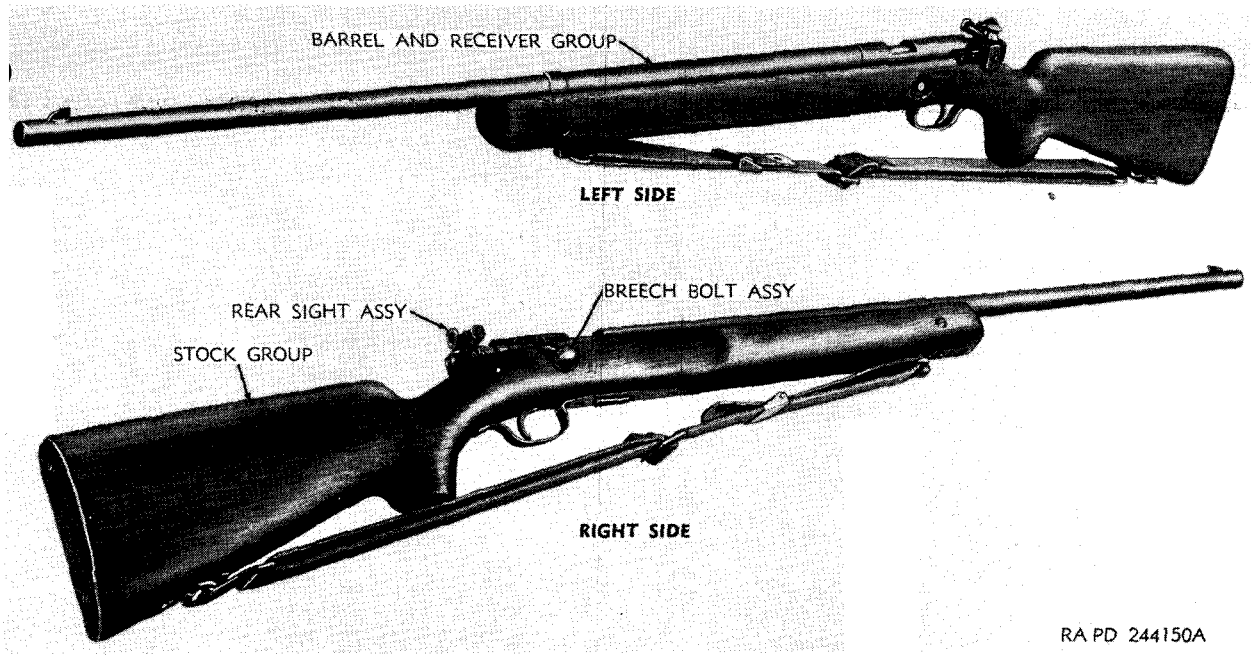


Figure 3. Cal. .22 Winchester rifle M75T—left and right side views.

cal. .22 Stevens rifle M416–2T (fig. 2), and the cal. .22 Winchester rifle M75T (fig. 3) for using units.

b. The appendix contains a list of current references, including supply and technical manuals, and other publications applicable to the weapon.

c. Any errors or omissions will be brought to the attention of the Commanding Officer, Raritan Arsenal, Metuchen, N. J., ATTN: ORDJR–CPRA, using DA Form 468 (Unsatisfactory Equipment Report).

d. This manual differs from TM 9–280, dated 16 March 1944, as follows:

(1) Revises information on:
Cal. .22 Remington rifle M513T
Cal. .22 Stevens rifle M416–2T
Cal. .22 Winchester rifle M75T.

(2) Deletes references to:
Cal. .22 U. S. rifles M1922, M1, and M2.

2. Organizational Maintenance Allocation

In general, the prescribed organizational maintenance responsibilities will apply as reflected in the appropriate columns of the current Department of the Army Supply Manual ORD 7 SNL B–25 and in accordance with the extent of disassembly prescribed in this technical manual for the purpose of cleaning, lubricating or replacing parts. In all cases, where the nature of repair, modification, or adjustment is beyond the scope or facilities of the using organization, the supporting ordnance maintenance unit should be informed in order that trained personnel with suitable tools and equipment may be provided or other instructions issued.

3. Forms, Records, and Reports

a. General. Responsibility for the proper execution of forms, records, and reports rests upon the officers of all units maintaining this equipment. However, the value of accurate records must be fully appreciated by all persons responsible for their compilation, maintenance, and use. Records, reports, and authorized forms are normally utilized to indicate the type, quantity, and condition of materiel to be inspected, to be repaired, or to be used in repair. Properly executed forms convey authorization and serve as records for repair or replacement of materiel in the hands of troops and for delivery of materiel requiring further repair to ordnance shops. The forms, records, and reports establish the work required, the progress of the work within the shops, and the status of the materiel upon completion of its repair.

b. Authorized Forms. The forms generally applicable to units operating and maintaining this materiel are listed in the appendix. For a listing of all forms, refer to DA Pam 310–2. For instructions on the use of these forms, refer to FM 9–10.

c. Field Report of Accidents.

(1) *Injury to personnel or damage to materiel.* The reports necessary to comply with the requirements of the Army safety program are prescribed in detail in AR 385–40. These reports are required whenever accidents involving injury to personnel or damage to materiel occur.

(2) *Ammunition.* Whenever an accident or malfunction involving the use of ammunition occurs, firing of the lo which malfunctions will be immediately discontinued. In addition to any applicable reports required in (1) above, details of the accident or malfunction will be reported as prescribed in AR 700–1300–8.

d. Report of Unsatisfactory Equipment or Materials. Any deficiencies detected in the equipment covered herein, which occur under the circumstances indicated in AR 700–38, should be immediately reported in accordance with the applicable instructions in cited regulations.

Section II. DESCRIPTION AND DATA

4. Description

a. General.

(1) These rifles are procured to provide an accurate small-bore weapon for training purposes. Three types of commercial rifles are covered by this technical manual and are listed in paragraph 1*a*.

(2) These rifles are bolt operated and magazine-fed. The magazine will hold either 5 or 6 cartridges and one additional cartridge may be inserted into the chamber, making a maximum capacity for any one loading of 6 or 7 shots. A cartridge is ejected and a new one inserted into the chamber by drawing the bolt back and pushing it closed again. The rear sights are adjustable for both windage and elevation.

(3) Each of the cal. .22 rifles may be disassembled into five groups and/or assemblies: the bolt group or assembly; the magazine assembly or magazine; the rear sight assembly; the barrel and receiver group; and the stock group. Nomenclature of like parts, assemblies, or groups with similar functions composing the three distinct rifles covered in this technical manual vary somewhat. *For example,* the bolt groups are designated as groups or assemblies to agree with the listing in the supply manual pertaining to the rifle.

(4) The bolt group of the Remington rifle M513T is not designated as an assembly in the supply manual and is therefore called a group in this technical manual. The bolt group of the Stevens rifle M416–2T is termed "bolt assembly," that of the Winchester rifl M75T is referred to as "breech bolt assembly."

b. Remington Rifle M513T (fig. 4). The Remington rifle M513T (figs. 1 and 34) consists basically of a bolt group, magazine assembly, a rear sight assembly, a barrel and receiver group, and a stock group.

Note. The key letters shown below in parentheses refer to figure 4.

(1) *Bolt group* (fig. 5). The extractors are mounted on each side of the forward end of the bolt in two machined slots. They are retained there by two extractor pins passing through their centers and are operated by one extractor spring passing vertically through the bolt and pushing the rear of each extractor outward and forcing their front ends inward. The bolt (E) and firing pin (Y) are pinned together by the firing pin retaining pin but the firing pin retaining pin hole in the bolt is elongated to permit the firing pin to move back and forth inside the bolt.

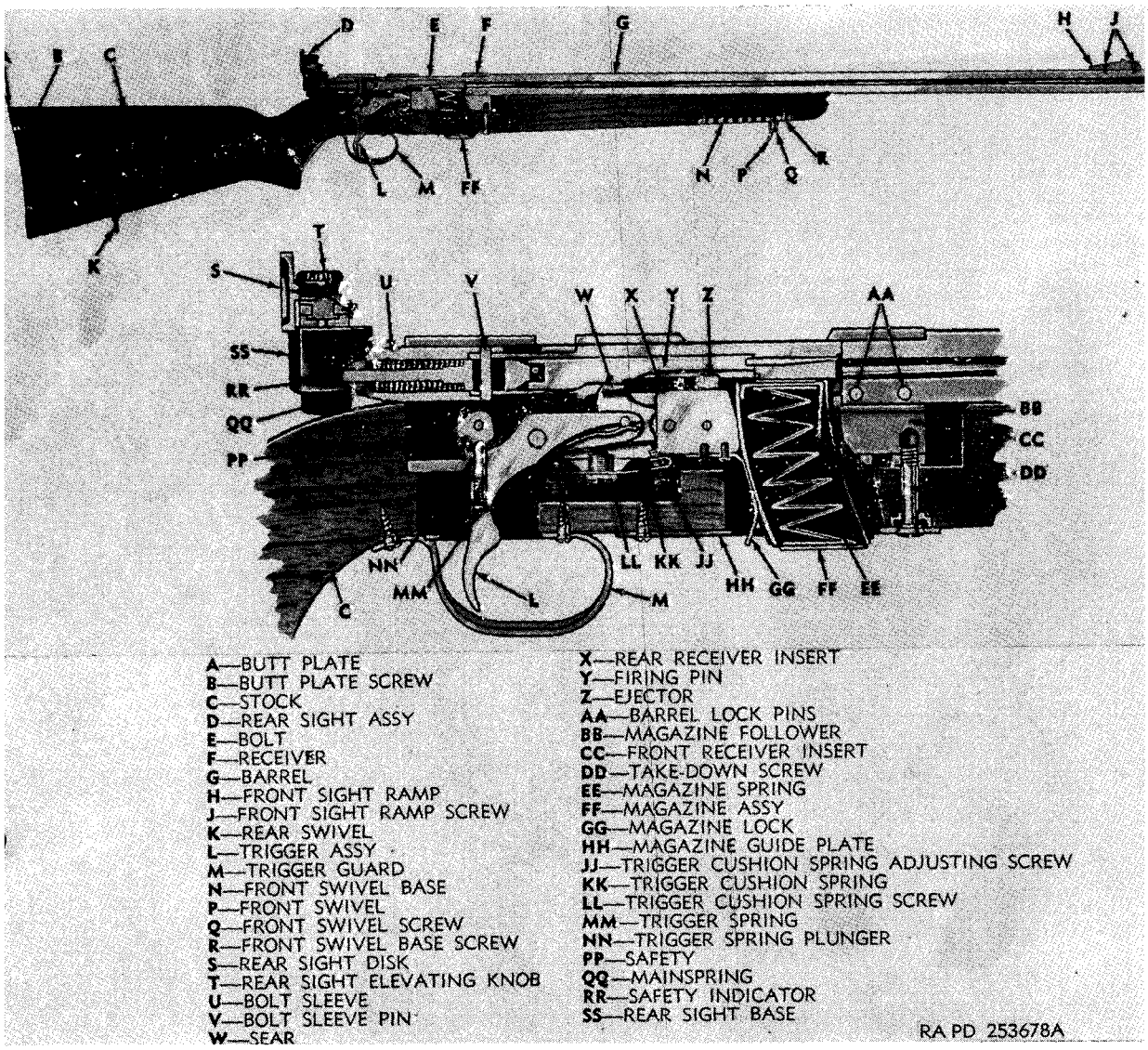


Figure 4. Remington rifle M513T—sectional view.

The firing pin is assembled in the hole at the center of the bolt with the needle point end of the pin mating with the similarly shaped hole in the front of the bolt. The bolt handle is mounted on the rear shoulder of the bolt and is retained by the pinned bolt sleeve that also is mounted on the bolt rear shoulder. The compressed mainspring (QQ), which is located between the bolt sleeve (U) and the safety indicator (RR), supplies the force to cause the firing pin to strike the cartridge rim.

(2) *Magazine assembly* (fig. 6). The magazine assembly is located below the front end of the bolt (E) and forward of the trigger (L) and sear (W) in the receiver and is retained in place by the magazine lock (GG). The magazine is of sheet metal construction. Magazine spring (EE) and follower (BB) push the cartridges to the top of the magazine, where the bolt face and extractors (fig. 5) remove them when needed. The magazine has lips at the top where the cartridge is held prior to feeding and has a removable

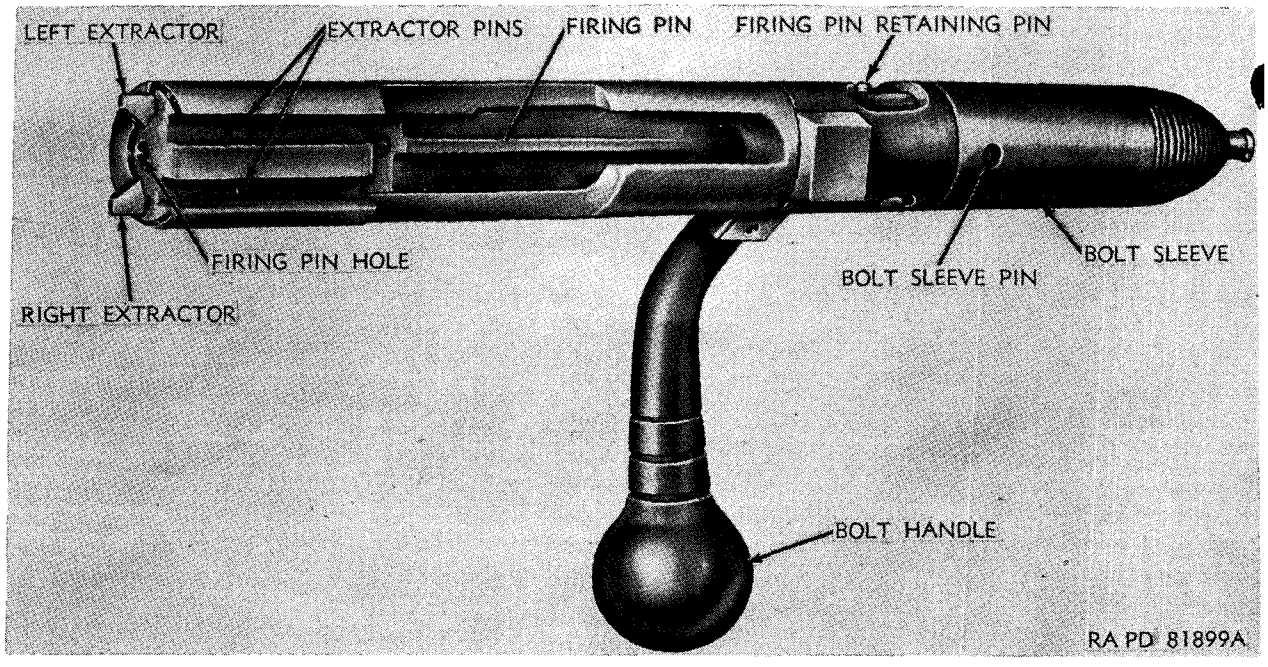


Figure 5. Bolt group (Remington rifle M513T)

plate fitted with a finger grip. The follower is U-shaped on the bottom to act as a seat for the spring and has a radius shaped to fit the cartridges on top. The spring maintains pressure against the follower and, when the magazine is loaded, forces the cartridges to the top. Lips on the sides of the magazine retain the top cartridge until the bolt, as it is closed, moves the cartridge forward to a slot on each side of the magazine, permitting the cartridge rim to be released from the magazine and into the firing chamber of the barrel.

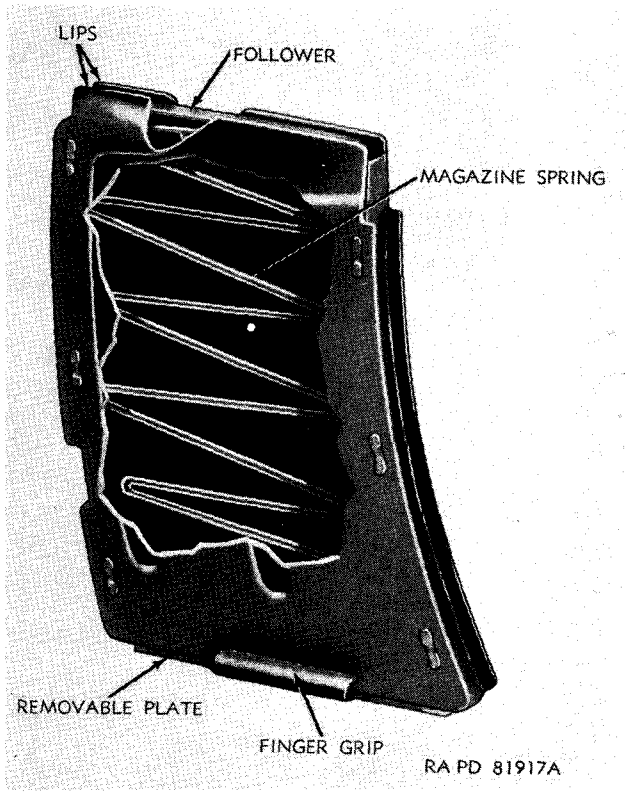


Figure 6. Magazine assembly (Remington rifle M513T).

(3) *Rear sight assembly* (fig. 7).

Caution: The rear sight must be handled with care, since the rear sight disk and rear sight elevating slide are easily damaged.

The rear sight assembly (Redfield 75RT) (D) is secured to the mounting block on the left-rear side of the receiver (F) by the rear sight base mounting screw. The mounting block is attached to the receiver by two mounting block screws. The elevating slide fits into a recess in the rear sight base (SS) and is moved up and down by means of the rear sight elevating knob (T) and screw. The elevating slide plate is mounted to the base by

two screws. The holes in this plate are elongated to provide means of moving the plate up and down for adjustment. The pointer, integral with this plate, together with the graduation lines on the elevating slide indicate to what elevation the sight is set. The graduation lines are in minutes of angle. The rear sight disk (S) screws into the windage yoke, which is so constructed that it slides over the top and bottom and into the slot of the elevating slide. The windage yoke and disk are moved laterally by means of the windage knob and screw which extends through the threaded yoke. The front side of the yoke has a line scribed at its center. This line and the graduation lines on the windage index plate indicate to what windage the sight is set. The windage index plate is mounted on the front of the elevating slide by a screw. The windage index plate screw hole in the index plate is elongated to provide means of moving the plate to the right and to the left for adjustment. The elevating and windage screws are controlled by micrometer graduated dial knobs fastened by setscrews. Detent balls under these knobs act as clicks, so that a distinct click is heard when the knobs are turned. Each click equals $\frac{1}{16}$-inch shift of the impact of the bullet on the target at 25 yards, $\frac{1}{8}$ inch at 50 yards, and $\frac{1}{4}$ inch at 100 yards.

(4) *Barrel and receiver group* (fig. 8). The barrel and receiver group mounts in a machined mortise in the stock (C). The mortise is shaped to form a firm base for the rectangular shaped receiver (F) in the rear and one-half the length of the circular barrel (G) in the front. The barrel and receiver group is secured to the stock by one takedown screw (DD). The rear sight assembly (D) is located on the left-rear side of the receiver (F) while the

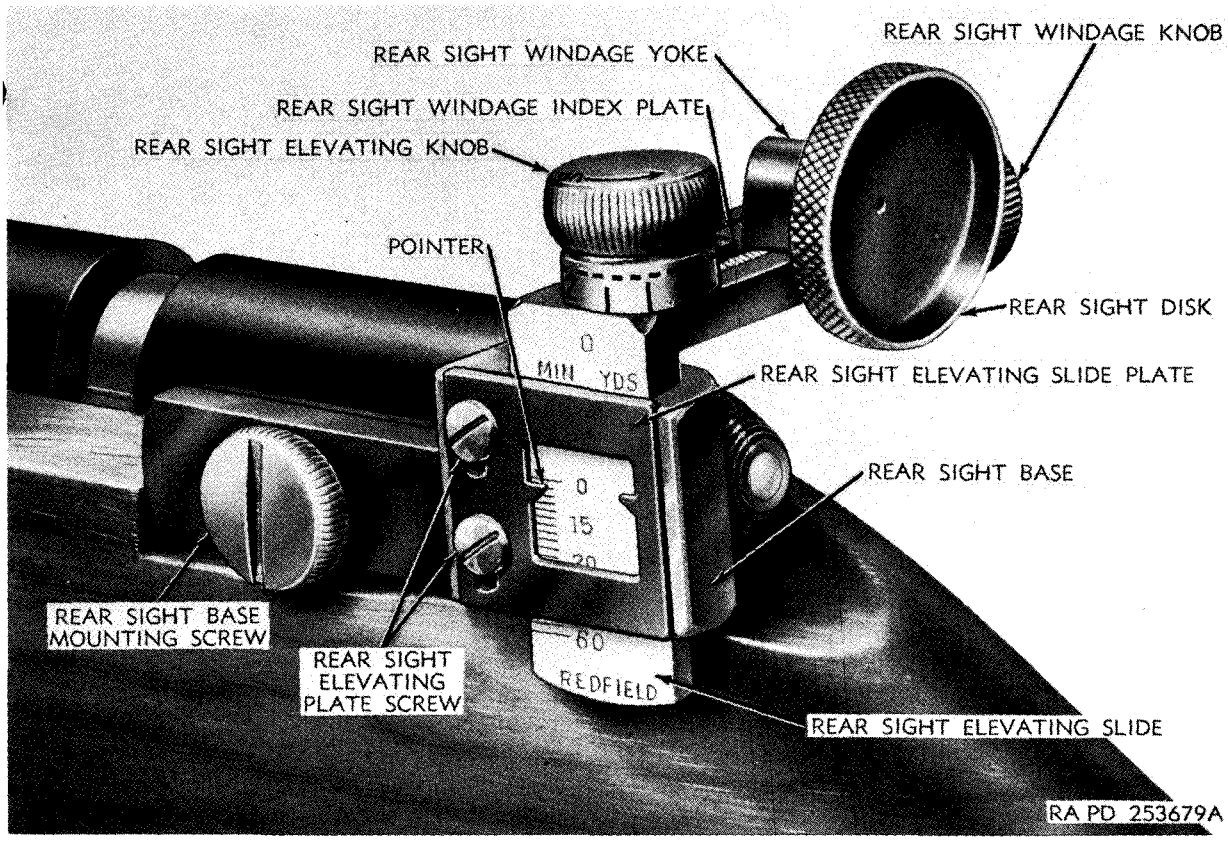


Figure 7. Rear sight assembly (Remington rifle M513T).

bolt (E) is mounted through and moves back and forth in the receiver bolt hole. The receiver is slotted at the right rear to receive the bolt handle. An opening is located directly above the magazine (FF) on the front top of the receiver to allow the cartridge to be ejected. A hole running almost its entire length is machined on the bottom of the receiver, the rear of which contains the trigger assembly (L) and front of which is the aperture that houses the magazine assembly. The breech of the barrel is recessed to receive the ends of the extractors. The barrel (G) is pressed into the receiver (F) and held in place by two barrel lock pins (AA) that lock the barrel, the receiver, and the front receiver insert (CC) together. The front sight ramp (H) is mounted on top of the barrel near the muzzle and is held by two front sight ramp screws (J). The trigger (L) is pivoted on its pin, which passes through the side of the receiver. The back of the sear (W) is installed on the front of the trigger by means of the sear stud. The front end of the sear is mounted on the sear pivot screw. This permits the sear to pivot on the forward end of the trigger when the trigger is squeezed. The upper portion extends into the receiver well where it can engage with the sear notch on the firing pin (Y). A trigger spring (MM) and plunger (NN) are located in the trigger hole. The plunger contacts the cam surface of the safety (PP) mounted between the walls of the receiver and the plunger spring puts tension on the trigger. The trigger takeup spring located in a slot in the bottom of the trigger gives tension between trigger and sear. A trigger cushion spring (KK) is mounted on the bottom of the receiver by a screw (LL). Trigger cushion spring adjusting screws (JJ) engage the trigger and sear and are used to adjust trigger squeeze. The magazine lock (GG) is mounted by two lock screws on the bottom of the rear receiver insert (X)

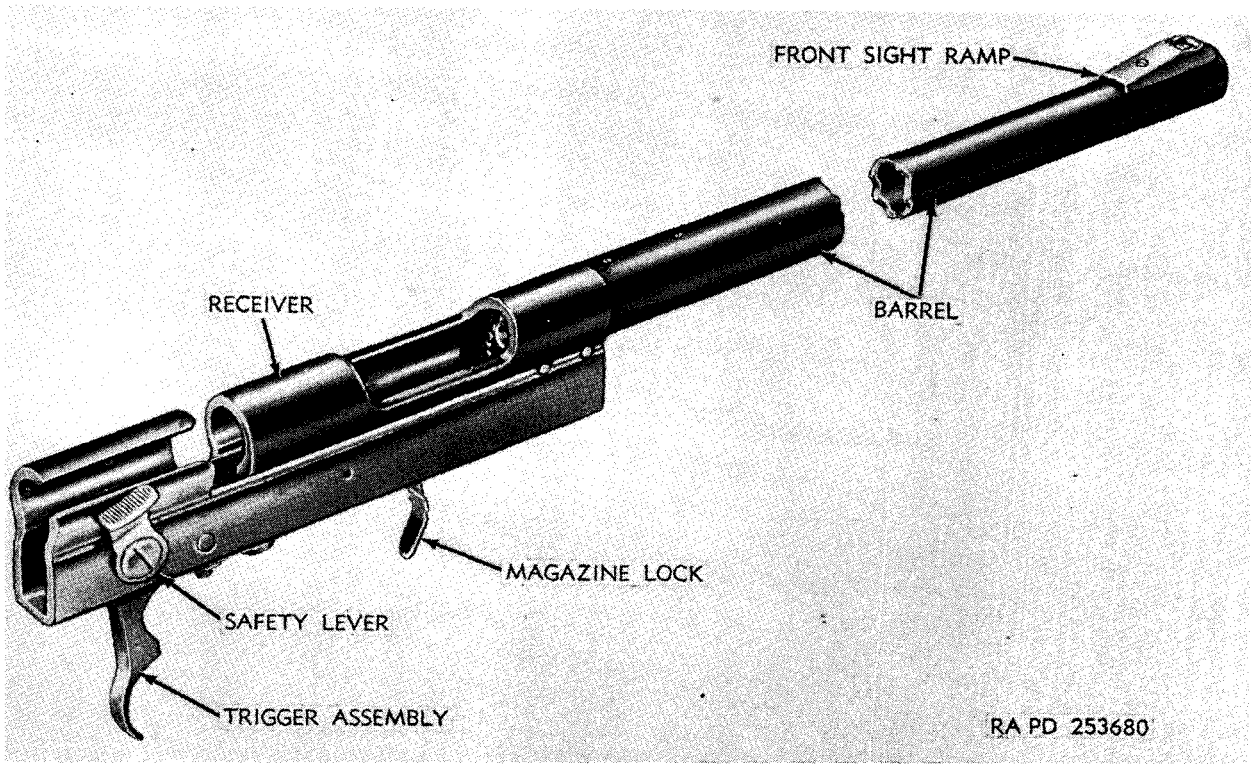
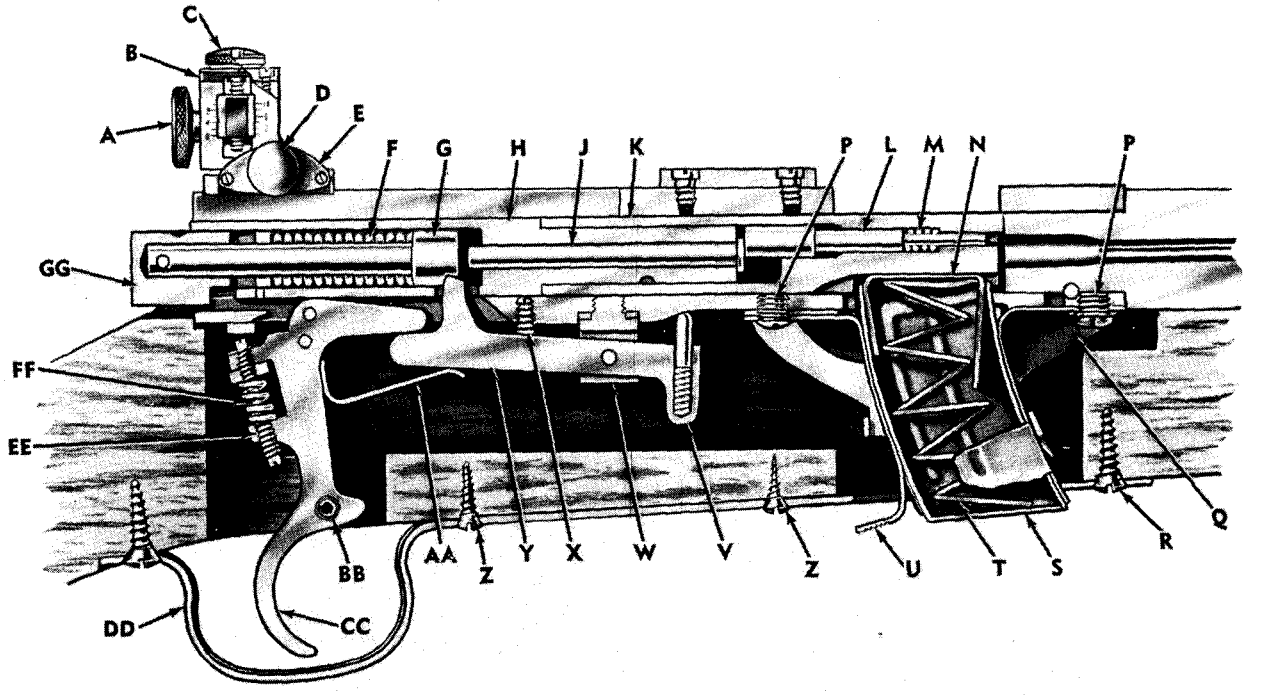


Figure 8. Barrel and receiver group (Remington rifle M513T).

and serves to retain the magazine in position in the rifle. The ejector (Z) is mounted in the bottom of the receiver by means of the ejector screw and the sear pivot screw. The sear pivot screw passes through the pivot hole in the sear, the ejector, and the rear receiver insert.

(5) *Stock group.* The stock (C) is cut out at the top for the barrel (G) and receiver (F). The side is slotted to receive the bolt handle. The bottom is mortised to receive the front swivel base (N), the trigger (L), and the magazine assembly (FF). The front swivel (P) is secured to the front swivel base by a front swivel screw (Q). Seven tapped holes in the swivel base (N) permit moving the swivel for adjusting of the handhold with relation to the sling. The rear swivel (K) is screwed to the stock by a screw which is integral with the swivel. The magazine guide plate (HH) which retains the barrel and the receiver in the stock is attached to the stock by one wood screw and one machine screw. The trigger guard (M) is secured to the stock by two wood screws. The butt plate (A) is attached to the rear of the stock with two butt plate screws (B).



A—REAR SIGHT DISK ASSY
B—REAR SIGHT WINDAGE DOVETAIL SLIDE
C—REAR SIGHT ELEVATING SCREW KNOB
D—REAR SIGHT WINDAGE SCREW KNOB
E—REAR SIGHT WINDAGE SCREW KNOB CLICK
F—MAINSPRING
G—STRIKER
H—BOLT BODY
J—FIRING PIN EXTENSION
K—BOLT HEAD
L—FIRING PIN
M—FIRING PIN SPRING
N—MAGAZINE FOLLOWER
P—MAGAZINE HOUSING SCREW
Q—MAGAZINE HOUSING W/EJECTOR
R—TRIGGER GUARD LONG SCREW
S—MAGAZINE
T—MAGAZINE SPRING
U—MAGAZINE RETAINER
V—SEAR SPRING
W—SEAR POST
X—SEAR STOP SCREW
Y—SEAR
Z—TRIGGER GUARD SHORT SCREW
AA—TRIGGER SPRING
BB—TRIGGER SIDE PLAY SCREW
CC—TRIGGER ASSY
DD—TRIGGER GUARD
EE—TRIGGER STOP PLUNGER
FF—TRIGGER STOP PLUNGER SPRING
GG—COCKING PIECE

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Figure 9. Stevens rifle M416–2T—sectional view.

c. Stevens Rifle M416–2T (fig. 9). The Stevens rifle M416–2T (figs. 2 and 39) consists basically of the bolt assembly, the magazine, the rear sight assembly, the barrel and receiver group, and the stock group.

Note. The key letters shown below in parentheses refer to figure 9.

(1) *Bolt assembly* (fig. 10). The extractors are mounted on each side of the forward end of the bolthead (K) and are retained in place by the tension of the extractor springs upon the plungers. The front of the bolthead is chambered to receive the cartridge rim and has the firing pinhole through which the firing pin passes to strike the cartridge rim. On the under side of the bolthead are the magazine clearance grooves which permit the bolt assembly to pass over the magazine. On the rear of the head is the hole for the bolthead retaining pin and the slot for the bolthead stop plunger. The head is bored to receive the firing pin (L), the firing pin spring (M) the firing pin extension (J), and the undercut portion of the front of the bolt body (H). On the back of the bolt handle is a cam which operates on the rear of the bolt body slot in the receiver and forces the bolt to its extreme forward position to finish cocking the rifle when the bolt handle is turned to the closed position. At the forward section of the bolt body is the extension upon which the bolthead is assembled. This extension is slotted to receive the bolthead retaining pin. The bolthead stop plunger and spring are assembled in a hole in the front. The plunger engages its slot in the rear of the bolthead when the bolt handle is raised. A sear recess is cut in the bolt body to form a ramp on which the sear (Y) rises when the bolt is moved forward or backward. Just ahead of the ramp, a slot provides clearance for the sear nose to hold the striker (G) in cocked position when the bolt handle is lowered after cocking. A slot at the rear of the bolt body (H) permits installation of the striker (G) and mainspring retainer. The retainer holds the mainspring (F), striker, and striker collar in position in the bolt body. The cam at the extreme rear of the bolt body acts on the cocking piece (GG) which is held stationary by its slot in the receiver and cocks the rifle when the bolt handle is raised. The firing pin spring (M) is a small coil spring assembled over the small end of the firing pin and acts to lay the firing pin against the firing pin extension when the rifle is cocked. The firing pin is machined with three different diameters. The front diameter acts as the striker and as a bearing for the firing pin when it is in the bolthead, and the rear diameter forms a shoulder to limit the forward movement against a shoulder in the bolthead. The firing pin extension (J) is assembled in the front of the bolt body and acts as a sliding connecting link between the front face of the striker (G) and the rear face of the firing pin (L). The striker has two diameters. The front or larger diameter acts as the front bearing of the striker in the bolt body. In this same diameter, the sear notch is cut for engaging the sear (Y) when the rifle is cocked, while the rear face of this diameter acts as a seat for the forward end of the mainspring (F). The small diameter of the striker receives the mainspring. In the rear end of the striker (G), a hole is drilled to receive the cocking pin retaining pin. The striker collar is located at the end of the mainspring. The striker, mainspring, and striker collar are assembled in the bolt body and retained in place by the striker and mainspring retainer. The cocking piece (GG) is bored out and assembled over the rear end of the striker, where it is retained by the cocking piece pin. The lug on the bottom of the cocking piece enters a groove in the bottom of the receiver well and keeps itself and the striker from turning when the rifle is being cocked by raising the bolt handle. A red dimple, located in the top of the

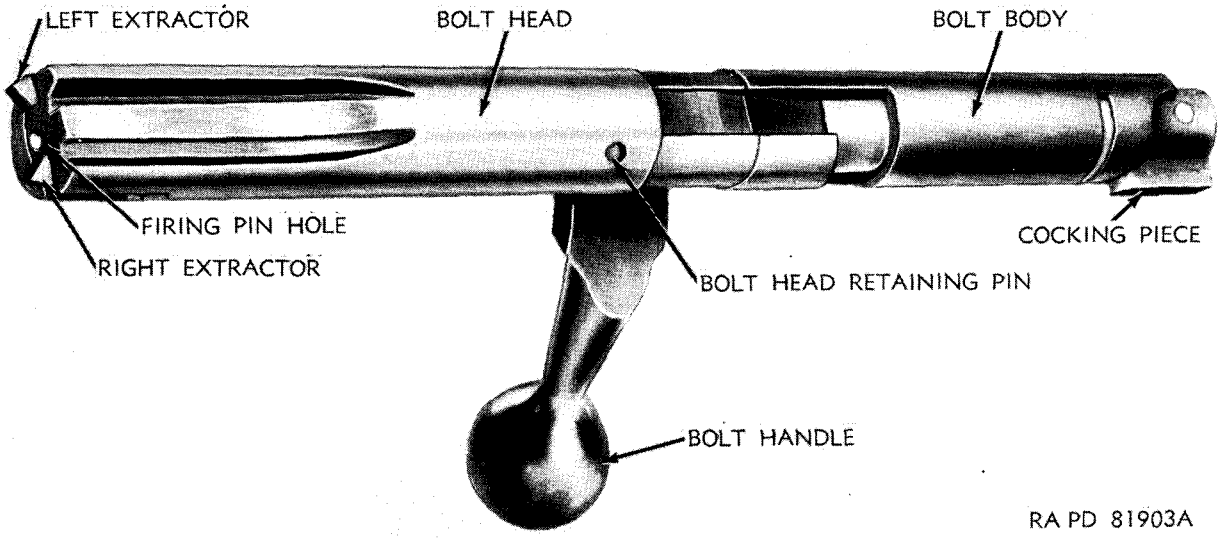

Figure 10. Bolt assembly (Stevens rifle M416–2T).

cocking piece, which is visible only when the striker and cocking piece move backward together into cocked position, indicates that the firing mechanism is cocked.

(2) *Magazine* (fig. 11). The magazine (S), which is located below the bolthead (K) and forward of the trigger (CC) and sear (Y), is retained in place by the magazine retainer (U).

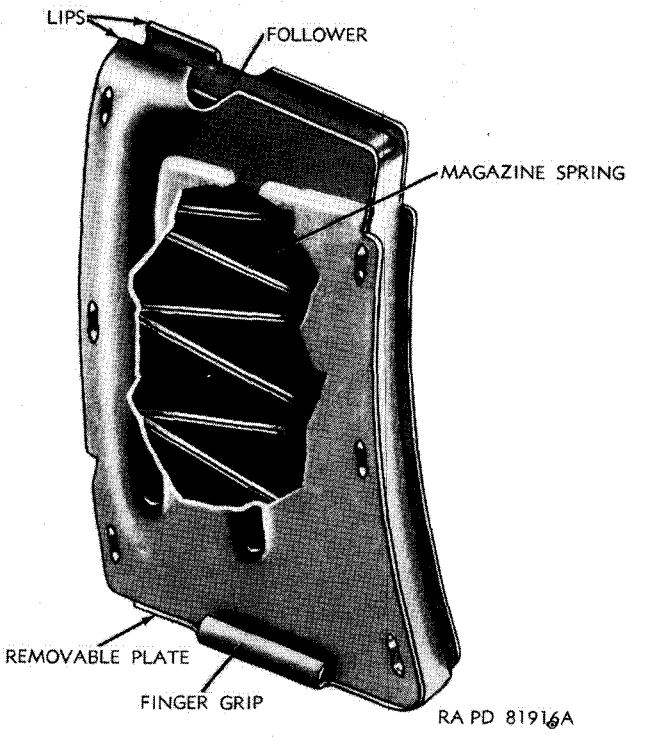

Figure 11. Magazine (Stevens rifle M416–2T).

The magazine is of sheet metal construction. The magazine spring (T) and the follower (N) push the cartridges to the top of the magazine, where the bolthead face and extractors (fig. 10) remove them when needed. The magazine has lips at the top to hold the next cartridge to be fired. The magazine has a removable plate fitted with finger grips. The follower is U-shaped at the bottom to act as a seat for the spring and has a radius shaped to fit the cartridge on top. The spring (T) maintains pressure against the follower (N) and, when the magazine is loaded, forces the cartridge to the top. Lips on the top of the magazine retain the top cartridge until the bolt, as it is closed, moves the cartridge forward to a slot on each side of the magazine and into the firing chamber of the barrel.

(3) *Rear sight assembly* (fig. 12). The present model of the rear sight assembly differs from the early model in its detailed construction although it is basically the same in its operation. The inside of the rear sight base is machined with a radius to fit the contour of the receiver to which it is attached by two rear sight base screws. The upper portion of the base is recessed to receive the rear sight windage slide (B). This slide is an inverted L-shaped part, the bottom of which is machined to fit into its recess in the base. A hole in the bottom of the right side of the base is drilled and tapped to take the rear sight windage screw. The rear sight windage screw bridge, click (E), and knob (D) are mounted on the right side of the base over the windage screw. The bridge is attached by two rear sight windage screw bridge screws. The knob is attached to the windage screw by means of a screw. The knob retains the click on the screw against the right face of the bridge. When the knob is turned either to the right or to the left, it moves the wind-

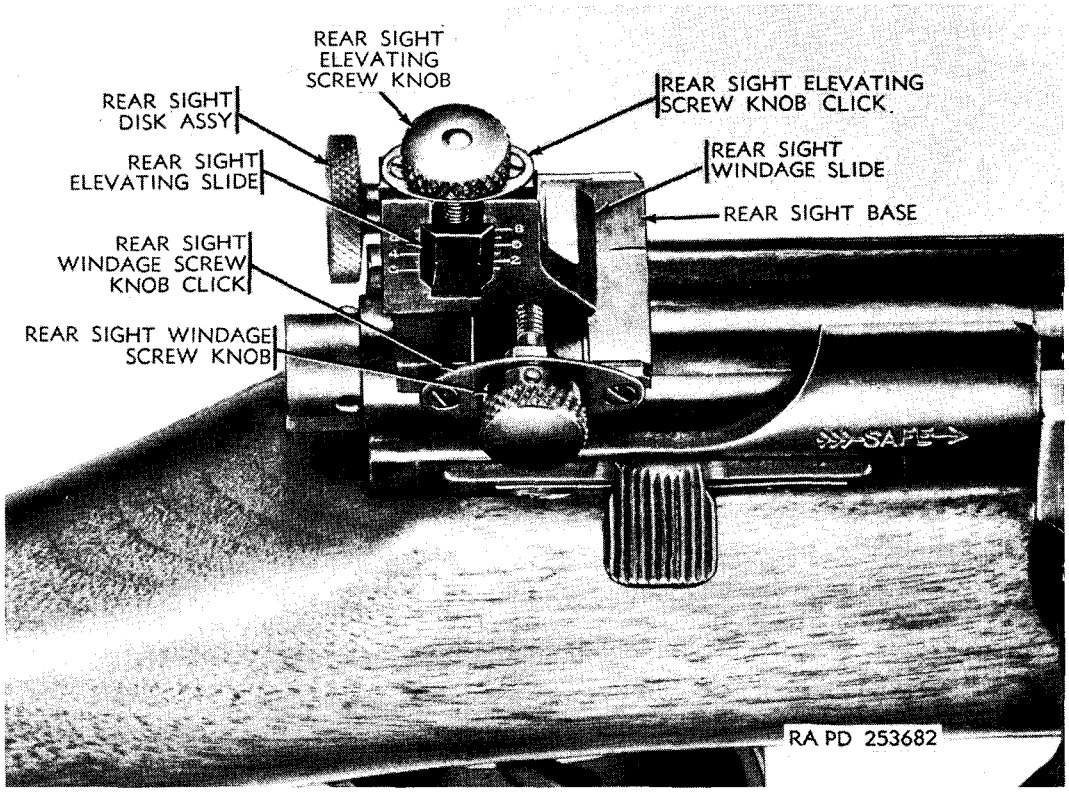

Figure 12. Rear sight assembly (Stevens rifle M416–2T).

age slide by means of the windage screw. When the knob is turned, a distinct "click" is heard, as there are six small grooves cut in the left face of the knob which engage the click. The upper portion of the windage slide is slotted to receive the rear sight elevating slide, which is grooved to fit into and over the slot. The back of the elevating slide is drilled and tapped to receive the rear sight disk assembly (A) and the top is drilled and tapped to receive the rear sight elevating screw. The elevating slide moves up and down when the elevating screw is rotated by means of the rear sight elevating screw knob (C), the elevation being indicated on the right side of the windage slide. The rear sight elevating screw knob click, bridge, and knob are mounted on top of the elevating screw. The bridge is secured to the windage slide by two rear sight elevating screw bridge screws. The knob is attached to the end of the elevating screw by means of a rear sight elevating screw knob screw. The knob retains the click on the elevating screw against the bridge. Six small grooves cut in the bottom face of the knob contact the raised portion of the click, so that a distinct "click" is heard when the knob is turned.

(4) *Barrel and receiver group* (fig. 13). The breech of the barrel is recessed to receive the front ends of the extractors (fig. 10). One dovetailed groove is located in the bottom rear of the barrel to mount the barrel stud which has a tapped hole on its bottom through which the barrel stud screw holds the barrel and stock together. Another dovetailed groove is provided in the top front of the barrel to mount the front sight, which may be either of the blade or hood types. The hood type is composed of a front sight body with a lateral slot at its center to receive one of the five front sight inserts. The inserts have two holes in the bottom corners to engage insert retainer plunger balls assembled in the rear of the body and projecting into the slot. The balls are held in position by two springs and screws. A front telescope dovetail block is attached on top at the rear of the barrel by means of two telescope dovetail block screws for the purpose of mounting a telescope sight if desired. The receiver is machined out to receive the bolt assembly. A slot in the bottom of the receiver well acts as a stop to keep the cocking piece (GG) from turning when the rifle is cocked. The rear telescope dovetail block is retained by means of two screws on the top of the receiver. Two drilled and tapped holes are provided on the left side for mounting the rear sight assembly. A recess and two holes are provided on the left side for mounting the rear sight assembly. A recess and two holes are provided on the right side as a means for mounting the trigger assembly (CC). The sear stop screw (X) is assembled just forward of the sear post (W) which projects from the bottom of the receiver. A flat

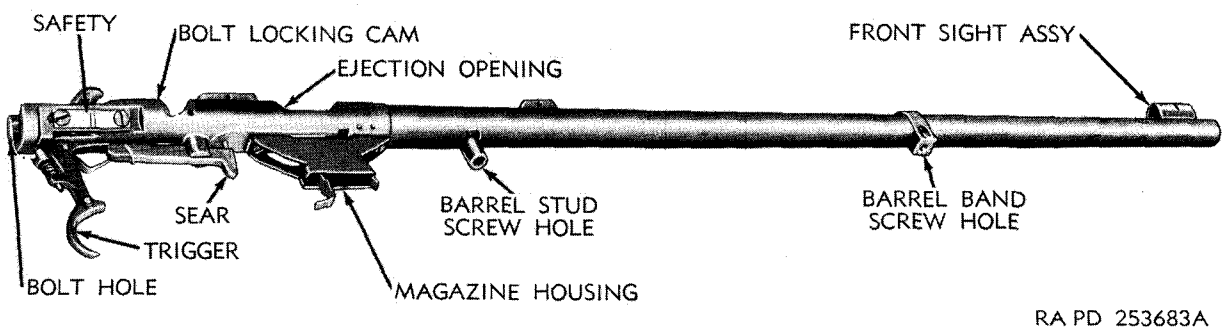

Figure 13. Barrel and receiver group (Stevens rifle M416-2T).

surface is machined on the forward bottom part of the receiver for the sear spring plunger to rest on and for mounting the magazine housing (Q). On this flat surface, the magazine and ejector slots are cut out. The trigger is mounted in its slot on the bottom of the receiver by means of the trigger pin. The trigger stop plunger (EE), nut, and spring (FF) are assembled to a boss at the rear of the trigger. Adjusting the trigger stop plunger sets the amount of trigger travel. The trigger sideplay screws (BB) and spring (AA) are assembled in a tapped hole in the lower part of the trigger and serve as a means of adjusting the sideplay of the trigger. The trigger spring is pinned to the top of the trigger and acts against the sear (Y) which, in turn, maintains a pressure on the trigger. The sear is secured to the sear post (W) on the bottom of the receiver by means of a pin. The sear spring plunger and sear spring are mounted in a hole in the forward portion of the

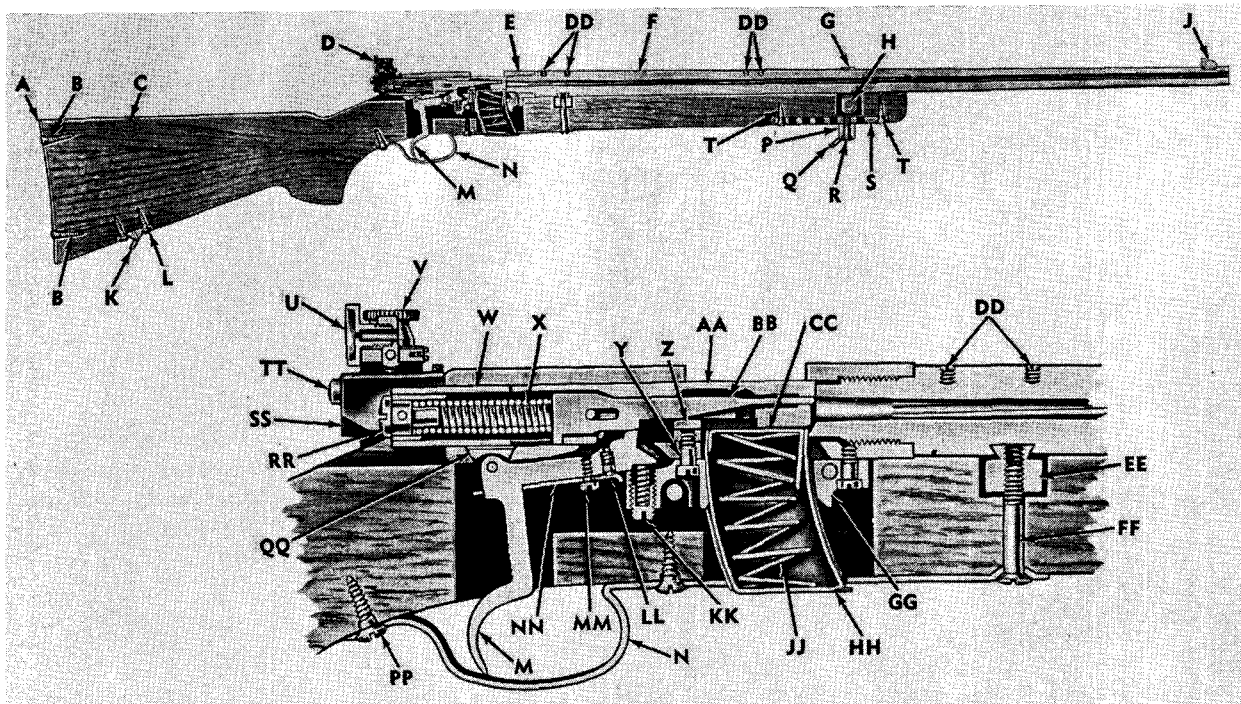

Figure 14. Winchester rifle M75T—sectional view.

sear. Pressure of this spring and plunger against the bottom of the receiver keeps the sear nose in its extreme upright position against its stop on the receiver. The magazine housing serves with the magazine retainer to hold the magazine in position. It is mounted on the bottom of the receiver by means of two magazine housing screws (P). The ejector, which is integral with the housing and fits into a machined slot in the bottom of the receiver, is on top of the housing. This acts to eject the cartridge case when the bolt is drawn backwards. Pressing on the serrated portion of the magazine retainer (U) releases the magazine from the housing.

(5) *Stock group.* The stock is cut out on top to receive the barrel and receiver group. The right side of the stock is cut away for the bolt handle. The front bottom of the stock is mortised to receive the front swivel plate. The front swivel plate is mounted by means of one swivel plate screw and one barrel band screw which extends through the stock and threads into the band. It has seven tapped holes for receiving the front swivel screw, with integral swivel, for adjustment of handhold with relation to the sling. The front and rear swivels are identical and serve as a means of attaching the sling to the rifle. The front swivel is mounted to the front swivel plate and the rear swivel is attached to the rear swivel escutcheon into the butt of the stock. A trigger guard (DD) is secured to the bottom of the stock by screws (R and Z). A cutout in the guard serves as an opening for the magazine (S). The butt plate is attached to the rear of the stock by two butt plate screws.

d. Winchester Rifle M75T (fig. 14). The Winchester rifle M75T (figs. 3 and 44) consists basically of the breech bolt assembly, the magazine, rear sight assembly, barrel and receiver group, and the stock group.

Note. The key letters shown below in parentheses refer to figure 14.

(1) *Breech bolt assembly* (fig. 15). The extractors are mounted in two slots provided in the head of the breech bolt (AA) and are retained in place by two extractor pins. A spring is mounted in a hole at the back end of each extractor. The forward portion of the bottom of the breech bolt has magazine and ejector clearance slots so that the bolt can slide over the magazine and the ejector. The lug in the center of this section serves to remove the cartridge from the magazine. The front face of the bolt is chambered to receive the cartridge rim and has the firing pinhole through which the striker end of the firing pin (BB) passes to strike the cartridge. The back end of the bolt is undercut to receive the breech bolt sleeve and the breech bolt cocking sleeve (W). A hole in the forward part of the undercut receives the firing pin stop pin. A hole in the rear receives the breech bolt sleeve pin. The breech bolt is bored out to receive the striker end of the firing pin. A slot cut in the center at the bottom of the bolt acts as a guideway for the bored hole in the front. The back of the handle of the bolt cocking sleeve acts against a cam surface in the receiver to force the bolt forward when the handle is lowered. The breech bolt cocking sleeve has a slot and a cam forward on its under side. When the handle of the cocking sleeve is raised, the cam acts against the cocking projection at the bottom of the firing pin and forces the pin rearward against the pressure of the firing pin spring (X) until the firing pin notch is in the cocked position. A clearance notch for the safety lever is formed in the rear of the sleeve just above the cocking cam. The breech bolt sleeve fits over the rear end of the breech bolt and is retained to it by the breech bolt sleeve pin. It acts as an inclosure for the firing pin spring. The breech bolt plug (RR) is assembled in the rear end of the sleeve and acts as the rear stop for the firing pin spring. It is retained

in place by the same pin that retains the bolt sleeve. The striker is found on the front end of the firing pin. The firing pin has flat surfaces and these, together with the slot forward in the breech bolt, act as a guide for the firing pin in the bolt as well as to keep the bolt from turning when the rifle is cocked. A lug formed at rear of the firing pin engages the sear. A small lug on the bottom rear of the firing pin engages the cocking cam of the cocking sleeve.

(2) *Magazine* (fig. 16). The magazine assembly is located below the front end of the breech bolt (AA) and forward of the trigger (M). The magazine spring (JJ) and follower (CC) push the cartridge to the top of the magazine. Lips retain the top cartridge until it is moved forward into a slot in each side of the magazine permitting the cartridge rim to pass out of the magazine. A lug formed on the left side of the magazine engages a slot in the magazine catch on the magazine holder (GG) in the receiver to hold the magazine in position.

(3) *Rear sight assembly* (fig. 17). A Lyman 57E rear sight (D) is mounted by two rear sight mounting screws on the left side of the receiver (E). The front of the rear sight elevating base is stamped O, which, when in line with the elevating scale on the rear sight slide, gives the elevation to which the sight is set. The rear sight base (SS) is grooved on the left side to take the elevating slide and drilled and tapped to take the elevating screw (V). The base is drilled longitudinally for the rear sight lock bolt (TT) and spring. The lock has an elongated hole drilled in it, the front side of which is threaded to engage the elevating screw and slide. The forward portion of the lock bolt is undercut to seat the lock bolt spring. When the lock bolt is de-

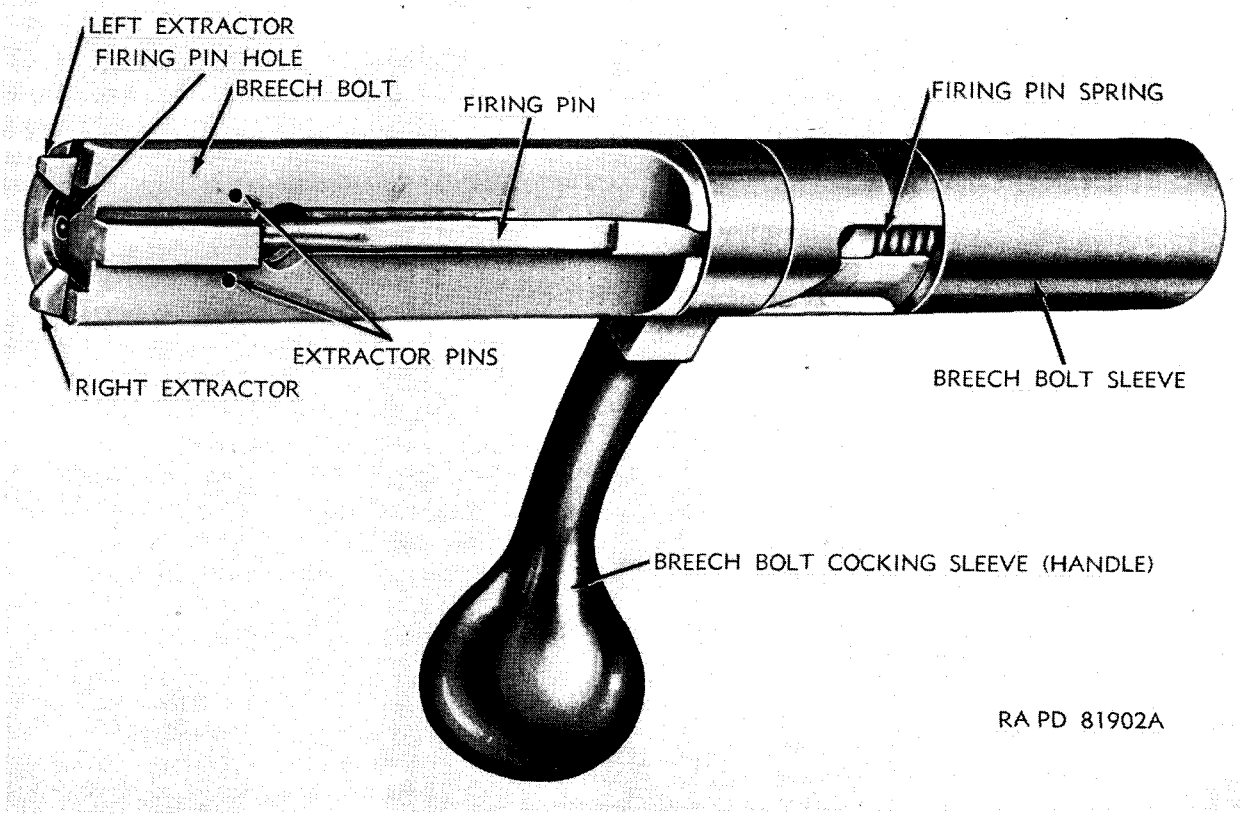

Figure 15. Breech bolt assembly (Winchester rifle M75T).

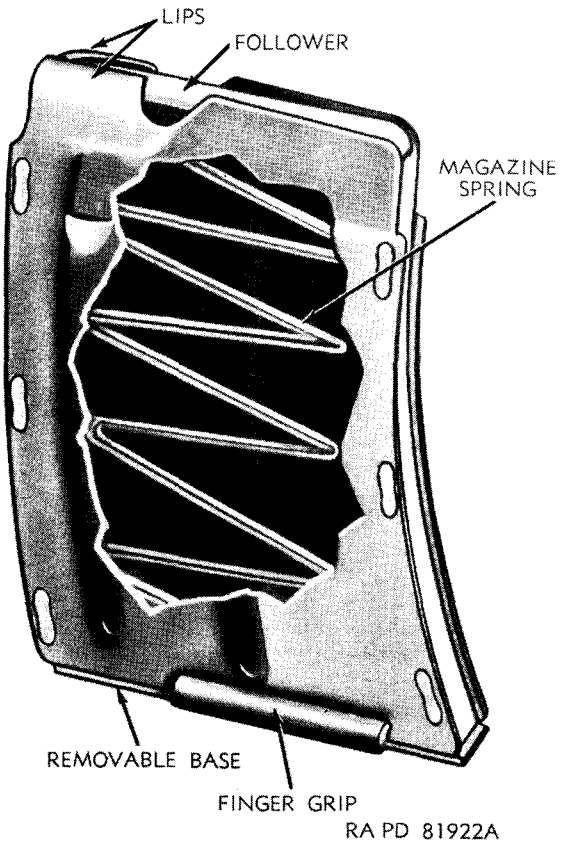

Figure 16. Magazine (Winchester rifle M75T).

pressed against the spring pressure, the threads on the lock bolt are disengaged from those of the elevating screw to permit the withdrawal of the elevating screw. The rear sight elevating screw knob is an integral part of the elevating screw. It is retained to the slide by a U-shaped rear sight elevating screw yoke. The knob has a knurled head with a scale beneath it. The scale is marked off in 12 graduations which correspond to the 12 slots or serrations on its under side. These 12 slots engage a raised portion of the rear sight elevating screw knob click. This click is made in the form of a circular spring with two lugs which fit into the corresponding female machined surface on top of the elevating slide. A raised portion on the click engages the slots or serrations on the bottom of the knob, with the result that, when the elevating screw knob is turned, a distinct "click" is heard. The rear sight elevating slide is an inverted L-shaped piece, on the left side of which is assembled the rear sight elevating scale. The clearance hole in the scale is elongated to provide means of adjustment. The top of the elevating slide is slotted to receive, from the right side, the rear sight windage aperture, windage screw, and integral knob. The windage slide is drilled and tapped to receive the windage screw and moves along on its threads when the screw is turned. The windage screw knob click is installed with two pins at the end of the slot. The raised portion in the click engages the slots in the bottom of the screw knob so that when the knob is turned a distinct "click" is heard. The upper portion of the windage slide aperture is drilled and tapped to receive the rear sight disk (U). Turning the knob moves the windage slide and disk from left to right and return. A rear sight windage scale is mounted on the top of the front portion of the slide. Its attaching hole is elongated for adjustment by loosening its attaching screw.

(4) *Barrel and receiver group* (fig. 18). The short shoulder at the rear of the barrel (F) is threaded for the purpose of securing the barrel to the receiver (E). Four tapped holes, two at the rear and two in the center of the barrel, are provided for mounting a telescope sight if desired. The holes are plugged with screws (DD) when the telescope is not mounted. The breech of the barrel is recessed to receive the extractors. One dovetail is machined at the front of the barrel to receive the front sight blade (J), another dovetail on the bottom at the receiver end of the barrel secures the stock stud (EE). The rear end of the barrel is mounted to the stock (C) by a screw (FF) through the stock and into the stock stud. The center of the barrel is secured to the stock by means of the barrel band (G), band screw

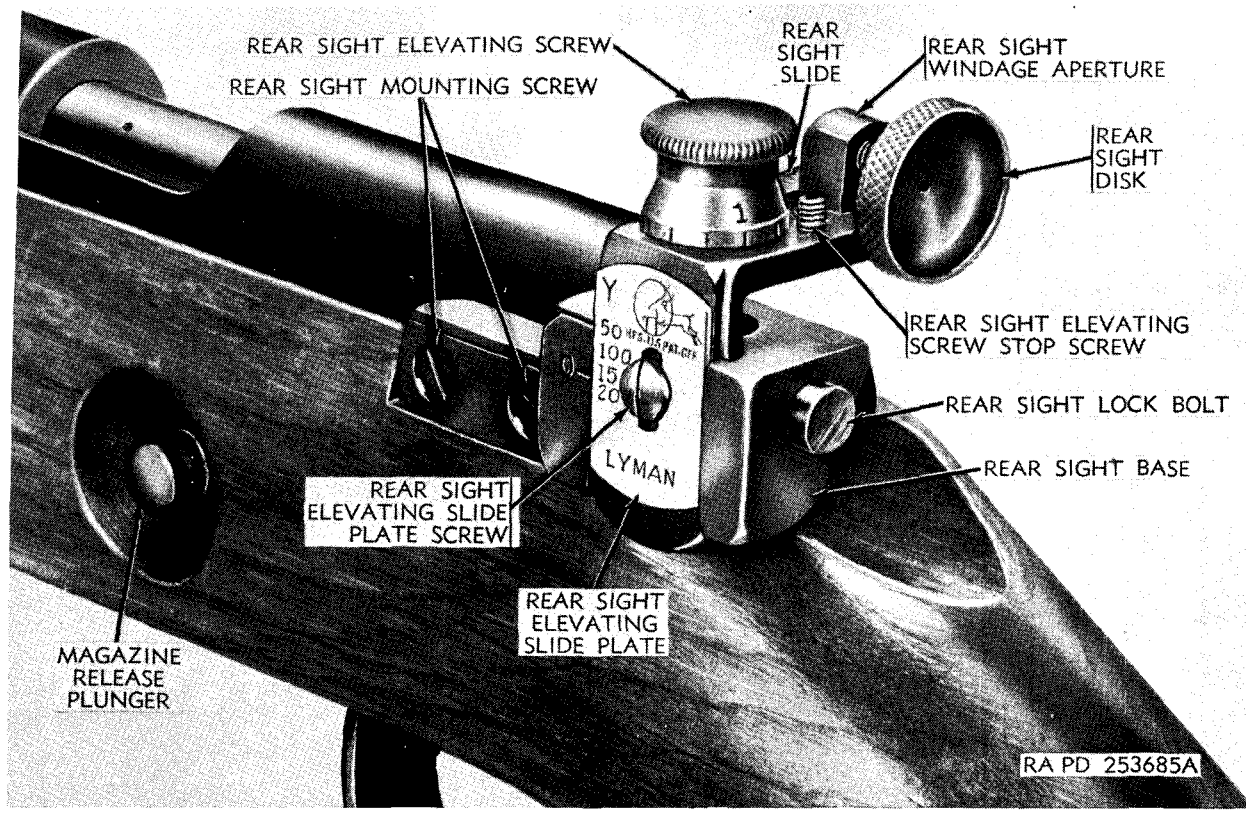

Figure 17. Rear sight assembly (Winchester rifle M75T).

(H), and barrel band screw bushing. The front sight is of the blade type and is drifted into the front barrel dovetail slot. The receiver (E) is chambered to receive the breech bolt (AA) and is slotted on the right side to form a locking shoulder for the breech bolt cocking sleeve (handle). A cam on the top rear surface of the slot, together with a cam on the bottom front surface of the breech bolt cocking sleeve (handle), combine to force the breech bolt to its extreme forward position when the handle is closed. Two tapped holes on the left side provide for the mounting of the rear sight. Suitable openings are provided in the bottom of the receiver for the magazine and sear end of the trigger. A dovetail is machined at the bottom to the rear to receive the trigger base (QQ). A slot in the rear of the receiver provides for the projection of the safety lever. A hole is provided on the right side for safety lever stop pin. Just back of this pin, the words FIRE and SAFE are stamped. Since there is no sear, the trigger (M) performs the function of both the sear and trigger. The trigger is mounted in its slot in the trigger base (QQ) on the bottom to the rear of the receiver by means of the trigger pin. Suitable holes are provided in the bottom of the trigger to assemble the safety lock screw (MM), safety lock plunger (LL), and spring. The trigger spring and trigger spring adjusting screw (KK) are installed in the rear portion of the magazine holder (GG). The magazine holder is mounted on the under side of the receiver by two magazine holder screws (Y). The magazine catch is attached to the right side of the holder and is provided with a slot which engages with a lug on the side of the magazine. The lug is released from the magazine catch slot by means of the magazine release plunger located in the side of the stock. The ejector (Z) is mounted crosswise in

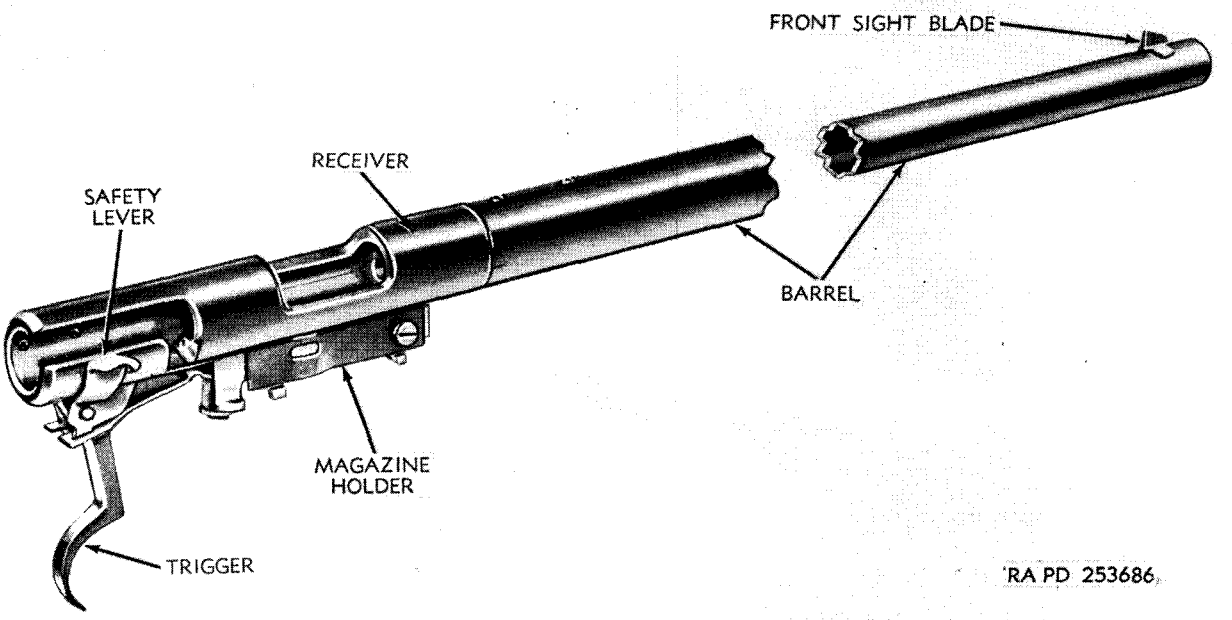

Figure 18. Barrel and receiver group (Winchester rifle M75T).

the bottom of the receiver well and is retained in place by the rear magazine holder screw (Y). It is slotted in the center to permit the passage of the lug on the bottom of the breech bolt. A lug on the left side of the slot stops the backward movement of the cartridge and forces it from the left extractor hook and, with the help of the cam on the right side of the ejector, ejects the cartridge from the received.

(5) *Stock group.* The stock (C) is cut out at the top to receive the barrel band (G), the receiver (E), the barrel (F), the breech bolt cocking sleeve (handle), and the rear sight assembly (D). The magazine release plunger (fig. 17) and spring are mounted on the left side of the stock in the magazine release escutcheon. The barrel band fits over the barrel and into a slot provided in the front of the stock. The barrel band screw (H) goes through the side of the stock and barrel band and screws into the barrel band screw escutcheon in the stock, securing the center of the band to the stock. The forearm adjustment base (S) is mounted in a recess in the forward end of the stock and is secured by two screws (T). Six tapped holes are provided in the base for adjustment of handhole with relation to the sling. The forearm adjustment swivel bow (Q) is attached to the base (P) by a screw (R). The stock swivel bow (K) is mounted in a recess in the rear of the stock and secured by two screws (L). The butt plate (A) is secured to the stock by two butt plate screws (B). The trigger guard (N) is attached to the stock by two screws (PP) and the stock stud screw (FF) which passes through the stock and threads into the stud (EE) to hold the barrel and receiver in the stock in the rear. This guard has an opening for the magazine.

5. Differences Among Models

a. General.

(1) The ordnance designation M13 is used to identify a group of three commercial rifles used for general training purposes. Currently, this group consists of the following manufacturers and their models: Remington rifle M513T; Stevens rifle M416–2T; and Winchester rifle M75T.

(2) Physical characteristics are different and are specifically covered in paragraph 7.

(3) Differences in construction show up as differences in the operation of various controls (e.g., safety, rear sight knobs, magazine release, etc.), internal functioning, and assembly and disassembly procedures. The differences in operation are covered for each rifle in paragraphs 13, 21, and 29. Differences in internal functioning are covered in paragraphs 19, 27, and 35. Disassembly and assembly differences are covered in paragraphs 56 through 67.

(4) Performance characteristics (e.g., range, pressure, and muzzle velocity) are identical.

b. Modification Work Orders.

(1) MWO ORD B25–W1, March 1949, calls for increasing the depth of the counterbore on the bolt forward face of the cal. .22 Remington rifle M513T to insure proper clearance between the cartridge seat in the face of the bolt and the barrel breech when the bolt is closed.

(2) MWO ORD B25–W2, April 1953, calls for cutting approximately ½ inch from the top of the wooden stock of the Remington rifle M513T with a wood rasp to enable the rifleman to sight the rifle with a greater degree of comfort.

6. Identification Information

a. Cal. .22 Remington Rifle M513T (fig. 19). The barrel is marked "*Remington* 22 LONG RIFLE."

b. Cal. .22 Stevens Rifle M416–2T (fig. 19). The barrel is marked "STEVENS MODEL 416."

c. Cal. .22 Winchester Rifle M75T (fig. 19).

(1) The barrel is marked "MODEL 75 *WINCHESTER* 22 LONG RIFLE."

(2) The receiver is marked "Winchester."

7. Data

Characteristics for each manufacturer's rifle is given in table I.

Figure 19. Barrel and receiver identification markings.

Table I. Characteristics of Cal. .22 Rifle M13

Characteristics	Manufacturer and designation		
	Remington M513T	Stevens M416–2T	Winchester M75T
General:			
Weight of rifle (lb).	8.20	9	7.5
Overall length of rifle (in.).	45.0	45.8	45.0
Length of barrel (in.).	27.00	26.12	28.12
Length of rifling (in.).	26.25	25.35	27.32
Number of lands and grooves.	6	6	6
Twist of rifling, right hand (turn per in.).	1/16	1/16	1/16
Sight radius (in.).	32.3	31.8	31.5
Height of front sight from center of bore (in.).	0.832	0.878 (hood-type) 0.828 (blade-type)	0.65
Loading device	magazine	magazine	magazine
Type of firing mechanism.	bolt	bolt	bolt
Ammunition (ch 4).			
Performance:			
Approximate maximum range for cartridges (yds).	1,500	1,500	1,500
Normal pressure (psi).	20,000	20,000	20,000
Muzzle velocity (ft/sec).	1,100	1,100	1,100

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

8. General

a. When a new or reconditioned rifle is received by the using organization, it is the responsibility of the officer in charge to determine whether the materiel has been properly prepared for service by the supplying organization and to be sure it is in condition to perform any mission to which it may be assigned when placed in service. For this purpose, inspect all assemblies, subassemblies, and accessories to be sure they are properly assembled, secure, clean, and correctly adjusted and/or lubricated. Check all tools and equipment against ORD 7 SNL B–25 to be sure every item is present and determine that they are in good condition, clean, and properly mounted or stowed.

b. Make a list of any missing parts and of any malfunctions. Correct any deficiencies as soon as possible.

c. Pay special attention to small parts, as they are more likely to become lost and may seriously affect the proper functioning of the rifle.

9. New Materiel

a. New rifles received from storage are packed in heat-sealed, water-vaporproof bags, and cotton stockinette (Saran packing).

b. Rifles packed using these methods are completely coated with a light film of special preservative oil and are serviced as follows:

(1) Remove rifle and packing from crate.

(2) Remove protective covering from rifle.

(3) To insure that there is no corrosion present, missing parts, or incorrect assembly, proceed as described in paragraph 8.

c. Clean oil film from all parts. Check front face of the bolt and other adjacent surfaces subject to powder fouling and corrosion.

Note. All new rifles are function-fired and therefore certain parts will have their protective finish worn away. This is a normal condition and is not to be construed as excessive wear.

d. Clean bore (par. 49), using cleaning rod M1 5503837 and patches.

e. Check rifle to be sure that all modification work orders have been applied (par. 5*b*).

f. Lubricate (pars. 44–47) and assemble rifle.

10. Used Materiel

Used materiel requires the same inspection and service prescribed for new materiel (par. 9). In addition, check all components for signs of excessive wear and corrosion. Check for missing parts and correct any deficiencies.

11. Disassembly of Rifle Prior to Cleaning

Refer to paragraphs 56 through 67, for disassembly of the following groups or assemblies:

a. The bolt assembly, bolt group, or breech bolt assembly.

b. The magazine assembly or magazine.

c. The rear sight assembly or the receiver extension rear sight assembly.

d. The barrel and receiver group.

Note. During any disassembly, mark parts, assemblies, and/or groups to facilitate assembly of items in their respective rifles. Interchange of parts between rifles during assembly could damage the rifle and/or render the rifles unsafe or inaccurate.

Section II. OPERATION UNDER USUAL CONDITIONS FOR REMINGTON RIFLE M513T

12. General

This section describes and illustrates the operation and location of the controls (par. 13) and contains the instructions for the mechanical steps necessary to operate these controls (pars. 14–18) and explains the functioning

(par. 19) of the Remington rifle M513T.

13. Controls

(fig. 20)

a. Safety. The safety (PP, fig. 4) is mounted inside of the receiver by means of a safety screw which also holds the safety lever on the outside of the receiver and attaches the lever to the safety. The safety lever is keyed to permit it to engage in two slots in the safety. Push the safety lever on the right side of the receiver forward (red dot showing) for "firing" position and fully to the rear for SAFE position.

Note. When the safety lever is moved to the SAFE position, the safety cam surface blocks the top of the trigger and prevents its movement.

b. Magazine Release. The magazine lock (GG, fig. 4) is located just to the rear of the magazine assembly on the bottom of the stock when the magazine is in the rifle. Approximately ¼ inch of its length protrudes out of the bottom of the stock. To release the magazine, pull the release to the rear. This permits the release to separate from the locking lug in the rear of the magazine assembly, so that the magazine (FF, fig. 4) drops out of its aperture in the bottom of the stock. To secure the magazine, slide the magazine all the way up in its aperture. This locks it in place by having the lock (GG, fig. 4) engage with the locking lug of the magazine.

c. Bolt Handle. The bolt handle is located on the right-rear side of the receiver. To unlock the bolt from the receiver, rotate the bolt handle upward and to the rear. Rotating the handle up also cocks the bolt. To chamber a new cartridge and to lock the bolt, push the bolt handle forward and rotate down against the receiver slot. This is the "firing" position. After firing, rotate the bolt handle upward and pull to the rear to extract and eject the fired cartridge case.

d. Rear Sight Elevating Knob. The rear sight elevating knob (fig. 7) is located on the left-top side of the rear sight. To fire the rifle above the present setting, rotate the knob counterclockwise. To fire the rifle below the present setting, rotate the knob clockwise.

e. Rear Sight Windage Knob. The rear sight windage knob (fig. 7) is located on the right

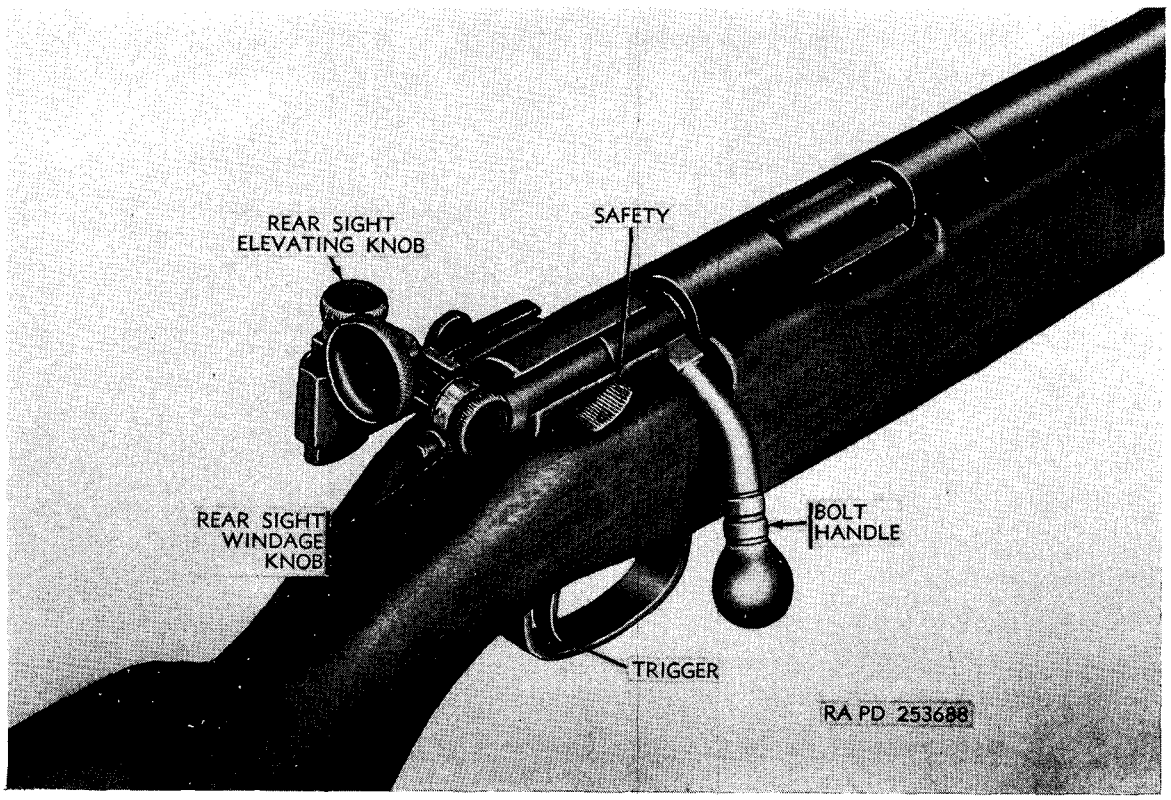

Figure 20. Controls (Remington rifle M513T).

side of the rear sight. To fire the rifle to the right of the present setting, rotate the knob counterclockwise. To fire the rifle to the left of the present setting, rotate the knob clockwise.

f. Trigger. The trigger (L, fig. 4) is located in the bottom of the stock immediately below the bolt handle. To fire the rifle, squeeze trigger to the rear against the tension of the trigger spring (MM, fig. 4). The squeezing of the trigger releases the firing pin (Y, fig. 4), to permit the offset striker end of the pin to strike the cartridge rim.

14. Loading the Magazine

The magazine has a capacity of six cartridges. The magazine is loaded by depressing the magazine follower and inserting one cartridge at a time. With its rim toward the back, press the cartridge down and into the slots on each side of the top of the magazine and back under the lips of the magazine (fig. 21).

Note. As each succeeding cartridge is inserted, it pushes the first one toward the bottom of the magazine.

15. Loading and Unloading the Rifle

a. Loading.

(1) *Insert magazine.* Insert loaded magazine (par. 14) through the magazine opening at the bottom of the receiver just forward of the trigger guard (fig. 22) and push upward until locked in place. If an extra cartridge is to be used, proceed as in (2) below. If an extra cartridge will not be used, rotate bolt handle up and draw entirely to rear; then push bolt handle forward and rotate down against the receiver slot. This action cocks the rifle and pushes the top cartridge from the magazine into the chamber.

(2) *Insert extra cartridge.* An extra cartridge, making a total of seven, can be used. To insert extra cartridge, open the bolt, place a cartridge fully in the chamber by hand and close the bolt before inserting the loaded magazine ((1) above).

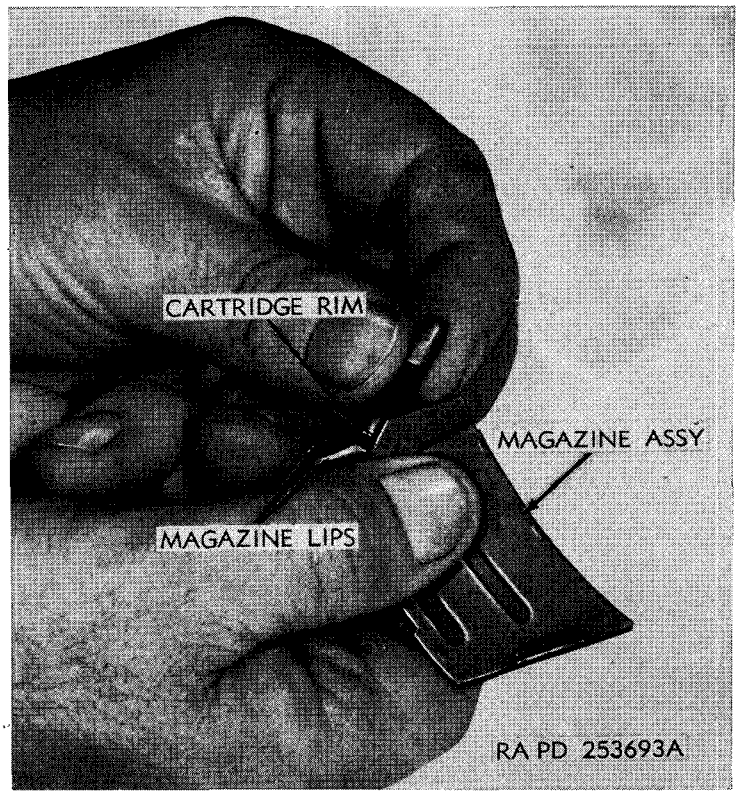

Figure 21. Loading cartridge into magazine assembly (Remington rifle M513T).

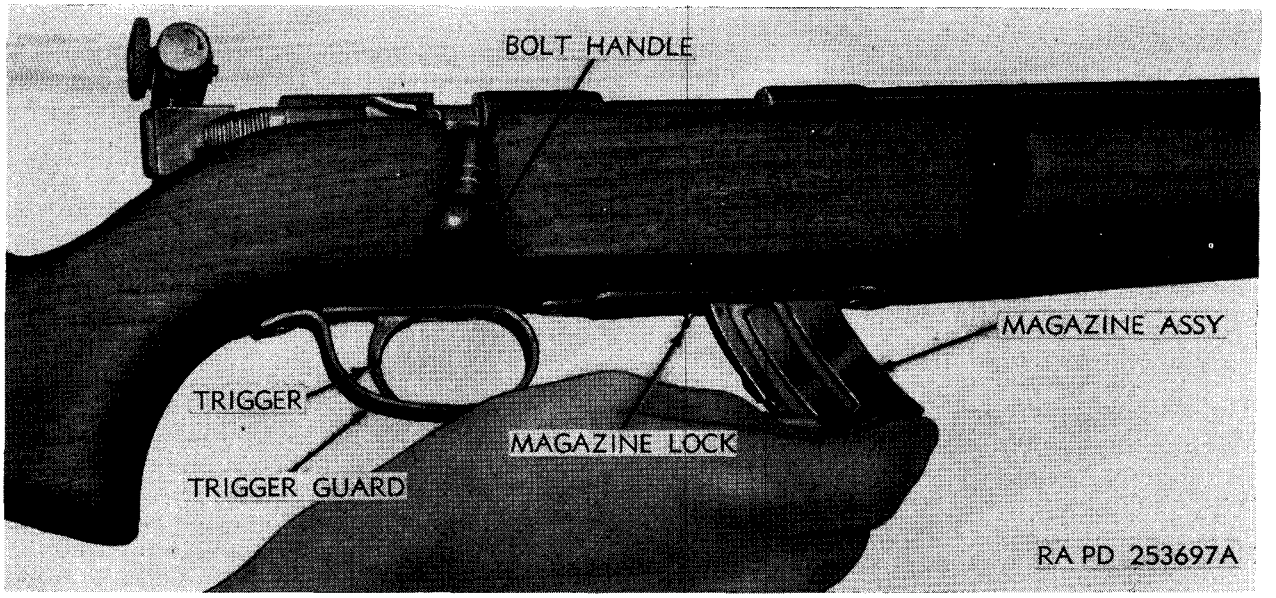

Figure 22. Installing or removing magazine assembly (Remington rifle M513T).

b. Unloading.

(1) *Remove chambered cartridge.* To unload a fired or live cartridge, rotate the bolt handle up and draw entirely to the rear.

(2) *Remove magazine.* Press the magazine lock (fig. 22) back towards the trigger and pull out the magazine assembly.

16. Setting the Safety

With the bolt cocked and locked forward against a chambered cartridge (par. 15*a*), push the safety on the right side of the receiver (fig. 20) rearward to place the rifle in the SAFE position or to the front for FIRE position. When the safety is in the SAFE position, the trigger cannot be squeezed to fire the rifle.

17. Firing and Recocking the Rifle

a. Firing. Load the rifle (par. 15*a*), set the safety in FIRE position (par. 16), and draw the finger piece of the trigger to the rear. The rifle fires once when the trigger is squeezed.

b. Recocking. Rotate bolt handle up and draw entirely to the rear; then push bolt handle forward and rotate down against the receiver slot. This action ejects the fired cartridge and pushes a new cartridge into the chamber.

18. Rear Sight Setting

a. Rear Sight (fig. 7).

(1) *General.* The rear sight of the Remington rifle M513T is provided with elevating and windage screws for shifting the aperture in the rear sight disk for elevation or windage settings. These screws are furnished with knobs which, when turned, are retained in position by detent balls seating in notches in the face of the knobs. The seating of the detent balls can be plainly heard as the knobs are turned. The relation between the pitch of the screw threads and the notches in the knobs is such that each notch corresponds to a shift in the aperture in the rear sight disk vertically or laterally measured in minutes of angle. Each minute of angle corresponds to a shift of the point of impact of the bullet on the target in inches, varying with the range or distance of the target. These fractional shifts of the knobs are called "clicks." Turning the elevating screw knob shifts the point of impact vertically and turning the windage screw knob shifts the point of impact laterally. The sight is

usually adjusted at the factory, but to make sure it is correct, it should be checked on the range.

(2) *Redfield 75RT rear sight.* This rifle is furnished with the Redfield 75RT rear sight, with ¼-minute "clicks." Each "click" corresponds to a ¼-minute change in angle of sight; such a change corresponds to a ¼-inch shift of the point of impact of the bullet on the target at 100 yards. This shift varies with the distance; as the range is doubled or halved, the amount of shift of the point of impact is doubled or halved. The point of impact will be shifted 1/16 inch at 25 yards, ⅛ inch at 50 yards, ¼ inch at 100 yards, and ½ inch at 200 yards, etc. The windage slide moves laterally in the elevating slide. The elevating slide is graduated and marked in minutes of angle. Each division represents 3 minutes, and every 5 divisions are marked to represent 15, 30, 45, and 60 minutes of angle, respectively. The right side of the slide is blank and can be marked for ranges in yards when determined. The elevating knob has 12 click divisions, each of which corresponds to a change of ¼ minute of angle. Thus, a full revolution of this knob corresponds to 3 minutes of angle or 1 division on the slide. The windage index plate likewise is divided into 3-minute divisions with a 0 stamped at the central point. The windage knob corresponds in divisions and clicks to the elevating knob. The windage index plate and elevating (slide) plate are adjustable for setting when the zero of the rifle is determined.

Note. One "click" of the elevating or windage knob represents a shift of 1/16 inch at 25 yards.

b. Zeroing the Rear Sight.

(1) The rear sight of the rifle should be checked to ascertain the basic or "zero" setting. For accuracy, zero setting is best performed at short range. When zero setting is determined and noted, the rifle shoud be checked at various yardages and any variations from computed settings noted. In sighting-in this rifle, a large target should be used with a cross in its center and the rifle fired from a rest. Such a target will register the first few shots which may be out-of-line and clearly indicate the point of impact vertically or laterally from center. All sighting-in should be done on a safe range and on a day without any wind. As short ranges are preferable for such zero settings, 25 yards are taken, which means 25 yards from the muzzle of the rifle to the target. As the point of impact of each bullet will vary somewhat, the center of the group should be considered.

(2) To set the sight for minimum range and zero windage, take a position 25 yards from the target and proceed as described in (*a*) through (*d*) below.

(*a*) Screw the elevating slide down as far as it will go by turning the elevating screw knob (fig. 7). Loosen the two elevating plate screws and adjust the elevating slide plate pointer to aline with 0 marking on the slide for a test shot. Tighter the two screws.

(*b*) Set the windage yoke as near the center (bore line) as possible by turning the windage screw knob (fig. 7).

(*c*) Fire five shots and correct for windage to center the point of bullet impact laterally by turning the windage knob (par. 13*e*) in the proper direction. Moving the windage yoke to the right will shift the point of bullet impact on the target to the right and vice versa. When the point of bullet impact is centered laterally, set the windage index plate so that the 0 alines with the indicating line on the yoke.

(*d*) Correct for elevation in like manner to center the point of bullet impact vertically by turning the elevating knob (par. 13*d*) in the proper direction. Moving the elevating slide up raises the point of bullet impact on

the target and vice versa. When point of bullet impact is centered vertically, loosen the two elevating plate screws and reset the pointer of the elevating slide plate at 0 and mark 25 on the slide opposite 0 to indicate yardage.

19. Functioning

Note. The key letters shown below in parentheses refer to figure 4.

a. When the bolt handle is raised to the unlocked position, this portion of the handle rotates around the bolt (E), which is prevented from turning by the engagement of the ejector (Z) with the grooved bottom of the bolt. The firing pin retaining pin extending through the rear of the firing pin (Y) and through slots in the bolt walls engages the cam surface in the handle sleeve. The rotation of this cam, when the handle is raised, forces the firing pin to the rear against the plunger and indicator, compressing the mainspring (QQ) and positioning the firing pin in firing position. When the firing pin has reached its cocked position, the sear notch is directly over the sear (W), which then rises under the indirect action of the trigger spring (MM) and enters the notch. The trigger (L), being pivoted on the sear, returns to firing position at the same time.

b. As the bolt (E) is retracted, the cartridge case, held against the bolthead by the two extractors, is extracted from the chamber. Just before the bolt is fully retracted, the cartridge case strikes the ejector (Z), and as the bolt is further retracted, the cartridge rim is forced out from the sloping claw of the left extractor, is pivoted to the right around the right extractor hook, and thrown out of the receiver upward and to the right. The engagement of the sear projection anchored in the receiver with the magazine clearance grooves prevents full withdrawal of the bolt from the receiver (F) until the trigger is squeezed to pivot the sear down and away from the bolt.

c. As the bolt uncovers the magazine (FF) during retraction, the magazine spring (EE) and follower (BB) partially raise a cartridge out of the magazine, where the rim is retained between the aperture formed by the two walls of the magazine so that the cartridge is held in an inclined position with its front end extending up and out of the magazine. When the bolt is pushed forward, the lug on the bottom of the bolthead pushes the cartridge forward until the rim is released from the magazine aperture and forced up under pressure of the magazine spring (EE) into the recess of the bolthead face and under the extractors. Further closing of the bolt seats the cartridge in the barrel chamber (G). Turning the bolt handle down locks the bolt, leaving the firing pin held by the sear notch in position for firing.

d. When the trigger (L) is squeezed to the rear, it pivots on its mounting pin. This trigger movement causes the sear (W), which pivots on the sear stud, to be disengaged from the sear notch in the firing pin (Y). When the firing pin is disengaged; the compressed mainspring (QQ) forces the firing pin forward to strike the cartridge rim.

Section III. OPERATIONS UNDER USUAL CONDITIONS FOR STEVENS RIFLE M416–2T

20. General

This section describes and illustrates the operation and location of the controls (par. 21) and contains the instructions for the mechanical steps necessary to operate these controls (pars. 22–26) and explains the functioning (par. 27) of the Stevens rifle M416–2T.

21. Controls

(fig. 23)

a. Safety. The safety and safety spring are mounted on the side of the receiver by means of two screws. The screw holes in the safety are elongated, permitting it to move to the front or rear. When moved forward, the lug on the safety spring seats into one of the grooves in the safety and retains the safety in the SAFE position. When moved rearward, the lug on the safety spring seats in the other groove in the safety and retains the safety in the ready position. Push the safety rearward for "firing" position and fully to the front for SAFE position.

Note. When the safety is moved to the SAFE position, the safety locking lug moves forward into engagement with the trigger and prevents its movement.

b. Magazine Retainer. The magazine retainer (U, fig. 9) is located just to the rear of the

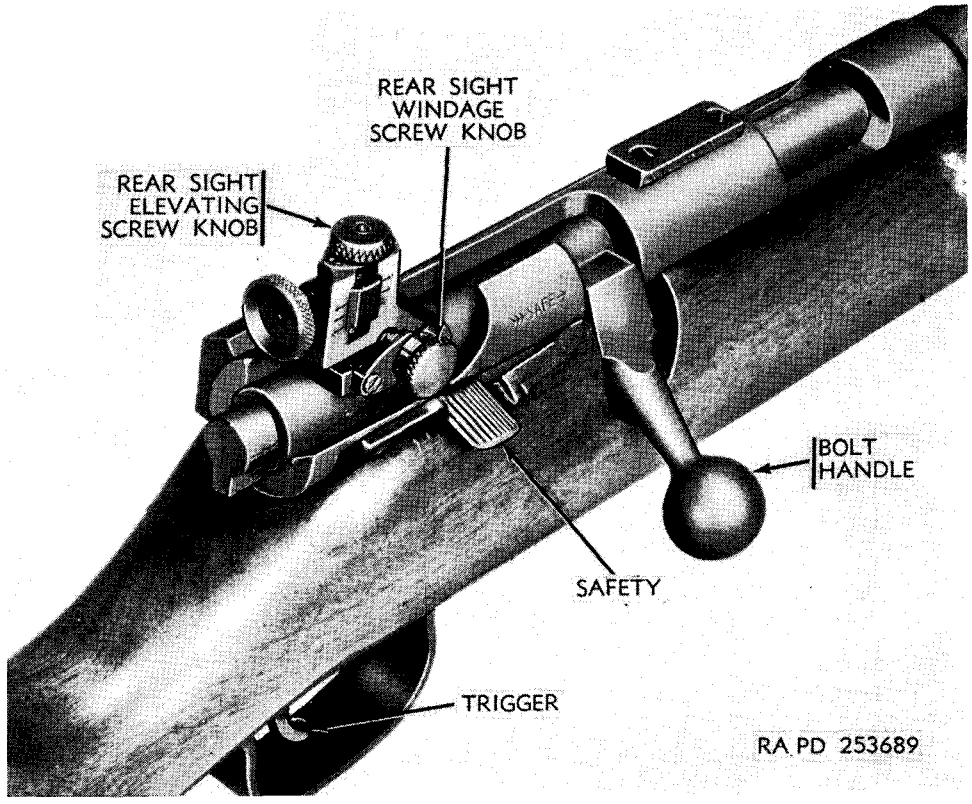

Figure 23. Controls (Stevens rifle M416–2T).

magazine on the bottom of the stock when the magazine is in the rifle. Approximately ½ inch of its length protrudes out of the magazine aperture at the bottom of the stock. To release the magazine, press the retainer to the rear. This releases the spring tension of the retainer from the locking lug in the rear of the magazine so that the magazine (S, fig. 9) drops out of its aperture. To secure the magazine, slide the magazine all the way up in its aperture. This locks it in place by exerting spring tension of the retainer on the locking lug in the rear of the magazine.

c. Bolt Handle. The bolt handle is located on the right-rear side of the receiver. To unlock the bolt from the receiver, rotate the bolt handle upward and to the rear. Rotating the handle up also cocks the bolt. To chamber a new cartridge and to lock the bolt, push the bolt handle forward and rotate down against the receiver slot. This is the "firing" position. After firing, rotate the bolt handle upward and pull to the rear to extract and eject the fired cartridge case.

d. Rear Sight Elevating Screw Knob. The rear sight elevating screw knob (fig. 12) is located on the top of the rear sight. To fire the rifle above the present setting, rotate the knob clockwise. To fire the rifle below the present setting, rotate the knob counterclockwise.

e. Rear Sight Windage Screw Knob. The rear sight windage screw knob (fig. 12) is located on the right side of the rear sight. To fire the rifle to the right of the present setting, rotate the knob clockwise. To fire the rifle to the left of the present setting, rotate the knob counterclockwise.

f. Trigger. The trigger (CC, fig. 9) is located in the bottom of the stock immediately below the bolt handle. To fire the rifle, squeeze the trigger to the rear against the tension of the trigger spring (AA, fig. 9). Squeezing the trigger releases the striker (G, fig. 9), to permit the striker to hit the firing pin extension (J, fig. 9) which, in turn, activates the firing pin (L, fig. 9).

22. Loading the Magazine

The magazine has a capacity of five cartridges. The magazine is loaded by depressing the magazine follower and inserting one car-

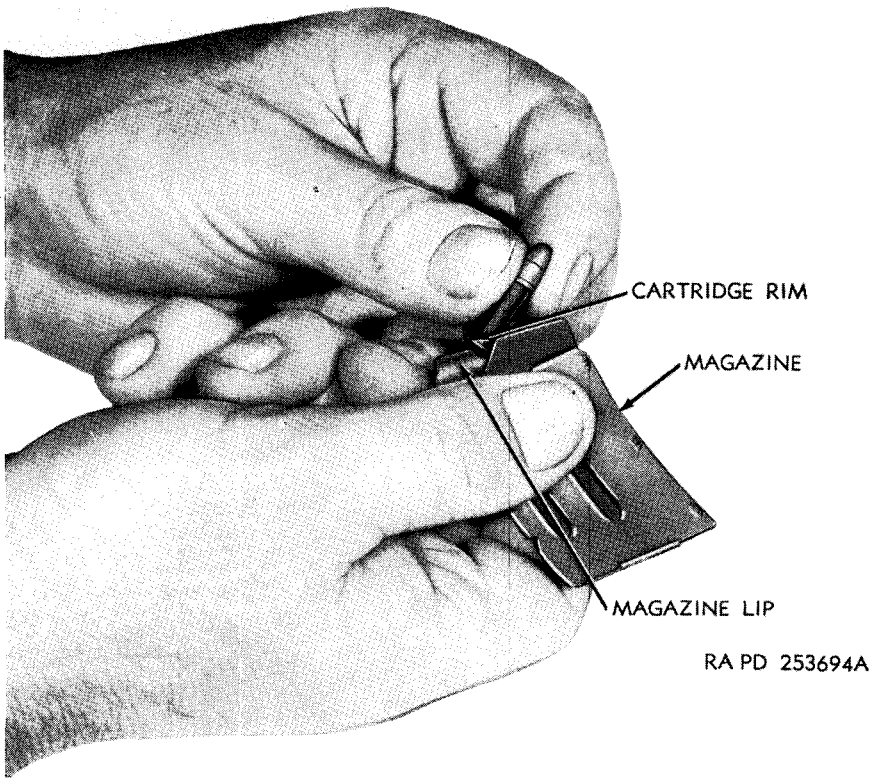

Figure 24. Loading cartridge into magazine (Stevens rifle M416–2T).

tridge at a time. With its rim toward the back, press the cartridge down and into the slots on each side of the top of the magazine and back under the lips of the magazine (fig. 24).

Note. As each succeeding cartridge is inserted, it pushes the first one toward the bottom of the magazine.

23. Loading and Unloading the Rifle

a. Loading.

(1) *Insert magazine.* Insert loaded magazine (par. 22) through the magazine opening at the bottom of the receiver just forward of the trigger guard (fig. 25) and push upward until locked in place. If an extra cartridge is to be used, proceed as in (2) below. If an extra cartridge will not be used, rotate the bolt handle up and draw entirely to rear; then push bolt handle forward and rotate down against the receiver slot. This action cocks the rifle and pushes the top cartridge from the magazine into the chamber.

(2) *Insert extra cartridge.* An extra cartridge, making a total of six, can be used. To insert extra cartridge, open the bolt, place a cartridge fully in the chamber by hand and close the bolt before inserting the loaded magazine ((1) above).

b. Unloading.

(1) *Remove chambered cartridge.* To unload a fired or live cartridge, rotate the bolt handle up and draw entirely to the rear.

(2) *Remove magazine.* Press the magazine retainer (fig. 25) back toward the trigger and pull out the magazine.

24. Setting the Safety

With the bolt cocked and locked forward against a chambered cartridge (par. 23*a*), push the thumbpiece of the safety on the right side of the receiver (fig. 23) fully forward to place the rifle in the SAFE position or to the rear in order to fire. When the safety is in the SAFE position, the trigger cannot be squeezed to fire the rifle.

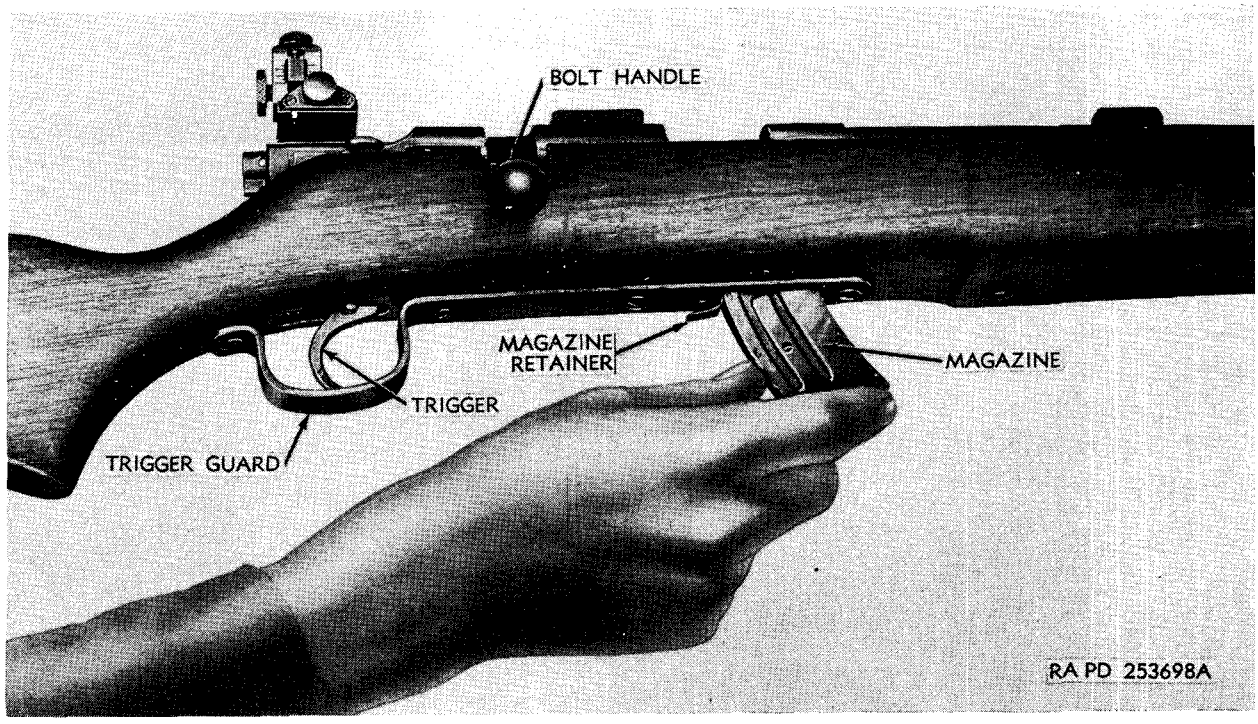

Figure 25. Installing or removing magazine (Stevens rifle M416–2T).

25. Firing and Recocking the Rifle

a. Firing. Load the rifle (par. 23*a*), set the safety in "fire" position (par. 24), and draw the finger piece of the trigger to the rear. The rifle fires once when the trigger is squeezed.

b. Recocking. Rotate bolt handle up and draw entirely to the rear; then push bolt handle forward and rotate down against the receiver slot. This action ejects the fired cartridge and pushes a new cartridge into the chamber.

26. Rear Sight Setting

a. Rear Sight (fig. 12).

(1) *General.* The rear sight of the Stevens rifle M416–2T is provided with elevating and windage screws for shifting the aperture in the rear sight disk for elevation or windage settings. These screws are furnished with knobs which, when turned, are retained in position by clicks seating in the notches in the face of the knobs. The seating of the clicks can be plainly heard as the knobs are turned. The relation between the pitch of the screw threads and the notches in the knobs is such that each notch corresponds to a shift in the aperture in the rear sight disk vertically or laterally measured in minutes of angle. Each minute of angle corresponds to a shift of the point of impact of the bullet on the target in inches, varying with the range or distance of the target. These fractional shifts of the knobs are called "clicks." Turning the elevating screw knob shifts the point of impact vertically and turning the windage screw knob shifts the point of impact laterally. The sight is usually adjusted at the factory, but to make sure it is correct, it should be checked on the range.

(2) *Stevens rear sight.* This rifle is furnished with a Stevens rear sight, with ½-minute "clicks." Each "click" corresponds to a ½-minute change in angle of sight; such a change corresponds to a ½-inch shift of the point of impact of the bullet on the target at 100 yards. This shift varies with the distance; as the range is doubled or halved, the amount of shift of the point of impact is doubled or halved.

The point of impact will be shifted ⅛ inch at 25 yards, ¼ inch at 50 yards, and ½ inch at 100 yards, etc. The elevating slide moves laterally in the windage slide. The windage slide is marked in 10 divisions, each of which represents 6 minutes of angle. There is no alinement mark on the elevating slide or on the base to aline the windage slide. Such marks should be made when the sight has been adjusted for minimum range and zero windage. There are no marks on the elevating or windage screw knobs. Each knob is divided into six click divisions, each division representing a change of ½ minute of angle. Two full revolutions of the knobs or 12 clicks represent 6 minutes of angle, or in the case of the elevating knob, 1 division on the windage slide.

Note. One "click" of the elevating or windage knob represents a shift of ⅛ inch at 25 yards.

b. Zeroing the Rear Sight.

(1) The rear sight of the rifle should be checked to ascertain the basic or "zero" setting. For accuracy, zero setting is best performed at short range. When zero setting is determined and noted, the rifle should be checked at various ranges and any variations from computed settings noted. In sighting-in this rifle, a large target should be used with a cross in its center and the rifle fired from a rest. Such a target will register the first few shots which may be out-of-line and clearly indicate the point of impact vertically or laterally from center. All sighting-in should be done on a safe range and on a day without any wind. As short ranges are preferable for such zero settings, 25 yards are taken, which means 25 yards from the muzzle of the rifle to the target. As the point of impact of each bullet will vary somewhat, the center of the group should be considered.

(2) To set the sight for minimum range and zero windage, take a position 25 yards from the target and proceed as described in (*a*) through (*d*) below.

(*a*) Screw the elevating slide down as far as it will go by turning the elevating screw knob (fig. 12). If yardage is marked on the scale, the slide may be set for proper yardage for a test shot.

(*b*) Set the windage slide as near the center (bore line) as possible by turning the windage screw knob (fig. 12).

(*c*) Fire five shots and correct for windage, to center the point of bullet impact laterally, by turning the windage screw knob (par. 21*e*) in the proper direction. Moving the windage slide to the right will shift the point of bullet impact on the target to the right and vice versa. When the point of bullet impact is centered laterally, mark the windage slide and sight base to indicate the center position.

(*d*) Correct for elevation in like manner, to center the point of bullet impact vertically, by moving the elevating screw knob (par. 21*d*) in the proper direction. Moving the elevating slide up raises the point of bullet impact on the target and vice versa. When point of bullet impact is centered vertically, mark the elevating slide to correspond with 0 stamped on the scale on the windage slide.

27. Functioning

Note. The key letters shown below in parentheses refer to figure 9.

a. Raising the bolt handle rotates the rear portion of the bolt in the receiver. The bolthead (K) is prevented from rotating because the ejector, which is integral with the magazine housing (Q), is seated in a slot in the bottom of the bolt. The striker (G) is now locked against rotation, because the cocking piece (GG) and the striker are pinned together and the cocking piece is held in a slot in the receiver. As the bolt handle is raised, a cam on the rear of the bolt body (H) engages the cocking piece, forcing it and the striker to the rear, compressing the mainspring (F) between the striker collar and the striker shoulder face. This

retraction of the striker permits the sear (Y) to engage with the sear notch on the bottom of the striker under pressure of the sear spring (V) and plunger. As the back of the sear pivots upward, it returns the trigger (CC) to the firing position.

b. As the bolt is retracted, the extractors holding the cartridge against the bolthead face (K) pull the case from the firing chamber of the barrel. Just before the bolt is fully retracted, the cartridge case strikes the ejector. As the bolt is further retracted, the cartridge is forced over the claw of the left extractor, is pivoted to the right around the hook of the right extractor, and thrown out of the receiver upward and to the right. The locking of the rear face of the sear projection with the rear face of the bolthead prevents full withdrawal of the bolt from the receiver until the trigger (CC) is squeezed to pivot the sear (Y) away from the bolt.

c. As the bolthead (K) uncovers the magazine (S) during its retraction, the magazine spring (T) and follower (N) raise a cartridge partially out of the magazine, where the rim is retained between the lips formed on the walls and the cartridge is held in an inclined position extending up and out of the magazine. When the bolt is pushed forward to its closed position, the lug on the bottom of the bolthead pushes the cartridge forward until the rim is released at the end of the magazine lips and forced up under pressure of the magazine spring into the recess in the bolthead face and under the extractors. As the bolt reaches its foremost position, the cartridge is seated in the chamber of the barrel.

d. Putting the bolt handle down in the firing position, locks the bolt to the receiver and rotates the cocking cam surface on the bolt body (H) away from a similar cam cocking surface on the cocking piece (GG), and the striker (G) is held in the sear notch in firing position.

e. When the trigger (CC) is squeezed, it pivots on its mounting pin and its forward projection depresses the sear (Y), disengaging the sear projection on the striker (G). The compressed mainspring (F) then drives the firing pin extension (J) which, in turn, drives the firing pin (L) forward against the rim of the cartridge.

Section IV. OPERATION UNDER USUAL CONDITIONS FOR WINCHESTER RIFLE M75T.

28. General

This section describes and illustrates the operation and location of the controls (par. 29) and contains the instructions for the mechanical steps necessary to operate these controls (pars. 30–34) and explains the functioning (par. 35) of the Winchester rifle M75T.

29. Controls
(fig. 26)

a. Safety. The safety lock (NN, fig. 14) is attached to the under side of the trigger (M, fig. 14) by the safety lock screw (MM, fig. 14). The safety lock plunger (LL, fig. 14) and spring are located in a hole in the front of the trigger and engage a detent in the safety lock. The safety lever pivots on the trigger pin. This lever has two extensions at the lower end. One engages a slot in the safety lock and the other extends through the receiver wall and prevents the opening of the bolt when the lever is in the SAFE position by engaging the safety lever slot in the breech bolt sleeve (handle). At the same time, the safety lock is pushed forward and engages an undercut in the magazine holder to prevent trigger movement. Push the safety lever on the right side of the receiver forward for FIRE position (word FIRE exposed) and fully to the rear for SAFE position (word SAFE exposed).

b. Magazine Release Plunger. The magazine release plunger is located on the left side of the stock just below the ejection opening in the receiver. To release the magazine, press magazine release plunger "in." The magazine release plunger moves the magazine catch to the right, thereby disengaging the magazine catch slot from the locking lug on the right side of the magazine and permitting the magazine to drop from its aperture in the stock. To secure the magazine, slide the magazine all the way up in its aperture. The spring action of the magazine catch prevents the magazine from falling out.

c. Breech Bolt Cocking Sleeve (Handle). The breech bolt cocking sleeve (handle) is located on the right-rear side of the receiver. To un-

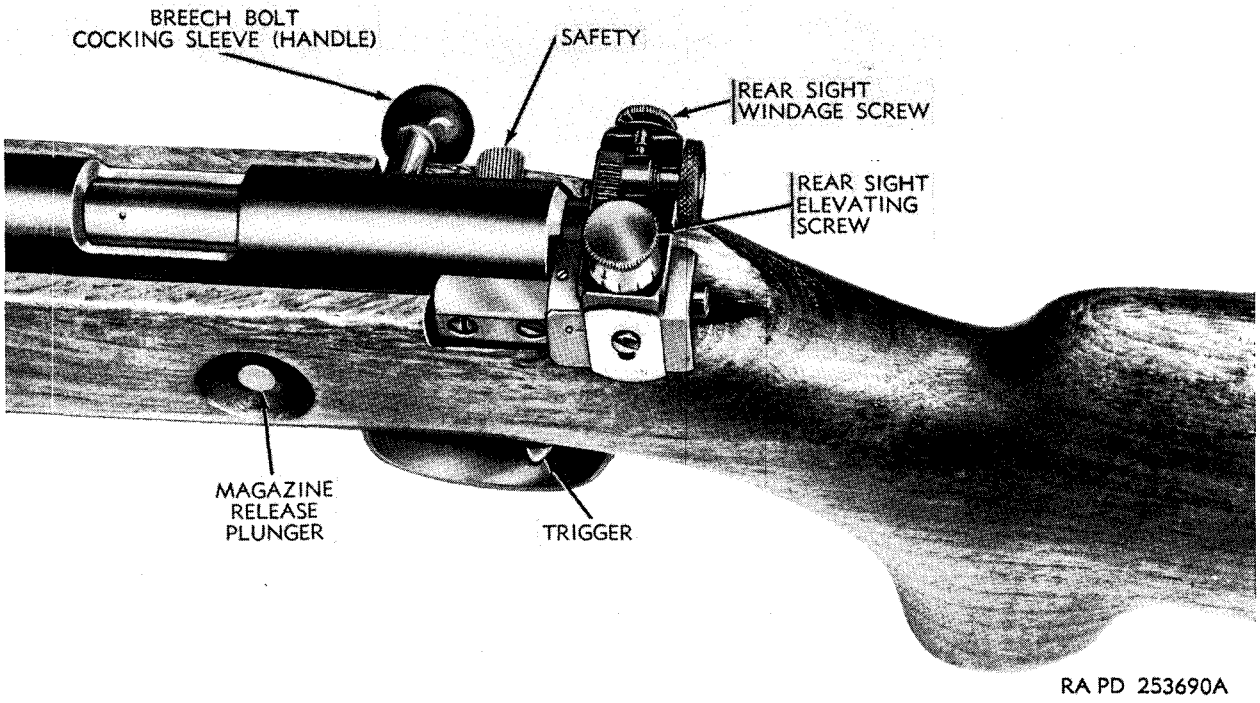

Figure 26. Controls (Winchester rifle M75T).

lock the bolt from the receiver, rotate the breech bolt cocking sleeve (handle) upward and to the rear. Rotating the sleeve up also cocks the bolt. To chamber a new cartridge and to lock the bolt, push the cocking sleeve forward and rotate down against the receiver slot. This is the "firing" position. After firing, rotate the cocking sleeve upward and pull to the rear to extract and eject the fired cartridge case.

d. Rear Sight Elevating Knob. The rear sight elevating screw knob is integral with the elevating screw (fig. 17) and is located on the left top of the rear sight. To fire the rifle above the present setting, rotate the knob counterclockwise. To fire the rifle below the present setting, rotate the knob clockwise.

e. Rear Sight Windage Knob. The rear sight windage screw knob is integral with the windage screw (fig. 17) and is located on the right side of the rear sight. To fire the rifle to the right of the present setting, rotate the knob counterclockwise. To fire the rifle to the left of the present setting, rotato the knob clockwise.

f. Trigger. The trigger (M, fig. 14) is located in the bottom of the stock immediately below the breech bolt cocking sleeve (handle). To fire the rifle, squeeze trigger to the rear against the tension of the trigger spring. Squeezing the trigger releases the firing pin (BB, fig. 14), to permit the offset end of the pin to strike the cartridge rim.

30. Loading the Magazine

The magazine has a capacity of five cartridges The magazine is loaded by depressing the magazine follower and inserting one cartridge at a time. With its rim toward the back, press the cartridge down and into the slots on each side of the top of the magazine and back under the lips of the magazine (fig. 27).

Note. As each succeeding cartridge is inserted, it pushes the first one toward the bottom of the magazine.

31. Loading and Unloading the Rifle

a. Loading.

Warning: The bolt cannot be unlocked nor retracted with the safety (par. 29*a*) in the SAFE position. Therefore, the safety should be placed in the FIRE position when chambering a cartridge.

(1) *Insert magazine.* Insert loaded magazine (par. 30) through the magazine opening at the bottom of the receiver just forward of the trigger guard (fig.

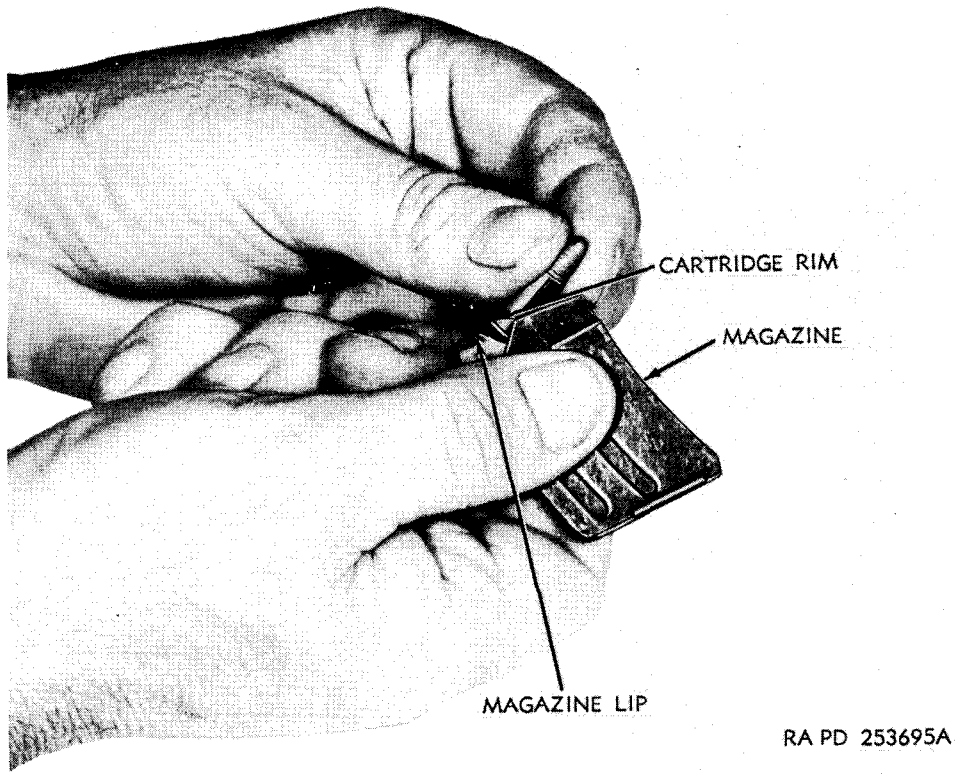

Figure 27. Loading cartridge into magazine (Winchester rifle M75T).

28) and push upward until locked in place. If an extra cartridge is to be used, proceed as in (2) below. If an extra cartridge will not be used, rotate breech bolt cocking sleeve (handle) up and draw entirely to the rear; then push cocking sleeve forward and rotate down against the receiver slot. This action cocks the rifle and pushes the top cartridge from the magazine into the chamber.

(2) *Insert extra magazine.* An extra cartridge, making a total of six, can be used. To insert extra cartridge, open

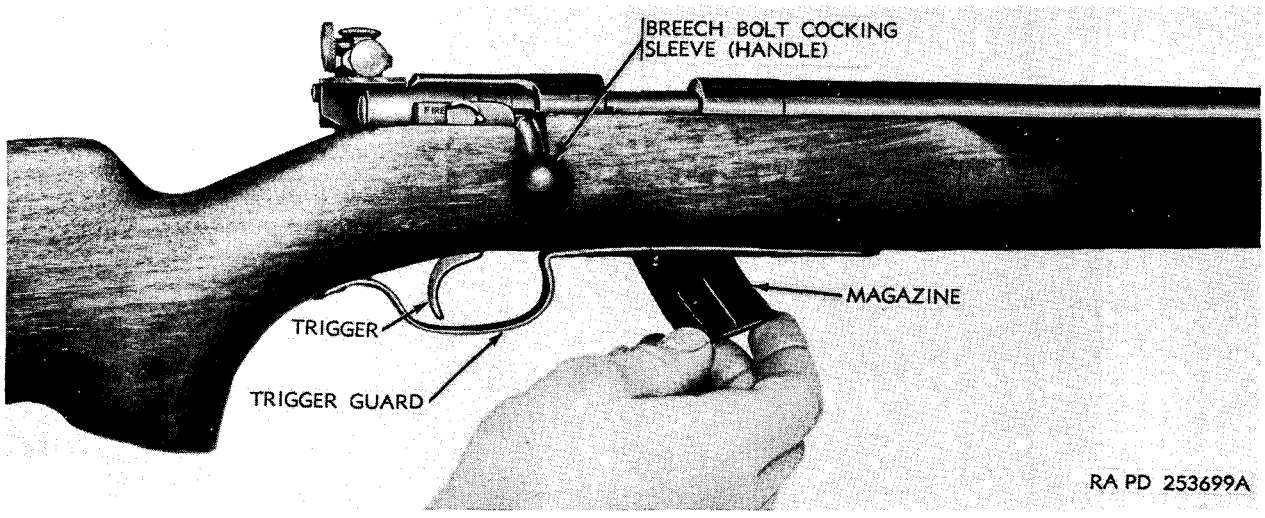

Figure 28. Installing or removing magazine (Winchester rifle M75T).

the bolt, place a cartridge fully in the chamber by hand and close the bolt before inserting the loaded magazine (1) above).

Warning: The safety must be placed in the SAFE position (par. 29*a*) immediately after the rifle is fully loaded. The trigger must not be touched while loading or shifting the position of the safety to prevent firing of the rifle.

b. Unloading.

(1) *Remove chambered cartridge.* To unload a fired or live cartridge, rotate the breech bolt cocking sleeve (handle) up and draw entirely to the rear.

(2) *Remove magazine.* Press the magazine release plunger (fig. 26) "in" and pull out the magazine.

32. Setting the Safety

With the breech bolt cocked and locked forward against a chambered cartridge (par. 31*a*), push the safety (fig. 26) on the right side of the receiver rearward to place the rifle in the SAFE position or to front for FIRE position. When the safety is in the SAFE position, the trigger cannot be squeezed to fire the rifle and the breech bolt cocking sleeve (handle) is locked in the down position. When the safety is in the SAFE position, the word SAFE is exposed, and when shifted to the FIRE position, the word FIRE is exposed.

33. Firing and Recocking the Rifle

a. Firing. Load the rifle (par. 31*a*), set the safety in FIRE position (par. 32), and draw the finger piece of the trigger to the rear. The rifle fires once when the trigger is squeezed.

b. Recocking. Rotate breech bolt cocking sleeve (handle) up and draw entirely to the rear; then push cocking sleeve forward and rotate down against the receiver slot. This action ejects the fired cartridge and pushes a new cartridge into the chamber.

34. Rear Sight Setting

a. Rear Sight (fig. 17).

(1) *General.* The rear sight of the Winchester rifle M75T is provided with elevating and windage screws for shifting the aperture in the rear sight disk for elevation or windage settings. These screws have integral knobs which, when turned, are retained in position by clicks seating in the notches in the face of the knob portion of the screws. The seating of the clicks can be plainly heard as the screws are turned. The relation between the pitch of the screw threads and the notches is such that each notch corresponds to a shift in the aperture in the rear sight disk vertically or laterally measured in minutes of angle. Each minute of angle corresponds to a shift of the point of impact of the bullet on the target in inches, varying with the range or distance of the target. These fractional shifts of the knobs are called "clicks." Turning the elevating screw shifts the point of impact vertically and turning the windage screw shifts the point of impact laterally. The sight is usually adjusted at the factory, but to make sure it is correct, it should be checked on the range.

(2) *Lyman 57E rear sight.* This rifle is furnished with the Lyman 57E rear sight, with ¼-minute "clicks." Each "click" corresponds to a ¼-minute change in angle of sight; such a change corresponds to a ¼-inch shift of the point of impact of the bullet on the target at 100 yards. This shift varies with the distance; as the range is doubled or halved, the amount of shift of the point of impact is doubled or halved. The point of impact will be shifted ⅛ inch at 50 yards, ¼ inch at 100 yards, and ½ inch at 200 yards, etc. The elevating slide plate (scale) is attached to the rear sight slide and is marked for 50, 100, 150, and 200 yards. The windage scale is attached to the top of the rear sight slide and is marked in minutes of angle. Both scales are adjustable. The elevating screw has 12 divisions, each of which corresponds to a change of ¼ minute of angle. Thus, a full revolution of the screw represents a change of 3 minutes of angle. The windage screw is

similarly divided into 12 "clicks" but is not so marked.

Note. One "click" of the elevating or windage screw represents a shift of ⅛ inch at 50 yards.

b. Zeroing Rear Sight.

(1) The rear sight of the rifle should be checked to ascertain the basic or "zero" setting. For accuracy, zero setting is best performed at short range. When zero setting is determined and noted, the rifle should be checked at various yardages and any variations from computed settings noted. In sighting-in this rifle, a large target should be used with a cross in its center and the rifle fired from a rest. Such a target will register the first few shots which may be out-of-line and clearly indicate the point of impact vertically or laterally from center. All sighting-in should be done on a safe range and on a day without any wind. As short ranges are preferable for such zero settings, 50 yards (the minimum setting of the rifle) are taken, which means 50 yards from the muzzle of the rifle to the target. As the point of impact of each bullet will vary somewhat, the center of the group should be considered.

(2) To set the sight for minimum range and zero windage, take a position 50 yards from the target and proceed as described in (*a*) through (*d*) below.

(*a*) Screw the elevating slide down as far as it will go by turning the elevating screw (fig. 17). Loosen the elevating slide plate screw, set the elevating slide plate (scale) so that the 50 mark is opposite the 0 mark on the rear sight base, and tighten the elevating slide plate screw.

(*b*) Set the windage aperture as near the center (bore line) as possible by turning the windage screw (fig. 17).

(*c*) Fire five shots and correct for windage, to center the point of bullet impact laterally, by turning the windage screw knob (par. 29*e*) in the proper direction. Moving the windage aperture to the right will shift the point of bullet impact on the target to the right and vice versa. When the point of bullet impact is centered laterally, mark the windage aperture to indicate the center position. Then loosen the windage scale screw, aline the center of the scale with the mark on the aperture, and tighten the screw.

(*d*) Correct for elevation in like manner, to center the point of bullet impact vertically, by turning the elevating screw knob (par. 29*d*) in the proper direction. Moving the elevating slide up raises the bullet impact on the target and vice versa. When point of bullet impact is centered vertically, loosen the elevating slide plate screw, reset the elevating slide plate (scale) so that the 50 mark is opposite 0 mark on the rear sight base, and tighten the elevating slide plate screw.

35. Functioning

Note. The key letters shown below in parentheses refer to figure 14.

a. When the handle of the breech bolt cocking sleeve (handle) is raised from the locking notch in the receiver (E), a cam surface formed on the center face of the sleeve slides against a projection on the bottom of the firing pin (BB) and forces it to compress the firing pin spring (X) to the rear. Rotation of the breech bolt (AA) and firing pin with the cocking sleeve (W) is prevented by the ejector, which is secured to the bottom of the receiver well and engages the flattened bottom section of the breech bolt.

Note. Sear and trigger are integral in this rifle.

b. The sear projection of the trigger (M) is retained in contact with the firing pin (BB) by the trigger spring. When the firing pin is forced to the rear by the raising of the breech bolt cocking sleeve (W), the sear gripping surface of the trigger is pushed up by the trigger spring to catch in front of the sear notch of the firing pin. The firing pin is now locked to the trigger until the trigger is squeezed to fire the rifle.

c. As the bolt is further retracted, the two

extractors, which hold the cartridge against the forward face of the breech bolt (AA), pull the case from the firing chamber of the barrel (F). Just before the end of the breech bolt retraction, the cartridge case strikes the ejector projection (Z). As the bolt is further retracted, the cartridge case rim is forced from under the claw of the left extractor, is pivoted to the right around the right extractor hook, and is thrown out of the receiver (E) upward and to the right.

d. After the breech bolt (AA) and cartridge have passed over the magazine during retraction, the magazine spring (JJ) and follower (CC) raise a cartridge partially out of the magazine, where the rim is retained by the lips formed on the walls of the magazine and the cartridge is held in an inclined position.

e. When the breech bolt (AA) is pushed forward to its closed position, the projection on the bottom of the breech bolt pushes the cartridge forward until the rim is released at the end of the magazine lips and forced up by the pressure of the magazine spring (JJ) into the recess in the face of the breech bolt and under the extractors. As the breech bolt continues to move forward, the cartridge is pushed into its seat in the chamber of the barrel (F) and the firing pin (BB), which is pinned to the breech bolt, is pushed forward within the receiver well (E) until the firing pin notch is gripped by the forward end of the trigger (M). Turning the breech bolt cocking sleeve (W) down locks the breech bolt to the receiver with the firing pin in the cocked position.

f. When the trigger (M) is squeezed to fire the rifle, it pivots on the trigger pin and tips its forward projection end down, disengaging the sear notch of the firing pin (BB). The compressed firing pin spring (X) drives the firing pin forward against the rim of the cartridge.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

36. General

a. In addition to the normal operation under usual conditions described in paragraphs 12 through 35, special instructions for operation under unusual conditions are contained herein. In addition to the normal preventive-maintenance service (pars. 20–27) specified in this technical manual, special care in cleaning and lubrication should be observed where extremes of temperature, humidity, and atmospheric conditions are present. Proper cleaning, lubrication, and storage and handling of lubricants not only insure operation and functioning but also guard against excessive wear of the working parts and deterioration of the materiel.

b. Refer to paragraph 47 for instructions on lubrication for operation under unusual conditions and to paragraphs 68 and 69 for maintenance procedures applying to unusual conditions.

c. When chronic failure of materiel results from subjection to extreme conditions, report of such failure should be made in accordance with paragraph 3*d*.

37. Operation in Cold Climates

a. In cold climates, contamination of lubricants with moisture from snow, rain, or condensation in partly filled containers is the source of many difficulties. Containers will be kept covered at all times and stored in a warm place if possible.

b. Whenever the metal parts of the materiel or equipment are cold and the surrounding air temperature rapidly becomes warmer or when they are moved into a warmer area, such as a heated building, a condensation of moisture vapor will occur upon the cold surface. This condition is known as "sweating." It can be prevented as described in (1) through (3) below.

(1) Do not bring any cold materiel indoors unless it is absolutely necessary. It is best to leave it outdoors, but protected from snow with proper covers. Snowtight lockers at outdoor temperatures are recommended for keeping binoculars, telescopes, and other equipment.

(2) If it is necessary to bring instruments or other equipment from low temperatures to room temperatures, use "anti-condensation" containers. These containers can be specially made tight-

fitting, cloth-framed boxes, or any other fairly airtight containers with heat conducting walls. Place the cold equipment in the container. Have the container at outside temperature so that it will contain cold, dry, air. Close the top, bring it indoors, and allow it to come to room temperature. It can be placed near a stove to hasten the warming-up process. The cold, dry air expands as it warms, breathing outward, and therefore, no warm, humid air from the room comes in contact with the materiel and there is no condensation on it. When the materiel is entirely at room temperature, sweating will not occur when it is removed from the container.

(3) If condensation occurs on cold materiel, it must be disassembled, cleaned, thoroughly dried, and lubricated after it reaches room temperature to prevent rust or corrosion. Do not operate the materiel before thoroughly drying, as the moisture will form an emulsion with the oil or grease, necessitating removal of the emulsified lubricant and relubrication of the materiel. Do not move materiel covered with moisture condensate outdoors, as the parts will become covered with frost and may not function.

c. Exercise the various controls throughout their entire range at intervals as required, to aid in keeping the controls from freezing in place and to reduce the effort required to operate them.

d. Particular attention will be given to protecting materiel when not in use with the proper covers, making sure that they are serviceable, in good state of repair, and are securely fastened, so that snow or ice will be kept from the operating parts. Provide as much protection as practicable for all parts of the materiel and associated equipment.

e. For description of operations in extreme cold, refer to FM 31–70, FM 31–71, FM 31–72, and TM 9–2855.

Caution: It is imperative that the approved practices and precautions be followed. TM 9–2855 contains information which is specifically applicable to this materiel as well as to all ordnance materiel. It must be considered an essential part of this manual, not merely an explanatory supplement to it.

Refer to TM 9–2855 for detailed instructions on storage, handling, and use.

38. Operation in Hot Climates

a. General.

(1) In hot climates, the film of oil necessary for operation and preservation will be quickly dissipated. Inspect the rifle frequently, paying particular attention to hidden surfaces such as the firing pin and like places where corrosion might occur and not be quickly noticed.

(2) Perspiration from the hands is a contributing factor to rusting because it contains acid; after handling, clean, wipe dry, and restore the oil film.

b. Hot-Dry Climate. When operating in hot climates, the bore of the rifles should be cleaned and oiled more frequently than usual. Temperature changes may cause condensation of moisture in the air on metal and cause rusting. If condensation occurs on metal parts of the weapon wipe them dry and coat with the special preservative lubricating oil as required to prevent rusting.

c. Hot-Damp and Salty Atmosphere.

(1) Materiel should be inspected frequently when being operated in moist areas.

(2) When the materiel is active, clean and lubricate the bore and exposed metal surfaces more frequently than is prescribed for normal service.

(3) Moist and salty atmospheres have a tendency to emulsify oils and frequently cause corrosion. Keep exposed surfaces covered as much of the time as firing conditions permit.

(4) When the materiel is inactive, the metal parts should be covered with a hard-film corrosion-preventive compound. Rifles should be protected from exposure to the salty atmosphere whenever practicable.

(5) Do not break moisture-resistant seal

of ammunition container until the ammunition is to be used.

(6) Keep ammunition dry and free from mud, corrosion, or foreign matter. Provide proper drainage around the emplacement to keep it as dry as possible.

(7) In the tropics, many optical instruments are protected against fungus growth by the installations of fungicidal capsules. Notify ordnance maintenance personnel if there are indications of fungus growth in any optical instrument.

39. Unusual Terrain Conditions

Inspect and lubricate the materiel more frequently when operating in sandy areas. Exercise particular care to keep sand out of the mechanisms when carrying out inspection and lubrication operations. Keep exposed surfaces covered as much of the time as firing conditions permit. Shield parts from flying sand with paulins during disassembly and assembly operations. When commencing an action in sandy areas, remove lubricants from barrel bore bolt assembly or any other exposed lubricated parts, situation permitting, as they will pick up sand, forming an abrasive which will cause rapid wear. With the surfaces dry, there is less wear than when they are coated with lubricant contaminated with sand. Clean and lubricate all exposed parts after the action is over.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. PARTS, SPECIAL TOOLS, AND EQUIPMENT

40. General

Tools, equipment, and repair parts are issued to the using organization for operating and maintaining the materiel. Tools and equipment should not be used for purposes other than prescribed and, when not in use, should be properly stored in the chest and/or roll provided for them.

41. Parts

Repair parts are supplied to the using organization for replacement of those parts most likely to become worn, broken, or otherwise unserviceable, providing replacement of these parts is within the scope of organizational maintenance functions. Repair parts, tools, and equipment supplied for the rifles are listed in the Department of the Army Supply Manual ORD 7 SNL B–25, which is the authority for requisitioning replacements.

42. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to this materiel are listed for issue by the ORD 7 supply manual and are authorized for issue by tables of allowances and tables of organization and equipment.

43. Special Tools and Equipment

All special tools and equipment designed for operation, organizational maintenance, and general use are listed in table II for information only. This list is not to be used for requisitioning replacements.

Table II. Special Tools and Equipment for Operation and Organizational Maintenance

Item	Identifying No.	References		Use
		Fig.	Par.	
ROD, cleaning, cal. .22, M1.	5503837	29	9*d*, 46*d*, 49*d*, 58*e*,	Use with patch or brush to clean bore.
SCREWDRIVER, sp, folding, 3 blade, ordnance design, width of blades ⅛, ¼, 21/64 in.	5564038	29	57*c*, 61*c*, 65*c*	To disassemble and assemble rifle.
SLING, gun, M1.	6544058	29	57*d*, 58*g*, 59*b*, 61*d*, 62*g*, 63*b*, 65*d*, 66*g*, 67*b*	To keep rifle steady during firing and to hold rifle on shoulder.

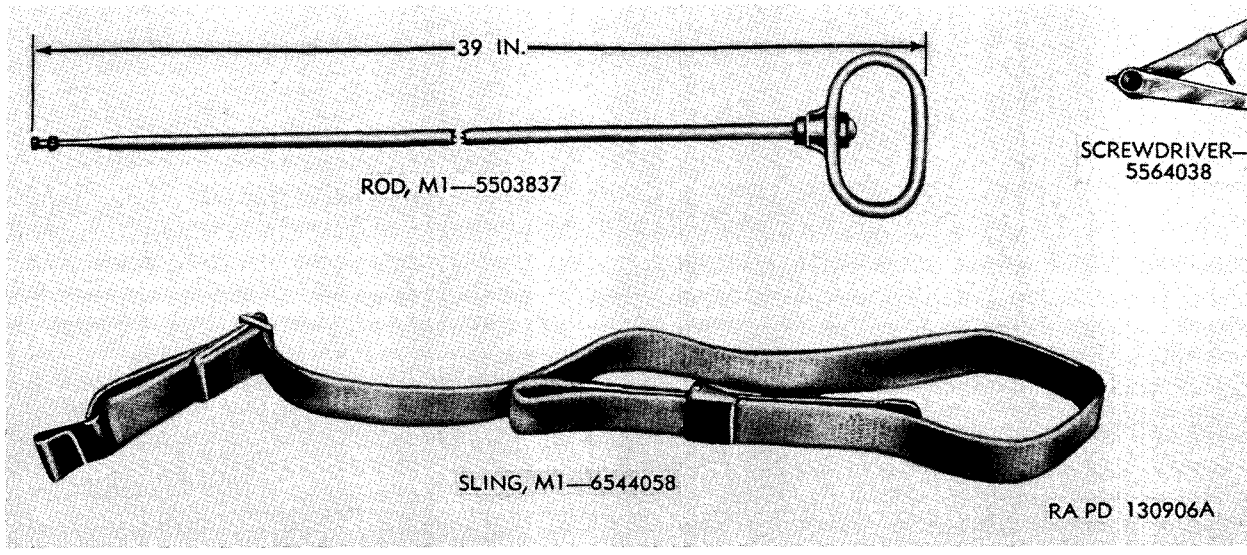

Figure 29. Special tools and equipment.

Section II. LUBRICATION

44. Lubrication Chart

The lubrication chart prescribes cleaning and lubrication procedures as to points to be lubricated, intervals, and lubricants to be used under various conditions.

Lubrication Chart for Cal. .22 Rifle M13

Barrel bore	Immediately after firing and on 2 consecutive days thereafter, thoroughly clean with CR, making sure that all surfaces are well coated. Do not wipe dry. On the third day after firing, clean with CR, wipe dry, apply a light coat of PL medium (above +32° F.) or PL special (below +32° F. to −40° F.).
Breech bolt and trigger group.	Immediately after firing, clean with CR, wipe dry, apply a light coat of oil as above.
Weapons not in use	Clean and lubricate the weapon weekly.
Stocks	When a weapon is in use each week, clean with a dry cloth and apply a light coat of raw linseed oil (RL). Allow wood to absorb the oil, wipe excess oil from the surface with a dry patch.

CR —CLEANING COMPOUND, SOLVENT: Rifle-Bore Cleaner

PL Medium —LUBRICATING OIL, GENERAL PURPOSE: Preservative, Medium

PL Special —LUBRICATING OIL, GENERAL PURPOSE: Preservative, Special

RL —LINSEED OIL, RAW.

45. General Lubrication Instructions

a. Usual Conditions. Service intervals specified on the lubrication chart are for normal operation and where moderate temperature, humidity, and atmospheric conditions prevail.

b. Lubrication Equipment. Each rifle is supplied with lubrication equipment adequate for its maintenance.

c. Cleaning. Prior to lubrication, all rifles should be cleaned by one of the methods described in paragraph 49.

46. Special Lubrication Instructions

a. Lubrication should be accomplished carefully and sparingly. All excess oil should be wiped from the rifles. This is especially important in regard to the barrel and chamber.

Warning: Oil or grease in the barrel will raise the breech pressure and may result in damage to materiel and injury to personnel.

b. Raw linseed oil will be applied to the wooden parts of the rifles to preserve the wood and to keep out the moisture.

c. Preservative general purpose lubricating oil (par. 44) will be used at all temperatures for metallic parts of the rifles.

d. Remove excess oil from the bore of the barrel before firing, using cleaning rod M1 5503837 and dry patch (par. 49*d* (1) (*a*)). Smoking of the barrel may indicate excessive lubrication.

47. Lubrication Under Unusual Conditions

Reduce service intervals specified on the lubrication chart (lubricate more frequently) to compensate for abnormal operation and extreme conditions, such as high or low temperatures, prolonged periods of rapid fire, continued operation in sand or dust, or exposure to moisture, any one of which quickly may destroy the protective qualities of the lubricant. Intervals may be extended during inactive periods commensurate with adequate preservation.

a. Extreme-Cold Weather Lubrication. Refer to TM 9–2855 for instructions on necessary special preliminary lubrication of the rifle. This materiel should be exercised frequently during periods of low temperature to insure proper functioning. If any equipment does not function properly, notify ordnance maintenance personnel.

b. Extreme-Hot Weather Lubrication. Special lubricants will not ordinarily be required at extremely high temperatures, as lubricants prescribed for temperatures above 32° F. provide adequate protection. However, more frequent servicing than specified in table III and in lubrication chart (par. 44) is necessary because the heat tends to dissipate the lubricants.

c. Lubrication for Humid and Salt-Air Conditions. High humidity, moisture, or salt air

tend to contaminate the lubricant, necessitating more frequent servicing than specified in table III and in lubrication chart (par. 44).

d. Lubrication After Operation Under Dusty or Sandy Conditions. If firing or prolonged travel has occurred under dusty or sandy conditions, clean and inspect all points of lubrication for fouled lubricants. Lubricate as necessary.

Note. A lubricant which is fouled by dust and sand makes an abrasive mixture that causes rapid wear of parts.

Section III. PREVENTIVE-MAINTENANCE SERVICES

48. General

Preventive-maintenance services prescribed by Army regulations are a function of the using level of maintenance. This section contains preventive-maintenance services allocated to operating personnel (table III) and to the organizational maintenance personnel (table IV).

49. Cleaning

a. General.

(1) Rifle-bore cleaner solvent cleaning compound is used for cleaning the rifle after it has been fired or for periodic cleaning as outlined in preventive-maintenance services.

(2) Rifle-bore cleaner solvent cleaning compound contains volatile solvents that evaporate at temperatures above 150° F., thus reducing the cleaning action. Therefore, after firing, the rifle should not be cleaned until the barrel may be safely touched with the bare hand.

(3) Maximum cleaning efficiency and protection against rusting occurs when the solvent cleaning compound is used undiluted. In an emergency and when necessary to conserve the supply, it may be diluted up to 50 percent with water, provided prevailing temperatures are above 32° F. The rust preventive qualities will be reduced however, and surfaces so cleaned shall be immediately dried and coated with oil.

b. Weekly. When not in use, inspect bore and chamber for rust. Check rifles for rust.

c. Before Firing.

(1) Thoroughly clean the bore and chamber of all rifle-bore cleaner solvent cleaning compound, oil, and foreign matter (*d*(1) (*a*) below).

(2) Wipe off surplus oil from the bolt, inside the receiver and stock, and from the magazine and trigger assembly openings, using a clean wiping cloth wet with proper oil and wrung out.

(3) Wipe outer surfaces of the barrel and receiver group and the magazine assembly, using a clean wiping cloth wet with the proper oil and then wringing the oil from the cloth.

d. After firing.

(1) *Bore and chamber.* The procedure prescribed in (*a*) and (*b*) below is to be followed at the end of the day's firing. If no further firing is anticipated, it is to be followed on 2 consecutive days thereafter.

(*a*) To clean the bore, assemble a patch saturated with rifle-bore cleaner solvent cleaning compound to the cleaning rod M1 5503837 and insert the rod into the bore at the breech end to avoid possible damage to the rifling at the muzzle. Move the cleaning rod and patch forward and backward several times through the bore and replace with a new patch. Be sure the patch goes all the way through the bore before reversing its direction, this will prevent the rod and patch from becoming stuck in the bore. If rust or foreign matter is not removed by the compound, repeat procedure several times, using fresh patch and solvent cleaning compound. After the bore has been thoroughly cleaned, lubricate the bore by sending a patch saturated with preservative general purpose lubricating oil (par. 44) to prevent rust through the bore.

(*b*) The third day following firing, assemble a clean dry patch on rod M1

5503837 and thoroughly dry bore and chamber. With clean dry patches saturated with preservative general purpose lubricating oil (par. 44) and then wrung out, apply a light coat of oil to the bore and chamber by running patches through the bore.

(2) *Parts other than barrel.*

(*a*) With rifle-bore cleaner solvent cleaning compound, clean all parts that have been exposed to powder gases.

(*b*) Dirt and foreign matter must be removed from all other parts. Thoroughly dry all parts and apply a light coat of preservative general purpose lubricating oil (par. 44).

e. Service for Periods Up To a Week. If rifles have not been fired, renew oil film in the bore and chamber each week using a single patch saturated in preservative general purpose lubricating oil (par. 44). When operating from areas of high humidity and salt spray and rifles are not being maintained in readiness for immediate operation use, lubricate with oil before placing in action. Wipe oil from bore and chamber before firing; inspect for traces of rust formation.

f. Care of Repair Parts and Equipment. Complete sets of tools, repair parts, and equipment shall be maintained at all times, lubricated to prevent rust, and inspected at frequent intervals. When in use, they should be cleaned with dry-cleaning solvent or mineral spirits paint thinner and lightly lubricated with preservative general purpose lubricating oil (par. 44).

50. General Procedures

The general preventive maintenance described in *a* through *f* below will be observed in addition to the schedules in paragraph 51.

a. The importance of a thorough knowledge of how to clean and lubricate materiel cannot be overemphasized. The attention to these rifles largely determines whether the rifle will shoot accurately and whether they will function properly.

b. Dust, dirt, grit, gummed oil, and water cause deterioration of all parts of the materiel. Particular care should be taken to keep all bearing surfaces and exposed parts clean and properly lubricated. Wiping cloths, rifle-bore cleaner solvent cleaning compound, and lubricants are furnished for this purpose. Remove all traces of rust with rifle-bore cleaner solvent cleaning compound or, if necessary, crocus abrasive cloth, which is the coarsest abrasive material to be used by organizational maintenance personnel for this purpose.

c. Repair parts, tools, and equipment will be inspected for completeness and serviceability. Missing or damaged parts will be replaced or turned in for repair. Use only tools provided and see that they fit properly.

Caution: Tools that do not fit will fail or damage parts.

d. At least every 6 months, see that pertinent modification work orders have been applied. A list of current modification work orders is published in DA Pam 310–4. No alterations or modification will be made by organizational personnel except as authorized in publications.

e. Each time the rifle is disassembled for cleaning or lubrication, carefully inspect all parts for cracks, excessive wear and rust, and defects that might cause malfunctioning of the rifle. See table V for troubleshooting and correction information on certain parts which when worn, damaged, or improperly adjusted cause definite malfunctions. Use this section as a guide during inspection. Thoroughly clean and properly lubricate all parts before assembly.

f. Each time a rifle is assembled, it should be given an operational check.

51. Preventive-Maintenance Schedule (Operator)

a. To insure continued satisfactory performance, it is necessary that the rifle be inspected periodically in order that defects may be discovered and corrected before they result in serious damage or failure. Any defects or unsatisfactory operating characteristics beyond the scope of corrections of the operator must be reported at the earliest opportunity to the designated individual in authority.

b. The services set forth in table III are to be performed by the operator.

Table III. Preventive-Maintenance Schedule (Operator)

Point	Preventive maintenance	Detailed instructions
Before Firing		
Bore and chamber.	Clean -------	Swab with dry cloth to remove oil, dirt, and foreign matter (par. 49).
Bolt --------	Clean and lubricate.	Wipe off excess oil, using clean, dry wiping cloth. Apply oil film by wiping with a clean cloth wet with proper oil and then wrung out (pars. 44 and 46).
Interior of receiver, including trigger assembly and magazine openings.	Clean and lubricate.	Wipe off excess oil, using clean, dry wiping cloth. Apply oil film by wiping with a clean cloth wet with proper oil and then wrung out (pars. 44 and 46).
Entire rifle---	Inspection and clean outer surface of rifle.	Check operation of bolt handle, trigger, safety, rear sight elevating and windage knobs, and magazine release (par. 13, 21, or 29).
Rear sight---	Inspection ---	Check rear sight for solid mounting on rear sight base (par. 58*d*, 62*d*, or 66*d*).
Sling M1 6544058.	Inspection ---	Check for proper installation (par. 59*b*, 63*b*, or 67*b*).
Entire rifle---	Inspection ---	Check for proper lubricating (par. 44).
After Firing		
Bore and chamber.	Clean -------	Follow instructions in paragraph 49.
Bolt --------	Clean and lubricate.	Remove all dirt and foreign matter. Dry thoroughly and immediately apply a light coat of preservative general purpose lubricating oil (pars. 44 and 46).

Table III. Preventive-Maintenance Schedule (Operator) Continued

Point	Preventive maintenance	Detailed instructions
After Firing—Continued		
Interior of receiver.	Clean and lubricate.	Remove all dirt and foreign matter. Dry thoroughly and immediately apply a light coat of preservative general purpose lubricating oil (pars. 44 and 46).
Bore and chamber.	Lubricate ----	If rifle has not been fired, renew oil film every 5 days, using a single patch wet preservative general purpose lubricating oil (par. 44).
Entire rifle---	Inspection ---	Remove live ammunition from magazine and chamber (par. 15, 23, or 31). Check for any malfunction and notify ordnance maintenance personnel if necessary (par. 55).

52. Preventive-Maintenance Schedule (Armorer)

a. The company armorer is issued necessary tools and either performs or supervises all authorized disassembly, maintenance, and adjustments. Service by the company armorer includes a systematic check to see that all operator preventive maintenance (table III) has been properly performed at the prescribed intervals and that the rifle is in the best possible operating condition. The operator should have the rifle in a clean condition for scheduled maintenance service by the company amorer.

b. The services set forth in table IV are to be

Table IV. Preventive-Maintenance Schedule (Armorer)

Point	Preventive maintenance	Detailed instructions
Weekly		
Rifle as a unit	Overall check-	Check to determine whether proper and effective maintenance is being performed by the operator.

performed and supervised by the company amorer at the designated intervals in addition to any preventive maintenance required as a result of the check and service by the operator.

Section IV. TROUBLESHOOTING

53. General

A malfunction is an improper action of some component part of the rifle or ammunition that may result in failure to fire or stoppage, or damage to the rifle.

54. Failure to Fire

a. Misfire. A misfire is a failure to fire that may be due to a faulty firing mechanism or a faulty element in the propelling charge explosive train. A misfire in itself is not dangerous, but since it cannot be immediately distinguished from a hangfire (*b* below), it should be considered as a possible delayed firing until such possibility has been eliminated. Such delay in the functioning of the firing mechanism, *for example,* could result from foreign matter such as grit, sand, frost, ice, or improper or excessive oil or grease, which might create initially a partial mechanical restraint which, after some indeterminate delay, is overcome as a result of the continued force applied by the spring and the firing pin is then driven into the primer in the normal manner.

b. Hangfire. A hangfire is a delay in the functioning of a propelling charge explosive train at the time for firing. The amount of delay is unpredictable, but in most cases, will fall within the range of a split second to several minutes. Thus, a hangfire cannot be distinguished immediately from a misfire and therein lies the principal danger of assuming that a failure of the weapon to fire immediately upon actuation of the firing mechanism is a misfire, whereas in fact, it may prove to be a hangfire. It is for this reason that the time intervals prescribed in *c* below should be observed before opening the bolt after a failure to fire. These time intervals, based on experience and consideration of safety, have been established to minimize the danger associated with a hangfire.

c. Procedures for Removing a Cartridge in Case of Failure to Fire.

(1) *General.* After a failure to fire, due to the possibility of a hangfire (*b* above), the precautions in (2) and (3) below as applicable will be observed until the cartridge has been removed from the rifle and the cause of failure determined.

(2) *Before removal of cartridge.*

(a) Keep the rifle trained on the target.

(*b*) After a failure to fire, recock the rifle without opening the bolt, and make one additional attempt to fire. If the weapon still fails to fire, wait 10 seconds before opening the bolt to remove the cartridge.

(*c*) Before retracting the bolt to remove the cartridge personnel not required for this operation will be cleared from the vicinity.

(3) *After removal of cartridge.* If the cartridge is determined to be at fault, it will be separated from other cartridges until disposed of. On the other hand, if examination reveals that the firing mechanism is at fault, the cartridge may be reloaded and fired after correction of the faulty firing mechanism.

55. Malfunctions of Rifle

The probable causes of malfunctions of the rifle are listed in table V and corrective measures are indicated. Repair by the using arms is limited to cleaning, removal of burs, and such minor repairs as are within its scope with the tools and repair parts that are authorized. If a malfunction cannot be readily corrected by such means, the rifle should be turned over to a responsible ordnance maintenance unit for inspection and repair.

Table V. Troubleshooting

Malfunctions	Probable causes	Corrective action
Failure to feed	Damaged cartridge.	Discard cartridge.
	Magazine not seated properly.	Seat magazine firmly (par. 15, 23, or 31).

Table V. Troubleshooting—Continued

Malfunctions	Probable causes	Corrective action
	Magazine retaining notch worn, dented magazine, deformed magazine lips, or weak follower spring.	Replace magazine assembly (par. 58*c*, 62*c*, or 66*c*).
Failure to extract.	Broken or dirty extractor.	Remove bolt (par. 57*a*, 61*a*, or 65*a*), and clean (par. 49) or notify ordnance maintenance personnel.
	Dirty or rough chamber.	Remove case and clean chamber or notify ordnance maintenance personnel (par. 49).
	Defective case	Notify ordnance maintenance personnel.
Failure to fire	Worn or broken firing pin.	Notify ordnance maintenance personnel.
	Failure to put bolt in locked position.	Lock bolt (par. 15, 23, or 31).
	Defective cartridge.	Replace cartridge (par. 15, 23, or 31).
	Heavy grease on firing pin or in bolt.	Clean (par. 49).
	Weak mainspring causes light blow of firing pin.	Remove cartridge (par. 15, 23, or 31) and notify ordnance maintenance personnel.

Section V. CAL. .22 REMINGTON RIFLE M513T

56. General

The Remington rifle M513T consists basically of the bolt group, magazine assembly, rear sight assembly, barrel and receiver group, and stock group (fig. 34).

a. Bolt Group (fig. 5). The bolt group is located within the rear end of the receiver (F, fig. 4) and locks and unlocks this opening, cocks the firing pin (Y, fig. 4) to the rear, extracts and ejects the fired cartridge case from the rifle, and chambers the new cartridge. This group consists of the bolt, the extractors, the firing pin, the bolt handle, the safety indicator, the mainspring, the bolt sleeve, and their springs and pins.

b. Magazine Assembly (fig. 6). The magazine assembly is installed in the bottom of the stock and receiver just forward of the trigger. The magazine assembly consists of the magazine, the magazine follower, and magazine spring. The magazine follower forces each new cartridge into the path of the bolt.

c. Rear Sight Assembly (fig. 7). The rear sight assembly (D, fig. 4) is mounted on the left-rear side of the receiver in such a manner as to permit raising, lowering, pushing, and pulling of the bolt handle with no interference between the rear sight and the bolt. The rear sight assembly is used to sight the rifle on the target by alining the stationary front sight ramp projection on target through the small hole in the rear sight disk. The rear sight assembly may be adjusted for both elevation and windage corrections and consists of the rear sight base and its mounting block; elevating slide screw, elevating knob, elevating slide plate, and elevating slide; windage screw, windage knob, windage screw plate, and windage yoke; and rear sight disk and rear sight base mounting screw.

d. Barrel and Receiver Group (fig. 8). The barrel and receiver group houses the trigger assembly, the magazine assembly, and bolt group and has attached to its outside surface the rear sight assembly, the safety lever, the stock group, and front sight ramp. This group consists of the barrel and the front sight ramp, magazine lock, ejector and sear; the receiver

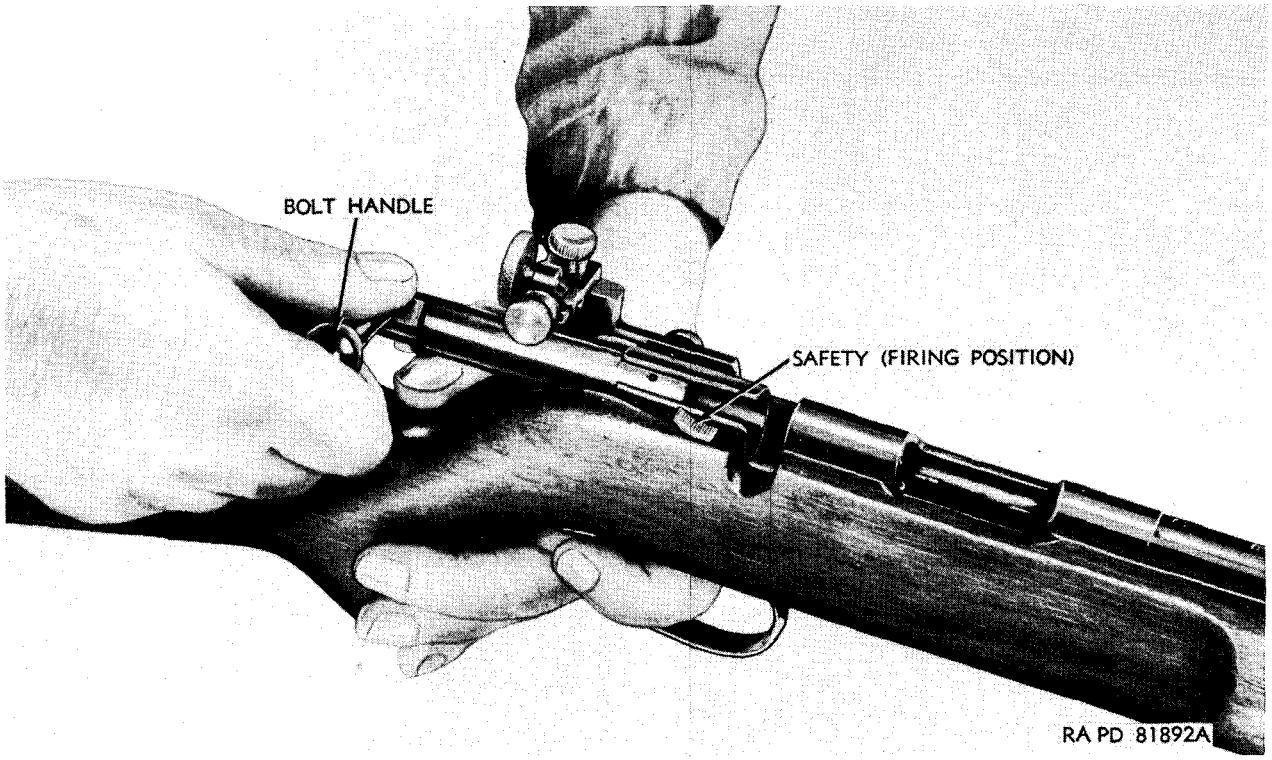

Figure 30. Removing or installing bolt group (Remington rifle M513T).

and its front and rear inserts; safety, lever, and screw; and trigger, spring, and plunger.

e. Stock Group (fig. 34). The stock group houses the barrel and receiver group to protect the firer from heated barrel and receiver after prolonged rapid firing. It serves as a means of attaching the sling to the rifle. The stock group consists of the front swivel and front swivel

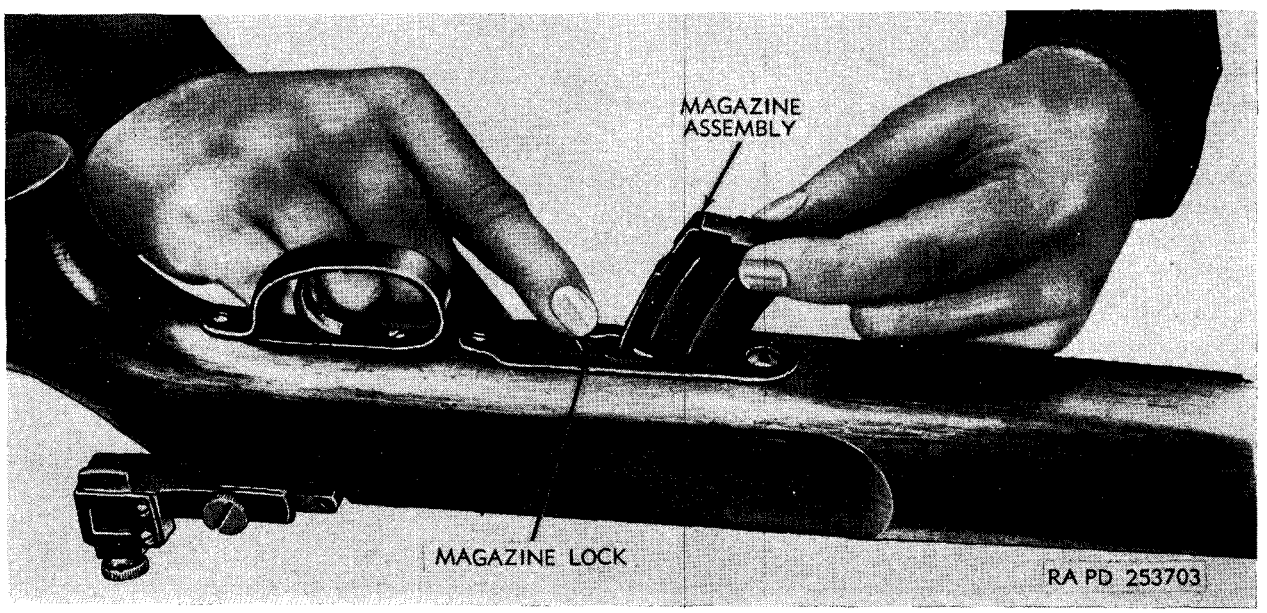

Figure 31. Removing or installing magazine assembly (Remington rifle M513T).

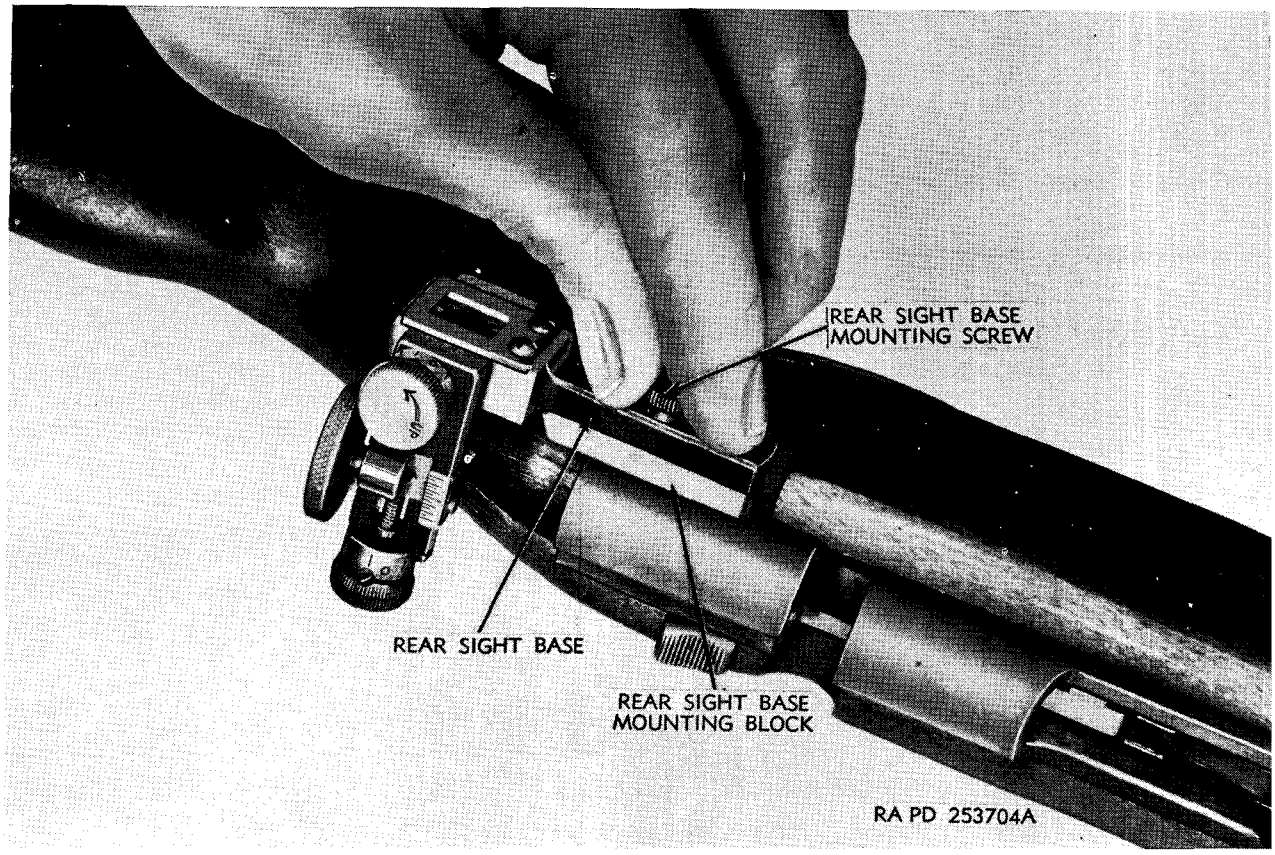

Figure 32. Removing or installing rear sight assembly (Remington rifle M513T).

base trigger guard magazine guide plate, takedown escutcheon, rear swivel, butt plate, and their screws.

57. Disassembly Into Components (fig. 34)

a. Remove Bolt Group (fig. 30). With the safety forward ("firing" position), raise the bolt handle and draw back as far as it will go. Squeeze the trigger and pull the bolt back and out of the receiver.

b. Remove Magazine Assembly (fig. 31). Press the magazine lock back toward the trigger and pull out the magazine assembly.

c. Remove Rear Sight Assembly (fig. 32). Using screwdriver 5564038 (fig. 29), remove the rear sight base mounting screw. Withdraw the rear sight assembly from the rear sight base mounting block on the left side of the receiver.

d. Remove Sling. Remove Sling M 6544058 (fig. 29) from front and rear swivels.

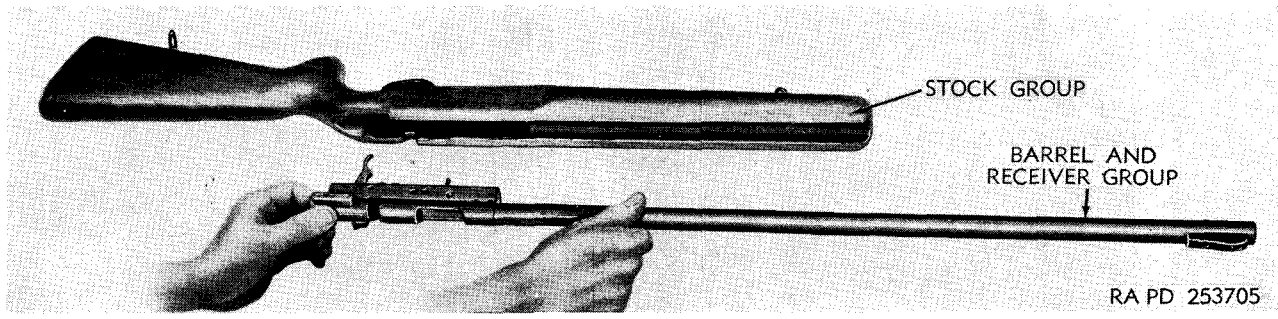

Figure 33. Removing or installing barrel and receiver group from stock group (Remington rifle M513T).

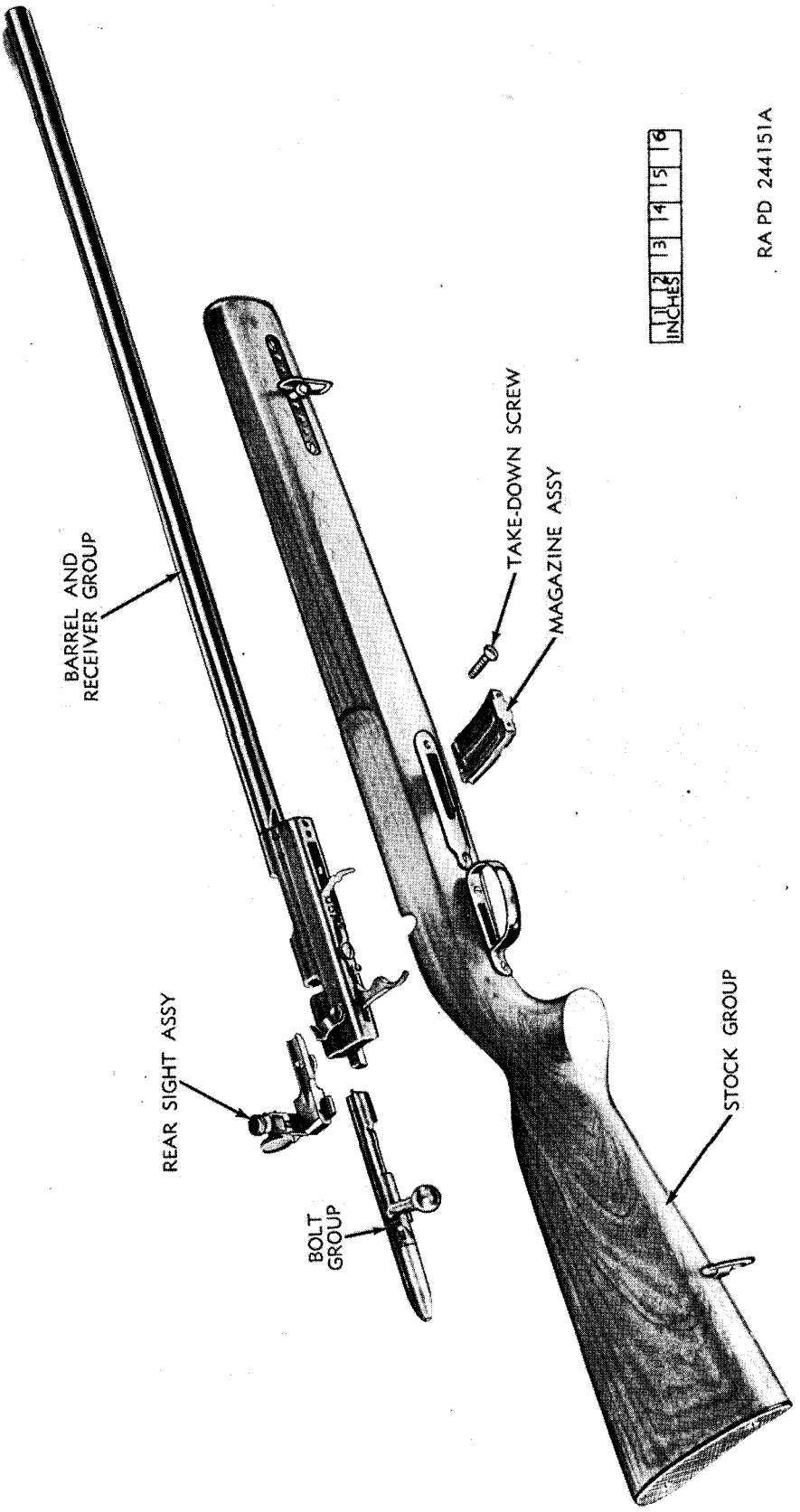

Figure 34. Remington rifle M513T—components.

e. Remove Barrel and Receiver Group. (fig. 33). Remove the takedown screw (fig. 34) from the front end of the magazine guide plate. Remove the barrel and receiver group from the stock group.

58. Maintenance

a. General. The magazine assembly is authorized for issue to organizational maintenance personnel. However, this is the only component of the rifle authorized. The maintenance of these weapons will be limited to that required by cleaning operations described in paragraph 49 and by lubrication operations described in paragraph 44. Inspection is for the purpose of determining the condition of the rifle and whether repairs and adjustments are required to insure its serviceability. When disassembling the rifle for cleaning purposes, inspect the rifle as described in (1) through (3) below.

(1) Before inspection is started, clear the rifle of live ammunition (par. 15) and thoroughly clean (par. 49) to remove fouling, dirt, rust, or other foreign matter.

(2) Inspection of the assembled rifle consists of visual and functioning inspections. Inspections are made on the rear and front sights, barrel and receiver group, stock group, bolt group, and the magazine assembly.

(3) If inspection reveals that parts or assemblies are unserviceable, requiring components, with the exception of the magazine assembly, ordnance maintenance personnel must be notified, since this repair is beyond the scope of organizational maintenance personnel.

b. Bolt Group.

(1) Raise the bolt handle up and return it to the closed position to make sure the rifle cocks properly.

(2) Squeeze trigger to test action of the mainspring and see that the firing pin moves forward properly.

(3) Load a fired cartridge case in the magazine and insert magazine in the receiver. Slowly retract the bolt and then slowly push it forward far enough to see that it contacts the case properly.

Caution: Do not try to load fired case into chamber as it may damage the chamber.

Warning: Testing with live ammunition is prohibited.

(4) Check extractors for looseness, burs, or worn claws. A fired cartridge case may be inserted under the extractors to test their retention.

(5) Check ejector for looseness, deformation, and burs.

(6) Inspect the bolt group for burs on all cams.

(7) Check the operation of the safety.

(8) Make sure the firing pinhole is not enlarged.

c. Magazine Assembly.

(1) Check the magazine assembly for fit and retention in the receiver.

(2) Depress the magazine follower and note the smoothness of operation and the tension of the magazine spring.

(3) Check the follower for deformation, wear, and burs and the spring for set and deformation.

(4) Inspect the magazine for dents, cracks, deformed lips, and foreign matter.

(5) If any components of the magazine assembly are unserviceable, replace the assembly.

d. Rear Sight Assembly.

(1) Try the rear sight elevating and windage knobs for tension.

(2) Check the yoke for burs or looseness.

(3) Make certain the elevating and windage scales are clear and readable.

(4) Check for damaged or loose components.

e. Barrel and Receiver Group.

(1) Determine that front sight ramp is not loose or damaged and that the rear sight fits properly on rear sight base.

(2) With the bolt withdrawn, inspect the receiver for wear and burs in the ways, surfaces contacting moving parts, and cams.

(3) The barrel is visually inspected by pointing the receiver toward the light and examining the bore from the muzzle or a piece of white paper placed in the breech will provide a reflecting surface. If the barrel is not bent or otherwise deformed and the bore appears free from bulges and pits and the lands are sharp and uniformly distinct, the barrel is serviceable. Interior bulging is indicated by a shadowy depression or dark ring in the bore. Exterior bulging is often unnoticed until after the rifle has been disassembled. Fine pits are allowed if they do not affect the sharpness of lands. Pits are allowed in the chamber if they are not large enough to cause extraction difficulties. If the lands are worn to the extent to affect accuracy or if pits are as wide as lands and grooves or if pits are $\frac{3}{16}$ inch long, the barrel is unserviceable. If the bore at muzzle appears to be enlarged, improper cleaning method is indicated, due to the cleaning rod being inserted into the bore at muzzle end instead of at the breech end. Inspect the outside of the barrel for rust, dents, and burs. If the barrel is unserviceable, ordnance maintenance personnel should be notified.

(4) The trigger, when squeezed, should move to the rear without bind or creep. Minimum trigger squeeze is 4 pounds and maximum 6 pounds. Return rifle with trigger squeeze outside these limits to ordnance maintenance personnel for correction.

f. Stock Group.

(1) Inspect the stock for cracks, scratches, bruises, mutilations, and warping.

(2) Check for loose or bent sling swivel, burs, or loose screws.

(3) Check the seating of the butt plate. Make sure screws are not missing.

(4) Inspect trigger guard and magazine guide plate for burs or damage.

g. Sling M1 6544058 (fig. 29).

(1) Inspect the sling as a unit for appearance, general condition, flexibility, and function of metal components.

(2) Check hooks and loops for deformation and burs.

(3) Check the sling for cut or frayed webbing of strap and for positive retention of hook and keeper.

59. Assembly

a. Install Barrel and Receiver Group (fig. 33).

(1) Install the barrel and receiver group in its aperture in the top of the stock.

(2) Insert the takedown screw (fig. 34) through the front hole of the magazine guide plate and tighten the screw.

b. Install Sling. Install sling M1 6544058 (fig. 29) in front and rear swivels.

c. Install Rear Sight Assembly (fig. 32). Install the rear sight assembly on the rear sight base mounting block located on the left rear end of the receiver and secure in place with the rear sight base mounting screw.

d. Install Magazine Assembly (fig. 31). Holding the convex side of the magazine assembly toward the rear, slide the magazine into its recess in the stock and receiver until it seats in its locked position.

e. Install Bolt Group (fig. 30). Slide the bolt into the receiver as far as it will go. Move safety forward (firing position), depress trigger, and, at the same time, push bolt forward until bolt handle is opposite slot in receiver. Move safety to fire position, then release trigger and slide bolt to its extreme forward position. Push the bolt handle down.

Section VI. CAL. .22 STEVENS RIFLE M416–2T

60. General

The Stevens rifle M416–2T consists basically of the bolt assembly, magazine, rear sight assembly, barrel and receiver group, and stock group (fig. 39).

a. Bolt Group (fig. 10). The bolt assembly is

located within the rear end of the receiver and locks and unlocks this opening, cocks the firing pin (L, fig. 9) to the rear, extracts and ejects the cartridge case from the rifle, and chambers the new cartridge. This assembly consists of the bolthead and its retaining pin, the extractors, plungers and springs; the firing pin and spring, the firing pin extension, the bolthead stop plunger and spring, bolt handle group, the striker and collar, the mainspring, and the cocking piece and its pin.

b. Magazine (fig. 11). The magazine is installed in the bottom of the stock and receiver just forward of the trigger. The magazine consists of the magazine, magazine follower, magazine floor plate, and magazine follower spring. The magazine follower forces each new cartridge into the path of the bolt.

c. Rear Sight Assembly (fig. 12). The rear sight assembly is mounted on the left side of the receiver in such a manner as to permit raising, lowering, pushing, and pulling of the bolt handle with no interference between rear sight and bolt. The rear sight assembly is used to sight the rifle on target by alining the stationary front sight ramp projection on target through a small hole in the rear sight disk. The rear sight assembly may be adjusted for either elevation or windage corrections. The rear sight assembly consists of the rear sight base; elevating screw with its knob, bridge, and slide; the rear sight windage screw with its knob, bridge, and slide; and rear sight disk.

d. Barrel and Receiver Group (fig. 13). The barrel and receiver group houses the sear and trigger and their associated parts, the magazine, and the bolt group. Attached to its external surface are the rear sight assembly, the front sight assembly, and the safety and its associated parts. The barrel and receiver group consists of the barrel, stud, and band; the front sight assembly and front telescope dovetail block; the receiver, the magazine housing with ejector and retainer; the sear, the sear pin, and sear post; the trigger with its pin and spring; and the safety with its spring and screw.

e. Stock Group (fig. 39). The stock group houses the barrel and receiver group to protect the operators from heated barrel and receiver after prolonged rapid firing. It serves as a means of attaching the sling to the rifle. The stock group consists of the swivels, swivel plate, trigger guard, barrel stud screw escutcheon, swivel escutcheon, butt plate, and their screws.

61. Disassembly Into Components

(fig. 39)

a. Remove Bolt Assembly (fig. 35). With the safety thumbpiece pushed to the rear ("firing" position), raise the bolt handle and draw the bolt back as far as it will go. Squeeze the trigger and pull the bolt back and out of the receiver.

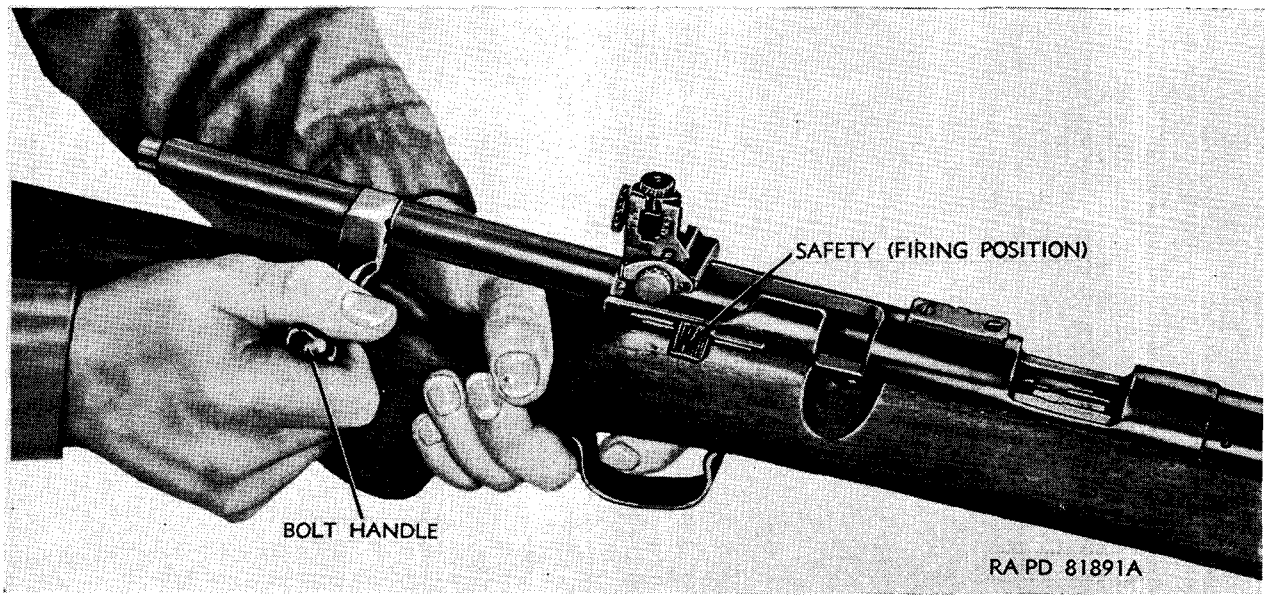

Figure 35. Removing or installing bolt assembly (Stevens rifle M416–2T).

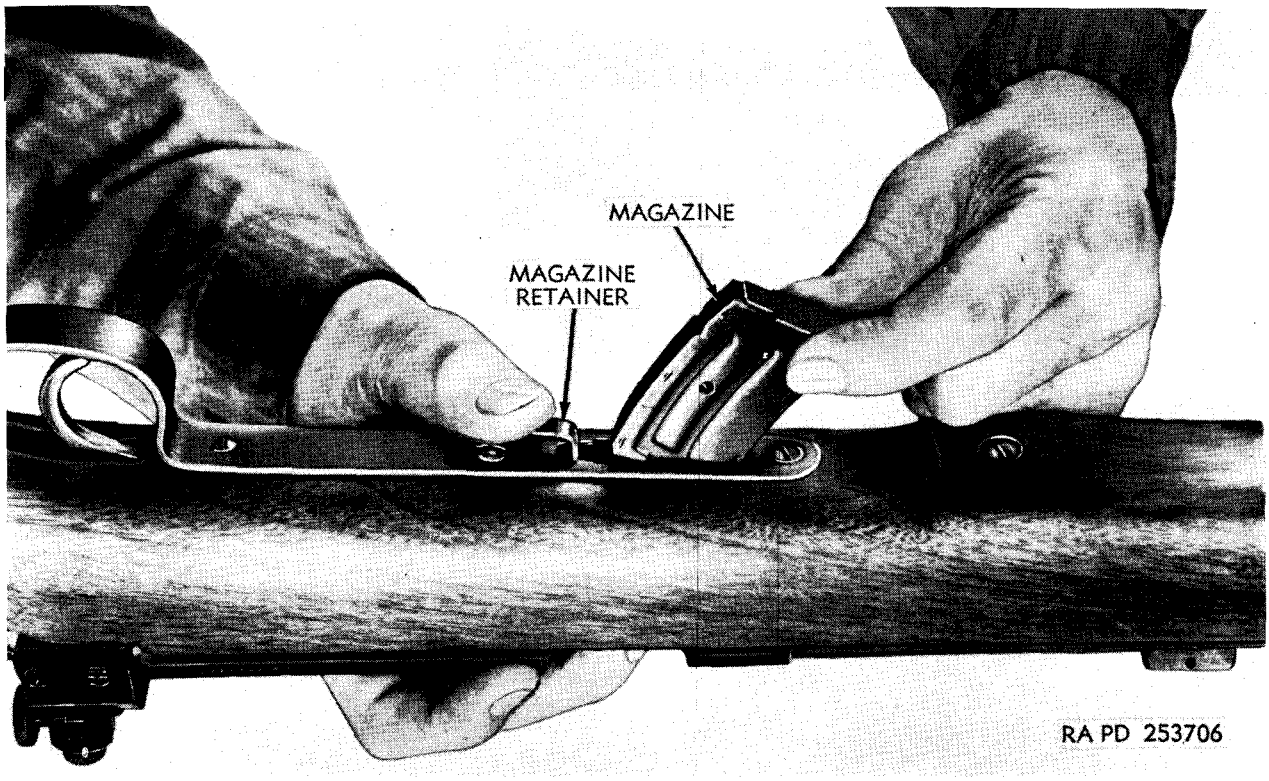

Figure 36. Removing or installing magazine (Stevens rifle M416–2T).

b. Remove Magazine (fig. 36). Press the magazine retainer, located on the bottom of the stock just in front of the trigger, and slide the magazine out of the magazine holder opening just forward of the retainer.

c. Remove Rear Sight Assembly (fig. 37). Using screwdriver 5564038 (fig. 29), remove the two rear sight base screws, located on the

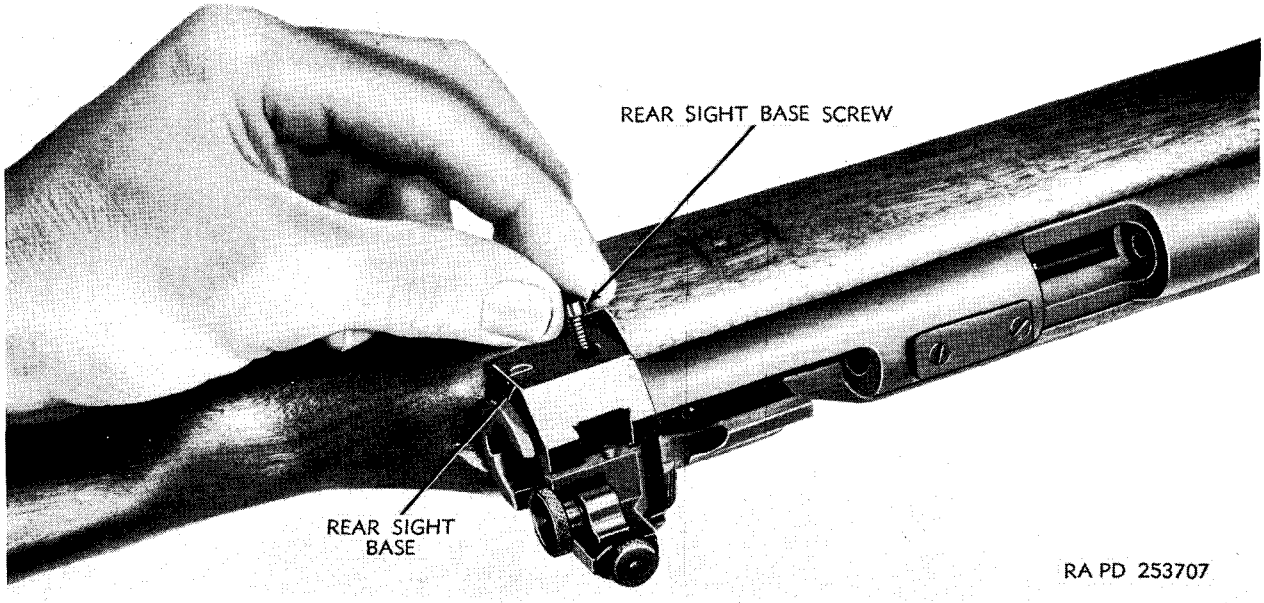

Figure 37. Removing or installing rear sight assembly (Stevens rifle M416–2T).

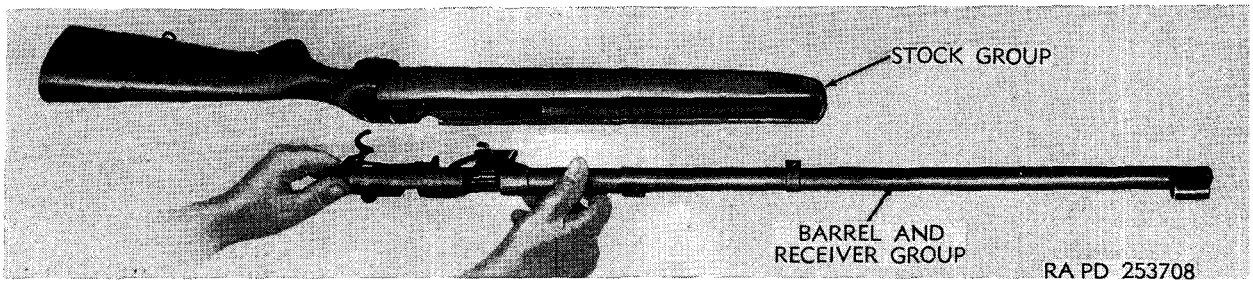

Figure 38. Removing or installing barrel and receiver group from stock group (Stevens rifle M416–2T).

rear left end of the receiver. Remove the rear sight assembly from the receiver.

d. Remove Sling. Remove sling M1 6544058 (fig. 29) from front and rear swivels.

e. Remove Barrel and Receiver Group (fig. 38). Remove the barrel band screw (fig. 39) from the foremost hole of the front swivel plate, located in the stock, and from the barrel band nut hole on the barrel. Remove the barrel stud screw (fig. 39), located just forward of the trigger guard on the bottom of the stock. The removal of these two screws will permit the barrel and receiver group to be lifted out of the top of the stock.

62. Maintenance

a. General. The magazine is authorized for issue to organizational maintenance personnel; however, this is the only component of the rifle authorized. Maintenance of these weapons will be limited to that required by cleaning operations described in paragraph 49 and by lubrication operations described in paragraph 44. Inspection is for the purpose of determining the condition of the rifle and whether repairs and adjustments are required to insure its serviceability. When disassembling the rifle for cleaning purposes, inspect the rifle as described in (1) through (3) below.

(1) Before inspection is started, clear the rifle of live ammunition (par. 23) and thoroughly clean (par. 49) to remove fouling, dirt, rust, or other foreign matter.

(2) Inspection of the assembled rifle consists of visual functioning inspections. Inspections are made on the rear and front sights, barrel and receiver group, stock group, bolt assembly, and the magazine.

(3) If inspection reveals that parts or assemblies are unserviceable, requiring components, with the exception of the magazine assembly, ordnance maintenance personnel must be notified, since this repair is beyond the scope of organizational maintenance personnel.

b. Bolt Assembly

(1) Raise the bolt handle up and return it to the closed position to make sure the rifle cocks properly.

(2) Squeeze trigger to test action of mainspring and see that the firing pin moves forward properly.

(3) Load a fired cartridge case in the magazine and insert magazine in the receiver. Slowly retract the bolt and then slowly push it forward far enough to see that it contacts the case properly.

Caution: Do not try to load fired case into chamber as it may damage the chamber.

Warning: Testing with live ammunition is prohibited.

(4) Check extractors for looseness, burs, or worn claws. A fired cartridge case may be inserted under the extractors to test their retention.

(5) Check ejector for looseness, deformation, and burs.

(6) Inspect the bolt assembly for burs on all cams.

(7) Check the operation of the safety.

(8) Make sure the firing pin hole is not enlarged.

c. Magazine.

(1) Check the magazine for fit and retention in the receiver.

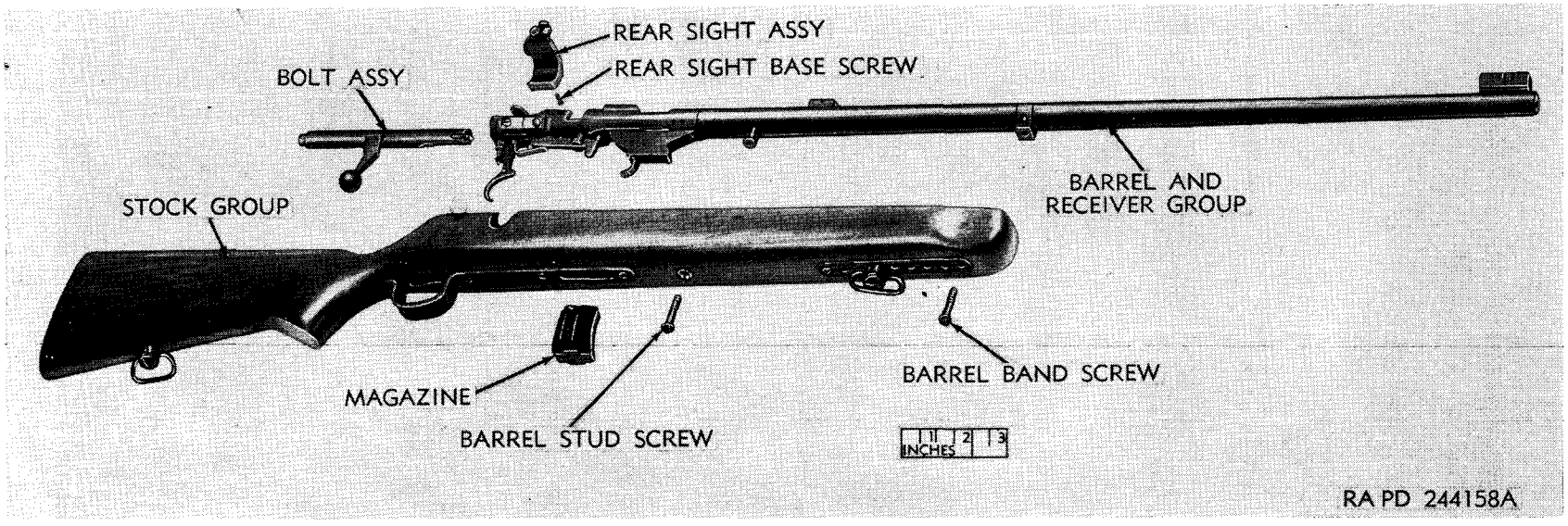

Figure 39. Stevens rifle M416–2T—Components.

(2) Depress the magazine follower and note the smoothness of operation and the tension of the magazine follower spring.

(3) Check the follower for deformation, wear, and burs and the spring for set and deformation.

(4) Inspect the magazine for dents, cracks, deformed lips, and foreign matter.

(5) If any components of the magazine are unserviceable, replace the magazine.

d. Rear Sight Assembly.

(1) Try the rear sight elevating and windage knobs for tension.

(2) Check the rear sight elevating slide for burs or looseness.

(3) Make certain the elevating and windage scales are clear and readable.

(4) Check for damaged or loose components.

e. Barrel and Receiver Group.

(1) Determine that front sight body is not loose or damaged and that the rear sight fits properly on rear sight base.

(2) With the bolt withdrawn, inspect the receiver for wear and burs in the ways, surfaces contacting moving parts, and cams.

(3) The barrel is visually inspected by pointing receiver toward the light and examining the bore from the muzzle; or a piece of white paper placed in the breech will provide a reflecting surface. If the barrel is not bent or otherwise deformed and the bore appears free from bulges and pits and the lands are sharp and uniformly distinct, the barrel is serviceable. Interior bulging is indicated by a shadowy depression or dark ring in the bore. Exterior bulging is often unnoticed until after the rifle has been disassembled. Fine pits are allowed in the chamber if they are not large enough to cause extraction difficulties. If the lands are worn to the extent to affect accuracy or if pits are as wide as lands or grooves or if pits are $\frac{3}{16}$ inch long, the barrel is unserviceable. If the bore at the muzzle appears to be enlarged, improper cleaning method is indicated, due to the cleaning rod being inserted into the bore at the muzzle end instead of at the breech end. Inspect the outside of the barrel for rust, dents, and burs. If the barrel is unserviceable, ordnance maintenance personnel should be notified.

(4) The trigger, when squeezed, should move to the rear without bind or creep. Minimum trigger squeeze is 4 pounds and maximum 6 pounds. Return rifle with trigger squeeze outside these limits to ordnance maintenance personnel for correction.

f. Stock Group.

(1) Inspect the stock for cracks, scratches, bruises, mutilations, and warping.

(2) Check for loose or bent sling swivel, burs, or loose screws.

(3) Check the seating of the butt plate. Make sure screws are not missing.

(4) Inspect trigger guard for burs or damage.

g. Sling M1 6544058 (fig. 29).

(1) Inspect the sling, as a unit, for appearance, general condition, flexibility, and function of metal components.

(2) Check hooks and loops for deformation and burs.

(3) Check the web sling for cut or frayed webbing of strap and for positive retention of hook and keeper.

63. Assembly

a. Install Barrel and Receiver Group (fig. 38).

(1) Place the barrel and receiver group in place in its cutout on the top of the stock. Make certain the barrel band is alined with its slot in the front of the stock, with the barrel band nut facing down.

(2) Insert barrel band screw (fig. 39) through the foremost hole in the swivel plate and tighten the screw to the barrel band nut attached to the barrel.

(3) Insert the barrel stud screw (fig. 39) through its hole on the bottom of the stock just forward of the trigger guard and tighten the screw to the barrel stud.

b. Install Sling. Install sling M1 6544058 (fig. 29) in front and rear swivels.

c. Install Rear Sight Assembly (fig. 37). Place the rear sight assembly in its proper position on the left side of the receiver and secure in place with two rear sight base screws.

d. Install Magazine (fig. 36). Holding the convex face of the magazine toward the rear, slide it into its recess until it is in its proper position and is locked with the magazine retainer.

e. Install Bolt Assembly (fig. 35). Slide the bolt assembly into the receiver as far as it will go. Move the safety to the rear (firing position), depress the trigger, and move the bolt forward. Release the trigger and slide the bolt to its extreme forward position and push the bolt handle down.

Section VII. CAL. .22 WINCHESTER RIFLE M75T

64. General

The Winchester rifle M75T consists basically of the breech bolt assembly, the magazine, the rear sight assembly, the barrel and receiver group, and the stock group (fig. 44).

a. Breech Bolt Assembly (fig. 15). The breech bolt assembly is located within the rear end of the receiver (E, fig. 14), locks and unlocks this opening, cocks the firing pin (BB, fig. 14) to the rear, extracts and ejects the cartridge case from the rifle, and chambers the new cartridge. This assembly consists of the breech bolt, the left and right extractors, with their springs and pins; firing pin, firing pin spring, and firing pin stop pin; and breech bolt sleeve, breech bolt plug, breech bolt sleeve pin, and breech bolt cocking sleeve (handle).

b. Magazine (fig. 16) The magazine is installed in the bottom of the stock just forward of the trigger. The magazine consists of the magazine, the magazine follower, the spring, and the base. The magazine follower forces each new cartridge into the path of the breech bolt assembly.

c. Rear Sight Assembly (fig. 17). The rear sight assembly is mounted on the left-rear side of the receiver in such a manner as to permit the raising and lowering of the breech bolt cocking sleeve (handle) and to allow the pushing and pulling of the breech bolt assembly within the receiver with no interference between the breech bolt assembly and the rear sight assembly. This assembly is used to sight the rifle on the target by alining the stationary front sight blade on target through the small hole in the rear sight disk. The rear sight may be adjusted for both elevation and windage corrections. The assembly consists of the rear sight base and mounting screws; the rear sight elevating screw with its yoke, spring, and stop screw; the rear sight windage screw, with its aperture, spring, scale, and scale screw; the rear sight disk, slide, and elevating plate; the rear sight lock bolt with its spring, and stop screw; and the rear sight elevating slide plate screw.

d. Barrel and Receiver Group (fig. 18). The barrel and receiver group houses the trigger group, the magazine, the ejector, and the breech bolt assembly and has attached to its outside surufaces the rear sight assembly, the front sight blade, the barrel band, the stock stud, the magazine holder, the trigger base, and the safety lever. This group consists of the barrel, front sight blade, and stock stud; the receiver, ejector, safety lock, and screw; the safety lever, the safety lock plunger, and spring; the trigger, pin, and spring; the magazine holder and screws; and the magazine catch and screw.

e. Stock Group (fig. 44). The stock group houses the barrel and receiver group to protect the operator from the heated barrel and receiver after prolonged rapid firing. It serves as a means of attaching the sling to the rifle. The stock group consists of the stock, forearm adjustment swivel bow, base, and screws; the barrel band, the barrel band screw, escutcheon, and bushing; the trigger guard, screws, and

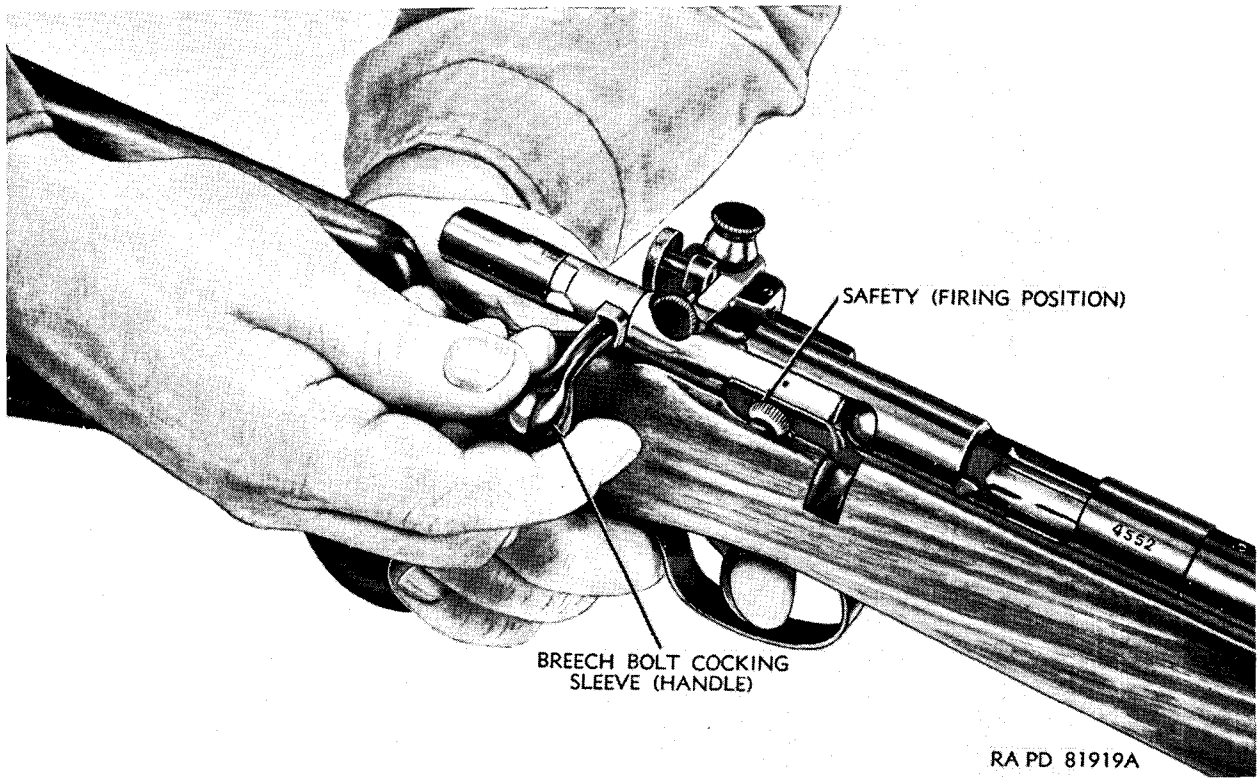

Figure 40. Removing or installing breech bolt assembly (Winchester rifle M75T).

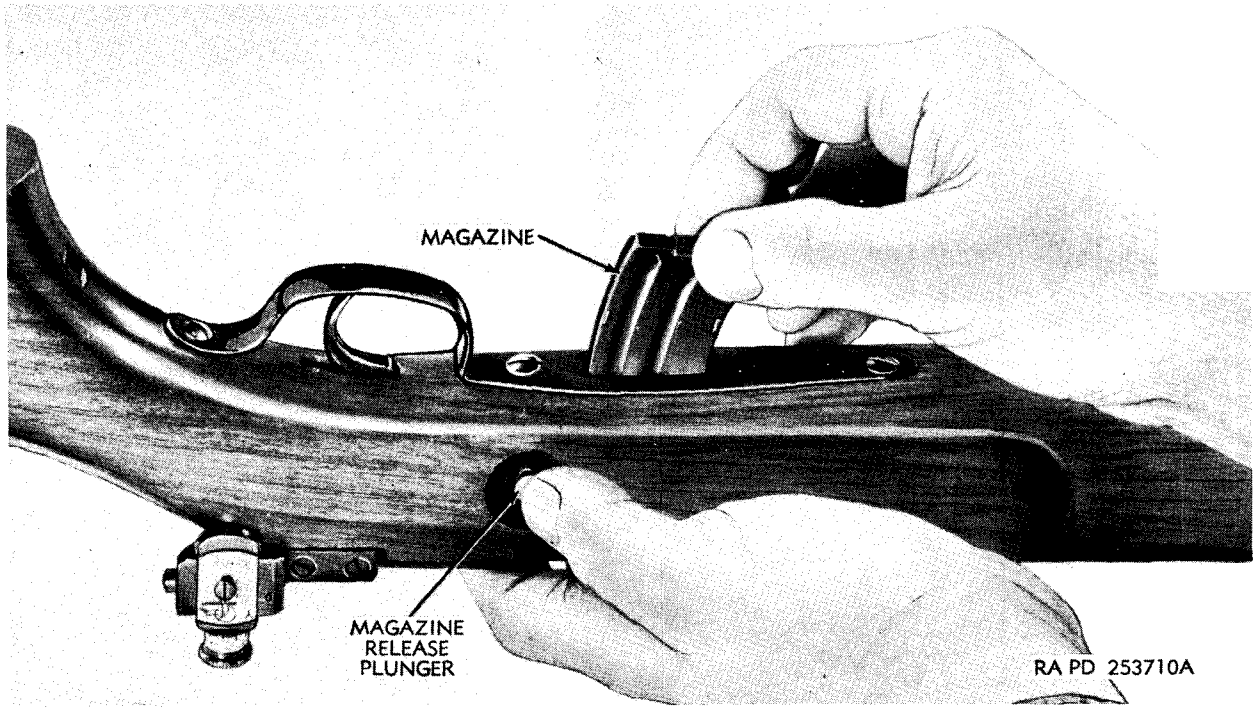

Figure 41. Removing or installing magazine (Winchester rifle M75T).

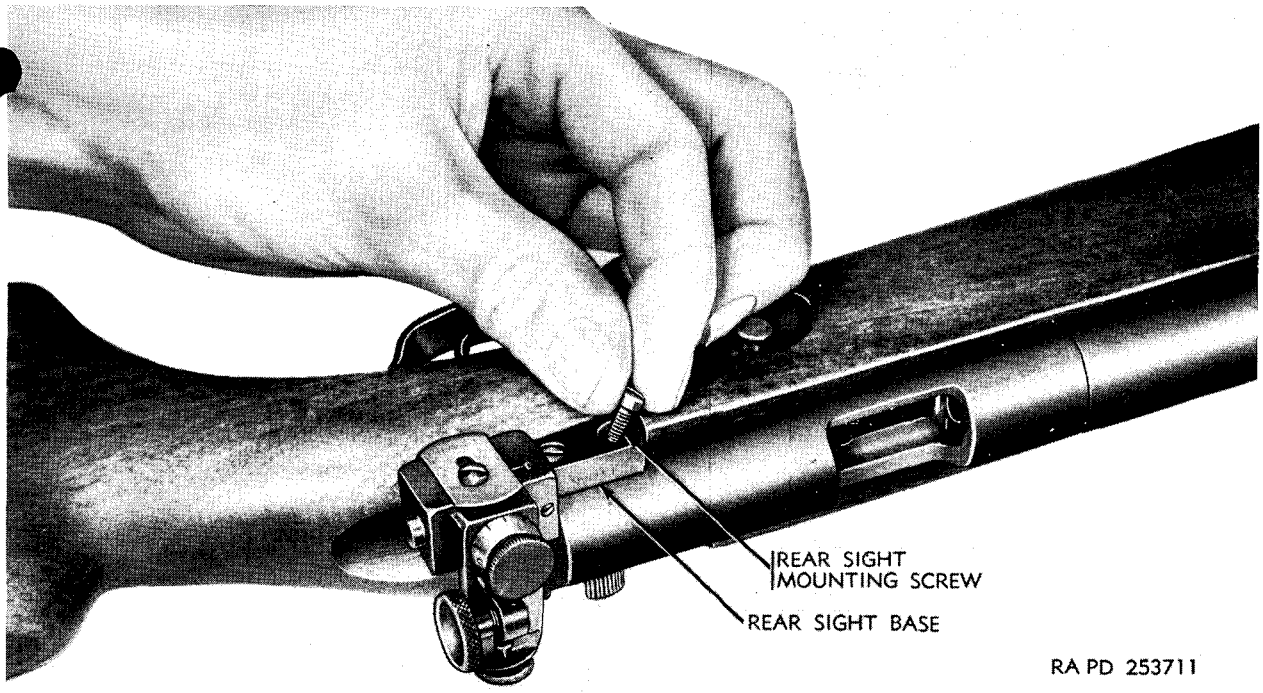

Figure 42. Removing or installing rear sight assembly (Winchester rifle M75T).

the stock stud screw; the magazine release plunger, spring, and escutcheon; the stock swivel bow, pin, and screws; and the butt plate and its two screws.

65. Disassembly Into Components (fig. 44)

a. Remove Breech Bolt Assembly (fig. 40). With the safety forward (firing position), raise the breech bolt cocking sleeve (handle) and draw the breech bolt back as far as it will go. Depress the trigger and pull the breech bolt backward out of the receiver.

b. Remove Magazine (fig. 41). Press in on the magazine release plunger, located on the left side of the stock, and remove magazine from its opening in the bottom of the stock.

c. Remove Rear Sight Assembly (fig. 42). Using the screwdriver 5564038 (fig. 38), remove the two rear sight mounting screws holding the rear sight assembly to the left-rear side of the receiver. Remove the rear sight assembly.

d. Remove Sling. Remove the sling M1 6554-4058 from front and rear swivels.

e. Remove Barrel and Receiver Group (fig. 43). Unscrew the barrel band screw (fig. 44) located on the right side of the stock and in line with the barrel band, and unscrew the stock stud screw, located in the front trigger guard

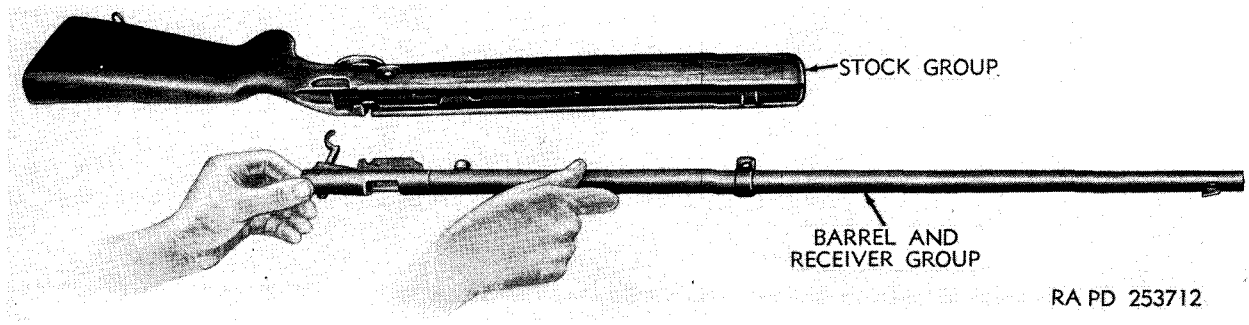

Figure 43. Removing or installing barrel and receiver group from stock group (Winchester rifle M75T).

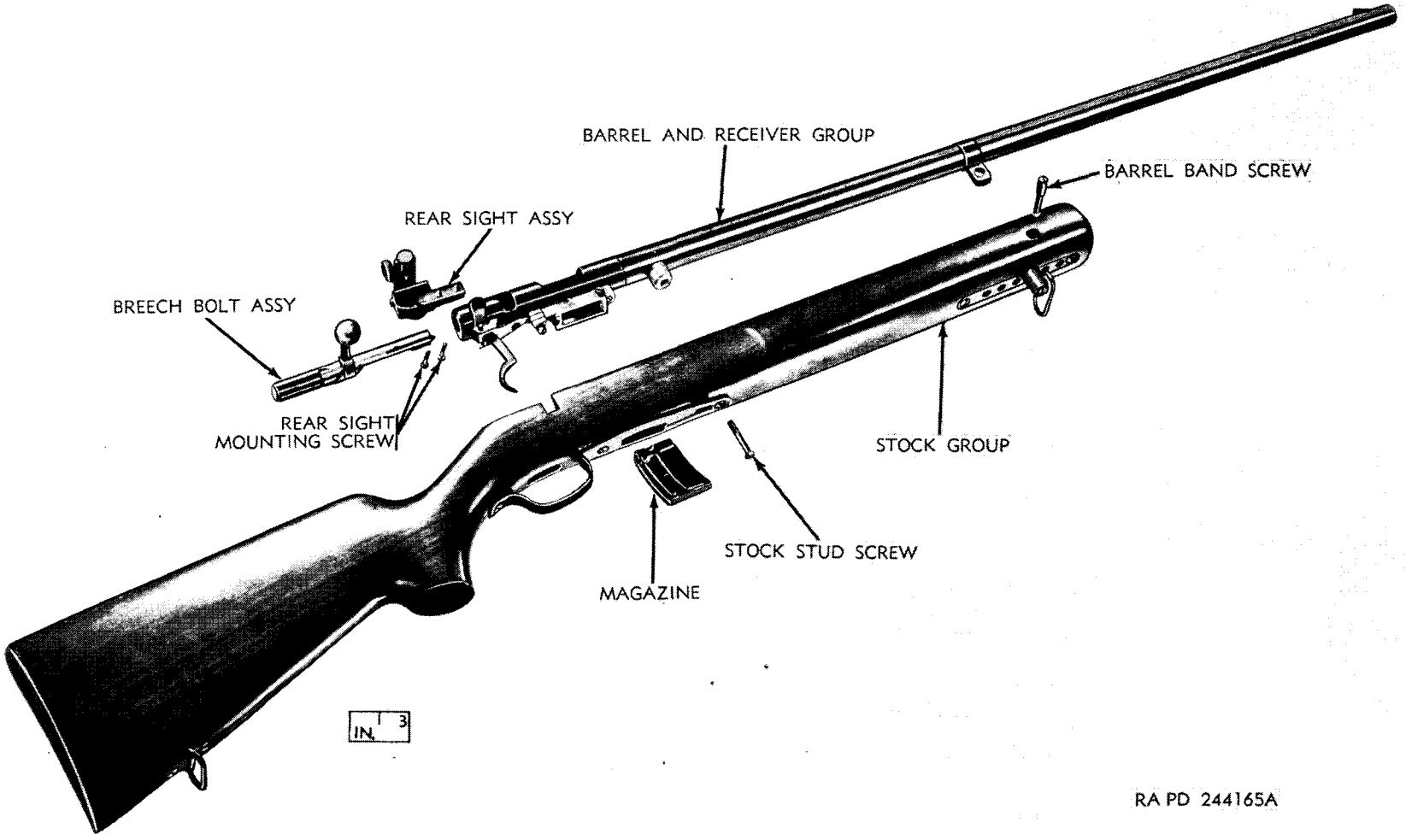

Figure 44. Winchester rifle M75T—components.

screw hole. Lift the barrel and receiver group out of the opening in the top of the stock.

66. Maintenance

a. General. The magazine is authorized for issue to organizational maintenance personnel; however, this is the only component of the rifle authorized. The maintenance of these weapons will be limited to that required by cleaning operations described in paragraph 49 and by lubrication operations described in paragraph 44. Inspection is for the purpose of determining the condition of the rifle and whether repairs and adjustments are required to insure its serviceability. When disassembling the rifle for cleaning purposes, inspect the rifle as described in (1) through (3) below.

(1) Before inspection is started, clear the rifle of live ammunition (par. 31) and thoroughly clean (par. 49) to remove fouling, dirt, rust, or other foreign matter.

(2) Inspection of the assembled rifle consists of visual and functioning inspections. Inspections are made on the rear and front sights, barrel and receiver group, stock group, breech bolt assembly, and the magazine.

(3) If inspection reveals that parts or assemblies are unserviceable, requiring components, with the exception of the magazine assembly, ordnance maintenance personnel must be notified since this repair is beyond the scope of organizational maintenance personnel.

b. Breech Bolt Assembly.

(1) Raise the cocking sleeve (handle) of the breech bolt cocking sleeve up and return it to the closed position to make sure the rifle cocks properly.

(2) Squeeze trigger to test action of mainspring and see that the firing pin moves forward properly.

(3) Load a fired cartridge case in the magazine and insert magazine in the reeciver. Slowly retract the breech bolt and then slowly push it forward far enough to see that it contacts the case properly.

Caution: Do not try to load fired case into chamber as it may damage the chamber.

Warning: Testing with live ammunition is prohibited.

(4) Check extractors for looseness, burs, or worn claws. A fired cartridge case may be inserted under the extractors to test their retention.

(5) Check ejector for looseness, deformation, and burs.

(6) Inspect the breech bolt assembly for burs on all cams.

(7) Check the operation of the safety lever.

(8) Make sure the firing pin hole is not enlarged.

c. Magazine.

(1) Check the magazine for fit and retention in the receiver.

(2) Depress the magazine follower and note the smoothness of operation and the tension of the magazine spring.

(3) Check the follower for deformation, wear, and burs and the spring for set and deformation.

(4) Inspect the magazine for dents, cracks, deformed lips, and foreign matter.

(5) If any components of the magazine are unserviceable, replace the magazine.

d. Rear Sight Assembly.

(1) Try the rear sight elevating and windage screws (knobs) for tension.

(2) Check the aperture for burs or looseness.

(3) Make certain the elevating and windage scales are clear and readable.

(4) Check for damaged or loose components.

e. Barrel and Receiver Group.

(1) Determine that front sight blade is not loose or damaged, and that the rear sight fits properly on rear sight base.

(2) With the breech bolt withdrawn, inspect the receiver for wear and burs in the ways, surfaces contacting moving parts, and cams.

(3) The barrel is visually inspected by pointing receiver toward the light and examining the bore from the muzzle; or a piece of white paper placed in the breech will provide a reflecting surface. If the barrel is not bent or otherwise deformed and the bore appears free from bulges and pits and the lands are sharp and uniformly distinct, the barrel is serviceable. Interior bulging is indicated by a shadowy depression or dark ring in the bore. Exterior bulging is often unnoticed until after the rifle has been disassembled. Fine pits are allowed if they do not affect the sharpness of lands. Pits are allowed in the chamber if they are not large enough to cause extraction difficulties. If the lands are worn to the extent to affect accuracy or if pits are as wide as lands or grooves or if pits are $\frac{3}{16}$ inch long, the barrel is unserviceable. If the bore at the muzzle appears to be enlarged, improper cleaning method is indicated, due to the cleaning rod being inserted into the bore at the muzzle end instead of at the breech end. Inspect the outside of the barrel for rust, dents, and burs. If the barrel is unserviceable, ordnance maintenance personnel should be notified.

(4) The trigger, when squeezed, should move to the rear without bind or creep. Minimum trigger squeeze is 4 pounds and maximum 6 pounds. Return rifle with trigger squeeze outside these limits to ordnance maintenance personnel for correction.

f. Stock Group.

(1) Inspect the stock for cracks, scratches, bruises, mutilations, and warping.

(2) Check for loose or bent sling, swivel, burs, or loose screw.

(3) Check for seating of the butt plate. Make sure screws are not missing.

(4) Inspect trigger guard for burs, or damage.

g. Sling M1 6544058 (fig. 29).

(1) Inspect the sling, as a unit, for appearance, general condition, flexibility and function of metal components.

(2) Check hooks and loops for deformation and burs.

(3) Check the web sling for cut or frayed webbing of strap and for positive retention of hook and keeper.

67. Assembly

a. Install Barrel and Receiver Group (fig. 43). Assemble the barrel and receiver group to the stock group by placing the bottom of the barrel and receiver group in its machined aperture along the top of the stock. Make certain the trigger, the magazine holder, the stock stud, and the barrel band of the barrel and receiver group are alined with their respective openings in the stock. Check barrel and receiver group for proper seating in the stock group and insert and tighten the barrel band screw (fig. 44) from the right side of the stock. Insert and tighten the stock stud screw (fig. 44) through the forward hole of the trigger guard.

b. Install Sling. Install sling M1 6544058 (fig. 29) in front and rear swivels.

c. Install Rear Sight Assembly (fig. 42). Install the rear sight assembly in its proper position on the left rear side of the receiver and secure it in place with two rear sight mounting screws.

d. Install Magazine (fig. 41). Holding the convex side of the magazine toward the rear of the rifle, slide the magazine into its recess until it seats into its proper position and is held in place by the magazine catch.

e. Install Breech Bolt Assembly (fig. 40). Slide the breech bolt assembly into the receiver as far as it will go. Move the safety forward (firing position), depress the trigger, and slide the bolt forward until it clears the sear projection of the trigger. Release the trigger, move the safety rearward (safe position); and push the bolt to its extreme forward position. Push the handle of the breech bolt cocking sleeve (handle) down.

Section VIII. MAINTENANCE UNDER UNUSUAL CONDITIONS

68. Extreme-Cold Weather Maintenance

Refer to TM 9–2855 for a general discussion of maintenance problems, arctic-type lubrication, and winterization and dewinterization procedure.

69. Extreme-Hot Weather Maintenance

a. In hot damp climate, corrosive action on all parts of the rifles will occur and will be accelerated in areas of high humidity and during the rainy season. Evidences will appear in the form of rust on metal surfaces and mildew or fungi mold on sling.

b. Protect all exposed exterior metal surfaces from the atmosphere with preservative general purpose lubricating oil (par. 44).

c. Make frequent inspections of inactive weapons. Remove corrosion from exterior surfaces with crocus abrasive cloth and apply a protective coating of oil or suitable corrosion-preventive compound.

CHAPTER 4
AMMUNITION

70. General

Ammunition for use in the caliber .22 rifles covered in this manual is issued as a complete assembly, consisting of all the components necessary to fire the weapon once. These components are the bullet, cartridge case, priming composition, and propellant.

71. Ballistic Data

Ballistic data are published herein in paragraph 76 and in TM 9–1900 and are not published separately.

72. Classification

The only cartridge authorized for use in these weapons is classified as ball ammunition of the long rifle type (fig. 45). The cartridge is known as a "rim fire" cartridge because the priming composition is contained in a circular recess inside the rim of the cartridge case.

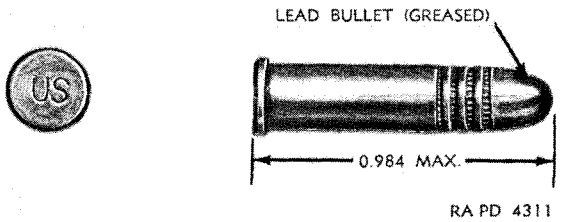

Figure 45. Cartridge, caliber .22 ball, long rifle.

73. Identification

a. The caliber .22 long rifle cartridges are procured by the Ordnance Corps from several commercial manufacturers. They are all of the same general appearance (fig. 45), differing slightly in shape of bullet, propellant used, and ballistic qualities. The cartridge case is made of brass and is of the rim fire type; the bullet is made of lead. The priming composition and charge of propellant may differ for each manufacturer.

b. Since all the cartridges for use in these rifles are of commercial design, they do not have any model designation. The manufacturer of these cartridges can be determined by the following marks which are stamped on the head of the cartridge case:

Federal cartridges have an initial F.
Peters cartridges have an initial P.
Remington cartridges have an initial U.
Western cartridges have the figure of a diamond ◇.
Winchester cartridges have an initial H.

c. Caliber .22 ammunition of recent manufacture has the manufacturer's lot number stamped on the wooden packing box, providing a means of identifying ammunition for use and reporting purposes.

d. No grade is assigned to caliber .22 ammunition. All unserviceable ammunition should be destroyed locally. Instructions for the destruction of ammunition are contained in TM 9–1903.

74. Care, Handling, and Preservation

a. Small-arms ammunition, as compared with other types, is not dangerous to handle. Care must be observed, however, to keep the wooden packing cases from becoming broken or damaged. All broken boxes must be immediately repaired and careful attention should be given that all markings are transferred to new parts of the box. In case the box contains a metal liner, it should be air-tested and sealed provided that equipment for this work is available.

b. Ammunition boxes should not be opened until the ammunition is required for use. Ammunition removed from its container, particularly in damp climates, is apt to corrode, thereby causing it to become unserviceable.

c. Protect ammunition from mud, sand, dirt, and water. If it gets wet or dirty, wipe it off at once. If verdigris or light corrosion forms on cartridges, it should be wiped off. Cartridges should not be polished to make them look better or brighter.

d. Use of oil or grease on cartridges, other than that applied by the manufacturer, is prohibited.

e. Do not allow ammunition to be exposed to direct rays of the sun for any length of time, since this is likely to affect its firing qualities.

f. Whenever cartons of cartridges are taken from their original packing boxes, they will be tagged (if no lot number appears thereon) so that in the event ammunition is not fired it can later be identified and returned to its proper packing box.

g. Whenever practicable, small-arms ammunition should be stored under cover. When necessary to leave it in the open, raise it on dunnage at least 6 inches from the ground and cover it with a double thickness of paulin. Suitable trenches should be dug to prevent water from flowing under the pile.

75. Authorized Cartridge

a. The CARTRIDGE, ball, caliber .22 long rifle, is authorized for use in the rifles covered in this technical manual. It should be noted that this nomenclature completely describes the cartridge as to type and caliber.

Caution: The use of the caliber .22 short cartridge or other unauthorized cartridge is prohibited in these rifles. Such cartrides will be inaccurate and damage the rifle by causing erosion (fig. 46). Erosion will then cause the rifle to function unsatisfactorily with its authorized cartridge.

b. Commercial manufacturers produce cartridges of the long rifle type known as Hi-Speed, Hi-Velocity, Super Speed, etc., which give high muzzle velocities and create high pressures. These high-velocity cartridges are not issued by the Ordnance Corps and their use is therefore not authorized.

76. Data

Although there are slight differences in cartridges of different manufacture (shape of bullet, powder, etc.), the data given in *a* through *e* below are considered substantially correct.

a. General.

Weight of ball cartridge (approx) ---------- 53.5 gr
Weight of bullet (approx) ---------- 40.0 gr
Weight of propellant charge (approx) ---------- 1.7 gr

b. Table of Fire

Range (yd)	Velocity (ft-sec)	Bullet energy (ft-lb)	Time of flight (sec)	Drop at target (in.)	Ordinate of trajectory half range) (in.)	Mean accuracy radius in.)	Angle of departure (min)
0	1,100	102	----	----	----	----	----
25	1,070	95	0.068	0.89	0.24	0.14	3.5
50	1,020	89	0.140	3.17	0.98	0.33	7.6
75	980	84	0.214	8.06	2.28	0.45	11.7
100	950	79	0.292	14.82	4.08	0.57	15.8
125	920	75	0.372	24.73	6.78	0.80	20.5
150	890	71	0.455	36.64	10.02	0.98	24.9
175	860	67	0.541	50.80	14.20	1.13	29.6
200	840	64	0.630	72.93	19.10	1.25	34.3
225	810	61	0.720	93.04	28.30	1.45	39.7
250	790	58	0.812	118.21	31.87	1.65	44.7
275	770	55	0.911	147.20	39.87	1.88	50.8
300	750	52	1.005	177.12	48.69	2.12	55.7

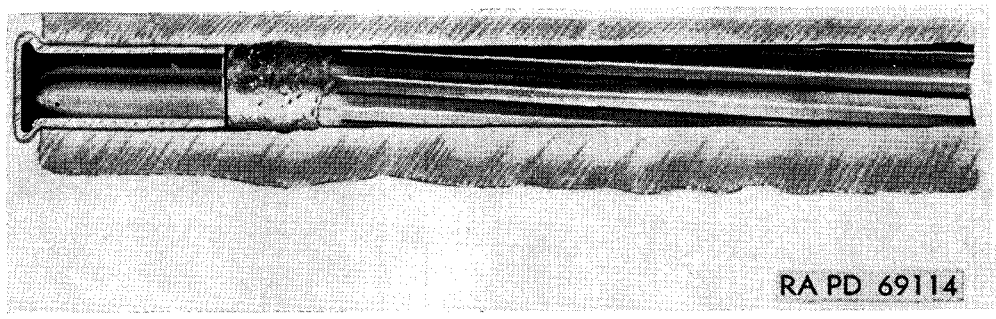

Figure 46. Erosion caused by firing cal. .22 short cartridges in barrel chambered for cal .22 long range cartridge.

c. Angles of Departure.

Range (yd)	Angle of departure		Range (yd)	Angle of departure	
	Degrees	Minutes		Degrees	Minutes
100	--	16	900	6	13
200	--	34	1,000	7	44
300	--	56	1,100	9	32
400	1	29	1,200	11	41
500	2	10	1,300	14	16
600	2	56	1,400	19	00
700	3	51	1,450	25	00
800	4	56			

d. Accuracy (As Determined by Firings).

Range (yd)	Diameter of group circle (in.)
25	0.55
50	1.1
100	2.2
200	4.4

e. Penetration. When fired into 1-inch pine boards spaced 1 inch apart at a range of 15 feet, the bullet will penetrate the first five boards and 1/8 inch into the sixth board.

77. Packing

a. The cartridges are packed 50 per cardboard box and 10 of these boxes (500 cartridges) are packed in a paper carton. These cartons may be packed as indicated in (1) through (3) below.

(1) In metal can M20 and overpacked with a wooden box.

(2) In a metal lined wooden box.

(3) In an unlined wooden box.

b. The boxes may contain 6,000 or 10,000 cartridges. Cartridges in metal cans or in metal lined wooden boxes are suitable for oversea shipment.

c. A box containing 6,000 cartridges weighs approximately 60 pounds; a metal lined wooden box containing 10,000 cartridges weighs 88 pounds.

d. Packing boxes are marked with the manufacturer's name and the quantity and type of ammunition. Containers of this ammunition are usually marked by the manufacturer with the caliber, type of ammunition, type of propellant, and such trade names as "Kleanbore," "Lubaloy," "Rustless," "Staynless," "Kopperklad," "Tackhole," "Filmkote," etc. Boxes which do not have a metal liner for oversea shipments are stamped NOT METAL LINED.

e. Complete data are published in Department of the Army Supply Manual 9–5–1305.

CHAPTER 5

SHIPMENT AND STORAGE AND DESTRUCTION TO PREVENT ENEMY USE

Section I. SHIPMENT AND STORAGE

78. Domestic Shipping Instructions

a. Preparation. When shipping the caliber .22 rifles, the officer in charge of preparing the shipment will be responsible for furnishing materiel in a serviceable condition, properly processed, packaged, and packed as prescribed in paragraph 80. Personnel withdrawing materiel from storage for shipment must not open exterior containers that have been previously inspected and packed. If exterior containers or interior packages have been damaged or opened, the materiel will be inspected for serviceability. If materiel is found to be serviceable, it will be prepared for shipment as prescribed in paragraph 80. Unserviceable materiel will be segregated, classified, and where possible, placed in a serviceable condition. If repairs are beyond the scope of the organization, ordnance maintenance personnel will be notified.

b. Army Shipping Documents. Prepare all army shipping documents accompanying shipments in accordance with TM 38–705.

79. Limited-Storage Instructions

a. General.

(1) Rifles received for storage and already processed and boxed for domestic shipment will not be reprocessed for storage unless inspection performed on receipt of rifles reveals damaged containers, corrosion, deterioration, etc.

(2) Rifles to be prepared for limited storage must be given a limited technical inspection and processed as prescribed in paragraph 80.

b. Receiving Inspections.

(1) If rifles are received for storage showing evidence of corrosion, deterioration, physical damage, or improper processing, notify the transportation officer and prepare a DD Form 6, in accordance with AR 700–58.

(2) When weapons are inactivated, they will be processed in accordance with paragraph 80.

(3) Immediately upon receipt of rifles for storage, they must be inspected and serviced as prescribed in paragraphs 8 through 10. Perform a systematic inspection and replace or repair all missing or broken parts. If repairs are beyond the scope of the unit and the rifles will be inactivated for an appreciable length of time, place them in limited storage and attach tags specifying the repairs needed. The reports of these conditions will be submitted by the unit commander for action by an ordnance maintenance unit.

c. Inspection During Storage. Perform a visual inspection periodically to determine general condition. If corrosion is found on any parts, remove it and clean and paint or treat with the prescribed preservatives.

Note. Touchup painting will be in acordance with TM 9–2851.

d. Storage Site. Store all rifles in warehouses or under covered storage whenever possible. When it is found necessary to store materiel outdoors, protect the rifles against the elements as prescribed in TB ORD 379.

80. Preservation, Packaging, and Packing Instructions

a. Preservation, packaging, and packing of caliber .22 rifles will be accomplished in accordance with instructions prescribed in TB ORD 623.

b. Marking, strapping, and stapling of exterior containers will be applied as prescribed in TM 9–1005.

c. For general loading rules and methods and procedures for loading and blocking boxed items in closed cars for shipment, see TM 9–1005.

Section II. DESTRUCTION OF MATERIEL TO PREVENT ENEMY USE

81. General

a. Destruction of the cal. .22 rifles when subject to capture or abandonment in the combat zone will be undertaken by the using arm only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army commander. When in the hands of ordnance maintenance personnel or in storage, destruction will be in accordance with FM 5–25 and the information below as applicable.

b. The information which follows is for guidance only. Certain of the procedures outlined require the use of explosives and incendiary grenades which normally may not be authorized items of issue to the using organization. The issue of these and related materials and the conditions under which destruction will be effected are command decisions in each case, according to the tactical situation. Of the several means of destruction, those most generally applicable are:

Mechanical —Requires axe, pick mattock, sledge, crowbar, or similar implement.

Burning —Requires gasoline, oil, incendiary grenades, or other flammables, or welding or cutting torch.

*Demolition —Requires suitable explosives or ammunition.

*Gunfire —Includes artillery, machine guns, rifles using rifle grenades, and launchers using antitank rockets. Under some circumstances hand grenades may be used.

Disposal —Requires burying in the ground, dumping in streams or marshes, or scattering so widely as to preclude recovery of essential parts.

In general, destruction of essential parts followed by burning will usually be sufficient to render the rifles useless. Selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

c. If destruction to prevent enemy use is resorted to, the rifles must be so badly damaged that they cannot be restored to a usable condition in the combat zone either by repair or cannibalization. Adequate destruction requires that all parts essential to the operation of the rifles, including essential spare parts, be destroyed or damaged beyond repair. When lack of time and personnel prevents destruction of all parts, however, priority is given to the destruction of those parts most difficult to replace. Equally important, the same essential parts must be destroyed on all like materiel so that the enemy cannot construct one complete unit from several damaged ones.

d. If destruction is directed, due consideration should be given to observance of appropriate safety precautions.

82. Destruction of the Cal. .22 Rifles

a. General. The cal. .22 rifles should be destroyed by one of the methods outlined in *b* through *d* below.

b. Method No. 1—by Mechanical Means. Using an axe, pick mattock, sledge, or other heavy implement, destroy the rifle by smashing the receiver assembly, front and rear sights, trigger guard, stock swivels, and stock. Also bend the barrel of the rifle and cut the carrying strap into several pieces. Elapsed time: about 3 minutes.

c. Method No. 2—by Burning.

(1) Place the rifle on a suitable pile of combustible. Pour gasoline or oil over the rifle and the combustible. Ignite and take cover. A hot fire is required to render the rifle useless.

*Generally applicable only when the rifles are to be destroyed in conjunction with other equipment.

Warning: When igniting gasoline, due consideration should be given to the highly flammable nature of gasoline and its vapor. Carelessness in its use may result in painful burns. Elapsed time: about 3 minutes.

(2) If a welding or cutting torch is available, burn through the barrel and receiver assembly. Destroy the stock and carrying strap as described in *b* or (1) above. Elapsed time: about 3 minutes.

d. Method No. 3—By Disposal. Bury the rifle in a suitable hole or dump it into a stream. Elapsed time: about 3 minutes.

APPENDIX
REFERENCES

1. Publication Indexes

The following indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to materiel covered in this manual.

Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.	DA Pam 108–1
Military Publications:	
Index of Administrative Publications.	DA Pam 310–1
Index of Blank Forms	DA Pam 310–2
Index of Graphic Training Aids and Devices.	DA Pam 310–5
Index of Supply Manuals—Ordnance Corps.	DA Pam 310–29
Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.	DA Pam 310–4
Index of Training Publications.	DA Pam 310–3

2. Suppy Manuals

a. Ammunition.

Ammunition, through 30-Millimeter.	SM 9–5–1305

b. Destruction to Prevent Enemy Use.

Ammunition and Explosive Land Mines.	SM 9–5–1345

c. General.

Introduction	ORD 1

d. Maintenance and Repair.

Abrasives, Adhesives, Cleaners, Preservatives, Recoil Fluids, Special Oils, and Related Items.	ORD 3 SNL K–1

e. Weapons.

Rifle, Cal. .22 Stevens, Model 416–2, Target; Rifle, Cal. .22, Remington, Model 513T, Matchmaster; Rifle, Cal. .22 Winchester, Model 52, Heavy Barrel; Rifle, Cal. .22, Winchester, Model 75, Target.	ORD 7 SNL B–25 TO 11W3–5–2–25

3. Forms

DA Form 9–3, Processing Record for Storage and Shipment (tag)

DA Form 468, Unsatisfactory Equipment Report

DA Form 811, Work Request and Job Order

DA Form 811–1, Work Request and Hand Receipt

DD Form 6, Report of Damaged or Improper Shipment

4. Other Publications

a. Ammunition.

Ammunition, General	TM 9–1900
Ammunition Inspection Guide	TM 9–1904
Ballistic Data, Performance of Ammunition.	TM 9–1907
Care, Handling, Preservation, and Destruction of Ammunition.	TM 9–1903
Logistics (General): Malfunctions Involving Ammunition and Explosives.	AR 700–1300–8
Qualifications in Arms: Qualification and Familiarization.	AR 370–5
Safety: Accident Reporting and Records.	AR 385–40 AFR–136–9

Safety: Regulations for Firing Ammunition for Training, Target Practice, and Combat.	AR 385–63 AFR 50–13
Small-Arms Ammunition ...	TM 9–1990
Supply Control: Distribution of Ammunition for Training.	AR 710–1300–1
b. Camouflage.	
Camouflage, Basic Principles	FM 5–20
Camouflage of Individuals and Infantry Weapons.	FM 5–20A
c. Decontamination.	
Decontamination	TM 3–220
Defense Against CBR Attack	FM 21–40
d. Destruction to Prevent Enemy Use.	
Explosives and Demolitions.	FM 5–25
e. General.	
Administration in the Arctic	FM 31–72
Basic Arctic Manual	FM 31–70
Fundamentals of Small Arms	TM 9–2205
Instruction Guide: Operation and Maintenance of Ordnance Materiel in Extreme cold (0° to —65° F.).	TM 9–2855
Logistics (General):	
Report of Damaged or Improper Shipment.	AR 700–58
Unsatisfactory Equipment Report.	AR 700–38
Military Terms, Abbreviations, and Symbols:	
Authorized Abbreviations.	AR 320–50
Dictionary of United States Army Terms.	SR 320–5–1
Military Symbols	FM 21–30 AFM 55–3
Military Training	FM 21–5
Operations in the Arctic ...	FM 31–71
Ordnance Maintenance and General Supply in the Field.	FM 9–10
Painting Instructions for Field Use.	TM 9–2851
Targets, Target Material, and Training Course Lay-Outs.	TM 9–855
Techniques of Military Instructions.	FM 21–6
f. Maintenance and Repair.	
Lubrication	TM 9–2835
Maintenance and Care of Hand Tools.	TM 9–867
Ordnance Maintenance: Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Materials Including Chemicals, Lubricants, Indicators, and Hydraulic Fluids.	TM 9–1007
g. Shipment and Limited Storage.	
Instruction Guide: Ordnance Preservation, Packaging, Packing, Storage, and Shipping.	TM 9–1005
Marking and Packing of Supplies and Equipment:	
Marking of Oversea Supply	SR 746–30–5
Ordnance Storage and Shipment Chart, Group B, Major Items and Major Combinations of Group B.	TB 9–OSSC–B
Packaging and Shipping of Materiel: Army Shipping Document.	TM 38–705
Packaging of Small Arms Materiel with Volatile Corrosion Inhibitor (VCI).	TB ORD 623
Processing of Unboxed Self-Propelled and Towed Class II Ordnance General and Related Materiel for Shipment and Storage.	SB 9–4
Protection of Ordnance General Supplies in Open Storage.	TB ORD 379
Standards for Oversea Shipments and Domestic Issue of Ordnance Materiel Other Than Ammunition and Army Aircraft.	TB ORD 385

INDEX

[AG 474.4 (9 June 58)]

By Order of *Wilber M. Brucker*, Secretary of the Army:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

Official:

HERBERT M. JONES,
Major General, United States Army,
The Adjutant General.

Distribution

Active Army:

ASA (2)
CNGB (2)
Technical Stf, DA (1) except
  CofORD (19)
Ord Bd (2)
USCONARC (3)
US ARADCOM (Incl ea Rgn Comd) (2)
OS Maj Comd (2) except USCINCEUR (5)
Log Comd (3)
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Armies (3)
Corps (2)
Div (2)
Brig (2)
Regt/Gp/bg (1) except
  Ord Gp (2)
Bn (1) except
  Ord Bn (2)
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Ord Sec, Gen Depot (5)
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  Rossford Ord Depot (12)
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Fld Comd, AFSWP (1)
MAAG (1)
Mil Msn (1)
Mil Dist (1)
USA Corps (Res) (1)
Sectors, USA Corps (Res) (1)
JUSMAG (Greece) (2)
JBUSMC (2)

NG: State AG (6); units—same as Active Army except allowance is 1 copy to each unit.
USAR: None.
For explanation of abbreviations see, AR 320–50

☆ U. S. Government Printing Office: 1958—440512