M. C. LISLE.

FIREARM.

APPLICATION FILED JAN. 30, 1909.

970,248.

Patented Sept. 13, 1910.

3 SHEETS—SHEET 1.

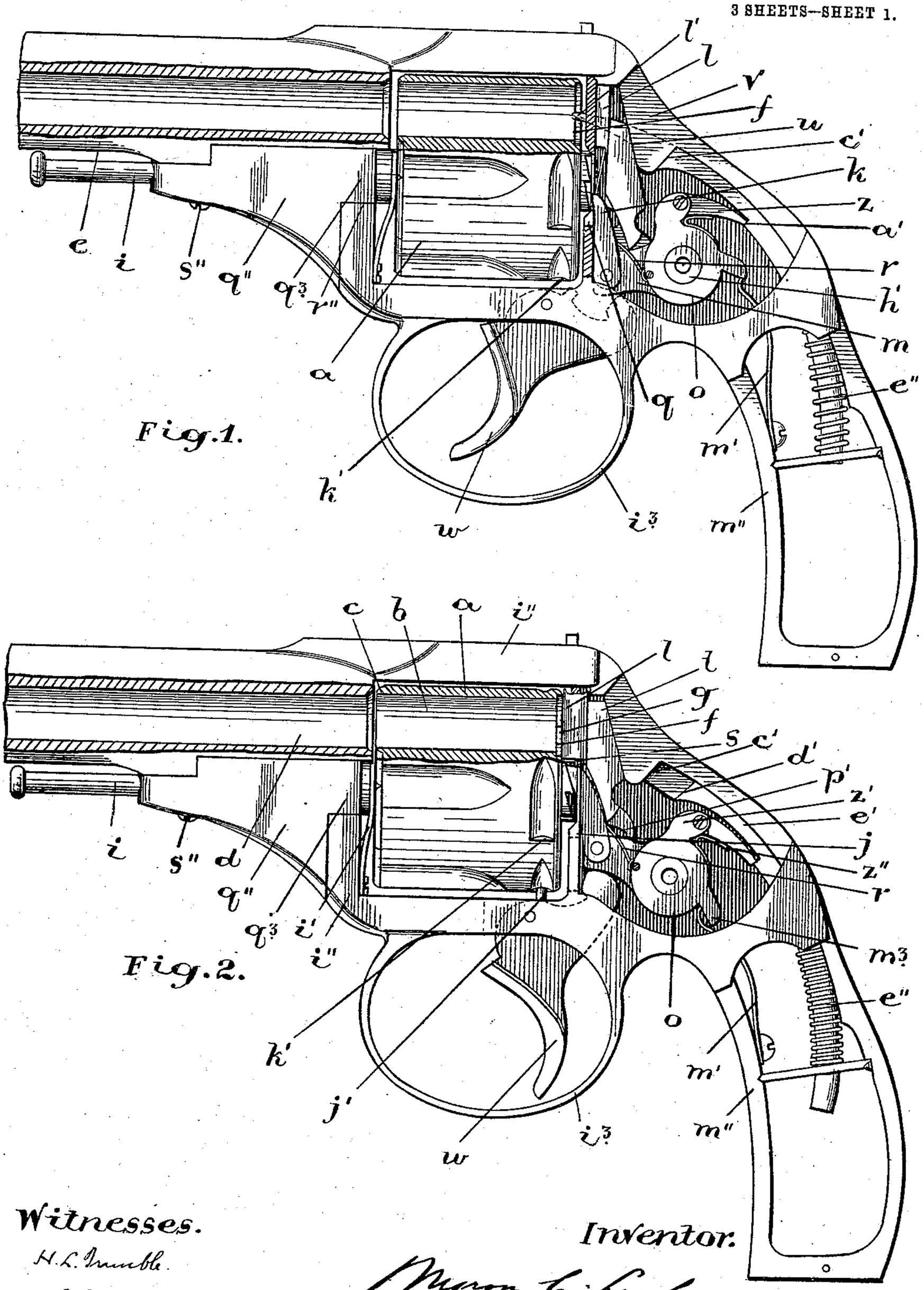

Fig. 1.

Fig. 2.

Witnesses.

H. L. Trumble.

C. E. Smith.

Inventor.

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3 SHEETS—SHEET 2.

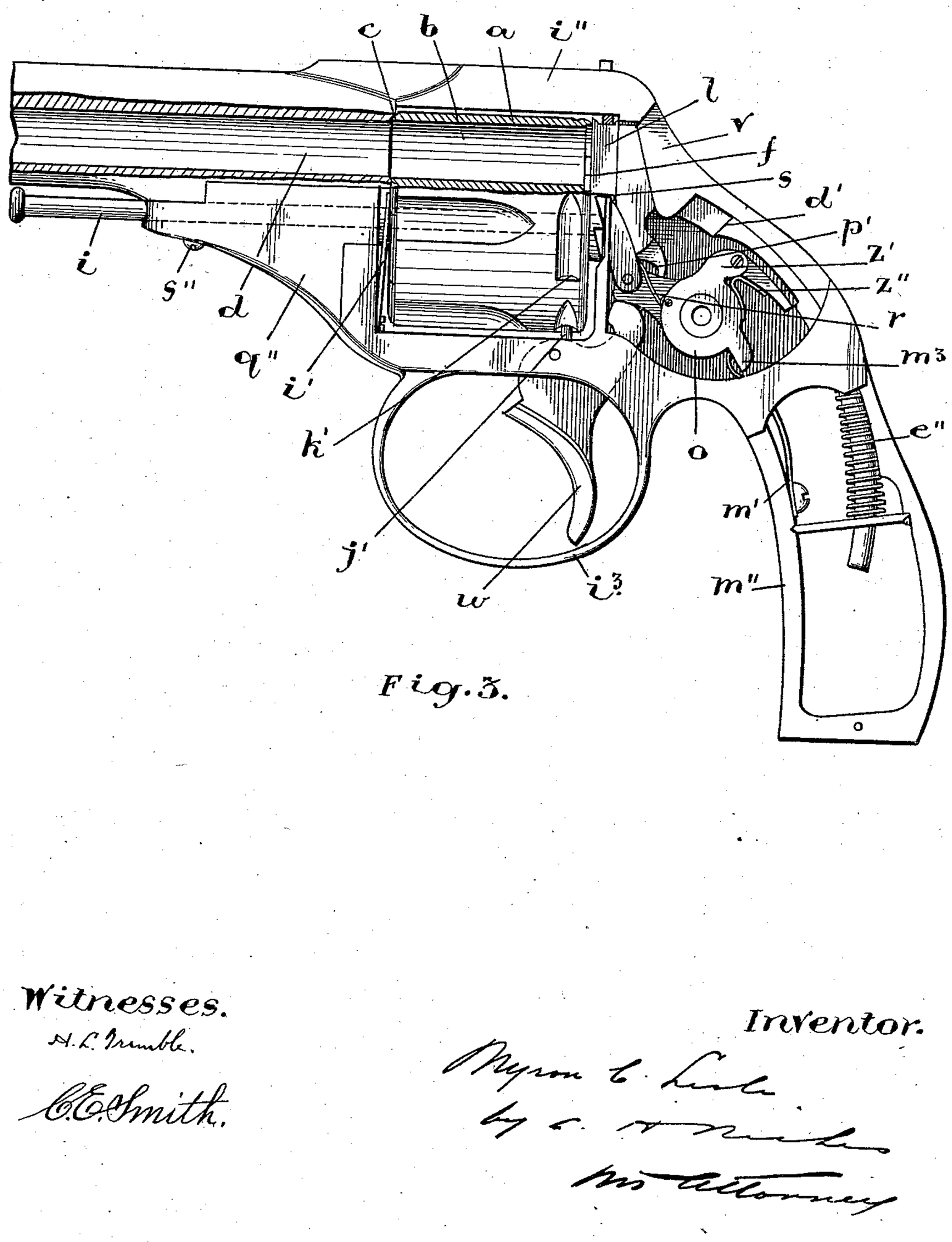

Fig. 3.

Witnesses.

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3 SHEETS—SHEET 3.

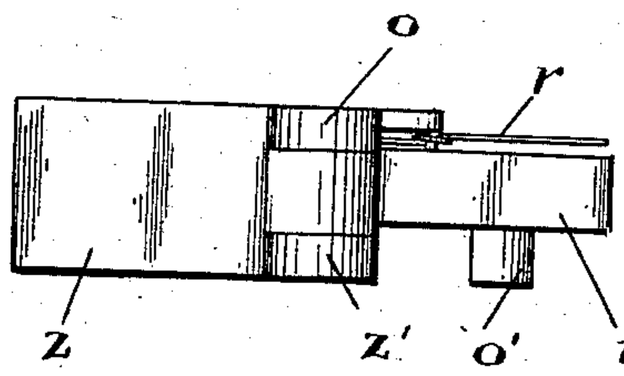

Fig. 4.

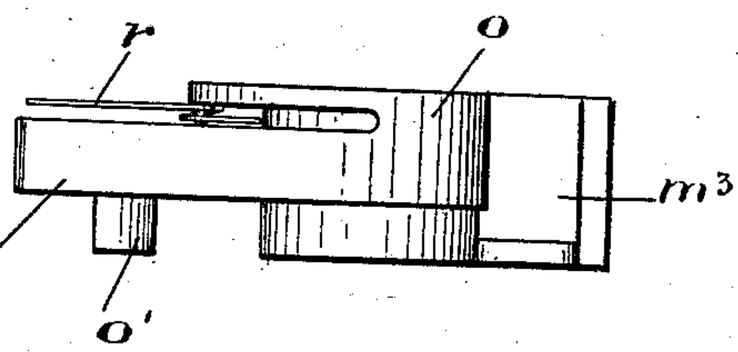

Fig. 4a.

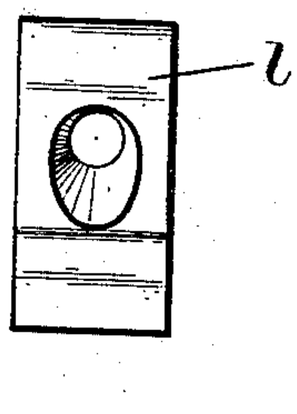

Fig. 5.

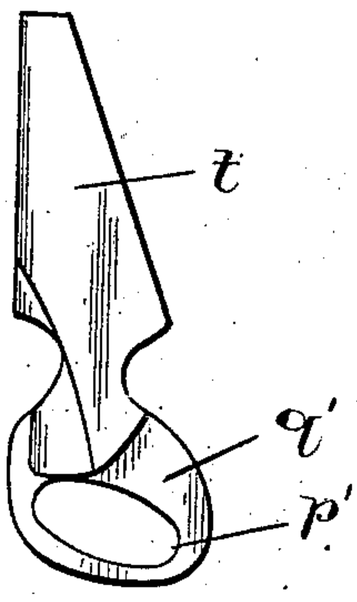

Fig. 7.

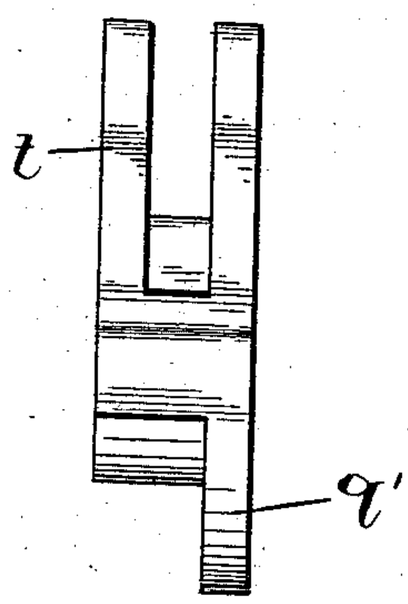

Fig. 6.

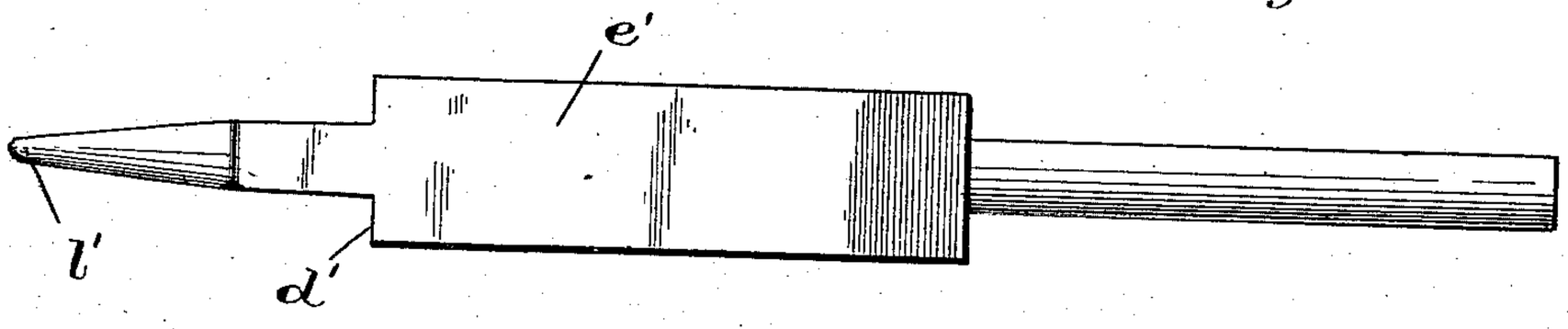

Fig. 8.

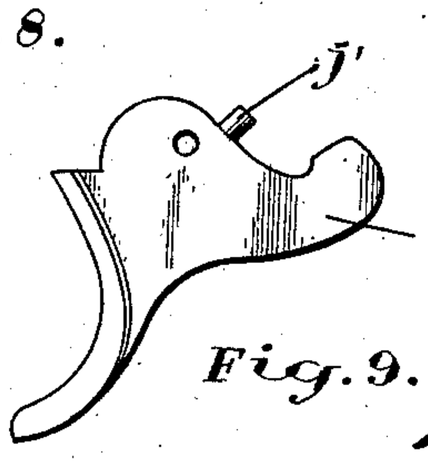

Fig. 9.

Witnesses.

H. L. Trimble.

C. E. Smith.

Inventor.

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UNITED STATES PATENT OFFICE.

MYRON CLARK LISLE, OF TORONTO, ONTARIO, CANADA, ASSIGNOR OF ONE-FOURTH TO VINCENT ROBINSON, OF TORONTO, CANADA.

FIREARM.

970,248. Specification of Letters Patent. **Patented Sept. 13, 1910.**

Application filed January 30, 1909. Serial No. 475,274.

To all whom it may concern:

Be it known that I, MYRON CLARK LISLE, a citizen of the United States, residing at the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Firearms; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a fire arm in which a chambered cylinder revolves on a horizontal axis behind the barrel. It has been ascertained by comparative penetrative tests that in this class of weapon, the loss of pressure resulting from gas leakage between the cylinder and the barrel, amounts to as much as 50% of the total pressure generated by the explosive. It has also been ascertained that this loss can be prevented by closing the gap between the cylinder and the barrel before the explosion occurs and keeping it closed until the bullet has completed its flight from the muzzle.

This invention therefore relates to a chambered cylinder having a reciprocating motion as well as a rotary motion by which it can be moved by means forming part of the breech mechanism into contact with the adjacent end of the barrel, to close the gap which would otherwise exist between the cylinder chamber and the bore of the barrel. The closing of this gap prevents the loss of pressure of the gas of the exploded charge and permits of the utilization of the full pressure for propelling the projectile through the muzzle. The breech mechanism by which the reciprocating motion is effected is moved by the action of the trigger into an operative position coincident with the initial movement of the hammer and its motion is completed prior to the disengagement of the sear from the bent so that the full pressure on the trigger may be immediately transferred to this part of the breech mechanism to lock it against the recoil of the cylinder when the cartridge is exploded.

The invention further relates to a solid frame so constructed as to permit of the cylinder moving laterally from behind the barrel without removing or disconnecting any of the parts as a weapon.

The invention further relates to the specific construction of the breech mechanism by which a semi-deliberate fire control can be attained.

For an understanding of the invention reference is to be had to the following description and to the accompanying drawings in which:—

Figure 1, is a view of a revolver partly in section showing the barrel and the cylinder and breech mechanism in their normal positions. Fig. 2, is a similar view to Fig. 1, with the cylinder moved against the barrel, and the breech mechanism positioned preparatory to the release of the hammer by the sear. Fig. 3, is a similar view to Figs. 1 and 2, showing the position of the movable breech block and wedge when the sear has been disengaged from the bent, prior to the movement of the hammer in the direction of the cylinder. Fig. 4, is a plan view of the oscillator and sear. Fig. 4^a, is a plan view looking at the oscillator and sear from the opposite side to Fig. 4. Fig. 5, is a rear elevation of the movable breech block. Fig. 6, is a rear elevation, and Fig. 7, is a side elevation of the wedge. Fig. 8, is a plan view of the hammer, and Fig. 9, is an elevation of the trigger.

Like characters of reference refer to like parts throughout the specification and drawings.

Each of the cylinder chambers *b* is provided at the barrel end of the cylinder *a* with a cylinder ring *c* to enter the bore of the barrel *e* and cause the cylinder chamber to correctly register with the bore *d*, and to close the opening between the cylinder and the barrel when it has entered the bore so that there will be no loss of pressure by a leakage of the gas until the projectile has completed its flight from the muzzle.

In the breech end of the cylinder is an ejector seat *f* and contained in the ejector seat *f* is an ejector *g*. The breech end of each cylinder chamber and the corresponding part of the ejector is countersunk to form a seat for the cartridge rim so that the heads of the cartridge shells will be flush with the breech end of the cylinder.

The cylinder loosely revolves upon the cylinder pin *i* under the influence of the lifter *k* and in addition to its rotary motion it has a reciprocating motion between the breech plate and the barrel. Behind the breech end of the cylinder is a standing breech plate *j* slotted for the lifter *k* and for the movable breech block *l*.

The lifter *k* is pivotally connected to the

lifter cam *m* which forms an integral part of the oscillator *o*. The oscillator *o* is loosely mounted upon the oscillator stud *h'* with the lifter cam projected in the direction of the cylinder and so positioned as to be engaged by the trigger *w*. When pressed the trigger raises the lifter cam and causes the lifter to rotate the cylinder a distance of one chamber, on each actuation of the trigger to bring the cylinder chambers successively into line with the bore of the barrel, the free end of the lifter projecting through the breech plate slot *q* to engage with the ratchet teeth and yieldingly held in engagement with the latter by the lifter spring *r* connected at one end to the oscillator and engaging at the other end with the lifter.

When the breech mechanism is in repose the cylinder is pressed in the direction of the standing breech plate by a spring *i'* connected at one end to the frame *i''* in front of the cylinder and bearing at the other end against the cylinder in the vicinity of the cylinder pin to apply its pressdre axially to the cylinder.

When the breech mechanism is in activity the cylinder is pressed against the end of the barrel by a movable breech block *l* extending through the breech block slot *s* in the standing breech plate, and engaging the breech end of the cylinder. The movable breech block *l* is actuated by a breech block wedge *t* raised to engage the movable breech block *l* and the resisting piece *u* by the lifter cam *m*. The resisting piece *u* forms part of the breech *o* and engages the wedge *t* when the wedge is raised by the lifter cam *m* and presses the wedge *t* against the movable breech block *l* to force the movable breech block into engagement with the breech end of the cylinder. The continued movement of the wedge *t* causes the movable breech block to ultimately force the cylinder against the end of the barrel and the cylinder ring of the chamber axially alined with the barrel into the bore *d* to close the opening between the barrel and the cylinder.

When the trigger is pressed several coincident and successive actions occur viz:—

1st. The lifter cam is engaged and raised by the trigger causing the oscillator to move from the position shown in Fig. 1, to that shown in Fig. 2. This movement of the lifter cam and oscillator causes the coincident movement of the lifter *k* and the sear *z*, the lifter causing the rotation of the cylinder a distance of one cylinder chamber and the sear engaging with the bent *a'* and cocking the hammer *e'* while the cylinder is rotating this distance. Coincident with the rotation of the cylinder the lifter cam moves the wedge into the space between the movable breech block and the resisting piece and positions the wedge to start the forward movement of the cylinder when the reciprocation of the latter is completed. When the lifter is causing the rotation of the cylinder the cylinder stop *j'* is being moved by the trigger to enter a cylinder detent *k'* to hold the cylinder against further rotation. The lifter then discontinues the revolution of the cylinder and passes along the face of the ratchet tooth with which it has been in engagement as the cylinder moves forward under the influence of the movable breech block and wedge.

2nd. When the revolution of the cylinder is arrested the continued upward movement of the lifter cam raises the wedge to start the forward movement of the cylinder. When the wedge has nearly attained its maximum position the cylinder is close to the end of the barrel and the cylinder ring is positioned to enter the bore and the sear is about to be disengaged from the bent.

3rd. The continued pressure on the trigger moves the wedge to its maximum position and locks the cylinder against the end of the barrel with the cylinder ring in the bore coincident with the release of the sear from the bent. The full pressure on the trigger when the sear is disengaged from the bent is transferred to the wedge to hold it tightly in position to lock the cylinder against the barrel end and hold it in that position against the recoil resulting from the explosion of the cartridge. Coincident with the locking up of the cylinder and barrel is the movement of the hammer under the influence of the main spring *e''*. The hammer is located along the inner surface of the breech *v* and is of substantially the same curvature as the breech as shown in Figs. 1 and 2 of the drawings. The movement of the hammer is continued by the main spring until its stopping shoulder *d'* engages with a stopping shoulder *c'* forming part of the breech at the base of the resisting piece.

To provide for the movement of the striker *l'* forming part of the hammer, the stopping shoulder *d'* and resisting piece are slotted and corresponding slots are formed in the wedge and the movable breech block to permit of the free action of the hammer for exploding the cartridge.

The pressure on the trigger is released when the cartridge is exploded and when the pressure on the trigger is removed the oscillator returns to its initial position under the influence of the trigger spring *m'*. The trigger spring *m'* is connected at one end to the hand grip frame *m''* below the trigger spring lug m^3 integrally formed with the oscillator. When the oscillator is in a position of repose the adjacent end of the trigger spring engages the free end of the trigger spring lug and when the oscillator is in activity it moves from the free

end of the trigger spring lug inward in the direction of the cylindrical part of the oscillator, the trigger spring being preferably of an ogee formation so that the trigger spring lug will be free to move without coming into contact with it during the activity of the oscillator. This construction of the trigger spring permits of a uniform tension on the oscillator at all parts of its movement.

During the return of the oscillator to its normal position a pin o' projecting from the lifter cam engages in the slot p' of the extension q' of the wedge t to cause the coincident return of the wedge to its normal position. When the wedge has resumed its normal position a spring i' presses the cylinder away from the barrel so that the cylinder can freely revolve when pressure is again applied to the trigger.

The sear z as shown in the accompanying drawings is pivoted to the sear lug z' forming part of the oscillator, and is held in position by the sear spring z'' to engage with the bent a' when the oscillator is actuated.

The frame i'' is what is known to gunsmiths as a solid frame, and the trigger guard i^3 and the hand grip frame m'' and the breech v are integrally formed with the frame. Pivotally connected to the barrel in front of the frame i'' is the cylinder pin bracket q'' in which is slidably mounted the cylinder pin i. The cylinder pin bracket q'' is provided with a lug q^3 at one side of the frame i'' and formed in the frame is a recess r'' to receive the lug q^3. The cylinder pin bracket q'' on the other side of the frame is provided with a slidable latch, which with the assistance of the lug q^3 holds the cylinder pin bracket and the cylinder against lateral movement when the lug and the latch engage with the opposite sides of the frame. By releasing the latch the cylinder pin bracket can turn on its pivot s'' and swing the cylinder sidewise from its position behind the barrel, and can be returned to its position behind the barrel by being swung in the opposite direction to that first mentioned when the latch and lug will reëngage with the frame and hold the cylinder in its fixed position behind the barrel.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A fire arm comprising a barrel, a chambered cylinder revoluble behind the barrel end and having a reciprocating motion axially of the fire arm, a trigger, an oscillator actuated by the trigger, a movable breech block, a resisting piece opposed to the movable breech block, a wedge positioned by the oscillator between the movable breech block and resisting piece to lock the chambered cylinder against the barrel end and a projection on the wedge having a pin receiving slot and a pin on the oscillator engaging in the slotted projection.

2. A fire arm comprising a barrel, a chambered cylinder, a trigger, an oscillator, an oscillator cam, a lifter pivotally connected to the oscillator cam to rotate the chambered cylinder, a sear pivotally connected to the oscillator, a spring for the sear, a hammer, having a bent to be engaged by the sear, a main spring for the hammer, a trigger spring lug on the oscillator, and a trigger spring engaging at one end with the trigger spring lug.

3. A fire arm comprising a breech mechanism consisting of an oscillator, an oscillator cam integrally formed with the oscillator, a trigger engaging with the oscillator cam, a lifter pivoted to the oscillator cam, a hammer, a bent for the hammer, a main spring for the hammer, a sear, a lug integral with the oscillator to which the sear is pivotally connected, a sear spring connected to the oscillator to hold the sear in its normal position, a trigger spring lug integral with the oscillator, and a trigger spring normally engaging with the free end of the trigger spring lug and movable between the free end of the trigger spring lug and the oscillator.

Toronto, January 9th, 1908.

MYRON CLARK LISLE.

Signed in the presence of—

OLIVE BATEMAN,

C. H. RICHES.