No. 781,765. PATENTED FEB. 7, 1905.

J. M. BROWNING.

MAGAZINE GUN.

APPLICATION FILED JULY 10, 1903

4 SHEETS—SHEET 1.

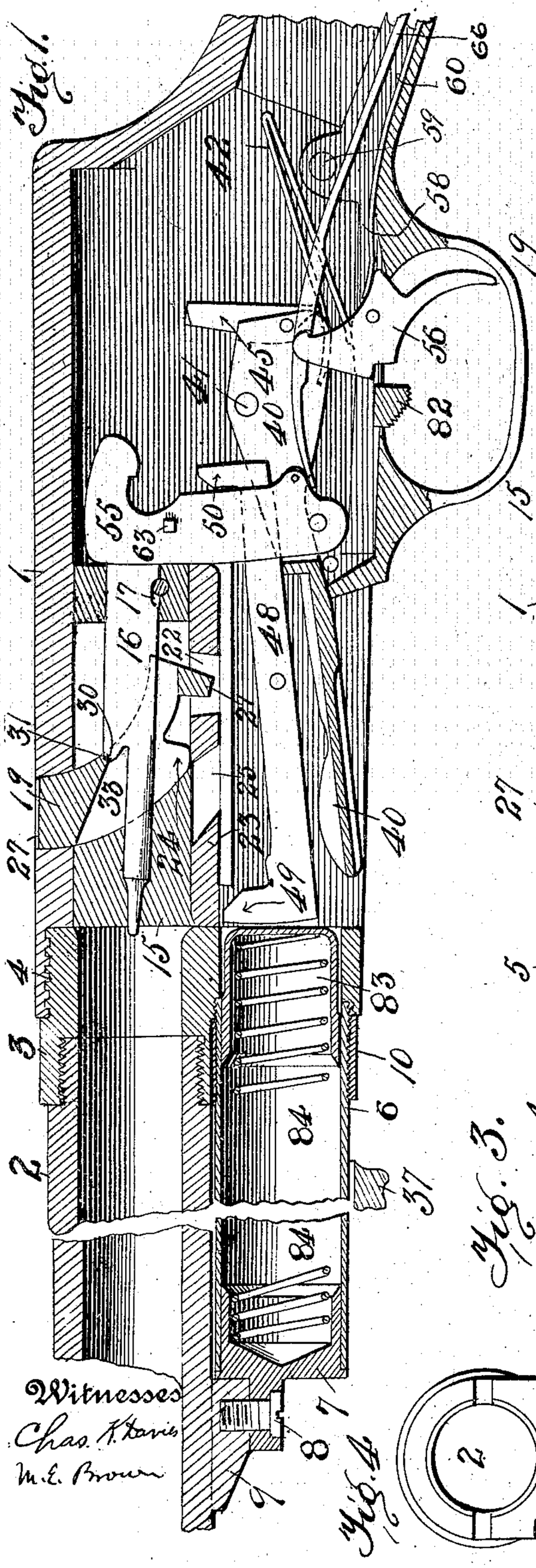

Fig. 1.

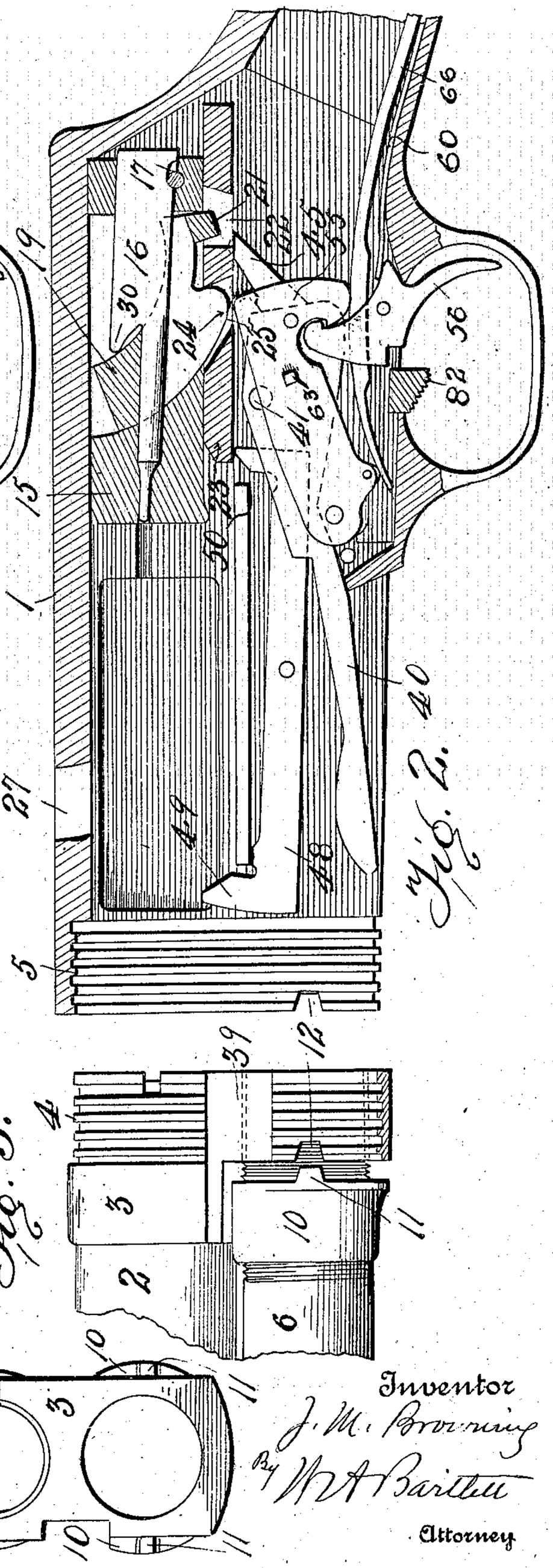

Fig. 2.

Fig. 3.

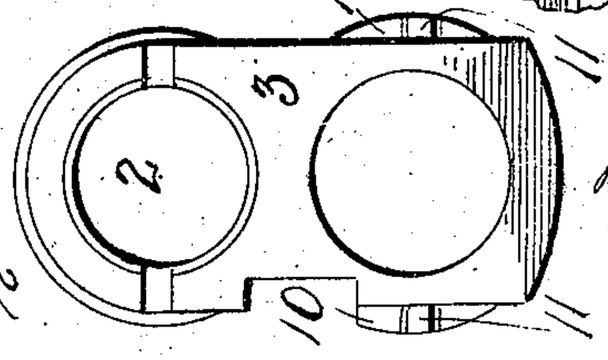

Fig. 4.

Witnesses
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4 SHEETS—SHEET 2.

Fig. 30.

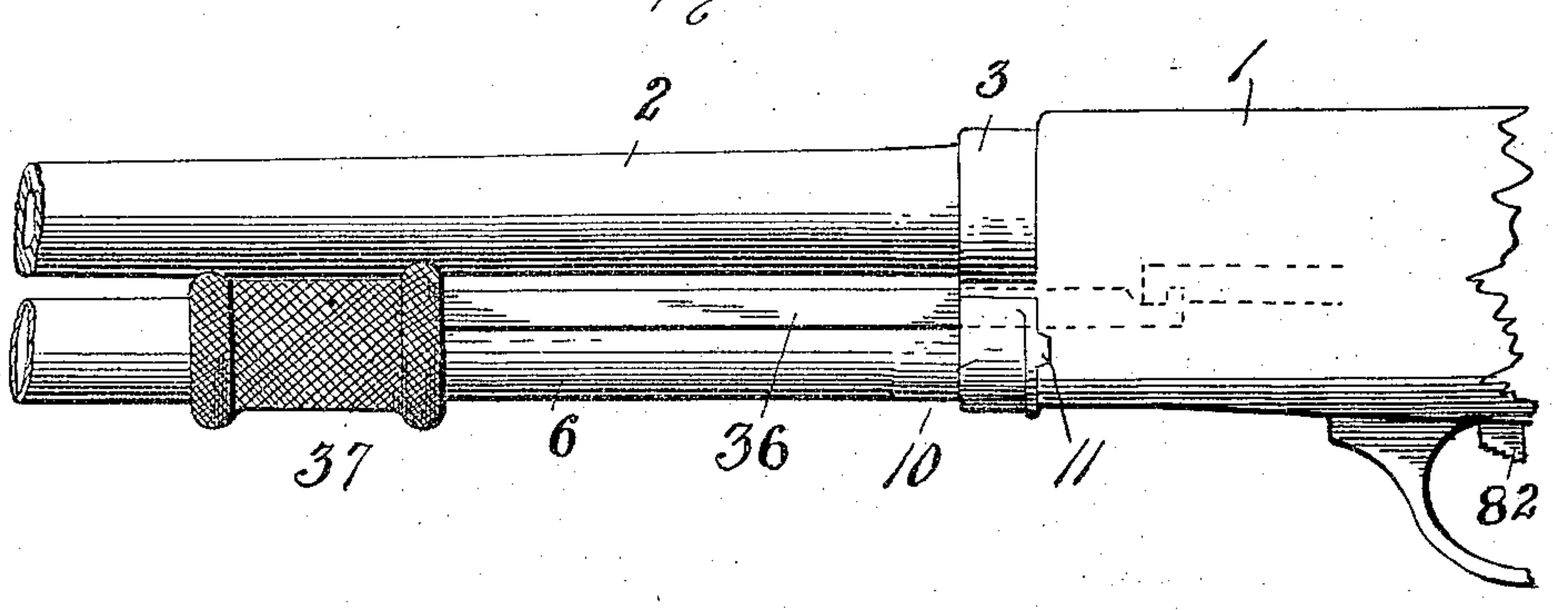


Fig. 31.

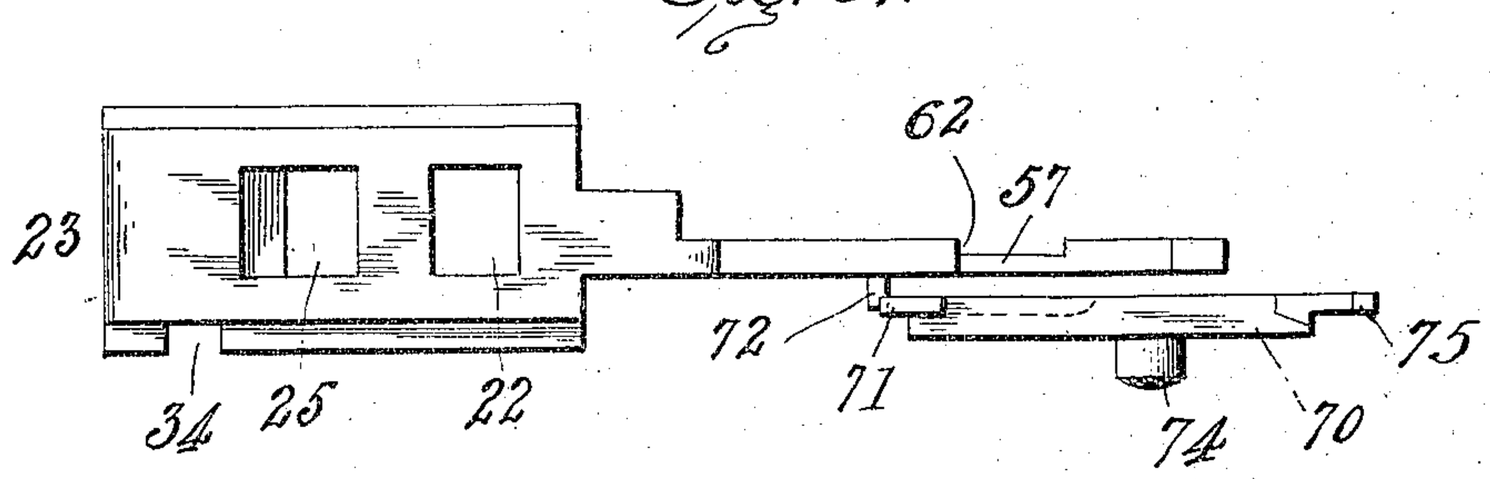
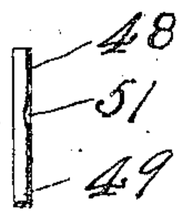


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

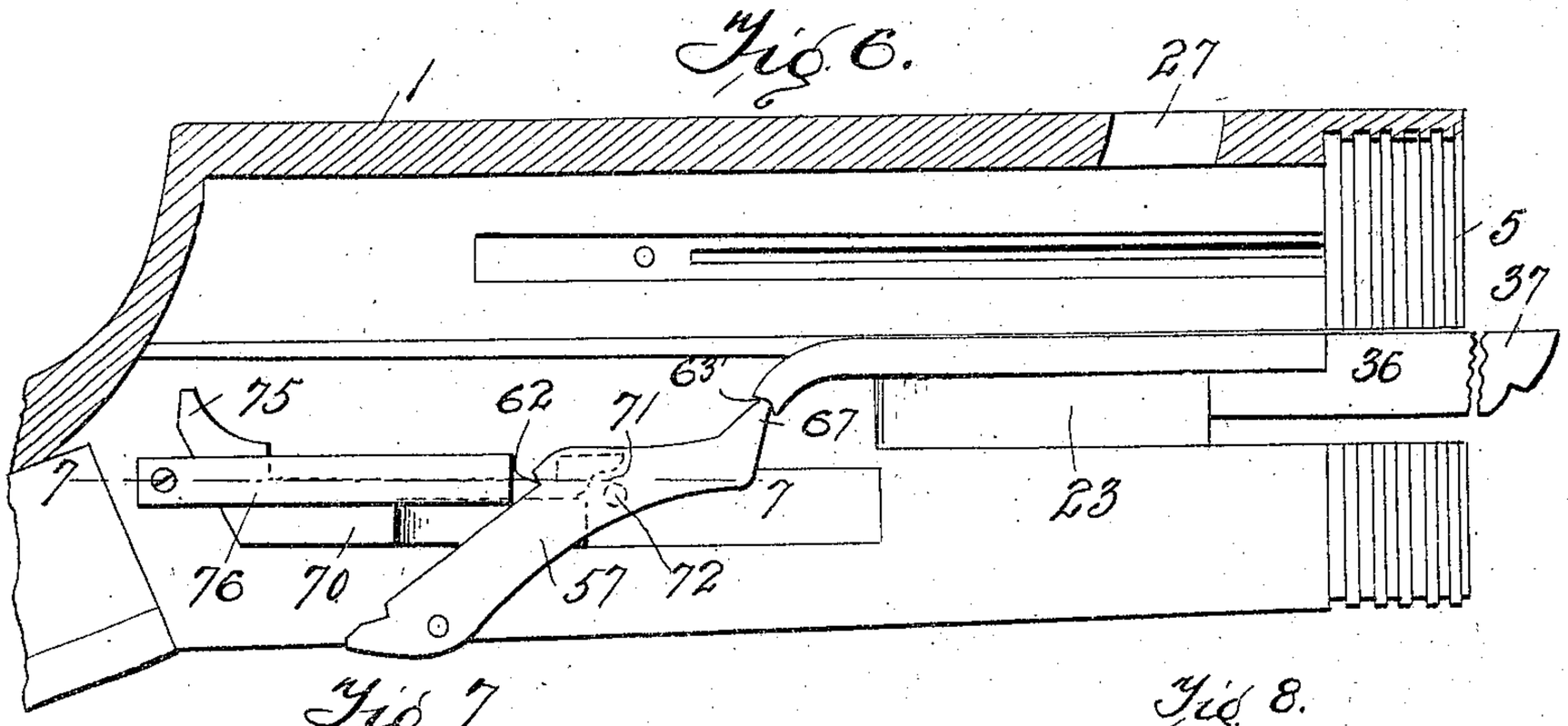


Fig. 7.

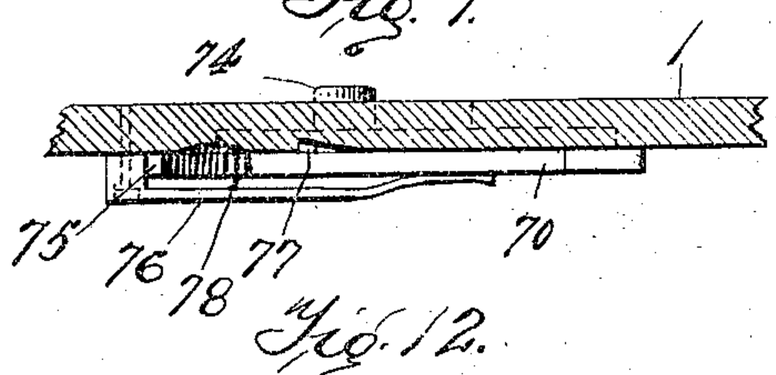


Fig. 8.

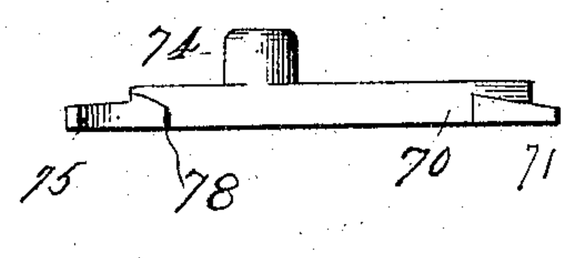


Fig. 12.

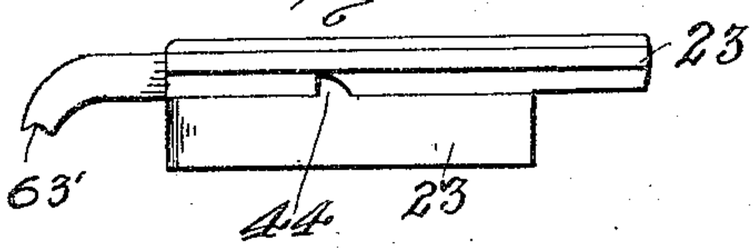


Fig. 9

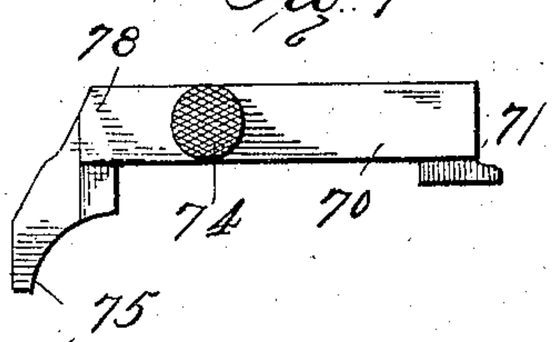


Fig. 13.

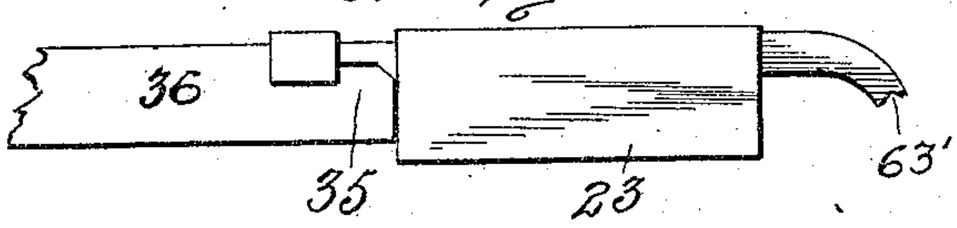


Fig. 10.

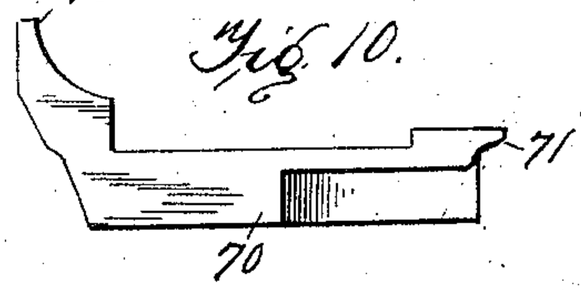


Fig. 14.

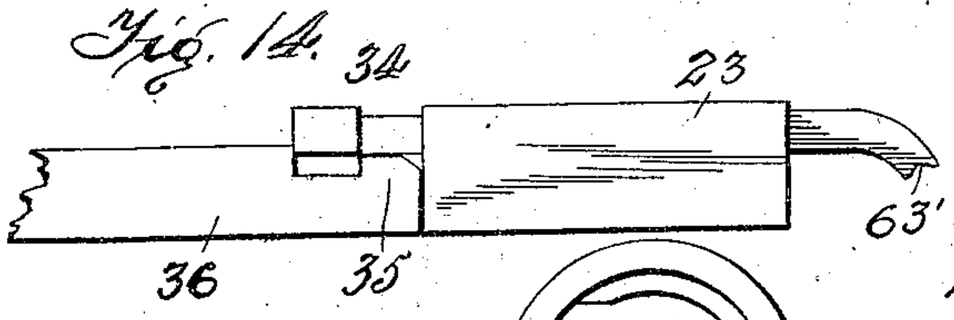


Fig.

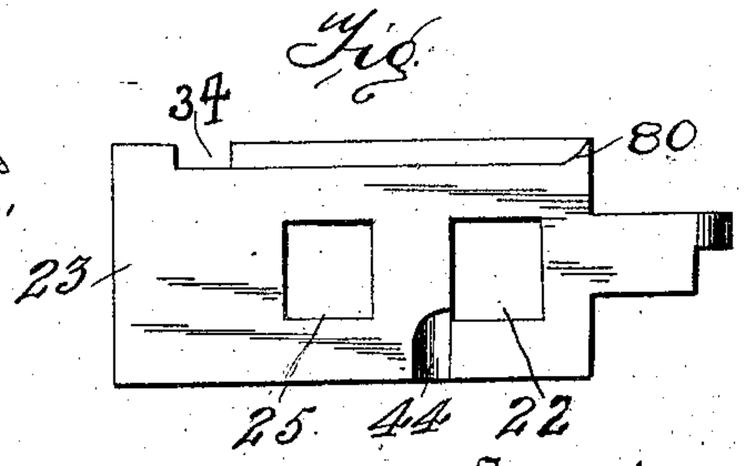
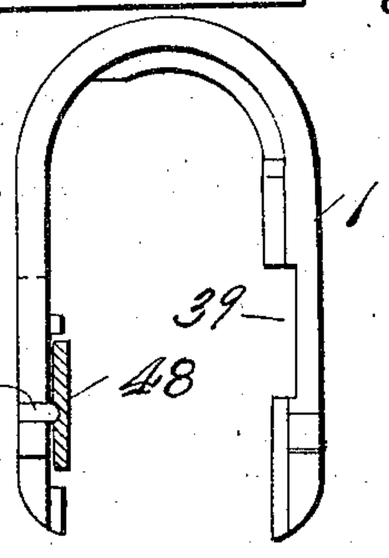


Fig. 26.



Witnesses

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4 SHEETS—SHEET 4.

Fig. 15.

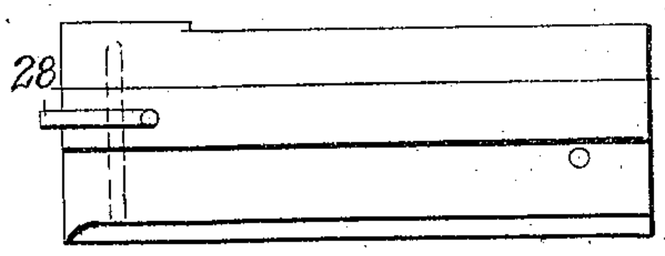


Fig. 18.

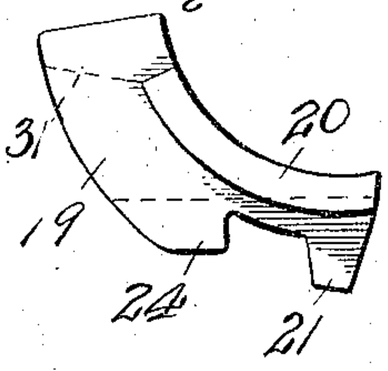


Fig. 19.

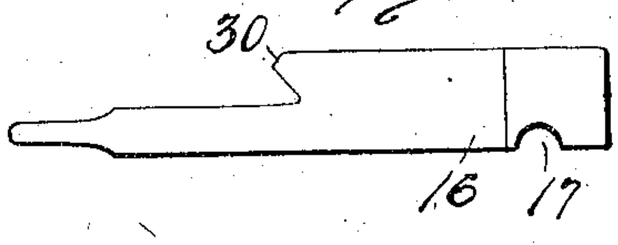


Fig. 21.

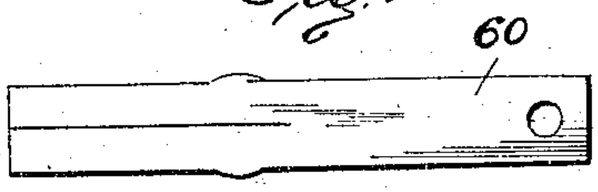


Fig. 16.

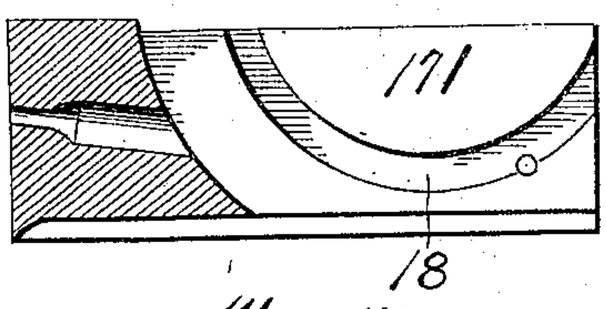


Fig. 22.

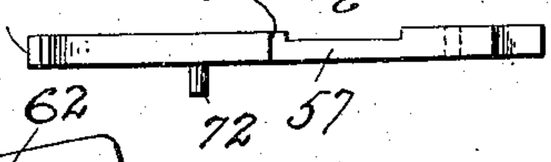


Fig. 20.

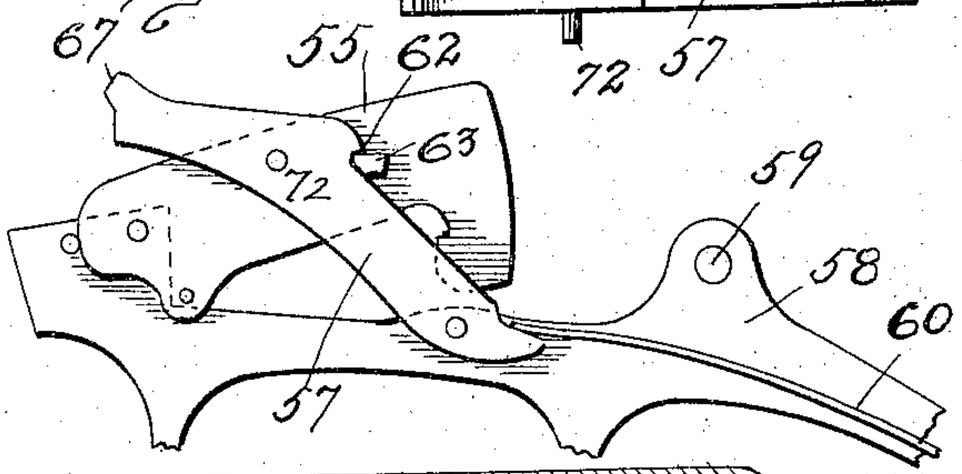


Fig. 17.

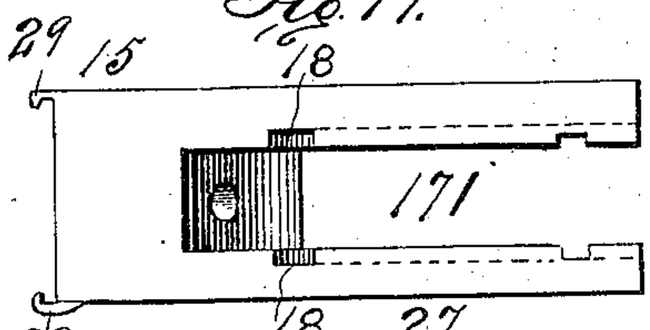


Fig. 23.

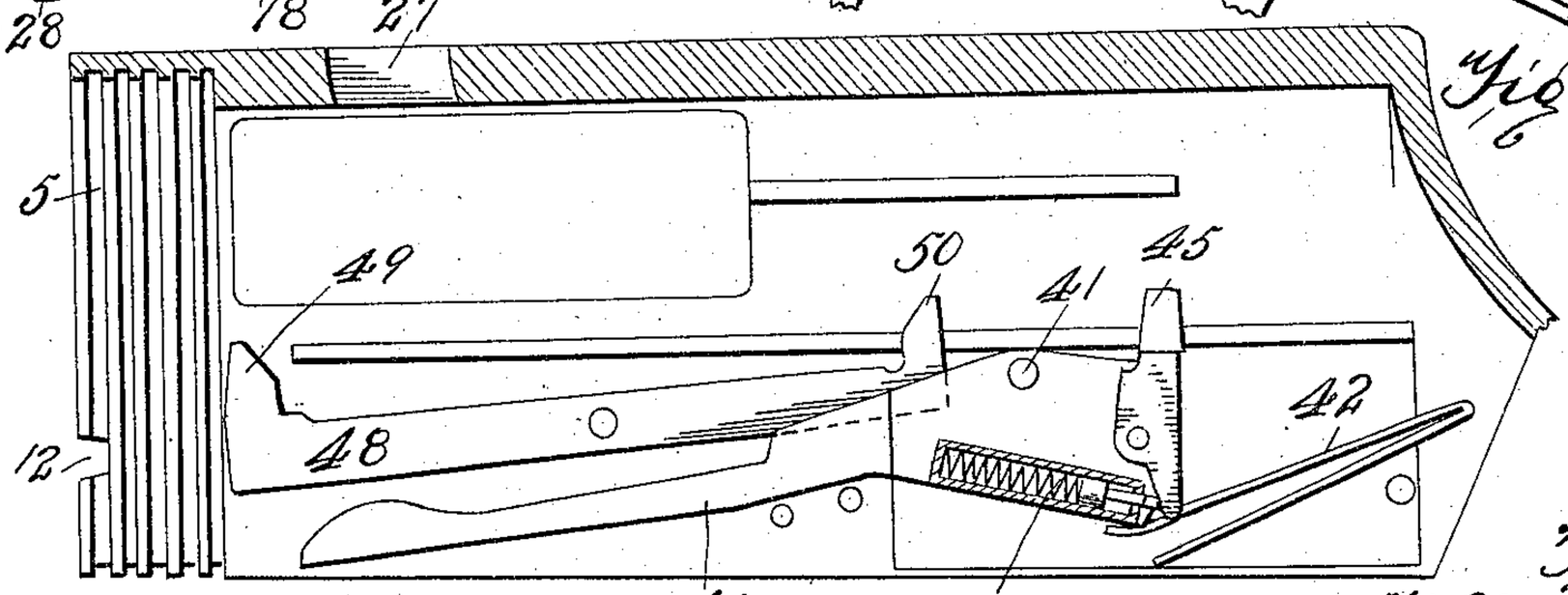


Fig. 25.

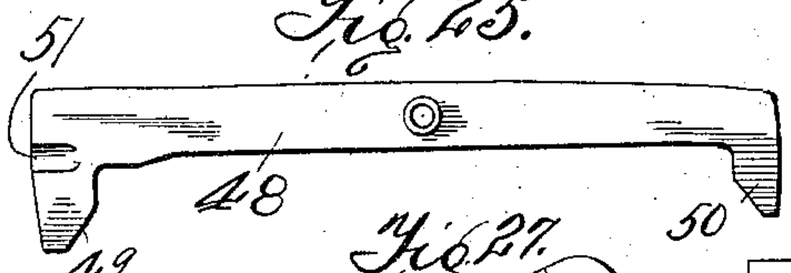


Fig. 27.

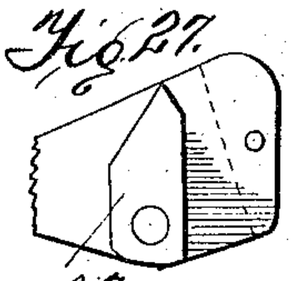


Fig. 28.

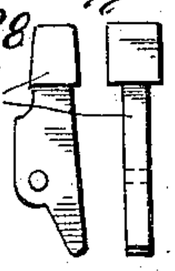
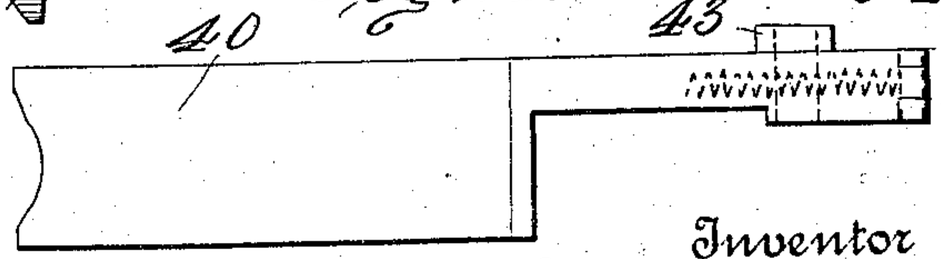


Fig. 24.



Witnesses
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Inventor
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Attorney

No. 781,765. Patented February 7, 1905.

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 781,765, dated February 7, 1905.

Application filed July 10, 1903. Serial No. 165,020.

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, a citizen of the United States, residing at Ogden, in the county of Weber and State of Utah, have invented certain new and useful Improvements in Magazine-Guns, of which the following is a specification.

This invention relates to magazine-guns, and is mainly applicable to shotguns.

The object of the invention is to improve the construction of guns, especially in the strengthening of the barrel, magazine, and stock connection, so that the recoil may not weaken the joint or cause the breech-operating mechanism to work abnormally; also, to improve the connections by which the handle which reciprocates on the barrel is made to open and close the breech; also, to improve the safety mechanism and to place the control of the firing devices largely with an automatic mechanism actuated by the recoil or shock of firing.

The invention consists in certain constructions and combinations of mechanisms, substantially as hereinafter set forth and claimed.

Figure 1 is a broken longitudinal section of the loading and firing mechanism of the gun, the stock and some other parts being omitted, the breech being closed. Fig. 2 is a longitudinal section of the breech mechanism, the breech being open and parts omitted for clearness. Fig. 3 is a side elevation of the coupling-piece between barrel and frame, showing the barrel and magazine partly broken away. Fig. 4 is an end view of said coupling-piece and immediate connections. Fig. 5 is a detail end view of cartridge-stop. Fig. 6 is a broken inside view of the left-hand side of the receiver or frame, showing the bolt-operating slide locked in forward position. Fig. 7 is a broken cross-section of the frame on the line 7 7, Fig. 6, showing the safety-sear lock and immediate connections. Fig. 8 is an edge view, and Figs. 9 and 10 side elevations, of a safety-sear lock. Fig. 11 is a bottom plan of the operating-slide. Fig. 12 is a side view thereof. Fig. 13 is a side view of the slide with the handle or draw bar engaging the same. Fig. 14 is a similar view with the handle-bar partly disengaged. Fig. 15 is a side elevation of the breech-bolt detached. Fig. 16 is a longitudinal section of the breech-bolt. Fig. 17 is a top plan of the breech-bolt. Fig. 18 is an elevation of the breech-bolt lock. Fig. 19 is an elevation of the firing-pin. Fig. 20 is a broken elevation of the trigger-plate, showing the safety-sear, spring, and hammer. Fig. 21 is a plan of the double or split spring for the safety-sear and trigger; Fig. 22, a top plan of the safety-sear. Fig. 23 is a broken inside view of the right side of the frame, showing the carrier and spring and cartridge feed-stop. Fig. 24 is a plan of the carrier detached. Fig. 25 is an elevation of the cartridge feed-stop. Fig. 26 is a front end view of the frame or receiver with the cartridge-stop. Fig. 27 is a broken side elevation of the carrier, showing the projection 43. Figs. 28 and 29 are views of the carrier-pawl detached. Fig. 30 is a broken side view of the gun; Fig. 31, a plan of the slide, sear-lock, and inertia-piece.

The gun is of that class which is operated to open and close the breech by a handle sliding on the magazine, which magazine is under the barrel. The handle, having connections to the bolt-operating mechanism, is locked in closed position by an inertia-piece which releases the bolt mechanism under the impulse of recoil when the gun is fired. Mechanism is provided by which the bolt-operating mechanism can be released by manipulation without firing the gun. The magazine feeds cartridges back to a carrier in the receiver, which carrier lifts a cartridge to the line of the barrel. The breech-bolt acts in the usual manner to impel a cartridge from the carrier into the barrel and by its adjuncts to withdraw the shell from the barrel and eject it through the side of the frame.

The numeral 1 indicates the frame or receiver, which is closed on top and at the rear of the barrel and is open at the bottom. The bottom opening in the frame is in part closed by the trigger-plate and in part by the carrier, as will be explained.

The barrel 2 is screwed into the coupling-piece 3. This coupling-piece is attached to the frame by ribs and grooves 4 on its outer and upper surfaces, said ribs and grooves interlocking with grooves and ribs 5 in the frame when the parts are coupled. The bar-

rel, however, does not enter into the coupling-piece from the front so far as the frame extends forward, and the coupling-piece 3 contains the rear end of the cartridge-chamber. The coupling-piece 3 is therefore of full thickness and strength between the frame and the barrel, and where it is weakened at the rear by the ribs and grooves it is not so weakened by the screw-thread for the barrel, and vice versa.

The tubular magazine 6 slips at its forward end over a plug 7, which plug is attached by a screw 8 to a lug 9, projecting from the lower part of the barrel. (See Fig. 1.) The rear end of the magazine 6 is externally screw-threaded. A ring-nut 10 surrounds the tubular magazine a little in front of its rear end and is internally screw-threaded. The ring-nut has a projection 11, (preferably at each side,) which projection is in line with a corresponding recess 12 in the coupling-piece 3. To lock the barrel, magazine, and coupling-piece to the frame, the tongues and grooves 4 5 of the frame and coupling-piece are slipped together, as is usual, the ring-nut being then in the position shown in Fig. 3. Then by rotating the magazine-tube 6 the ring-nut is screwed backward. The projection 11 on said nut enters the recess 12 in the frame and precludes the separation of the slip-joint until the ring-nut is again moved forward. One end of the magazine rotates easily on the plug 7 and the other end turns in the coupling-piece 3, which keeps the magazine from moving backward or forward. The ring-nut is internally threaded, and as it cannot rotate it is screwed backward or forward by turning the magazine. The slip-joint can be operated to break the gun in two when the ring-nut 10 is out of engagement with the coupling-piece. The draw-bar 36 then unhooks from its connection with the operating-slide 23, as will be explained.

The breech-bolt 15 reciprocates longitudinally in the frame, as in many bolt-guns. The bolt 15 has a solid front except a passage for the firing-pin 16. The rear part of the bolt has a vertical mortise 171 therein and a curved guideway 18 at each side of said mortise. A curved bolt-lock 19 is guided in this curved guideway by curved guides 20 moving in the said curved guideways.

The bolt-lock 19 has a finger 21, which enters a mortise 22 in the operating-slide 23, Figs. 1 and 2. The mortise in the slide 23 is long enough to permit an independent movement or "lost motion" between the slide and bolt-lock.

A downward projection 24 on the bolt-lock 19 swings down into the mortise or recess 25 in the slide 23 when the backward movement of the slide 23 causes the bolt-lock 19 to move backward and downward in its curved ways 18, thus releasing the bolt-lock from the mortise 27 in the top of the frame. (See Fig. 2.) When the slide 23 moves forward to close the bolt, the front upper end of the bolt-lock rides under the frame until it comes to the opening 27, at which time the bolt is closed. Then the lock 19 moves on its curved guide or slideways 18. The upper end closing into the mortise 27 and the slide 23 closing under the projection 24 of the bolt-lock effectually holds the bolt-lock into its engagement with the frame until the slide is moved back, when a reverse operation takes place. The bolt carries an extractor-hook 28 and an ejector-hook 29, which operate to withdraw and eject the cartridge-shell in usual manner.

The firing-pin 16 passes through an opening 33 in the bolt-lock 19, Fig. 1 and dotted lines, Fig. 18. The firing-pin has an inclined shoulder 30, which comes directly in rear of a shoulder 31 on the bolt-lock when said bolt-lock is closed. The first backward movement of the bolt-lock moves back the firing-pin and causes it to remain back except when the bolt is closed and locked.

The operating-slide 23 has in its left side near its forward end a notch 34, with which a hook 35 of handle-bar 36 engages to reciprocate the said slide by movement of the handle 37 in the usual manner. Both the slide and the bolt may be held so as to move in direct line by means of ribs or grooves in the frame in the usual manner. The handle-bar 36 moves in the groove 39 in the side of the frame.

The groove or recess 39 is wider than the handle-bar 36 by so much as the length of the hook 35. When the gun is coupled, the handle-bar is in the upper part of the groove or recess 39. In uncoupling, after the ring-nut is moved forward the first movement is to push the barrel and coupling-piece down until the handle-bar strikes the bottom of the groove 39, when the handle-bar is unhooked from the slide 23, and the handle-bar is then moved forward out of the groove 39, when the uncoupling may be completed.

The carrier 40 is supported on pivot 41 at the left-hand side of the frame. The carrier extends forward from its pivot, and when down it fills the opening in the bottom of the frame or receiver in front of the trigger-plate. The carrier 40 may be swung upward on its pivot 41, becoming thus a loading-trap under which cartridges may be entered into the magazine. The carrier-spring 42 in the frame bears on the tip of the polygonal lug 43 of the carrier, so as to throw the carrier down whenever the carrier is lifted, except it be lifted so far as to throw the pressure of the spring 42 at the reverse side of the pivot, when the spring will operate to hold or lift the carrier up. (This is similar to the operation of the spring in opening or closing the blade of a pocket-knife.) The position of the slide 23 will prevent the carrier from being held upward except when the breech is open,

at which time the magazine may be filled by passing cartridges under the carrier. The carrier is raised to lift a cartridge for loading by the engagement of the operating-slide 23 with a spring-pressed dog 45, pivoted to the carrier. This happens at about the time of completion of the backward movement of said slide.

The dog 45 is pressed by the spring 46 in the carrier into contact with the slide 23 when the slide is back. The forward movement of the slide 23 turns the dog on its pivot and starts the carrier and cartridge upward. The upward movement is continued by the spring 42 as soon as this spring finds its bearing to lift and not depress the carrier.

The notch 44 in the slide 43 engages the upper end of the spring-dog 45 when the slide 23 is near its rear position. The slide 23 rides over the end of the dog 45 in its forward movement, releasing the spring-dog 45 from the notch 44, when the dog swings back under impulse of the spring 46. The cartridge-stop 48 is pivoted in the frame with its forward end close to the rear face of the coupling-piece 3. The front end of the cartridge-stop has an arm 49 with a beveled rear face, and the rear end of the stop has an arm 50 with a beveled front face.

The side of the cartridge-stop has a beveled recess 51, which is engaged by the stud 52 in the side of the frame. The forward movement of the slide 23 by engaging the arm 49 moves the front end of the cartridge-stop down when the end of the stud 52 enters the recess 51 in the cartridge-stop, which releases the cartridge in the magazine and allows it to follow the slide backward as the breech is opened. When the slide has about completed its backward movement, it engages the arm 50, which moves the rear end of the cartridge-stop down and the front end up. This moves the recess 51 away from the stud 52, which moves the front of the cartridge-stop inward and stops the cartridge following in the magazine.

The hammer 55, trigger 56, and safety-sear 57 are all pivoted to the trigger-plate 58, (the trigger 56 and sear 57 on the same pivot,) and the trigger-plate is held in the frame by any usual means for securing the same in place, as by a screw 59 passing through the frame. The spring 60 is split at its forward end, one side or leaf bearing on the safety-sear 57 to engage said sear with the hammer. (See Fig. 20.) The safety-sear is shown at the left side of the trigger, and its function is to hold the hammer in cocked position even though the trigger be pulled, unless the breech is practically closed. The safety-sear also prevents the breech from being opened by a backward pull on the handle and operating-slide, except at the time of the recoil of the gun (unless freed by other manipulations, as will be explained.)

A notch 62 in the safety-sear engages a stud 63, projecting from the side of the hammer, when the parts are in the position of Fig. 20. The hammer is forced back into its cocked position by the backward movement of the slide 23. The rear end of the slide 23 has a downwardly-projecting arm and a notch 63′ in this arm. When the slide 23 moves forward to close the breech, the downwardly-projecting arm strikes safety-sear 57 just as the breech is closing. This depresses the safety-sear and releases the hammer from this sear; but the hammer is still held cocked by engagement with the trigger 56 unless this trigger is pulled or held back, in which case the hammer will strike forward under impulse of the mainspring 66. The notch 63′ in slide 23 is engaged by the nose 67 of the safety-sear when the slide is forward, and the slide is held thereby. A backward pull on the handle at the instant of firing moves the slide 23 back in the frame, carrying back the bolt and firing-pin and effectuating the other operations hereinbefore explained. The completion of the backward movement of the slide cocks the hammer, and the trigger and safety-sear engage therewith to hold the hammer cocked.

The safety-sear lock and inertia-piece is a sliding piece 70 arranged to move horizontally in the left side of the frame beside the safety-sear. The rear end of safety-sear lock 70 has a sidewise movement, as will be explained. The sear-lock 70 has a cam 71 at its right side and front end, and this cam engages a pin or projection 72 on the safety-sear 57 and holds the front end of the safety-sear down, so that the operating-slide 23 can be reciprocated when the sear-lock 70 is moved forward. A slot is cut through the frame, and a stud 74 on the safety-sear lock projects through this slot, so that the sear-lock 70 may be manipulated to hold the sear and release the operating-slide. The rear end of the sear-lock 70 has an upwardly-projecting arm 75, with which the operating-slide 23 engages at the extreme of its rearward movement to slide the sear-lock backward and release the safety-sear therefrom. A friction-spring 76 holds the safety sear-lock against accidental displacement; but the sear-lock 70 moves relatively forward under the impulse of recoil. To prevent a rebound of the sear-lock, a notch 77 is cut in the inner wall of the frame and a shoulder 78 is formed on the side of the sear-lock adjacent thereto. As the spring 76 bears the sear-lock against the frame the shoulder 78 on the sear-lock will be pressed into the notch 77 as the sear-lock slides, thus holding the sear-lock. An incline 80 on the operating-slide 23 presses the front end of the sear-lock 70 inward and disengages it from its notch 77, so that its further movement by the operating-slide is easy. A trigger-lock 82 of usual construction may be employed.

From the foregoing description it is be-

lieved the construction and operation of this gun may be understood by persons skilled in this art. The handle is only partly shown in the drawings; but such handles are well known in this art. The gunner grasps this handle by one hand and the gun-stock by the other hand in aiming and firing. The filling of the magazine has been explained. The magazine has the usual cartridge-follower, as 83, pressed back by a spring 84. To load the gun, the sear-lock 70 is slid forward by means of the button or projection 74, thus pressing down the front end of the safety-sear 57 and releasing the operating-slide 23. A backward pull on the handle now causes the mechanism to open the breech and lift the front end of the cartridge-stop, shutting off the cartridges in the magazine. A forward movement of the handle closes the bolt, the cartridge moving before it, and throws down the carrier. The hammer having been cocked by the backward movement of the operating-slide is held cocked by the trigger and by the safety-sear. The forward movement of the slide causes the safety-sear to engage and hold said slide, the safety-sear being released from the hammer by the final engagement of said sear with the operating-slide. A pull of the trigger may now fire the gun, and the recoil causes the safety-sear lock to fly forward (or to remain at rest when the gun moves backward) and hold the sear until the slide in its rearward movement pushes back the safety-sear lock, which allows the sear to engage the slide in its next forward movement.

The barrel, magazine, and coupling-piece, with their immediate connections, constitute the front part of the gun, and the frame, operating mechanism, and stock constitute the rear part, which parts can be disconnected, as is common in shotguns and as has been explained.

What I claim, and desire to secure by Letters Patent, is—

1. In a magazine-gun, the combination of a barrel and frame, a coupling-piece interposed between the two and suitably connected to both barrel and frame, said coupling-piece containing a part of the cartridge-chamber, the barrel connection terminating forward of the frame connection so that the full thickness of the coupling-piece forms the wall of said chamber for part of the length of the chamber.

2. In a magazine-gun, the combination of a barrel, a coupling-piece screwed thereto and having ribs and grooves at its rear end, and a front notch, the frame having ribs and grooves at its front end, a magazine-tube turning in the coupling-piece, and a nut on the magazine having a projection at its rear to enter the front notch of the frame.

3. The frame having a notch and internal ribs and grooves at its front end, the coupling-piece having external ribs and grooves at its rear end, and a movable nut carried by the coupling-piece and having a projection to enter the notch in the frame to lock the ribs and grooves when engaged, all combined.

4. In a magazine-gun, the barrel and magazine connected together in the front section, the frame connected to said front section by a slip-joint, the operating-handle sliding on the magazine and having a draw-rod, the operating-slide moving in the frame, and a hooked connection between said slide and draw-rod.

5. In a magazine-gun, the front section carrying the operating-handle, combined with the rear section carrying the breech-operating and loading mechanism, and detachable joints which connect the sections and the operating parts.

6. In a magazine-gun, the front section consisting essentially of the barrel, magazine, and coupling-piece, and the rear section consisting essentially of the stock, frame, and mechanism for loading and firing, and a slip-joint consisting of interlocking ribs for the barrel and frame, and interlocking hooks for the handle and working parts, all combined.

7. In a gun, the combination with the frame of a longitudinally-reciprocating bolt, a bolt-lock moving in curved ways in said bolt and engaging a mortise in the top of the frame, and a reciprocating slide engaging said bolt-lock to move the same in its curved path.

8. In a gun, the combination with the frame, longitudinally-reciprocating bolt, the bolt-lock moving in curved ways in said bolt and having a projection therefrom, of a longitudinally-reciprocating slide having a mortise into which the projection on the bolt-lock extends.

9. In a gun, the frame, the longitudinally-reciprocating bolt, the bolt-lock moving in curved ways generally transverse to said bolt, the operating-slide having a mortise into which a projection on the bolt-lock extends, and the firing-pin having a shoulder with which the bolt-lock engages at its initial opening movement to retract the same, all combined.

10. In a gun, the frame, longitudinally-moving breech-bolt, locking-block moving on curved ways in the bolt, a projection on said bolt engaging the locking-block and permitting a lost motion, and a shoulder on the locking-block engaged by said slide to secure the lock when the slide is at its extreme forward position.

11. The combination with the reciprocating slide, bolt, and bolt-lock, of the safety-sear engaged by said slide in its forward position.

12. The combination with a reciprocating bolt, bolt-lock, and reciprocating slide, of the safety-sear, the hammer engaged by said sear, when cocked and the sear free for such engagement, and the slide engaging said sear to free it from the hammer.

13. The combination of the reciprocating bolt, bolt-lock, and reciprocating slide, of the hammer, the safety-sear having a projection

in line with said hammer when cocked, and the slide having a notch engaging said sear to free the hammer.

14. The combination with the hammer and safety-sear, of a sliding sear-lock whereby the sear is controlled.

15. The combination with the reciprocating slide and its operative connections, of the safety-sear engaging said slide, and the sear-lock controlling such engagement.

16. The combination with the operating-slide, safety-sear engaging said slide and sear-lock, of means whereby the sear-lock may be engaged with or disengaged from said safety-sear

17. In a magazine-gun and in combination, a barrel-section and a breech-section and transverse ribs and grooves by which such sections may be coupled, an operating-slide in the breech section, and a handle-bar making hooked engagement therewith, said breech-section grooved to permit the side movement of the handle-bar.

18. In a magazine-gun, the combination of a grooved breech-section and a barrel-section connected by transverse ribs and grooves, and a longitudinally-sliding handle-bar resting in the groove in the breech-section to limit transverse displacement of the sections.

19. The combination with the magazine of the cartridge-stop pivoted to the frame and having one end extending in front of the magazine, means for swinging said stop on its pivot, and inclines on the frame and stop whereby the latter is given a sidewise as well as a swinging movement to stop the magazine.

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

JOHN M. BROWNING.

Witnesses:

LOUISE ELDREDGE,

JOHN E. RAMSDEN.