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EXTRACTOR FOR AUTOMATIC AND OTHER FIREARMS.

APPLICATION FILED JULY 29, 1918. RENEWED JULY 2, 1919.

1,317,587.

Patented Sept. 30, 1919.

2 SHEETS—SHEET 1.

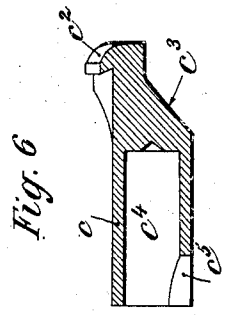


Fig. 6

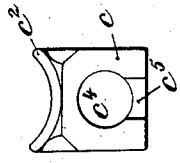


Fig. 3

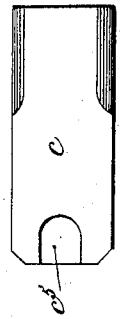


Fig. 5

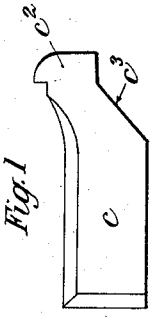


Fig. 1

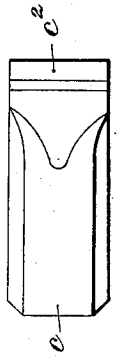


Fig. 4

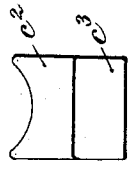


Fig. 2

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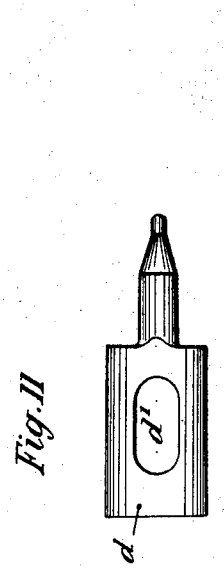
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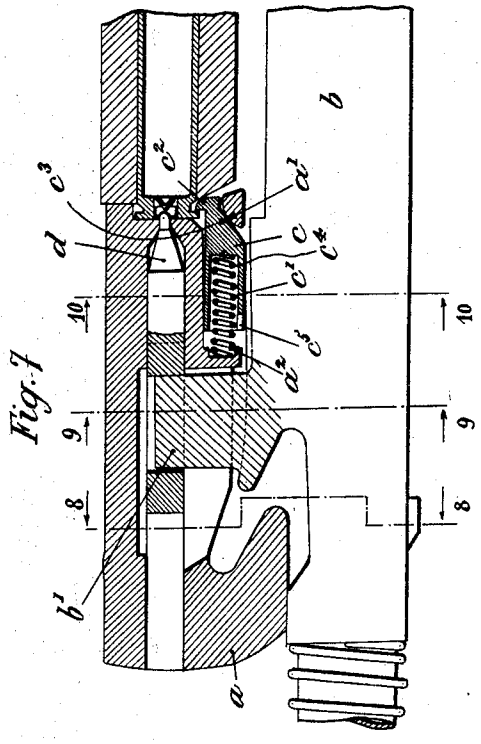
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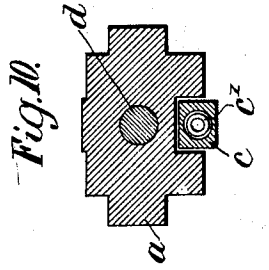
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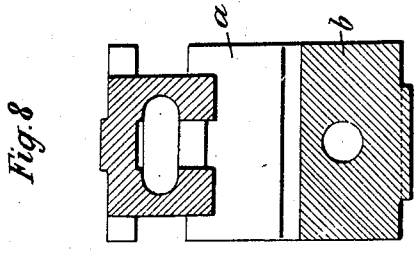
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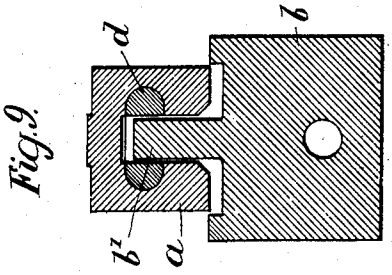
2 SHEETS—SHEET 2.











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UNITED STATES PATENT OFFICE.

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EXTRACTOR FOR AUTOMATIC AND OTHER FIREARMS.

1,317,587. Specification of Letters Patent. Patented Sept. 30, 1919.

Application filed July 29, 1918, Serial No. 247,204. Renewed July 2, 1919. Serial No. 308,269.

To all whom it may concern:

Be it known that I, HENRI ALBERT MERCIÉ, artillery engineer, a citizen of the Republic of France, and a resident of St. Denis, Seine, France, (whose post-office address is 6 route de Gonesse, St. Denis, Seine, France,) have invented new and useful Improvements in Extractors for Automatic and other Fire-arms, of which the following is a specification.

The present invention relates to extractors for breech-loading automatic or non-automatic fire-arms.

The extractor according to the present invention is of the kind described in United States Letters Patent to Benét and Mercié No. 1041410 of Oct. 15, 1912, and having no rigid connection with the breech-block, in which it is freely mounted and held in place by a coiled spring which forces it constantly against an inclined plane formed on the breech-block.

Now experience has established that, in certain fire-arms, this spring shows, after a certain time, signs of fatigue resulting from the repeated trepidations and shocks thereof against parts adjacent to the breech-block and especially from abnormal bending strains to which it is subjected, in particular when the opening and closing of the breech-block take place by a tilting movement of the latter.

On the other hand, in certain fire-arms, more especially the one forming the subject matter of United States Letters Patent applied for by H. G. Squire and H. A. Mercié on Dec. 10, 1917, Serial No. 206502, and entitled Improvements in automatic fire-arms wherein the firing pin, located in the breech-block above the extractor, is operated by the piston located below, the housing for the extractor is formed by a very narrow bridge, on each side of which operate the tangs which are integral with the piston and actuate the firing-pin. The bridge is fragile to a certain extent and therefore constitutes a weak point of the breech-block.

The present invention consists in an arrangement whereby the said bridge may be dispensed with, thus enabling one tang only to be used on the piston and the extractor to be arranged in the very axis of the breech-block, an arrangement which is adapted to being carried out owing to the fact that the extractor according to the present invention is very short, comparatively to the types hitherto devised and notably to the one described in the aforementioned patent dated Oct. 15, 1912. On the other hand, by means of this arrangement, the aforementioned drawbacks are done away with, as regards its spring. Finally, another advantage obtained is that of much simplified manufacture, both of the extractor itself and of its housing.

The accompanying drawing represents the invention applied, by way of an example, to a Hotchkiss automatic fire-arm, wherein the opening and closing of the breech are effected by the tilting action of the breech-block.

Figures 1, 2, 3, 4, 5 and 6, on a purposely exaggerated scale, are respectively a side elevation, a front view, a rear view, a plan, an underside view and a longitudinal section of the extractor.

Fig. 7, in longitudinal section, is a general view showing the extractor in place, with the breech closed.

Fig. 8 is a section along 8, 8, Fig. 7.

Fig. 9 is a section along 9, 9, Fig. 7.

Fig. 10 is a section along 10, 10, Fig. 7 and

Fig. 11 is a plan of the firing-pin.

In Figs. 7–10, a is the breech-block, b, the piston, c, the extractor, c^1 the extractor spring and b^1 the tang of the piston b, engaging a hole d^1 in the firing-pin d, for the operation of the latter.

The extractor c is lodged in its housing in the breech-block a. At its front part, it is provided with the usual claw c^2 for grasping the cartridge rim, and with an inclined plane c^3. Under the combined action of the spring c^1 and the pull exerted on the extractor by the cartridge to be extracted, the inclined plane c^3 tends to constantly force the extractor against the cartridge, owing to the presence, opposite the said plane, of an inclined plane a^1 formed in the housing for the extractor.

The extractor c is formed with a cavity c^4, Fig. 6, serving as a housing for the spring c^1, the latter taking a bearing, on the other hand, in a recess a^2, Fig. 7, formed in the housing in the breech block for the extractor. A notch c^5, Figs. 5, 6, 7 formed in the ex-

tractor, enables the spring c^1 to be acted on by a suitable tool, for the purpose of mounting and dismounting the extractor.

The operation of the extractor is, on principle, the same as that of the extractor covered in the aforementioned patent of Oct. 15, 1912.

The mounting and dismounting are effected as follows: After placing the spring c^1 in its cavity c^4, the extractor c is introduced from the rear, with the claw c^2 in front, by causing it to ride over the inclined plane a^1 until the inclined plane c^3 of the extractor comes into contact with the plane a^1. The spring is then compressed by using the point of a bullet or any suitable instrument, after which the extractor is caused to tilt in order to make it enter its housing, the spring c^1 then assuming its position in the recess a^2.

When dismounting, the spring c^1 is compressed through the opening c^5 as when mounting, until it leaves the cavity a^2, whereupon the extractor is caused to be tilted outwardly, while at the same time the claw c^2 is pushed in order to withdraw the extractor from its housing.

It will be observed that, as the breech is opened, the breech-block a operated by the piston b being abruptly thrust downward, the lower face of the extractor lays exactly against the corresponding upper face of the piston; in this manner, any distortion of the spring in the transverse direction is avoided. The extractor spring c^1, being thus at all times protected and guided, can only be normally distorted in the longitudinal direction. On the other hand, the arrangement according to the invention makes it possible to obtain, besides a simplification in the manufacture, a very compact extractor, which takes up little room. Finally, the extractor can, owing to its reduction in length, be located entirely at the front of the tang b^1 of the piston actuating the firing-pin d, instead of being, as is the case with the arrangement of fire-arm described in the aforementioned patent applied for on December 10, 1917, Serial No. 206,502, partly in the same plane as the pair of operating tangs for the firing-pin. The essential advantage resulting therefrom is that the number of operating tangs may be reduced from two to one and that, consequently, a single hole d^1 is sufficient, arranged in the center line of the firing-pin, as shown in Figs. 7 and 11, while at the same time more strength is imparted to these parts as a whole.

Claims:

1. In a magazine fire-arm, the combination of a reciprocating breech block provided with a laterally open recess for the extractor, through which the extractor may be readily removed, and with a transverse shoulder partly closing the forward portion of the lateral recess, said shoulder having a wedge face projecting into said extractor recess, a longitudinally movable extractor mounted in said extractor recess and provided with a wedge face on its back engaging said wedge face on the breech block, and with a claw oppositely disposed to said wedge face, said extractor being also provided with an axial chamber in the rear end thereof, and a coil-shaped extractor spring also mounted in said axial chamber and projecting rearward into said open recess and normally pressing said extractor toward said wedge face on the breech block, substantially as described.

2. In a magazine fire-arm, the combination of a reciprocating breech block provided with a laterally open recess for the extractor, through which the extractor may be readily removed, and with a transverse shoulder partly closing the forward portion of the lateral recess, said shoulder having a wedge face projecting into said extractor recess, a longitudinally movable extractor mounted in said extractor recess and provided with a wedge face on its back, engaging said wedge face on the breech block, and with a claw oppositely disposed to said wedge face, said extractor being also provided with an axial chamber in the rear end thereof, and with a notch through the outer wall of said chamber at the rear end thereof, and a coil-shaped extractor spring also mounted in said axial chamber and projecting rearward into said open recess and normally pressing said extractor toward said wedge face on the breech block, substantially as described.

HENRI ALBERT MERCIÉ.

Witnesses:
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L. ESCHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."