

1,413,109.

F. FEEDERLE,
FIREARM.
APPLICATION FILED JUNE 17, 1921.

Patented Apr. 18, 1922.

4 SHEETS—SHEET 1.

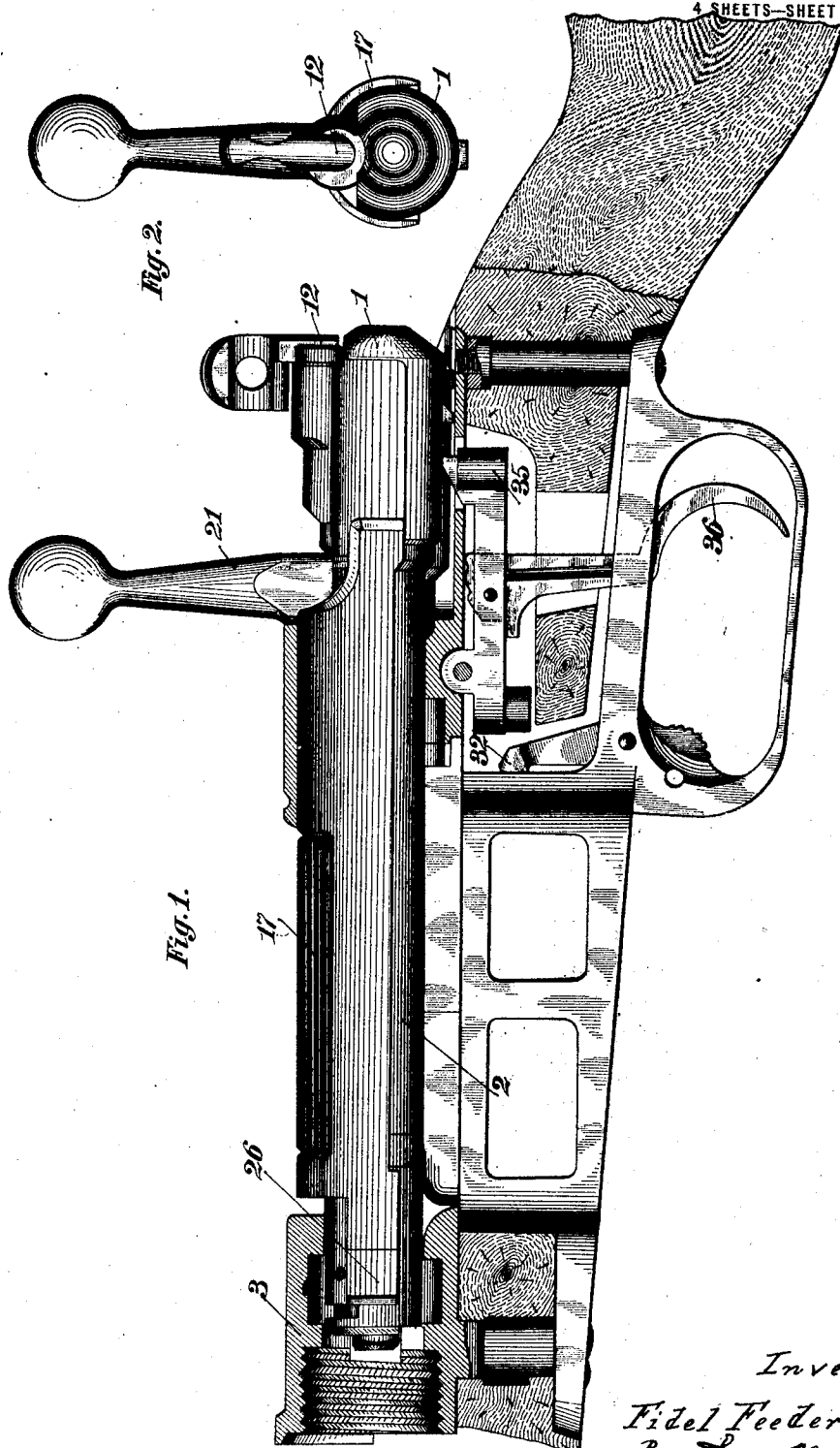


Fig. 2.

Fig. 1.

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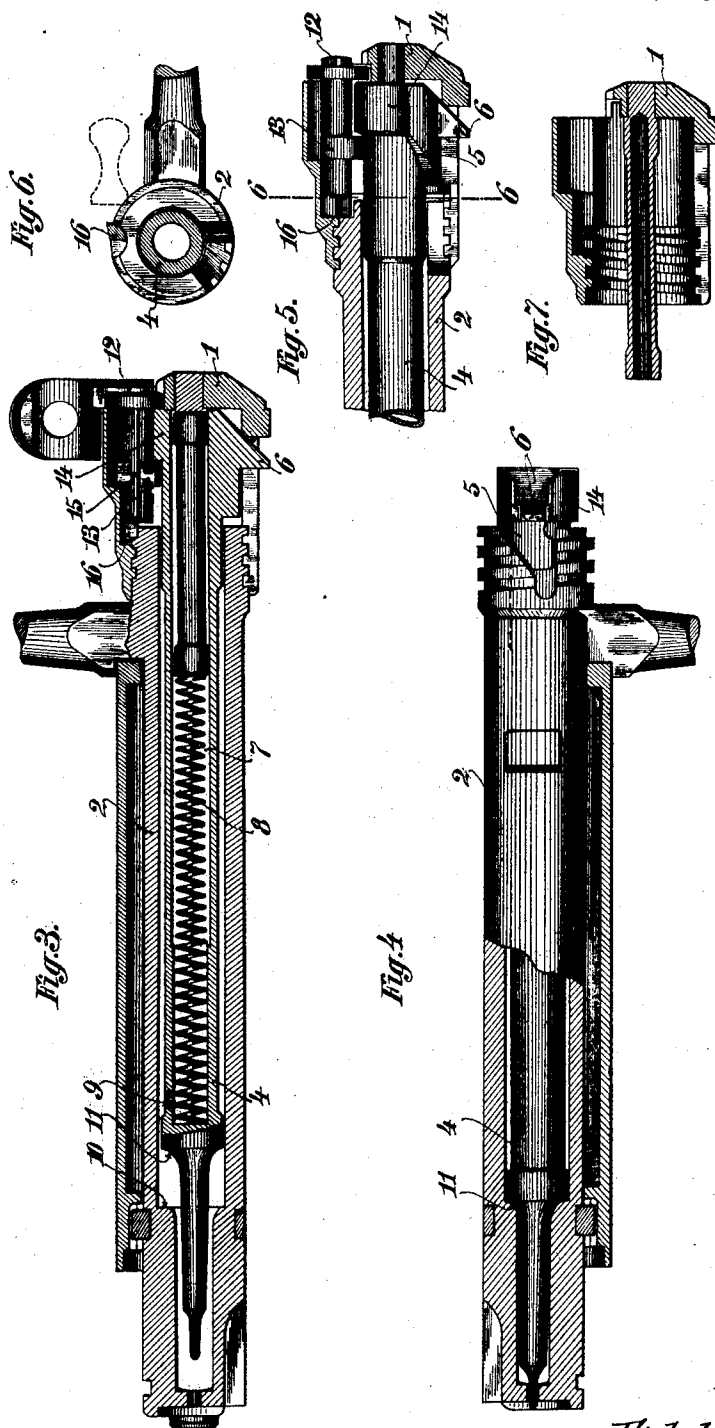
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4 SHEETS—SHEET 2.

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4 SHEETS—SHEET 3.

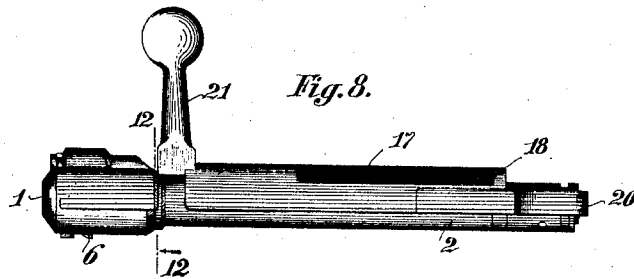


Fig. 8.

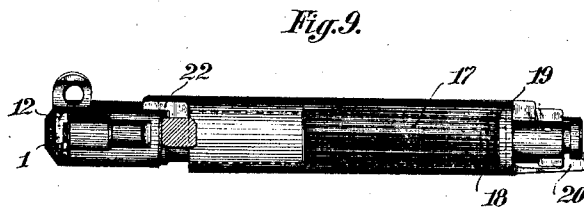


Fig. 9.

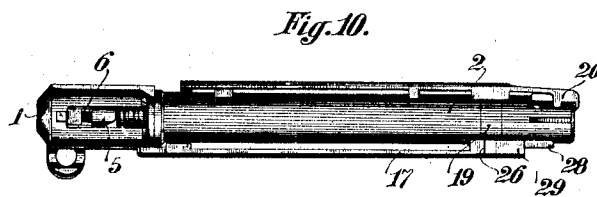


Fig. 10.

Fig. 11.

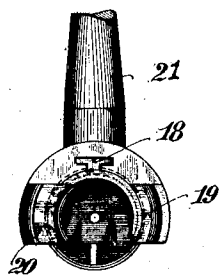


Fig. 12.

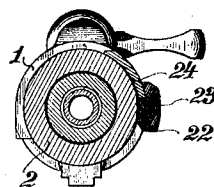


Fig. 13.

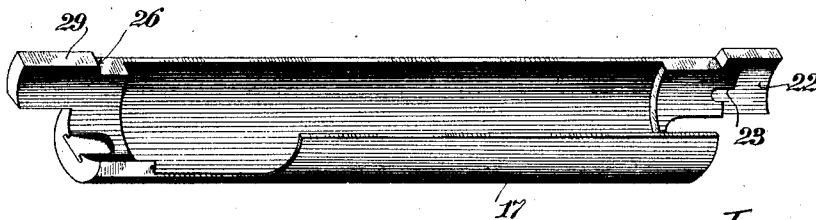


Fig. 14.

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4 SHEETS—SHEET 4.

1,413,109.

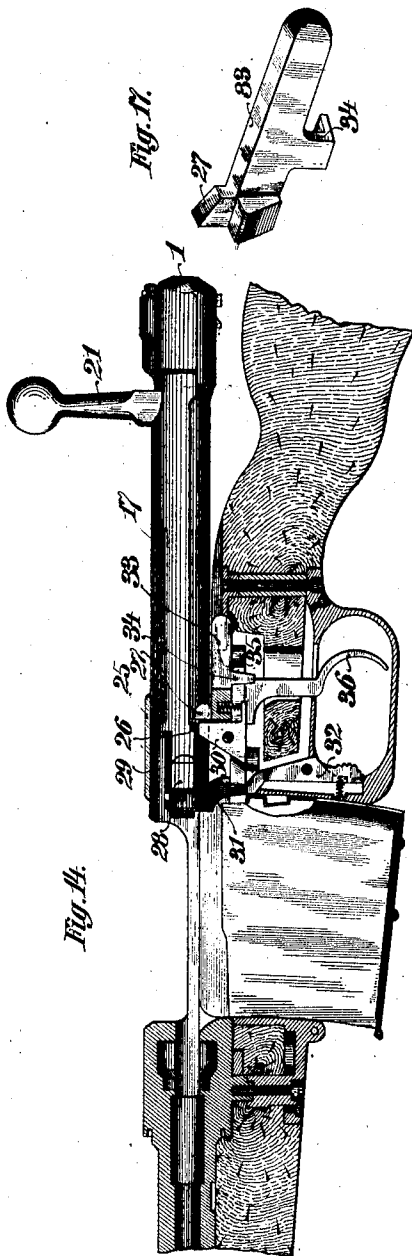


Fig. 11.

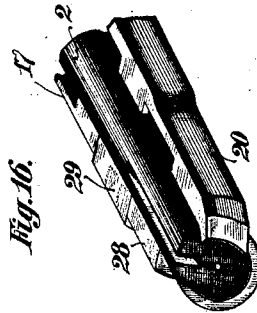
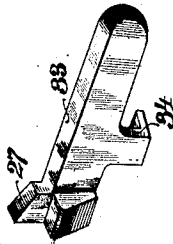


Fig. 16.

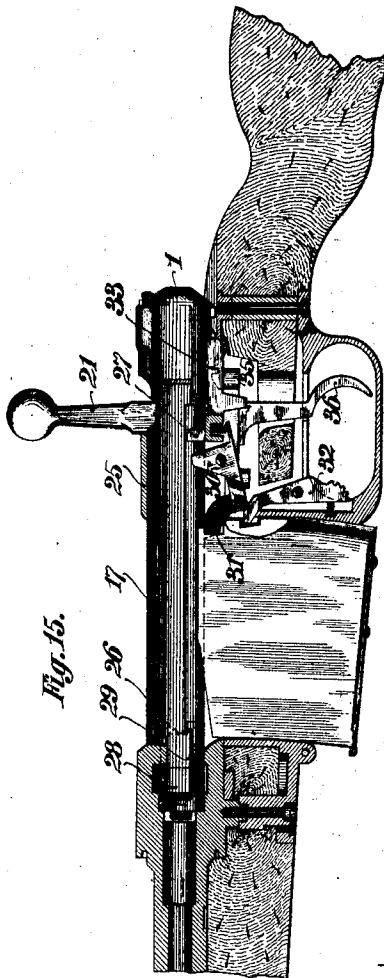


Fig. 15.

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UNITED STATES PATENT OFFICE.

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FIREARM.

1,413,109. Specification of Letters Patent. Patented Apr. 18, 1922.

Application filed June 17, 1921, Serial No. 478,348.

To all whom it may concern:

Be it known that I, FIDEL FEEDERLE, citizen of the German Republic, residing at Oberndorf-on-the-Neckar, Germany, have invented certain new and useful Improvements in Firearms, (for which I have filed applications in Germany, Aug. 3, 1917; Nov. 20, 1917, and Dec. 22, 1917,) of which the following is a specification.

This invention relates to bolt breech mechanisms for fire arms and has particular reference to actions of the Mauser type, in which, as is well known, the cocking of the firing pin is effected through the medium of cocking cams or cocking surfaces. The invention has for its object to effect a simplification of and improvement on such breech mechanisms and it consists essentially in the fact that the firing pin nut which is present in the 98 model breech mechanism is dispensed with and the cocking cam and cocking piece located directly on the firing pin, the bore of which is closed at the rear by a locking cap which is constructed as a sleeve closed at the back and screwed onto the bolt and is provided with the usual safety catch. As a further feature of this invention an abutment for the firing pin is also arranged inside the bore of the bolt in such a position that contact of the cocking surfaces is prevented when the weapon is fired. Furthermore the bolt mechanism is, according to the invention, provided with a protecting cover, which follows the movements of the breech mechanism and in so doing, performs certain other functions which have hitherto been executed by the bolt or by special appliances.

Now in order that the invention may be fully understood, and readily carried into practice reference is hereinafter made to the accompanying drawings which illustrate a preferred embodiment.

In these drawings:—

Figure 1 is a partial longitudinal section through a rifle provided with the new breech mechanism.

Figure 2 is a rear elevation of the bolt with the bolt handle and safety catch upright.

Figure 3 is a longitudinal section through the bolt and locking cap with the firing pin cocked.

Figure 4 is a bottom plan view partly in section of the bolt with the firing pin uncocked and the locking cap removed.

Figure 5 is a partial longitudinal section through the bolt and the locking cap with the firing pin at "safe" and

Figure 6 is a section on the line 6—6 of Figure 5.

Figure 7 is a longitudinal section through the locking cap.

Figure 8, drawn to a smaller scale, is a side elevation of the complete bolt and protecting cover plate, seen from the right.

Figure 9 is a top plan and

Figure 10 a bottom plan view of the bolt and cover illustrated in Figure 1.

Figure 11 is a front elevation of the bolt on an enlarged scale and

Figure 12, likewise on an enlarged scale, is a section on the line 12—12 of Figure 8.

Figure 13 shows the protecting cover separately from the interior and in perspective.

Figures 14 and 15 are two partial longitudinal sections through the breech mechanism of a rifle and illustrate the action of the protecting cover on the lock holder and also on the ejector and

Figures 16 and 17 are perspective views of certain constructional details.

The locking cap 1 is constructed in the form of a sleeve closed at the rear and screwed on to the bolt 2 by means of a square screw thread (see Figures 3, 4, 5, 7). The front part of the bolt 2 engages, when the breech is closed, in the head 3 of the barrel extension and is locked there in the usual way by means of lateral lugs. On the firing pin 4 are situated the cocking cam 5 and cocking piece 6 (see Figure 5) and said pin is also provided with a bore 7 which serves to receive the firing pin spring 8 (see Figure 3). In order to prevent this spring from falling out accidentally when the action is stripped, this bore is constricted at its front end, so that the spring 8 engages in it frictionally and is thus held in position even when the firing pin is removed from the bolt. The firing pin 4 is also provided at its front end with the hole 9 (see Figure 3) through which the air—the escape of which rearwards is impossible on account of the closed locking cap—can pass out when the firing pin is cocked, so that the action of cocking does not produce an opposing cushion of compressed air.

The location of the cocking cam and the cocking piece on the firing pin obviates the use of the firing pin nut hitherto employed, for example in the 98 model. In order to

prevent the firing pin from striking against the opposing surface on the bolt 2 when the weapon is fired, there I provide, in the bore of the latter a shoulder or stop 10 against which the shoulder 11 of the firing pin 4 bears when the action is uncocked and which serves to hold the opposing cam surfaces a little way apart (see Figure 4, on the right).

The safety catch 12 of the well known type carries on its cylinder a collar 13, which, when the action is cocked and the lever of the safety catch turned to the right, engages the edge or shoulder of the projection or collar 14 of the firing pin 4 and thus locks the latter in its cocked position in a manner which will readily be apparent (see Figures 5 and 6). A recess 15 in the collar 13 shaped to the form of the projection 14 enables the firing pin to be released when the safety catch lever is turned over towards the left. The lug 16 of the said safety catch engages in known manner when the breech mechanism is set to "safe," in a recess in the bolt 2 (see Figures 5 and 6) and thus prevents the head of the bolt from being drawn back, but this mutual engagement is not operative in other positions of the safety catch.

The protecting cover 17 embraces the bolt semi-circularly and is held thereon at its front end by a lug 18 which engages in a T-shaped groove therein (see Figures 11 and 13) and which in the example shown, is formed on the usual rotating ring 19 of the extractor 20. The rear end of the protecting cover 17 engages in a groove in the stem 21 of the bolt handle (see Figures 8 and 9) and is provided with an extension 22, having, on its interior side a shoulder 23, which bears against a corresponding projection 24 on the locking cap 1. (See Figure 12.)

This engagement takes place when the protecting cover 17 is put on in such a manner that the bolt can be inserted into the bolt-way 25 of the rifle. In this position, in which the cover is prevented from rotating, its rear extension 22 (see Figure 12) holds the locking cap fast in position so that the rotation thereof when the bolt is drawn back to open the breech is prevented. With this construction, therefore, the pressure bolt which is present in the 98 model rifle and which, as is well known, is only released when the breech mechanism is closed by impact against the breech shoe is no longer necessary. The protecting cover 17 embraces the bolt in such a way that it can be pushed, together with the latter, inside the bolt-way 25, and it is suitably provided with longitudinal and transverse flutes, as shown in the drawing, for the purpose of reducing friction. At the front end of the protecting cover is provided another shoulder 26 (see Figures 10 and 13) which is so situated that when the bolt is drawn back for the purpose of opening the breech it hits against the bolt

stop 27 and thereby limits the movement of the bolt (see Figure 14). The usual left hand locking lug 28 on the bolt is thus protected from onesided wear, so that a uniform locking action is always ensured. Furthermore the cover 17 is arranged so close to the lug 28, that no dirt can accumulate and interfere with the locking action. The face 29 which lies behind the shoulder 26 on the cover 17 co-operates with a lever arm 30 on the pivotally mounted ejector 31, (see Figures 14 and 15). This ejector 31 is arranged, as shown, underneath the bolt 2 and its nose engages in a corresponding groove at the front end and on the underside thereof (see Figures 14 and 16) when the bolt is almost completely drawn back. Prior to this and when the breech is closed, the ejector is kept with its nose pressed downwards by the solid cylindrical surface of the bolt, so that its arm 30 projects upwards (see Figure 15) into the path of the shoulder 26 and of the face 29. Shortly before the final movement of the bolt is reached the face 29 adjoining the shoulder 26 strikes against the lever arm 30 of the ejector 31 and forces its nose positively into the front groove of the bolt (see Figure 14), so that the cartridge case is ejected. The employment of a spring for effecting the proper function of the ejector is thus avoided.

The ejector 31 is so mounted and so constructed at its front end that when the breech mechanism is closed it bears against the upper incline of the magazine catch 32 (see Figure 15) which is pivotally mounted in the magazine box in the well known way and holds the magazine in position by engaging the notch in its wall (see Figure 15). In this way the magazine remains locked until the bolt has been drawn so far back that the front nose of the ejector 31 engages in the front groove of the chamber (see Figures 14 and 16); that is to say until shortly before the bolt completes its outward travel. The magazine catch 32 can then be released in the usual way by hand and the magazine taken off. It will be observed that during firing, the magazine catch is held firmly locked so that it cannot become disengaged of its own accord even under the jarring which occurs during firing, and thus the magazine cannot fall out after it has once been pushed in. The bolt stop 27 (see Figures 14 and 17) is mounted on a lever arm 33, which is pivotally mounted underneath the bolt-way 25. On the lever arm 33 is mounted an angular projection 34, which passes under the trigger lever 35 with a clearance. This clearance or intermediate space is such that when the trigger 36 is pulled in the usual way to fire the weapon, the lever 35 has no action on the lever arm 33 of the bolt stop 27. Only when the trigger is pulled to excess—that is to say, fur-

ther than is necessary to release the cocked firing pin—does the trigger lever 35 come into contact with the projection 34 and pull the bolt stop 27 downwards, so that the bolt
5 can be withdrawn from the weapon.

What I claim and desire to secure by Letters Patent of the United States is:

1. Bolt breech mechanism for fire arms, comprising a cocking cam and a cocking
10 piece located directly on the firing pin, a locking cap closing the bore of the bolt and constructed in the form of a sleeve, said cap being closed at the rear and screwed onto the exterior of the said bolt, and a
15 safety catch carried by the locking cap; substantially as specified.

2. Bolt breech mechanism for fire arms as claimed in claim 1, wherein the bore of the bolt is furnished with an abutment for
20 the firing pin so arranged and located as to prevent contact of the cocking faces when the weapon is fired.

3. Bolt breech mechanism for fire arms as claimed in claim 1, having a bolt stop and
25 a protecting bolt cover, which moves with the bolt and is furnished with means for preventing rotating of the locking cap, with means for engaging the bolt stop and with
30 means for actuating the ejector; substantially as specified.

4. Bolt breech mechanism for fire arms as claimed in claim 3, wherein the bolt cover is mounted at its front end on a portion of the bolt and has a projection which bears
35 against a corresponding projection on the locking catch in such a manner that rotation of the latter cannot take place when the bolt is in the weapon.

5. Bolt breech mechanism for fire arms as claimed in claim 3, wherein the protecting
40 cover is provided with a stop shoulder or abutment which, when the bolt is drawn back, strikes against the bolt stop; substantially as specified.

6. Bolt breech mechanism for fire arms
45 as claimed in claim 5, wherein the underface of the said shoulder or abutment on the bolt cover strikes, when the bolt is drawn back, against an arm carrying a cartridge ejector and thus brings the said ejector automati-
50 cally into its operative position.

7. Bolt breech mechanism for fire arms as claimed in claim 6, wherein the ejector, which is released by a face on the bolt cover when the breech is closed, is set by the bolt
55 in position for locking the magazine holder in place; substantially as specified.

In testimony whereof I affix my signature.

FEEDERLE, FIDEL.