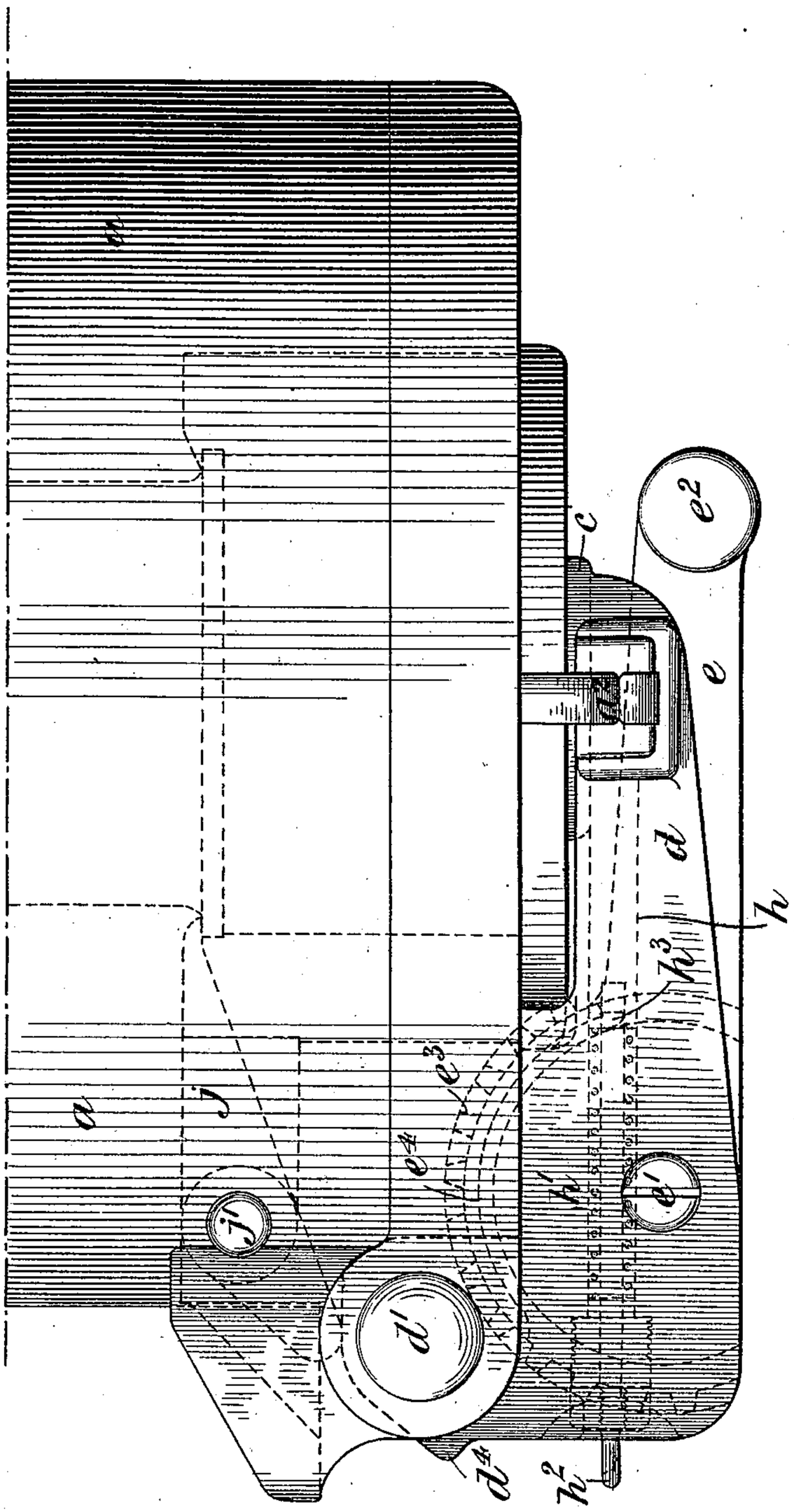
(No Model.) 5 Sheets—Sheet 1.

A. WELIN.

RAPID FIRING GUN.

No. 562,994. Patented June 30, 1896.

Fig. 1.



Witnesses
D. W. Miller.
Guy E. Davis.

Inventor
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By his Attorneys.
Baldwin Davidson & Wright.

(No Model.)

5 Sheets—Sheet 2.

A. WELIN.

RAPID FIRING GUN.

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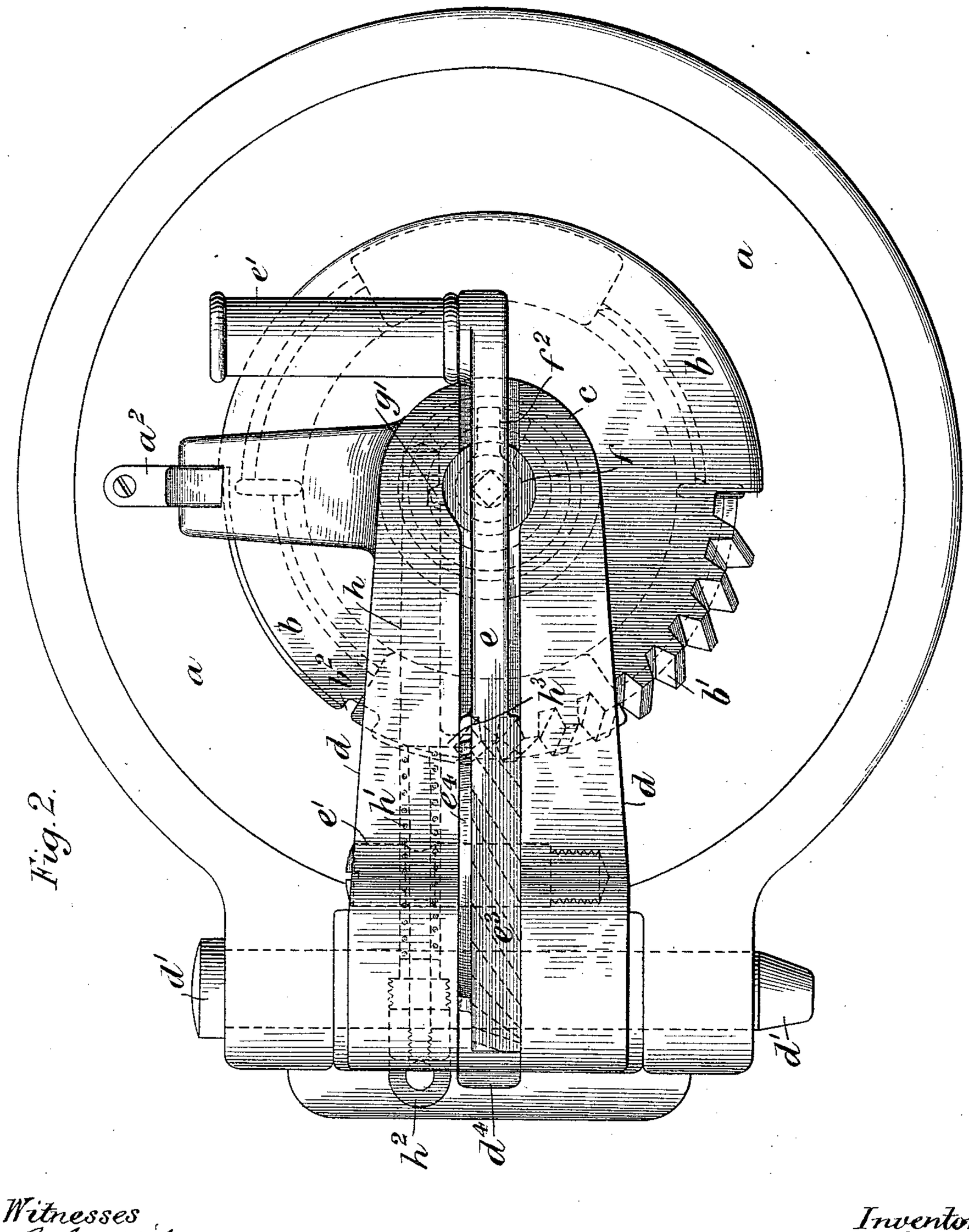

Fig. 2.

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(No Model.) 5 Sheets—Sheet 3.

A. WELIN.

RAPID FIRING GUN.

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Fig. 4.

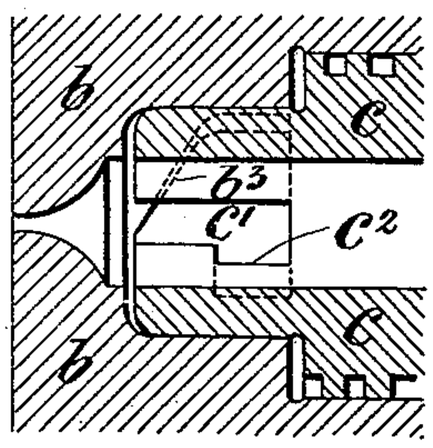
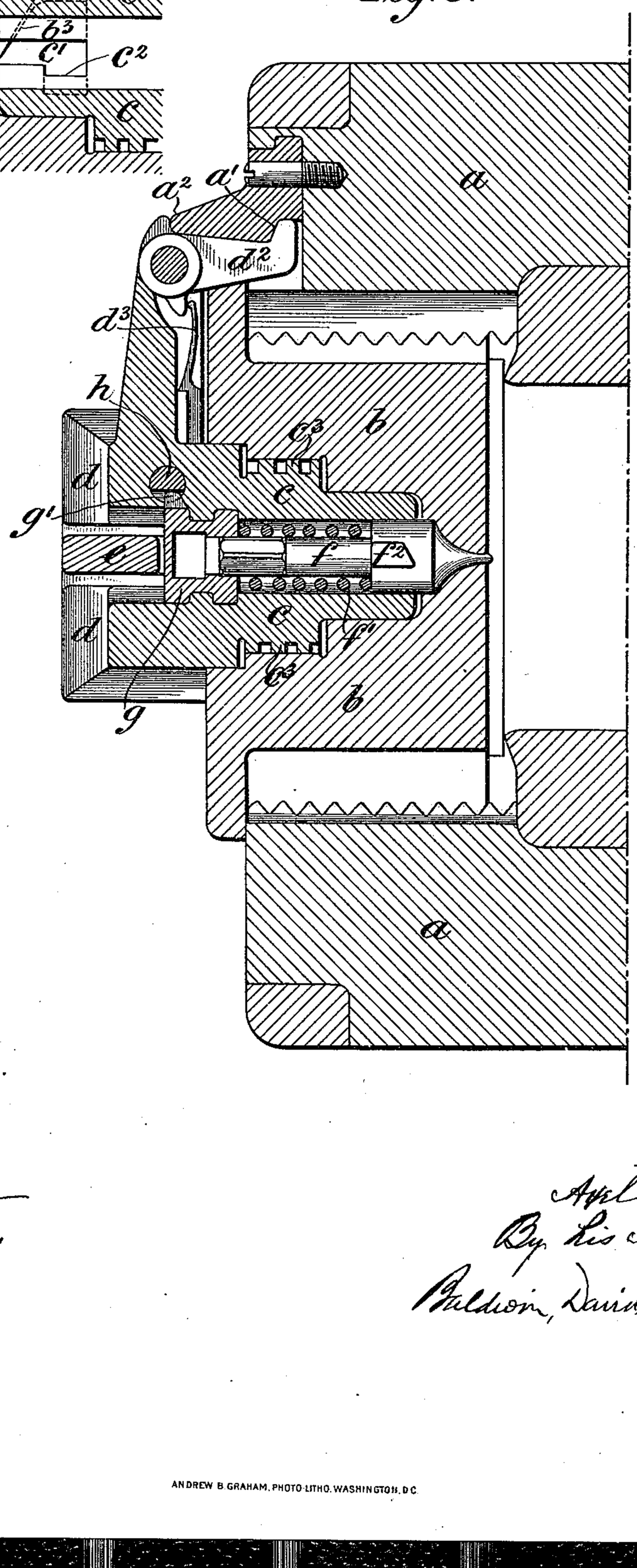


Fig. 3.



Witnesses.

B. H. Miller.
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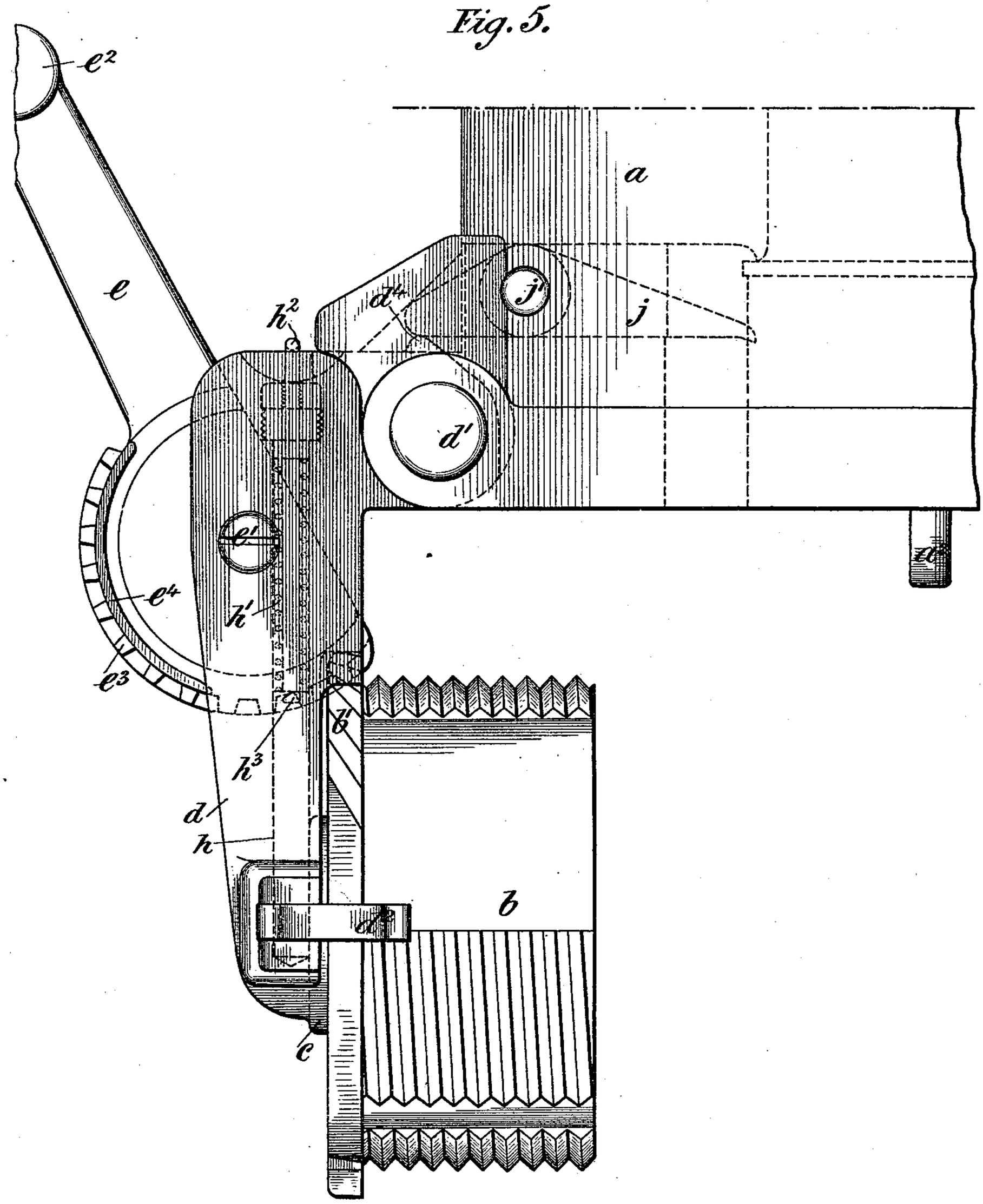
(No Model.) 5 Sheets—Sheet 4.

A. WELIN.

RAPID FIRING GUN.

No. 562,994. Patented June 30, 1896.

Fig. 5.



Witnesses.
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(No Model.) 5 Sheets—Sheet 5.

A. WELIN.

RAPID FIRING GUN.

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Fig. 6.

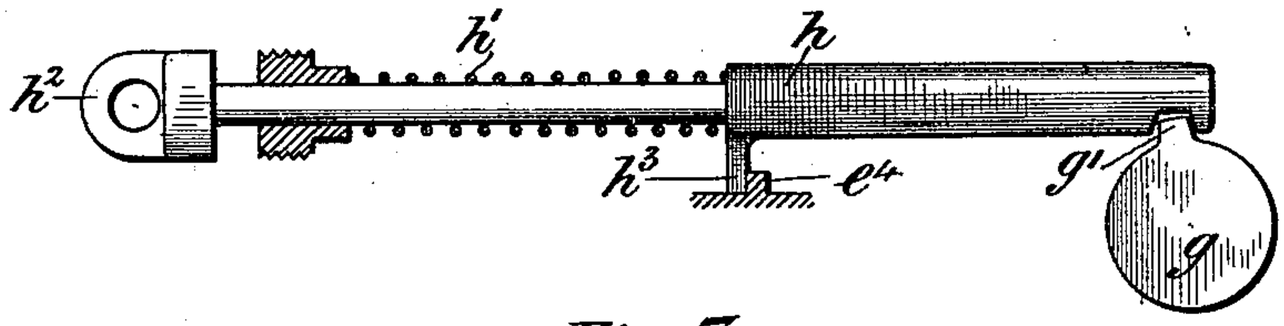


Fig. 7.

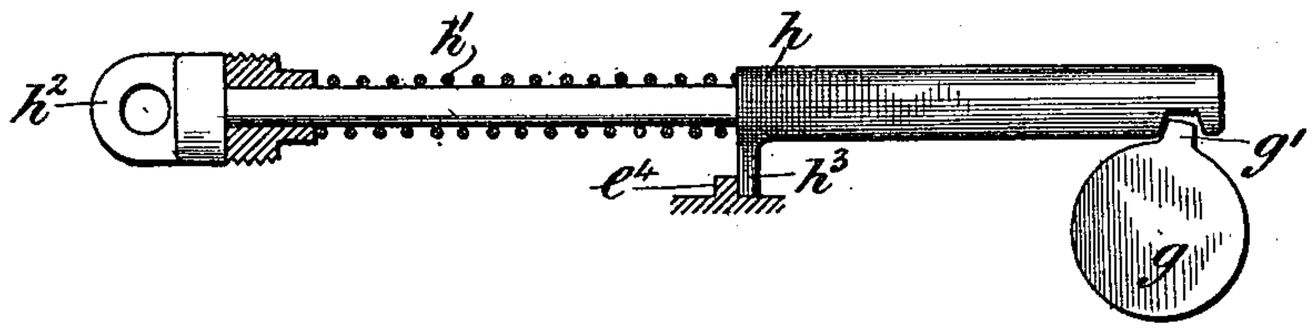


Fig. 8.

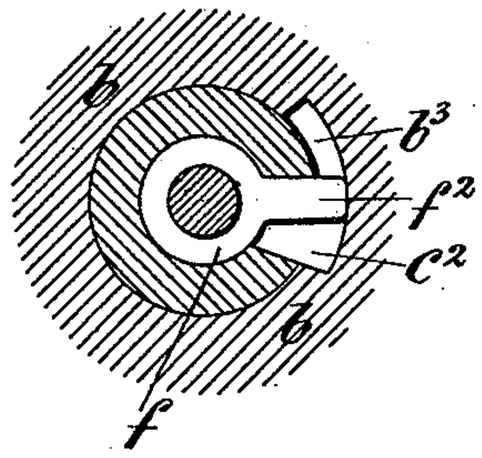
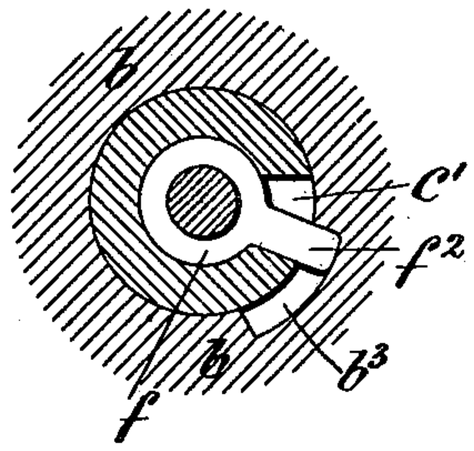


Fig. 9.



Witnesses.
E. A. Bullock.
Guy E. Davis.

Inventor.
Axel Welin,
By his Attorneys,
Baldwin Davidson & Wright

UNITED STATES PATENT OFFICE.

AXEL WELIN, OF LONDON, ENGLAND.

RAPID-FIRING GUN.

SPECIFICATION forming part of Letters Patent No. 562,994, dated June 30, 1896.

Application filed September 16, 1895. Serial No. 562,713. (No model.)

To all whom it may concern:

Be it known that I, AXEL WELIN, engineer, a subject of the King of Sweden and Norway, residing at 9 London Street, in the city of London, England, have invented a certain new and useful Quick-Firing Gun, of which the following is a specification.

This invention relates to guns in which the breech-block is withdrawn from the breech after being unlocked by being simply swung round a pivot.

The breech-block may be of any of the well-known forms effecting this object. That shown in the drawings is, however, of the construction forming the object of my prior patent of the 16th of May, 1893, No. 497,695, but having the steps of the screw sufficiently deep to allow them to clear the screws in the gun when the block is swung back.

Figure 1 is a plan, Fig. 2 a rear elevation, Fig. 3 a longitudinal section, (looking to the left,) and Fig. 4 a part longitudinal section, (looking to the right,) of the breech mechanism. In these figures the breech is closed. In Fig. 4 the firing-pin and spring are omitted. Fig. 5 is a plan with the breech open. Figs. 6 and 7 are detached views of the trigger and the nut on the firing-pin in the fired and cocked positions, respectively. Figs. 8 and 9 are local transverse sections of the firing-pin and parts connected with it. In Fig. 8 the pin is in the fired position, and in Fig. 9 it has just been cocked.

a is the gun, and b the breech-block.

The usual carrier-ring is dispensed with, the breech-block b being supported on an axial pivot c, fixed to the ends of two parallel arms d, whose other ends are pivoted by the pin d' to the gun. The breech-block b is operated by the continuous movement of a lever e, which, when the breech is closed, lies between the arms d and which works on a pivot e', fixed to them and parallel to their own pivot. This lever is operated by a handle e^2 and carries a pinion or segment e^3, having oblique teeth gearing with corresponding teeth b' in the breech-block, so that the first part of the movement of the lever e turns the block b about its axis and frees it from the screws in the breech. When this has taken place, the lever is locked, as hereinafter described, to the arms d and its further movement therefore swings the arms with the block about the pivot d' of the former. When the breech is closed, the arms d are locked to the gun by a hook-shaped catch d^2, pivoted to them and engaging with a corresponding hook a', fixed to the gun. The catch d^2 is supported in its locked position by the curved surface of the breech-block, upon which it rests; but when the block has been turned sufficiently to disengage it from the screws in the gun the catch drops into a recess b^2 in the block and frees the arms d. The faces of the catch d^2 and hook a' are suitably inclined to give the catch a tendency to disengage itself from the hook, and a spring d^3 may also be provided to assist in this.

In closing the breech the tail end of the catch comes against a projection or lug a^2 on the gun, which raises the catch out of the recess b^2 in the block and causes it to engage with the hook a' on the gun. It will be observed that when the catch is in the recess it locks the block b to the arms d, and since the lever e and block are geared together the former can now no longer turn about its own pivot e', but being also locked to the arms turns them with it, as above described, about the pivot d'.

The axial pivot c of the breech-block is hollow and contains the firing-pin f with its spring f'. The hollow axial pivot c has in it a longitudinal slot c', Fig. 4, with a recess c^2 at its rear end. A lug f^2, fixed to the firing-pin, projects through this slot and engages with an incline b^3 inside the breech-block. As the latter is rotated to disengage it from the screws in the gun, the incline forces the lug f^2 and firing-pin f back, and when the former comes to the rear end of the slot c' it is carried round by the breech-block into the recess c^2, where it is held, the gun being now cocked. The rear end of the spindle of the firing-pin is square and works to and fro in a nut g, square inside and circular outside, which is free to rotate without moving endwise in the hollow axial pivot c. This nut carries a tooth g', engaging with a notch in a trigger or firing-bar h, which is radial to the gun and is contained in one of the arms d, which is bored to receive it. This trigger, when pulled against the spring h' by a lanyard attached to the eye h^2 at its end or

otherwise, turns the nut g and with it the firing-pin f, freeing the lug on the latter from the recess. The spring f' then forces the firing-pin forward and the gun is fired. The trigger h has upon it a lug h^3, resting against a ridge or projection e^4, Figs. 1, 2, 5, 6, and 7, in the form of part of a circle on the side of the pinion e^3 on the lever e. When the pinion is being turned to disengage the breech-block, this lug is on the inside of or nearer to the center than the circular projection e^4, as shown in Fig. 6, and the trigger is locked in the fired position; but when the firing-pin has been drawn fully back, as above described, the lug h^3 on the trigger comes to the end of the circular projection e^4, and when the firing-pin f is turned to cock the gun, moving the trigger h with it, the lug h^3 passes to the other side of the circular projection e^4, so that when the breech is being closed again the trigger is locked in its cocked position, as shown in Fig. 7, and the gun cannot be fired until the breech is fully closed, when the lug on the trigger has passed the other end of the circular projection.

When the breech-block b is being turned to disengage it from the screws in the gun, it has a slight rearward movement. In order to provide for this, it has on its inside screw-threads of the same pitch as those on its outside and engaging with corresponding threads c^3 on its axial pivot c. Preferably these screws are divided screws, so that the block may readily be detached from the pivot.

j, Fig. 1, is the extractor. It is pivoted at j' to the gun and its tail is acted on by a cam-shaped lug d^4 on the arms d.

What I claim is—

1. The combination of a gun, an arm pivoted to the gun its pivot being at right angles to the axis, a breech-block pivoted to the arm and locking in the gun by a partial turn, a lever pivoted to the arm its pivot being parallel to that of the arm, gearing whereby the rotation of the lever turns and unlocks the breech-block, a catch pivoted to the arm, supported by the breech-block and engaging with a catch on the gun and a notch in the breech-block lying beneath the catch on the arm when the breech-block is in its unlocked position.

2. The combination of a gun, an arm pivoted thereto on a pivot at right angles to its axis, a hollow pivot fixed to the arm, a breech-block on the hollow pivot and locking in the gun by a partial turn, a firing-pin and spring within the hollow pivot, a lever connected to the arm by a pivot parallel to that of the arm and toothed gearing whereby the rotation of the lever turns and unlocks the breech-block.

3. The combination of a gun, an arm pivoted to the gun its pivot being at right angles to the axis, a hollow pivot fixed to the arm, a breech-block on the hollow pivot and locking in the gun by a partial turn, a firing-pin and spring within the hollow pivot, a lever pivoted to the arm its pivot being parallel to that of the arm, gearing whereby the rotation of the lever turns and unlocks the breech-block, a catch pivoted to the arm, supported by the breech-block and engaging with a catch on the gun and a notch in the breech-block lying beneath the catch on the arm when the breech-block is in its unlocked position.

4. The combination of a gun, a divided screw in the gun, an arm pivoted to the gun its pivot being at right angles to the axis, a hollow pivot fixed to the arm, a screw on the outside of the pivot of the same pitch as the screw in the gun, a breech-block on the hollow pivot having on its inside a screw engaging with that on the pivot and on its outside a divided screw engaging with that in the gun, a firing-pin and spring within the hollow pivot, a lever pivoted to the arm its pivot being parallel to that of the arm and gearing whereby the rotation of the lever turns and unlocks the breech-block.

5. The combination of a gun, a divided screw in the gun, an arm pivoted to the gun its pivot being at right angles to the axis, a hollow pivot fixed to the arm, a screw on the outside of the pivot of the same pitch as the screw in the gun, a breech-block on the hollow pivot having on its inside a screw engaging with that on the pivot and on its outside a divided screw engaging with that in the gun, a firing-pin and spring within the hollow pivot, a lever pivoted to the arm its pivot being parallel to that of the arm, gearing whereby the rotation of the lever turns and unlocks the breech-block, a catch pivoted to the arm, supported by the breech-block and engaging with a catch on the gun and a notch in the breech-block lying beneath the catch on the arm when the breech-block is in its unlocked position.

6. The combination of a gun, an arm pivoted to the gun its pivot being at right angles to the axis, a hollow pivot fixed to the arm, a breech-block on the hollow pivot and locking in the gun by a partial turn, a firing-pin and spring within the hollow pivot, a longitudinal slot with a recess at its rear end in the hollow pivot, a lug on the firing-pin projecting through the slot, an incline inside the breech-block engaging with the lug, a lever pivoted to the arm its pivot being parallel to that of the arm and gearing whereby the rotation of the lever turns and unlocks the breech-block.

7. The combination of a gun, an arm pivoted to the gun its pivot being at right angles to the axis, a hollow pivot fixed to the arm, a breech-block on the hollow pivot and locking in the gun by a partial turn a firing-pin and spring within the hollow pivot, a longitudinal slot with a recess at its rear end in the hollow pivot, a lug on the firing-pin projecting through the slot, an incline inside the breech-block engaging with the lug, a trigger carried by the arm and free to move longitudinally of it, means whereby the movement

of the trigger rotates the firing-pin, a lever pivoted to the arm its pivot being parallel to that of the arm, a pinion with oblique teeth fixed to the arm and gearing with corresponding teeth on the breech-block, a lug on the trigger and a circular guide on the pinion against which the lug works.

8. The combination of a gun, an arm pivoted to the gun its pivot being at right angles to the axis, a breech-block pivoted to the arm and locking in the gun by a partial turn, a firing-pin, means for cocking the same, a trigger carried by the arm and free to move longitudinally of it, means whereby the movement of the trigger rotates the firing-pin, a lever pivoted to the arm its pivot being parallel to that of the arm, a circular guide carried by the arm, a lug on the trigger working against the guide and gearing whereby the rotation of the lever turns and unlocks the breech-block.

9. The combination of a gun, an arm connected therewith by a pivot at right angles to the axis of the gun, a breech-block pivotally connected with the arm and locking in the gun by a partial turn, a lever connected with the arm by a pivot parallel with the pivot of the arm, gearing between the lever and the breech-block for turning and unlocking the breech-block, devices for locking the arm to the breech of the gun when the breech-block is closed, and means for releasing said locking devices when the block has been turned sufficiently to disengage it from the breech of the gun.

10. The combination of a gun, an arm connected therewith by a pivot at right angles to the axis of the gun, a hollow pivot fixed to the arm, a breech-block on the hollow pivot and locking in the gun by a partial turn, a firing-pin and spring within the hollow pivot, a lever connected with the arm by a pivot parallel with that of the arm, toothed gearing whereby the rotation of the lever turns and unlocks the breech-block, devices for locking the arm to the breech of the gun when the breech-block is closed, and means for releasing the locking devices when the breech-block is in position to be withdrawn.

AXEL WELIN.

Witnesses:
JOHN H. WHITEHEAD,
FREDERICK CARPMAEL.