

No. 712,730.

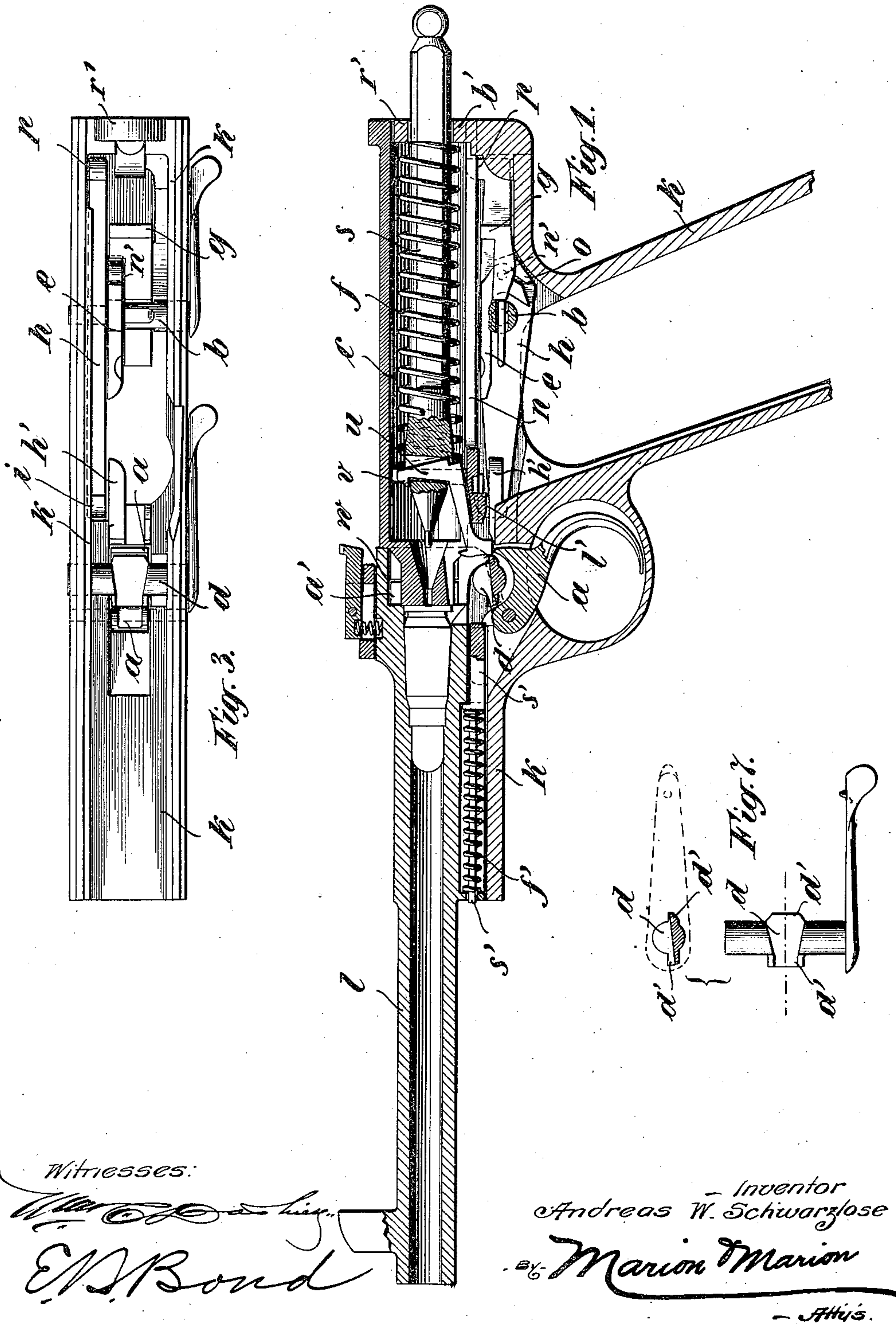
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A. W. SCHWARZLOSE.
RECOIL OPERATED FIREARM.

(Application filed Jan. 7, 1902.)

(No Model.)

2 Sheets—Sheet 1.



UNITED STATES PATENT OFFICE.

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RECOIL-OPERATED FIREARM.

SPECIFICATION forming part of Letters Patent No. 712,730, dated November 4, 1902.

Application filed January 7, 1902. Serial No. 88,777. (No model.)

To all whom it may concern:

Be it known that I, ANDREAS WILHELM SCHWARZLOSE, engineer, a citizen of the Kingdom of Prussia, and a resident of Suhl, Thuringia, Germany, (whose post-office address is Bahnhofstrasse 54,) have invented certain new and useful Improvements in Firearms with Sliding Barrel and Breech-Block, of which the following is a specification.

10 The present invention relates to a firearm in which the barrel as well as the breech-block are caused to execute a backward motion when the powder charge of the cartridge is exploded.

15 In the accompanying drawings the new invention is represented as embodied in a pistol.

Figure 1 shows a vertical section through the weapon, the breech closed and ready for firing. Fig. 2 shows the same parts in their 20 relative position when the breech mechanism is completely opened. Fig. 3 shows the butt-end of the weapon as seen from above, the breech-block being removed. Fig. 4 is a front view of the same. Fig. 5 shows the barrel as 25 seen from the side and the rear end. Fig. 6 is the catch for the magazine. Fig. 7 is the device for securing the weapon, and Fig. 8 the breech-block.

30 The weapon comprises a barrel *l*, a breech-block *c*, and the casing *k*, containing in its cavity the magazine *m*, the trigger mechanism *a*, and the breech-casing *h*.

35 The barrel *l*, Fig. 5, slides by means of two ribs *r* in corresponding grooves of the casing *k*, Figs. 3 and 4. It is able to execute a short to-and-fro motion. The coiled spring *f* tends to hold it always in its foremost position. It is passed over a guide-bar *s* and rests with the same in a groove on the under side of the 40 barrel in such a way as not to protrude over the sliding surface. The fore end of the said spring abuts against the fore end of said groove, and the rear end bears against a shoulder of the guide-bar. The guide-bar rests 45 with its rear end against the trigger *a*. The rear end of the barrel has a concentric groove *w*, Figs. 2 and 5, the rear wall of which forms the abutment for the bosses *a'* of the breech-block. The breech-block *c* has equal diameter with the rear end of the barrel, which it 50 engages with its head, to which are fastened the aforesaid bosses *a'*. The rear end of the

barrel is, for the purpose of allowing these bosses to enter, provided with longitudinal grooves *w'*, Figs. 2 and 5. The rear end of 55 the breech-block is guided by means of a ring *r'*, fixed to the rear end of the breech-casing, Figs. 1, 2, and 3. The shank *b'* of this ring engages a groove *n*, Fig. 8, of the breech-block, said groove having such a form that 60 the breech-block in beginning its back motion is forced to execute a partial rotation to the left. The barrel moving backward without turning, this motion of the breech-block releases the bosses *a'* of the latter from the bar- 65 rel. The disk of the striking-pin *s*, which rests in the longitudinal bore of the breech-block, has on its front side a curved surface, to which the inner face of the breech-block exactly corresponds. By means of two flat 70 surfaces the rear end of striking-pin is guided in the ring *r'* and prevented from rotating. In opening the breech-block and turning the same to the left the striking-pin is therefore pressed somewhat backward, and its point is 75 thereby withdrawn behind the front of the breech-block. In consequence of this arrangement the weapon may only be fired when the breech-block has been completely closed. A coiled spring *f*, passed over the firing-pin, 80 presses the same toward the front end of the breech-block.

The extractor *u*, forming a bent lever, is loosely inserted into a slot of the striking-pin *s* and is held in its position by its nose *v*. *u* 85 may execute a certain free motion in the slot of the striking-pin, Fig. 1, its nose resting against the end of the coiled spring, Figs. 1 and 2, by which it is elastically pressed forward, at the same time depressing its other 90 arm. Just before the breech-block in opening the mechanism is removed from the barrel the fore end of the extractor *u* is pressed by the nose *h'* upward, whereby the claw of the extractor is pressed into the groove of the 95 cartridge-shell. In completing the back motion it withdraws the shell from the barrel.

e is the ejector, Figs. 1, 2, and 3, pivoting on pin *n'*, Fig. 6, of the magazine cut-off. This cut-off holds the uppermost cartridge of 100 the magazine in such a position as not to interfere with the motion of the breech-block. By means of an axle *b* it is fastened in the body of the breech-frame. In the last part

of the backward motion of the breech-block the cut-off is moved by a projection l' on the bolt, setting thereby the uppermost cartridge free, which is pressed by the magazine-spring into the way of the breech-block. At the same time the ejector participating in the backward motion meets the shoulder o and is swung upward, thereby ejecting the empty cartridge-shell, Fig. 2. In moving backward the rear end of the magazine cut-off slides over the ascending surface in the body of the butt-end, and its projection g enters a corresponding notch of the cylinder, Fig. 2. The magazine cut-off, with the cylinder, in sliding back to its foremost position thereby slides over the next cartridge of the magazine until leaving the slanting surface of the butt, when it falls down and is freed from the breech-block.

The lever h serves for retaining the barrel in its rearmost position when the breech-block executes its backward and forward sliding motion for ejecting the empty cartridges and for introducing new ones. It has the form of a double-armed lever, pivoting on an axle b , inserted into the breech-frame, Fig. 3. Just before the breech-block separates from the barrel the rear end is depressed by means of the slanting surface of the boss p , against which acts the front face of the groove c' of the breech-block, Fig. 8, and the prong i of its front end thereby comes into the way of the barrel. The barrel is retained in its rearmost position until the breech-block reaches the rear end of the barrel and p enters the recess c' of the breech-block. Then the fore arm of the lever h is able to swing down, and i sets the barrel free. The spring f' now is able to bring the barrel and the breech-block back to the firing position, Fig. 1.

In order to secure an exact coöperation of the barrel, the breech-block, and part h , the breech-block must during its forward motion engage with its bosses a' the corresponding grooves of the barrel in the moment when i sets the barrel free, whereas in opening the mechanism prong i has already moved upward when the bosses a' are withdrawn from the grooves of the barrel. For that purpose the straight part of the groove n , Figs. 2 and 8, is somewhat shorter than the way over which the breech-block moves alone. The breech-block is thereby rotated a little before it comes into contact with the rear end of the barrel, and the bosses a' engage with the corresponding abutments w of the same, when the breech-block and the barrel being in contact the prong i sets the barrel free.

For limiting the motion of the barrel in both directions and for setting the weapon to rest the device d , Fig. 7, is provided, the axle of which passes across the breech-frame. It is secured in its position by means of two projections d' , the rear one of which serves as a trigger-nib, Fig. 3. One-half of said axle

protrudes into the way of the barrel, the under side of which is provided with a corresponding recess, the front and rear faces q and t of which limit the to-and-fro motion on the breech-frame. If the lever on the left side of the casing is depressed, so as to engage the lower one of the catches provided therefor, the axle has the position shown in Fig. 1. If the trigger is depressed, the end of the same presses u upward, and from d' the spring f throws the striking-pin s forward and against the bottom of the cartridge, thereby exploding the same. If, on the contrary, the lever is pressed into the upper catch, the axle takes the position which is indicated in Fig. 1 in dotted lines. The trigger cannot be depressed, because the forward projection d' abuts against the same, and the trigger-bar cannot leave the rearward projection d' .

In charging, the magazine containing the fresh cartridges is pressed into the hollow breech-frame until the catch engages the corresponding notch of the frame. Then the breech-block is caught by the ears projecting on both sides of the same, pulled backward, and released. It is thrown forward by the spring and at the same time inserts the uppermost cartridge of the magazine into the barrel. The weapon is now ready for use. In pulling the trigger the striking-pin is set free and explodes the cartridge. The back pressure exerted by the explosion of the powder charge causes the barrel, together with the locked breech-block, to slide a certain distance back on its guides, the barrel thereby executing a straight line motion, whereas the breech-block is at the same time turned a little to the left, thereby unlocking it from the barrel. The barrel in its backward motion compresses the spring f' and meets with its surface t the axle and is thereby stopped. The breech-block now prosecutes its way alone in a straight line. The coiled spring f is thereby completely compressed, and the empty cartridge is withdrawn from the barrel by the prong of u and ejected by e . If the breech-block comes to a rest, the compressed spring f pushes the same back to its initial position and the uppermost cartridge of the magazine is inserted into the barrel, the magazine cut-off s' retaining the next cartridge below the breech-block. The barrel has beforehand been pushed forward a very small distance by the spring f' , when it is caught by the prong i . When the breech-block presses against the rear end of the barrel, prong i releases the barrel and both barrel and breech-block continue simultaneously their forward motion under the influence of spring f' . At the same time the breech-block is forced by the groove n to execute a rotation to the right, whereby it interlocks with the barrel. In the last part of this forward motion u is caught by the rear end of the trigger, which the shooter has not yet released,

as the described actions take place in a very short space of time. If the trigger is now released, it is brought back to the normal position by means of spring *f'*. Under the influence of the striking-spring *u* slides over the rear end of the trigger and is caught by *d'*. If the trigger is now again pulled, the striking-pin is set free and the described manipulations begin anew. The prong *i* at the front end of the lever *h* is inclined, as shown, and the depending lug on the barrel is oppositely beveled, and as the barrel is moved this incline engages the incline of said prong, and thus the front end of the lever is depressed.

I claim—

1. A firearm having a sliding breech-block and barrel, comprising a guide-rail arranged on the frame to guide the barrel and breech-block, the latter having a curved groove, a guide-ring for the breech-block, a pin on the guide-ring to engage said groove, the extractor connected with the firing-pin, a catch-spindle rotatably mounted transversely of the barrel for securing the weapon, said spindle being disposed transversely of the barrel to cooperate with the extractor constructed to limit the back and fore motion of the barrel

and to serve at the same time as a sear-shoulder, as set forth.

2. In a firearm, a sliding barrel and a breech-block, the latter mounted to reciprocate and to partially rotate during its reciprocation, a cut-off for holding the uppermost cartridge of the magazine below the breech-block, a projecting nose on the breech-block constructed to withdraw said cut-off, the said cut-off having an oblique surface, and a coacting part constructed to press the cut-off upward against the breech-block, substantially as and for the purpose specified.

3. In a firearm, a sliding barrel, and a breech-block mounted for longitudinal movement and for partial rotary movement, means for imparting such rotary movement to the breech-block, a cut-off having a pin, and an ejector pivoted on said pin of the cut-off, the breech-block having a projection for actuating the cut-off to free the uppermost cartridge, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREAS WILHELM SCHWARZLOSE.

Witnesses:

ERNEST GUMPERT,
MAX SCHUSTER.