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I. GENERAL CHARACTERISTICS

- 1. Method of functioning.** — The weapon is gas-operated. Gas intake is controlled by means of a regulator, which ensures regular and smooth functioning, without excessive recoil. The breech block is mechanically locked before firing can take place; in addition, unlocking cannot take place until the bullet has left the barrel.

As the breech block must necessarily be in the forward position when firing takes place, accuracy is not affected by the forward movement of a fairly heavy mass, which is one of the draw-backs of many automatic weapons.

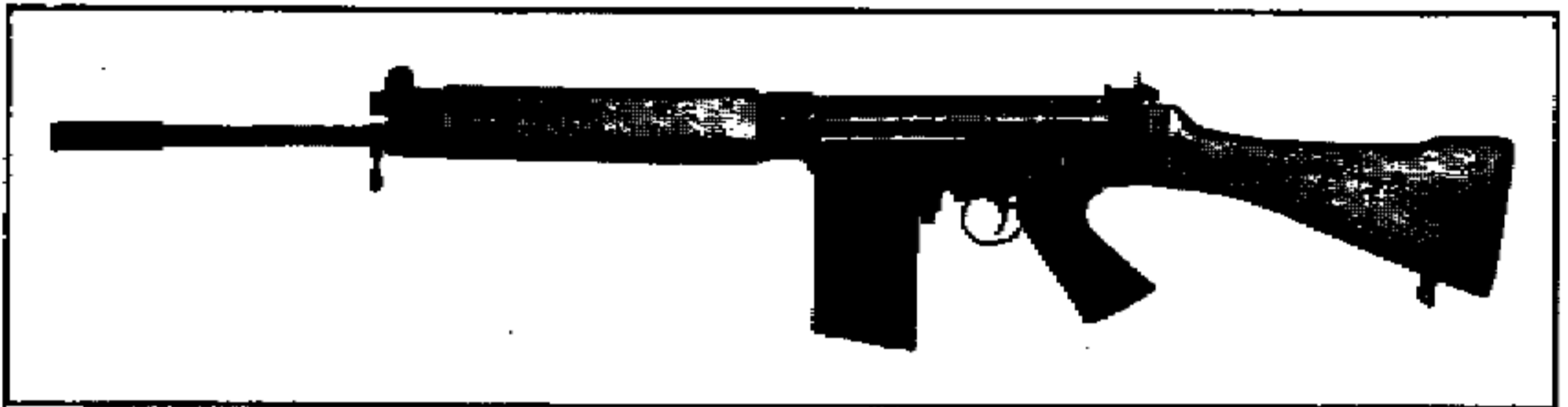


Fig. 1

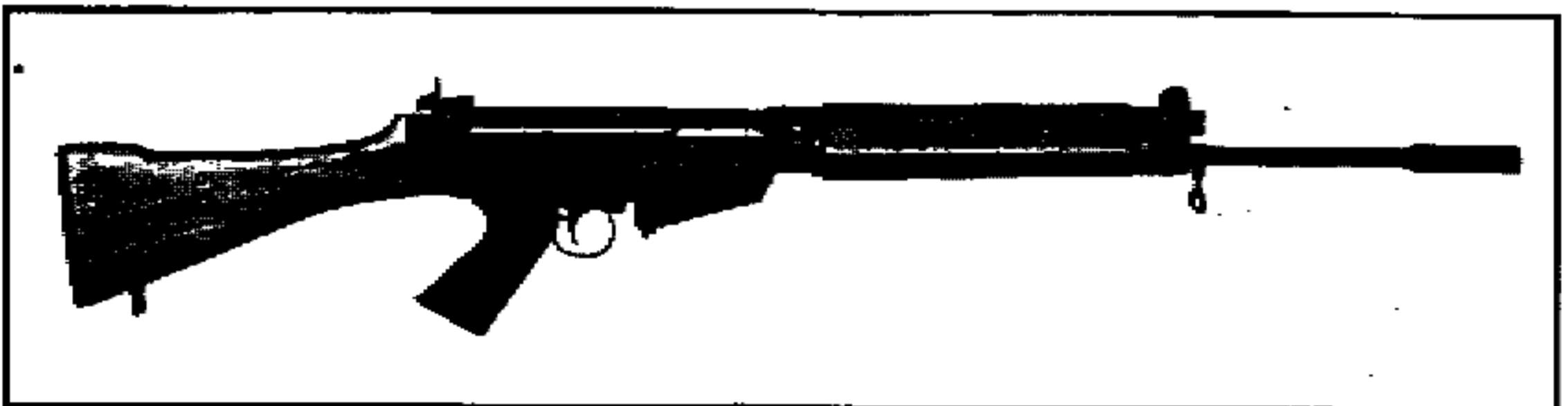


Fig. 2

After each shot, the mechanism extracts the spent case and feeds another round into the chamber; this operation continues so long as there are any cartridges in the magazine. When the magazine is empty, the breech block is held to the rear, which lets the firer know that he must recharge.

2. Firing. — The rifle can be fired in two ways, either semi or full automatic, by manipulating the change lever positioned on the lefthand side of the trigger frame.

3. Stability. — By placing the gas cylinder above the barrel and careful attention to design, the centre of gravity of the weapon has been placed in line with the barrel axis. The tendency of a weapon to jerk upwards on recoil has thus been eliminated in this rifle, as compared with most existing types. This stability enables the firer to keep his sights trained on the target without difficulty. On the other hand, this design avoids the danger inherent in rectilinear weapons, with raised sights, which force the soldier taking cover to disclose his position when he fires.

4. Method of feed. — Feed is from a 20-round magazine, housed beneath the receiver. Arrangement of cartridges in the magazine is quincuncial.

5. Sights. — These consist of:

- An aperture backsight, graduated up to 600 metres (or yards), fixed to the rear part of the trigger frame,
- A well protected foresight, mounted at the forward end of the gas cylinder.

The line of sight is very low, which allows the soldier to keep under cover when firing.

6. Gas regulator. — This is designed on the exhaust principle, i.e. the regulator only allows sufficient gas to ensure correct functioning to penetrate into the gas cylinder; surplus gas is vented outside the weapon. This system prevents undue wear on the mechanism and keeps fouling to a minimum.

7. Protection from the elements. — The weapon itself is completely weatherproof, without any additional protection, and this is the best safeguard against grit, sand and mud.

8. Handiness. — The reduced weight of this rifle and its length make it a very handy weapon. Its weight is in proportion to the power of the cartridge and it is thus a very comfortable weapon to fire. The F. N. 7.62 mm rifle is designed so that the operations of cocking, feed, putting the weapon at safe are done with the left hand, leaving the right hand on the pistol grip. In addition, the rifle has a carrying handle, which can be folded down when not in use. This handle is positioned at the centre of gravity and is a handy method of carrying the weapon when advancing in the field.

9. Stripping and assembly. — Stripping and assembly for normal cleaning and maintenance can be done without using tools. For the usual cleaning, it is sufficient to take out the magazine, gas plug and piston and the breech block assembly, after removing the top cover (fig. 3). The breech block assembly and the cover can be removed very easily. The weapon opens like a shot-gun, i.e. the butt is hinged to the body and the rifle swings open to give access to the mechanism. The return springs, encased in the butt, do not require maintenance and should never be touched by the user.

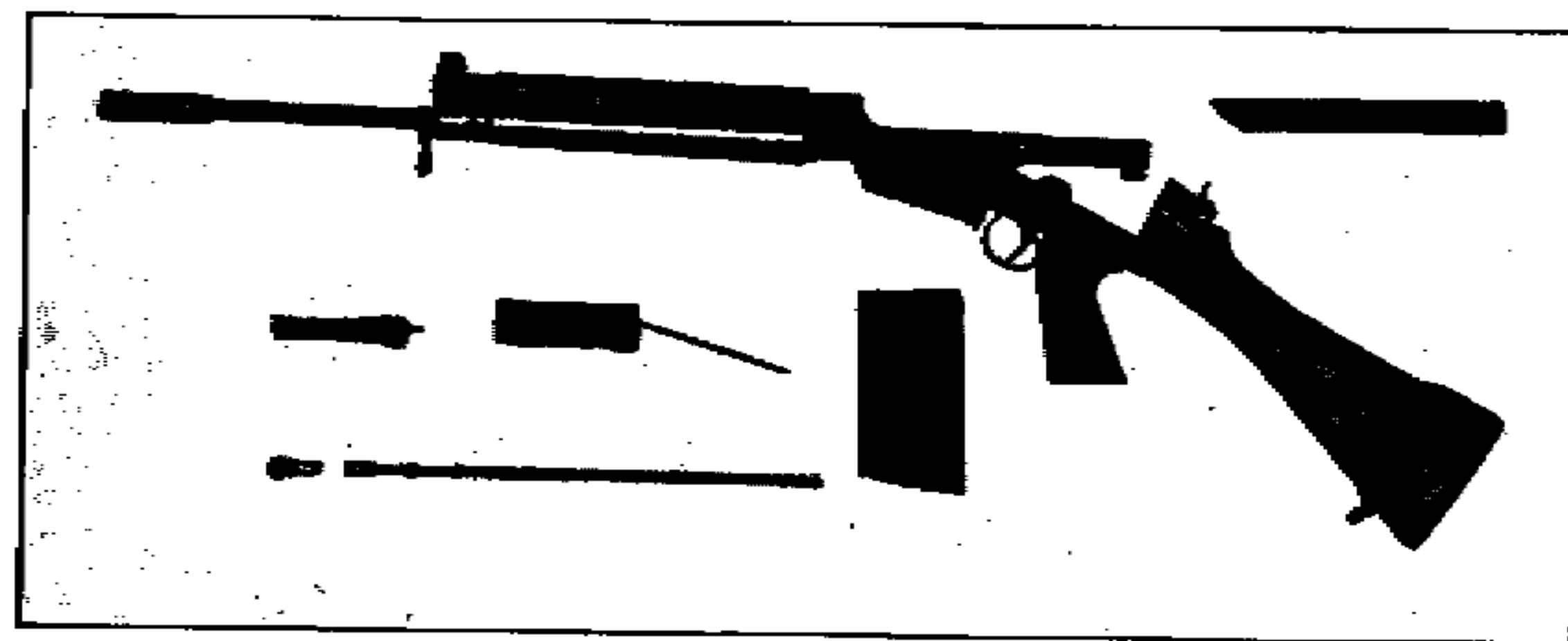


Fig. 3

II. OPERATION OF MECHANISM

1. GAS SYSTEM

10. Technical details

1. Weights:
 - a) Rifle without magazine: 4.200 kg (9.25 lbs.);
 - b) Empty magazine: 250 grams (8.8 ozs.);
 - c) Filled magazine: 730 grams (1 lb. 9.74 ozs.) (bullet 9.30 grams = approx. 144 grains);
 - d) Barrel: approx. 800 grams (1 lb. 12.21 ozs.);
 - e) Bayonet with scabbard: 350 grams (12.34 ozs.).
2. Lengths:
 - a) Overall length: 1.10 metres (43.3");
 - b) Barrel: 533 mm (approx. 21");
 - c) Bayonet: 290 mm (approx. 11.4").
3. System of operation: gas.
4. Method of feed: 20-round magazine.
5. Position of feed opening: underneath the body.
6. Position of ejection opening: right side of body.
7. Position of cocking handle: left side of body.
8. Position of change lever: left side of trigger frame.
9. Sight radius: 553 mm (21.77").
10. Backsight graduated from 200 to 600 metres, in 100 metre steps (or in yards).
11. Rifling of barrel: number of grooves: four; twist: righthand; pitch: 1 in 305 mm (1 in 11.9").
12. Rate of fire:
 - a) Cyclic: 650-700 r.p.m
 - b) Effective, automatic fire: 120 r.p.m.;
 - c) Effective, semi-automatic: 60 r.p.m.

- Starting point:
a round is in the chamber;
the breech block is locked;
the shot has just been fired.
- The bullet moves along the barrel and reaches the level of the gas port (f) (fig. 4).
- The combustion gases pass through the gas port (f) and reach the gas plug (a), which closes the front end of the gas cylinder, screwed into the gas block (b); if the gas plug is closed (letters Gr showing on top), the gas intake is blocked and the weapon will then function as a repeating rifle.
- If the gas plug is open (letter A showing on top), gas passes through the plug (a) and reaches the piston head (d).
- Under pressure of the combustion gases, the piston moves backward and uncovers the gas outlet vent (e).
- The gas exhaust vent is partially closed by the gas regulator (c) the position of which determines the gas exhaust and thus controls the quantity of gas acting on the piston. The position of the gas regulator sleeve is normally determined when the weapon is fired for gas regulator setting (see Chapter IV).

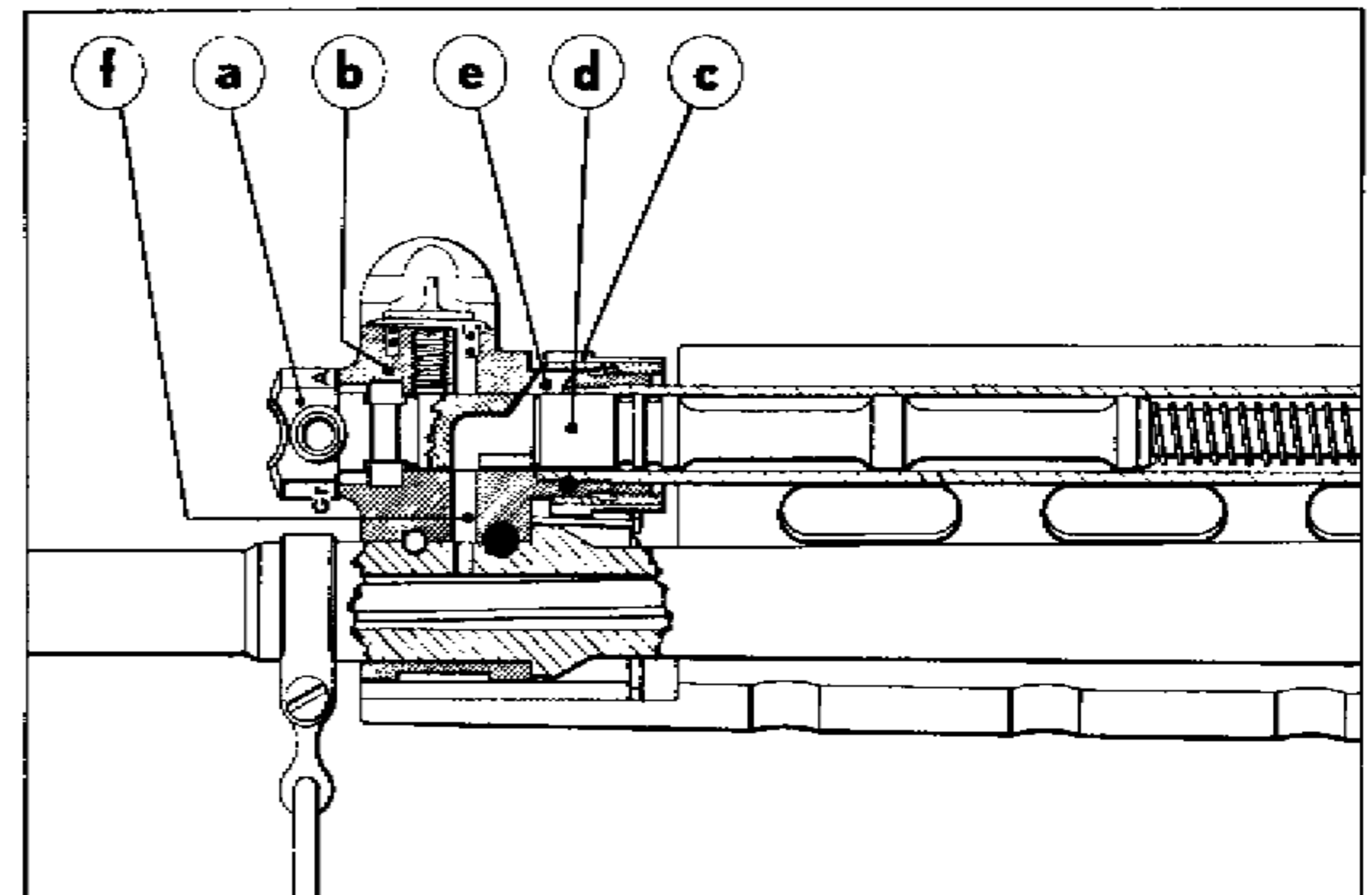


Fig. 4

- As the piston (P) moves backwards, it contacts the slide (B) (fig. 5), thrusting it to the rear.
- The piston spring, which has been compressed by the rear movement of the piston, relaxes and returns the piston to its forward position.

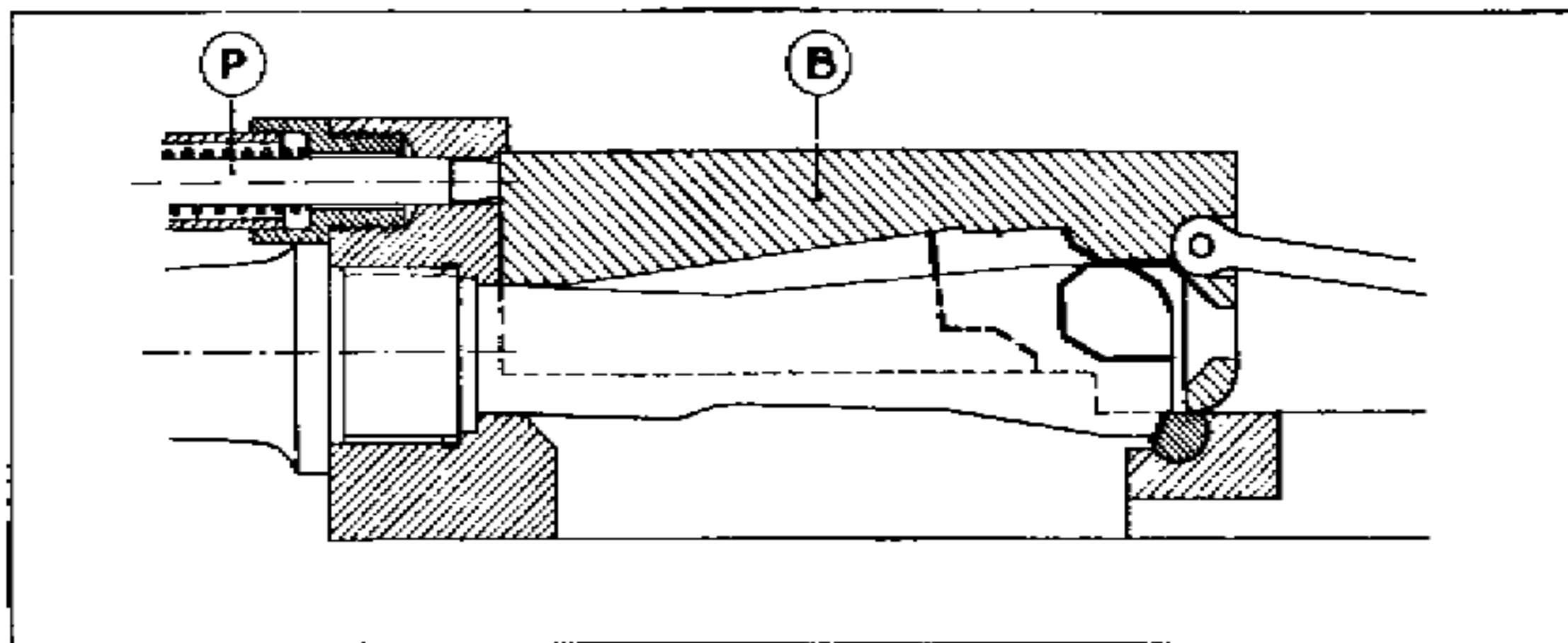


Fig. 5

2. REAR MOVEMENT OF THE MECHANISM

a. Unlocking the breech

- As the slide moves backwards, the ramps of the slide (B1) engage the cams of the breech block (C1) (fig. 6), raising the rear end of the breech block and lifting it out of engagement with its locking shoulder (D) in the body (E) (fig. 7).
- The breech block is thus unlocked.

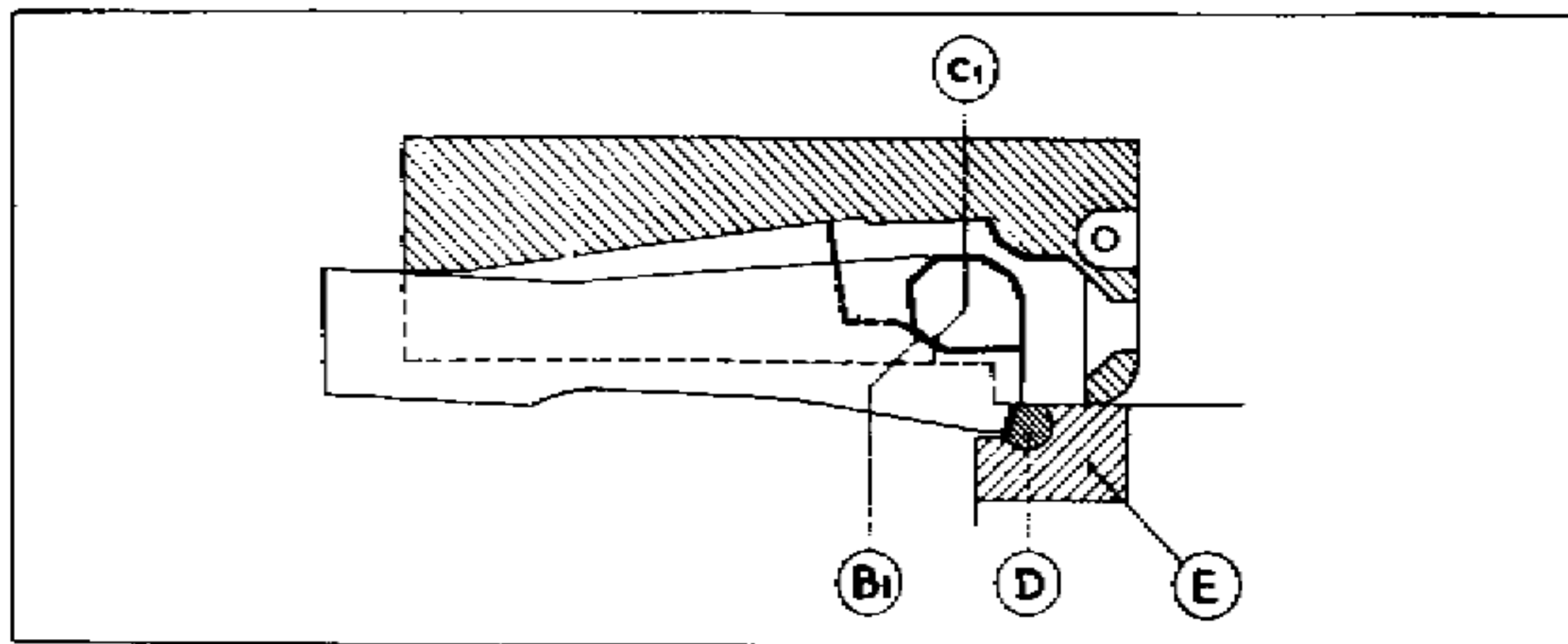


Fig. 6

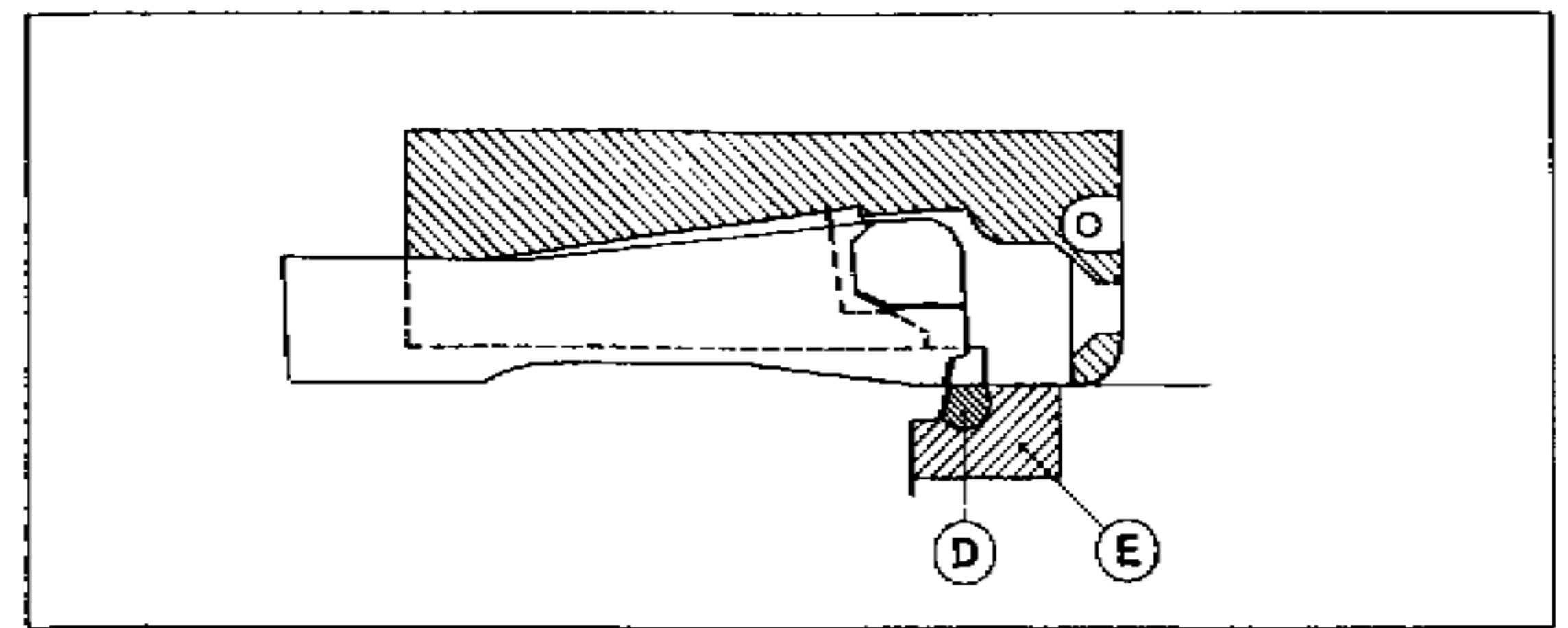


Fig. 7

b. Extraction

- The shoulders of the slide (B2) engage those of the breech block (C2) (fig. 8) and the slide and breech block travel to the rear together.
- During this movement, the extractor claw withdraws the spent case rearwards from the chamber, holding it in the breech block recess.

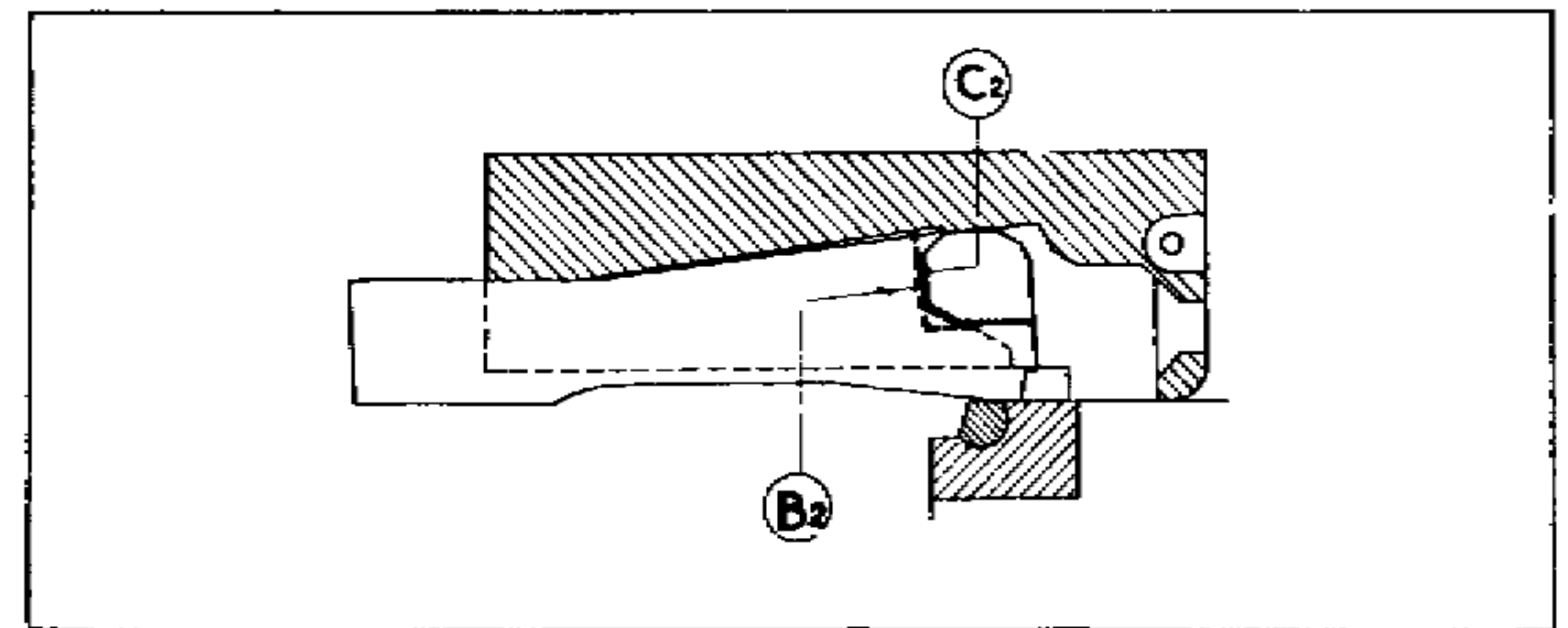


Fig. 8

c. Ejection

- When the breech block recess is almost at the same level as the rear face of the ejection opening, the spent case contacts

the ejector, which projects into the breech block recess; the case is then thrown out of the gun to the right (fig. 9).

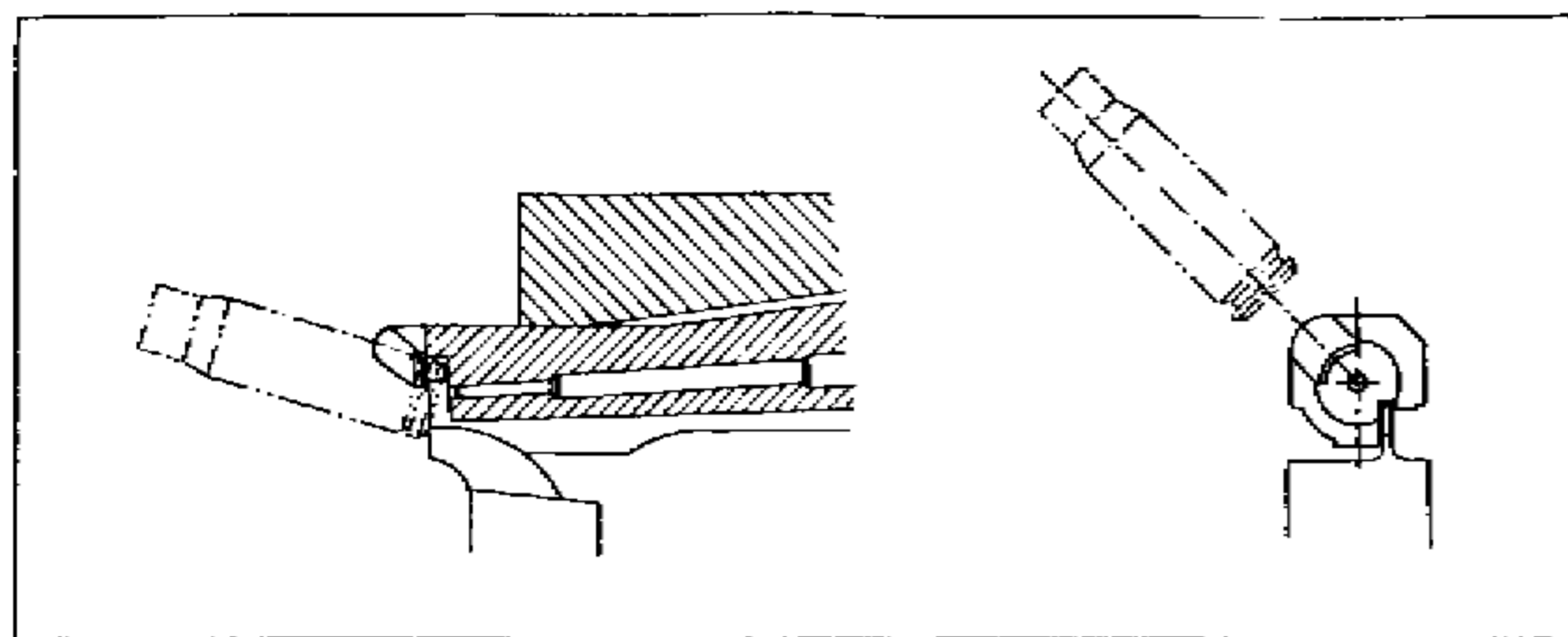


Fig. 9

- After ejection, the mechanism continues to move to the rear until the slide-breech block assembly comes into contact with the trigger frame.
- During the backward movement, the slide rod, hinged to the slide, has been compressing the return springs housed in the butt.

3. FORWARD ACTION OF THE MECHANISM

a. Beginning of movement

- The return springs relax and through the slide rod push the slide forward; the ramps of the breech block (C3) and slide (B3) (fig. 10) engage and push the breech block forward.

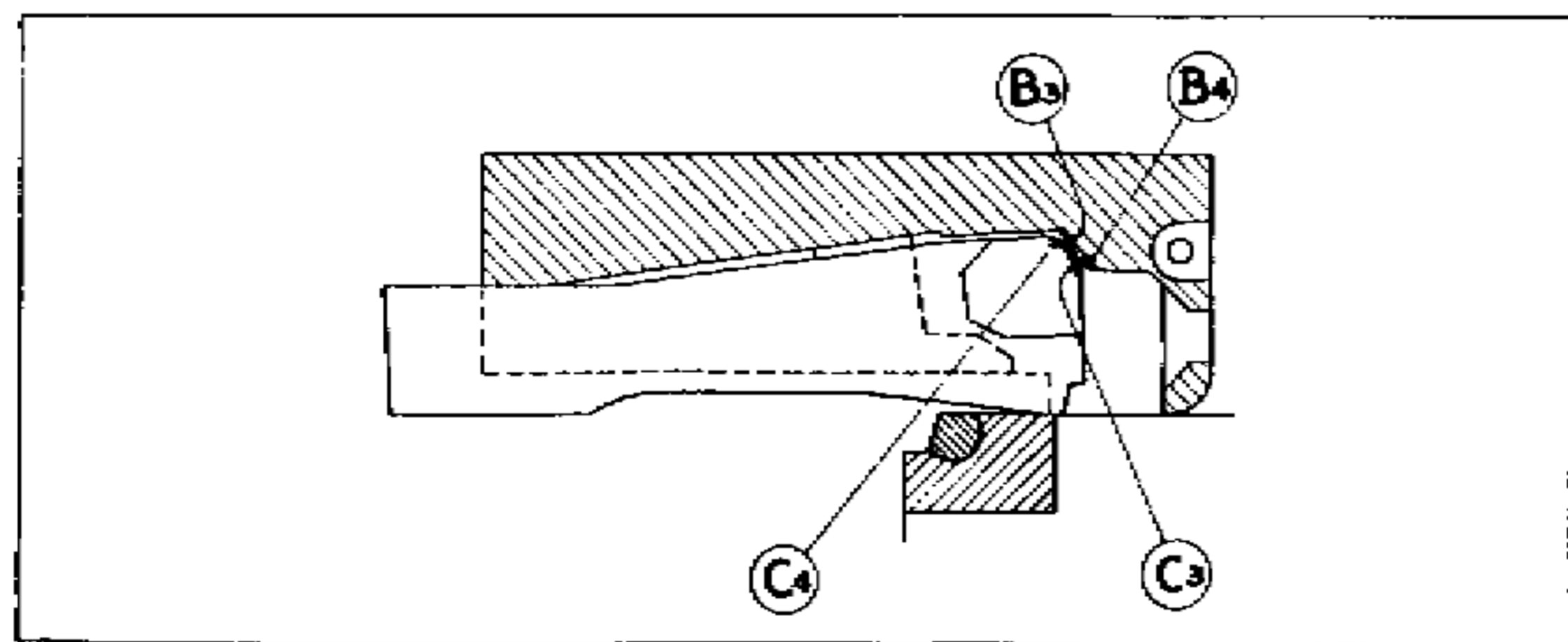


Fig. 10

b. Feed

- During the latter part of the rear movement of the working parts, the rounds in the magazine are raised under action of the magazine spring, until the top cartridge comes into contact with the lips of the magazine.
- As the mechanism moves forward, the lower front face of the breech block engages the top of the base of the uppermost round in the magazine and pushes it forward.
- As it moves, the apex of the round encounters the ramp leading to the chamber, which directs it towards the chamber and partly disengages it from the front lips of the magazine.
- The base of the cartridge is, however, still held in the rear lips of the magazine.

c. Introduction of round

- Under pressure of the breech block, the base of the cartridge is released and the round pushed forward into the chamber.
- Continuing its forward course, the breech block forces the extractor to rise, thus allowing the base of the cartridge to lodge in its recess.
- The forward course of the breech block is completed and the gun is closed, but not locked.

d. Locking

- As the breech block comes into contact with the breech, the rear of the block is forced down by the interaction of inclined surfaces in the slide (B3) and breech block (C3).
- The locking shoulders of the slide (B4) and the breech block (C4) engage and the breech block is forced downwards, the locking shoulder finally engaging with the locking recess in the body.
- The weapon is now locked.

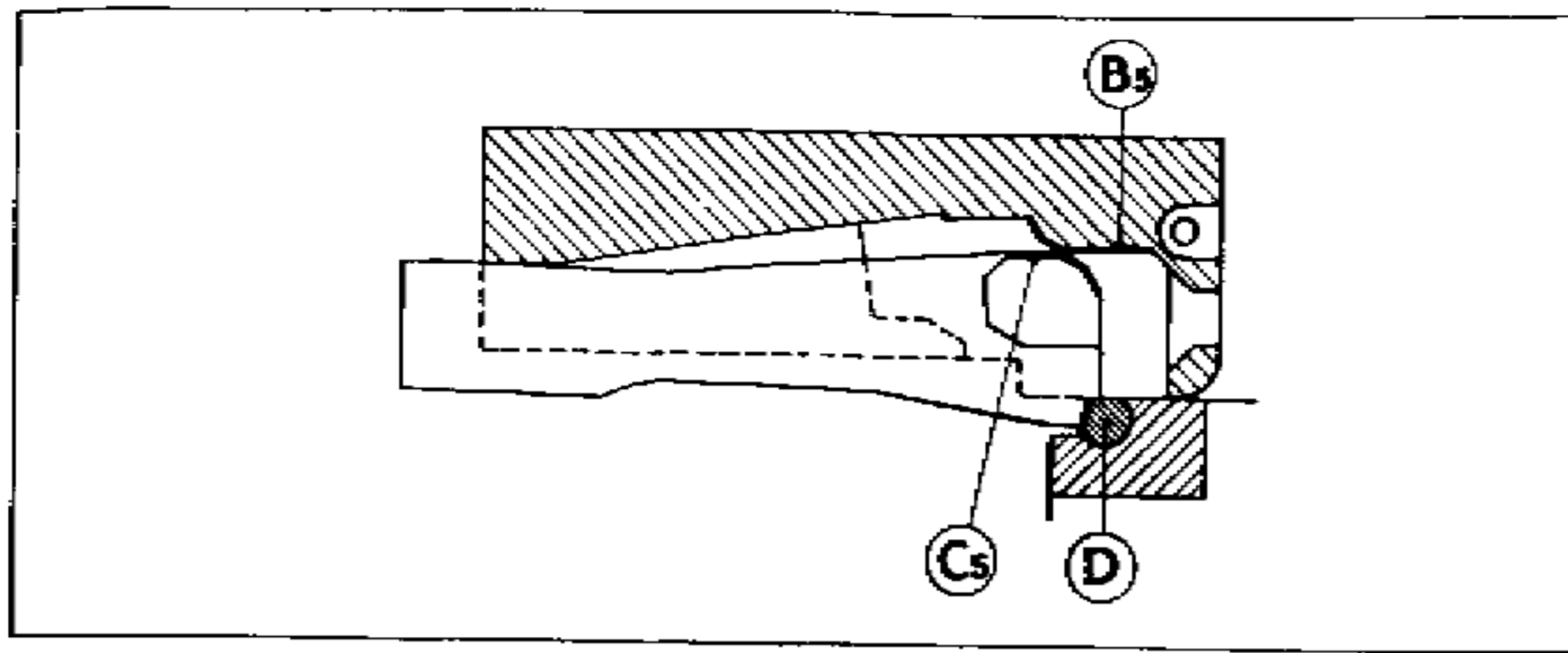


Fig. 11

e. Safeties

1. Confirmation of locking

- The slide continues its forward movement and its surface (B5) is brought above the breech block's surface (C5) (fig. 11), thus preventing the breech block from rising or unlocking.

2. Firing pin

- While the working parts are moving, the head of the firing pin is hidden by the slide (fig. 12).
- When mechanical locking takes place the firing pin head is uncovered by the slide taking up its foremost position. The hammer can only act on the firing pin from this point.

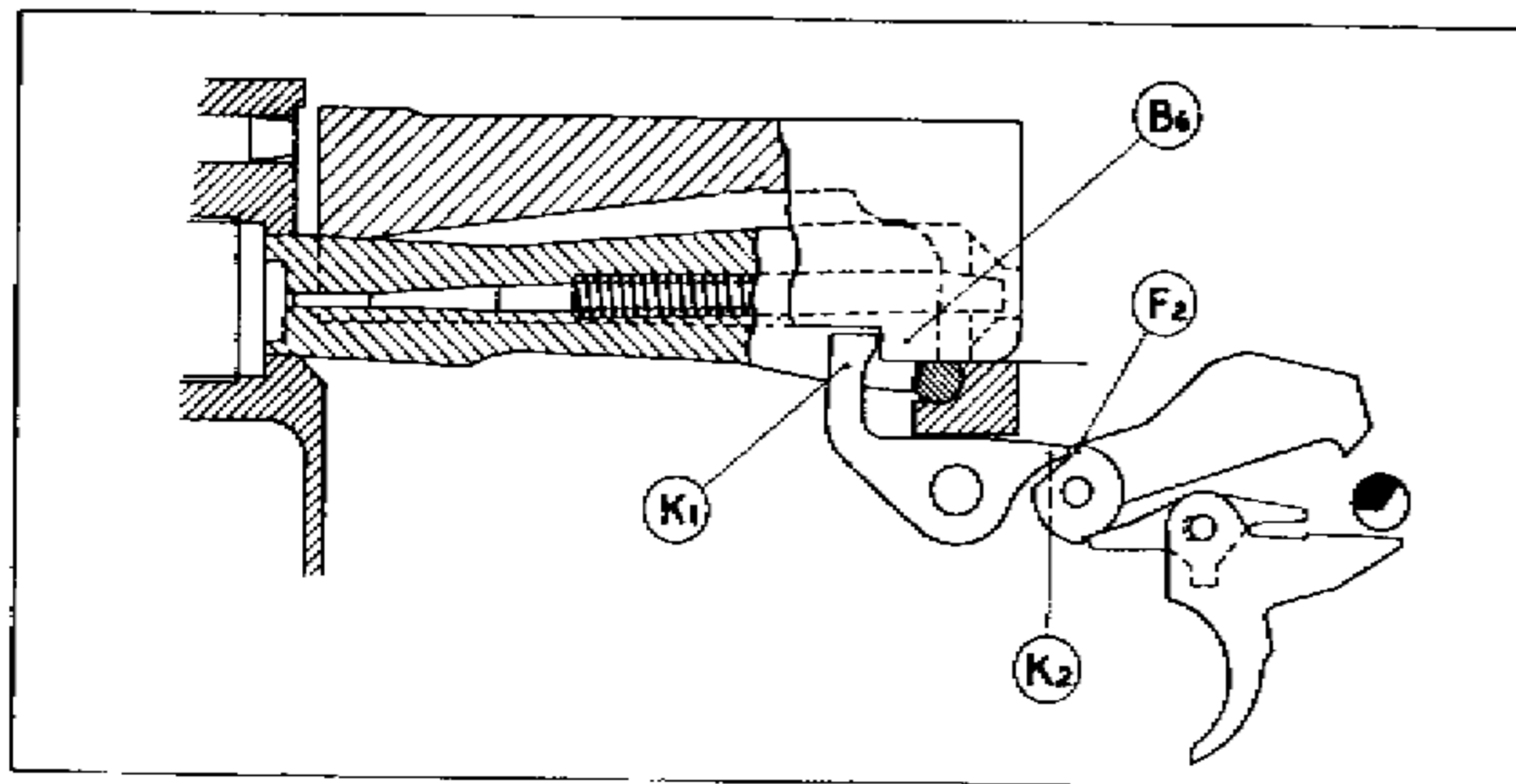


Fig. 12

3. Safety sear

- During the forward action of the moving parts, these keep the hammer down.
- As soon as the rear portion of the slide has passed the hammer, the latter rises and its bent (F2) engages with the nose (K2) of the safety sear, which holds it in the "cocked" position (fig. 12).
- Just before reaching its limit of travel, the shoulder (B6) on the rear bottom surface of the slide comes into contact with the arm of the safety sear (K1) (fig. 12).
- The safety sear, tripped by the slide, is released from the upper bent of the hammer (fig. 15); the hammer rotates forward until the lower bent (F1) is engaged by the nose of the trigger sear (G1).

4. HOLDING OPEN DEVICE

- When the last round has been fed out of the magazine, the rear projection on the magazine platform engages the stud of the holding open device.
- After recoil of the moving parts, the platform rises under action of the magazine spring and raises the holding open device (fig. 13) until it moves up into the body and checks the forward movement of the working parts.
- The weapon then remains open and the firer knows that his magazine is empty.

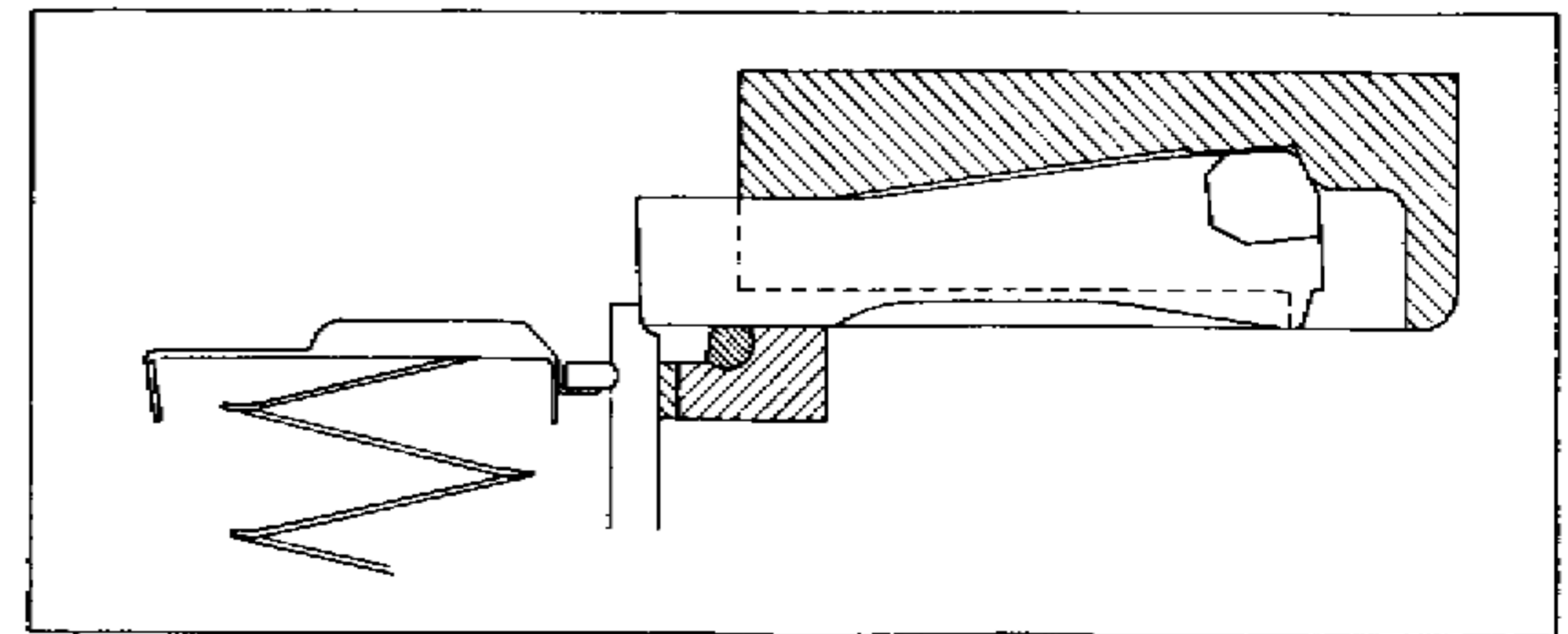


Fig. 13

5. TRIGGER MECHANISM

PLEASE NOTE

This section on the trigger mechanism is not wholly applicable to the American model in which full automatic fire is not possible.

Starting point:

Mechanism in the locked position;
Hammer cocked.

a. Safe position

- Applied safety is provided by setting the change lever at "S".
- In this position, the rounded edge of the change lever axis (J1) (fig. 14) is over the rear part of the trigger (H3), preventing it from rising to engage the tail of the sear.

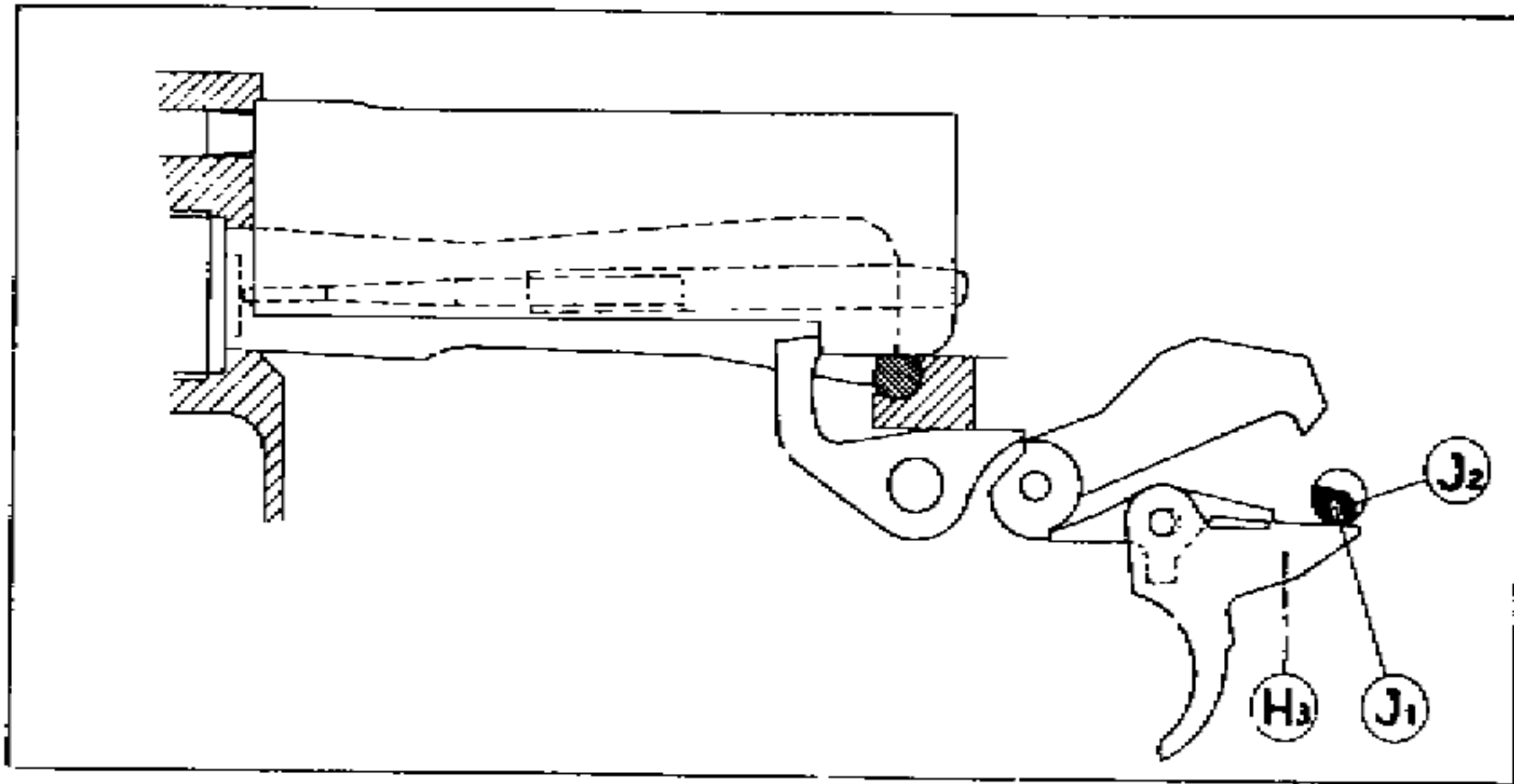


Fig. 14

b. Semi-automatic fire position

- The change lever is set at "R" (Single Shot).
- The change lever axis is now positioned with its shallowest notch (J2) in contact with the rear part (H3) of the trigger (fig. 15).

1. Release of hammer

- When the trigger is pressed, the rear shoulder (H2) of the trigger contacts the rear arm (G2) of the sear (fig. 15). (This gives the feeling of initial pressure.)

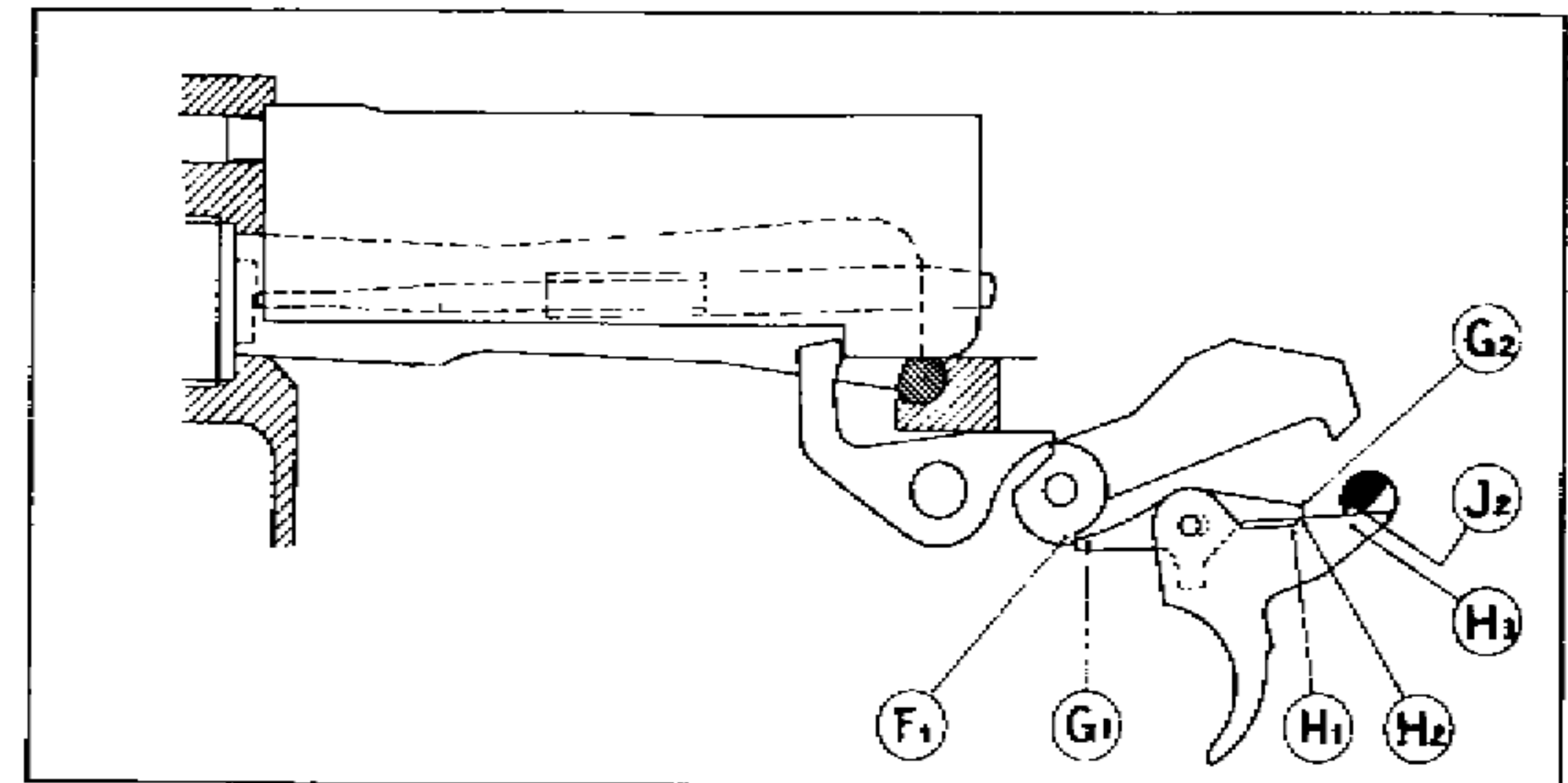


Fig. 15

- Continued pressure on the trigger causes the rear arm (G2) of the sear to pivot upwards.
- The nose (G1) of the sear is consequently disengaged from the hammer bent (F1); the hammer flies forward under the impulse of its spring and strikes the firing pin.
- As the hammer is released, the sear, on being freed from the bent, is moved forward by its spring (fig. 16).
- In this position, the rear arm (G2) of the sear loses contact with the rear shoulder of the trigger (H2) and drops into the step (H1) of the trigger: the nose (G1) bears up against the hammer spindle, in position to engage the hammer again.

2. Recocking of hammer

- As the working parts move backward, the rear bottom surface of the slide rotates the hammer to the rear and downwards; as the mechanism moves forward the hammer follows until the upper bent contacts the safety sear (see page 15, safety sear, Para. 3. e. 3.).
- At the end of the forward movement, the slide trips the safety sear, which frees the hammer.
- The hammer pivots slightly around its pin and again moves forward to be caught by the nose (G1) of the sear in the lower hammer bent (F1), causing the sear to withdraw against the vertical part of the rear shoulder of the trigger (H2) (fig. 15).
- On releasing the trigger, the trigger plunger and spring force