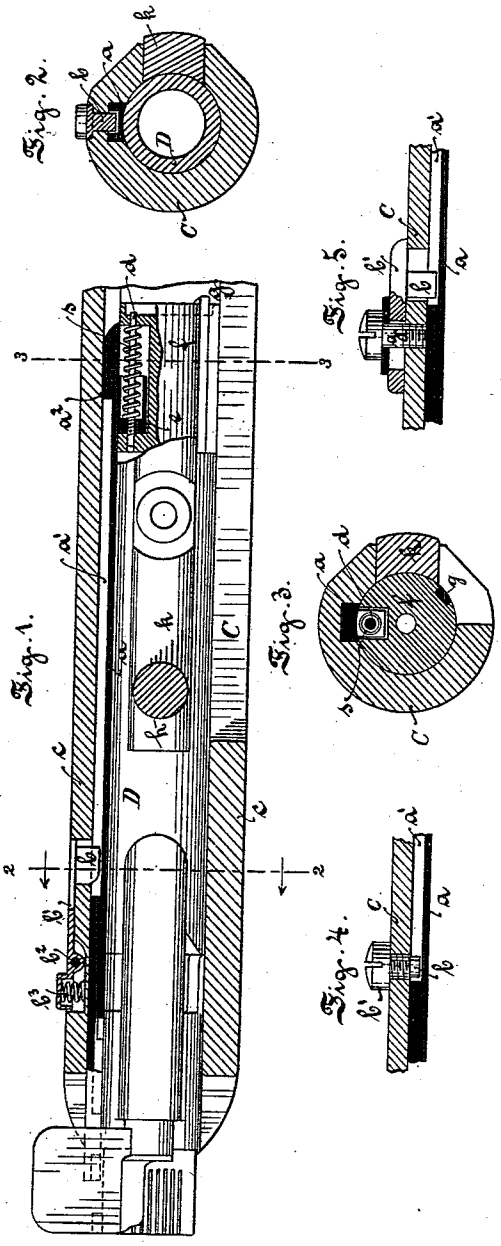
(No Model.)

P. MAUSER.

CARTRIDGE EJECTOR FOR BREECH LOADING FIRE ARMS.

No. 398,064. Patented Feb. 19, 1889.



WITNESSES:
C. K. Fraser,
J. A. E. Criswell.

INVENTOR:
Paul Mauser.
By his Attorneys,
Arthur O. Fraser & Co.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

PAUL MAUSER, OF OBERNDORF-ON-THE-NECKAR, WÜRTEMBERG, GERMANY, ASSIGNOR TO THE WAFFENFABRIK MAUSER, OF SAME PLACE.

CARTRIDGE-EJECTOR FOR BREECH-LOADING FIRE-ARMS.

SPECIFICATION forming part of Letters Patent No. 398,064, dated February 19, 1889.

Application filed July 2, 1888. Serial No. 278,759. (No model.) Patented in Belgium March 8, 1888, No. 80,933; in Italy March 31, 1888, No. 23,205/478; in England April 17, 1888, No. 5,709, and in Spain June 12, 1888, No. 8,054.

To all whom it may concern:

Be it known that I, PAUL MAUSER, manufacturer, a resident of Oberndorf-on-the-Neckar, in the Kingdom of Würtemberg, German Empire, and a subject of the King of Würtemberg, German Empire, have invented certain new and useful Improvements in Cartridge-Expellers for Breech-Loading Fire-Arms, (which are the subject of Letters Patent in Belgium, No. 80,933, dated March 8, 1888; in Italy, No. 23,205/478, dated March 31, 1888; in England, No. 5,709, dated April 17, 1888, and in Spain, No. 8,054, dated June 12, 1888,) of which the following is a specification.

This invention relates to breech-loading fire-arms of that class having a longitudinally-sliding bolt, and which are known as "bolt-guns."

The object of the invention is to provide an improved construction of cartridge expeller or ejector for such guns, whether they be single-loaders, or guns with temporary detachable magazines, or magazine-guns called "repeaters."

In the accompanying drawings my improvement is represented as applied to a single-loading Mauser gun as an example; but it will be understood that it is equally applicable to Mauser guns with temporary magazines or to Mauser repeating-guns, as well as to bolt-guns of other systems. The modifications of detail necessary for these different applications of my invention can be readily made by any skilled gunsmith without the exercise of the inventive faculty.

Figure 1 of the accompanying drawings is a sectional plan view of the breech portion of the gun, the breech-case and cartridge-expeller and a fragment of the bolt-head being shown in mid-section. Figs. 2 and 3 are transverse sections made respectively on the lines 2 2 and 3 3, Fig. 1. Both these views are turned on their sides, the top of the gun being at the right hand in each figure. Figs. 4 and 5 are fragmentary horizontal sections cut in the same plane as Fig. 1, and showing modified constructions of the stop applied to the left-hand wall of the breech-case.

Let C designate the breech-case, and D the bolt, of which *k* is the locking projection, and *h* in Fig. 1 is the hand-lever. In Figs. 1 and 3, *f* designates the bolt-head or breech-block. These parts, being all understood, require no further description.

The expeller or ejector consists of a bar, *a*, extending longitudinally on the left-hand side of the bolt, and is sunk in a longitudinal groove or recess in the left-hand wall of the breech-case. The bar *a* extends from the bolt-head *f* nearly back to the end of the breech-case C. Near its front end it is formed with a ledge, *e*, extending into a recess formed in the side of the bolt-head *f*, as shown in Figs. 1 and 3. An ejector-pin, *d*, is fastened to the ledge *e*, preferably by screwing it into the latter, as shown in Fig. 1, and extends beyond the recess in the bolt-head at both ends, a small hole being drilled longitudinally through the bolt-head, into which the ends of the pin enter. A coiled spring, *s*, is applied to push back the pin *d* and ejector-bar *a*.

The ledge *e* consists, preferably, of a block which is bored out from the front concentrically with the pin *d* to receive the coiled spring *s*, and its front side serves as a stop to limit the backward movement of the head *f* relatively to the bar *a*. The recess in the bolt-head is sufficiently longer than the ledge or block *e* to admit of a relative movement of the bolt of three-eighths to one-half of an inch. This construction of the ledge *e* with the spring-socket bored out in it has the important advantage that the spring *s* cannot be set or injured by being pressed together too much, since the front edge of the ledge or block abuts against the front of the recess and prevents any further compression of the spring. The spring is also guided and kept central by the bore in the ledge *e*, whereby it is caused to work evenly. After the gun is fired and when the breech is opened by the pulling back of the bolt, the extractor-claw *g*, carried by the bolt, pulls the empty cartridge-shell out of the barrel and drags it back as the bolt is drawn back until just a short distance before the end of the stroke of the bolt the ejector-pin *d* is stopped. Prior to this instant the pin *d* was pressed back with its front end flush, or approximately so, with the front of the breech-block *f*; but after the pin is thus stopped and while the bolt is completing its back-stroke the backward movement of the bolt-head *f* leaves the arrested ejector-pin *d* protruding beyond the front of the bolt-head.

As the claw g continues to pull the cartridge-shell back, the base of the shell is stopped by its encounter with the pin d at the left hand, while the claw g, pulling back the right-hand side of its rim, whirls the shell around the claw and throws it out of the gun.

The stopping or arresting of the pin d is effected in the following manner: The bar a is formed upon its outer face with a groove, a', which terminates near the front end of the bar in a shoulder, a^2, and near the rear end in a similar shoulder. Into this groove a' a stop, b, protrudes through a slot in the side wall of the case C. In the construction shown in Fig. 1 this stop consists of a tooth projecting from the end of a lever, b', which is pivoted on a pin, b^2, and the other arm of which is cup-shaped and is pressed out by an inclosed coiled spring, b^3. The lever b' is placed in a suitable recess in the outer side of the breech-case. During the greater part of the back-stroke of the bolt the bar a slides freely past the stop b, but at the proper moment its shoulder a^2 abuts against the stop and is arrested thereby, so that the ejector-pin d is also stopped during the remaining portion of the backstroke of the bolt. The groove a' is made of suitable length for this purpose, which should be at least equal to the stroke of the bolt plus the width of the stop b, but minus the desired throw of the ejector-pin d relatively to the bolt.

The construction of the stop b shown in Fig. 1 has the advantage of enabling the bolt to be easily removed from the breech-case. For this purpose the cup-shaped end of the lever b' is pressed in by the finger, thereby drawing out the stop b sufficiently to allow the shoulder a^2 to pass it. In reinserting the bolt the beveled front end of the bar a presses back the stop b until the shoulder a^2 has passed it, when the stop b snaps automatically into the groove a'.

By surrendering the advantage just stated the construction of the stop b may be much simplified. In Fig. 4 the stop b consists of the end of a screw, b', screwed into the side of the breech-case C. In Fig. 5 the stop b consists of a tooth projecting from a small slotted plate, b', which is clamped to the breech-case C by a set-screw, g. The slot in the breech-case through which the stop b projects and the slot through which the screw g passes are elongated to admit of the adjustment of the position of the stop b.

It will be understood that the front part of the bar a can be simplified by omitting the bored-out portion of the ledge e and using only the bottom portion thereof, so that the spring s is guided only by the pin d; but this construction is not recommended because it allows the spring s to be injured by compressing it too much during the insertion of the injector into the recess in the bolt-head f. In such case some suitable stop should be formed in lieu of the front end of the bored-out ledge or block e to limit the backward movement of the bolt-head f relatively to the ejector.

My improved ejector has the advantage that the striking of the shoulder a^2 against the stop b is cushioned by the spring s, which increases the durability of the parts. It is applicable as well to repeaters and guns with detachable magazines as to single loaders, since the ejector-pin d is capable of a long stroke, so that the empty shell can be ejected prior to the passing of a cartridge from the magazine into the cartridge-cavity.

I claim as my invention the following defined improvements in the class of fire-arms known as "bolt-guns," substantially as hereinbefore specified, viz:

1. The combination, with the breech case and bolt, of the bolt-head formed with a recess in one side, and an ejector consisting of a bar arranged to slide longitudinally in a groove in the breech-case and having a ledge entering said recess, an ejector-pin fixed to said ledge and sliding in a hole in the bolt-head, a spring in said recess pressing backwardly against said ledge, and a stop for limiting the rearward movement of the ejector.

2. The combination, with the breech case and bolt, of the bolt-head formed with a recess in its side, an ejector consisting of a bar arranged to slide longitudinally in a groove in the breech-case and having a ledge entering said recess, and bored out on the front side to form a cup, an ejector-pin in said recess working through a hole in the front of the bolt-head and fastened to said ledge, and a spring confined within said recess in the bored-out portion of said ledge, with a stop for limiting the backward movement of the ejector.

3. The combination, with the bolt, of the breech-case having a longitudinal groove on one side, an ejector-bar arranged to slide in said groove and formed with a groove on its outer side terminating in a shoulder, a stop projecting from the breech-case into said groove for limiting the rearward movement of the bar, an ejector-pin fastened to said bar, and a spring for retracting said pin.

4. The combination, with the bolt, of the breech-case having a longitudinal groove on one side, an ejector-bar arranged to slide in said groove and formed with a groove on its outer side terminating in a shoulder, a stop consisting of a lever pivoted to the exterior of the breech-case, and formed with a tooth projecting through a slot in the side of the breech-case and entering said groove in the bar, and a spring pressing against said lever and holding it normally with said stop entering said groove, an ejector-pin fastened to said bar, and a spring for retracting said pin.

This specification signed by me this 3d day of February, 1888.

PAUL MAUSER.

Witnesses:
EDMUND GRONCKI,
THEO. ABENHEIM.