

No. 688,636.

Patented Dec. 10, 1901.

G. W. GRUVER.  
MAGAZINE GUN.

(Application filed Nov. 6, 1900.)

(No Model.)

3 Sheets—Sheet 1.

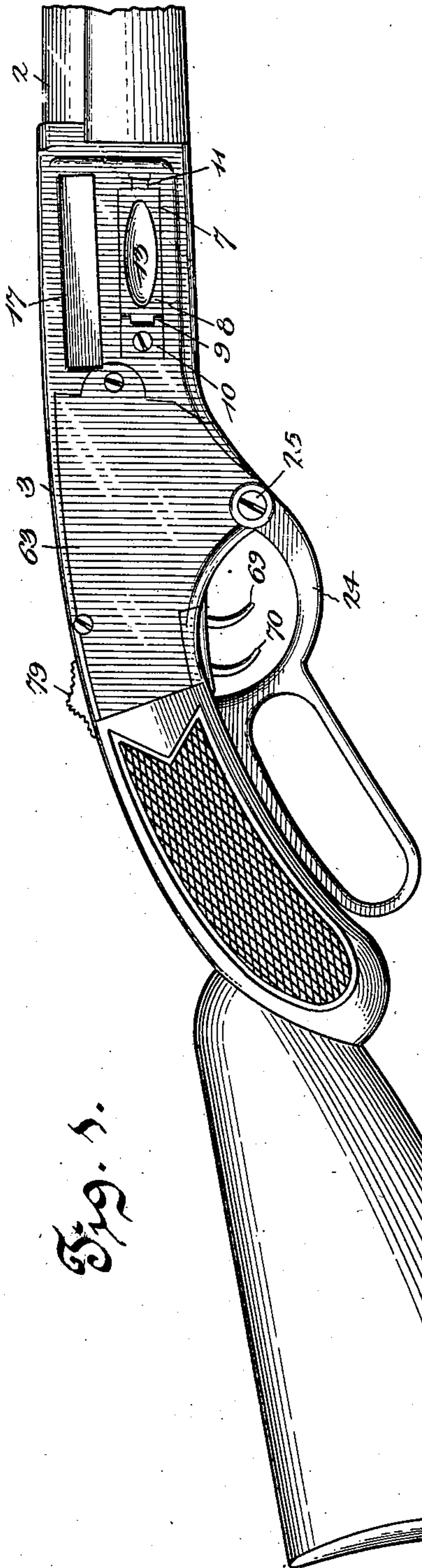


Fig. 1.

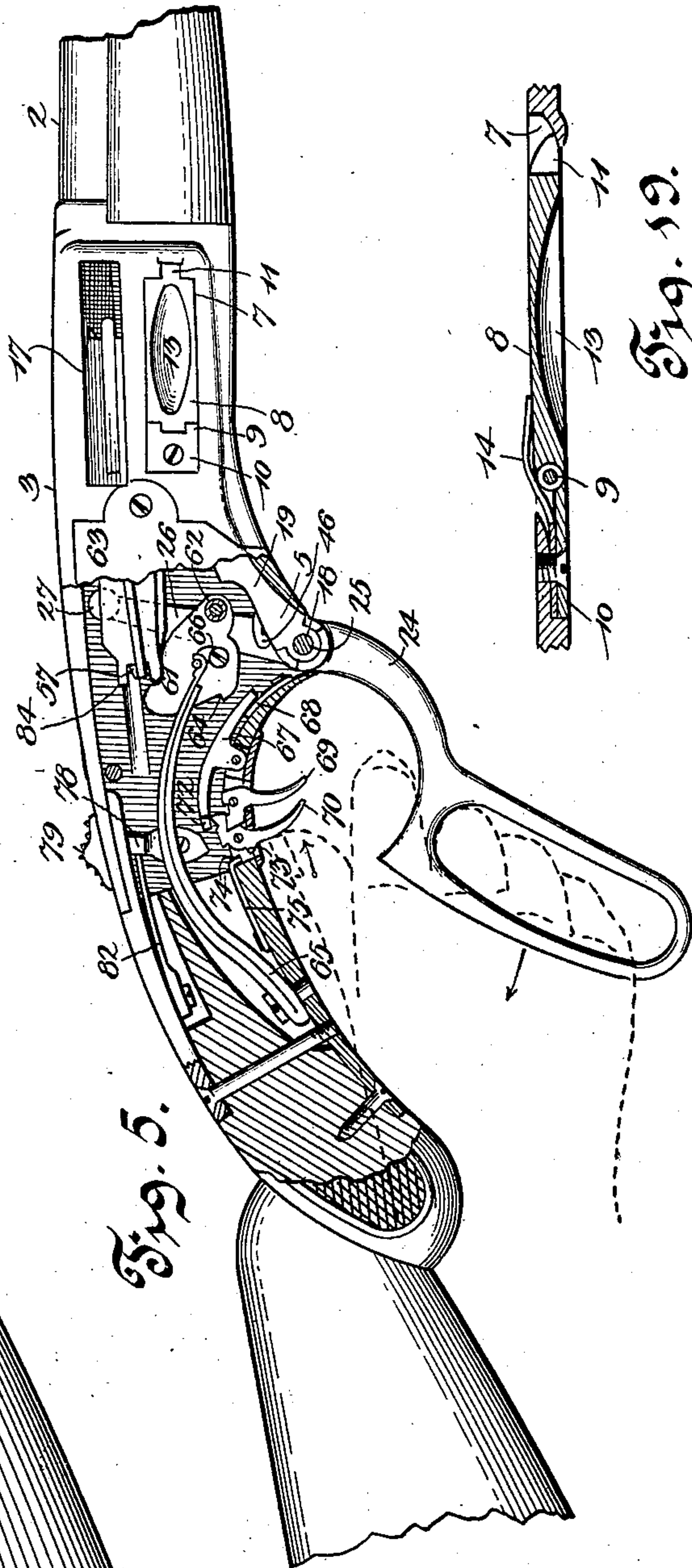


Fig. 5.

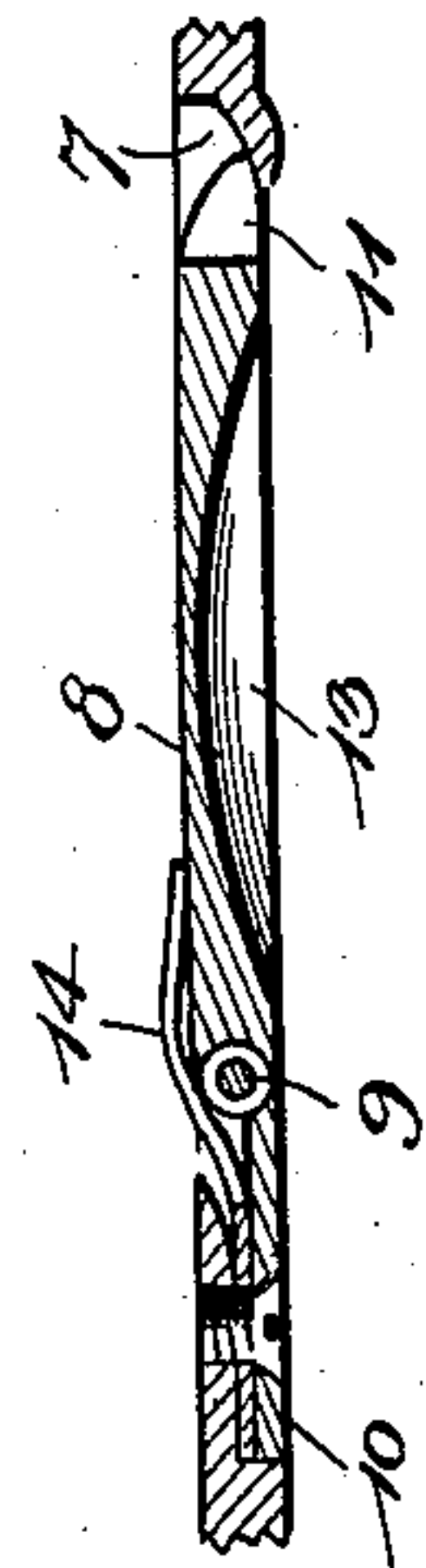


Fig. 19.

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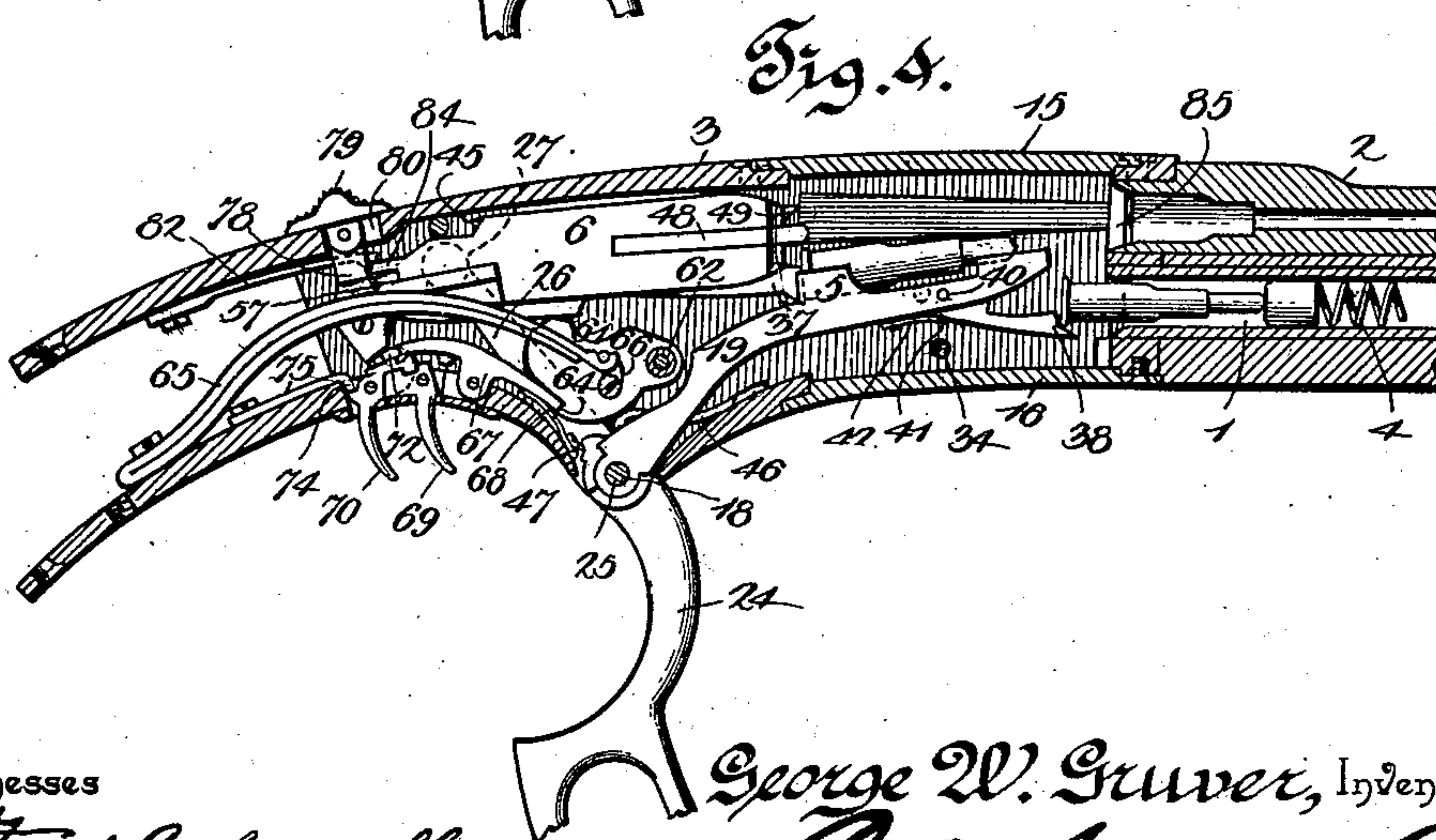
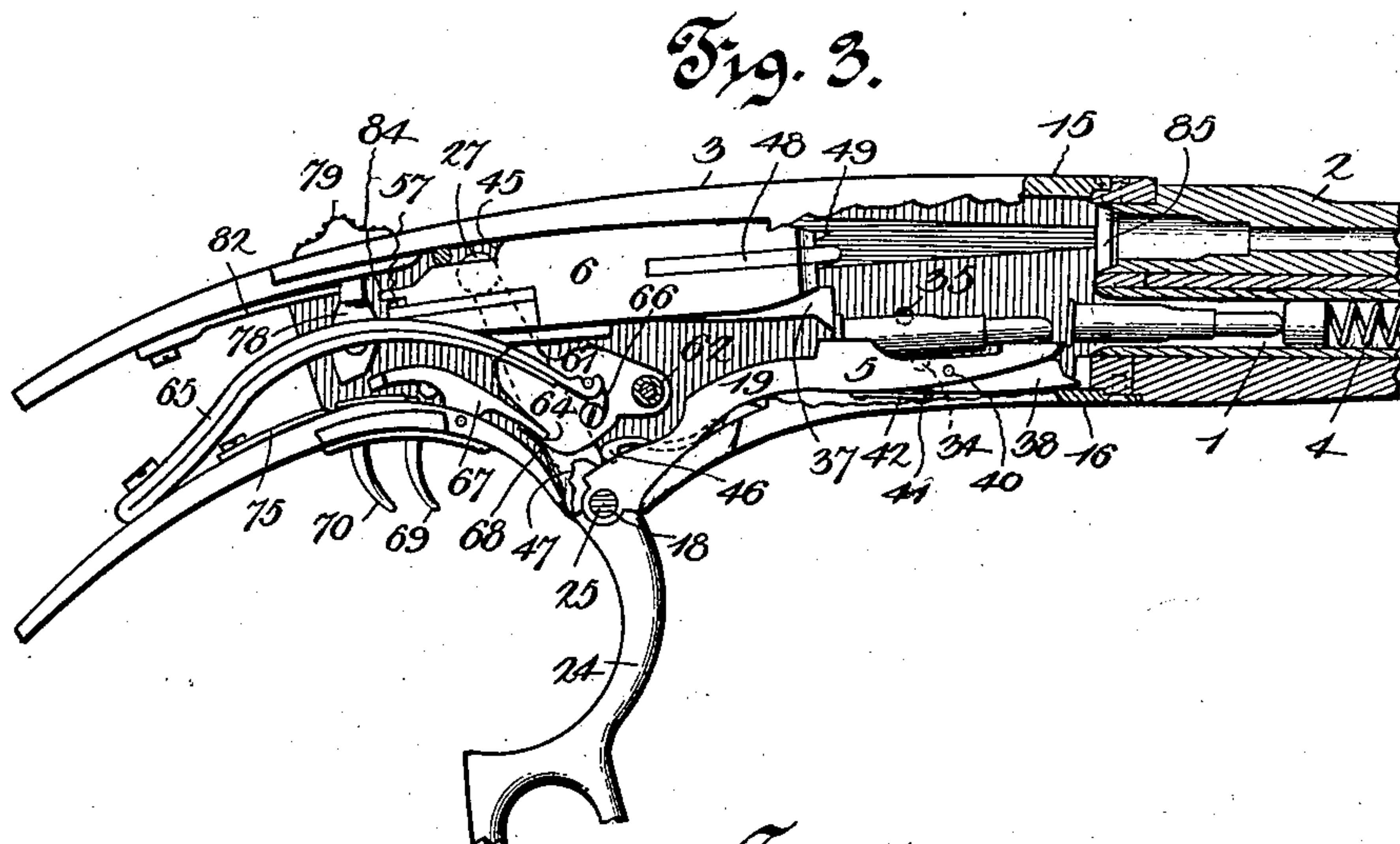
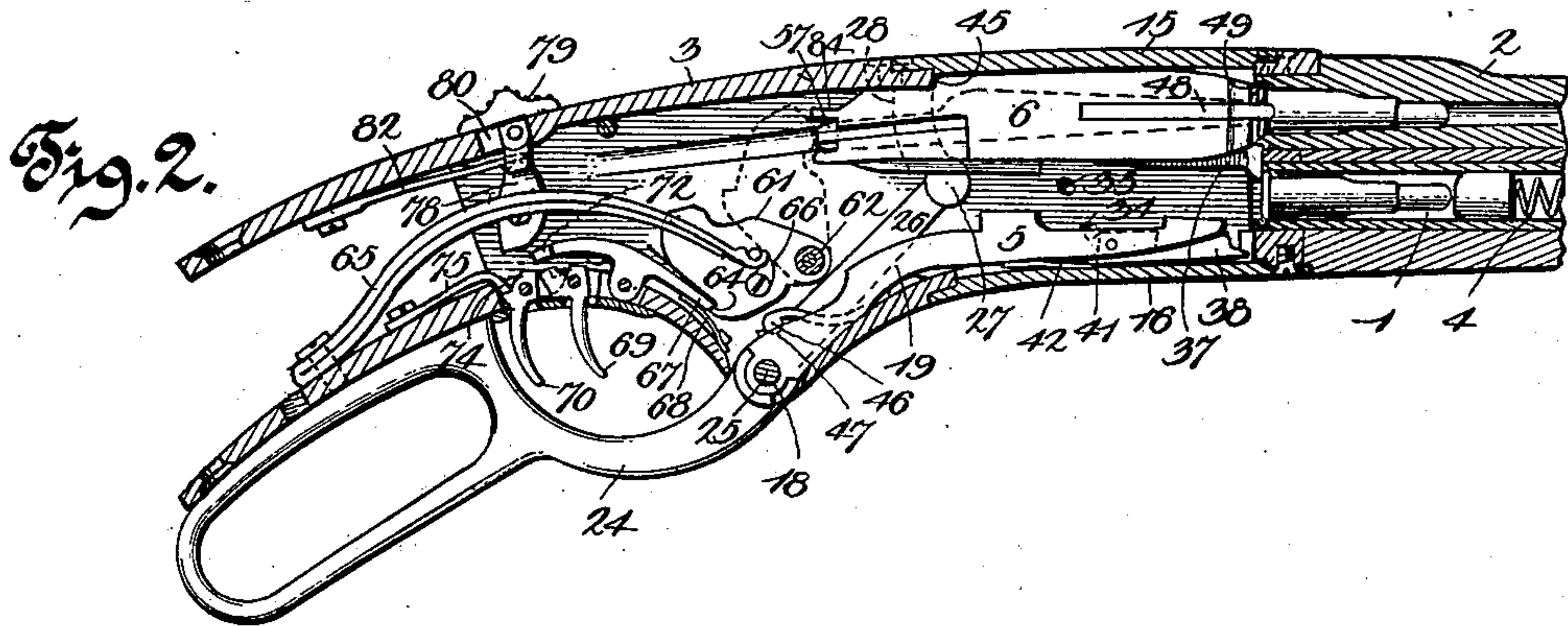
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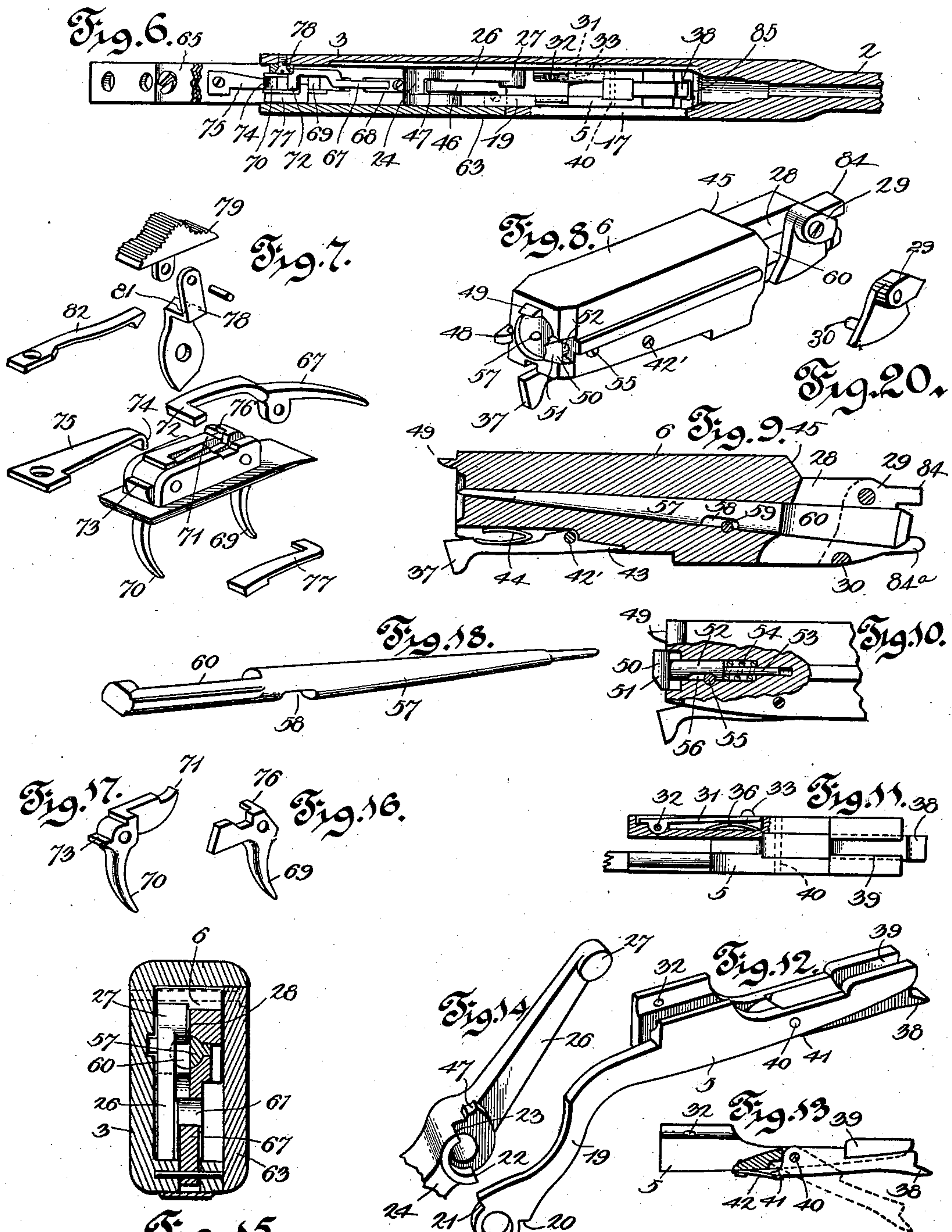
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**3 Sheets—Sheet 3.**



## Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE W. GRUVER, OF PRIEST VALLEY, CALIFORNIA.

## MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 688,636, dated December 10, 1901.

Application filed November 6, 1900. Serial No. 35,654. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. GRUVER, a citizen of the United States, residing at Priest Valley, in the county of Monterey and State of California, have invented a new and useful Magazine-Gun, of which the following is a specification.

The invention relates to improvements in magazine-guns.

10 The object of the present invention is to improve the construction of that class of magazine-guns in which the magazine is arranged longitudinally beneath the barrel and in which the breech-block and the carrier are 15 both operated by means of a guard-lever and to provide a gun of this character which will be closed at all points except where the empty shells are ejected and which will be closed at that point while it is being fired.

20 Another object of the invention is to provide a hammerless magazine-gun adapted to hold the cartridges in a position for balancing it and capable of being readily taken apart for cleaning, repairing, and other purposes. 25

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

30 In the drawings, Figure 1 is a side elevation of a magazine-gun constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view showing the parts arranged for firing. Fig. 3 is a similar view, the guard-lever being thrown forward and being in position for raising the carrier. Fig. 4 is a longitudinal sectional view, the guard-lever being thrown completely forward and the carrier being raised for delivering a cartridge to 40 the breech-block. Fig. 5 is a longitudinal sectional view illustrating the manner of uncocking the gun. Fig. 6 is a horizontal sectional view. Fig. 7 is a detail view illustrating the construction of the sear, the trigger, 45 and the locking device for holding the sear out of operation. Figs. 8 and 9 are detail views of the breech-block. Fig. 10 is a detail sectional view of one end of the breech-block, illustrating the construction of the ejecting device. Fig. 11 is a detail view of 50 a portion of the carrier, illustrating the construction of the laterally-projecting catch for

locking the carrier against accidental movement during the first portion of the forwardly-swinging movement of the guard-lever. Fig. 12 is a perspective view of the carrier. Fig. 13 is a detail view of a portion of the carrier, illustrating the construction of the catch for holding the cartridges in the magazine when the carrier is swung upward by the guard-lever. Fig. 14 is a detail perspective view of the inner arm of the guard-lever. Fig. 15 is a transverse sectional view of the gun. Figs. 16 and 17 are detail views of the triggers. Fig. 18 is a detail view of the firing-pin. Fig. 19 is an enlarged detail sectional view illustrating the manner of mounting the depressible-loading-gate. Fig. 20 is a detail view of the removable piece of the rear end of the breech-block. 70

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a tubular magazine arranged beneath a gun-barrel 2 in the ordinary manner and secured to a frame 3, to which the gun-barrel is secured. Within the magazine is arranged a spiral spring 4 for forcing the cartridges rearward for feeding them to a carrier 5, which elevates them to a position in advance of a reciprocating breech-block 6, and the latter, as hereinafter explained, is adapted to carry the cartridges forward into the barrel. The frame is provided at the lower portion of its right-hand side with an opening 7, through which the cartridges are introduced to feed them into the magazine, and this lower opening is normally closed by a spring-actuated cover, hinged at its rear end at 9 to a plate 10 and provided at its front end with a tongue 11, extending forward into a recess of the frame and limiting the outward swing of the hinged cover 8. The hinged loading-gate 8 is provided in its outer face with an approximately elliptical recess 13 to afford the necessary clearance for the rims of the cartridges, and the said cover is held normally closed by a spring 14, interposed between the attachment-plate 10 and the frame 3 and secured to the latter by the screw of the attachment-plate and having one end free and engaging the inner face of the hinged cover. 100

The attachment-plate is seated in a recess, and its outer face and the outer face of the



depressible spring-actuated loading-gate 8 are flush with the adjacent outer face of the frame. The frame is provided with top and bottom openings in which are secured removable top and bottom plates 15 and 16, adapted to be readily taken off to afford access to the interior of the frame. The left-hand side of the frame is solid, and the right-hand side is provided at a point above the depressible spring-actuated loading-gate 8 with an opening 17, through which the empty shells are ejected after the gun has been fired.

The carrier, which is adapted to swing upward and downward from the position illustrated in Fig. 2 of the accompanying drawings to that shown in Fig. 4, consists of a front body portion provided with a cartridge-receiving upper face and a shank extending rearward from one side of the body and terminating at its rear end with an eye or opening 18, and the said shank 19 is arranged at a slight angle to the body portion of the carrier and is provided at opposite sides of the opening 18 with shoulders 20 and 21, adapted to be engaged by corresponding shoulders 22 and 23 of a guard-lever, whereby the latter is adapted to oscillate the carrier. The guard-lever 24 is fulcrumed between its ends on a pin or screw 25, which also forms a pivot for the carrier. The shoulders are located at opposite sides of the shank 19 and the guard-lever 24, and when the shoulders at one side are in engagement with each other those at the opposite side are separated by an intervening space, whereby the guard-lever is capable of a limited movement independent of the carrier to actuate the breech-block 6. The inner portion of the guard-lever is reduced adjacent to the shoulders 22 and 23 to provide a recess for the rear end of the shank, so that the outer side face of the shank will lie in approximately the same plane as the adjacent side face of the lever. The inner arm 26 of the guard-lever is provided with a head 27 and is arranged in a recess 28 of the breech-block, whereby the latter is reciprocated when the guard-lever is oscillated. The recess 28 is formed by reducing the rear end of the breech-block at one side thereof and attaching a block or piece 29 at the rear end of the breech-block to form a rear wall or abutment to be engaged by the inner arm of the guard-lever. The block 29 has an enlarged upper portion which is perforated for the reception of a screw or other suitable fastening device, and the bottom of the block is provided with an approximately semicircular lug 30, fitting in a corresponding recess of the bottom of the breech-block, whereby the block or piece 29 is rigidly held in place. When the guard-lever is first swung downward and forward, it moves the breech-block rearwardly sufficiently to extract a shell from the barrel and permit such shell to be expelled through the upper side opening by the means hereinafter described. The lower or outer side shoulder 22 of the guard-lever is

then carried into engagement with the corresponding outer shoulder 20 of the carrier, which is swung upward by the continued forward movement of the guard-lever from the position shown in Fig. 3 to that illustrated in Fig. 4. The first portion of the movement of the guard-lever arranges the parts in the position illustrated in Fig. 3 of the accompanying drawings, wherein the empty shell is extracted and a fresh cartridge is fed backward by the coiled spring of the magazine to the carrier. The upward movement of the carrier stops the rearward feed of the cartridges and carries the rearmost one upward to a position in advance of the breech-block, which will carry it forward into the barrel to the position illustrated in Fig. 2 of the drawings when the guard-lever is returned to its normal position.

The carrier is held in its raised and lowered positions by means of a laterally-projecting catch 31, pivoted at one end at 32 in a recess of the left-hand side of the carrier and provided at its other end with an approximately semispherical head 33, adapted to engage indentations or concavities 34 and 35 of the adjacent side of the frame, and it is held in engagement with the same by means of a curved spring 36, extending longitudinally of the laterally-projecting catch at the inner face thereof and housed in the recess of the carrier. The laterally-projecting catch is adapted to effectually prevent the carrier from accidentally moving out of either position, and the guard-lever, which engages the carrier adjacent to its fulcrum, has sufficient leverage to swing the carrier readily from one position to the other.

When the parts are in their normal position, as illustrated in Fig. 2 of the accompanying drawings, the cartridges are held in check in the magazine by a spring-actuated dog 37, forming a stop and mounted on the breech-block at the front portion thereof and adapted when the breech-block is carried rearward by the first portion of the movement of the guard-lever to permit a cartridge to be delivered to the carrier, as illustrated in Fig. 3 of the drawings, and when the carrier is swung upward by the guard-lever the remaining cartridges in the magazine are held in check by a dog 38, forming a stop and pivoted in a bifurcation 39 of the front portion of the carrier. The pivoted dog 38 is adapted to drop as the carrier moves upward, and the pivot 40 is located near the inner end of the stop or dog 38 to provide a projecting heel 41 to be engaged by a spring 42, whereby the operation of the pivoted dog or stop is rendered positive, but the pivoted dog or stop 38 will drop by gravity if its front portion has sufficient weight. The dog or stop of the breech-block is mounted on a pivot 42, located between the ends of the stop or dog, and the inner portion or arm 43 thereof is adapted to abut against the breech-block to limit the throw or outward movement of the engaging



portion, which is forced outward by a spring 44. The spring 44, which may be of any desired construction, is interposed between the outer portion of the stop or dog 37 and the breech-block, and it is housed within the recess of the latter. The engaging portion of the stop or dog of the breech-block projects over the rear end of the magazine, as clearly illustrated in Fig. 2 of the accompanying drawings, when the breech-block is closed, and it is beveled and adapted to be readily depressed or forced inward by the cartridges as they are introduced into the magazine. When the carrier drops or is swung downward from the position illustrated in Fig. 4 to that shown in Fig. 2, its pivoted stop or dog is received within the recess or bifurcation of the front portion of the carrier.

The breech-block is recessed at the upper face of its rear end to provide a projecting portion and to form a shoulder 45, and this projecting portion at the top of the breech-block is extended into the recess formed by the opening at the top of the frame, and the shoulder 45 abuts against the rear wall of the opening, whereby the breech-block is prevented from being blown rearward by the discharge of the gun. The guard-lever holds the breech-block in the elevated position illustrated in Fig. 2, and it is locked in its closed position by a resilient catch 46, secured to the bottom of the frame at one side of the rearwardly-extending portion or shank of the carrier and provided at its rear end with a head arranged to engage a recess 47 of the guard-lever, as clearly indicated in dotted lines in Fig. 2 of the drawings. The head of the catch 46 is rounded, and the wall of the recess is curved, so that the lever may be readily engaged with and disengaged from the catch; but the latter has sufficient power to hold the lever firmly in its closed position.

The breech-block is provided at one side with an extractor 48 of the ordinary construction, consisting of a resilient shank provided at the front or outer end with a beveled head for engaging the rim of the cartridge, and the inner or rear end of the barrel is provided with the usual recess to receive the extractor. The front end of the breech-block is provided with an upper supporting-lug 49, and it has at its left-hand side an ejector 50, which is adapted to throw the empty shell outward through the upper side opening of the frame when the breech-block is moved rearward to the position illustrated in Fig. 3 of the drawings. The ejector 50 consists of a spring-actuated plunger provided with a head 51 for engaging the shell at the left-hand side of the breech-block and having a stem 52 with a reduced rear portion 53. The stem 52 and its reduced rear portion 53 are slidingly mounted in a longitudinal bore or opening of the breech-block, and the bore or opening has a reduced inner portion to receive the reduced portion of the stem. The stem is actuated by a coiled spring 54, and its movement is limit-

ed by a transverse pin 55, mounted on the breech-block and arranged in a recess 56 of the enlarged portion of the stem of the ejector. The coiled spring is behind the rear end of the enlarged portion of the stem of the ejector, and it bears against the shoulder formed by the enlarged portion of the bore or opening. When the breech-block is closed, the ejector is depressed within the said block, which is provided at its front end with a recess to receive the head of the ejector, and when the breech-block is moved rearward by the guard-lever the right-hand side of the empty shell is held by the extractor and the left-hand side is thrown forward by the ejector. This causes the empty shell to swing laterally, and it is projected through the upper side opening of the frame with considerable force. The extractor and the ejector may be arranged at the top and bottom of the breech-block to throw the empty shells out through the opening of the top of the frame, if desired; but it is preferable to eject the shells at the side, as this will prevent them from being thrown into the face of the person using the gun or across the line of sight. This arrangement of the discharge-opening at the side of the frame also prevents the lungs of a person becoming filled with the gases resulting from the discharge of the gun, and there is no liability of pine needles, twigs, or other foreign matter accidentally getting into the action of the gun. The arrangement also excludes moisture and prevents the interior of the frame from becoming wet when the gun is fired while it is raining or snowing.

The breech-block is provided with a tapering longitudinal opening for the reception of a firing-pin 57, provided at its bottom with a recess 58 to receive a transverse pin 59, which limits the longitudinal reciprocation of the firing-pin. The rear portion of the firing-pin is provided with a longitudinal recess 60 to provide a space for the upper arm of the guard-lever, and the rear end of the firing-pin projects laterally over the rear edge of the block or piece 29 and is arranged to be engaged by an interior hammer 61.

The interior hammer 61 is secured by a screw or other suitable fastening device to a rigid stud 62 of a removable side plate 63, secured to the right-hand side of the frame, in rear of the side openings thereof, and adapted to be detached to afford access to the interior of the gun. The hammer is provided with a sear-shoulder 64 and is connected at a point in rear of its pivot with a mainspring 65 by a tumbler-link 66, of the ordinary construction, provided at its point of connection with the spring with a T-shaped head for engaging a bifurcation of the mainspring. When the breech-block is carried rearward to the position illustrated in Fig. 3 of the accompanying drawings, it cocks the hammer, carrying it to the position shown in Fig. 3, and the shoulder 64 is engaged by one end of a sear 67, pivoted between its ends on the



frame, at the bottom thereof, and having its front arm or hammer-engaging portion engaged by a spring 68, secured at one end to the frame. The rear end of the mainspring 5 is secured to the lower tang of the frame, and the said mainspring is curved or arched over the sear 67, which has its rear arm located above front and rear triggers 69 and 70.

The rear trigger has its front portion 71 located beneath and arranged to engage a laterally-extending arm or lug 72 of the rear end of the sear, and the said rear trigger 70 is provided in rear of its pivot with a shoulder 73, which is engaged by the front end 74 of a stout spring 75, which is adapted to swing 15 the front portion of the rear trigger upward into engagement with the rear end of the sear 67, whereby the latter is tripped or carried out of engagement with the hammer to 20 release the latter for discharging the gun or for uncocking the hammer, as hereinafter explained.

The front trigger is provided at its top with a laterally-projecting lug 76, extending over 25 and adapted to engage the front portion of the rear trigger to set the latter and lock the same out of engagement with the sear 67. The front trigger is engaged in rear of its pivot by an approximately L-shaped spring 30 77, which holds the front trigger in engagement with the rear trigger when the parts are set or arranged as shown in Fig. 2. The gun may then be fired by moving the front trigger rearward, and as soon as the rear trigger is 35 released by the operation of the front trigger the spring 75 throws the front portion of the rear trigger upward into engagement with the sear 67, and carries the latter out of engagement with the shoulder of the hammer.

40 When the breech-block is carried from the position illustrated in Fig. 3 to that shown in Fig. 4, its rear end engages with the upper arm of a safety-lever 78, pivoted between its ends and adapted to have its lower end 45 swung forward over the rear end of the sear 67, whereby the latter is locked in engagement with the hammer and is prevented from being tripped until the said safety-lever is operated to remove its lower end from over 50 the sear 67. The upper arm of the safety-lever is approximately L-shaped and is attached to a depending ear of a slide 79 by a pin-and-slot connection arranged at the top of the frame, as clearly shown in Figs. 2, 3, 55 and 4. The slide, which is approximately triangular in side elevation, has a roughened or milled upper face and its depending ear or projection operates in a slot 80 of the top of the frame. The safety-lever is engaged 60 at its L-shaped portion 81 by a spring 82, which holds the safety-lever in either position, and the frame of the gun may be provided with suitable marks or characters for indicating the position of the slide. The rear 65 trigger is operated to set the front trigger while the safety-lever is in its engaging position, and the gun will then be in con-

dition for firing as soon as the safety-lever is swung from over the sear. This safety-lever may be allowed to remain in this position 70 until the gun is to be fired, and it will effectually prevent the gun from being accidentally discharged. The gun may be rapidly discharged by the operating-lever without manipulating the triggers, as the spring 75 will 75 engage the rear trigger and trip the sear 67 unless the front trigger is set as soon as the safety-lever is swung from its position over the sear 67. This will enable the gun to be fired rapidly without removing it from the 80 shoulder by simply operating the guard-lever and the slide.

Should it be desired to uncock the gun after it has been set for firing, the guard-lever is swung forward to carry the breech-block 85 rearward to within close proximity of the hammer, which is then released and allowed to fall against the breech-block, and the latter is then returned to its closed position. The hammer may also be uncocked by actu- 90 ating the rear trigger, as indicated in dotted lines in Fig. 5 of the accompanying drawings, while returning the guard-lever.

The breech-block is provided at its rear end with upper and lower arms or extensions 95 84 and 84<sup>a</sup>, which when the breech-block is in the position illustrated in Fig. 2 of the accompanying drawings will permit the upper portion of the front edge of the hammer to engage the firing-pin; but when the breech- 100 block is dropped from the position shown in Fig. 2 either or both of the rearwardly-extending arms 84 and 84<sup>a</sup> will lie in the path of the hammer and will prevent the same from striking the firing-pins, whereby a car- 105 tridge is effectually prevented from being exploded when the breech-block is not in proper position. The rear end of the firing-pin is arranged between the arms or extensions 84, and should the hammer fall when the breech- 110 block is moved rearward it will strike one of the arms or projections.

The bore of the barrel has a flared portion 85 adjacent to the rear end, and the breech- 115 block is correspondingly tapered at its front end to fit the flared portion 85, which is adapted should the gun be turned sidewise to guide the same into the barrel and prevent it from catching and interfering with the operation 120 of the gun.

It will be seen that the magazine-gun is hammerless and is completely closed in, except at the point where the empty shells are discharged, and that such discharge-opening is covered when the gun is in position for 125 firing. It will also be apparent that the safety-lever, which may be instantly operated, is adapted to lock the sear out of operation, so that the gun may be carried through dust and over fences without liability of discharging 130 it, and that the said safety-lever may also be employed for discharging the gun when desired.

Changes in the form, proportion, size, and



the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. In a firearm, the combination of a frame, an oscillating carrier pivoted at its rear end and provided at its front with a pivotally-mounted cartridge-engaging device arranged to hold the cartridges in the magazine when the carrier is raised, a reciprocating breech-block provided at its front end with a depressible cartridge-engaging device arranged to hold the cartridge in the magazine when the carrier is lowered, a lever pivotally mounted on the frame and having a limited movement independent of the carrier and engaging the breech-block, and a locking device mounted on the carrier and arranged to hold the same in a raised or lower position until the said carrier is positively actuated by the lever, substantially as described.

2. In a magazine-firearm, the combination of a frame, a movable carrier having a recess, the laterally-projecting catch 31 pivoted at one end in the recess and provided at its other end with a head arranged to engage the frame, a curved spring located within the recess and engaging the catch, and means for operating the movable carrier, substantially as described.

3. In a magazine-firearm, the combination of a frame, a reciprocating breech-block having a depressible dog or stop located at the front end of the breech-block and arranged to be depressed by the cartridges when loading the gun, an oscillating carrier having an automatically-operating cartridge-engaging device, a locking device mounted on the carrier and arranged to engage the frame to hold the carrier in either of its positions, and a lever arranged to operate the carrier and the breech-block, substantially as described.

4. In a magazine-firearm, the combination of a hammer, a sear arranged to engage the same and adapted to be operated by a trigger,

a safety-lever, and a breech-block arranged to engage the safety-lever, whereby the latter is set automatically, substantially as described.

5. In a magazine-firearm, the combination of a hammer, a sear arranged to engage the same and adapted to be operated by a trigger, a safety-lever fulcrumed between its ends, a slide arranged on the exterior of the firearm and connected with the safety-lever, and a breech-block arranged to engage the safety-lever, substantially as described.

6. In a magazine-firearm, the combination of a hammer, the sear 67 fulcrumed between its ends and provided at its rear end with a laterally-extending lug 72, a spring for holding the sear out of engagement with the hammer, the rear trigger provided at its back with the shoulder 73 and having a forwardly-extending portion arranged to engage the rear arm of the sear to throw the latter out of engagement with the hammer, a spring engaging the shoulder 73, the front trigger provided with a laterally-extending lug arranged over the front portion of the rear trigger and adapted to engage the same to lock the rear trigger out of engagement with the sear, and a spring engaging the front trigger, substantially as described.

7. In a magazine-firearm, the combination of a frame, the hammer mounted within the frame, the reciprocating breech-block capable of forward and backward movement and having a limited vertical movement to interlock it with the frame and provided with guards arranged to be engaged by the hammer when the breech-block is dropped downward, and a lever for operating the breech-block, substantially as described.

In testimony that I claim the foregoing as my own I hereby affix my signature in the presence of two witnesses.

GEORGE W. GRUVER.

Witnesses:

FLORENCE M. SMITH,  
BENJAMIN F. GRUVER.