CZECHOSLOVAKIAN SELF-LOADING RIFLE "ZH" MOD. 29.

No.ZB 151 - 30

AUTOMATIC RIFLE "ZH" Mod.29

Československá Zbrojovka a.s.
B r n o

June 1930

C O N T E N T S

oooOooo

PREFACE.

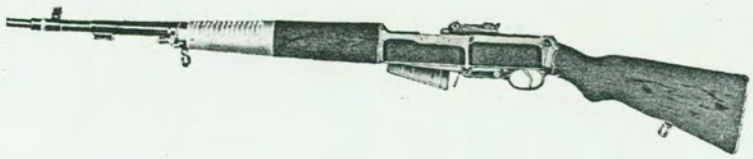
The need of an automatic rifle, dependable and simple to operate, was long felt in military circles and was often discussed in military publications.

The Československá Zbrojovka, akciová společnost, Brno, has since a long time endeavored to accomplish this and has studied in its Experimental Departments several models of different systems.

Model ,,ZH 29 ,, described in this pamphlet, is because of its purposeful construction and its durability able to withstand even the most rigorous demands set upon an automatic rifle.

AUTOMATIC RIFLE SYSTEM ZH 29

is constructed and manufactured at the Československá Zbrojovka, akciová společnost, Brno. It may be supplied with any caliber / : 7.92, 7.65, 7, or 6.5 m/m : /, for pointed or ogival ammunition. The weight of the rifle with the magazine is 4.35 kg. Its efficiency and durability are -- if not better -- at least equal to those of all normal magazine rifles. It is based on the principle of utilizing of gases, carried from the bored barrel to the piston tube, in which moves the piston . It may be loaded either from clips or with full magazines from below. The magazines contain five or ten rounds of ammunition and are easily interchangeable. The construction is simple. The rifle may be easily dismounted and its parts interchanged without any adjusting /: absolute interchangeability :/. The practical firing-speed is 20 to 50 rounds a minute ; when loading with full magazines, this speed increases up to 85 rounds a minute.



Main Advantages of Automatic Rifle ZH 29 .

The piston is carried in a short piston tube, along a course of 20 m/m, and after the action is in operatio the gases blow into the free space in the cooler and the stoc so that they do not clog the gas cylinder.

Because the bolt mechanism has a sufficient reserve during its rearward movement, no careful regulating of the recoil spring is necessary and the rifle functions properly even if the cartridge should have either a smaller or a larger quantity of powder.

Its simply construction and advatageously placed guiding surfaces enable the rifle to operate with a minute exactness even with a soiled or dry mechanism.

It is not necessary to clean or oil the rifle during firing.

After firing, the rifle may be cooled in water. The entrance of water into the barrel, gas cylinder or bolt or trigger mechanism -- which causes trouble to other syste of rifles -- does not influence the proper functioning of ri ZH 29.

The barrel may be of any length without alterin the principle of the rifle in any way.

A worn-out barrel may be easily exchanged, without it being necessary to adjust any parts of the rifle.

The rifle may be opened easily and quickly, and in this condition may be cleaned with facility. The cocking handle is of the same piece as the bolt, which makes it possible -- in case of necessity -- to use the rifle as a magasine rifle.

The entrance of the gases may be regulated, if desired closed up entirely, and the rifle will then operate on the principle of a magazine rifle.

The rifle may be adapted to a bayonet of any syste

The rifle is supplied with an aluminium cooler, which absorbs the heat and lessens the wear of the rifle .

The breaking or injuring of any of the parts upon which depends the automatic functioning, does not disqualify the rifle.

The construction is so simple that the manufacture is not in the least complicated, and its simplicity assures a complete exchangeability. The principle of the breech is the simplest imaginable ; there are no joints or pins used, the tolerance of which, added, would make rational manufacture or exchangeability difficult.

The automatic rifle ZH 29 may be adapted to any kind or caliber of ammunition, used for magazine rifles.

Weight and Portability of the Rifle.

The weight of this rifle, 4.20kg, differs very little from that of the rifle now in use, and even the loops for the sling may be so arranged that the automatic rifle ZH 29 may be carried as easily and comfortably as the magazine rifle. Its shape is so much like that of the normal rifle that even at close range, the rifle does not strike one as something unusual or different from the normal rifle.

DESCRIPTION OF THE RIFLE .

The main parts of the automatic rifle ZH 29 may be divided into two groups :

1./ FIXED :

a/ barrel with the Gas Deriver and Cooler,
b./receiver,
c./ guard,
d., stock,
e./ magazine,

2./ MOVABLE

f./ bolt carrier,
g./ bolt .

The BARREL

-1- is 590 m/m long. It is threaded in the rear in order to be screwed into the Receiver - 15 -. The front part of the Barrel is threaded for the Gas Deriver Nut - 7 - or the dummy shooting attachment. The Gas Deriver - 3 - is attached to the front part of the Barrel, sits on a shoulder on the Barrel and is set in place through the Gas Deriver Nut -7-. The projection on the rear side of the Gas Deriver is located in the groove of the abovementioned shoulder and in that way holds the Gas Deriver in its proper position.

The front part of the Gas Deriver forms a little bridge for the Front Sight. Below the Gas Deriver is a catch for the Bayonet, enforced through two lengthwise placed ribs. The rear part passes into the Gas Cylinder, which is closed by

the Gas Stopper - 4 -, serving at the same time to regulate the gas. The Gas Stopper is put into required positions by a projection that fits into grooves in the Gas Deriver. The Stopper is held in position by the Gas Stopper Safety Stay Bolt -5- and this again by the Gas Stopper Safety Stay Bolt Pin - 6 -. In the part between the gas deriver and the Receiver is the Barrel provided with a Cooler - 12 - and a Front Stock - 14 -. The Cooler is a duraluminum casting, with crosswise and lengthwise placed ribs, fitted on the Barrel. Along its length, in its lower part, it has two openings: through the right one passes the Bolt Carrier - 35 -, the left one is for better cooling. The Cooler sits with its front part on the Gas Deriver, while in its rear side is held the Front Stock. This has two parts ; the right side is provided with a groove for the Bolt Carrier - 35 -. The Front Stock is secured both in a notch in the Receiver and in the Cooler ; that part of the rifle which is covered with wood is supplied with a Cooler. The connecting rod of the Gas Deriver and Cooler is covered by the Front Band -8-, provided with the Front Band Swivel - 11 -, Front Band Screw -9-, and Front Band Screw Nut - 10 -.

The RECEIVER

-15- forms in its forward part a cylindrical projection that contains threading for the Barrel. On its right side it is provided with a notch for the Bolt Carrier, on its left side with guiding slides for the Bolt -37-. On its left side is placed a Bearing Plate - 21-, fastened to the Receiver by the Bearing Plate Screw -27-. In the forward part of the Receiver there is a notch for the Magazine -70-, and Magazine Front and Back

Stops -16- and -17-. The Magazine Front Stop -16- has a Magazine Front Stop Spring -20- and is secured by a Magazine Front Stop Screw -18-. The Magazine Back Stop -17- has a Magazine Back Stop Spring -20- and is secured by a Magazine Back Stop Screw -19-. The longer, lever-like part of the Magazine Back Stop projects from the Receiver and by pressing it the Magazine is loosened when it has to be exchanged for another one. On the upper surface of the Receiver is a notch for the Rear Sight. This is of a frame type and the arrangement and execution of its parts is like that of the Rear Sight used on Mauser Rifles. It consists of: Rear Sight Ramps -30-, Leaf -27-, Rear Sight Spring -29-, Rear Sight Slide -31-, two Rear Sight Catches -32-, Rear Sight Leaf Pin -28- and two Rear Sight Catch Springs -33-. On the lower rear part of the Receiver are placed the Front and Rear Guard Bolts -23- and -24-, with their Guard Bolt Locking Pins -25- and Springs -26-. The Guard -34- is connected with the Receiver -15- through the help of these bolts.

The GUARD

-34-/: the lower part of which projects into a trigger-guard bow and on the rear wall of which is adjusted the Stock : / forms the bed of the Trigger and Recoil mechanism. On its right side is placed the Recoil Spring -58- provided with the Recoil Spring Pin -59-, which sits on the Bolt Carrier. In the rear wall of the Guard is fastened -- on the Bayonet Lock-- the Recoil Spring Housing -60-. The Guard Mechanism consists of the following parts : the Striking Hammer -46- pivoting on the Striking Hammer Pin -48-, this Pin

securing at the same time the Recoil Spring Pin against dislocating. The Striking Hammer Spring -47- has two ends; the shorter one presses the Striking Hammer, the longer passes through the Interruptor -53-. The upper part of the Striking Hammer is provided with an oval surface for the setting of firing readiness of the Bolt -37- and a double-cogged catch for the Sear and the Interruptor. The Sear -49- has two arms, is provided with the Interruptor -53- and is connected with it through a riveted Interruptor Pin -54-. The longer arm of the Sear is in contact with the Trigger -51-. The rear arm of this Trigger raises the Sear; the front arm projects into a hooked nose and when in a secured position, leans on the Safety Stay Bolt. The Safety Stay Bolt -55- is pivot-like bedded in the Guard. It is secured in the required position through the Safety Stay Bolt Pin -56-, and the Safety Stay Bolt Spring -57, placed in the outer arm of the Safety Stay Bolt. The Safety Stay Bolt Pin engages into the grooves on the right side of the Guard. The pivotlike Pins -48-,-50, and -52-, of the different parts of the Trigger and the Safety Stay Bolt, are secured against falling out by the left side of the Receiver. The Safety Stay Bolt is secured through the Sear.

The STOCK :

-61- is fastened to the Guard through the Stock Screw -63-, /:with a square head :/ and the Stock Screw Washer -64-.In the Stock is bedded the Recoil Spring Housing -60-. The rear part is provided with a Butt Plate -62- made of pressed sheet-iron, which is fastened with a Butt Plate Screw -65-. On the lower part of the

Stock is placed the Butt Swivel Plate -66- with the Butt Swivel -67- and the Butt Swivel Pin -68-. The Butt Swivel Plate is fastened to the Stock through Butt Swivel Plate Screws -69-.

The MAGAZINE

-70- is manufactured of pressed sheet-iron and is provided with the Feeder and Feeder Spring -71- and -72-. The Feed is the same for a magazine either for five or ten rounds. The Spring -72- is held by one of its ends in the Feeder -71-, by the other in the Magazine Bottom Stop -74- which is in turn secured by the Magazine Bottom -73 -.

The BOLT CARRIER

-35- changes in its front part into a piston rod, which engages into the Gas Cylinder of the Gas Deriver -3-. The rear part is provided with a Cocking Handle and the Bolt -37- is bedded in it. Slides on the lower and upper part serve to guide the Carrier. The movement of the Carrier is transmitted in the rear part through a cog-like projection to the Recoil Spring Pin. The opening for the bolt projection is covered by the Bolt Cover -36-.

The BOLT

-37- has on its right side a projection which is caught during its rearward movement by the Bolt Carrier. The front wall of the Bolt forms a bed for the cartridge bottom. The oblique surface of the rear left wall touches the Bearing Plate -21-. The slide on the lower part of the Bolt serves for cocking of the Striking Hammer and for holding the Bolt in firing readiness. In the right fore part is placed in a groove-like manner the Extractor -41-, pressed upon by a flat Extractor Spring -42-, which is held on its

lower wall by a milled cog and is fastened in a notch in the Bolt. On the left side, on the lower part of the cartridge bed, are placed two Ejectors -43- with its Ejector Spring -44- and secured by an Ejector Safety Ping -45-. The Striker -38- passes through the center of the Bolt and its rear end projects outside of the Bolt. It has a Main Spring -40- and is secured by a Striker Pin -39-.

ACTION OF THE RIFLE ZH 29.

The Sear -49- releases through the pressing of the Trigger -51- the Striking Hammer -46-, which strikes the Striker -38- through the pressure of the Striking Spring -47-, and fires the cartridge. This operation causes some of the gases to enter through the gas channel into the Gas Cylinder, acts on the fore, piston-like end of the Bolt Carrier -35- and moves it to the rear. The notch in the rear part of the Carrier catches the Bolt, pulls it out of the notch in the Bearing Plate -21-, and continuing in its rearward movement cocks the Trigger mechanism. The Extractor -41- extracts the fired cartridge case, which is then ejected by the Ejector forward and a little to the right. The depressed Recoil Spring -58- moves again the Bolt Carrier forward, the Bolt inserts a new cartridge into the chamber, and the rifle is ready for further firing. This operation is repeated through depressing of the Trigger. After the last cartridge has been fired, the Feeder holds the Trigger mechanism in an open position and the rifle may be loaded again.

The cartridges are being ejected through spring ejectors forward and a little to the right . The ejecting is not violent and the Ejector does not injure the cartridge cases ; these are ejected about one meter away from the operator.

DUMMY SHOOTING .

The automatic rifle ZH 29 may be easily adjusted for dummy shooting. Instead of the Gas Deriver Nut one screws in the Dummy Shooting Attachment.

HOW TO ATTEND TO ZH 29 .

The rifle may be carried just like a normal magazine rifle /: fig. 1 :/. Simple adjusting of the loops for the sling enables one to carry it like a carabin.

While firing, the rifle is held in the same manner as the magazine rifle /: fig.2 :/, even the siming is identical.

When using magazines for 20 rounds, the rifle must be held on the magazine / : fig. 3.:/.

THE LOADING OF ZH 29 .

Loading from clips

/: fig. 4 : / is done in the same way as the loading of a magazine rifle. The clip with the cartridges is pushed into the notch in the Receiver, the cartridges slipping into the Magazine as a result of pressure exerted. The Feeder is depressed at the same time, which causes the Bolt to take the positic

of firing readiness and now further cartridges may be loaded from clips without it being necessary to do any other securing.

Loading from below with full magazines

/ : fig. 5. and 6. :/.One depresses the Magazine Back Stop with the right-hand thumb and takes out the empty Magazine. This causes the Bolt to take automatically the position of firing readiness. The new full Magazine is loaded by simply pushing it into the Receiver from below. The rifle, after it has been loaded by pulling the cocking handle to the rear and releasing it, automatically pushes the cartridge into the chamber and closes it. Should the rifle be closed, one takes the cocking handle and pulls the Bolt Carrier back. During the rearward movement the Bolt catches the Feeder and the rifle mechanism remains open, so that the rifle may be loaded from the top.

When the rifle is loaded but the cartridge is not in the , we pull the Carrier back and its releasing causes the cartridge to slide into the chamber .

SECURING OF THE RIFLE .

Since the rifle has, after the firing of a cartridge, always a new one in the chamber and is ready to fire, it is necessary to secure the rifle when firing is discontinued .

1./ Securing when cartridge is in the chamber . One turns the Safety Stay Bolt into ,,0,, position . By turning the

Safety Stay Bolt into position ,, 1 ,, one may immediately press the Trigger and fire. This securing is best for discontinuing of fire for a short time.

2./ Complete discontinuing of fire . One places the Safety Stay Bolt into position ,,0,, ; then presses the Magazine Back Stop and pulls out the Magazine /: fig. 6 : / ; pulls the cocking handle of the Carrier back and in this way throws the cartridge out of the chamber ; empties the Magazine and places the empty one into the rifle.

REGULATING OF THE ENTRANCE OF GASES .

The entrance of gases into the Gas Cylinder may be left entirely open, or the gases may be shut half off, or they may be shut off entirely. It may be done as follows : The Gas Stopper Safety Stay Bolt is raised with the point of a cartridge / : fig.7 : and turned 180° ; then we pull out the Gas Stopper /: fig. 8:/ and place it into the required position /: fig. 9 :/, which causes the Gas Stopper to take the required position, after which we again secure the Safety Stay Bolt.

DISMOUNTING AND CLEANING OF ZH 29 .

The rifle ZH 29 may be dismounted easily and quckly, the only necessary tools being : a cartridge, a universal wrench and a cap key.

In order to dismount the rifle only partially, a cartridge is sufficient.

1./ Gas Deriver Nut :

Is unscrewed with a universal wrench /: fig.10 :/.

2./ Gas Deriver, Cooler, Front Stock :

Is pulled off the Barrel / : fig. 11. : /.

3./ Bolt and Bolt Carrier :

The Guard Bolts are disengaged with a cartridge /: fig. 12. and 13. :/.

4./ Trigger mechanism:

Pins are disengaged :

a./ The Striking Hammer Pin is disengaged with a cartridge This disengages the Recoil Spring, Striking Hammer and Striking Spring /: fig. 14.:/

b./ The Sear Pin is disengaged with a cartridge .

c./ The Trigger Pin is disengaged with the Striking Spring /: fig. 15.:/.

d./ The Safety Stay Bolt is put between positions ,,1,,and

,, O ,, and is pushed out from the opposite side with a cartridge /: fig. 16 :/.

5./ Butt Plate :

The Butt Plate Screw is unscrewed with a universal wrench.

6./ Stock :

The Stock Screw is loosened with a cap key

7./ Recoil Spring Housing :

Is turned 90° and pulled out.

8./ Butt Swivel Plate :

The Butt Plate Screws are unscrewed with a universal wrench.

9./ Striker :

The Striker Pin is pushed out with the Striking Spring /: fig. 18.:/.

10./ Extractor and Extractor Spring :

Is wrenched out with a cartridge /:fig. 19. and 20./

11./ Ejector with Springs :

The Ejector Pin is pushed out with the Striking Spring /: fig. 21.:/.

12./ Magazine Front and Back Stops :

Magazine Front and Back Stop Screws are unscrewed.

13./ Gas Stopper :

The Gas Stopper Safety Stay Bolt is raised and turned 180° with a cartridge /: fig. 7. and fig. 8. :/.

14./ Magazine :

Pulling out of the Magazine Bottom loosens the Feeder with its Spring.

The rifle, dismounted according to the above, may be now completely cleaned. It is not necessary to dismount the parts that remained joined.

After discontinuing of fire it is sufficient to dismount the rifle according to point 3, 4a, 9, 10 and 13, and to use on these parts a little vaseline when mounting them again.

The mounting of the rifle is done in the opposite manner.

PARTS OF AUTOMATIC RIFLE ZH 29

Number:	Parts	Number of pieces:
1.	Barrel	1
2.	Front Sight	1
3.	Gas Deriver	1
4.	Gas Stopper	1
5.	Gas Stopper Safety Stay Bolt	1
6.	Gas Stopper Safety Stay Bolt Pin	1
7.	Gas Deriver Nut	1
8.	Front Band	1
9.	Front Band Screw	1
10.	Front Band Screw Nut	1
11.	Front Band Swivel	1
12.	Cooler	1
13.	Front Stock Tube	1
14.	Front Stock/Right and Left/	2
15.	Receiver	1
16.	Magazine Front Stop	1
17.	Magazine Back Stop	1
18.	Magazine Front Stop Screw	1
19.	Magazine Back Stop Screw	1
20.	Magazine Stop Springs	2
21.	Bearing Plate	1

22.	Bearing Plate Screw	1
23.	Guard Front Bolt	1
24.	Guard Rear Bolt	1
25.	Guard Bolt Locking Pins	2
26.	Locking Pin Springs	2
27.	Leaf	1
28.	Leaf Pin	1
29.	Rear Sight Spring	1
30.	Rear Sight Ramps	1
31.	Rear Sight Slide	1
32.	Rear Sight Catches	2
33.	Rear Sight Catch Springs	2
34.	Guard	1
35.	Bolt Carrier	1
36.	Bolt Cover	1
37.	Bolt	1
38.	Striker	1
39.	Striker Pin	1
40.	Main Spring	1
41.	Extractor	1
42.	Extractor Spring	1
43.	Ejectors	2
44.	Ejector Springs	2
45.	Ejector Safety Pin	1
46.	Striking Hammer	1

47.	Striking Spring	1
48.	Striking Hammer Pin	1
49.	Sear	1
50.	Sear Pin	1
51.	Trigger	1
52.	Trigger Pin	1
53.	Interruptor	1
54.	Interruptor Pin	1
55.	Safety Stay Bolt	1
56.	Safety Stay Bolt Pin	1
57.	Safety Stay Bolt Spring	1
58.	Recoil Spring	1
59.	Recoil Spring Pin	1
60.	Recoil Spring Housing	1
61.	Stock	1
62.	Butt Plate	1
63.	Stock Screw	1
64.	Stock Screw Washer	1
65.	Butt Plate Screws	2
66.	Butt Swivel Plate	1
67.	Butt Swivel	1
68.	Butt Swivel Pin	1
69.	Butt Swivel Plate Screws	2
70.	Magazine	1
71	Feeder	1

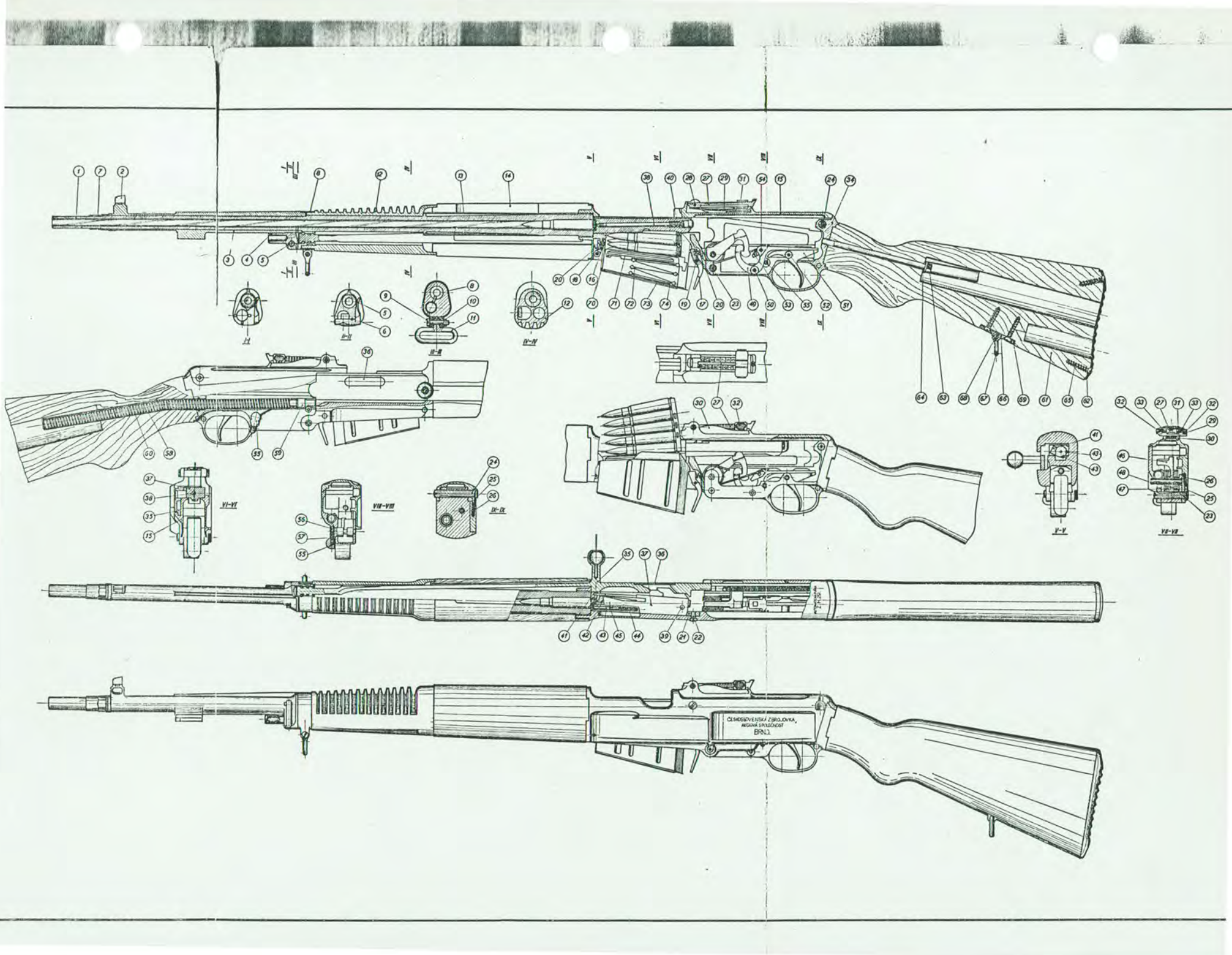
72.	Feeder Spring	1
73.	Magazine Bottom	1
74.	Magazine Bottom Stop	1

The rifle consists of 79 parts, the Magazine of 5 parts.

---o---

TECHNICAL DATA OF AUTOMATIC RIFLE ZH 29,CAL.7.92mm

Calibre	7.92mm
Number of grooves	4
Depth of grooves	0.17mm
Twist	right
Pitch of rifling	240+-2mm
Course of the bullet in the barrel	534mm
Muzzle velocity	830m/sec
Length of barrel	590 mm
Length of rifle	1140 mm
Length of rifle with bayonet	1395 mm
Distance between sights	385 mm
Graduation of rear sight each 100 m,from 300 up to	1600 m
Weight of rifle	4.20 kg
Weight of magazine for 5 rounds,empty	0.15 kg
Weight of magazine for 5 rounds,full	0.37 kg
Weight of magazine for 10 rounds,empty	0.19 kg
Weight of magazine for 10 rounds,full	0.43 kg


ČESKOSLOVENSKÁ ZBROJOVKA,
AKCIOVÁ SPOLEČNOST
BRNO.

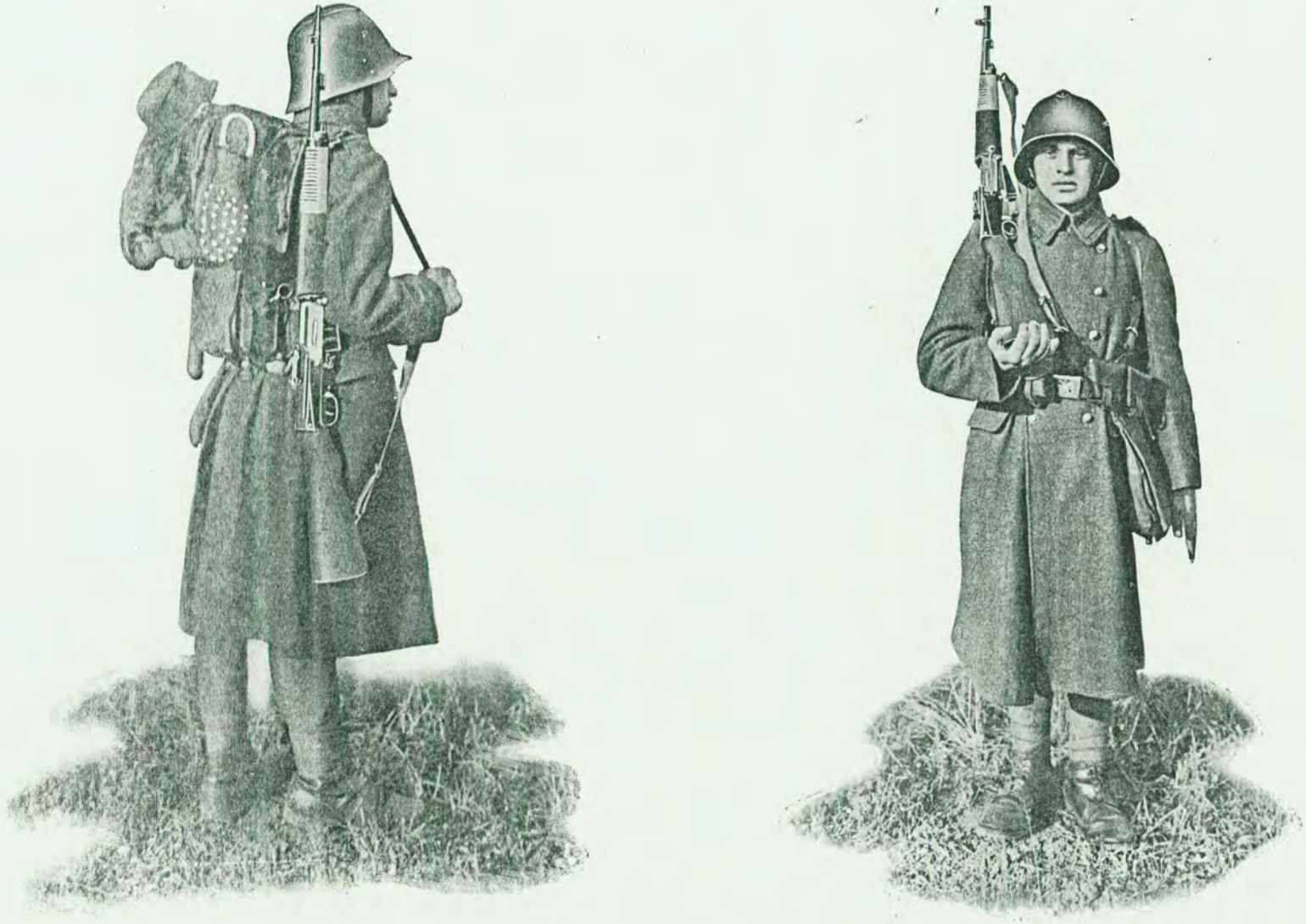


Fig. 1.

Fig. 2.

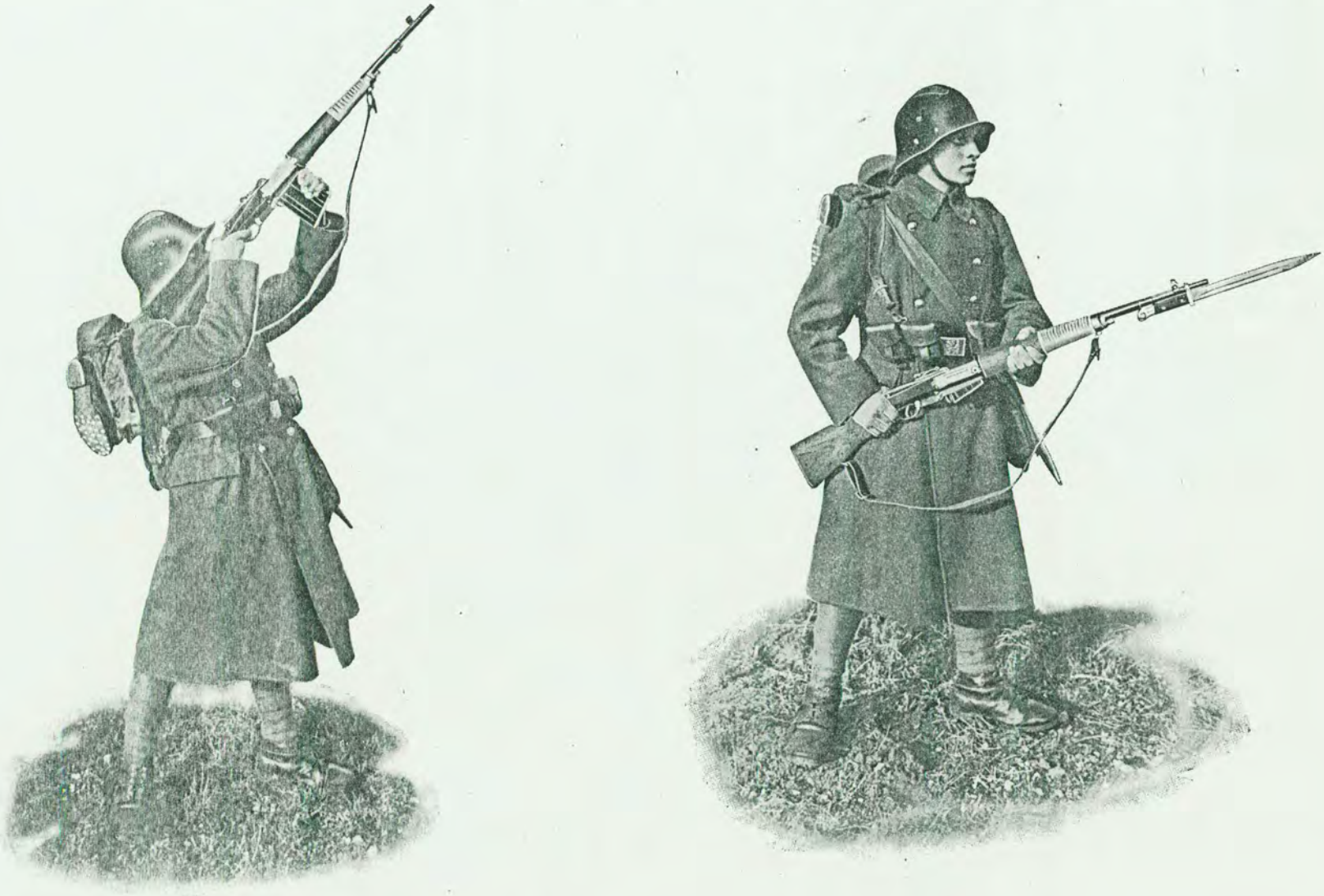


Fig. 3

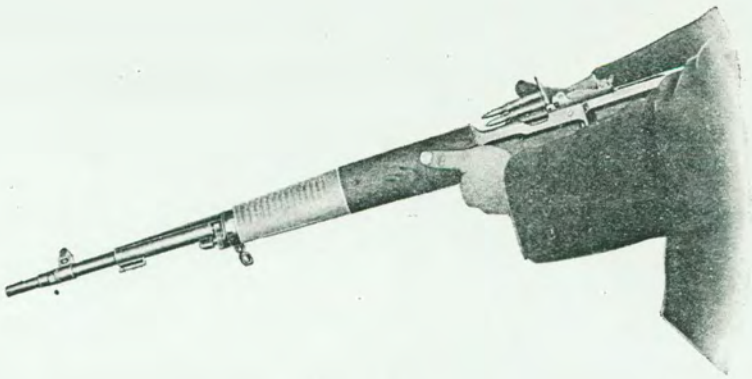


Fig. 4

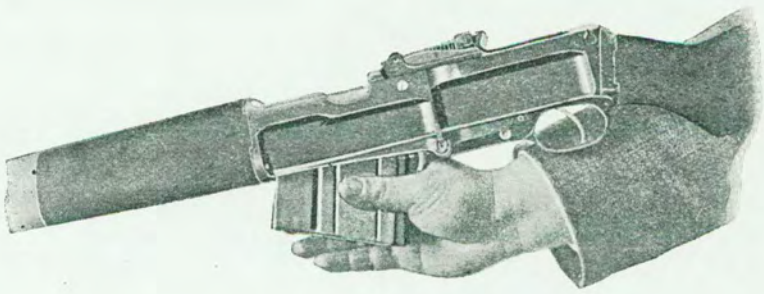


Fig. 5.

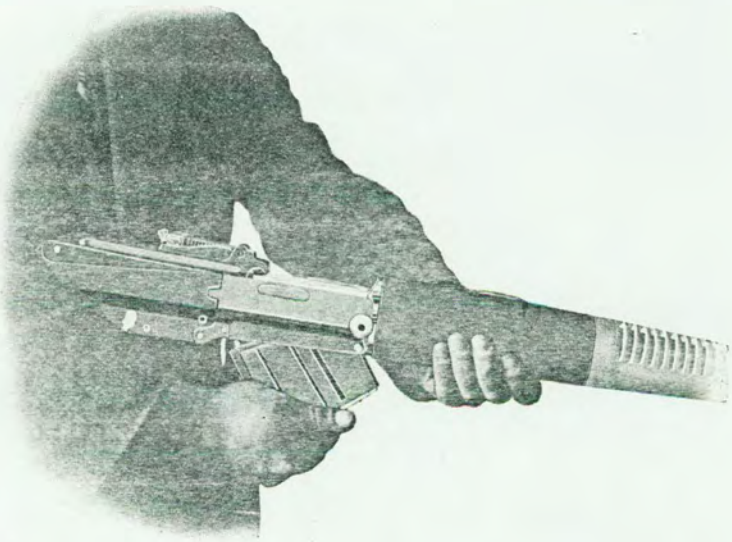


Fig. 6.

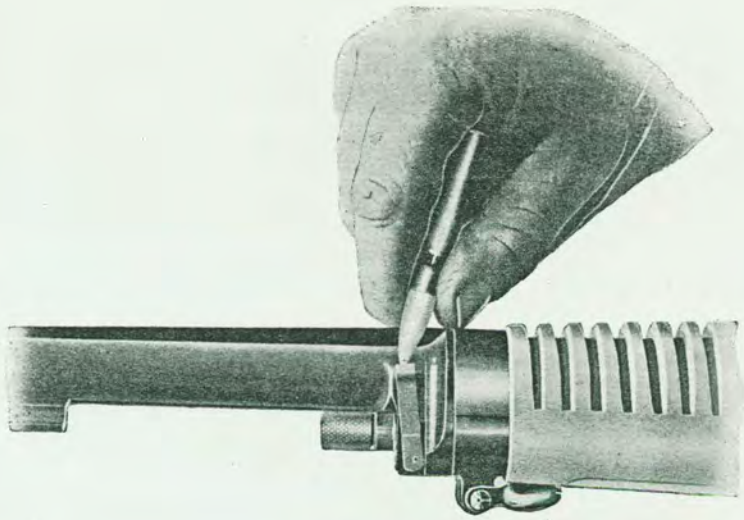


Fig. 7.

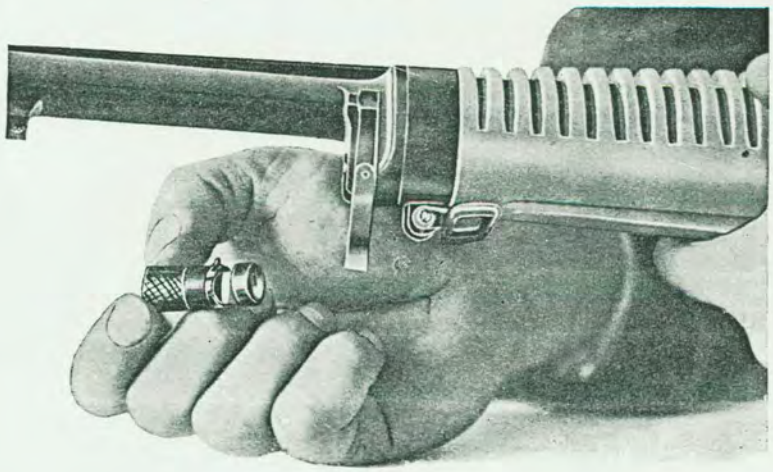


Fig. 8.

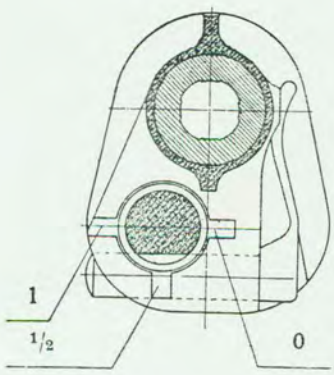


Fig. 9.

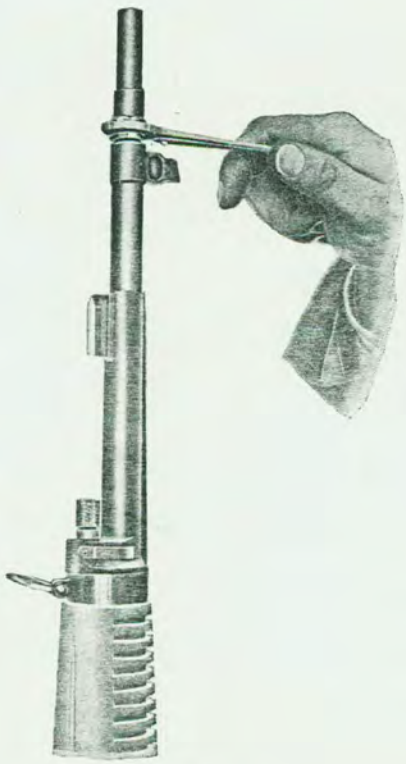


Fig. 10.

Fig. 11.

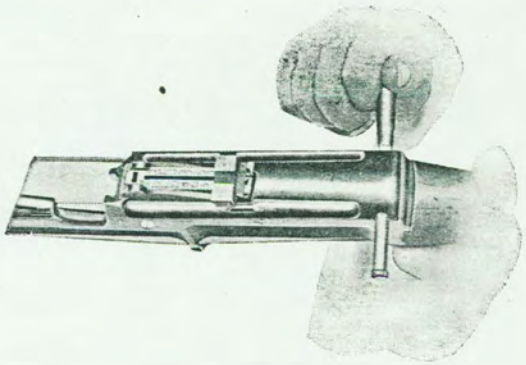


Fig. 12.

Fig. 13.

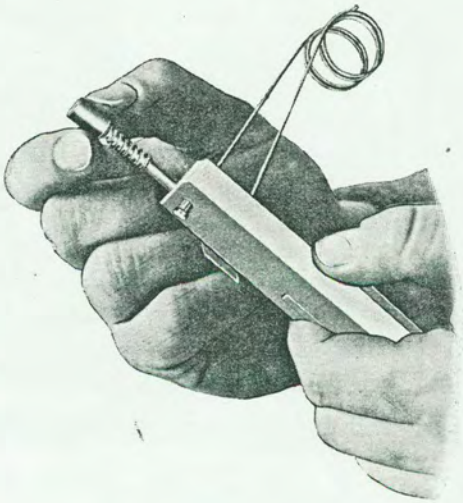


Fig. 18.

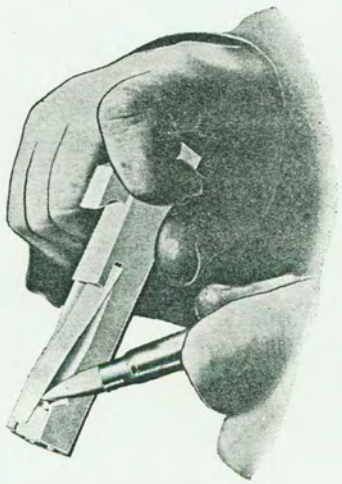


Fig. 19.

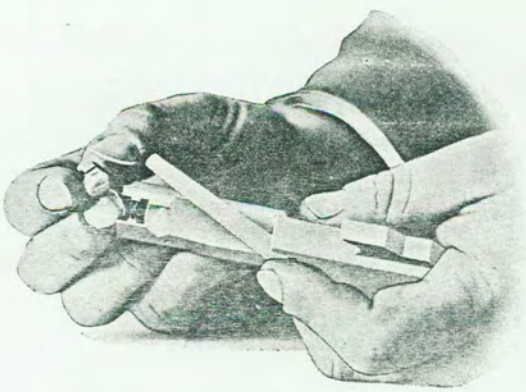


Fig. 20.

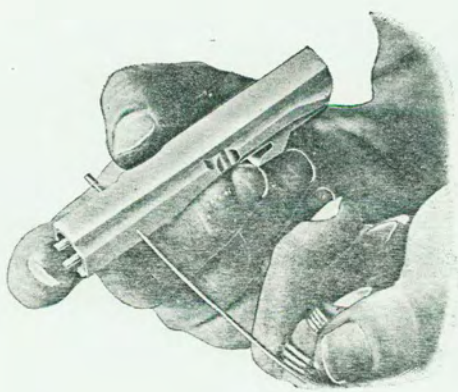


Fig. 21.

THE ZH 29

by

Roger Marsh

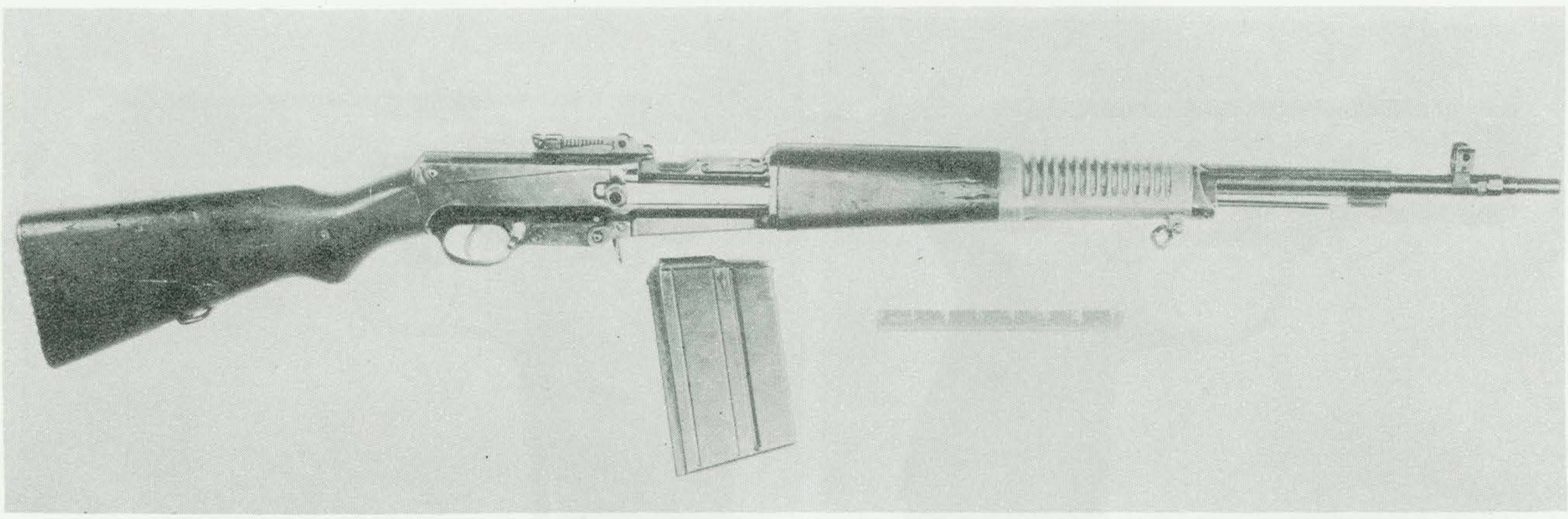
This is the Czech autoloading rifle, a massive-appearing weapon weighing just about ten pounds. It looks as big as the BAR when you first examine it, but it weighs scarcely more than the M1 Rifle. Its barrel length (23") and over-all length (45") compare very favorably with those of the M1. Yet--difficult as was the M1 to manufacture--the ZH 29 tops it in this respect; it must have required about three times as many manufacturing processes and steps!

The ZH 29 is a gas-operated rifle of radical design. Chambered for the 7.92mm service cartridge, it was intended as a service rifle for some country--just what country is an interesting question. The ZH 29 was tested in this country against the M1 and the Johnson, according to reports, and the Czech demonstrators wouldn't let anyone come near it! Johnson and Haven (in Automatic Weapons of the World) indicate that the ZH 29 was used by the Italians in Ethiopia and later in Europe. Remembering some of the ungodly machines which the Italians dreamed up as light machine guns, one hardly finds it surprising that they greeted this remarkable mechanism with open arms.

The Czechs--who now rival the Danes in the field of exporting arms designs--also seem to have sent the ZH 29 to the Far East, for examples have turned up in Tokyo. It is not certainly known whether this gun was sent to the Japanese for testing or whether it was sent to the Chinese and captured later by the Japs.

The Germans, of course, did not ignore the ZH 29. The extractor of the Kar 43 is very similar to that of the ZH 29, and the firing mechanism (sear, hammer, etc.) of the STU 44 is a very close copy of the Czech weapon's. It is probable that the entire rifle was considered as a service weapon by the Germans and--equally probable

Czech ZB 29 Automatic Rifle



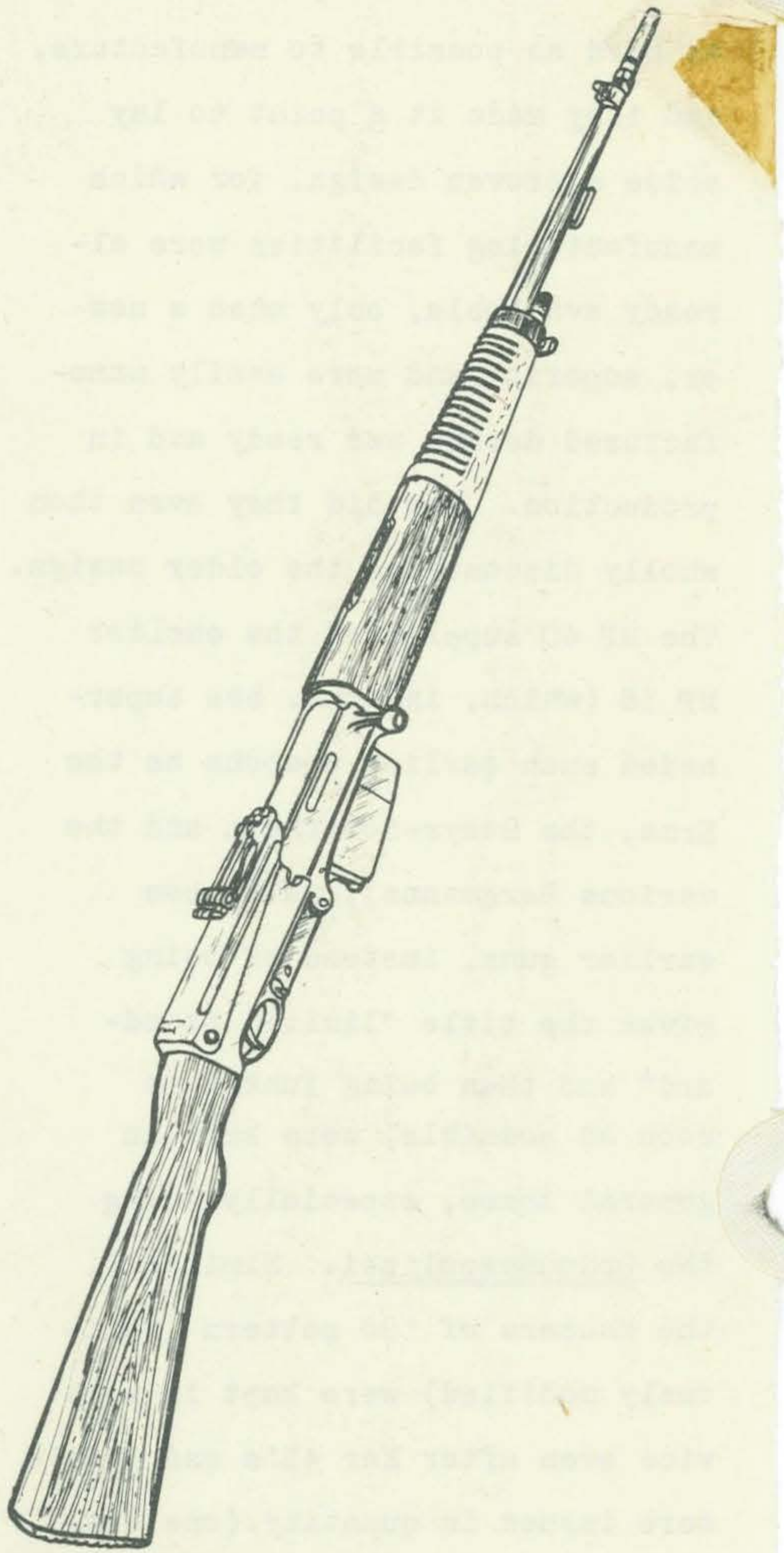
Czech ZB 29. This is a semi- and full-auto rifle with selective switch. Magazine is withdrawn. Beechblock shown in full rear position. This rifle was used in Germany, Abyssinia and in the Far East in limited quantities. liber 7.92-mm German.

--that it was set aside by them as being too complicated and difficult to manufacture. The Germans did not recognize the "imperative necessity" of making a service rifle as complicated and as hard as possible to manufacture, and they made it a point to lay aside a proven design, for which manufacturing facilities were already available, only when a newer, superior and more easily manufactured design was ready and in production. Nor did they even then wholly discontinue the older design. The MP 40 supplanted the earlier MP 38 (which, in turn, has superseded such earlier weapons as the Erma, the Steyr-Solothurn and the various Bergmanns); yet these earlier guns, instead of being given the title "limited standard" and then being junked as soon as possible, were kept in general issue, especially among the Ordnungspolizei. Similarly, the Mausers of '98 pattern (variously modified) were kept in service even after Kar 43's and G 41's were issued in quantity.(one company alone supplied almost 90,000 G 41's and nearly 130,000 Kar 43's). So, since the ZH 29 was neither more manufacturable nor in production, it was out.

The ZH 29 is particularly interesting for several reasons. In the first place, the barrel is set at a slight angle to the receiver--sideways! The barrel is enclosed in three separate jackets, the rear one of wood, the middle one of cast aluminum. The front jacket of steel, including the bayonet lug, front sight and gas cylinder, is held on by a threaded ring; it, in turn, holds on the other jackets. Interestingly, the barrel runs at an angle through these jackets, which are aligned with the receiver. The Czechs, in designing this rifle, seemed determined to make it as ingenious and original as possible. In addition to the features already mentioned, they also designed the hammer so that it would hold back the bolt when the magazine was emptied, thus eliminating various bolt catches. They designed

the entire rifle so that it could be field-stripped by removing only two spring-locked pins. They furnished ten- and twenty-round magazines with the gun, and the owner of the specimen I have examined (Mr. Albert Kutner, 20 Mattoon St., Springfield, Mass.) states that he has seen magazines of even greater capacity.

For all their ingenuity, however, the Czech designers were unsuccessful in having this rifle widely used. The trend in arms design was running against beautifully made--and this rifle <u>is</u> a beautiful piece of machinery and of the gunmaker's art--weapons, arms whose design involvs extensive and slow machining. The drift was toward arms employing a maximum of pressed metal parts, and there were only three of these in the ZH 29: the magazine, magazine floor plate, and the buttplate. The entire rifle was designed to be a superb piece of machinery, which it is. It was not contrived to be a mass-production war weapon--and it certainly isn't. So it had to go. It's interesting to note that the Czechs themselves apparently felt the same way, since they continued to use the "Brno Mauser".



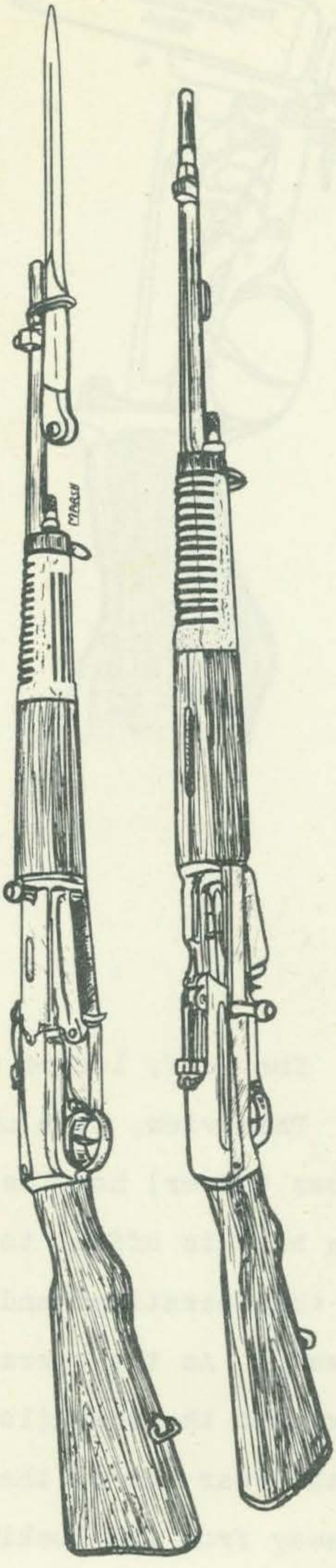


FIGURE 1: The ZH 29. Note that the operating slide covers the right side and the top of the bolt. The receiver (see FIG. 4) is entirely open on the right side. Also note the various barrel jackets, especially the offset gas cylinder in the muzzle jacket.

The magazine latch is of the type used in the Kar 43 and the Tokarev, also in the ZB and Bren. It has, however, one notable feature: the front end of the magazine is normally supported by a fixed ledge, but in the ZH 29 both front and rear of the magazine are held by spring-loaded latches. To remove the magazine, only the rear latch need be released. This makes it unnecessary to insert the magazines with the front end tipped up (as in the Kar 43 and Tokarev) since the magazine may be pushed straight in, when both latches will engage it. In the lowest sketch the bolt has been fully retracted.

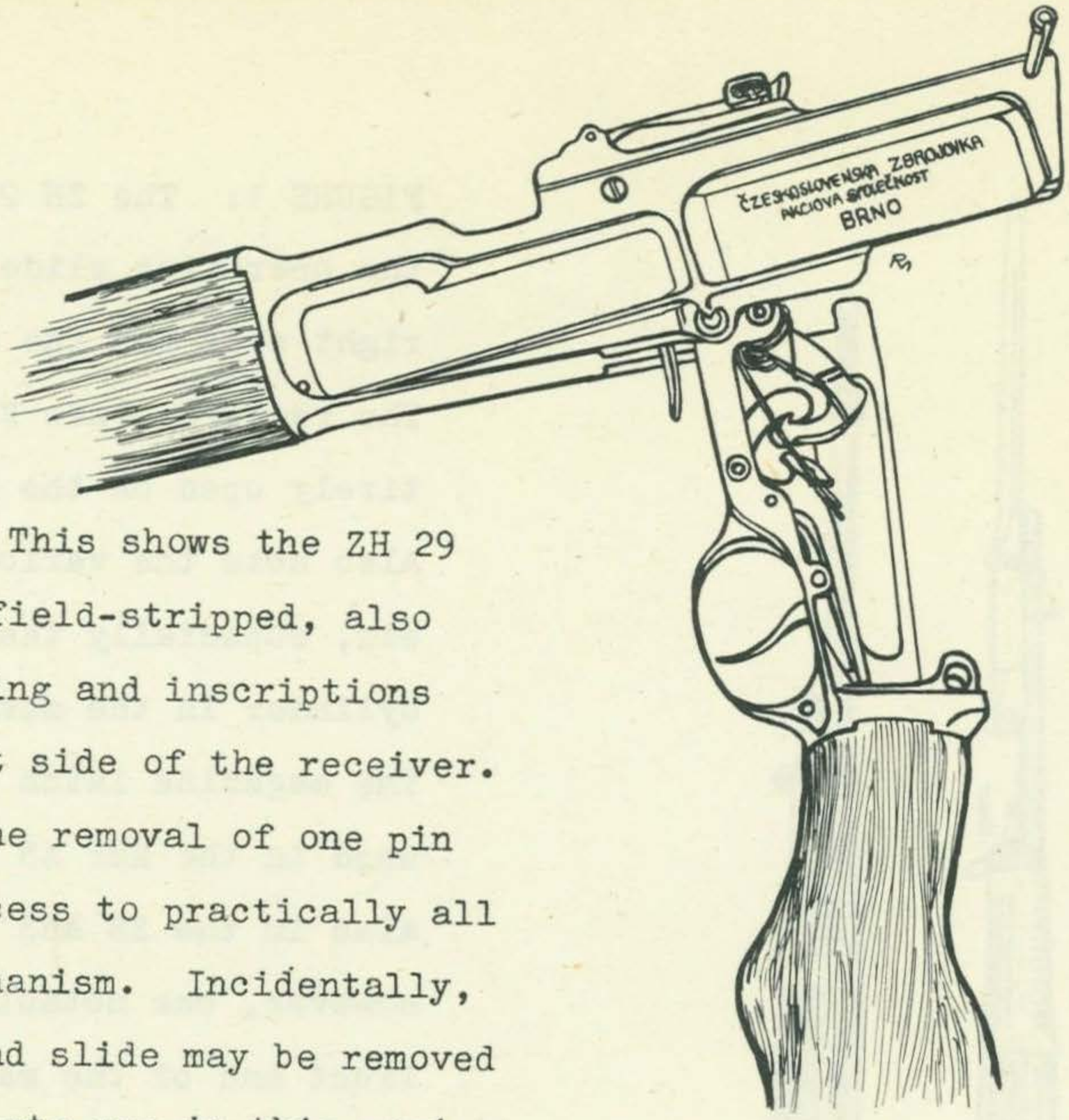


FIGURE 2: This shows the ZH 29 partially field-stripped, also the machining and inscriptions on the left side of the receiver. Note how the removal of one pin permits access to practically all of the mechanism. Incidentally, the bolt and slide may be removed when the parts are in this position. The screw (head visible), just below the axis pin of the rear sight, holds a replaceable locking shoulder or key. (See FIG. 4)

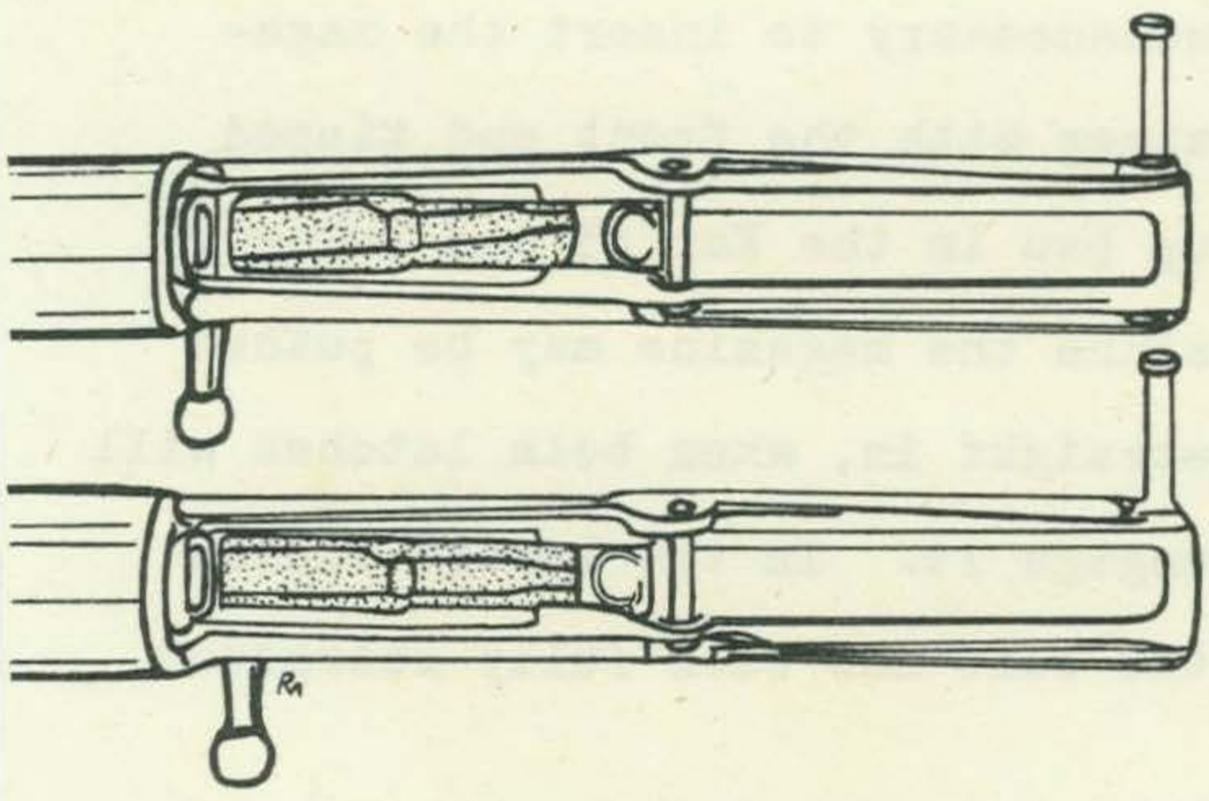


FIGURE 3: The bolt, locked and unlocked. This view, from underneath, shows (upper) how the rear end of the bolt is offset to the left when the operating handle is fully forward. As the operating handle moves to the rear (lower), it moves the rear end of the bolt out away from its locking key. (See FIG. 4.)

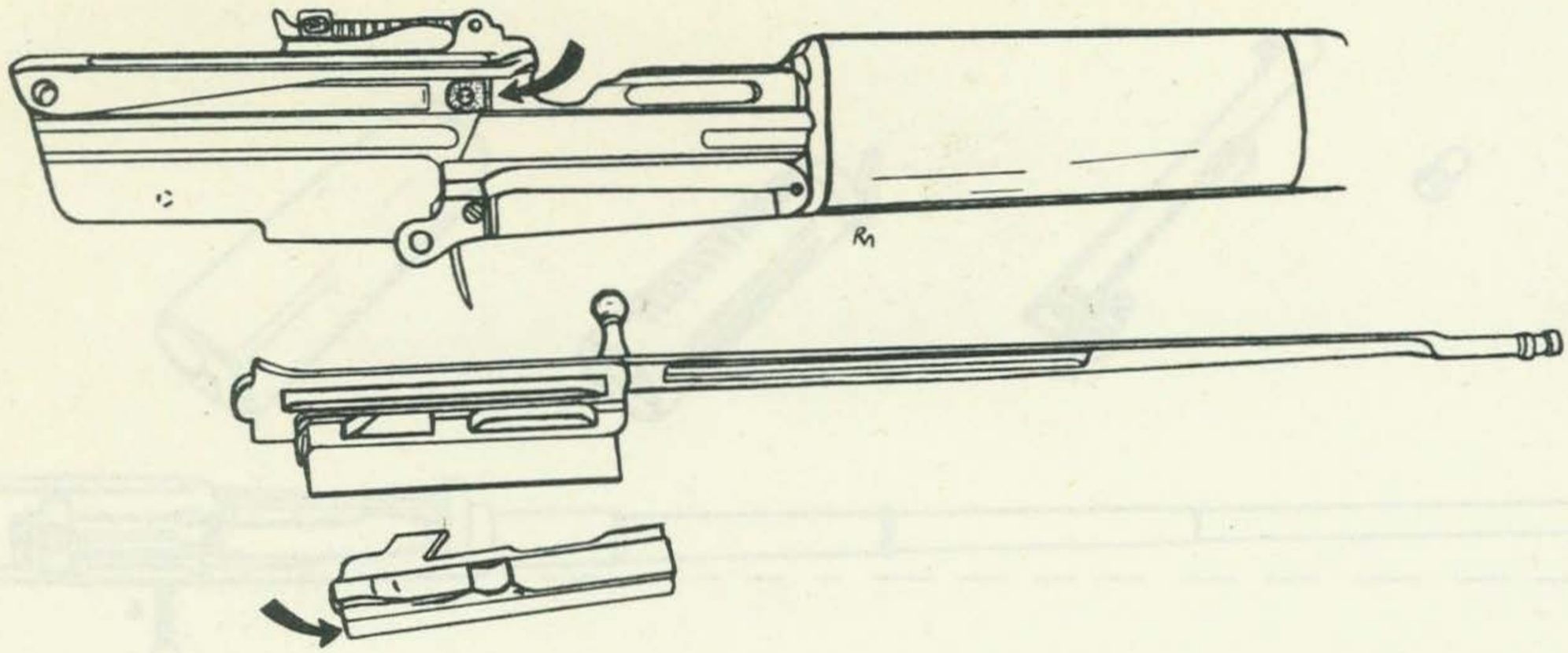


FIGURE 4: The works. In this view, the lock housing has been removed from the receiver, and the slide and bolt have been laid out. Note, in the receiver, the locking key (arrow, shaded) and note, too, the fact that removal of the lock housing leaves open all of the right side of the receiver. The bolt and slide have been turned over better to illustrate the locking system. The locking shoulder on the left side of the bolt which abuts the locking key is indicated by an arrow. Opposite it may be seen the locking cam, a lug which fits into a corresponding cam slot in the slide. The slide is extensively milled out to reduce weight, as are the receiver and lock housing (see FIGS. 6 & 7). Note the top plate of the slide which extends over the top of the bolt and closes the bolt opening in the receiver.

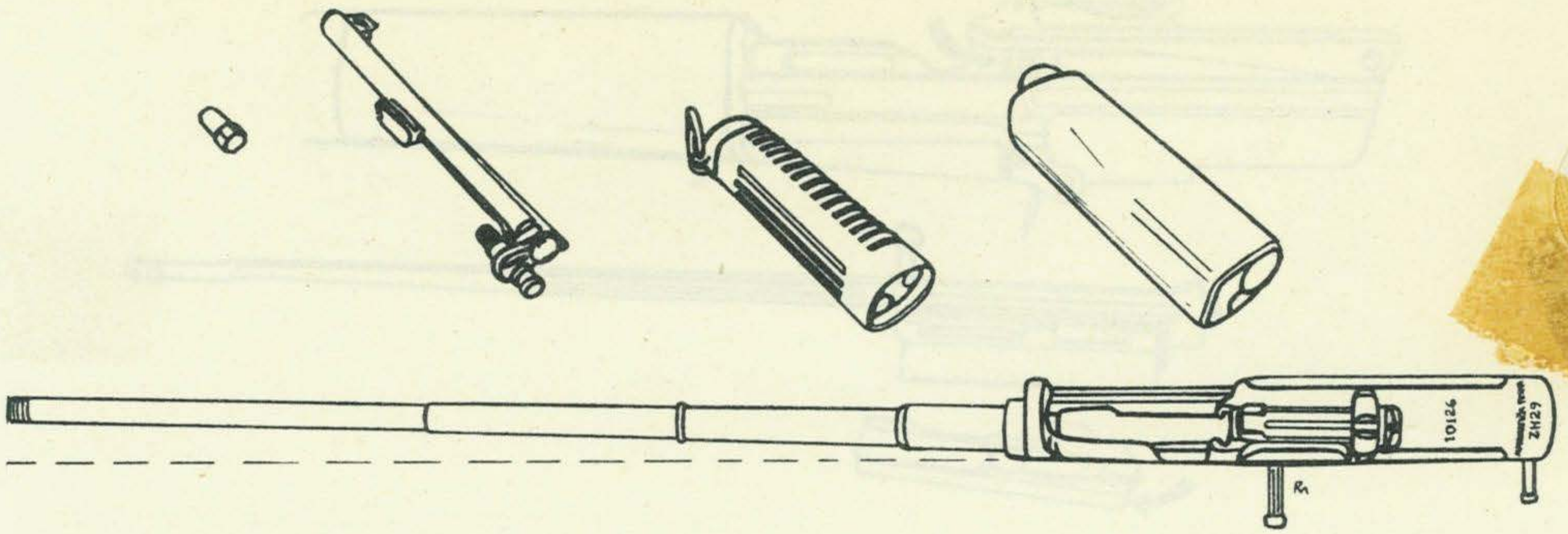


FIGURE 5: It's bent! See how the barrel, stripped of its various jackets, is set in the receiver just a little off the beam. The gun was designed this way, apparently to simplify the matter of lining up the slide, gas cylinder and receiver. This is an original idea, but its virtues, if any, are well hidden. Above the barrel and receiver are (left to right) the jacket cap, the front jacket with bayonet lug and gas cylinder, the cast aluminum jacket with cooling fins and front sling swivel, and the rear jacket, made of wood fitted around a thin metal tube. Only the front jacket lines up with the barrel; the middle and rear jackets line up with the receiver. The front sight, which is also part of the front jacket, is offset to the right. Note that, to conform to the angle of the barrel and to the location of the front sight, the rear sight is set parallel to the barrel--therefore somewhat askew on the receiver. Incidentally, the combination tool which accompanies the gun makes removal of the cap a simple matter; in fact, the entire gun may be disassembled --and reassembled--using only this tool. No, not the barrel!

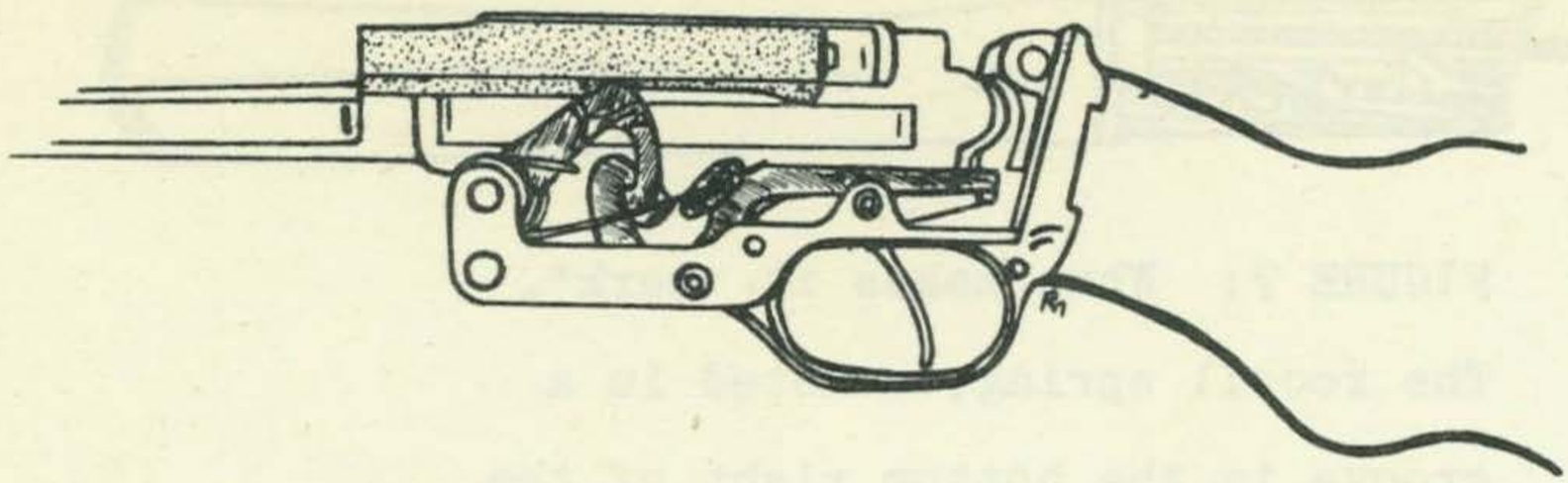


FIGURE 6: How the "bolt-catch" works. The Czechs, by making the hammer do the work of a catch have eliminated several parts from the gun. When the hammer is held by the front sear hook, the trigger entirely released, the nose of the hammer rises high enough to engage a semi-circular cut in the bottom of the bolt (shaded), holding it to the rear. Therefore, when you have fired the last shot, the magazine follower rises and blocks the bolt, and you naturally release the trigger to change magazines, thereby allowing the hammer to catch the bolt. After inserting a new magazine, you simply pull the trigger and the bolt slams shut. Pulling the trigger causes its rear arm to rotate upward, lifting the tail of the sear. This rocks the front arm of the sear forward and down, which pulls the hammer down just enough to free the bolt and then releases it. As the bolt moves forward, a nub on the rear end of the feed rib pushes the hammer down until it's caught by the sear dog (corresponds to the rear sear hook). Note how one mousetrap spring serves as hammer spring, sear spring, sear dog spring and trigger spring. Bless my soul! The safety, incidentally, is a rotary bolt which blocks the front arm of the trigger when "on".

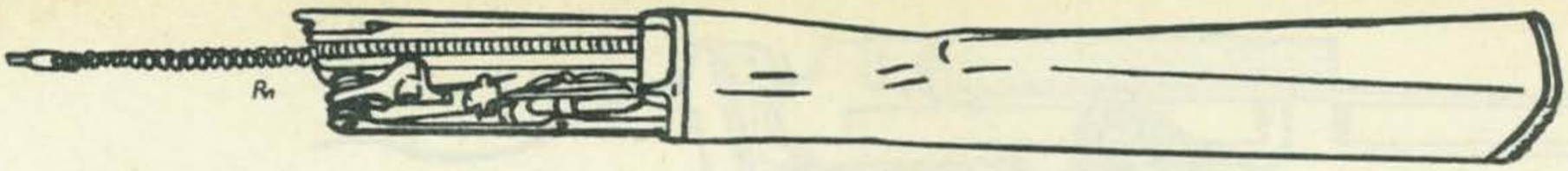


FIGURE 7: What makes it "perk". The recoil spring, mounted in a groove in the bottom right of the lock housing, extends down into a tube in the stock. The spring plunger is normally prevented from flying out by the hammer pin. A nose on the bottom of the rear end of the slide (see FIG. 4) contacts the plunger, compressing the recoil spring during recoil.

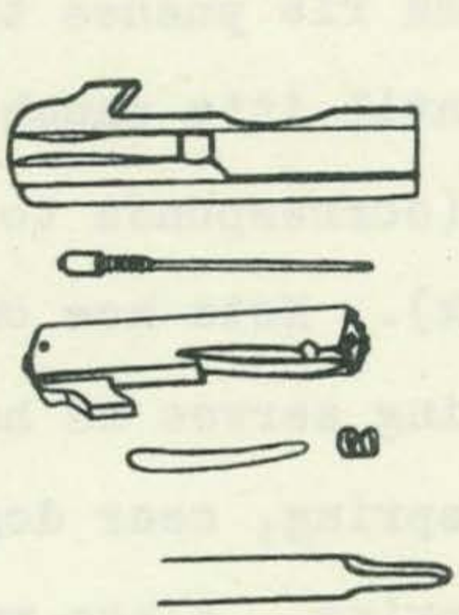


FIGURE 8: The bolt. From top to bottom: bottom view of the bolt, the firing pin, top right view of the bolt, the extractor spring and extractor, a close-up of the business end of the firing pin. This firing pin is a peculiar gadget, being shaped rather like a chisel with a rounded end. The smaller dimension of the nose is roughly equal to normal firing pin diameter, but the larger dimension is twice normal. An interesting idea--hanged if I can figure out