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FM 23-15 AR DEPARTMENT

BASIC FIELD MANUAL

BROWNING AUTOMATIC RIFLE

CALIBER .30, M1918A2

30 June 1943

U.S. Army Military History Institute

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FM 23-15

BASIC FIELD MANUAL

BROWNING AUTOMATIC RIFLE

CALIBER .30, M1918A2



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TABLE OF CONTENTS

	Paragraphs	Page
CHAPTER 1. Mechanical training.		
SECTION I. General -----	1-3	1
II. Disassembly and assembly-----	4-12	3
III. Care and cleaning-----	13-16	16
IV. Functioning-----	17-28	25
V. Operation-----	29-37	37
VI. Stoppages and immediate action--	38-41	41
VII. Spare parts and accessories-----	42-43	44
VIII. Ammunition-----	44-51	48
CHAPTER 2. Marksmanship, known distance targets.		
SECTION I. General -----	52-54	53
II. Preparatory marksmanship training-----	55-80	54
III. Courses to be fired-----	81-83	86
IV. Range practice-----	84-93	94
V. Regulations governing record practice-----	94-124	100
VI. Targets and ranges-----	125-126	112
CHAPTER 3. Marksmanship, moving ground targets.		
SECTION I. General -----	127-128	117
II. Moving vehicles-----	129-131	118
III. Moving personnel-----	132-133	119
IV. Moving targets, ranges, and range precautions-----	134-135	121
CHAPTER 4. Marksmanship, aerial targets.		
SECTION I. Nature of aerial targets for automatic rifles -----	136-137	124
II. Technique of fire-----	138-142	124
III. Marksmanship training-----	143-147	129
IV. Miniature range practice-----	148-151	142
V. Towed target and radio-controlled plane target firing-----	152-156	146
VI. Ranges, targets, and equipment--	157-162	152
CHAPTER 5. Technique of fire.		
SECTION I. General -----	163-165	163
II. Range estimation-----	166-170	164
III. Target designation-----	171-174	169
IV. Automatic rifle fire and its effect--	175-181	181
V. Application of fire-----	182-189	186
VI. Landscape target firing-----	190-197	199
VII. Field target firing-----	198-201	211
VIII. Destruction of ordnance matériel--	202	228
CHAPTER 6. Advice to instructors.		
SECTION I. Mechanical training -----	203-211	231
II. Marksmanship, known distance targets-----	212-225	242
III. Marksmanship, aerial targets-----	226-230	258
IV. Technique of fire-----	231-240	262
CHAPTER 7. Safety precautions -----	241	272
INDEX -----		277

BASIC FIELD MANUAL

BROWNING AUTOMATIC RIFLE, CALIBER .30, M1918A2

This manual supersedes FM 23-15, 27 Aug. 1940; including C 1, 15 July 1941; C 2, 15 Nov. 1941; C 3, 10 July 1942; C 4, 5 Nov. 1942; and C 5, 18 Dec. 1942.

Attention is directed to FM 21-7 for details as to how appropriate training films and film strips are intended to be used and how they are made available for use during training with the Browning automatic rifle, caliber .30, M1918A2.

CHAPTER 1

MECHANICAL TRAINING

	Paragraphs
SECTION I. General.....	1-3
II. Disassembly and assembly.....	4-12
III. Care and cleaning.....	13-16
IV. Functioning.....	17-28
V. Operation.....	29-37
VI. Stoppages and immediate action.....	38-41
VII. Spare parts and accessories.....	42-43
VIII. Ammunition.....	44-51

SECTION I

GENERAL

■ 1. OBJECT.—This chapter is designed to give the soldier training that will insure his ability to maintain the rifle and keep it in operation.

■ 2. DESCRIPTION.—The Browning automatic rifle, caliber .30, M1918A2, is an air-cooled, gas-operated, magazine-fed shoulder weapon with bipod (fig. 1). It weighs approximately 20 pounds with sling. The ammunition is loaded in magazines of 20 rounds. The weight of the magazine when empty is 7 ounces; when filled, 1 pound 7 ounces.

■ 3. FIRE POWER.—The Browning automatic rifle, caliber .30, M1918A2, is not mechanically capable of semiautomatic fire, though it can be fired single shot by proper trigger manipu-

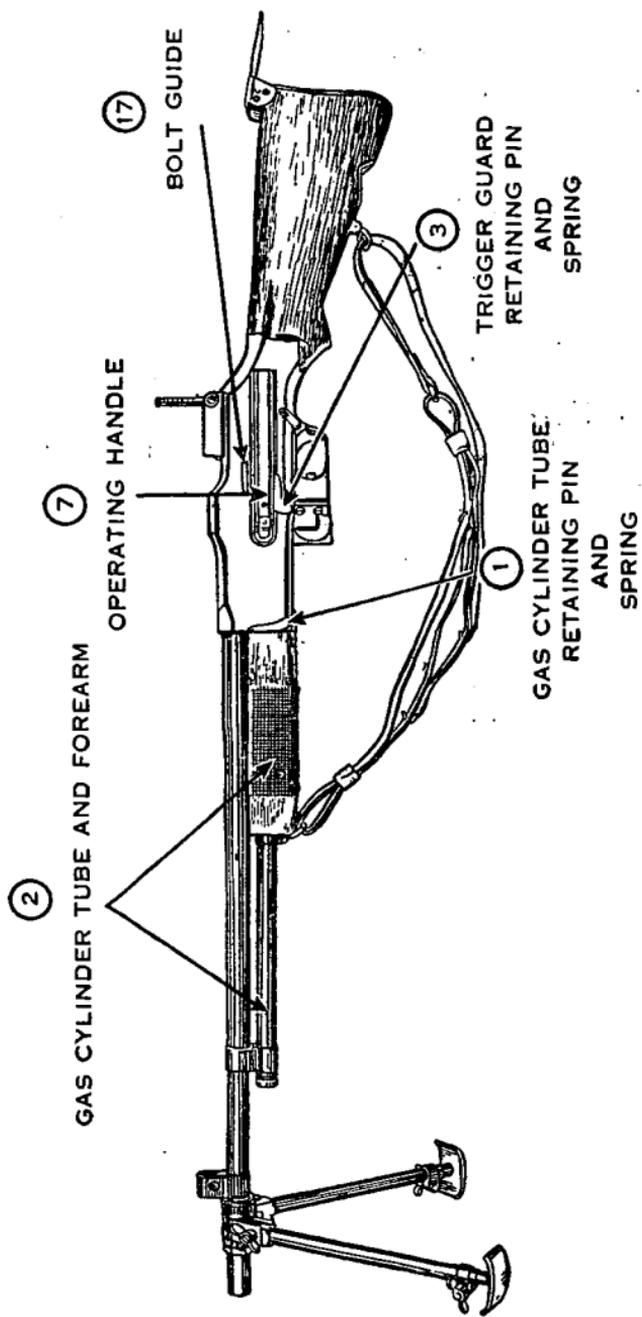


FIGURE 1.—Browning automatic rifle, caliber .30, M1918A2.

lation. There are two cyclic rates of full automatic fire, normal and slow, which may be selected by the firer. The normal cyclic rate is approximately 550 rounds per minute; the slow cyclic rate is approximately 350 rounds per minute. The most effective rate of fire for this weapon is from 120 to 150 rounds per minute. The sustained rate, however, is from 40 to 60 rounds per minute.

SECTION II

DISASSEMBLY AND ASSEMBLY

■ 4. TRAINING.—Training in disassembly and assembly will be taken up as soon as practicable after the soldier receives his rifle. In any case, it will be completed before any firing is done with the rifle by the individual. Instruction in the care and cleaning of the automatic rifle will also be covered.

■ 5. ORGANIZATION.—In the company or platoon, all enlisted men of the automatic rifle teams are combined in one or more groups, for instruction, under selected officer and non-commissioned officer instructors. Rifle squad leaders or assistant squad leaders supervise the work of their respective automatic rifle teams.

■ 6. CARE TO BE EXERCISED.—*a.* The rifle can normally be disassembled and assembled without applying undue force. When undue resistance is met, force will be applied cautiously.

b. The rifle will not be disassembled or assembled against time. Instruction, blindfolded, may be given to men who have passed their tests in mechanical training. In all work in disassembling the rifle, the men will be taught to lay out the parts on a smooth, clean surface from left to right, in the same sequence as they are disassembled from the rifle. The trigger mechanism will not be disassembled or assembled blindfolded.

■ 7. NOMENCLATURE.—The names of the parts to which reference is made in mechanical training are readily learned as this training progresses. Instructors will therefore take care to name the parts clearly and correctly in their work. A sufficient knowledge of the nomenclature of the rifle is

gained by the soldier during the instruction in mechanical training.

■ **8. DISASSEMBLING.**—*a. General.*—Authorized disassembly by the soldier is limited to that required for proper care and maintenance of the rifle. Further disassembly will be done under the supervision of an officer or ordnance personnel. The individual soldier is prohibited from disassembling the—

- (1) Forearm group.
- (2) Barrel group.
- (3) Butt stock and buffer group.
- (4) Rear sight group.
- (5) Receiver group.

b. Sequence.—The steps in the disassembly of the rifle authorized to be performed by the individual soldier without supervision are performed in the following sequence:

- (1) *Operating group.*—(a) Cock the rifle and remove—
 1. Gas cylinder tube retaining pin and spring.
 2. Gas cylinder tube and forearm.
- (b) Let the slide forward and remove—
 1. Trigger guard retaining pin and spring.
 2. Trigger guard.
 3. Recoil spring guide.
 4. Recoil spring.
 5. Operating handle.
 6. Hammer pin.
 7. Hammer.
 8. Slide.
 9. Bolt assembly.
 10. Firing pin.
 11. Bolt link pin.
 12. Bolt link.
 13. Extractor.
 14. Extractor spring.
- (2) *Trigger group.*—Remove—
 - (a) Ejector.
 - (b) Magazine catch spring.
 - (c) Magazine catch pin.
 - (d) Magazine catch.

- (e) Magazine release.
- (f) Sear spring.
- (g) Trigger pin.
- (h) Trigger.
- (i) Connector.
- (j) Sear pin.
- (k) Sear.
- (l) Sear release stop lever.
- (m) Sear carrier.
- (n) Counterrecoil spring.
- (o) Change lever.
- (p) Change lever spring.
- (3) *Bipod group*.—Remove—
 - (a) Flash hider.
 - (b) Two bipod leg clamp wing screws.
 - (c) Right and left bipod leg assemblies.
 - (d) Two bipod clamp leg guides.
 - (e) Two bipod body wing screws.
 - (f) Right and left bipod leg tubes.
 - (g) Bipod spring-lock washer.

c. *Method*.—The following detailed explanation of the method of disassembling the automatic rifle is furnished as an aid to instructors:

(1) *Operating group* (figs. 1 and 2).—Lay rifle on a table, barrel down, pointing to the left. Cock the rifle. Turn gas cylinder tube retaining pin spring (1) 180° in a clockwise direction and pull out gas cylinder tube retaining pin and spring (1). Remove gas cylinder tube and forearm (2). Let slide (10) forward *easily* by pressing trigger with thumb of the right hand and at the same time grasping the slide with the left hand so that the middle and index fingers are astride the gas piston. Turn trigger guard retaining pin spring (3) 90° in a clockwise direction and pull out the pin and spring (3). Lift out trigger group (4). Remove recoil spring guide (5) by pressing right index finger on checkered surface of its head and turning it until ends are clear of the retaining shoulders. Remove recoil spring (6). Line up hammer pin holes in receiver and operating handle by inserting point of recoil spring guide in hole in operating handle with right hand, press against hammer pin (8) until it clears the

operating handle by jutting through its hole in the receiver as the operating handle is pushed slowly to the rear with the left hand. Remove operating handle (7) by pulling straight to the rear. Remove hammer pin (8). Push hammer (9) forward out of its seat in the slide (10) and lift out of the receiver. Push the bolt link (13) to the rear and down. Being careful to avoid striking the gas piston or rings against the gas cylinder tube bracket, remove slide (10) by pulling it forward out of the receiver. Pry bolt guide (17) outward with the rim of a cartridge. Lift out bolt assembly (14) by pulling it slowly to the rear end of the receiver and raising it with the right thumb and forefinger. (As an alternate method of removing the bolt, move bolt assembly all the way to the rear end of receiver, bolt link up and forward. Then, grasp front end of bolt between left forefinger and thumb, rotate bolt assembly gently to clear bolt guide and bolt support on sides of receiver, and lift bolt assembly out of receiver.) Pull out firing pin (11) from its aperture in the bolt. Remove bolt link pin (12). Remove bolt link (13). Remove extractor (15) by pressing the point of a dummy cartridge against claw and exerting pressure outward and to the front. Remove extractor spring (16).

(2) *Trigger group* (fig. 3).—(a) Depress ejector lock with the point of a dummy cartridge. Hold thumb in front of magazine catch spring to prevent it from flying out, and then slide ejector (18) out of its seat. Remove magazine catch spring (19). Remove magazine catch pin (20), lift out magazine catch (21) and magazine release (22).

(b) Holding trigger guard so that its rear is away from the body, insert trigger guard retaining pin spring under the *three leaves* of the sear spring *above the connector stop*. Pry up so that center leaf trips above front end of sear. Rotating the trigger guard retaining pin forward while pressing firmly down and forward on sear spring with the left thumb, unseat the sear spring and pull it out to the front. Remove the trigger pin (24). The trigger pin must always be removed before the sear pin in order that tension of the counterrecoil spring will always be on the sear pin. Remove trigger (25) and connector (26) through top of the trigger guard. Push out sear pin (27) with the recoil

spring guide. Remove sear (28) and sear release stop lever (29). Noting the manner in which these parts are fitted together prior to separating them, separate the sear and sear release stop lever. Pry up on the sear carrier (30) by

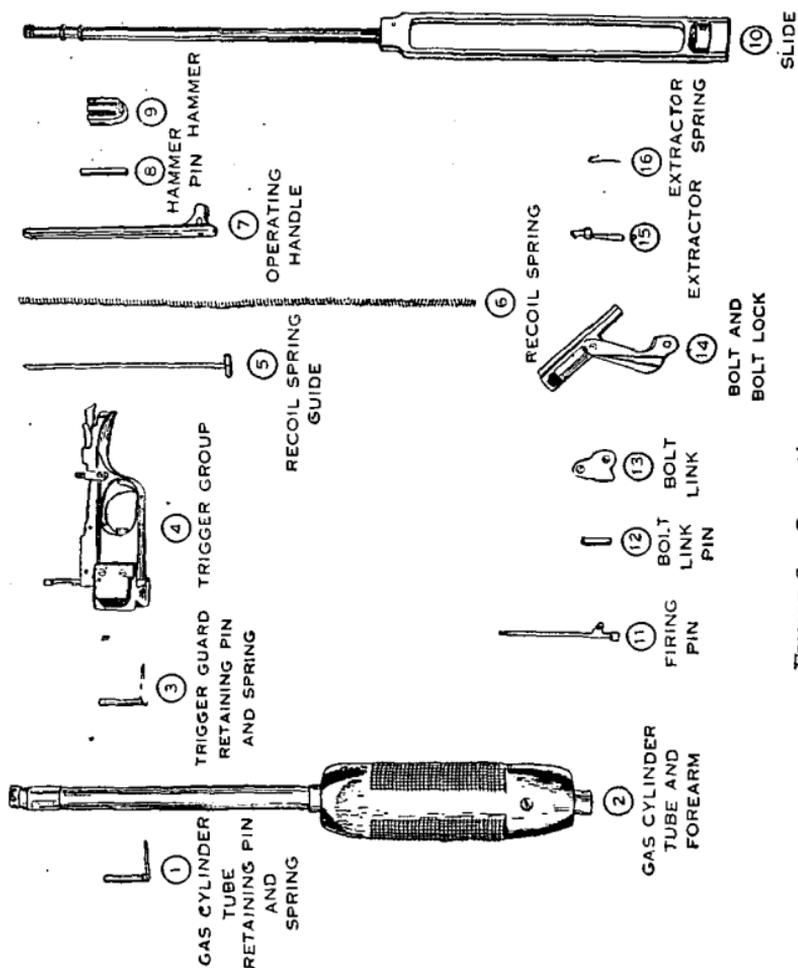


FIGURE 2.—Operating group.

inserting the point of the recoil spring guide in either of the sear pin holes in the sear carrier. Lift out the sear carrier and counterrecoil spring (31). Remove the change lever (32) by prying up on the forward end of the change lever spring with the rounded end of the sear spring held in the

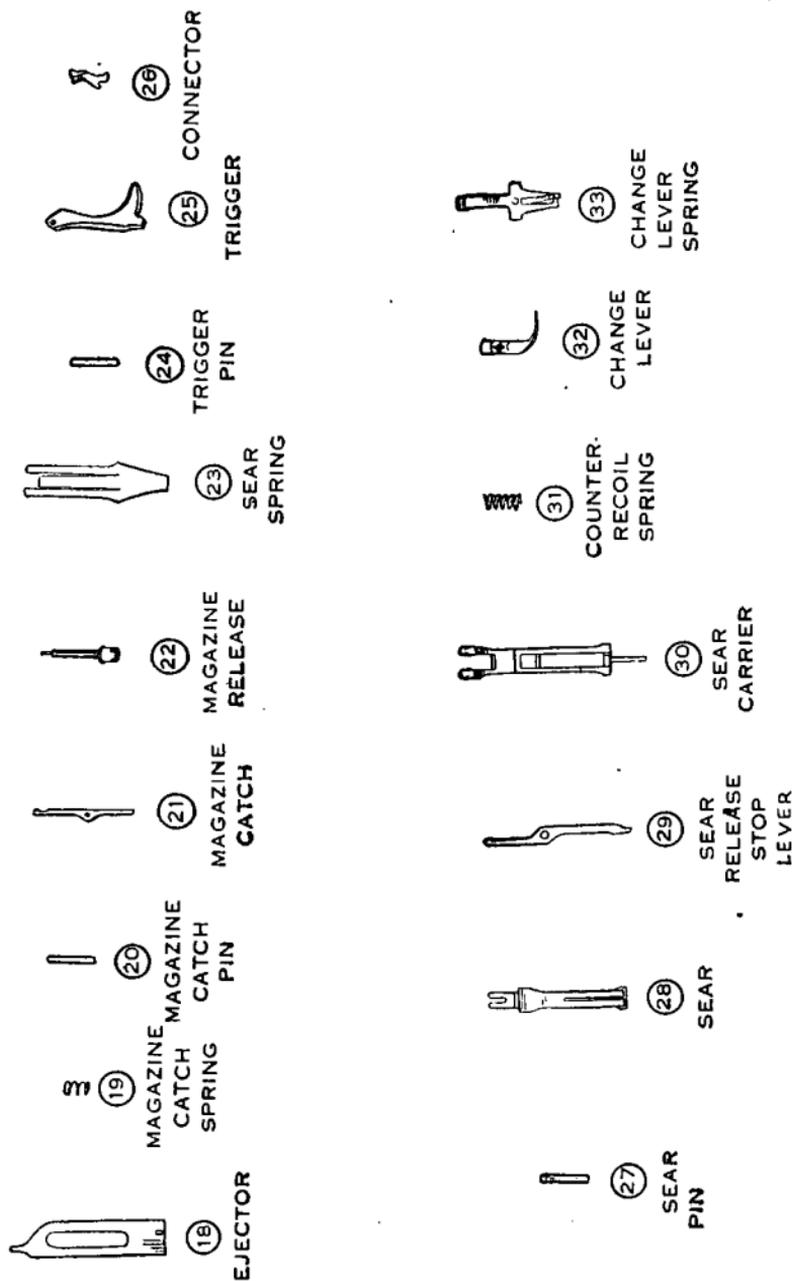


FIGURE 3.—Trigger group.

right hand, withdrawing the change lever to the left with the left hand. Being careful not to bend or break the sear release stop lever spring which is riveted to the change lever spring (33), remove the change lever spring by prying it to the rear with the rounded end of the sear spring so as to unseat the shoulders of the change lever spring from their slots in the trigger guard.

(3) *Bipod group* (fig. 4).—The disassembling of the bipod group generally is not performed as a part of mechanical training. However, it may become necessary to disassemble this group to replace damaged or broken parts, and the following procedure is prescribed: Unscrew the flash hider (34). Remove the bipod assembly. Unscrew the two bipod leg clamp wing screws (35). Remove right and left bipod legs (36). Remove the two bipod clamp leg guides (37). Unscrew the two bipod body wing screws (38). Remove right and left bipod leg tubes (39) from bipod body (40). Remove bipod spring-lock washer (41).

■ 9. ASSEMBLING.—The rifle and its component parts are assembled in the reverse order of their disassembly as given in paragraph 8c. The following detailed explanation of the method of assembling the rifle is furnished as an aid to instructors:

a. *Bipod group* (fig. 4).—Replace bipod spring-lock washer (41). Replace the right and left bipod leg tubes (39) on the bipod body (40). Screw the two bipod wing screws (38) into the bipod body. Replace the two bipod clamp leg guides (37) in their slots on the right and left bipod legs. Replace bipod legs (36) in the bipod leg tubes (39). Aline U-shaped opening of the bipod clamp leg guides with the holes in the bipod leg clamps, and replace the bipod leg clamp wing screws (35). Replace bipod assembly on the rifle. Screw flash hider (34) on to the rifle.

b. *Trigger group* (fig. 3).—(1) Replace the change lever spring (33) with sear release stop lever spring up and to the rear, by pressing down and forward on the rivet with the thumb of the right hand and engaging the ears of the change lever spring in their slots in the rear of the trigger guard. Then, *being careful not to bend or break the sear re-*

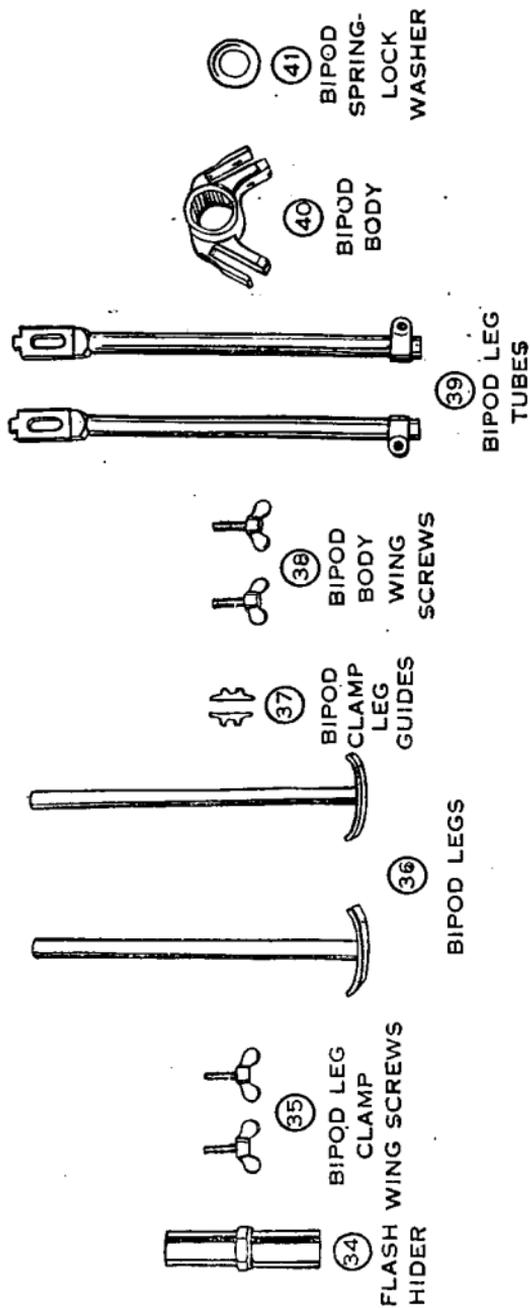


FIGURE 4.—Bipod group.

lease stop lever spring, continue the pressure with the right thumb, using rounded end of the sear spring as a ramp, and seat the rear end of the change lever spring in its slot. Replace change lever (32) by inserting it in its hole in the trigger guard with the left hand while with the right hand prying up on the forward end of the change lever spring with the rounded end of the sear spring. Replace counterrecoil spring (31) on counterrecoil spring guide (front end of sear carrier). Insert counterrecoil spring guide into its seat in the trigger guard. Brace forward end of trigger guard against an immovable object, and with the thumbs pressing on the rear of the sear carrier, push sear carrier (30) forward until its rear end is held by the ears of the change lever spring. Replace the sear release stop lever (29) in its proper seat in the sear (28) by holding the sear in the left hand with the thumb and forefinger at the holes, sear nose up and to the rear; then, taking the long end of the sear release stop lever in the right hand, short end up and to the front, inserting its short end upward through the slot in the forward part of the sear and alining the holes. Replace sear and sear release stop lever on sear carrier with sear nose up and to the rear. Replace sear pin (27) by alining the holes in the sear release stop lever, sear, sear carrier, and trigger guard with the recoil spring guide and inserting the sear pin as the recoil spring guide is slowly worked out (considerable pressure must be exerted by means of the recoil spring guide in order to overcome the resistance of the strong counterrecoil spring). The sear pin must be replaced before the trigger pin in order that tension of the counterrecoil spring will always be on the sear pin.

(2) Replace connector (26) in the trigger (25) by holding the trigger in the left hand with the thumb and forefinger at the hole and the toe of the trigger in the palm of the hand. Pick up the connector in the right hand, toe to the rear and down, and place it in its seat in the trigger. Place the trigger and connector in the trigger guard by holding the trigger guard in the palm of the right hand with the sear carrier up, forward end of trigger guard tipped downward at about a 45° angle, and placing the trigger and connector down through the sear carrier until the connector passes un-

der and to the rear of the connector stop. Replace trigger pin (24). Place the two outer leaves of the sear spring on top of the forward shoulders of the sear and the middle leaf under the forward end of the sear release stop lever, depress the rear end of the sear and slide the sear spring to the rear until its shoulders are in the rear of the slots in the trigger guard, press down and forward on the sear spring with the thumb of the right hand until the front end of the sear spring (23) rests in the depression stop.

(3) Replace magazine release (22). Replace magazine catch (21), spring depression facing out. Replace magazine catch pin (20). Replace magazine catch spring (19). Insert ejector (18) into recess and move it down until it is flush with the magazine catch spring. Compress magazine catch spring in its seat and move ejector down until it is flush with the ejector lock. Depress the ejector lock with the base of a dummy cartridge and push ejector home until the ejector lock is in its proper position.

(4) After trigger mechanism has been assembled, turn change lever to forward position, and pull trigger. If connector will not rise, it is not in place correctly. It should rise and snap out from under sear. If connector will rise but does not raise sear, the middle leaf of the sear spring is weak and the sear spring should be replaced.

c. Operating group (figs. 1 and 2).—Replace extractor spring (16) in the extractor with the short end in the hole and the long end along the groove in the side. Place extractor (15) in its seat in the bolt. Replace bolt link (13) in the bolt lock with the shoulder of the link against the flat surface of the bolt lock. Replace bolt link pin (12). Lift bolt lock and insert the firing pin (11) in its receptacle in the bolt. Lay rifle barrel down and pointing to the left so that rifle is resting on the front sight cover and rear sight base. With bolt (14) and its assembly held in a perpendicular position, insert it in the receiver between the bolt guide and the rear ends of the bolt supports. Press the assembled bolt down so it will lie flat in its place. With bolt link down, push bolt forward. Replace slide (10) with the sear notch up, and push it back all the way. With hammer (9) held with the thumb and forefinger of the left

hand, place it in its seat in the slide, rounded end to the rear. Push bolt lock fully into its locking recess and push slide forward. Using the recoil spring guide as a drift, align the hammer pin holes of the bolt link, hammer, and slide with the hammer pin holes in the sides of the receiver. Insert hammer pin (8) to the right, allowing about $\frac{1}{4}$ inch of the hammer pin to protrude from the receiver. Replace operating handle (7). Push protruding hammer pin all the way home. Replace recoil spring (6). Insert recoil spring guide (5) in the recoil spring, and, with the end of the index finger on the checkered end of the recoil spring guide, turn it until it is properly seated. Replace trigger group (4). Replace trigger guard retaining pin and spring (3). Cock the rifle. Slide gas cylinder tube and forearm (2) to the rear over the gas piston until its rear end is seated in the slot in the front end of the receiver. Replace the gas cylinder tube retaining pin and spring (1). Test rifle by pulling the trigger.

■ 10. TO REMOVE FIRING PIN WITHOUT DISASSEMBLING (fig. 5).—To remove firing pin without disassembling the rifle, lay rifle upside down on table, muzzle to the front. Remove the trigger group. Place rim of cartridge under center of bolt guide. With the right hand, slowly pull the operating handle all the way to the rear, taking care not to dislodge the rim of the cartridge from beneath the bolt guide. With the left hand, palm up, grasp the stock so that at least two fingers of the left hand are on the operating handle, holding it to the rear, while the thumb of the left hand is on the bolt link in the rear of the receiver (fig. 5 ①). Release the operating handle with the right hand, it still being held in the rearmost position by the fingers of the left hand. Pry the bolt guide outward with the right hand by placing the middle finger of the right hand under the base of the cartridge while the thumb exerts pressure on the nose (fig. 5 ②). Press down on the bolt link with the thumb of the left hand, causing the bolt to break at the bolt lock pin (fig. 5 ③). Allow bolt to go forward until it stops. Change firing pin. Pull operating handle to the rear again and push bolt into position.

■ 11. TO REMOVE AND REPLACE EXTRACTOR WITHOUT DISASSEMBLING.—*a. Removal* (fig. 6).—Pull operating handle toward the rear and insert an *empty* cartridge case, base to

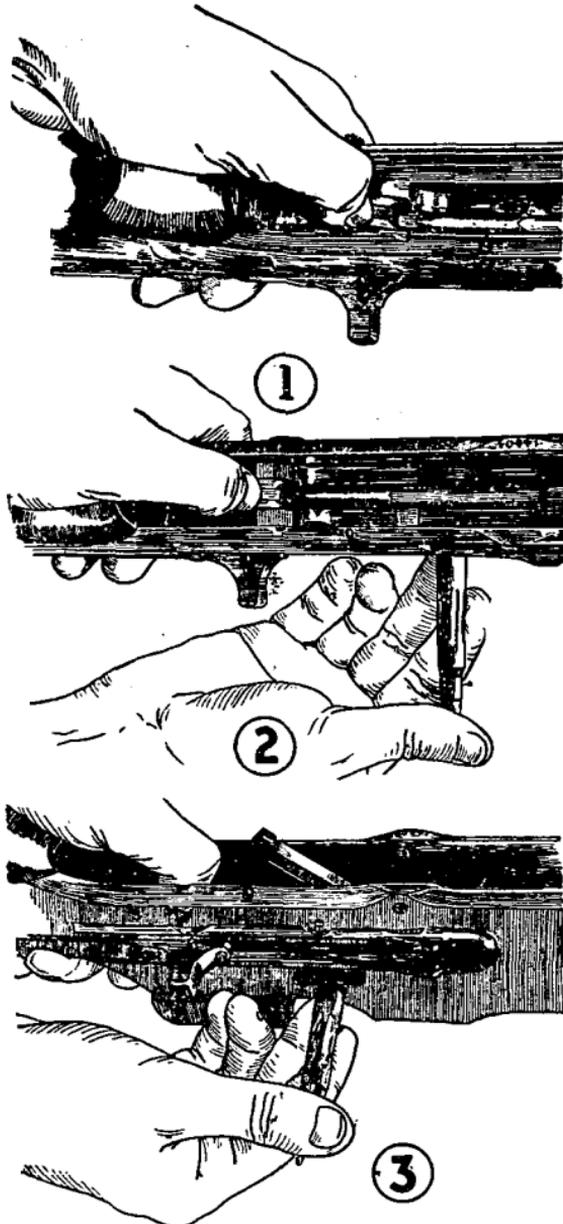


FIGURE 5.—Removing firing pin without disassembling.

the front, between the bolt and chamber, exposing the extractor in the ejection opening (fig. 6 ①). Lay rifle on its side so that the ejection opening is up. With forefinger of

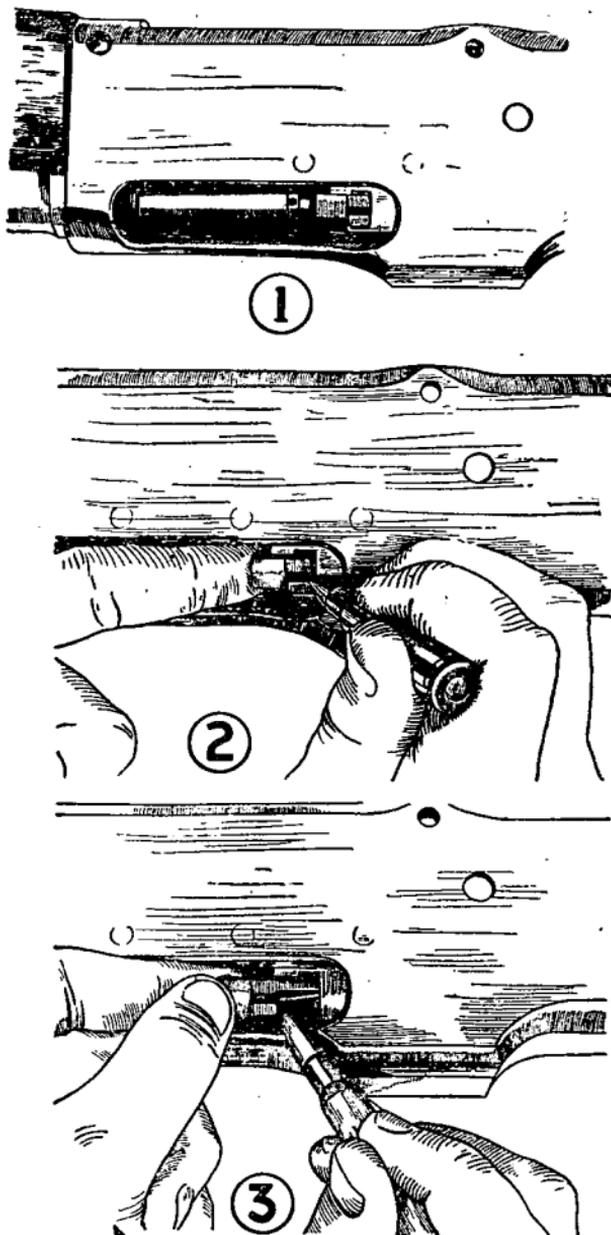


FIGURE 6.—Removing extractor without disassembling.

the left hand, pull out claw of the extractor, then place nose of a cartridge behind the extractor shoulder (fig. 6 ②) and pry it forward until extractor is free of the recess (fig. 6 ③). Remove extractor and extractor spring.

b. Replacement.—Insert short end of extractor spring in the hole in the shank of the extractor so that the long end on the spring is along the slot in the extractor. Insert extractor and spring in the end of the bolt and push them into position. Remove empty cartridge case.

■ 12. **DISASSEMBLING AND ASSEMBLING MAGAZINE** (fig. 7).—Raise rear end of magazine base until indentations are clear, then slide it to the rear. The magazine spring and follower will then fall out. It is assembled in the reverse order.

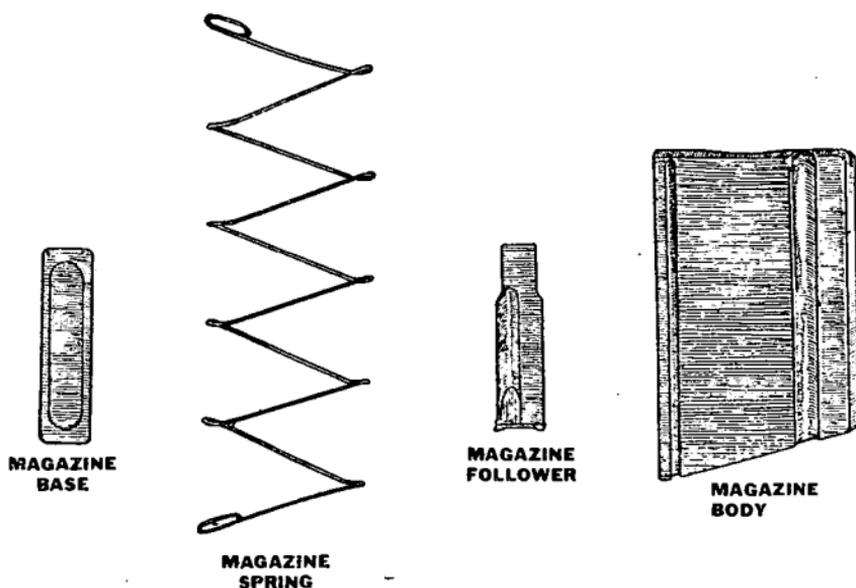


FIGURE 7.—Magazine.

SECTION III

CARE AND CLEANING

■ 13. **GENERAL.**—*a. Importance.*—Care and cleaning includes the care of the automatic rifle necessary to preserve its condition and appearance under all conditions at all times. Unserviceable rifles are usually the result of improper care