No. 689,283.

Patented Dec. 17, 1901.

J. M. BROWNING.

AUTOMATIC FIREARM.

(Application filed Mar. 18, 1901.)

(No Model.)

5 Sheets—Sheet 1.

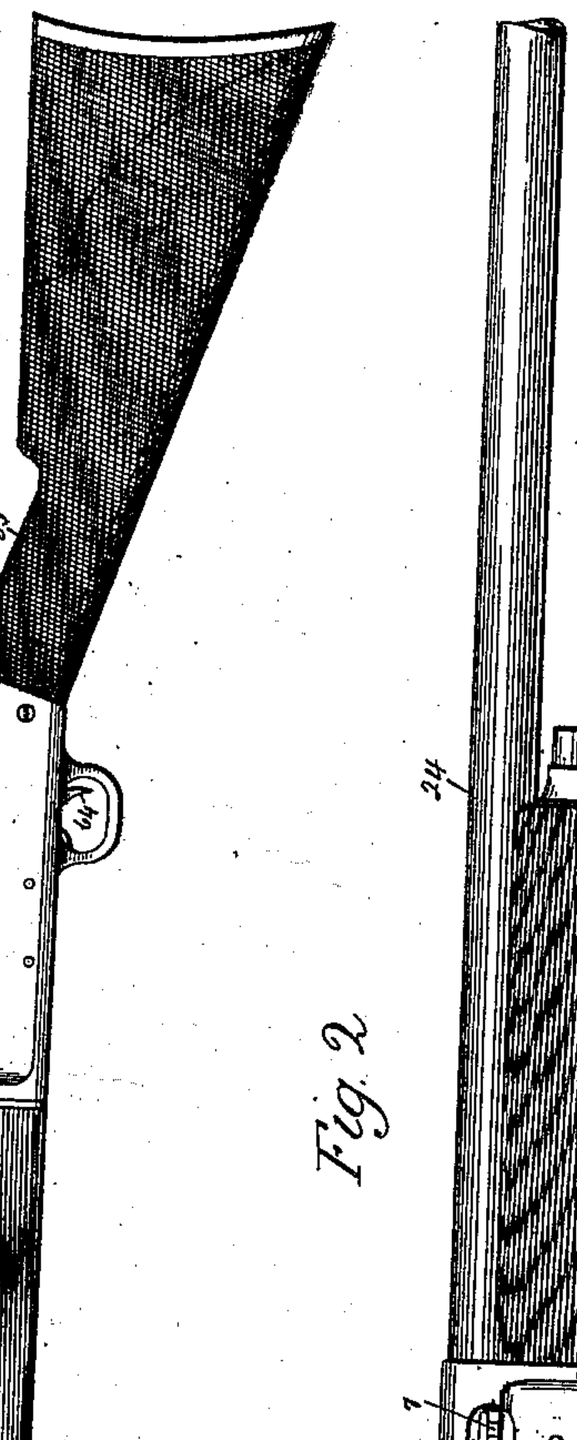

Fig. 1.

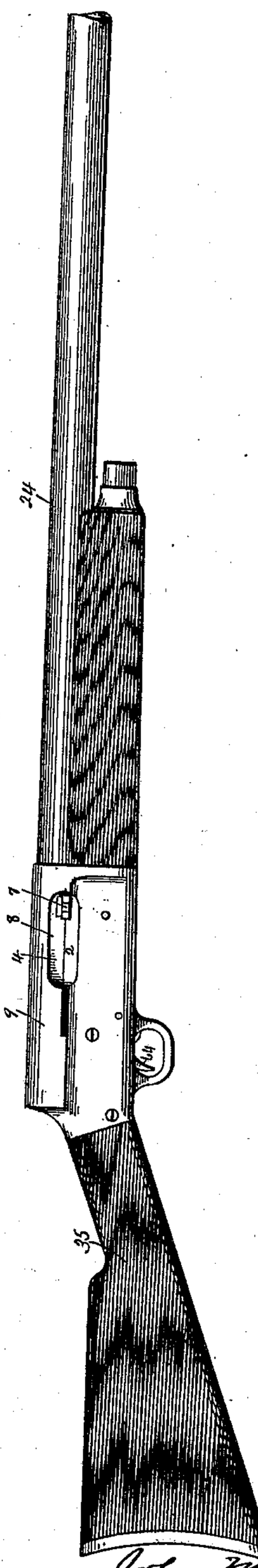

Fig. 2.

Witnesses.
J. H. Shumway.
Lillian D. Kelsey.

John M. Browning.
Inventor.
By atty's Seymour & Earle

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No Model.) 5 Sheets—Sheet 2.

Fig. 3

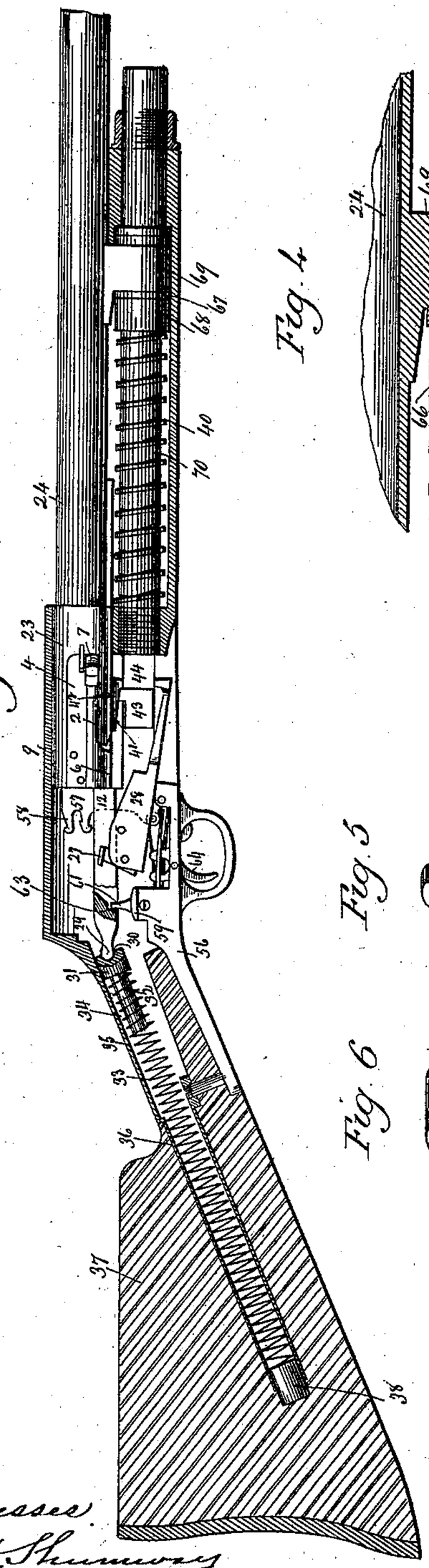


Fig. 4

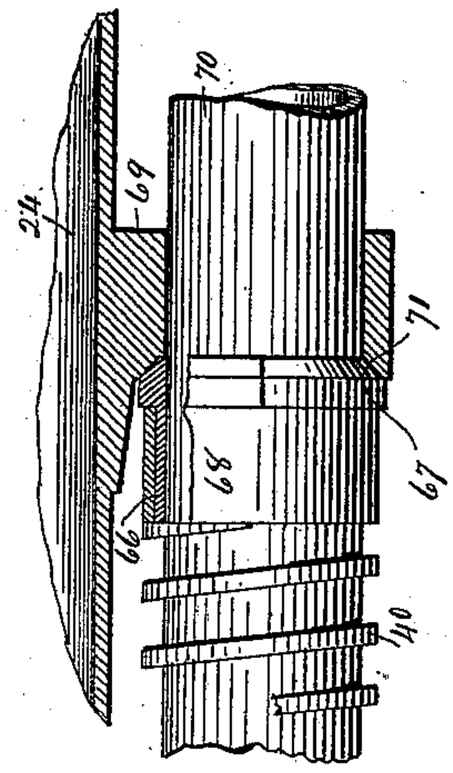


Fig. 5

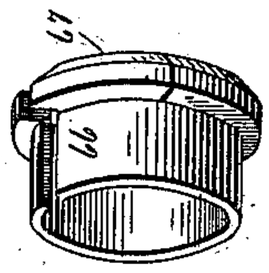


Fig. 6

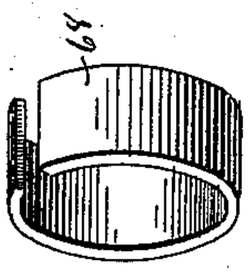
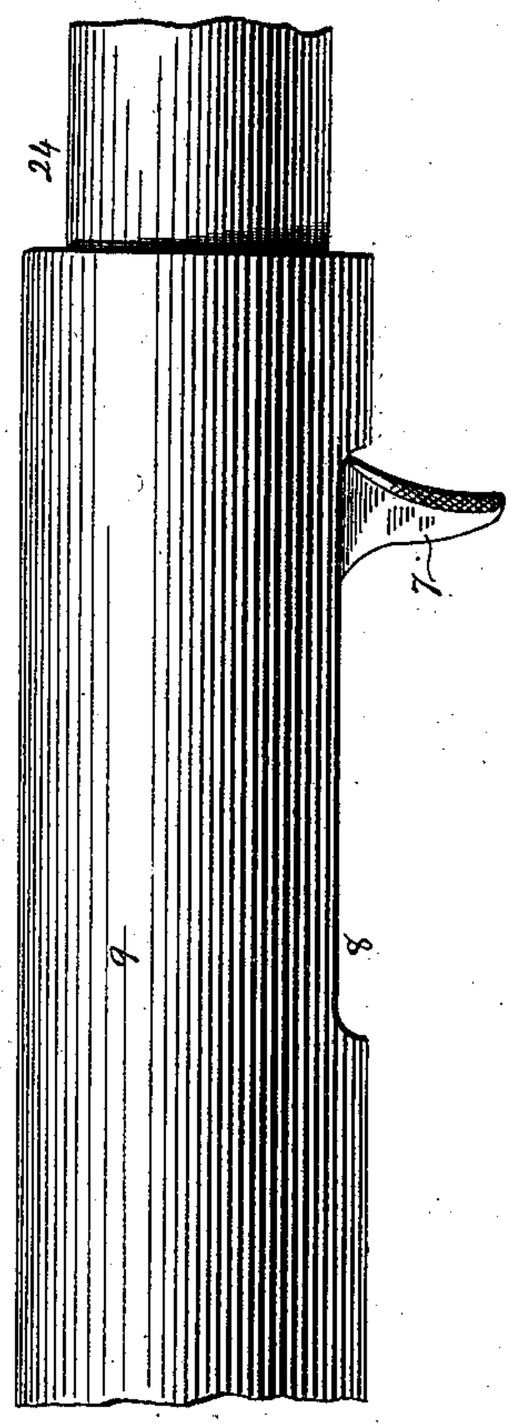


Fig. 7



Witnesses:
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(No Model.) 5 Sheets—Sheet 3.

Fig. 8

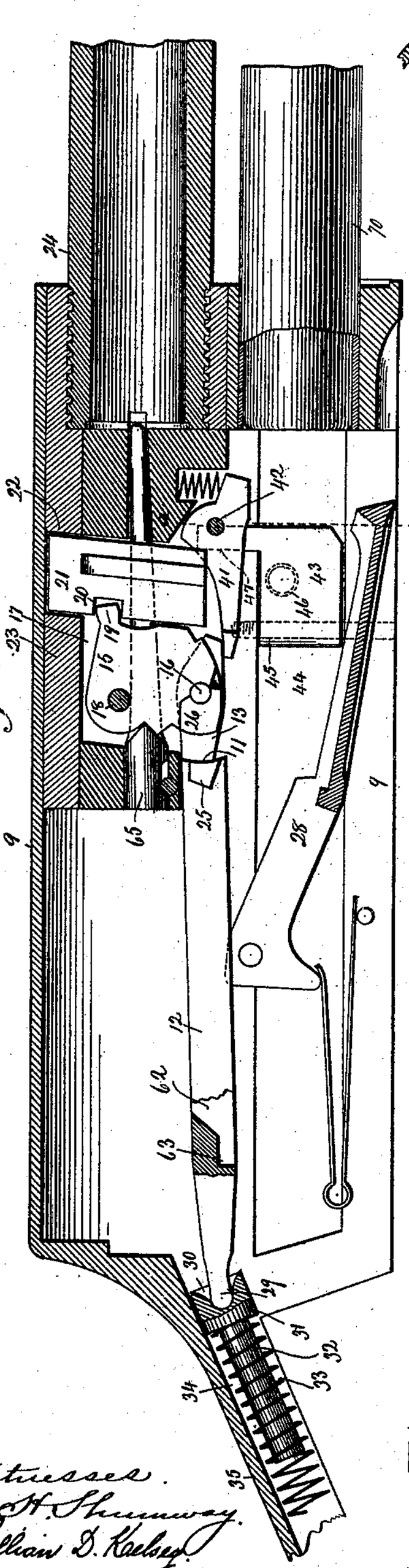

Fig. 9

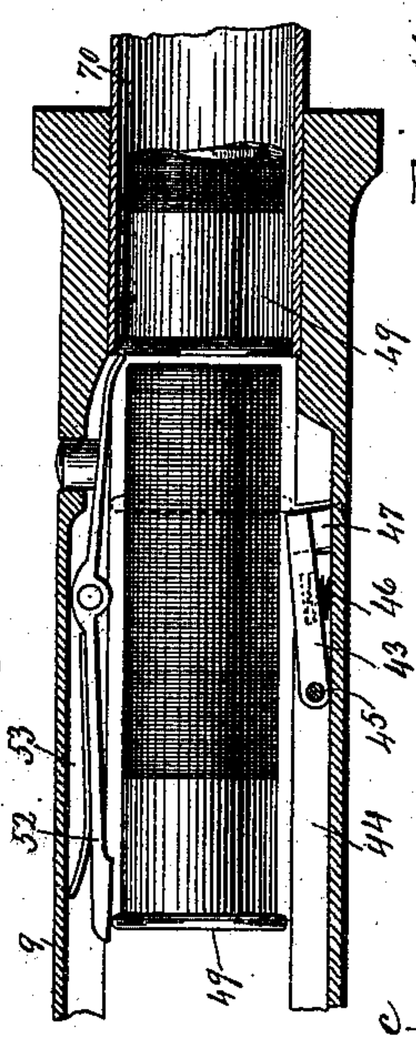

Fig. 14

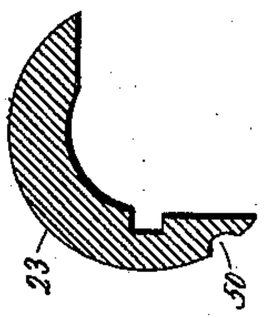

Fig. 13

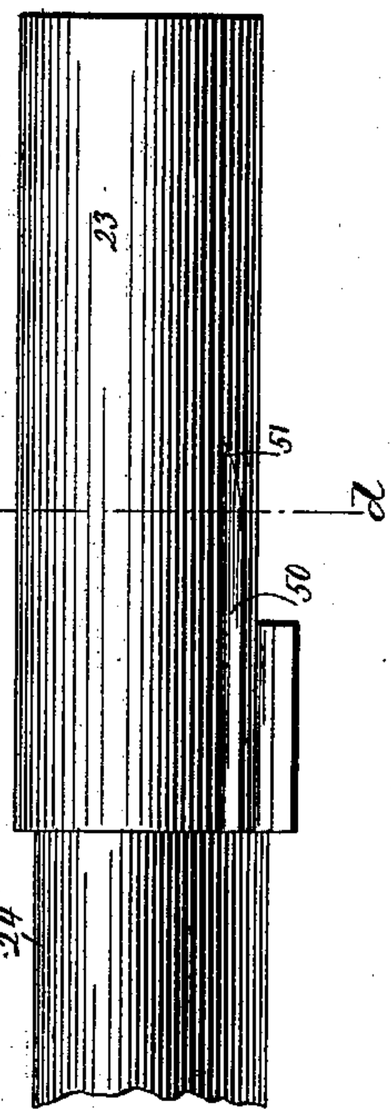

Fig. 12

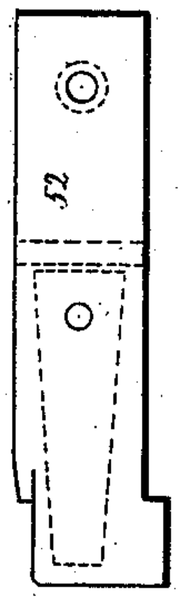

Fig. 11

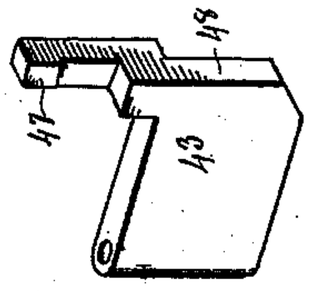

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Fig. 16.

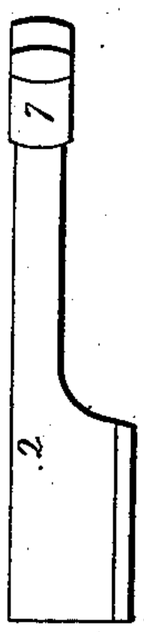


Fig. 17

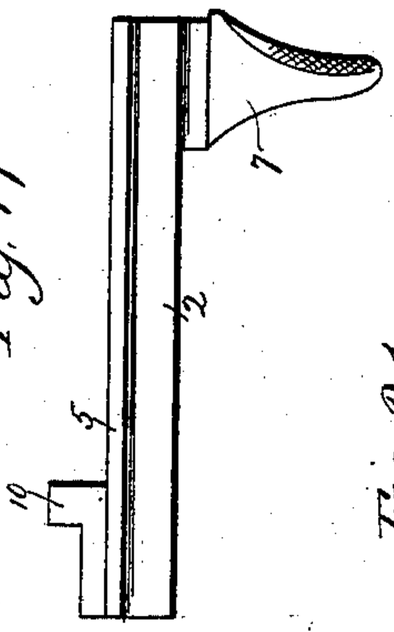


Fig. 18

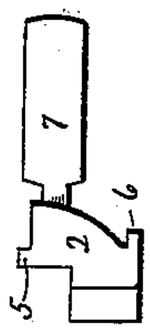


Fig. 21.

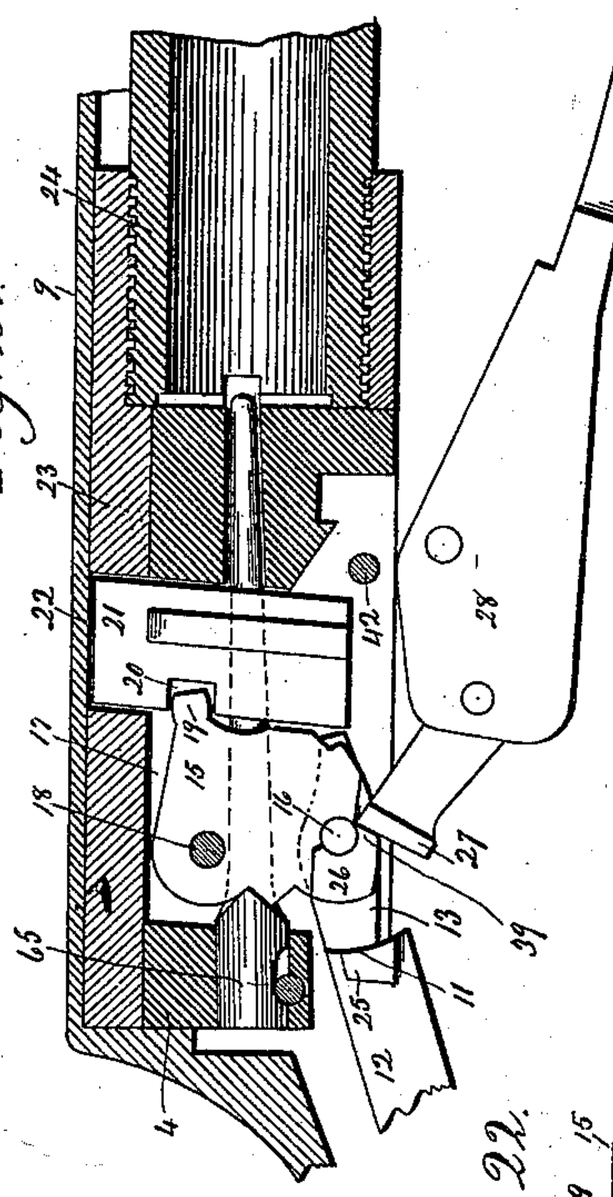


Fig. 22.

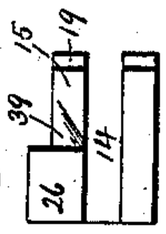


Fig 15

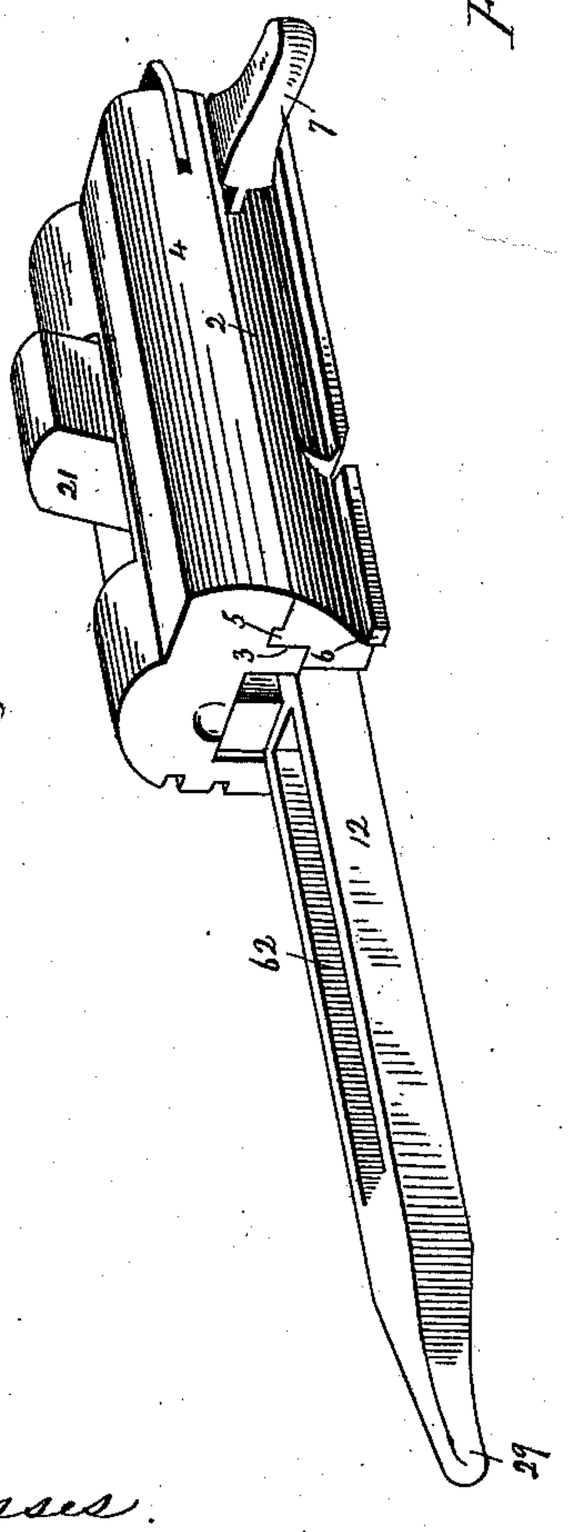
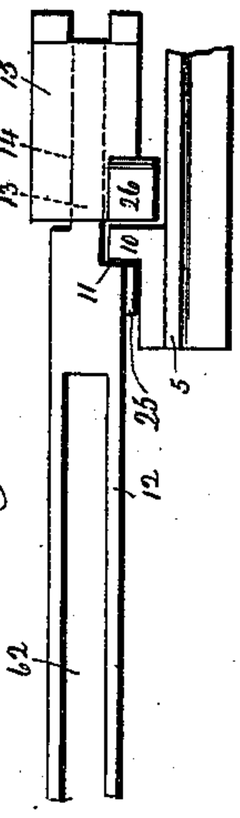


Fig. 19

Fig. 20.



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AUTOMATIC FIREARM.

(Application filed Mar. 18, 1901.)

(No Model.) 5 Sheets—Sheet 5.

Fig. 23

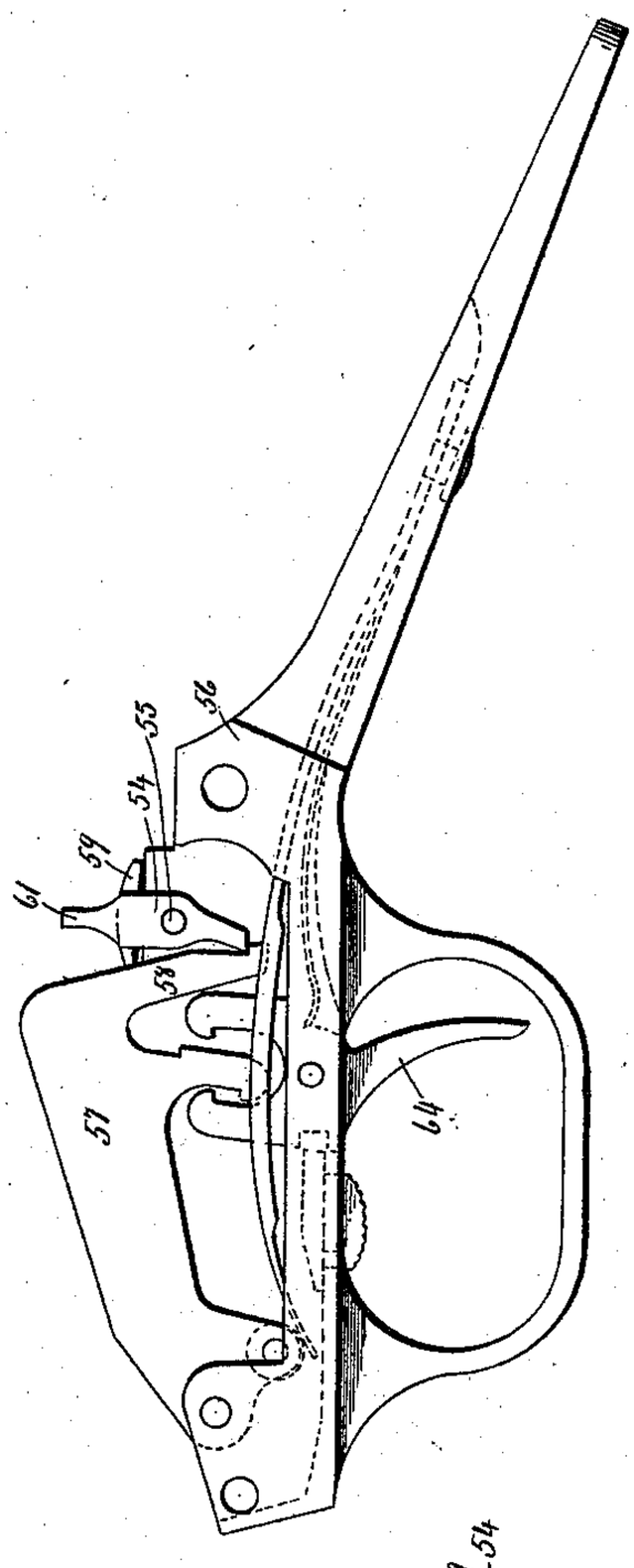


Fig. 25

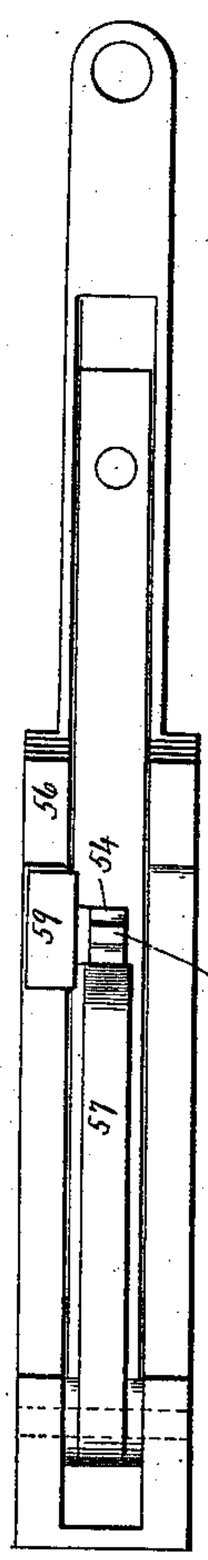


Fig. 27

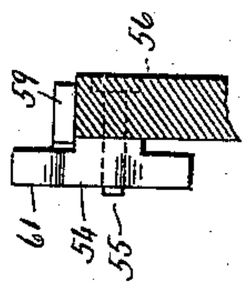


Fig. 26.

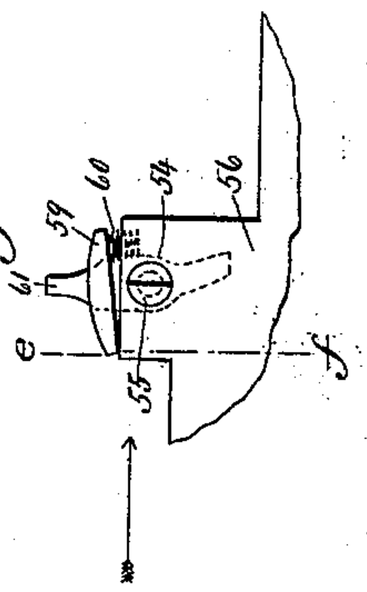
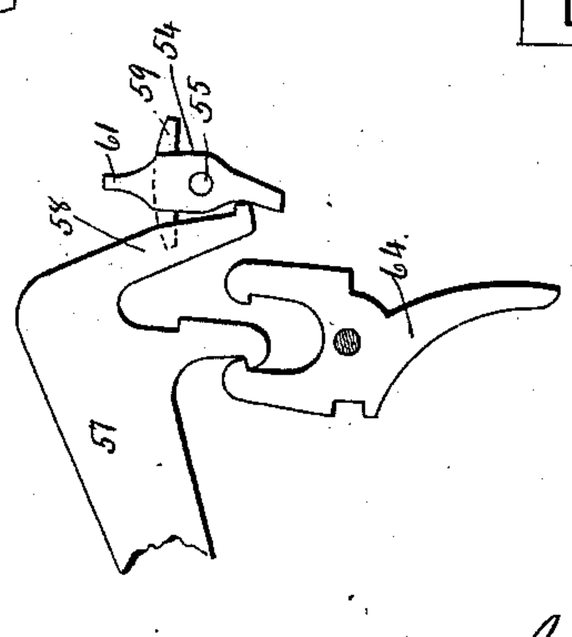


Fig. 24



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John M. Browning.
Inventor
By attys Seymour & Earle

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

AUTOMATIC FIREARM.

SPECIFICATION forming part of Letters Patent No. 689,283, dated December 17, 1901.

Application filed March 18, 1901. Serial No. 51,697. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, of Ogden, in the county of Weber and State of Utah, have invented a new Improvement in Automatic Portable Firearms; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of a gun constructed in accordance with my invention looking at its left-hand side; Fig. 2, a corresponding view looking at the right-hand side of the gun; Fig. 3, a view of the gun in vertical longitudinal section, showing the right-hand side of the mechanism; Fig. 4, a broken view, in vertical section, showing the contractile collar-brake applied to the forward end of the magazine and coacting with the barrel-spring encircling the magazine and with the bevel upon the lug depending from the barrel; Fig. 5, a detached perspective view of the contractile collar-brake; Fig. 6, a detached perspective view of the clamping-ring applied to the said collar-brake; Fig. 7, a broken plan view of the forward end of the receiver and the rear end of the barrel, showing the finger-piece of the sliding handle mounted in the bolt of the gun; Fig. 8, a broken view of the gun, in vertical longitudinal section, showing the parts of the breech mechanism in the positions due to them when the bolt is closed and locked; Fig. 9, a broken view, in horizontal section, taken through the forward end of the receiver and the rear end of the magazine and showing in particular the combined cartridge-stop and carrier-lock and the safety cartridge-stop on the opposite side of the receiver therefrom; Fig. 10, a broken view, in vertical section, on the line *a b* of Fig. 8, showing the location of the safety cartridge-stop in its recess in the left-hand wall of the receiver; Fig. 11, a detached perspective view of the safety cartridge-stop; Fig. 12, a detached view, in inside elevation, of the combined cartridge-stop and carrier-lock; Fig. 13, a broken view, in left-hand side elevation, showing the clearance-groove in the barrel extension; Fig. 14, a view in vertical section of the barrel extension on the line *c d* of the preceding figure; Fig. 15, a detached perspective view of the bolt of the gun and the operating-link thereof; Fig. 16, a detached view, in side elevation, of the sliding handle of the gun; Fig. 17, a detached plan view thereof; Fig. 18, a detached end view thereof looking at its rear end; Fig. 19, a broken view, in side elevation, of the operating-link of the gun with its rear end broken away; Fig. 20, a broken plan view showing how the rear end of the sliding handle coacts with the forward end of the operating-link and also with the tumbler; Fig. 21, a broken view, in vertical section, through the receiver of the gun, showing the bolt in its open position and the coaction of the locking-dog mounted in the carrier with the pivotal tumbler; Fig. 22, a detached reverse plan view of the tumbler, showing the notch formed in it for the reception of the locking-dog of the carrier; Fig. 23, a detached view, in left-hand side elevation, of the tang of the gun, showing in particular the safety-dog in coaction with the safety-finger of the hammer; Fig. 24, a less comprehensive detail showing the safety-dog as released from the safety-finger of the hammer; Fig. 25, a detached plan view of the parts shown by Fig. 23; Fig. 26, a detail view, in right-hand side elevation, showing the mode of mounting the safety-dog in the tang of the gun; Fig. 27, a broken detail view, in vertical section, on the line *e f* of Fig. 26 looking forwardly.

My invention relates to an improvement in automatic portable firearms of the class in which the recoil following the explosion of a cartridge in the gun-barrel is utilized to operate the breech mechanism of the gun.

More particularly my invention relates to an improvement upon the arm shown and described in United States Patent No. 659,507, granted to me under date of October 9, 1900.

The object of my present invention is to simplify and improve the gun of the said patent.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

Before proceeding to a detail description of my present gun I may say that in view of the fact that many of its features correspond to

those of the gun of my said patent I shall not enter into a detailed description of the construction and operation of those features herein.

In carrying out my present invention I employ a sliding handle 2, located in a longitudinal groove 3, formed to receive it in the right-hand side of the breech-bolt 4, the upper and lower edge of the said handle being formed with longitudinal retaining and guiding ribs 5 and 6. This handle is provided at its forward end with a laterally-projecting finger-piece 7, which projects outward through the ejection-opening 8, formed in the right-hand wall of the frame or receiver 9 of the gun, as clearly shown in Fig. 2. At its rear end the said handle is formed with an inwardly-projecting lug 10, the rear edge of which coacts with a shoulder 11, formed by the forward end of the right-hand wall of the operating-link 12, the extreme forward end of which consists of a tongue 13, entering a slot 14, formed in the lower face of the tumbler 15, with which the tongue is connected by means of a pin 16. The said tumbler 15 is located in a chamber 17, formed to receive it in the breech-bolt 4, in which it swings upon a pin 18. The said tumbler is provided with a lug 19, entering a notch 20 in the vertically-movable locking-block 21, also mounted in the breech-bolt, and raised and lowered when the tumbler is rocked, whereby the upper end of the said locking-block is shot into or withdrawn from a locking-opening 22, formed in the segmental extension 23 of the gun-barrel 24. The said tumbler and locking-block having been fully described in my prior patent do not need detailed description here. As shown, the shoulder 11 is formed with a reinforcement 25; but this is not essential. As shown also, the lower end of the tumbler 15 is formed with a shoulder 26 for coaction with the forward edge of the lug 10 of the sliding handle, as well as for coaction with the locking-dog 27 of the pivotal carrier 28, as will be described later on. At its rear end the link 12 is shaped to form a nose 29, entering a socket 30, formed in the head 31 of a plunger 32, which is set into the forward end of a coiled operating-spring 33, the forward portion of which is located in a bore 34, formed in the tang 35. The rear portion of the said spring is housed in a tube 36, constituting an extension of the tang, and entering an inclined bore formed to receive it in the butt-stock 37. The rear end of this tube is closed by a plug 38. The said spring 33 exerts a constant effort through the plunger 35 and the link 12 to push the breech-bolt 4 forward into its closed position. To retract the upper end of the locking-block 21 from the locking-opening 22 in the barrel extension 23 and so unlock the breech-bolt, the user of the arm grasps and exerts a rearward pull or pressure upon the finger-piece 7 of the sliding handle, whereby the lug 10 at the rear end of the handle engages with the shoulder 11 of the operating-link and forces the same rearward for a short distance against the tension of the operating-spring 33. The link 12 being moved rearward, the pivotal tumbler 15 is turned on its pin 18, so as to move the locking-block downward out of the locking-opening 22 in the barrel extension. The breech-bolt is now unlocked, and pressure or pull upon the finger-piece being continued the breech-bolt may readily be moved to the limit of its rearward excursion. It is to be understood, of course, that the sliding handle 2 is provided for unlocking and opening the breech-bolt by hand, either for the purpose of inserting the first cartridge or for removing a cartridge, or for any other purpose.

When the gun is fired, the ensuing recoil moves the barrel, the barrel extension, and the breech-bolt rearward together in their locked relations. When they reach their open position, the locking-dog 27 immediately enters the notch 39 formed in the lower face of the pivotal tumbler 15, directly in front of the shoulder 26, before mentioned. Now when the spiral barrel-spring 40 reacts to restore the barrel to its normal position it operates through the barrel 24 and barrel-extension 23 and the locking-block 21 to pull the breech-bolt forward, and everything connected with it, including the pivotal tumbler 15, the lower end of which is engaged with the locking-dog 27. The result of this is that the tumbler 15 turns on its pin 18 and forces the locking-block 21 downward clear of the barrel extension 23, so as to leave the barrel and barrel extension free to be moved forward into their normal positions under the action of the barrel-spring 40. The turning of the tumbler 15 on its pin 18, as described, disengages it from the locking-dog 27.

The location of a handle directly in the breech-bolt for the purpose of manually opening the same secures a very convenient position for it, enables it to be simply constructed, reduces the cutting of the butt-stock to the minimum, and enables any form of butt-stock to be used. I may state in this connection that the tumbler 15 is locked in its open position by means of a locking-lever 41 hung upon a pin 42. The construction and action of this lever are the same as in the gun of my patent referred to, and will not be detailed herein.

I may here mention that in assembling the gun the handle 2 is passed into the receiver 9 of the gun through the ejection-opening 8 thereof and that the breech-bolt is introduced into the receiver through the forward end thereof, which is open. The breech-bolt and handle are now respectively moved, so that the forward end of the handle is entered into the rear end of the handle-groove 3 in the breech-bolt. Preparatory to sliding the handle into the groove in the breech-bolt the link 12 is allowed to drop down, so as to carry its shoulder 11 below the inwardly-projecting lug 10 at the rear end of the handle. Then when

the handle is in place the link is lifted, causing the shoulder 11 to rise in rear of the said lug, whereby the sliding handle is retained in place. When, on the other hand, it is desired to dismember the gun, the rear end of the link is moved out of the socket 30 in the head 31 of the follower 32. The link may now be dropped, so that its shoulder 11 will fall below the lower edge of the lug 10 of the sliding handle, which may then be very easily slipped out of the breech-bolt and removed from the gun through the ejection-opening 8 thereof.

A leaf-like safety cartridge-stop 43 is located in a recess 44, formed to receive it in the right-hand wall of the receiver 9, as shown in Fig. 10. This stop swings upon a vertical pivot 45, passing through its rear end, as shown in Fig. 9, and is constantly pushed inward by means of a spiral spring 46, located in the recess 44; but this spring might be replaced by a leaf-spring. At its forward end the said stop is furnished with an upwardly-projecting operating-finger 47, by means of which the stop is crowded back against the tension of the spring 46 into its recess 44, whereby the forward edge 48 of the stop is cleared from the path of the cartridges 49. A clearance-groove 50, in which the end of the finger 47 is received, is formed in the side of the barrel extension near the front end thereof and permits the stop 43 to swing inward; but when the finger rides out of the rear end of the groove at the point 51 in Fig. 13 the stop is crowded outward into its retired position.

The stop above described supplements the action of the combined cartridge-stop and carrier-lock 52, located in a recess 53 in the right-hand wall of the receiver 9. The part 52 does not need detail description as to its construction or operation, because it is substantially like the corresponding part in the gun of the patent referred to. The forward end of the part 52, it will be enough to say, acts as a cartridge-stop by engaging with the heads of the cartridges while they are still in the magazine 70, while its rear end moves over the upper edge of the pivotal carrier 28 and locks the same in its depressed position.

The object of my safety cartridge-stop 43 is to prevent a cartridge from feeding rearward from the magazine 70 and operating upon the cartridge-stop and carrier-lock 52 so as to unlock the carrier prior to the complete return of the barrel to its normal or forward position, for it might happen that a cartridge would be fed rearward so fast as to unlock the carrier before the barrel had had time to return to its forward position. When the gun is being operated by hand, the safety-stop is kept in its retired and inoperative position by the barrel extension 23, the part 51 of which engages with the finger 47 of the stop and keeps the same crowded outward into its recess 44, for it must be remembered that when the gun is operated by hand the barrel and barrel extension do not move. When, however, the gun is being automatically reloaded by the action of the recoil, the cartridge being fed after passing the forward end of the part 52 will be engaged with the forward edge 48 of the safety-stop 43, which will at this time be in its operating position by reason of the fact that the rearward movement of the barrel and barrel extension will have brought a portion of the clearance-groove 50 of the extension into registration with the finger 47 of the stop 43, which will thus be free to be pushed inward by its spring 46. Now as the stop 43 will not be pushed into its retired position until the finger 47 rides out of the rear end of the clearance-groove 50 the stop 43 will not be crowded back into its position so as to release the partly-fed cartridge until the barrel extension, and hence the barrel, have been returned to their normal positions. Just before this occurs the stop will be crowded into its retired position, so as to release the partly-fed cartridge and allow the same to jump rearward and operate the rear end of the part 52 in unlocking the carrier, which is thus prevented from being unlocked until after the barrel is in its proper position for being loaded, so that the fouling of the gun is prevented.

To prevent the hammer from being released until the breech-bolt is in its closed and locked position, I employ a safety-dog 54, which is mounted upon a pin 55 in the tang 56 at a point directly to the rear of the hammer 57, which is formed at its extreme rear end with a long safety-finger 58, notched at its lower extremity for the reception of the nose of the dog, as shown in Fig. 23. This dog is provided upon its right-hand side with a laterally-projecting flange 59, the forward end of which is impinged against by a spiral spring 60, which exerts a constant effort to keep the nose of the dog in engagement with the finger 58. The upper end of the dog is shaped to form an arm 61, extending into the long opening 62, formed in the link 12 for the upward passage through the link of the hammer 57. The rear wall of the opening 62 is formed with a notch 63, which coacts with the arm 61 to tilt the upper end of the dog 54 forward and disengage the nose at its lower end from the safety-finger 58 of the hammer, just as the link 12 has completed that final portion of its forward movement which swings the tumbler 15 and lifts the locking-bolt 21 into its locking position, which occurs after the breech-bolt 4 has reached its fully-closed position. It will thus be seen that even if the hammer 57 is released by the action of the trigger 64 it will still be detained by the safety-dog 54 unless the same has been tilted, as described, and that that tilting cannot take place until the breech-bolt has been closed and locked and when it is safe to fire the gun.

I shall not describe the peculiar construction of the hammer 57 and the trigger 64, as that is fully set forth in my patent before referred to, nor is it necessary for me for the

same reason to describe the firing-pin 65 and its retraction by the tumbler 15.

In order to reduce the shock of recoil upon the rear end of the frame of the gun to reduce the shock of the return of the barrel to its normal position under the action of the barrel-spring and to prevent any rattling in the connection between the barrel and the magazine, I employ a contractile collar-brake which operates frictionally upon the magazine and consisting of a split collar 66, formed at its forward end with a conical or beveled flange 67, which is also split, so as to be contractile. The collar 66 is encircled by a split clamping-collar 68, preferably made of steel and exerting a constant effort to contract the collar 66 and the beveled or conical flange 67 thereof. This composite brake is interposed between the forward end of the barrel-spring 40 and the rear edge of the perforated lug 69, depending from the gun-barrel 24 and adapted to receive the forward end of the tubular magazine 70. The rear face of the perforated lug 69 is formed with a beveled shoulder 71 to coact with the beveled flange 67 of the brake. When the gun is fired and the barrel starts rearward, a portion of the force of the recoil will act through the beveled shoulder 71 upon the beveled flange 67, which will be contracted and which will in turn contract the collar 66, so as to cause the same to grasp the magazine 70 and slide over the same with sufficient resistance to materially reduce the shock of recoil and prevent the rear end of the bolt from being impinged with too much severity upon the rear end of the receiver 9. This I call the "recoil-braking action" of my improved composite collar-brake. Now when the barrel-spring 40 operates to return the barrel to its normal position the split clamping-collar 68 operates by its contractile power to squeeze the collar 66 upon the magazine with sufficient power to develop enough friction to moderate the action of the spring 40. This may be called the "barrel-spring-braking action" of my improved composite collar-brake. Of course the crowding of the flange 67 of the collar 66 forward against the bevel-shoulder 71 heightens the clamping action to a certain extent during the return movement of the barrel. Furthermore, at all times the coaction of the flange 67 and shoulder 71 prevents any rattling between the barrel and the magazine due to their connection through the perforated lug 69. It will be understood that the braking action is greater during the recoil movement of the barrel than during the return movement of the barrel, and that is as it should be, because the power of the recoil is always greater than the power of the barrel-spring.

In view of the modifications suggested and of others which may obviously be made I would have it understood that I do not limit myself to the precise construction shown and described, but hold myself at liberty to make such departures therefrom as fairly fall within the spirit and scope of my invention.

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

1. In a magazine-firearm, the combination with the breech-bolt thereof, of a handle mounted directly in the bolt for longitudinal sliding movement therein, and provided with a finger-piece extending laterally outward through the frame or receiver of the gun.

2. In a magazine-firearm, the combination with a frame or receiver formed in its right-hand wall with an ejection-opening, of a breech-bolt, and a handle mounted in the bolt for longitudinal sliding movement therein, and provided with a finger-piece extending laterally outward through the said opening.

3. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, breech mechanism connected with the bolt and operated by the recoil for reloading the gun, and a sliding handle mounted directly in the bolt and having a lateral projection extending through the frame of the gun for use in opening the gun manually.

4. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, a vertically-movable locking-block movable therein for engaging with the barrel extension to which the bolt is thus locked, means connected with the said block and operated automatically to move the same into its locked position, and a sliding handle mounted in the bolt for manually unlocking the said block.

5. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, a vertically-movable block for engagement with the barrel extension to which the bolt is thus locked, means for automatically moving the block into its unlocked position, and a sliding handle mounted directly in the bolt, having a projection through the frame of the gun, and coacting with the said means for manually moving the block into its unlocked position, whereby the bolt is unlocked, after which it is moved into its open position by the handle.

6. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, a vertically-movable locking-block therein for coaction with the said extension in locking the bolt in its closed position, a rocking tumbler also mounted in the said bolt and coacting with the said block for moving it into its locked and unlocked positions, and a sliding handle mounted directly in the bolt, having a projection through the frame or receiver of the gun, and coacting with the said tumbler for the manual operation thereof.

7. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, a locking-block mounted

therein and coacting with the said extension for locking the bolt thereto, a rocking tumbler also mounted in the said bolt and coacting with the said block for moving the same into its locked and unlocked positions, a link connected with the said tumbler and extending rearwardly therefrom, an operating-spring coacting with the rear end of the said link, and a sliding handle mounted directly in the bolt and coacting with the forward end of the link for manually operating the said tumbler in moving the said block into its unlocked position.

8. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt formed with a longitudinal handle-receiving groove, a vertically-movable locking-block mounted in the said bolt, a rocking tumbler also mounted in the said bolt and coacting with the block for moving the same into its locked and unlocked positions, an operating-link connected with the said tumbler, an operating-spring coacting with the said link to push the bolt forward, and a sliding handle mounted directly in the bolt, having a projection through the frame or receiver of the gun, and at its rear end coacting with the said link for manually operating the said tumbler, and confined in its groove in the bolt by means of the said link when the same is in its normal position.

9. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a breech-bolt, a vertically-movable locking-block mounted therein, a rocking tumbler also mounted in the said bolt and coacting with the said block for moving the same into its locked and unlocked positions, an operating-link connected at its forward end with the said tumbler which it automatically operates, and provided with an abutment-shoulder, a spring coacting with the said link which it moves forward, and a sliding handle mounted directly in the bolt, provided with a lateral projection extending through the frame or receiver of the gun, and also provided with an inwardly-extending arm for coaction with the abutment-shoulder of the link which is thereby manually operated for unlocking the bolt and moving the same manually into its open position.

10. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a swinging carrier, a combined cartridge-stop and carrier catch or lock, and a pivotal safety cartridge-stop brought into operation by the recoil of the gun for preventing the premature operation of the said combined part in unlocking the carrier by a cartridge released by the said part.

11. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a swinging carrier, a combined cartridge-stop and carrier catch or lock, a pivotal leaf-like safety cartridge-stop swinging on a vertically-arranged pivot, and brought into operation by the recoil of the gun for preventing the premature operation of the said combined part in unlocking the carrier by a cartridge released by the said part, and a spring for moving the said safety-stop into its operating position.

12. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a combined cartridge-stop and carrier-catch stopping the cartridges with its forward end, and locking the carrier with its rear end, and a leaf-like safety cartridge-stop located opposite the said combined part and coacting with the said extension which permits it to act as a cartridge-stop until the barrel has been returned to its normal position when the stop is retired to permit the cartridge already released by the said combined part to operate the said part in unlocking the carrier.

13. In a magazine-firearm, the combination with a reciprocating barrel and barrel extension, of a pivotal carrier, a combined cartridge-stop and carrier-catch for stopping the cartridges at its forward end and locking the carrier at its rear end, and a leaf-like safety cartridge-stop swinging on a vertically-arranged pivot, located opposite the said combined part, and formed with an upwardly-projecting finger coacting with the said extension which permits the said stop to swing inwardly into its operating position in which it prevents the premature operation of the said combined part in unlocking the carrier, and the said extension also forcing the stop into its retired position when the barrel has reached its normal position after which the cartridge being fed is free to operate the combined part in unlocking the carrier.

14. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a reciprocating breech-bolt, a vertically-movable locking-block mounted therein, a rocking tumbler for operating the said block, a swinging carrier, and a locking-dog mounted in the rear end of the said carrier itself, and coacting with the said tumbler for locking the breech-bolt at the limit of its rearward excursion.

15. In a magazine-firearm, the combination with a reciprocating bolt, of a vertically-movable locking-block mounted therein, an operating-link connected with the said block for automatically operating the same to lock the bolt after the same has reached its closed position, a hammer, and a safety hammer-dog operated for releasing the hammer by the rear end of the said link, after the bolt has been closed and locked.

16. In a magazine-firearm, the combination with a reciprocating bolt, of a vertically-movable locking-block mounted therein, an operating-link connected with the said block for automatically operating the same to lock the bolt after the same has reached its closed position, a hammer formed at its rear end with a safety-finger, a vertically-arranged safety hammer-dog coacting at its lower end with the said finger, and means coacting with the up-

per end of the dog for operating the same to release the hammer after the bolt has been closed and locked.

17. In a magazine-firearm, the combination with a recoiling barrel and barrel extension, of a reciprocating bolt, a locking-block mounted therein, a rocking tumbler also mounted in the bolt for operating the said block, a link connected at its forward end with the said tumbler and extending rearwardly therefrom, an operating-spring coacting with the rear end of the link, a hammer extending upwardly through the said link, and a safety hammer-dog operated by the said link for releasing the hammer after the bolt has been closed and locked.

18. In a magazine-gun, the combination with a recoiling barrel, of a friction-brake connected with the barrel and operating throughout the recoiling movement of the barrel for reducing the shock of recoil.

19. In a magazine-firearm, the combination with a recoiling barrel, of a friction-brake connected with the barrel to move rearward therewith and reduce the shock of recoil.

20. In a magazine-firearm, the combination with a recoiling barrel, of a tubular magazine, and a friction-brake coacting with the magazine over which it rides to reduce the shock of recoil.

21. In a magazine-firearm, the combination with a recoiling barrel of a friction-brake connected with the barrel and reducing the shock when the barrel is recoiling and breaking the shock following the return of the barrel to its normal position.

22. In a magazine-firearm, the combination with a recoiling barrel of a barrel-spring for returning the same to its normal position after recoil, a tubular magazine, and a friction-brake mounted upon the magazine and riding forward over the same to reduce the power of the barrel-spring in returning the barrel.

23. In a magazine-firearm, the combination with the receiver and tubular magazine thereof, of a recoiling barrel and barrel extension, a barrel-spring encircling the magazine for restoring the barrel to its normal position, and a contractile collar-brake applied to the magazine and interposed between the forward end of the said barrel-spring and the connection of the magazine with the barrel, and contracted by the action of recoil to grasp the magazine, whereby the shock of recoil is in part absorbed.

24. In a magazine-firearm, the combination with the receiver and tubular magazine thereof, of a recoiling barrel provided with a perforated lug receiving the forward end of the magazine, a barrel-spring encircling the magazine, and a contractile collar-brake interposed between the forward end of the spring and the said lug, and provided with a spring clamping-collar, the said collar-brake being clamped upon the magazine through the medium of the said lug during recoil, and being contracted upon the magazine through the medium of the said clamping-collar during the return of the barrel to its normal position.

25. In a magazine-firearm, the combination with the receiver and magazine thereof, of a recoiling barrel having a depending perforated lug through which the forward end of the magazine passes, and formed with a beveled shoulder, of a barrel-spring encircling the magazine, and a collar-brake interposed between the forward end of the said spring and the beveled shoulder of the lug, and formed with a beveled flange coacting with the beveled shoulder of the lug for clamping the collar upon the magazine during the recoil of the barrel.

26. In a magazine-gun, the combination with a recoiling barrel and barrel extension, of a cartridge-stop coacting with the barrel extension, whereby the stop assumes its operating position during the first part of the recoil movement of the barrel and is retired into its inoperative position by the barrel during the last part of the return movement thereof.

27. In a magazine-gun, the combination with a recoiling barrel, of a swinging carrier, means for locking the same in its depressed position, the said means being adapted to be operated to unlock the carrier by a cartridge, and a cartridge-stop brought into action during the recoil of the barrel to prevent the cartridge from operating the said means until after the barrel has completed its recoiling movement and returned to its closed or normal position.

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

JOHN M. BROWNING.

Witnesses:
A. L. ULRICH,
S. MONKS.