No. 898,038. PATENTED SEPT. 8, 1908.

B. CLARUS.

RECOIL OPERATED FIREARM.

APPLICATION FILED DEC. 26, 1906.

3 SHEETS—SHEET 1.

Fig. 2.

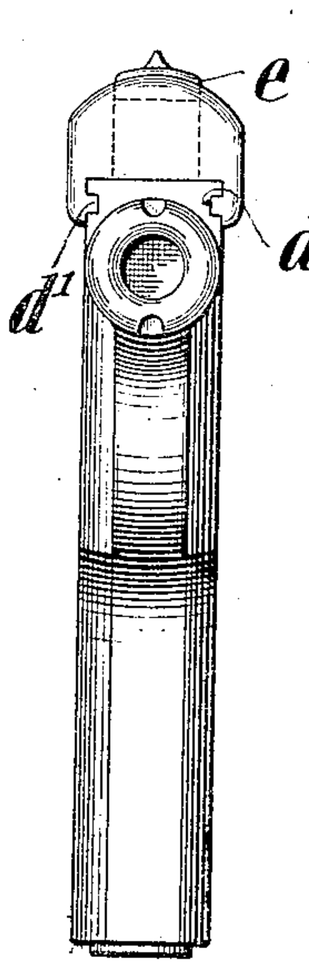

Fig. 1.

Fig. 3.

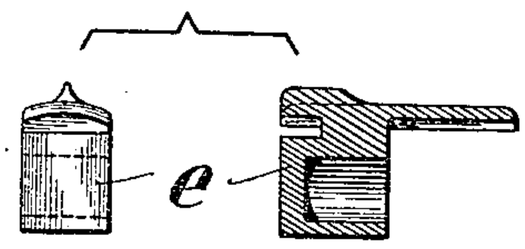

Fig. 9.

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3 SHEETS—SHEET 2.

Fig. 4.

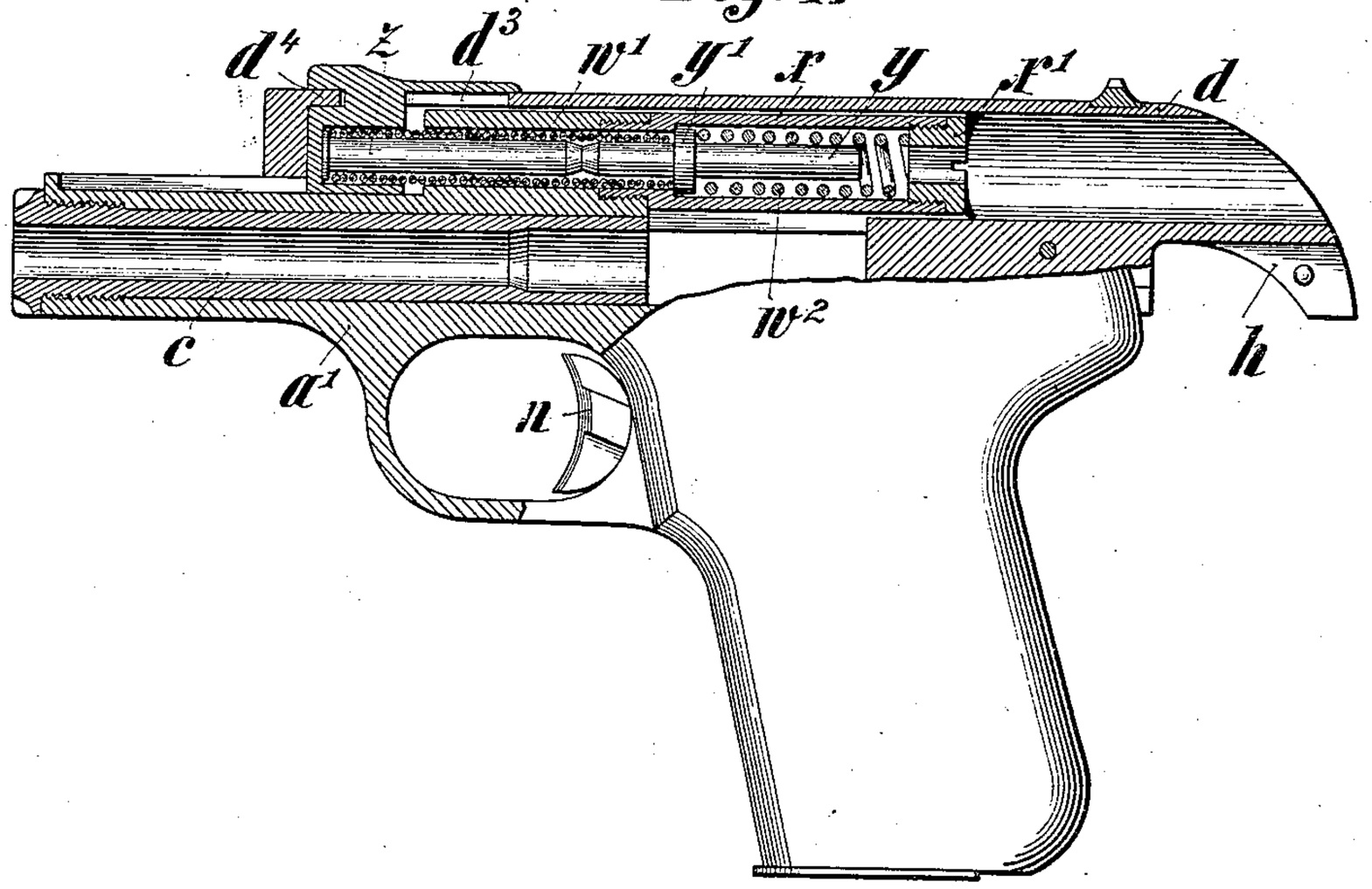
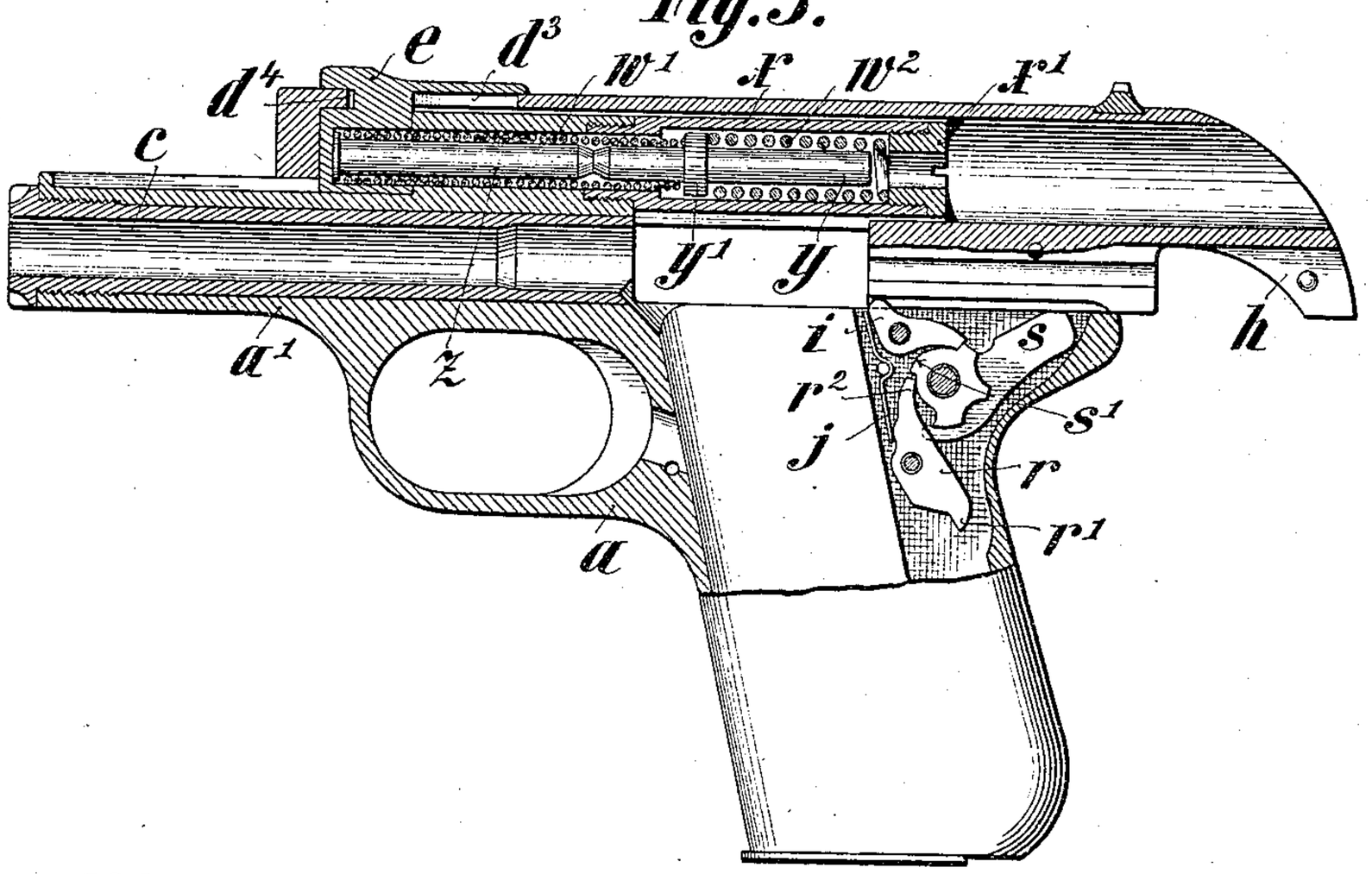


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

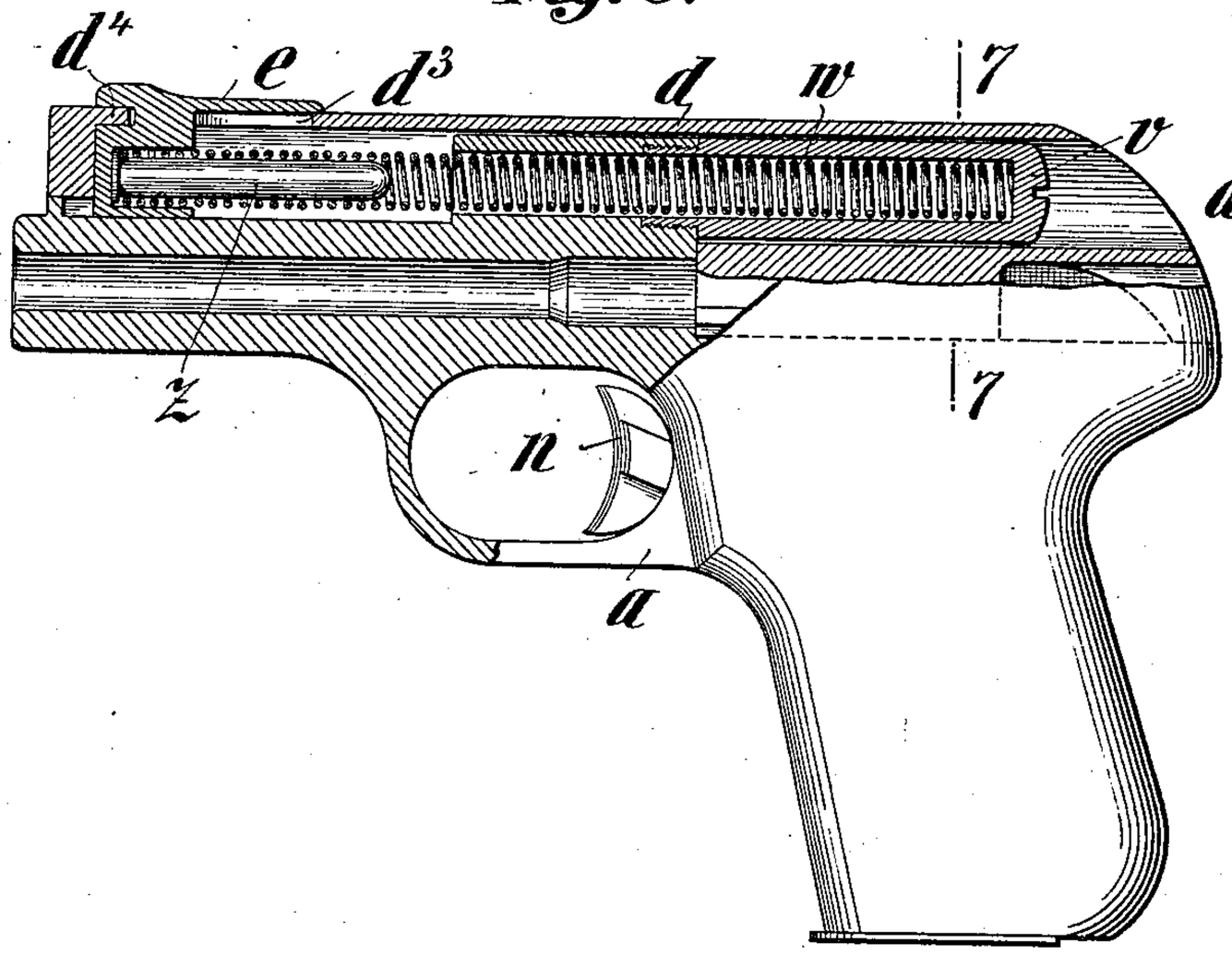


Fig. 7.

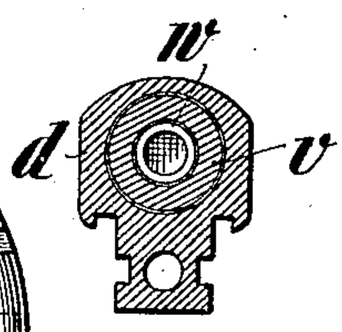
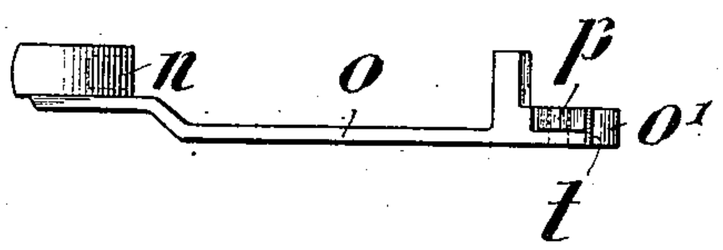


Fig. 8.



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UNITED STATES PATENT OFFICE.

BRUNO CLARUS, OF LÜTTICH, BELGIUM.

RECOIL-OPERATED FIREARM.

No. 898,038. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed December 26, 1906. Serial No. 349,503.

To all whom it may concern:

Be it known that I, BRUNO CLARUS, a subject of the German Emperor, residing at Lüttich, Belgium, have invented certain new and useful Improvements in Recoil-Operated Firearms, of which the following is a full, clear, and exact description.

This invention relates to a recoil operated firearm which is distinguished by its great simplicity; it can be readily taken to pieces and allows of the introduction of a long reaction spring.

The accompanying drawing represents the recoil operated firearm in one form of construction as a pistol.

Figure 1 is a longitudinal section through the closed firearm and Fig. 2 a front elevation thereof. Fig. 3 represents the firearm in partial longitudinal section, the firearm not being completely closed so as to show the position wherein the locking piece of the hammer is disengaged by the receiver. Fig. 4 represents a partial longitudinal section through the firearm, wherein the breech bolt is partly pushed back. Fig. 5 represents a longitudinal section through the firearm, wherein the receiver is pushed back and the hammer is locked by the locking piece. Fig. 6 is a special form of construction of the arrangement shown in Fig. 4. Fig. 7 is a cross-section on line 7—7 of Fig. 6. Fig. 8 is a plan of the trigger with an articulated part and the corresponding spring. Fig. 9 shows one of the abutments (the limiting nib) for the springs in a front elevation and a longitudinal section.

The firearm shown in the accompanying drawing consists of a fixed and a movable part. The fixed part, the frame *a* contains the trigger mechanism and the magazine, which is constructed in the usual manner and therefore not shown in the drawing. The part *c* forming the barrel is arranged on the upper part a^1 of the frame *a;* it may however be integral with the frame as shown in Fig. 6. The trigger mechanism consists of the trigger *n*, which is provided with an articulated part *p*, the sear *r*, the hammer *s*, the locking piece *i* and the necessary springs. The trigger is guided rectilinearly in a recess of the grip or handle of the frame so that it can neither move upwards nor downwards. The movable part of the barrel consists of the receiver *d*, which is provided with a firing pin and an extractor of known construction, which are not specially shown in the drawing. The receiver *d* has on its upper part ribs d^1 and grooves d^2 (Fig. 2) which coact with corresponding parts of the frame and serve as guide for the rectilinear movement of the receiver *d*. The receiver *d* is provided with a recess d^3, which serves for the reception of the abutment *e* shown in Fig. 9 and adapted for limiting the recoil movement. Before the insertion of the abutment *e*, the actuating spring is introduced from the front and compressed, whereupon the abutment *e* is brought from above into the recess d^3, the engagement of the abutment with the rib d^4 or the like on the receiver *d* being produced under the reacting pressure of the spring. The receiver *d* can be readily removed after the removal of the abutment, the former need only be pulled backwards and removed. The abutment *e* is formed in such a manner that it may simultaneously serve as foresight for the firearm. The rear lower part of the receiver *d* is provided with an arcual recess *h*, which permits the free movement of the hammer acting on the firing pin.

According to the present invention, means are also provided for preventing the discharge before a complete closure of the firearm. These means comprise a locking piece *i* for the hammer *s*, which is rotatably mounted on a pin. The rear nose-shaped end of the locking piece can engage in a rest of the hammer as shown in Fig. 5. The front upper end of the locking piece projects into the lower plane of the receiver *d*. Fig. 3 shows the position, wherein the end of the locking piece *i* after the completion of its rearward movement is moved out of the rest of the hammer *s* during the forward movement of the receiver *d*. The hammer *s* is provided with a projection s^1 which imparts to the sear *r* an additional movement when the hammer *s* strikes the firing pin. If this projection s^1 of the hammer *s* were not provided, it might happen that the lower end r^1 of the sear *r* would remain in contact with the nose of the part *p* of the trigger *n* even if the top projection r^2 of the sear *r* were moved out of the rest of the hammer *s*. This would lead to an automatic successive discharge of all the cartridges contained in the magazine. The projection s^1 imparts to the sear *r* a special movement, in consequence of which the nose of the part *p* on the trigger *n* can pass under the lower end r^1 of the sear *r*. The latter is thus by no means an impediment to the rectilinear movement of the trigger *n*. A spring *j* is ar-

ranged in such a manner that it can simultaneously exert a spring action on the locking piece *i* and the sear *r*. The trigger *n* is of special construction. It is moved rectilinearly and returned to its normal initial position by the pressure of a spring *q*. The movement of the trigger is limited by a stop *u*. There is connected with the trigger an arm *o*, which is guided in a corresponding recess of the frame *a* in such a manner that the trigger is prevented from moving up and down. The arm *o* of the trigger *n* carries on its rear end an articulated part *p*, which transmits the movement of the trigger *n* to the sear *r* and permits in consequence of its articulation the trigger *n* to reassume its normal position after every shot in such a manner that the trigger can be rendered operative again for the discharge of a fresh shot. The arm *o* of the trigger *n* is provided with an arm o^1, which carries the spring *t* for the articulated part *p*. For the purpose of readily interchanging the magazine, the lever which engages in the rest of the magazine is pivotally connected to the grip or handle in such a manner that it can be released from the locking position by pressure from below against its rear arm. The operation of the herein-described recoil operated firearm is well known.

The present invention also relates to an improvement in recoil operated firearms wherein the entire length of same is utilized for the reception of a large reaction spring.

This invention is of great importance for pocket firearms which are usually only made of small dimensions. Consequently, it is not possible in connection with the constructions hitherto known to provide therein a sufficiently elastic locking spring, which can comply with all requirements.

According to the known constructions of recoil operated firearms, the restoring spring which, after the withdrawal of the empty cartridge-holder, brings the receiver into its initial position, is mounted either in the front part or in the rear part of the firearm. In the former case, the length of the spring depends on that of the barrel and in the latter case on the length of the receiver. It is therefore readily obvious that the length of the reaction spring—this important part of a recoil operated firearm—is rather limited and especially in connection with the constructions for pocket firearms. Only comparatively short springs may be used, which do not sufficiently take up the recoil. When using a short spring, the recoil is transmitted to the hand of the shooter, which is obviated when a long spring is employed. According to the present invention, this drawback is obviated and the recoil of the receiver is taken up by a suitable device after the empty cartridge-holder is withdrawn. As the recoil takes place with considerable force, especially when the breech bolt or the spring are badly proportioned, interruptions in the mechanism and even accidents may frequently occur. The present arrangement is as follows: The reaction spring *w* (Fig. 6) is located in the spring barrel *v*. In consequence of the special arrangement, the spring may be made as long as possible. In the arrangements according to Figs. 1, 4 and 5, there is located in the spring barrel *x* a pin *y*, by the collar or band y^1 of which two springs are separated from each other. One of these springs, the reaction spring of the breech-block spring w^1, has less tension than the spring w^2, which is located behind the part y^1. The spring barrel *x* has moreover a screw-head x^1 against which the spring w^2 bears.

Fig. 1 represents the pistol in the act of firing. The pin *y* is forced by the pressure of its spring w^2 with the hinge or band against an abutment of the barrel *x*. Without this resistance, it would compress the weaker spring w^1 in consequence of the pressure of the stronger spring w^2.

Fig. 4 shows the receiver *d* in the position when the pin *y* comes in contact with the tongue *z* of the spring w^1. The impact caused by the recoil of the receiver is taken up by the compression of the spring w^2 (Fig. 5).

What I claim as my invention, and desire to secure by Letters Patent is:

1. In a recoil loading firearm, a fixed barrel, a receiver sliding on said barrel, a spring extending substantially the length of the barrel, and a casing or barrel for said spring fixed to the firearm within said receiver.

2. In a recoil loading firearm, a fixed barrel, a hollow receiver mounted to slide upon said firearm, a spring casing or barrel fixed to said firearm within said sliding receiver, and a spring operating against said casing and adapted to move said receiver forwardly.

3. In a recoil loading firearm, a fixed barrel, a hollow receiver mounted to slide upon said firearm, a spring casing or barrel fixed to said firearm within said sliding receiver, and a spring operating against said casing and adapted to move said receiver forwardly, and said casing being adapted to form a guide for said receiver.

4. In a recoil loading firearm, a fixed barrel, a sliding receiver, a casing or barrel within said receiver, a spring for operating against said casing and means for limiting compression of said spring, and a recoil spring adapted to operate independently of said actuating spring.

5. In a recoil loading firearm, a fixed barrel, a sliding receiver, a casing or barrel within said receiver, a spring for operating against said casing and means for limiting compression of said spring, and a recoil spring adapted to operate independently of said actuating spring, said recoil spring being mounted in said casing.

6. In a recoil loading firearm, a fixed barrel, a sliding receiver, a casing or barrel within said receiver, a spring for operating against said casing and means for limiting compression of said spring, and a recoil spring adapted to operate independently of said actuating spring, said recoil spring being mounted in said casing, a pin z within said actuating spring and a pin y having a collar y^1 against which such recoil spring acts.

7. In a recoil loading firearm, a fixed barrel, a sliding receiver, a spring for actuating said receiver, a nib for limiting the movement of said receiver and adapted to form an abutment for said spring, said nib being adapted to be inserted in said receiver from the top, and a sight carried by said nib.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

BRUNO CLARUS.

Witnesses:
B. GOEBEL,
J. GROVE.