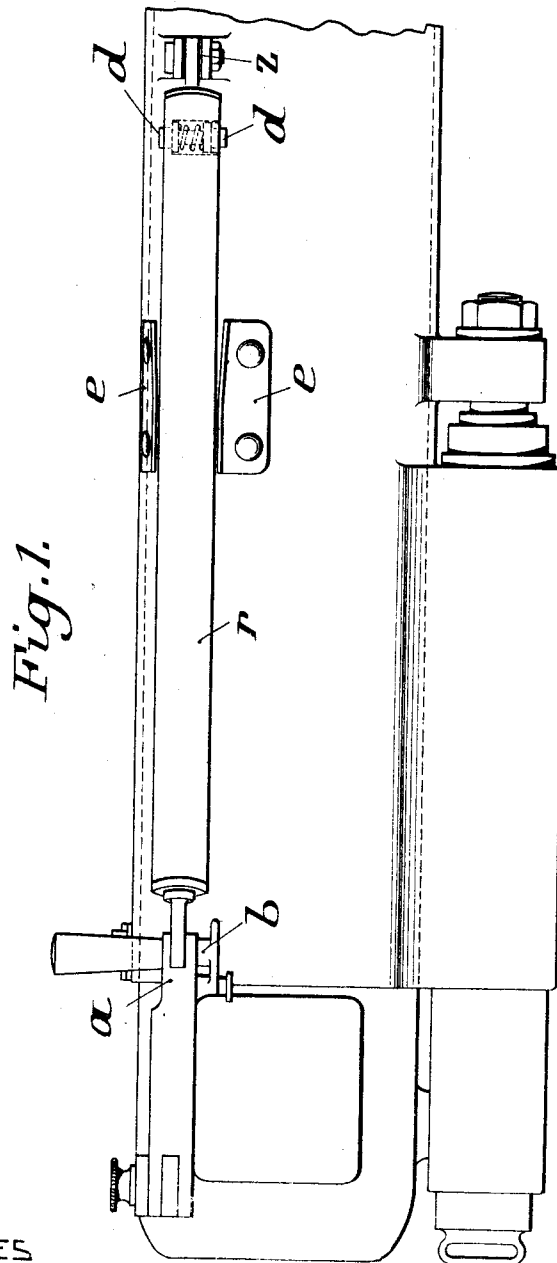


1,033,625.

Patented July 23, 1912.

3 SHEETS-SHEET 1.



WITNESSES
F. S. Magnus
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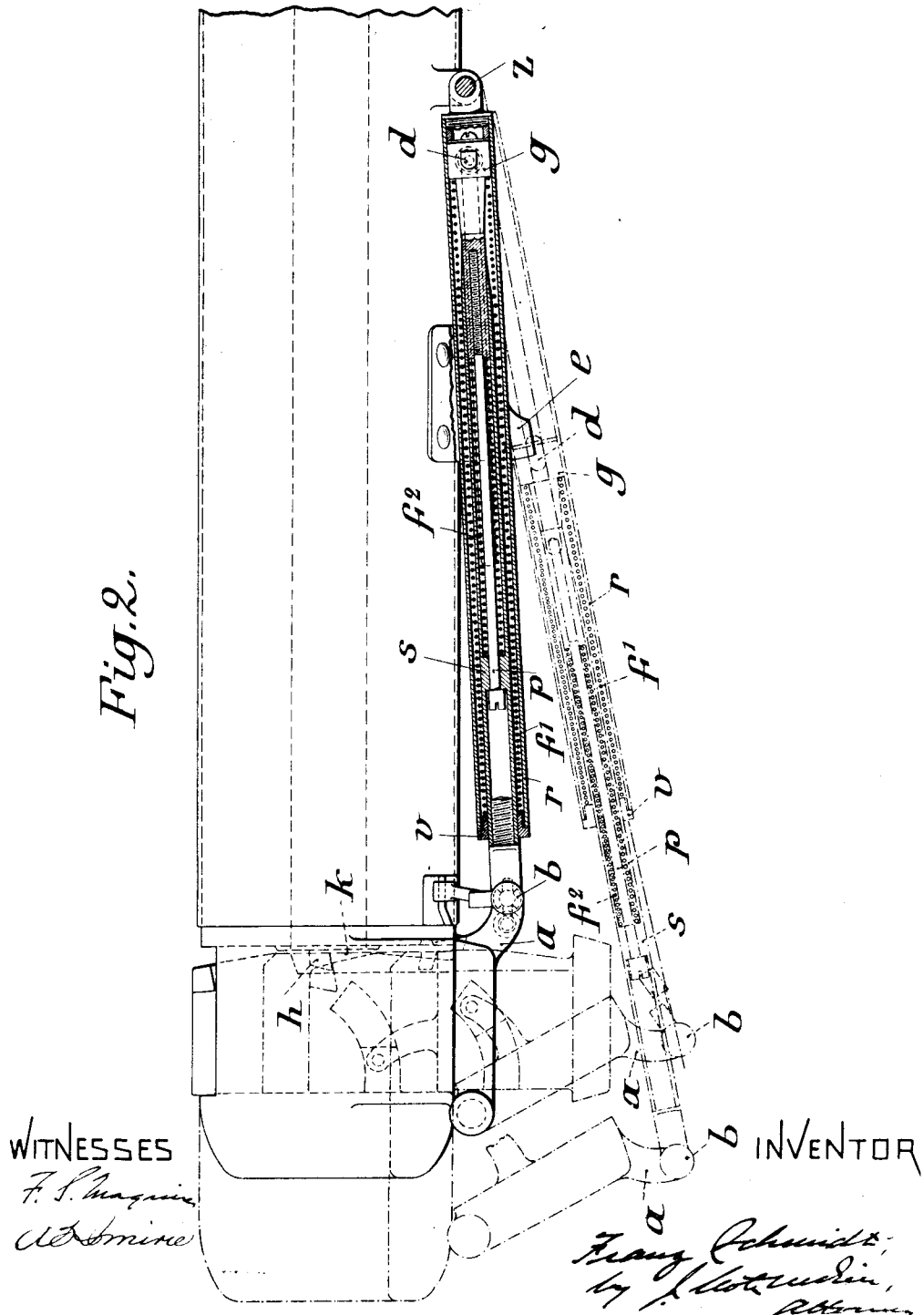
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1,033,625.

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3 SHEETS—SHEET 2.

Fig. 2.

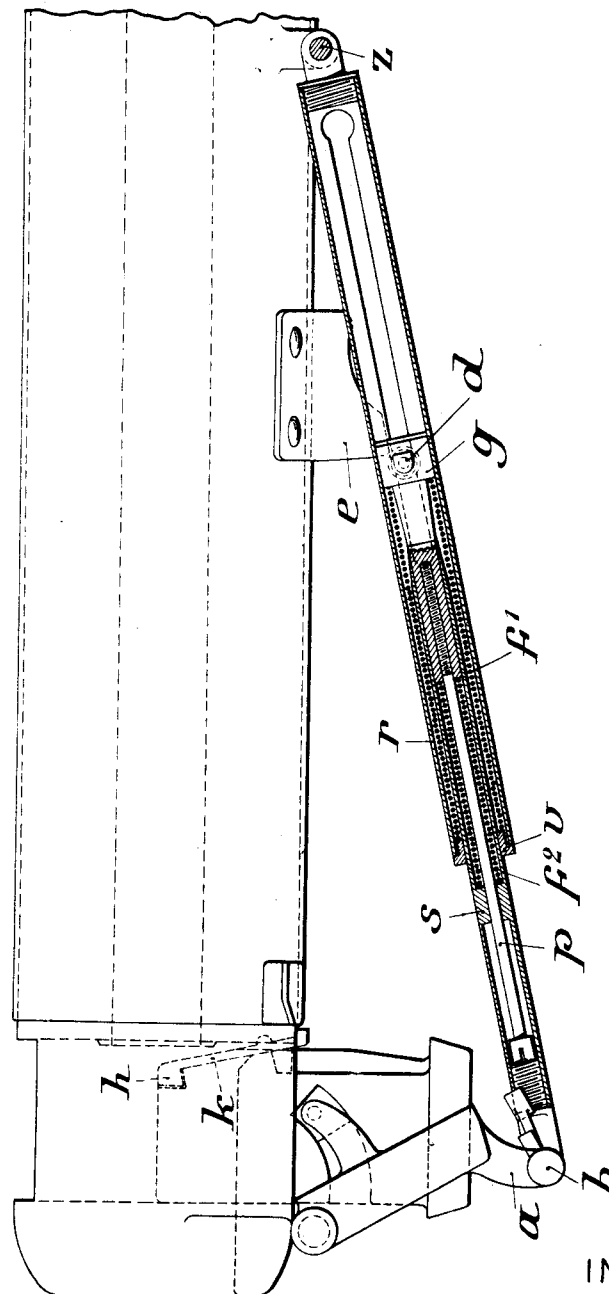


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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANZ SCHMIDT, OF DUSSELDORF, GERMANY, ASSIGNOR TO RHEINISCHE METALL-
WAAREN- UND MASCHINENFABRIK, OF DUSSELDORF-DEBENDORF, GERMANY, A
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AUTOMATIC GUN.

1,033,625.

Specification of Letters Patent.

Patented July 23, 1914.

Application filed October 20, 1911. Serial No. 655,709.

To all whom it may concern:

Be it known that I, FRANZ SCHMIDT, a subject of the German Emperor, residing at 3 Zülicherstrasse, Dusseldorf, Germany, have invented certain new and useful Improvements in Automatic Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a device for automatically opening and closing the breech of a gun having a recoiling barrel with aid of a spring compressed during the recoil.

According to the invention there is arranged in a sleeve a rod which recoils together with the barrel and compresses the spring: when the barrel runs forward again the rod comes against a fixed stop whereby the breech is opened, and as the forward movement continues a second spring is compressed, whereupon the springs, after a catch, which engages the breech in the open position, has been released, close the breech and return the rod into its normal position.

In the accompanying drawing one form of construction according to the invention is shown in Figure 1 in side elevation. Fig. 2 is a plan partly in section and shows in full lines the position of the parts at the beginning of the recoil and in dotted lines their position when the breech is opened. Fig. 3 is a plan partly in section showing the parts in the position they have at the end of the forward movement of the barrel but before the breech is closed.

The crank *a* of the breech block, which in this example is of the wedge type, is connected by a removable bolt *b* with the device for automatically opening and closing the breech. When the bolt *b* is removed the breech can be opened and closed in the usual manner by hand.

The device which is connected with the crank *a* by the bolt *b*, consists of a body which turns on a vertical pin *z* carried at one side of the cradle: the body comprises a sleeve or tube *r*, a draw bar *s* contained therein and connected to the bolt *b*, and a rod *p* guided in the sleeve by a sliding head *g*. Between the head *g* and the end *c* of the sleeve *r* is a closing spring *f'* and between the rod *p* and a shoulder in the draw bar *s* is a spring *f*. When the barrel recoils, the draw bar *s* being connected with the crank *a*

carries with it the rod *p* and the sliding head *g* to which the latter is screwed; the closing spring *f'* is thus compressed.

On the cradle are two laterally projecting guide plates *e* which, as shown in Fig. 1, converge toward each other in the rearward direction: the sliding head *g* is able to pass between these plates as it moves rearwardly because its upwardly and downwardly projecting spring pins *d* are pressed inwardly by the guides. During the recoil therefore nothing further happens than the compression of the closing spring *f'* by the rearward movement of the sliding head *g* in the sleeve *r*. In the return movement the pins *d* strike against the rear edges of the guides *e*, whereby the sliding head *g* and the draw bar *s* are arrested and the strength of the spring *f* is such that the pin *b* is swung outward instead of the draw bar *s* traveling farther and compressing the spring *f*. The parts now have the position shown in dotted lines in Fig. 2. As the crank *a* swings outward the breech is opened and at this moment a cartridge casing is automatically ejected in the known manner. In the open position the breech block is held by one or more projections *h* of the ejector *k* (Fig. 3), which engage in corresponding notches of the breech block.

During the continued forward movement of the barrel the spring *f'* is compressed so that the parts assume the position shown in Fig. 3: at this moment the pins *d* of the sliding head *g* are at the end of the suitably curved forward edge of the guides *e* and are able to pass in front of the guides. The pressure of spring *f'* drives the sliding head *g* with the attached rod *p* forward until the stop on the rear end of the rod *p* abuts against shoulders in the draw bar *s*. The closing spring *f* is still compressed and the sliding head *g* cannot return to its normal position in sleeve *r* because the breech is still opened. The introduction of a new cartridge disengages the projections *h* of the ejector from the breech block in the known manner and the closing spring *f'* closes the breech, all the parts returning again into the position shown in full lines in Fig. 2. The hand cannot be damaged while inserting the cartridge because the inner edge of the cartridge bore in the breech block is inclined and the hand is guided outward laterally by this part. In-

accuracies in recoil and return are without effect on the action of this arrangement because the stop pins *d* have already passed the guide *e* when the barrel has still to recoil through a distance of about 60 mms. Again a backward movement of the barrel during the return through a certain distance does not affect the automatic closure of the breech. Furthermore the spring *f*² has the considerable advantage that when the sleeve sticks or the breech mechanism corrodes and becomes very difficult to open or cannot be opened, the concussion of the forward movement is not exerted on the parts of the opener, but compresses the spring. The length of the spring or its tension is so adjusted that even in the most unfavorable case, that is to say when the breech during the forward movement of the barrel does not open for the above reasons, the spring allows of the compression which is equal to the path through which the stop pins have moved during the recoil before passing between the guides.

I claim as my invention:—

1. In a gun, in combination with a recoiling barrel and a breech-block therefor, a device for automatically opening and closing the breech, comprising a casing secured to a relatively fixed part, a rod movable in said casing and connected to said breech-block, a spring designed to be placed under tension when the rod recoils with the barrel and breech-block, a member carried by said rod, a fixed stop which is designed to arrest said rod and member during the return movement of the barrel, such arrest initiating the opening of the breech which is completed at the termination of the return movement of the barrel, said member, as the breech is opened, being disengaged from said stop, and a second spring for moving said member beyond said stop when the breech is opened, the first mentioned spring automatically closing the breech-block and returning the rod and said member to their normal positions when the gun is reloaded.

2. In a gun, in combination with a recoiling barrel and a breech block therefor, a device for automatically opening and closing the breech, comprising a casing secured to a relatively fixed part, a rod movable in said casing and connected to said breech block, a spring designed to be placed under tension when the rod recoils with the barrel and breech block, a member carried by said rod, a fixed stop which is designed to arrest said rod and member during the return movement of the barrel, such arrest initiating the opening of the breech which is completed at the termination of the return movement of the barrel, said member, as the breech is opened, being disengaged from said stop, a second spring for moving

said member beyond said stop when the breech is opened, and means for holding said breech block in its opened position, the first mentioned spring automatically closing the breech block and returning the rod and said member to their normal positions when the breech block is freed of said holding means.

3. In a gun, the combination with a recoiling barrel, and a breech block therefor, of a casing pivoted at its forward end to a relatively fixed portion of the gun, a rod movable longitudinally in said casing and connected at its rear end to the breech block, a head slidably connected to said rod and having a projection extending outside the casing, a spring within said casing designed to be placed under tension by said head when the rod is moved by the recoil of the barrel, a stop mounted on a relatively fixed portion of the gun and designed to arrest said head when moved forwardly by the return of the barrel, said rod thereby opening the breech block, and a second spring interposed between the head and said rod for moving the former past said stop when the casing is swung on its pivot by the opening movement of the breech block, the first mentioned spring closing the breech block and returning the rod and head to their normal positions.

4. In a gun, the combination with a recoiling barrel, and a breech block therefor, of a casing pivoted at its forward end to a relatively fixed portion of the gun, a rod movable longitudinally in said casing and connected at its rear end to the breech block, a head slidably connected to said rod and having a projection extending outside the casing, a spring within said casing designed to be placed under tension by said head when the rod is moved by the recoil of the barrel, a stop mounted on a relatively fixed portion of the gun and designed to arrest said head when moved forwardly by the return of the barrel, said rod thereby opening the breech block, means for holding said breech block in its opened position, and a second spring interposed between the head and said rod for moving the former past said stop when the casing is swung on its pivot by the opening movement of the breech block, the first mentioned spring closing the breech block and returning the rod and head to their normal positions when the breech block is freed of said holding means.

5. In a gun, the combination with a recoiling barrel, and a breech block therefor, of a casing pivoted at its forward end to a relatively fixed portion of the gun, a rod movable longitudinally in said casing and connected at its rear end to the breech block, a spring designed to be placed under tension when the rod recoils with the barrel and

breech-block, a second rod located within and movable with and relatively to the first mentioned rod, a guiding head on the forward end of said second rod having a lug projecting laterally through said casing, a stop with which said lug engages in the return movement of the barrel, and a second spring interposed between said rods, said second spring being placed under tension when said stop arrests said lug, said second spring moving said lug beyond said stop when the casing is swung outwardly by the opening of the breech when the lug is arrested by said stop.

6. In a gun, the combination with a recoiling barrel, and a breech block therefor, of a casing pivoted at its forward end to a relatively fixed portion of the gun, said casing having slots therein, a hollow rod within said casing connected at its rear end to the breech block, a second rod located within and movable with and relatively to the hollow rod, said second rod having a shoulder and said hollow rod a stop which engages said shoulder, a head carried by said second rod, spring-impelled lugs carried by said head and projecting through

said slots, a stop in the form of two convergingly-arranged plates mounted on a relatively fixed portion of the gun and between which said lugs are designed to pass during the recoil of the barrel, a spring acting on said hollow rod and placed under tension during the recoil, a second spring interposed between said rods and designed to be placed under tension when said second rod is arrested by said stop on the return of the barrel, thereby opening the breech block and causing said casing to swing outwardly to permit said lugs to clear said stop, said second spring serving to position said lugs beyond said stop, and means for holding the breech block in its opened position, the first mentioned spring serving to return the parts to their normal positions and close said breech block when the latter is free of said holding means.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

FRANZ SCHMIDT. [L. S.]

Witnesses:

ALBERT NUFER,
L. NUFER.