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NOTES

on

RIFLE, 7·62mm.

X8E1 (known as FN TYPE A)

X8E2 (known as FN TYPE B)

for

[illegible] TRIALS

LAND SERVICE

1954

INSPECTORATE OF ARMAMENTS

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NOTES

on

RIFLE, 7·62mm.

X8E1 (known as FN TYPE A)

X8E2 (known as FN TYPE B)

for

TROOP TRIALS

LAND SERVICE

1954

INSPECTORATE OF ARMAMENTS

NOTES ON RIFLE, 7.62 mm.
X8E1 (known as FN TYPE A)
X8E2 (known as FN TYPE B)
for TROOP TRIALS

LAND SERVICE 1954

AMENDMENTS NO.1

Page 47 -
Delete "Para.30" and substitute -

"30. ABNORMAL WEATHER CONDITIONS

When preparing the rifle for use in abnormal weather conditions all workings parts will be thoroughly dried before being lubricated with special oil.

The gas regulator may have to be adjusted to give more gas.

It will assist in the initial stages of firing if the working parts are hand operated sharply backwards and forwards a few times before loading takes place.

Lubricants will be used as follows:-

USE	Lubricants to be used for temperature			
	Over 80°F	Between 40°F & 80°F	Between 0°F & 40°F	Below 0°F
All working parts in body and trigger group.	Oil,OX 52 or Oil,OX 13	Oil,OX 52 or Oil,OX 13	Oil,OX 13 or Grease LG 380	50/50 mixture Oil,OX 13 and Kerosine,vaporizing or 50/50 mixture of Grease LG 380 and Kerosine,vaporizing.
	Emergency substitute			
	Oil,OM 52	Oil,OM 52	-	Kerosine, burning

NOTES:- (a) Magazines will also be cleaned and lubricated.
(b) In hot, dusty climates the rifle will be very lightly oiled."

INSPECTORATE OF ARMAMENTS
WOOLWICH

HB/8 Amdt.1

Mr. Hawkins
This issues to add to the 1954 edition No.

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W.O.
Code No.
10826-4

NOTES ON

RIFLE, 7.62 mm.

X8E1, X8E2 and X8E5

FOR

TROOP TRIALS

LAND SERVICE

1955

AMENDMENT NO. 4

MANUSCRIPT AMENDMENTS

Cover and Title page delete "for TROOP TRIALS"

PAGE 46 Para. 25 - line 10
Delete "OC 600" and substitute "OX52"

CUT-OUT AMENDMENTS

PAGE 48
Delete table of lubricants, and substitute new table attached.

HB.8/1

Amdt.4/Oct/1960

Lubricants to be used for various temperatures:-

Use	Temperature	Lubricant	
		Normal	Emergency substitute
All working parts in body and trigger mechanism	Below 0°F	50/50 Mixture of Oil, OX13 and Kerosene B	Vaporising oil in lieu of Kerosene
	0°F to 40°F	Oil, OX 13	Oil, OM 13
	40°F to 80°F	Oil, OX 52	Oil, OM 58
	Over 80°F	Oil, OX 52	Oil, OM 13 Oil, OM 58

Lubricants to be used for special purposes:-

Purpose	Lubricant
Storage	Preservative, PX 11 or PX 4
Beach landings	Grease, LG 380 or Grease, LG 280
Dusty/sandy climates	Graphited grease XG 340

NOTES: (a) **Magazines will also be cleaned and lubricated.**

(b) **In hot, dusty climates the rifle will be very lightly oiled.**

Inspectorate of Armaments
Woolwich

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NOTES ON

RIFLE, 7.62 mm.
X8E1 (known as FN TYPE A)
X8E2 (known as FN TYPE B)

for

TROOP TRIALS

LAND SERVICE

1954

AMENDMENTS (NO.2)

1. Page 6 para. 5 Delete from "Both" in line 7 to "slide" in line 8 and Substitute:-

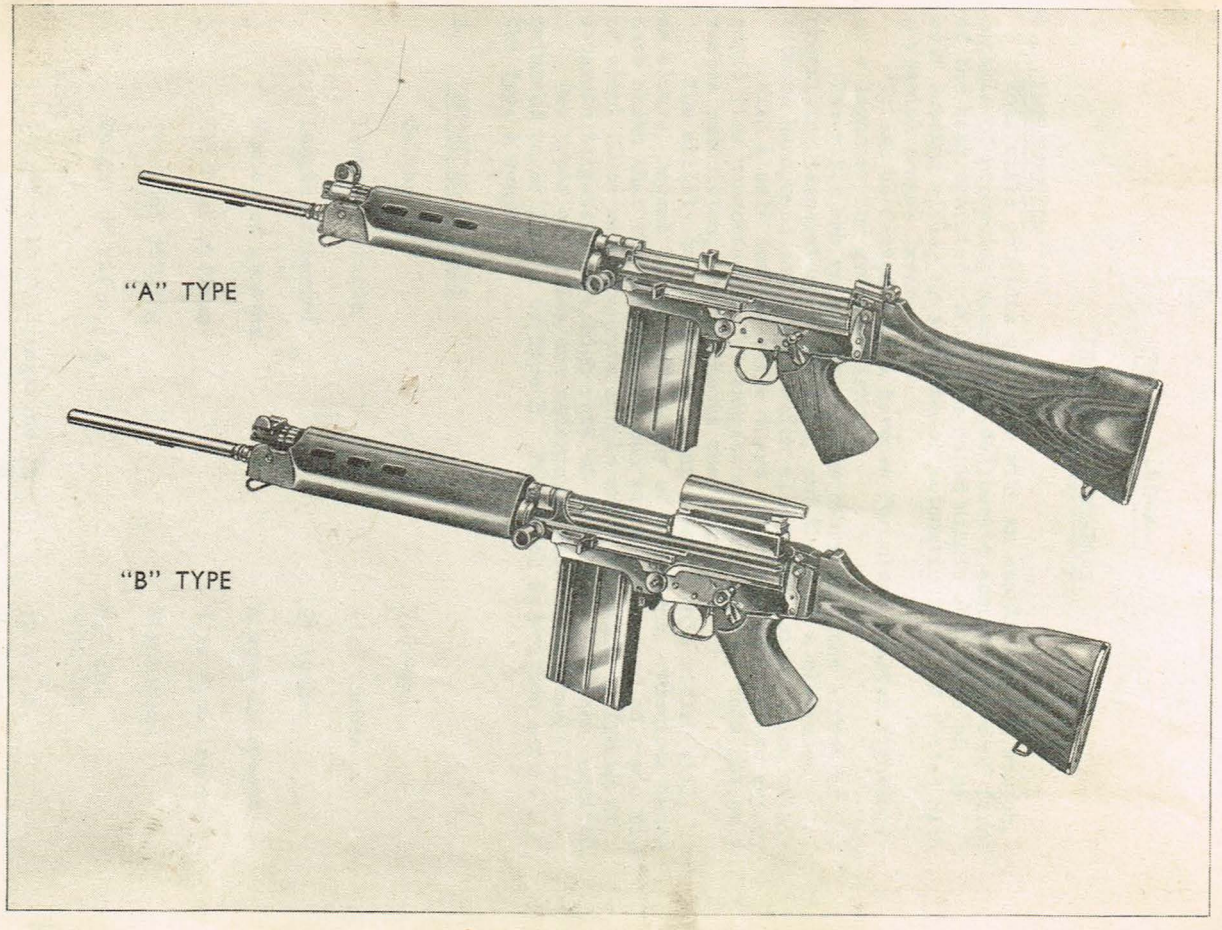
The handle has a rectangular stud which protrudes into the body to connect with the guide rib on the slide for cocking the rifle. The auxiliary catch has a stud also, but this only protrudes when the catch is pushed forward. It then connects with the rear of the slot in the body when the cocking handle is withdrawn.

Red Barracks
22nd September, 1954

Inspectorate of Armaments
Woolwich

CONTENTS


"A" TYPE
"B" TYPE


"A" TYPE
"B" TYPE

Rifle, 7.62-mm.

SECTION I - GENERAL

1. INTRODUCTION

This rifle provides the user with an easily handled weapon, capable of producing either the deliberate accurate rate of fire of the hand operated rifle, the rapid single shot rate of the self loading rifle, or a volume of automatic fire, if fitted with a special change lever.

It can be fitted with a bayonet for close quarter fighting, or a launcher for grenade firing.

The rifle has no cooling system other than the effect of prevailing temperature conditions, and there is a clearance between handguard and barrel which allows free circulation of air.

With a self loading rifle there will be a tendency to employ rapid fire unnecessarily at targets at long ranges, this not only wastes ammunition, but overheats the weapon.

The ability to exploit the many uses of this rifle, will, as always, depend on the efficiency of the firer. Previous tests have shown that the trained man can reach a standard of rapid fire of about 20 or more accurate single shots per minute, firing at separate targets, and a high rate of automatic fire when required.

Two types of rifles are undergoing tests and these will be referred to as Type A or Type B. This book is written around the Type A weapon.

2. TECHNICAL DETAILS

Calibre		7.62-mm.
Length of rifle		41.5 inches
Length of barrel		21 inches
Number of grooves		4 equally spaced
Pitch of rifling		1 in 8.66 inches
Twist of rifling		Right hand
Weight of rifle	A	8.9 lb.
	B	9.12 lb.
Weight with full magazine	A	10.48 lb.
	B	10.7 lb.

TECHNICAL DETAILS - contd.

Cyclic rate of fire	650-700 R.P.M.
Muzzle Velocity	2,800 ft. sec.
System of operation	Gas
Type of sight	Unit or Iron
Sight radius iron sight	21.77 inches
Magazine	Box type
Magazine Capacity	20 rounds
Magazine Weight empty	8.25-oz.
Magazine Weight full	1.58-lb.

3. SPECIAL FEATURES

(a) Mechanical Safety
A safety sear, operated by the slide, ensures that the hammer cannot be released to strike the firing pin until the breech block is fully forward.
The rear end of the firing pin protrudes beyond the rear face of the slide only when the breech block is in the locked position, therefore the firing pin cannot be struck by the hammer until the breech is sealed.

(b) Applied Safety
Applied safety is provided by the change lever. When the lever is put to the S (safe) position, the rounded edge of the change lever spindle is over the trigger platform, preventing it from rising to engage the tail of the sear.

(c) Gas Regulator
The quantity of gas allowed to escape is controlled by the gas regulator, the balance being used to drive the piston to the rear. The adjustment of the gas regulator is simple, and can be done by using a round of ammunition.

(d) Cocking Handle and Auxiliary Cocking Catch
The cocking handle is on the left side of the body. It is fitted with an auxiliary catch, which, when engaged, prevents the cocking handle being drawn back further than 3.15 inches, because of this, should it be necessary to

draw the breech block rearwards when a filled or partially filled magazine is on the rifle, the breech block cannot be pulled far enough back to engage the top round in the magazine, and thus a double feed is prevented.

(e) Change Lever
The change lever can be set to one of two positions, Single Shot, and Safe. A change lever may be fitted which can be set in three positions. Safe, Single Shot and Automatic.

(f) Holding Open Device
This device is operated by a rear lip on the magazine platform, the breech block is held to the rear when the magazine is empty.

(g) Stripping
The rifle opens similar to a shot gun, and can be field stripped without the aid of tools.

(h) Loading
Type "A" rifle can be loaded by using clips containing five rounds; loading is similar to bolt action rifles. A clip loading device can be used to fill magazines.

(j) Bayonet
The crosspiece of the bayonet is fitted with two prongs which act as a flash eliminator.

SECTION II- DESCRIPTION

4. BARREL GROUP (figs. 1, 2 and 3)

A lug on the underside of the barrel forms a fitting for both the bayonet and the grenade launcher. The front sling swivel, secured to a band by a screw, is assembled between two collars on the barrel.

The gas block (fig.2) is fitted along a keyway on the barrel and secured by a pin. A gas plug closes the front end of the gas block, where it is retained by two lugs engaging a groove in the block. A spring plunger on the head of the gas plug fits into shallow recesses at the end of the block,preventing the plug from turning.

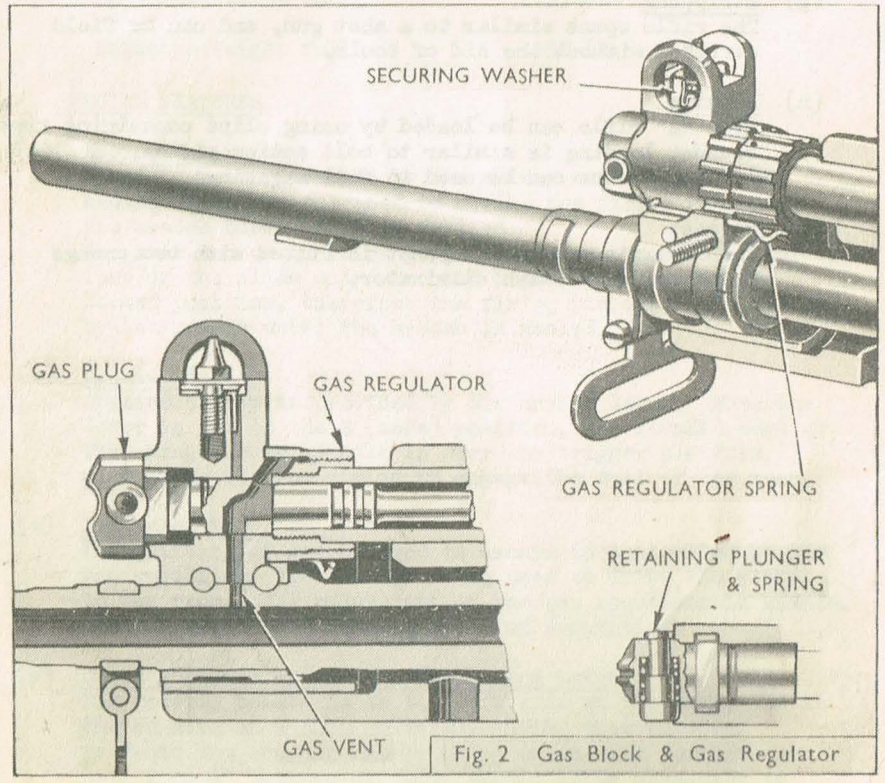


Fig. 2 Gas Block & Gas Regulator

If the letter A on the plug is turned uppermost, it indicates that the rifle is set for ball ammunition firing, in this position, the gas port in the plug is directly in line with the gas vent in the barrel.

For rifle grenade firing, when all the gases are needed to propel the grenade, the letter A is turned downwards, thereby shutting off the gas from the cylinder.

The forward end of the gas cylinder is threaded and screwed into the gas block, which is threaded on the outside to take the gas regulator.

The gas regulator has a number of projections on its outer surface, for use when adjusting the regulator, and for the engagement of the gas regulator spring. The forward ends of the spring are bent over and fit into small holes on each side of the gas block.

A gas escape hole is drilled at the top of the cylinder seated immediately in rear of the foresight bed; this hole is elongated and can be opened or closed by the gas regulator. Two gas escape holes are drilled into the right and left side of the cylinder at a distance of 2.4-ins. from the forward end.

The foresight is cone shaped and squared at its base, a round collar is formed immediately below, and this collar has a number of indents around its edge. Before assembly it is fitted into a spring steel washer on which are two lipped projections which engage in the indents on the collar. The sight is screwed into the gas block, and it is protected from damage by protectors which are designed as one piece with the gas block.

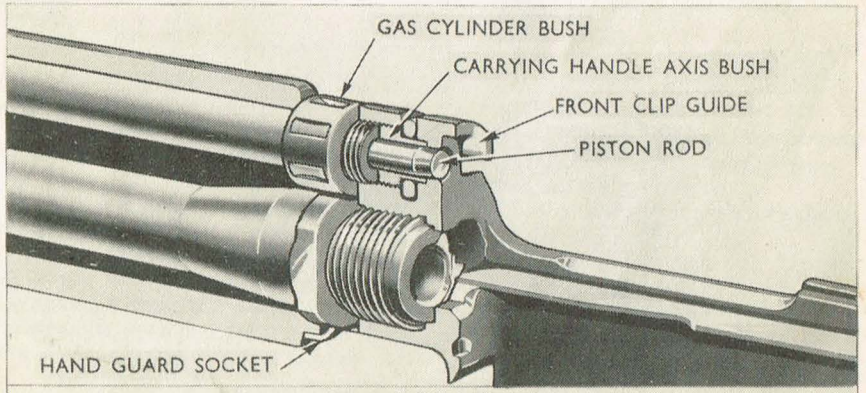


Fig. 3 Breech End

A bush is fitted over the rear end of the gas cylinder. Grooves on the outer surface of the bush allow the use of a tightening tool.

The gas cylinder houses the piston and spring.

The barrel is threaded at the rear (fig.3) and is breeched into the body; a hand guard socket on the outer surface, holds the two handguards at the rear, the other ends being secured by a screw passing through the gas block.

Metal linings are assembled to the front ends of the hand-guards to form a firm leverage when adjusting the gas regulator.

5. BODY GROUP (figs, 1, 4, 5 and 6)

A carrying handle is fitted to the upper front part of the body, and when not in use it is folded down to the right side of the rifle. A projection on the rear top surface of the body forms a seating for the front end of the horse shoe clip.

The cocking handle (fig.4) is on the left of the body and has a spring-loaded auxiliary cocking catch assembled on its extension. Both the handle and the catch have a rectangular stud which connects with the breech block slide.

The body cover is positioned by ribs fitting into guide grooves in the body, it is prevented by being pushed too far forward by stops on each side of the rear end. The front top

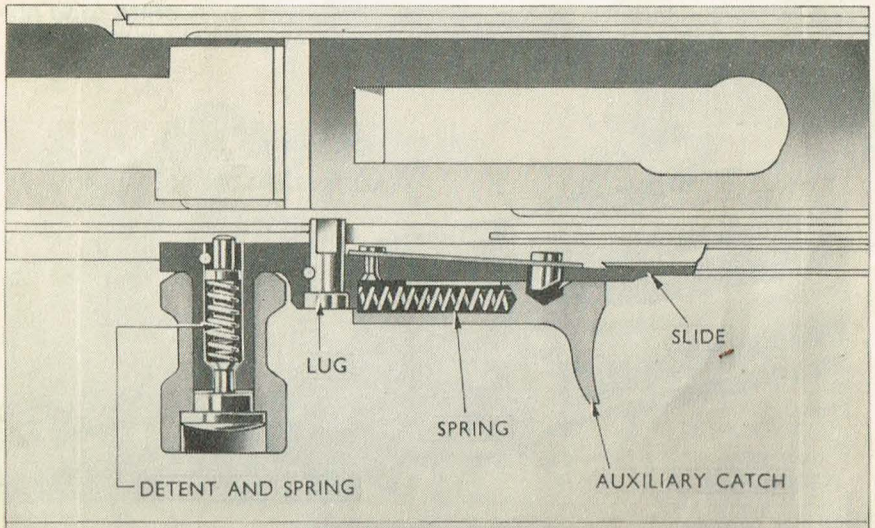


Fig. 4 Cocking Handle

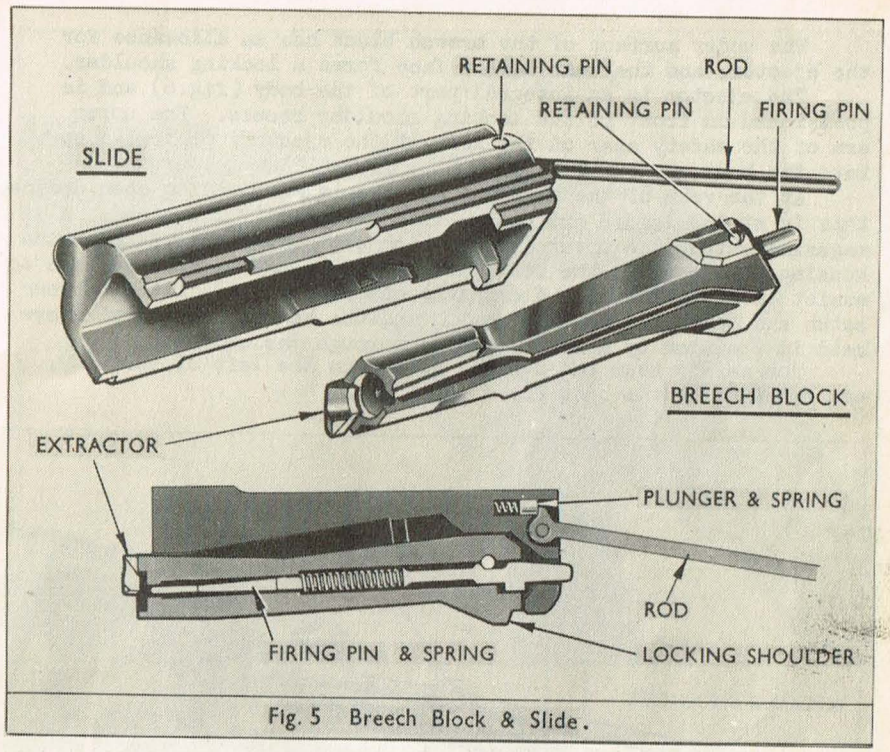


Fig. 5 Breech Block & Slide.

surface is fitted with guides to take the rear end of the horse shoe clip.

The breech block slide (fig.5) forms the housing for the breech block. It is fitted by ribs into guide grooves in the body. At its rear end a spring loaded rod is hinged on a pivot pin.

In the rear inner surface of the slide are sloping protrusions which actuate the shoulders of the breech block.

The breech block (fig.5) has a hole drilled through its length to house the firing pin and spring; these are retained by a pin engaging across an elongated recess. The spring is held under compression thus keeping the front end of the firing pin clear of the face of the breech block.

An extractor and spring is fitted at the right side of the breech block, with the claw of the extractor protruding on to the face of the block.

The under surface of the breech block has an allowance for the ejector, and the rear bottom face forms a locking shoulder.

The ejector is an integral part of the body (fig.6) and is positioned in front of the locking shoulder recess. The upper arm of the safety sear on the left of the ejector, protrudes up into the body.

At the rear of the magazine housing is the holding open device; this is spring-loaded and has a thumb catch at it lower end. A magazine catch, the upper arm of which protrudes into the magazine housing, projects to the rear. It is milled on its rear surface to assist in manipulation. A magazine catch spring is fitted between catch and body, the magazine catch and the holding open device are held in position by a screw passing through the body.

The safety sear and spring, housed in the left of the body, are retained by the butt frame joint pin.

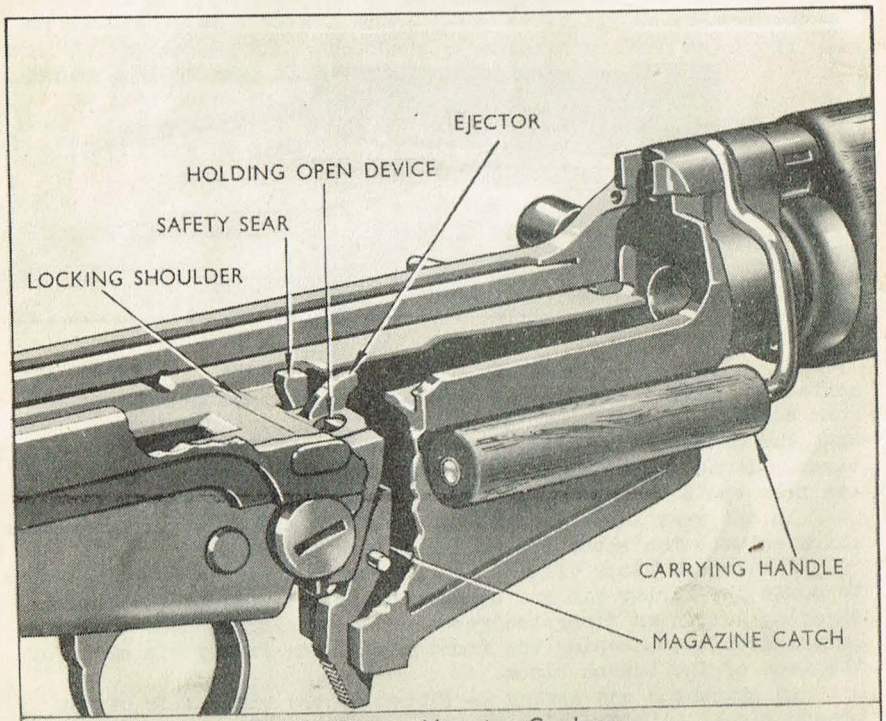


Fig. 6. Ejector, Magazine Catch, etc.

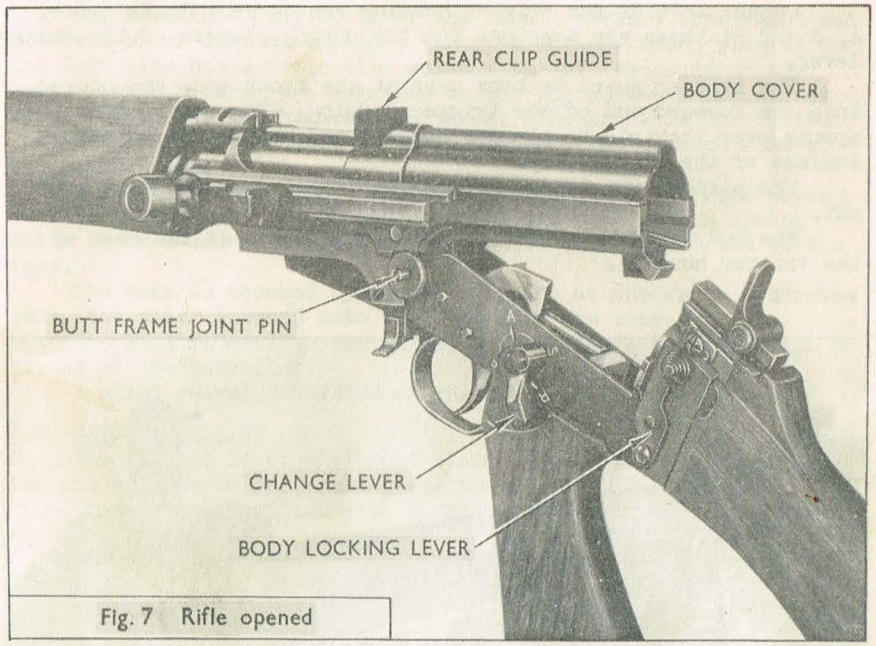


Fig. 7 Rifle opened

6. TRIGGER GROUP (figs. 1, 7 and 8)

The forward end of the trigger group housing, (fig.7) hinges to the body group, where it is secured by a butt frame joint pin and retaining pin.

The hammer and trigger (fig.8) are retained by pivot pins passing through the trigger housing, these pins are prevented from moving by a locking plate secured by the spindle of the change lever. The hammer spring rod is pinned to the hammer and carries the hammer spring partially covered by a spring housing, the rear end of the housing is coned and fits into a shallow recess in the cross frame of the trigger housing.

On the shank of the hammer are two bents, the lower one for use with the trigger sear, the upper one for the safety sear.

The trigger and sear are held by the same pivot pin, a sear spring being fitted between sear and trigger. The hole in the sear is elongated to allow backward and forward movement. The lower pivot arm of the trigger is held forward by a spring-loaded plunger. The change lever spindle is positioned directly above the rear arm of the trigger.

On the left of the trigger housing are three indents marked A, S and R; these are seatings for the spring plunger of the change lever.

The trigger guard is bent over at the front end, and hooked into the forward end of the trigger housing. The rear end is sprung over the trigger plunger housing and held by the upper surface of the pistol grip.

The pistol grip is secured to the trigger housing by a lock nut.

The body locking catch assembly is situated at the rear of the trigger housing.

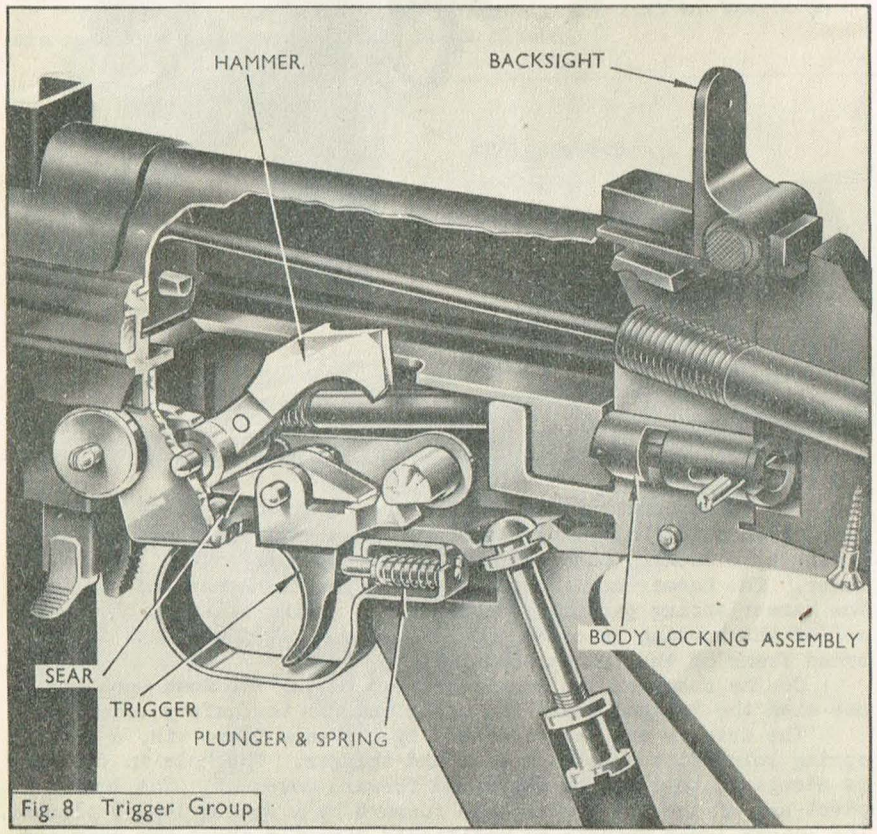


Fig. 8 Trigger Group

7. BUTT GROUP (figs. 1 and 8)

The backsight (fig.8) is of the usual aperture type which can be moved up or down an inclined ramp. A spring-loaded plunger on the left side has a projection which fits into recesses on the ramp. Range figures are engraved on the top surface, the lowest being 200 yards, the highest 600 yards. The sight is dovetailed into its seating and there is an adjusting screw on each side of the sight block.

A return spring tube (fig.1) is screwed into the rear upper surface of the butt frame, and contains a double return spring which is held under compression by a screw in the rear end of the tube.

The butt is secured by two screws, one at the front under the butt, the other screwed into the butt from the rear.

The butt is drilled for an oil bottle, and a butt trap is fitted on the butt plate.

A sling swivel is fitted on the toe of the butt.

8. BAYONET (fig.9)

The bayonet is of the broad bladed type. It is fitted with two projections on the cross piece to act as a flash hider.

The handle is fitted with a catch and spring which secure it to the barrel.

The handle is also spring-loaded so that when firing with the bayonet fixed, differences in the M.P.I. is negligible.

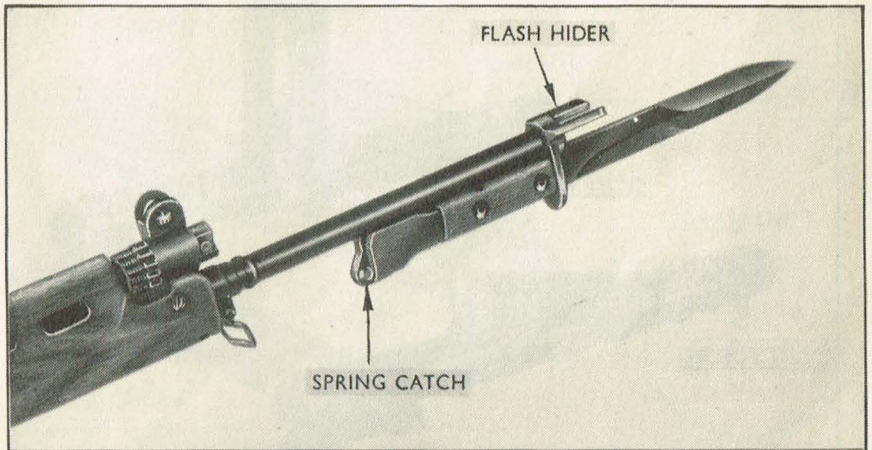


Fig. 9 Bayonet

9. GRENADE PROJECTOR (fig.10)

This consists of a steel tube which fits over the muzzle of the rifle and is secured on the bayonet lug by a spring catch.

A special sight, hinged at the rear of the projector is marked in graduations for ranges 25, 50, 75 and 100 yards.

A case is provided for the projector.

Grenade cartridge

This is similar in appearance to the blank rifle cartridge, being crimped at the neck, but it will be blackened for half its length to distinguish it from blank.

No other type of cartridge will be used to fire the grenade.

Preparation for firing

The gas plug will be turned so that the letter "A" is upside down.

NOTE: For further details of grenade firing see User Handbook (Provisional) for the Grenade rifle A/Tk. No.94 (Energa) with Projector No.4 Rifle Mk.5, Land Service, 1952.

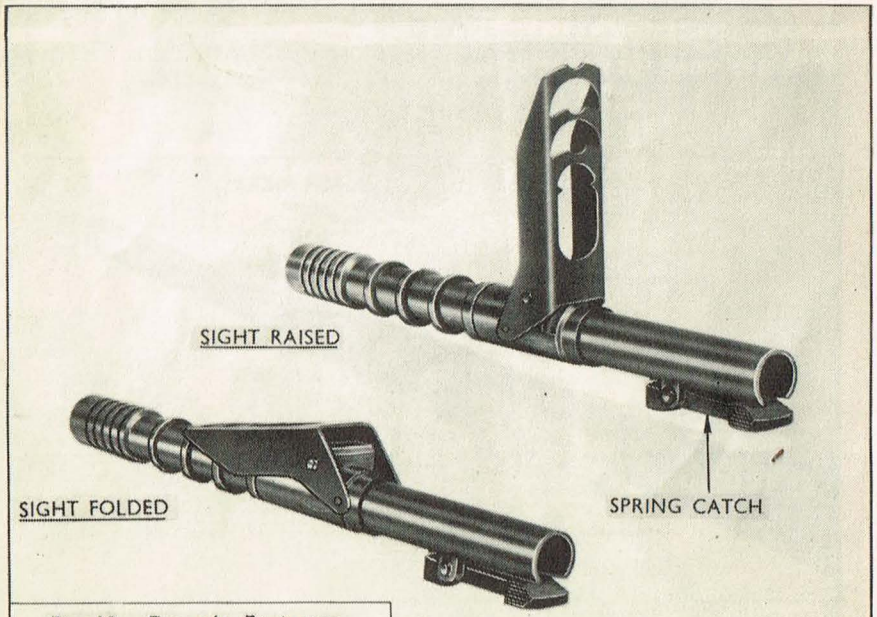


Fig. 10 Grenade Projector

10. DIFFERENCES BETWEEN TYPES OF RIFLE

The "B" type rifle differs from the "A" type as follows:-

(a) Sights (fig.11)

This rifle is fitted with a UNIT Sight, it consists of a small telescope-shaped tube fitted with lens. An inverted pointer and two range lines are etched on the lens inside the sight.

The pointer is used at ranges up to 200 yards, the two lines at 400 and 600 yards respectively.

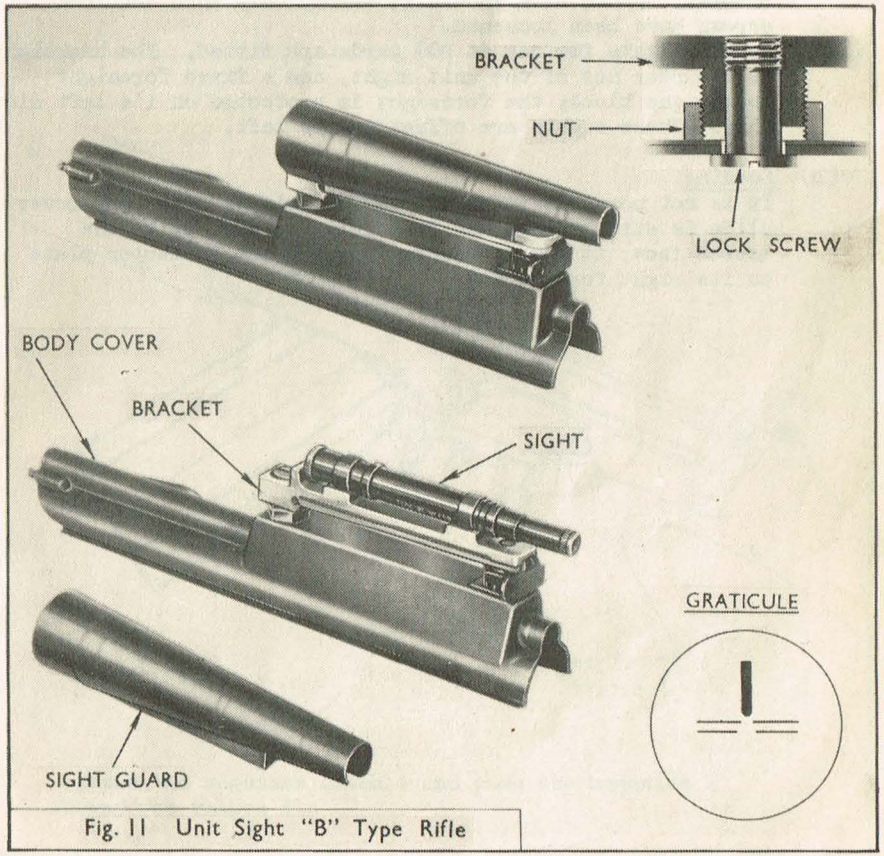


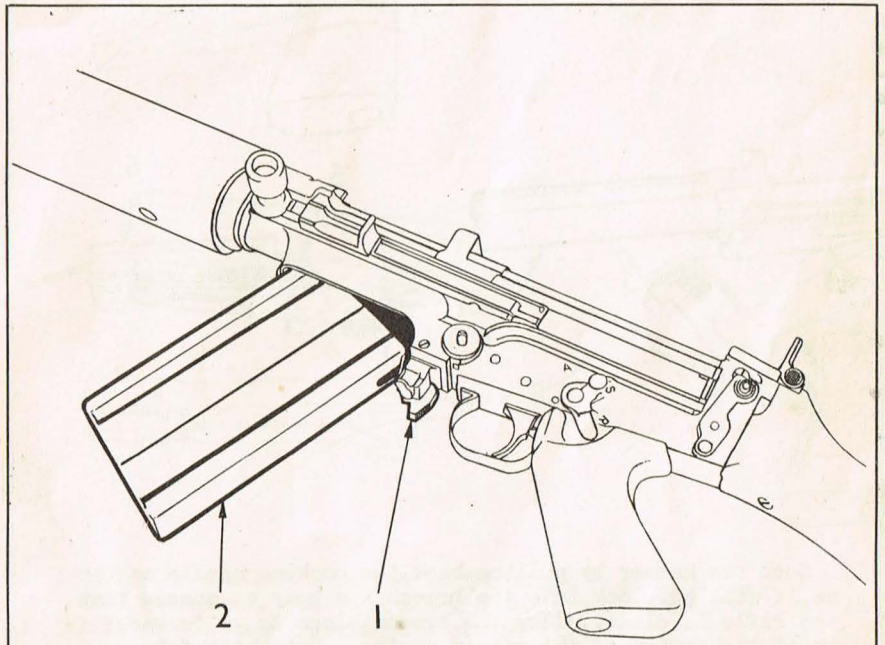
Fig. 11 Unit Sight "B" Type Rifle

The sight is protected by a cover guard which can be removed to the rear.
The sight is secured to a bracket by two collars, secured underneath by screws. The bracket is secured to the body cover by a lock screw at each end, the front one on top the rear one underneath. At the forward end is a nut, hexagonal in shape, and this nut is eccentric so that, when turned it moves the bracket laterally.
A second hexagonal shaped nut is at the rear; it has a number of small marks around its edge. This nut has normal threads and when turned it raises or lowers the rear of the bracket. These nuts should be turned only when the lock screws have been loosened.
Battle sights for use at 200 yards are fitted. The backsight to the rear nut of the unit sight, and a fixed foresight to the gas block; the foresight is protected on its left side only. These sights are offset to the left.

(b) Loading
It is not possible to clip load this rifle. The body cover slide is strengthened and fits fully forward up to the breech face, it has an ejector opening and deflector plate on its right forward end.

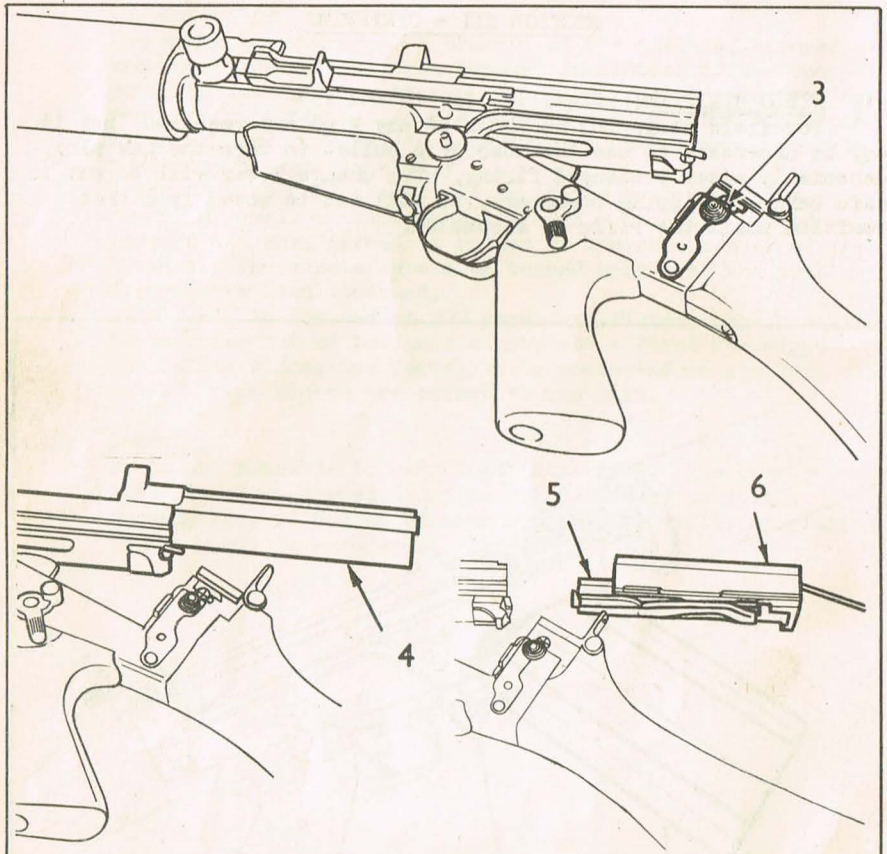
SECTION III - STRIPPING

11. FIELD STRIPPING (figs, 12, 13, 14 and 15)
For field stripping no tools of any kind are required, but it may be necessary to use the nose of a bullet to turn the gas plug, especially after prolonged firing. The change lever will be put to safe before stripping commences, it will not be moved from that position until the rifle is assembled.



Press the magazine catch 1 and push the magazine 2 forward to remove it.

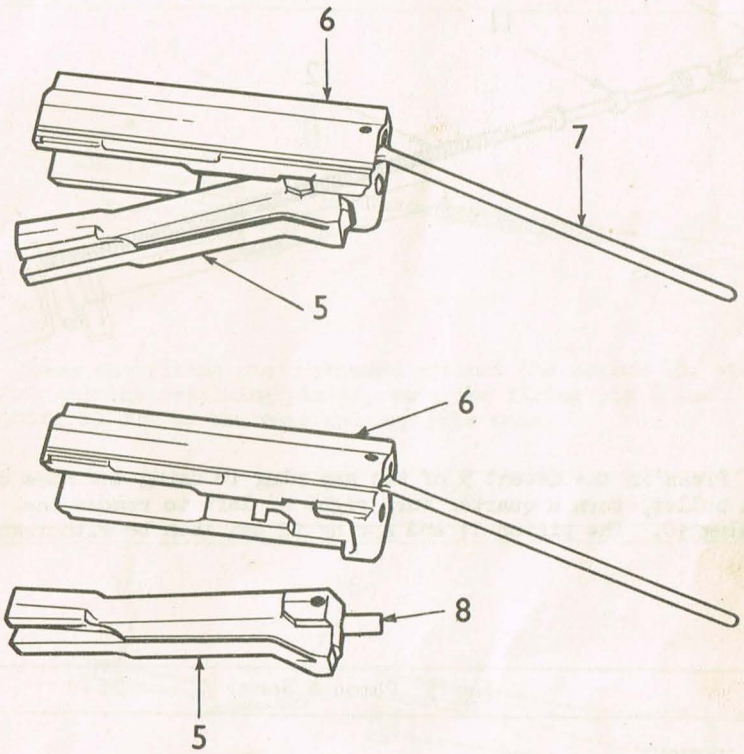
Fig. 12 Removing the Magazine



Cock the hammer by pulling back the cocking handle as far as it will go, look into the breech and body to ensure that the rifle is clear, allow the breech block to go forward under the action of the return spring. Set the safety lever to safe.

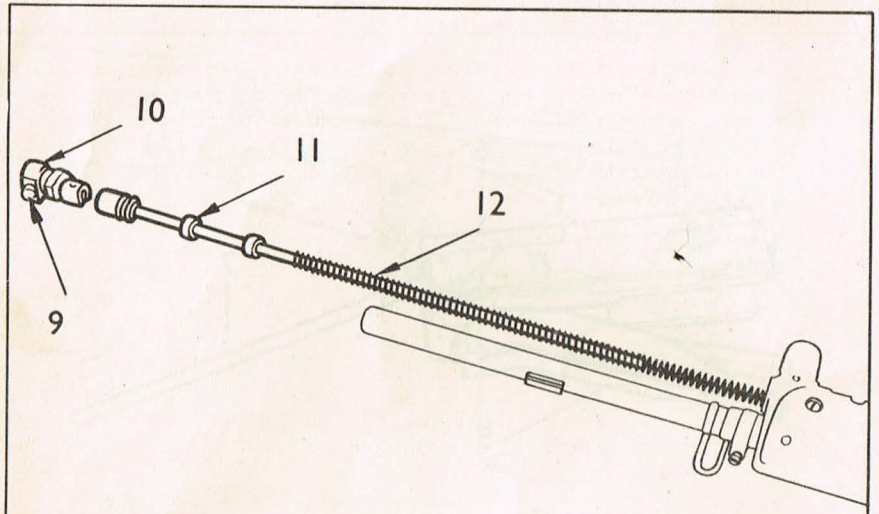
With the muzzle held pointing slightly downwards, hold the barrel group firmly, press the body locking lever 3 to the rear and open the rifle. Pull the body cover, 4 breech block 5 and slide 6 to the rear.

Fig. 13 Slide & Breech Block Group



Hold the slide 6 inverted in the right hand with the slide rod 7 rearwards, pull the block 5 fully to the rear of the slide 6. Put the forefingers of the left hand on the face of the breech block 5, and the thumb on the rear end of the firing pin 8, press together and lift the front end of the breech block 5 outwards until it can be removed from the slide 6.

Fig. 14 To Separate Breech Block & Slide



Press in the detent 9 of the gas plug 10 using the nose of a bullet, turn a quarter turn right or left to remove the plug 10. The piston 11 and spring 12 can then be withdrawn.

Fig. 15 Piston & Spring

12. ASSEMBLY

Put the piston and spring into the cylinder, and assemble the gas plug with the letter A in the required position. Ensure that the detent on the plug is correctly engaged in the shallow recess of the gas block.

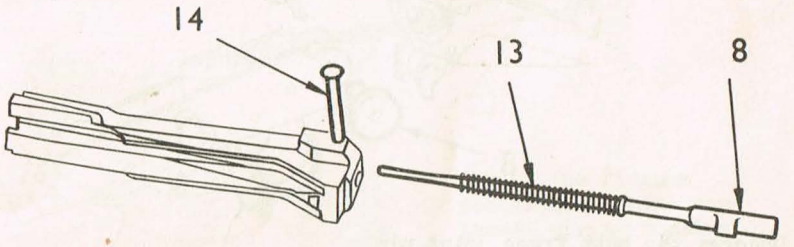
The breech block and slide are assembled in the reverse order. Before sliding into the body, push the breech block fully forward along the slide, so that the locking shoulder is clear of the lower surface.

Slide the body cover into position and, keeping the muzzle pointing slightly downwards, bring up the butt sharply to close the rifle.

Finally test the rifle by cocking and operating the trigger.

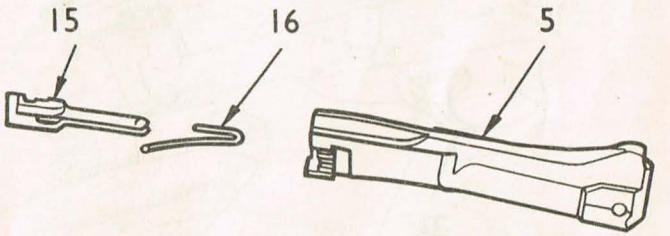
13. ADDITIONAL STRIPPING (figs. 16 to 28)

NOTE: Additional stripping, (magazine excepted), will be done only by a qualified armourer.
The rifle will first be field stripped.



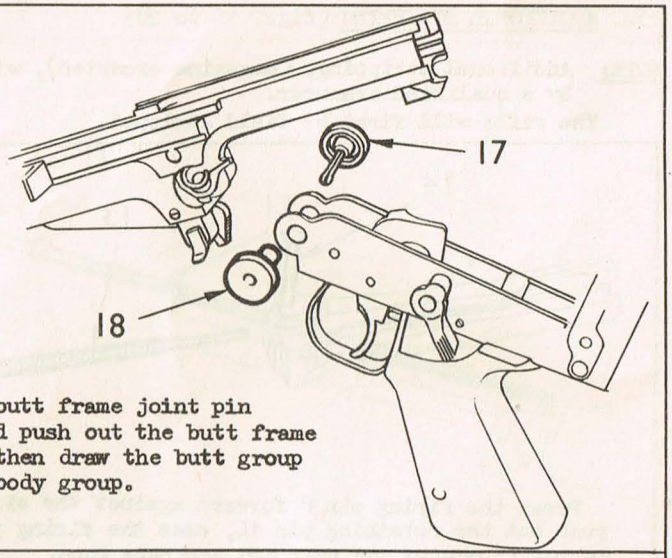
Press the firing pin 8 forward against the spring 13, and push out the retaining pin 14, ease the firing pin 8 and spring 13 out to the rear and separate them.

Fig. 16 Firing Pin



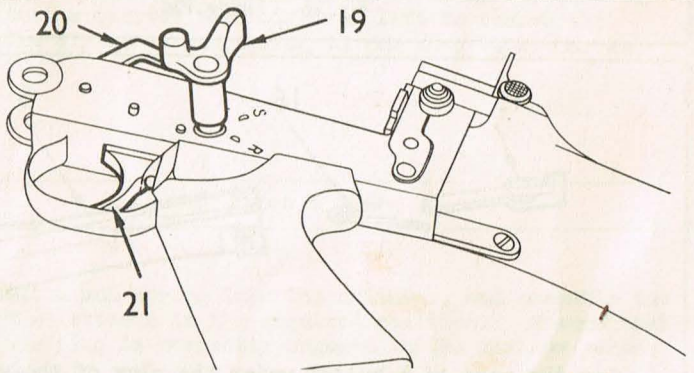
Put the nose of a bullet under the claw of the extractor 15 and push outwards as far as possible, lever up the extractor 15 clear of the block 5. Push on the long arm of the extractor spring 16 to disengage it from the extractor 15.

Fig. 17 Extractor



Unscrew the butt frame joint pin retainer 17 and push out the butt frame joint pin 18, then draw the butt group away from the body group.

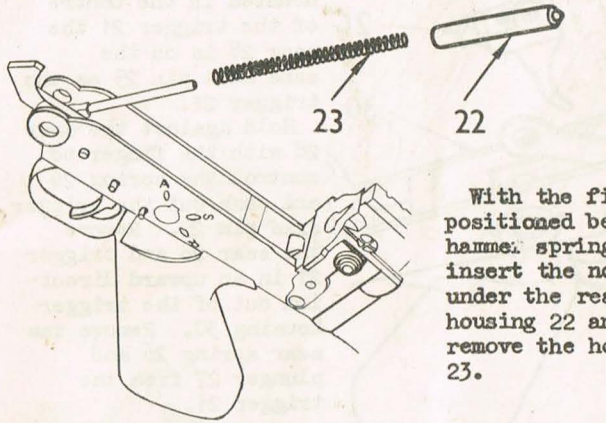
Fig. 18 Stripping the Butt Group



Set the change lever 19 to R and place the fingers or thumb over the hammer 20 to control its forward movement press the trigger 21 and ease the hammer 20 forward. Turn the change lever 19 so that the lever is upright, then pull out.

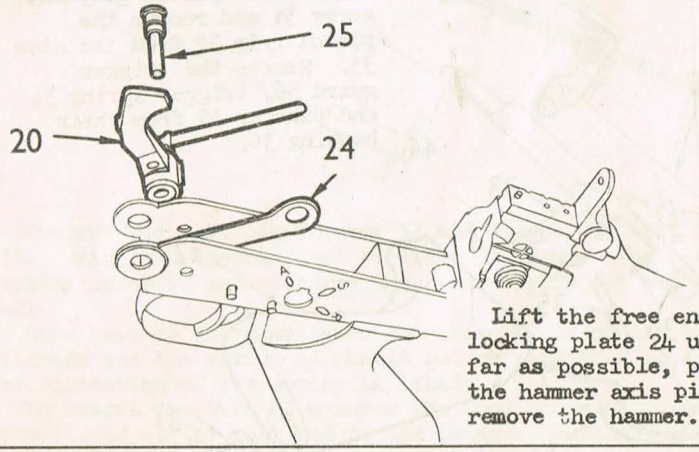
Fig. 19 To Remove Safety Lever

NOTE: The hammer must never be allowed to fly forward when the rifle is open - nor when the butt is detached from the body. Failure to observe this precaution will result in damage to the hammer spring rod.



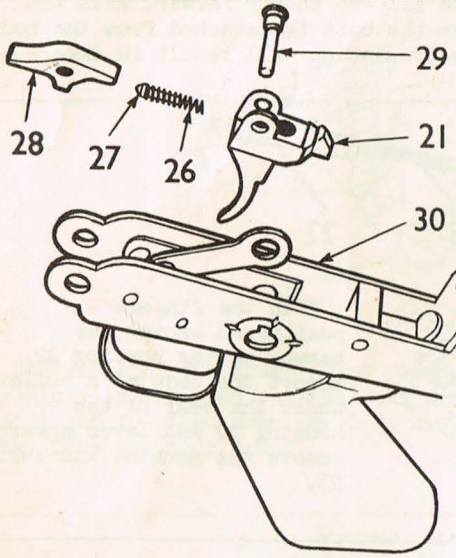
With the fingers positioned behind the hammer spring housing 22, insert the nose of a bullet under the rear of the housing 22 and lever upwards, remove the housing and spring 23.

Fig. 20 Hammer Spring



Lift the free end of the locking plate 24 upwards as far as possible, push out the hammer axis pin 25 and remove the hammer.

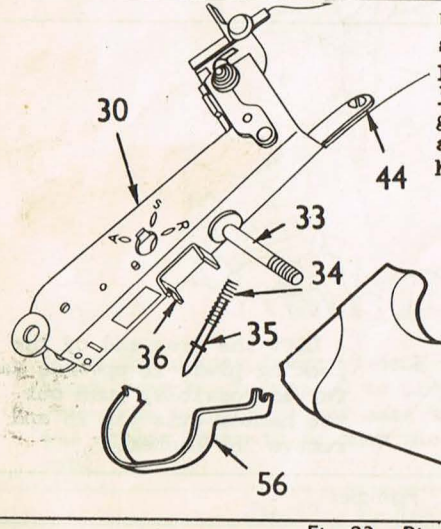
Fig. 21 Hammer



The sear spring 26 and plunger 27 are mounted in the centre of the trigger 21 the sear 28 is on the same axis pin 29 as the trigger 21.

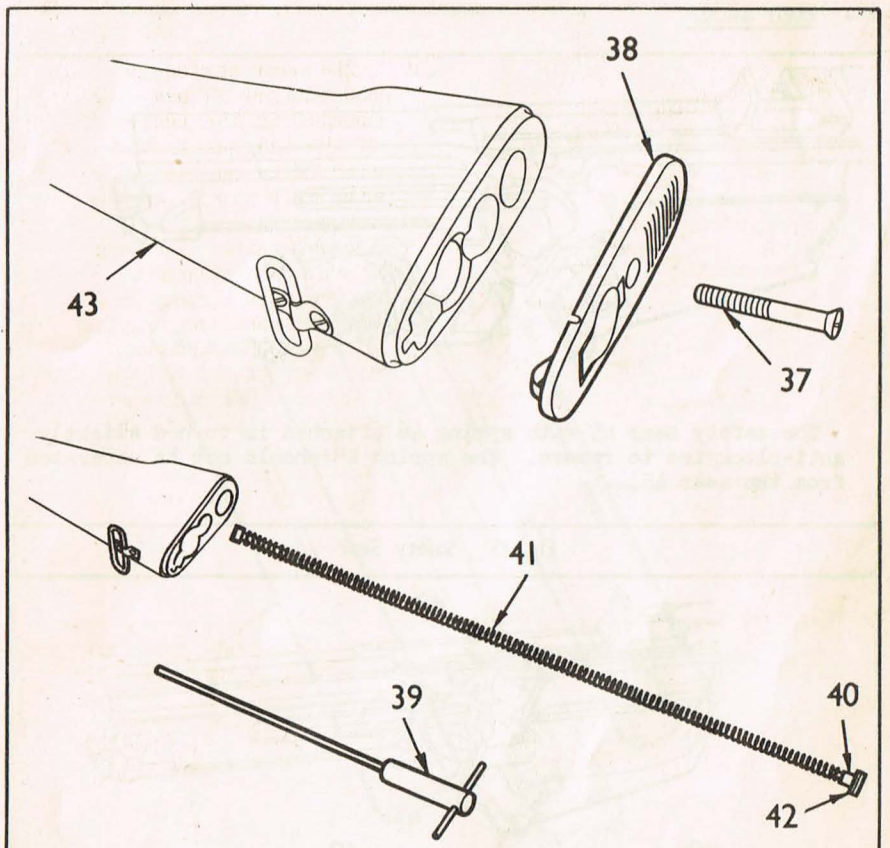
Hold against the sear 28 with the finger to control the spring 26 and push out the trigger axis pin 29. Remove the sear 28 and trigger 21 in an upward direction out of the trigger housing 30. Remove the sear spring 26 and plunger 27 from the trigger 21.

Fig. 22 Trigger & Sear



Unscrew the pistol grip nut screw 31 and remove the pistol grip 32 from the stem 33. Remove the trigger guard 56, trigger spring 34 and plunger 35 from their housing 36,

Fig. 23 Pistol Grip



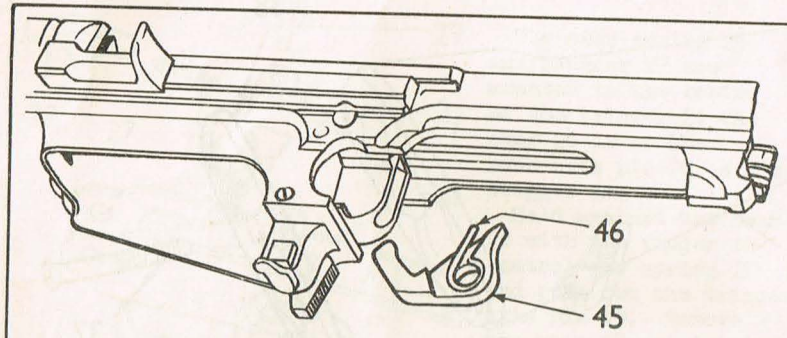
Unscrew the butt plate screw 37 and remove the butt plate 38. Using the special tool provided 39, remove the return spring screw 40 and withdraw the return spring 41 and washer 42.

Care must be exercised when the screw 40 is on its last threads and the spring 41 should not be permitted to fly out or distortion of the spring is likely.

To remove the butt 43 unscrew the wood screw 44 which is positioned at the rear end of the trigger housing 30, and remove the butt 43 from the return spring tube.

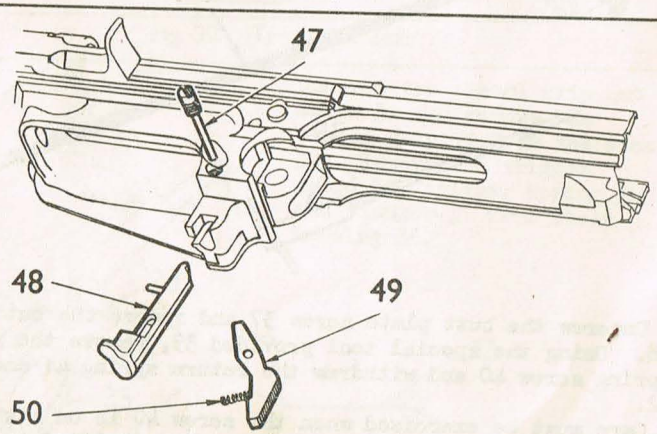
Fig. 24 Butt Group

14. BODY GROUP



The safety sear 45 with spring 46 attached is turned slightly anti-clockwise to remove. The spring 46 should not be separated from the sear 45.

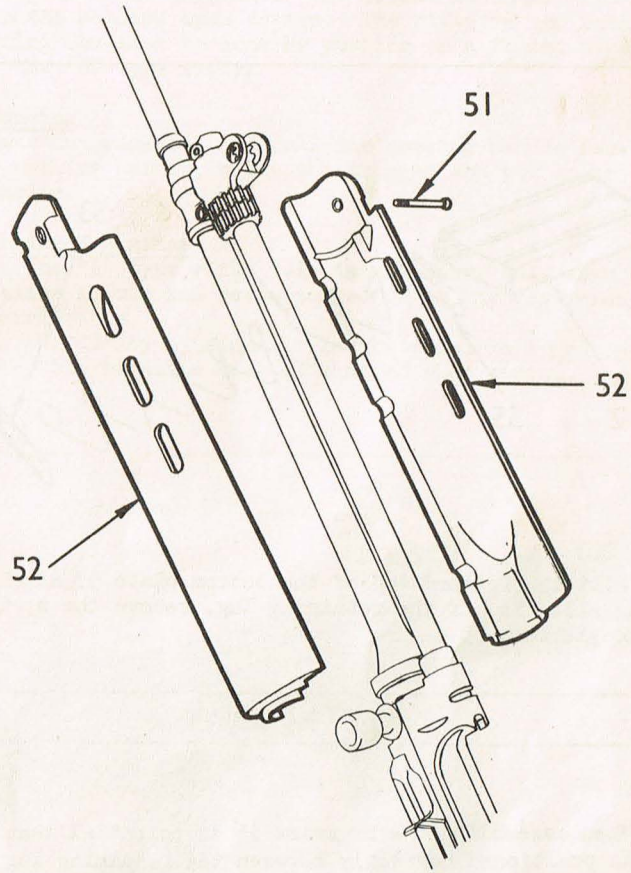
Fig. 25 Safety Sear



Unscrew the magazine catch axis pin 47 and remove the holding open device 48 from its seating. Ease the magazine catch 49 and spring 50 from the body. The spring 50 can now be separated from the catch 49.

Fig. 26 Magazine Catch & Holding Open Device

15. BARREL GROUP

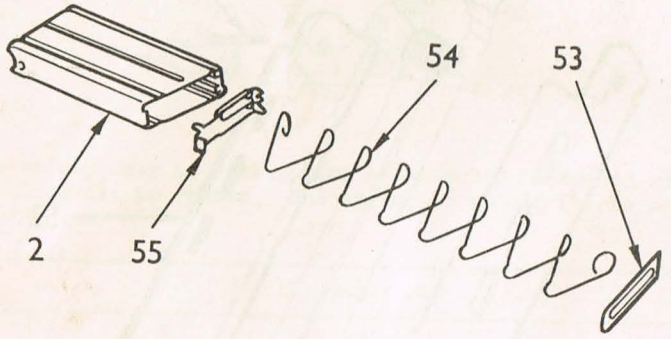


Unscrew the handguard screw 51 at the front end and draw the guards 52 forward.

Fig. 27 Hand Guards

16. MAGAZINE

Magazines will only be stripped when it is necessary for cleaning purposes, excessive stripping will be avoided to reduce wear on the bottom plate.



Lift the forward end of the bottom plate 53 slightly and slide it off the retaining lug, remove the spring 54 and platform 55.

Fig. 28 Magazine

NOTE: When assembling the magazine it is essential that the spring is positioned correctly between the retaining lug and the guide lug on the platform or stoppages will occur. The coil of the spring can be seen through the hole at the top rear of the magazine.

17. THE UNIT SIGHT

Remove the cover guard from the Unit Sight by sliding it rearwards along the retaining grooves of sight bed until it is free.

18. LOADING AND UNLOADING

(a) Loading

The cocking handle is pulled to the rear, the horse shoe clip inserted in the guides (fig.29) and the rounds pushed down firmly into the magazine. The breech block is then freed from the holding open device. The rifle is now ready to fire. Loading can also be done by putting on a filled magazine as for the "B" type rifle.

(b) Unloading

Remove the magazine and pull the cocking handle back, release the cocking handle, press the trigger and put on an empty magazine.

(c) Changing Magazines

With the "A" type rifle this is necessary only when the magazine in use has been damaged or in any way rendered unserviceable.
With the "B" type, since it is not possible to clip load the rifle, the magazine must be changed when empty.

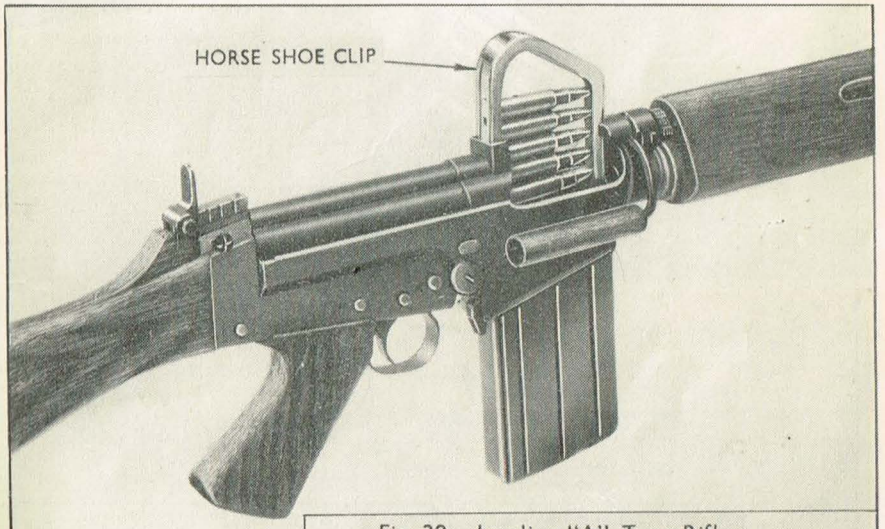


Fig. 29 Loading "A" Type Rifle

(d) Filling Magazines

A magazine filler (fig.30)can be used to fill magazines, it is fitted over the mouth of the magazine and a five round clip inserted into the guides, the rounds are then forced down into the magazine.

If the magazine filler is not available filling by hand is simple and quick.

Fig. 30 Magazine Filler

SECTION IV - OPERATION

19. BACKWARD AND FORWARD ACTION (figs. 31 - 36)

(a) Backward action

When the trigger is pressed, the tail of the trigger is lifted forcing the rear end of the sear upwards, disengaging the nose of the sear from the bent on the hammer. The hammer spring, which is under compression, is now free to force the hammer forward to strike the firing pin.

The firing pin hits the cap of the cartridge case a sharp blow (fig.31) and detonates the cap which ignites the propellant in the case, the resultant gases driving the bullet along the barrel.

As the bullet passes the gas vent in the barrel, (fig.32) a portion of the gases enter the gas vent and go through the gas plug into the front end of the gas cylinder.

Unwanted gas is permitted, by means of the regulator, to pass through the hole at the top of the cylinder, the remaining gases striking the head of the piston.

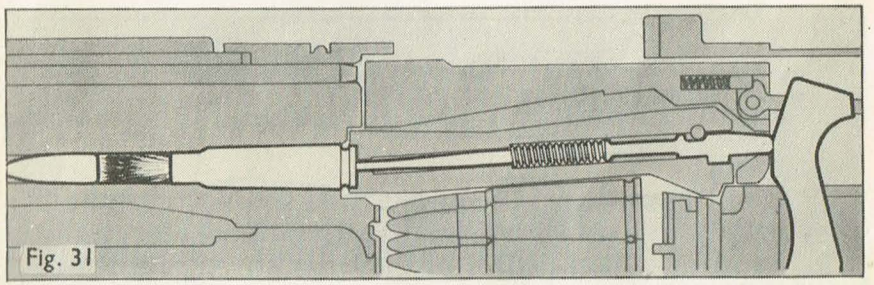


Fig. 31

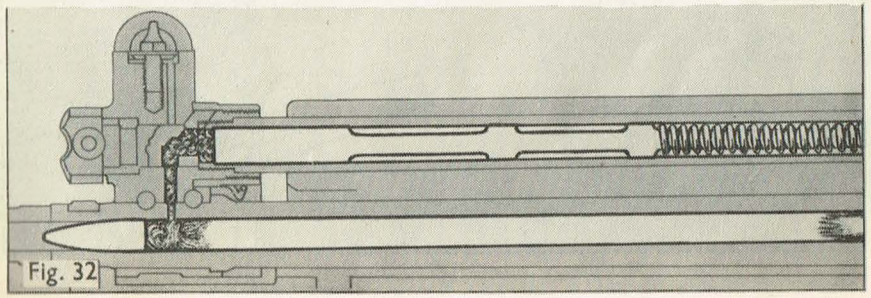


Fig. 32

The piston, moving to the rear, (fig.33) strikes the top front surface of the breech block slide, driving it rearwards. The piston, on being driven to the rear, compresses the piston spring, and when the gases in the cylinder are spent, the spring forces the piston forward. Gases in the cylinder are forced out of the gas escape holes at the forward end of the cylinder.

During the backward movement of the breech block and slide there are a number of actions taking place.

During its initial movement, the slide lifts the rear end of the breech block from the locking recess in the body, and the block can now move rearward with the slide.

The empty case, which is held by the extractor, is drawn from the chamber and at the same time the rear bottom surface of the slide is forcing the hammer back against its spring until the upper bent of the hammer is finally engaged by the safety sear.

The base of the empty case (fig.34) is brought into contact with the top of the ejector, and the case is forced off the face of the breech block and out of the ejector opening.

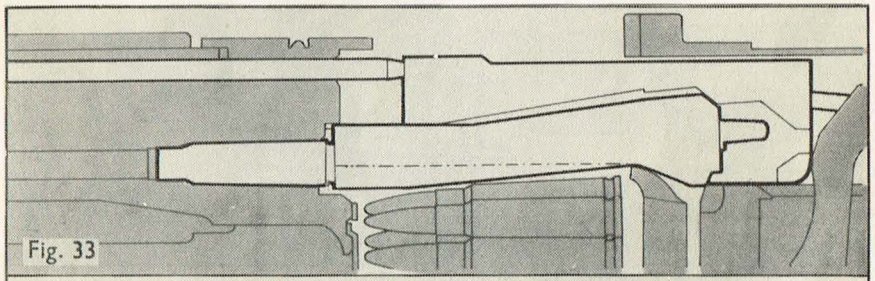


Fig. 33

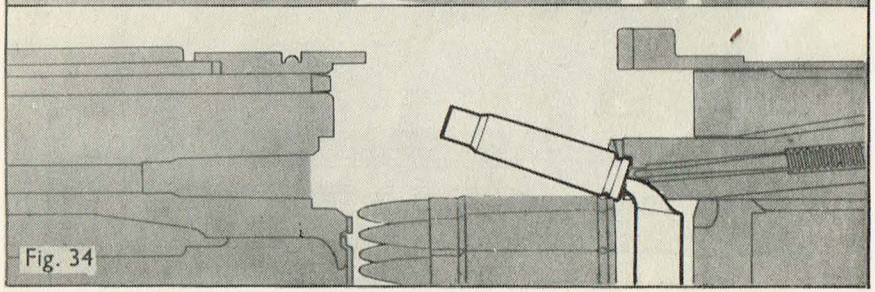


Fig. 34

During the backward movement the slide rod, (fig.35) which is engaged with the end of the return spring, has been compressing the spring in the butt, and movement of the working parts is finally brought to a stop by the rear end of the slide coming into contact with the butt frame.

When the breech block has moved far enough to the rear to clear the magazine (fig.36), the magazine spring forces upwards and positions the next round ready for loading.

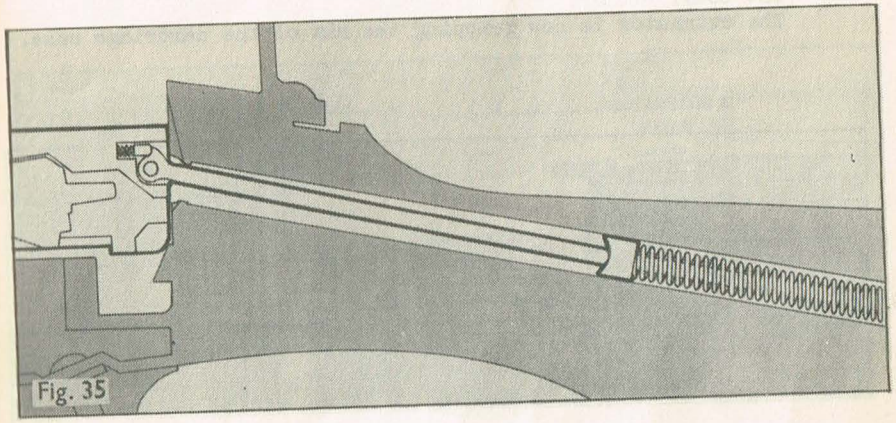


Fig. 35

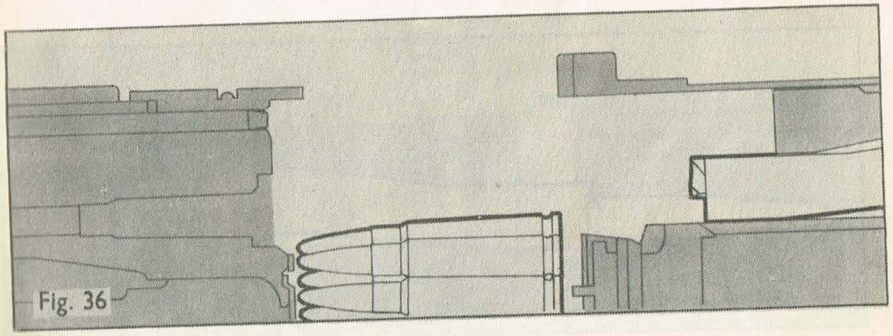


Fig. 36

(b) Forward Action

The breech block and slide, having been pushed backward by the gases are now pushed forward by the return spring.
During the forward movement (fig.37) the lower front face of the breech block engages the top of the base of the round in the magazine and pushes it forward into the chamber (fig.38).
The hammer rotating forward is caught and held by the safety sear on the upper bent of the hammer. The breech block comes into contact with the breech and the rear of the block is forced down (fig.39) by the inclined surfaces in the slide, and the locking shoulder engages with the locking recess in the body.
The extractor is now gripping the rim of the cartridge case.

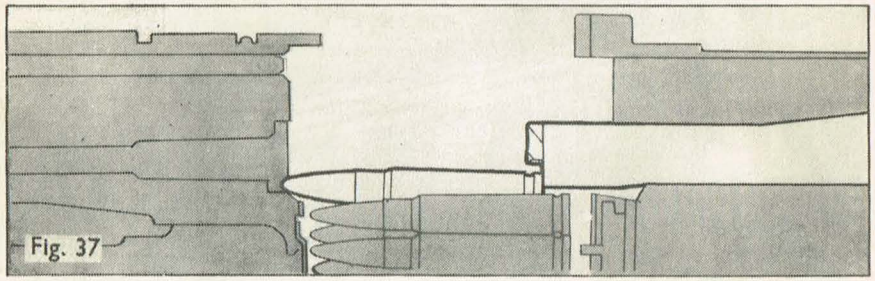


Fig. 37

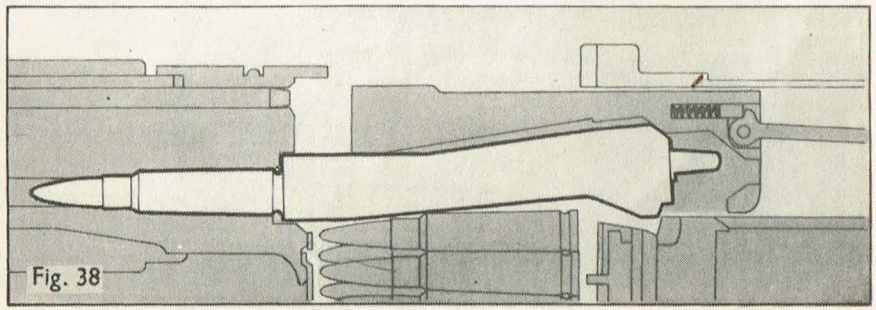


Fig. 38

The slide continues its forward movement and immediately before reaching its limit of travel a projection on the rear bottom surface of the slide comes into contact with the upper arm of the safety sear, and trips it forward releasing the nose of the safety sear from the upper bent of the hammer. The hammer rotates forward until the lower bent is engaged by the trigger sear.
The firing cycle will be repeated each time the trigger is pressed.
The trigger must be fully released before a second shot can be fired.

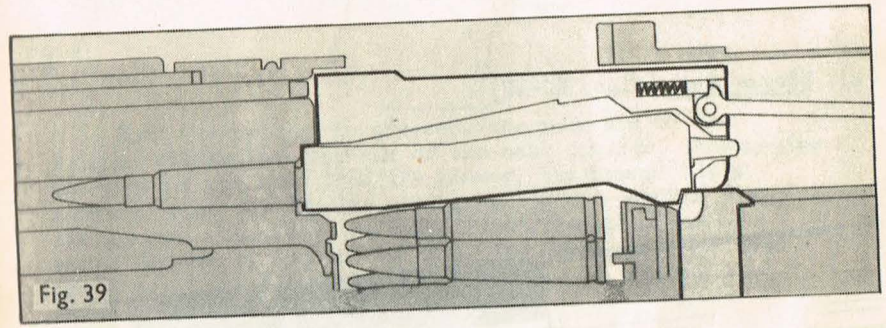


Fig. 39

20. TRIGGER MECHANISM

INTRODUCTION

Positioned directly above the rear arm of the trigger is the change lever spindle. This is formed with a flat surface which permits upward movement of the rear arm of the trigger.

It is this movement which determines the position of the sear in relation to the hammer bent.

A second surface, formed by the circumference of the spindle ensures applied safety.

(a) **Single Shot** (figs. 40-47)

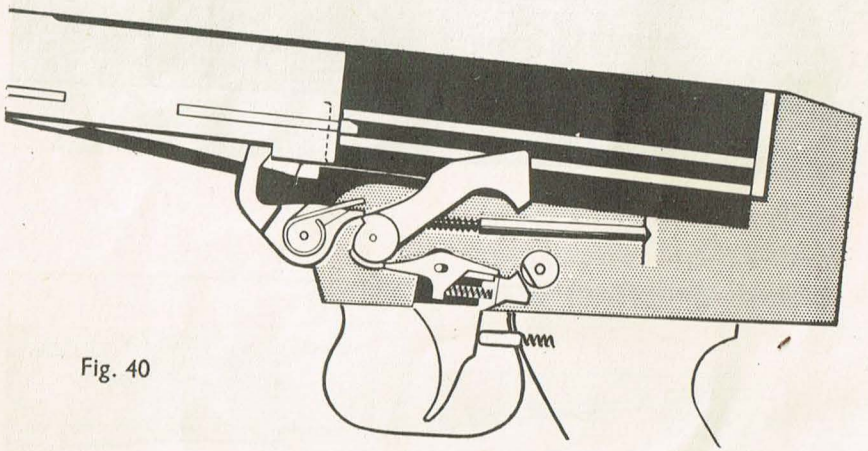


Fig. 40

When the change lever is put to R the flat surface is immediately above the rear arm of the trigger. The hammer is held by the nose of the sear engaging in the bent. The rifle is ready to fire.

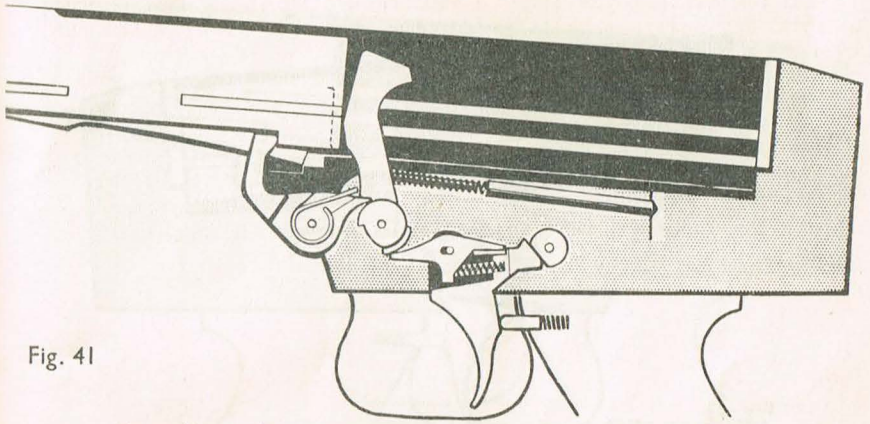


Fig. 41

When the trigger is pressed, the rear arm of the trigger pivots the rear arm of the sear upwards, disengaging the nose of the sear from the hammer, the hammer flies forward under the impulse of the spring and strikes the firing pin. The sear, on being freed from the bent is moved forward by its spring until the rear arm drops into the step of the trigger. The nose bears up against the hammer spindle.

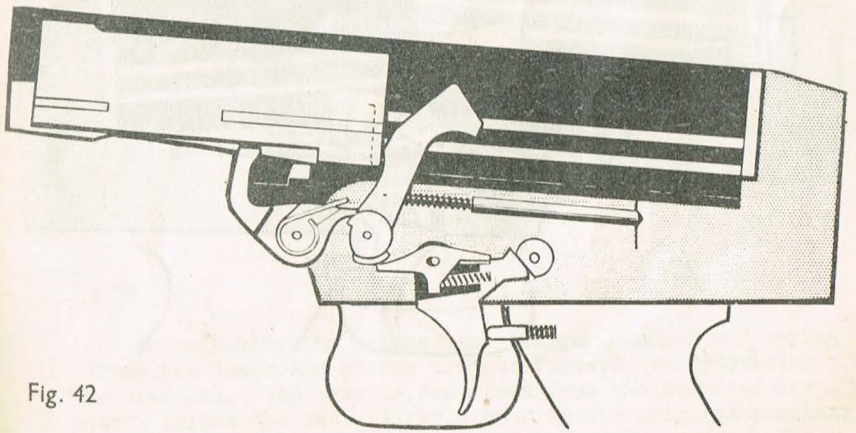


Fig. 42

During the backward movement the rear bottom surface of the breech block slide rotates the hammer to the rear and downwards.

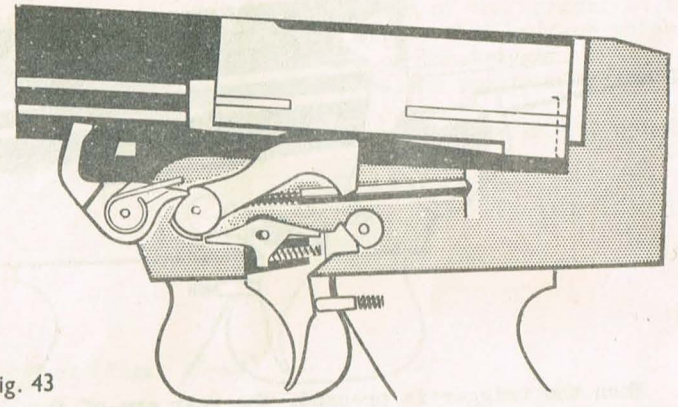


Fig. 43

When the breech block is at the rear, the hammer is held down by the underside of the block. The sear is now positioned behind the bent but not in contact.

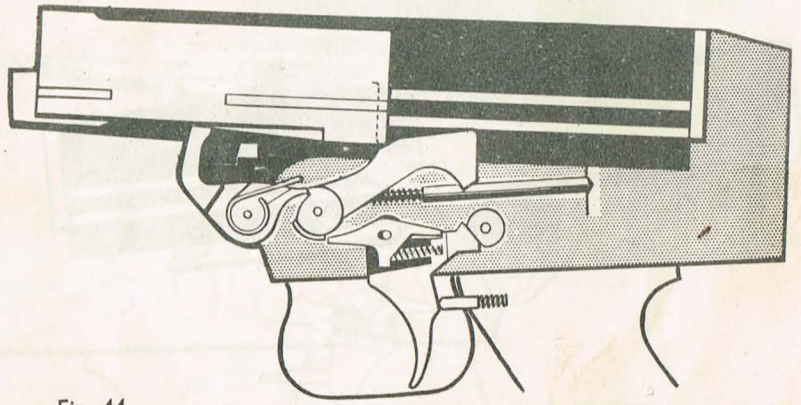


Fig. 44

As the breech block moves forward the hammer follows until the upper bent contacts the safety sear.

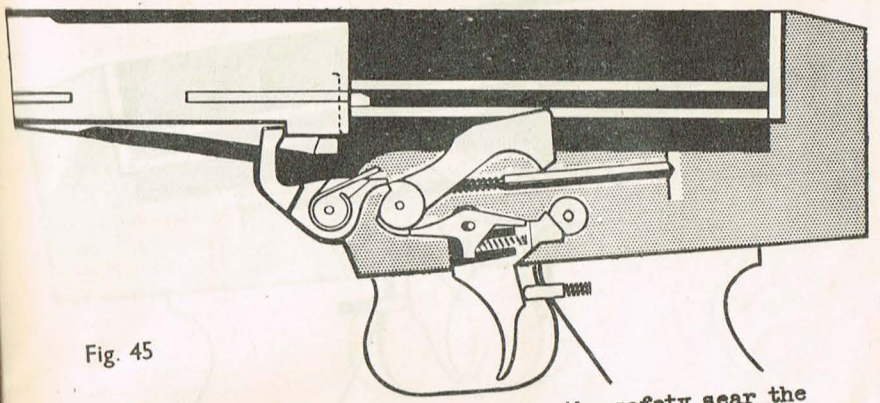


Fig. 45

As the breech block slide trips the safety sear the hammer again moves forward but is caught by the sear in the lower bent.

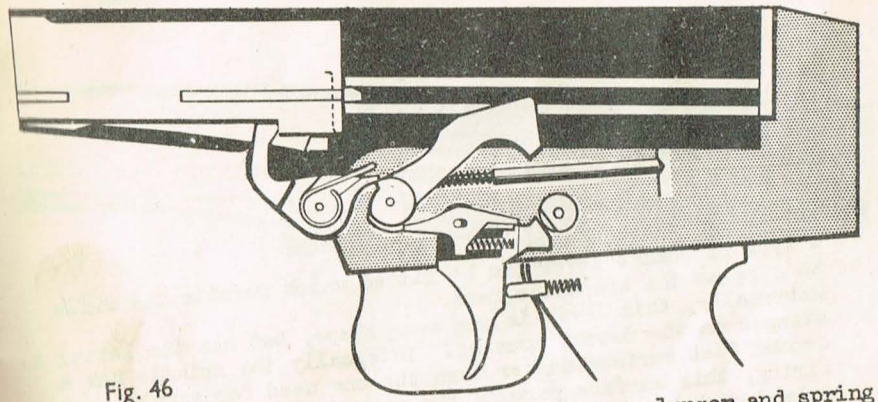


Fig. 46

On releasing the trigger, the trigger plunger and spring forces the lower arm of the trigger forward, thus lowering the rear arm. The sear is now freed from the step and the hammer forces the sear slightly back to its original position.

NOTE: The trigger must be fully released before the next shot can be fired.

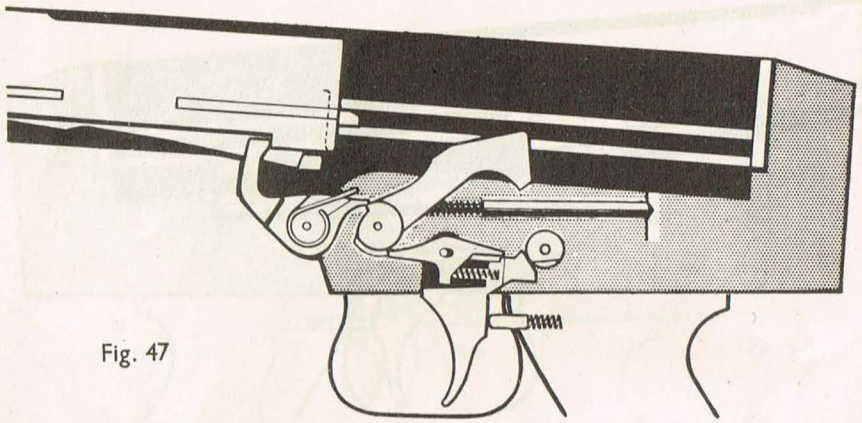


Fig. 47

SAFE

When the change lever is put to safe the rounded part of the spindle is directly over the rear arm of the trigger, and prevents it from rising to engage with the tail of the sear.

(b) Automatic (figs. 48-53)

A type of change lever can be fitted which permits the rifle to fire at the automatic rate.

Externally, this lever is the same shape, but has the letter A stamped on the detent housing. Internally the spindle has a second flat surface deeper than the one used for single shot firing, this surface permits the rear arm of the trigger to be raised much higher, and in consequence the nose of the sear to be well clear of the hammer spindle.

The sequence of actions which follow the pressing of the trigger is the same as in single shot, so also is the sequence when the round has been fired except for the behaviour of the sear.

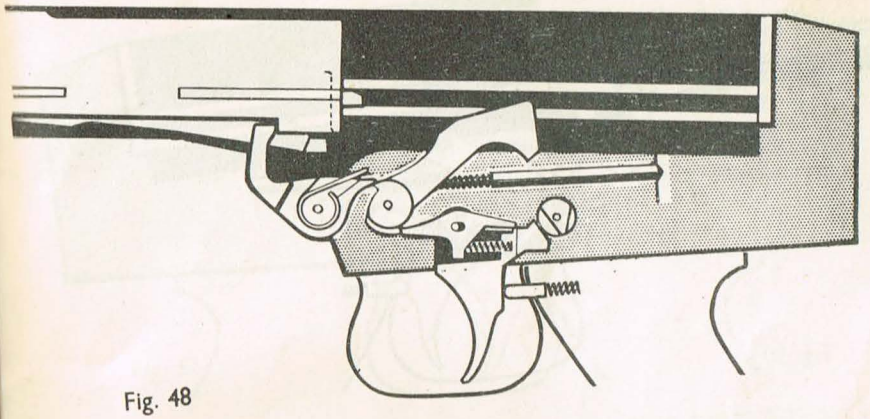


Fig. 48

When the safety lever is put to A, the deep flat surface of the spindle is over the rear arm of the trigger, the hammer is held by the sear engaging in the bent. The rifle is ready to fire.

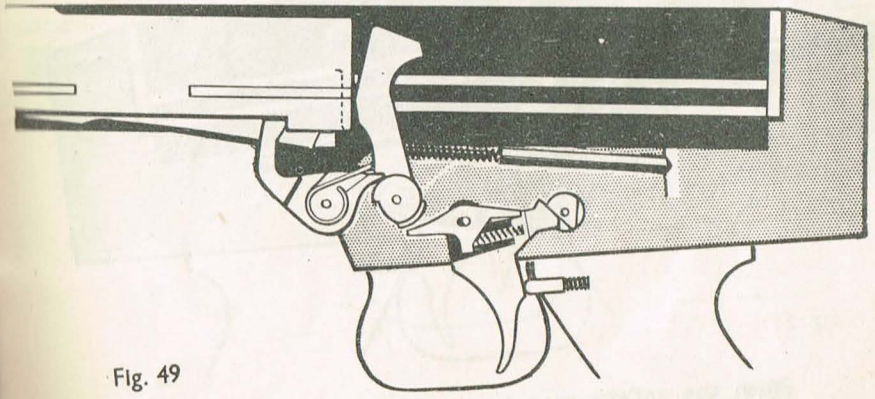


Fig. 49

On the trigger being pressed the hammer is released and strikes the firing pin. It will be seen that the nose of the sear is well clear of the safety lever spindle.

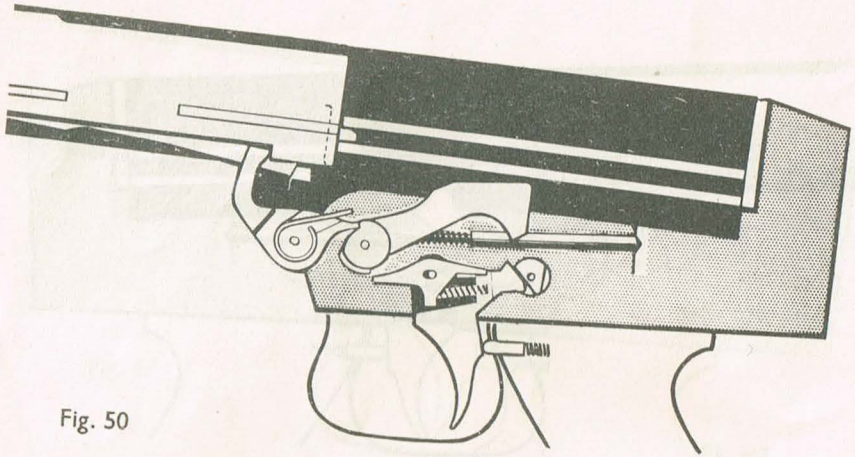


Fig. 50

The hammer is held on the safety sear until tripped, the sear in no way contacting the hammer bent.

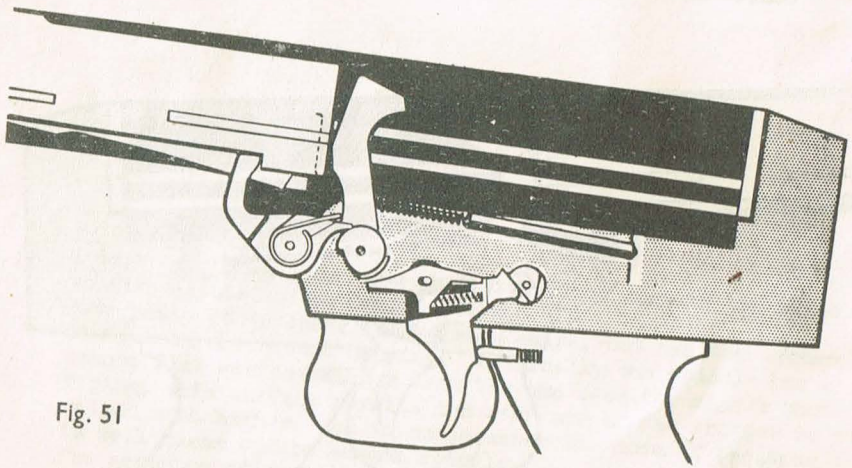


Fig. 51

When the safety sear is tripped the hammer is released and goes forward to strike the firing pin. The rifle will continue to fire at the automatic rate until the trigger is released or the magazine is emptied.

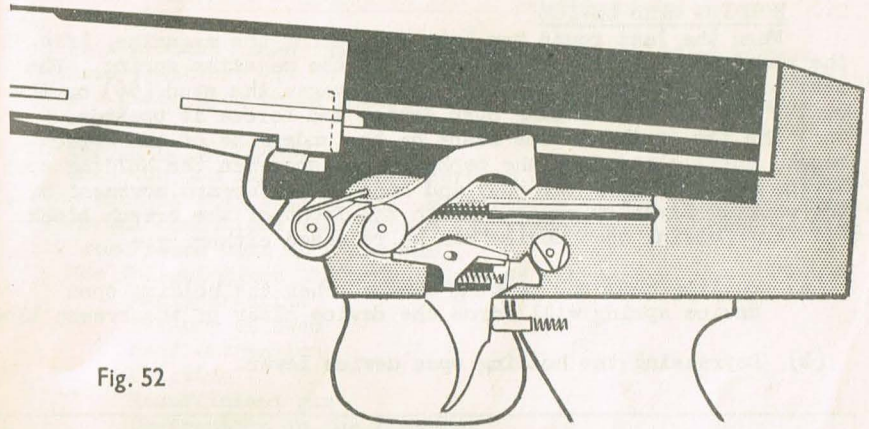


Fig. 52

When the trigger is released the sear rises and engages the hammer bent.

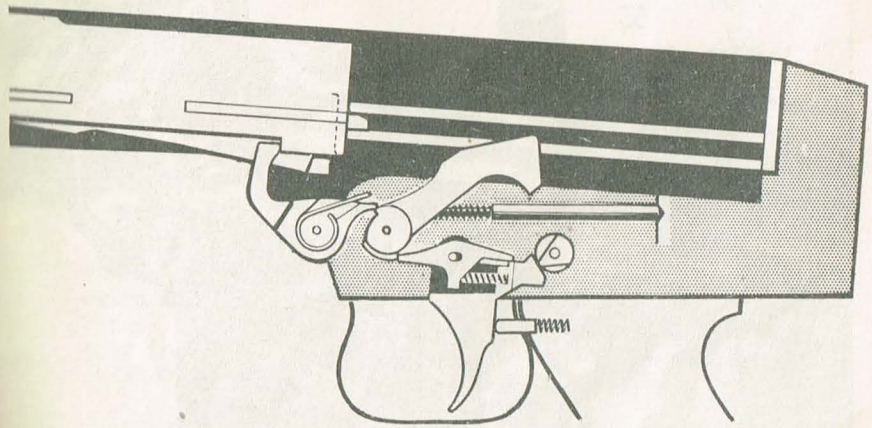


Fig. 53

SAFE

When the change lever is put at safe, the rounded portion between the two surfaces prevent the trigger being operated as in single shot.

21. HOLDING OPEN DEVICE

When the last round has been fed out of the magazine, (fig.54) the platform rises under the action of the magazine spring. The rear projection on the platform (55) engages the stud (56) on the pillar (57) of the holding open device and forces it upwards.

The top of the device bears on the underside of the breech block, until cleared by the backward action, when the holding open device moves up into the body and checks the forward movement of the working parts, by engaging with the front of the breech block.

The holding open device can be released either by:-

(a) Pulling back the cocking handle, when the holding open device spring will force the device clear of the breech block

(b) Depressing the holding open device lever.

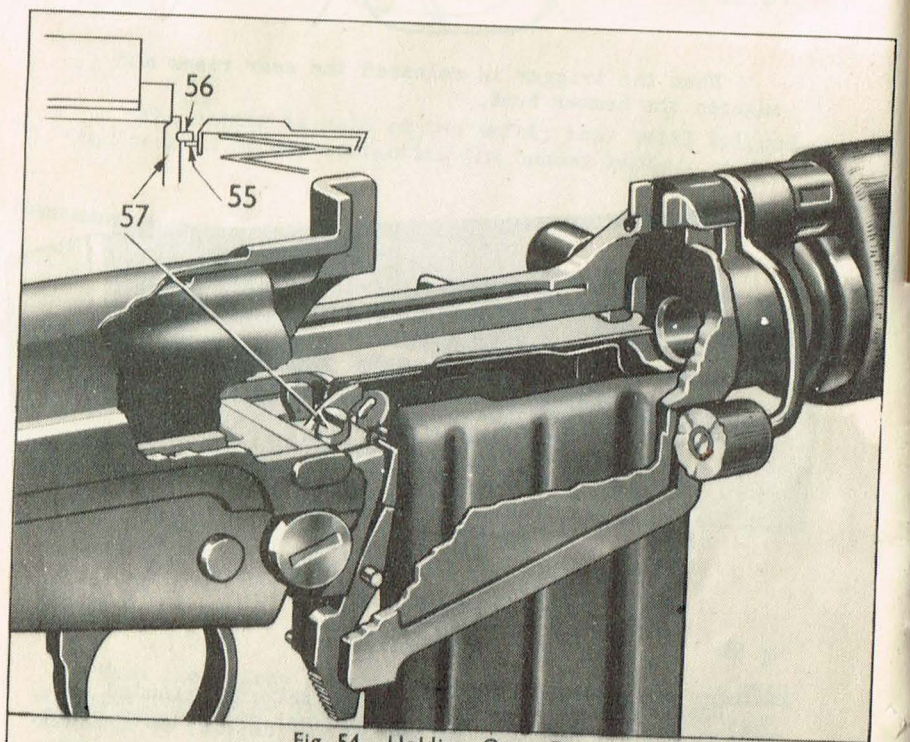


Fig. 54 Holding Open Device etc.

SECTION V - STOPPAGES AND IMMEDIATE ACTION

This section summarizes the mechanical aspect of stoppages and their remedies. It is not intended as an instructional pamphlet, but as a guide upon which instructional pamphlets may be based.

22. CAUSES OF STOPPAGES

Although the list mentioned here is somewhat lengthy, it should not be thought they will occur. Most stoppages are caused by adverse or abnormal conditions and correct maintenance will do much to keep their occurrence down to a minimum.

The following are the main causes of stoppages:-

Empty magazine
Failure to feed
Hard extraction
Friction
Insufficient gas
Obstruction in the chamber
Broken or worn part

(a) Empty Magazine
This will occur automatically, the breech block remaining at the rear.

(b) Failure to feed
In this case the breech block does not go fully forward. This stoppage may be due to incorrect handling when the cocking handle is not released smartly. It may also be due to a dirty or damaged round, damaged magazine or some obstruction fouling the face of the breech block slide or rear face of the breech.

(c) Hard extraction
The empty case may be in, or partially in, the chamber. This stoppage is caused by a dirty round, and because of the extra work, the gases are not able to perform correctly. Manual operation will cause the case to be extracted and once the dirty round is cleared the rifle should give no further trouble.

(d) Friction
This stoppage may result from a number of causes such as, dirt, fouling in the cylinder and on the piston, or lack of lubrication on the recoiling parts.
The breech block may be anywhere along the body and manual operation may remedy the stoppage temporarily but only cleaning will completely cure it.

(e) Insufficient Gas
This stoppage should only occur when either conditions are adverse or abnormal, or when the user has not fired the rifle before and in consequence does not know the correct setting required.
Adjustment of the regulator is easily and quickly done as explained in Section VI para.27.

(f) Obstruction in the chamber
This is caused by a separated case, the forward end of which remains in the chamber. The next round to be fed will go partially into the chamber and the breech block will be stopped about half way forward.

(g) Broken or worn parts
In investigating the cause of such a stoppage, looking into the body and chamber should disclose to the firer which part is at fault.
A round in the chamber with the cap struck indicates a broken extractor or extractor spring.
An unfired round drawn out of the chamber on cocking the rifle indicates a broken firing pin.
It is the responsibility of the armourer to change broken parts.

23. REMEDY IMMEDIATE ACTION

Most of the stoppages which may occur can be remedied by the user applying an immediate action. There are two things he must do if the rifle fails to fire:-

1. Grasp the cocking handle
2. Look into chamber and body

and from what he sees, apply his immediate action as follows:-

(a) If the working parts are to the rear

(i) Clip load
(ii) Pull back the cocking handle
(iii) Continue firing

with the "B" type rifle, change the magazines.

(b) If the working parts are not fully forward

(i) Use the auxiliary cocking catch and pull back to the stop
(ii) Release the cocking handle
(iii) Continue firing

(c) If the working parts are fully forward

(i) Pull the working parts fully to the rear
(ii) Release the cocking handle
(iii) Continue firing

24. REMEDY STOPPAGES

If after applying immediate action, (except that for an empty magazine) the rifle fires one or two rounds and again stops, unload; adjust for more gas; load and continue firing.

If the rifle fires one or two rounds and again stops, repeat adjustment of regulator until correct functioning is obtained.

If after immediate action the rifle will not fire:-

(a) Hold the cocking handle back

(b) Hook up the holding open device

(c) Remove the magazine

(d) Clear any round or empty case from rifle

(e) Put in a fresh magazine

(f) Continue firing

SECTION VI - CARE, CLEANING AND MAINTENANCE

25. CLEANING MATERIALS

The pullthrough is made up of a metal weight and a cord. The weight is pointed and can be used to remove hard fouling from the gas plug.

The cord has two loops situated about two thirds along its length, one for use with the wire gauze, the other for flannelette. A third loop at the end of the cord is used to assist removal of the cord should it jam in barrel or cylinder.

The oil bottle is the normal type with the spoon. Under normal conditions the bottle will be kept filled with oil ~~OC 600~~ OX 52 (Oil 'A').

Pullthrough and oil bottle are stored in the butt. The oil bottle will be put in screw top first, followed by the cord which will be coiled tightly. The butt trap retains these articles in position.

Normal service flannelette is used for cleaning the barrel and cylinder.

Rags or cotton waste will be used to clean the remaining parts of the rifle.

NO ABRASIVE MATERIAL OF ANY KIND WILL BE USED TO CLEAN THE RIFLE.

26. BEFORE FIRING

The rifle will be field stripped and all parts exposed will be dry cleaned. Before assembling, each part will be examined for wear and burrs.

Worn parts must be exchanged and burrs will be removed by the armourer.

Parts will be oiled or left dry as under:-

OILED	LEFT DRY
	Barrel
	Gas Cylinder
	Gas Plug
Piston spring	Piston, especially the forward end and between the rings
Inside breech block slide	Upper surface
Guide ribs.	
Breech block	
Locking shoulder recess	Face of block
Guide grooves	
Holding open device	
Magazine catch	
	Magazine platform
	Sights

27. GAS REGULATOR

The gas regulator will be adjusted for correct functioning.

Screw the gas regulator to the right until it is fully forward, then unscrew one and a half turns.

The outer surface of the regulator is marked to indicate its position, but if it is not possible to see these marks, the clicking device on the regulator is the only means of determining the exact position of the regulator.

There are fourteen clicks to one complete turn, so twenty one are needed to put on the first adjustment.

This adjustment may vary with different rifles, and the user must learn from experience the correct setting under normal circumstances.

Magazines, ammunition and clips should be cleaned and examined for damage.

28. DURING FIRING

It may be necessary during firing to readjust the gas regulator. The rifle will be unloaded and the regulator turned to correct the balance.

If the rifle has been giving stoppages, screw the regulator forward by a minimum of two clicks at a time until correct functioning is obtained.

If there is excessive backward hammering on the shoulder of the firer, unscrew the regulator by a minimum of two clicks at a time until the balance is adjusted correctly.

Every opportunity should be taken to clean and re-oil the rifle during non-firing periods, special attention being given to the gas affected parts.

To avoid overheating the round in the chamber, when possible during periods of rapid fire, the breech should be opened and the breech block held back on the holding open device.

29. AFTER FIRING

Field strip the rifle, and, using the pullthrough and slightly oiled flannelette clean out the barrel and cylinder. Dry and if clean, re-oil.

Clean remainder of rifle with special attention to the gas affected parts. The barrel and cylinder will be cleaned carefully for two or three days after firing.

Magazines will be cleaned and oiled.

If the bayonet has been used, clean the handle and prongs carefully and oil slightly.

30. ABNORMAL WEATHER CONDITIONS

In cold climates the rifle should be carefully dried. The gas regulator may have to be adjusted to give more gas.

It will assist in the initial stages of firing, if the working parts are hand operated sharply backwards and forwards a few times before loading takes place.

In hot dusty climates the rifle should be carefully dried.

SECTION VII - ZEROING

NOTE: Figures quoted in this section are based on the metric threads of the screws, and have been arrived at by trials carried out using one rifle only. They are therefore approximate and may vary when the threads have been converted to unified threads.

31. The rifle is zeroed before issue to the user, but it may require some attention to correct for elevation and direction. Zeroing is carried out by a qualified armourer, who will be in possession of the special box-type spanner for moving the foresight, and the normal type spanner for moving the "B" type rifle sight.

(a) Correction for Elevation

Errors in elevation are corrected by screwing the foresight up or down. If it is screwed up, the M.P.I. will be moved down and vice-versa.

A spring detent locates and holds the foresight in position, and the outer circumference of the foresight is serrated into twenty equal divisions, the two form a clicking device, which will assist the armourer when calculating movement of the M.P.I.

One division (or click) is equal to 1/10 inch at 25 yards. or 4/10 inch at 100 yards.

(b) Correction for Direction

Errors in direction are corrected by moving the backsight to the right or left. If the M.P.I. is to the RIGHT the screw on the left of the sight is loosened, and the screw on the right is screwed up thus moving the sight along its dove tail.

When the correction has been made and before shooting commences, tighten both screws.

If the M.P.I. is to the left, the sight is moved to the right.

One complete turn of the screw is equal to 1.1/8 inch at 25 yards and 4.1/2 inches at 100 yards.

32. "B" TYPE RIFLE

Due to its short sight base, zeroing with the unit sight requires more skill, because the smallest movement in the bracket will alter the M.P.I. appreciably.

There are no zero marks on the bracket and any movement made must be carefully judged. Zeroing of this sight must be by trial and error.

(a) Correction for Elevation

The cover must first be removed and the rear lock screw loosened. The nut is then turned right or left as required to raise or lower the bracket and the lock screw tightened.

NOTE: Care must be used so that the Battle sight is positioned correctly before locking the bracket.

(b) Correction for Direction

Unscrew the lock screw on the top front surface of the bracket, and turn the eccentric nut right or left to move the front of the bracket as required, then tighten the lock screw.

33. BATTLE SIGHT

The foresight can be zeroed for elevation by fitting washers under the collar of the sight.

Direction is obtained by unlocking the rear lock screw and by moving the sight right or left as required.

34. ZEROING DATA

TYPE OF RIFLE	RANGE YARDS	POSITION OF M.P.I.	ELEVATION 1 COMPLETE TURN OF SCREW	DIRECTION 1 COMPLETE TURN OF SCREW	PERMISSIBLE VARIATION
A	25	2/3" DOWN	2"	1.1/8"	1/2"
	100	1.1/2" UP	8"	4.1/2"	2"
B	25	3/4" DOWN	9"	8"	1/2"
	100	2" UP	36"	32"	2"

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