

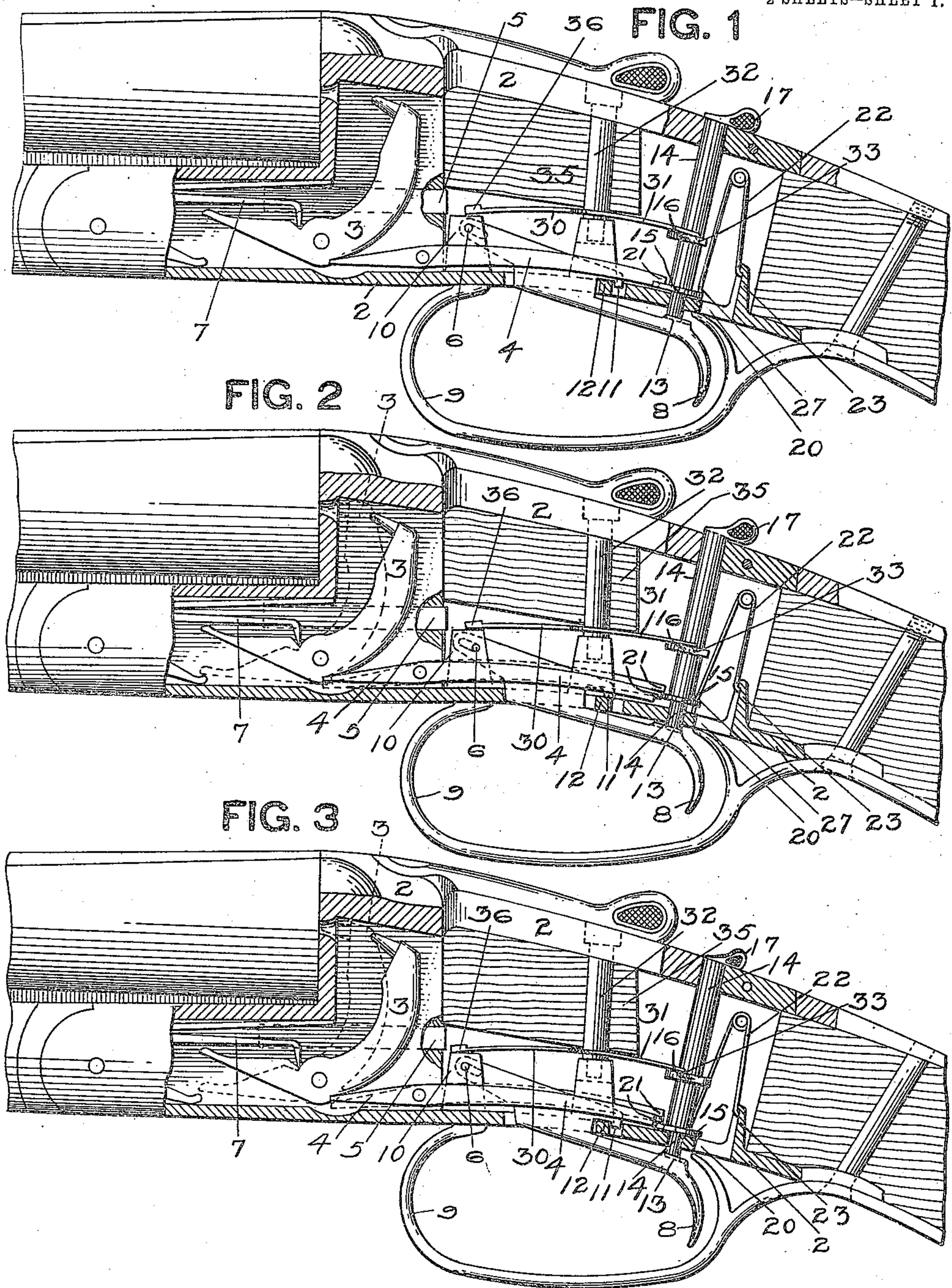
No. 894,451.

PATENTED JULY 28, 1908.

R. F. MACMICHAEL.
SINGLE TRIGGER MECHANISM FOR GUNS.

APPLICATION FILED MAY 28, 1907.

2 SHEETS—SHEET 1.



WITNESSES.
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2 SHEETS—SHEET 2.

FIG. 4

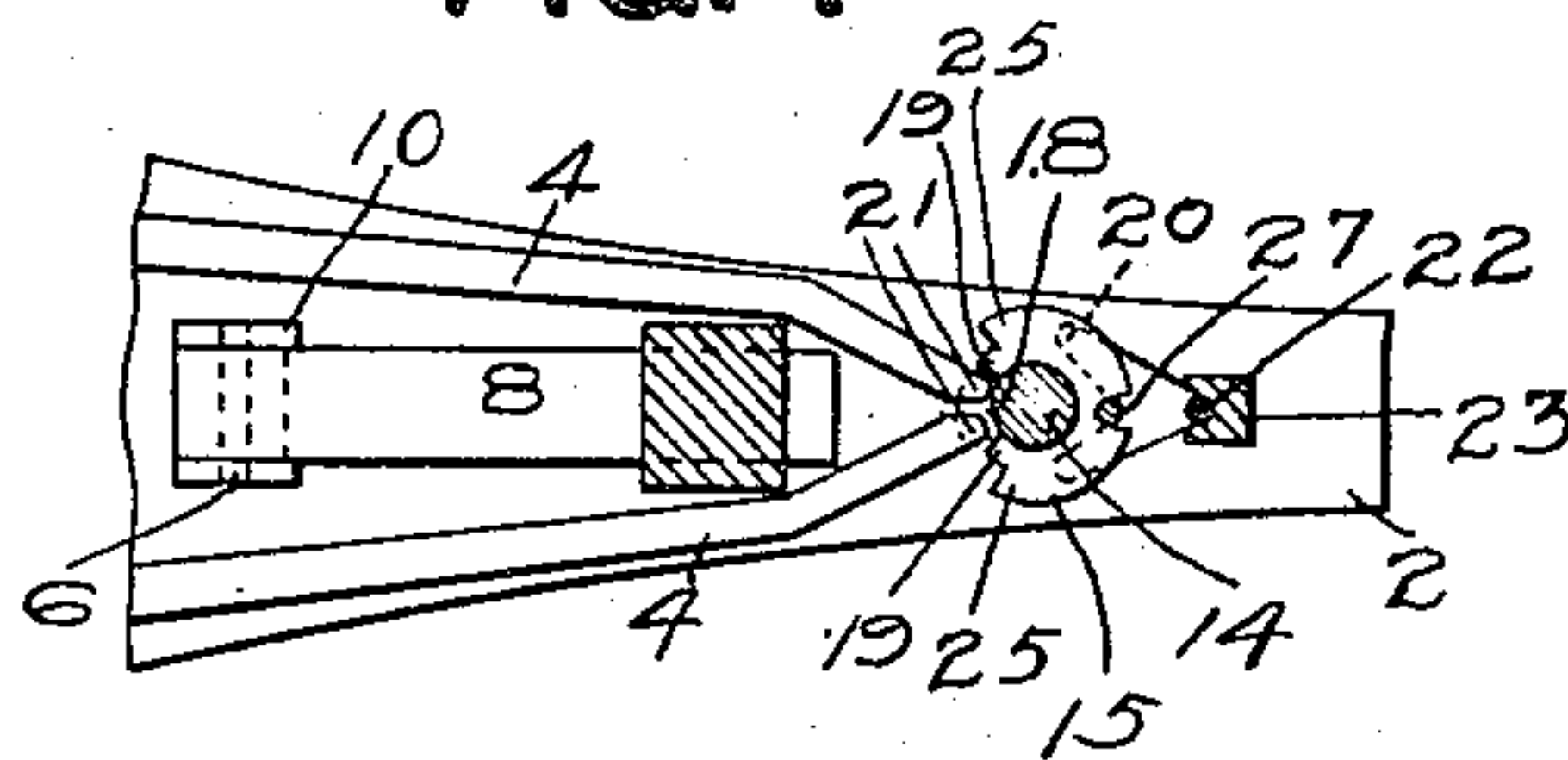


FIG. 5

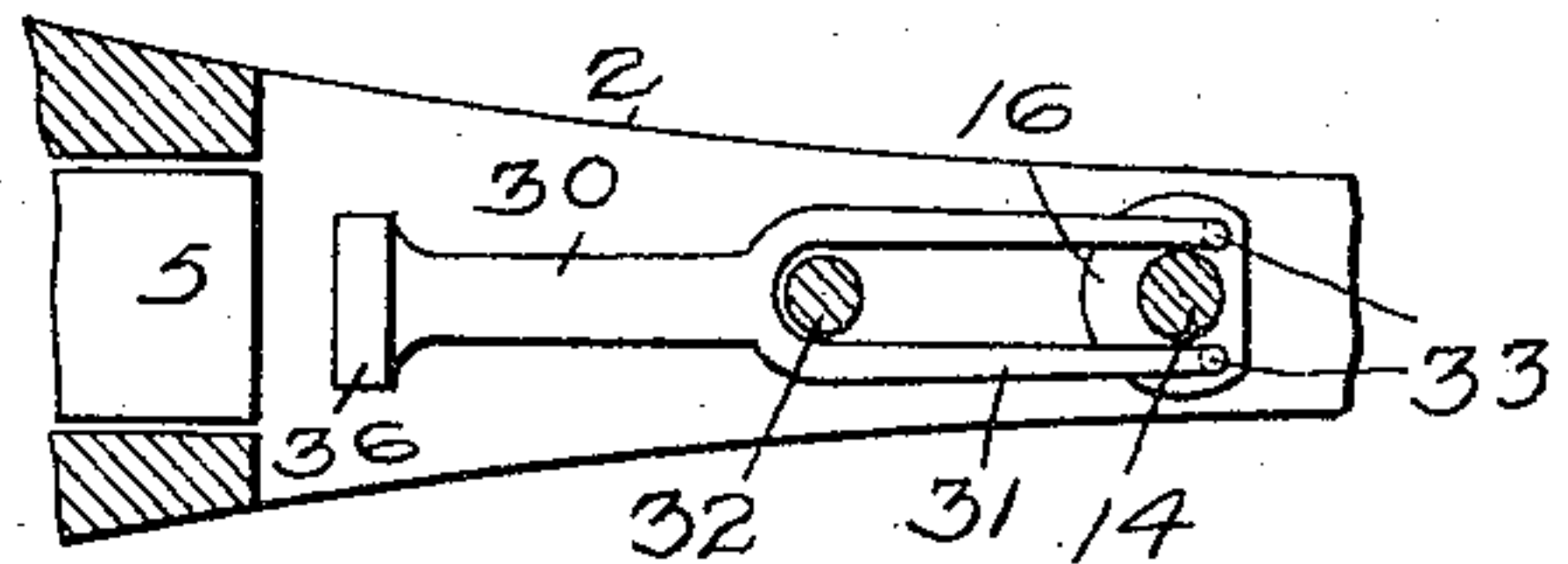


FIG. 6

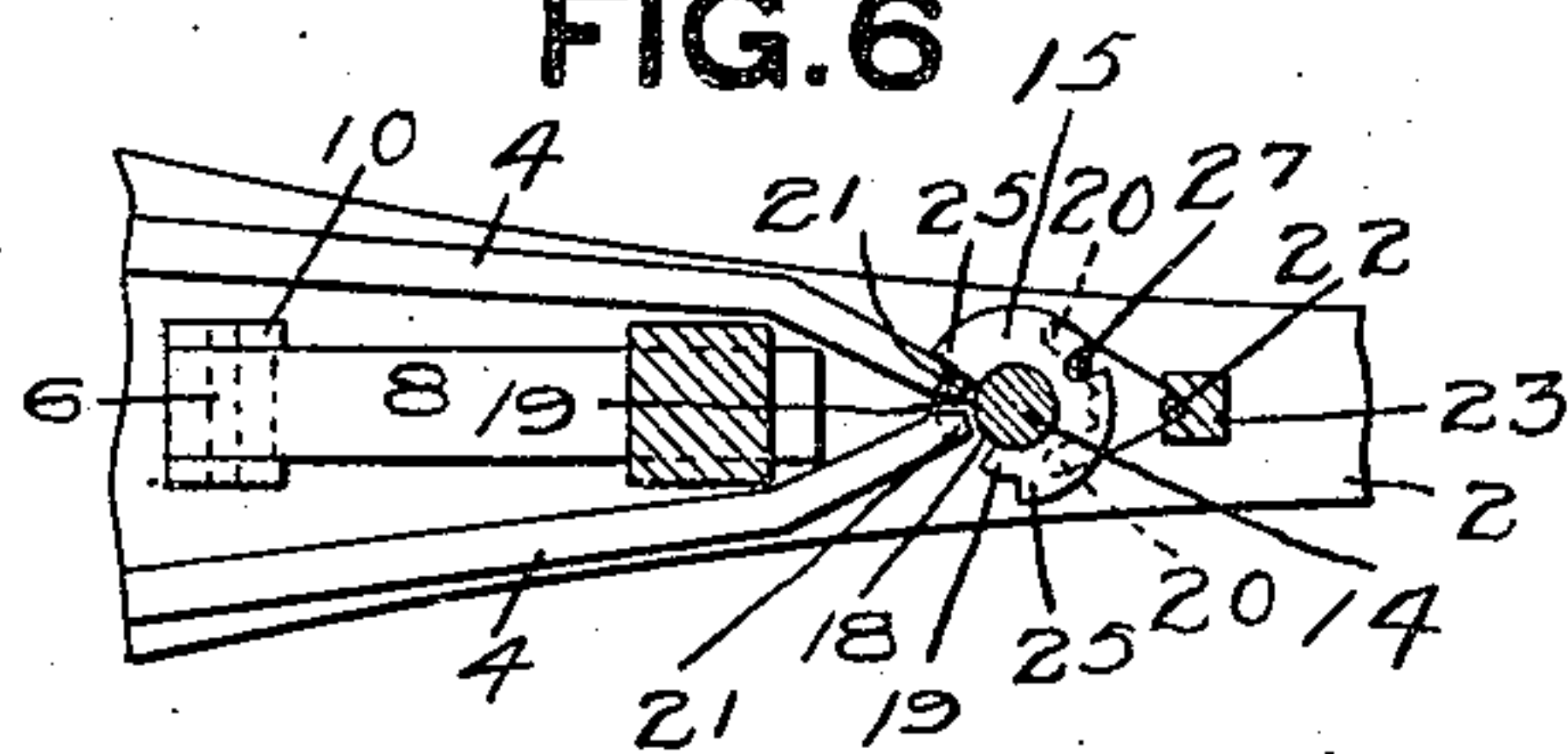


FIG. 7

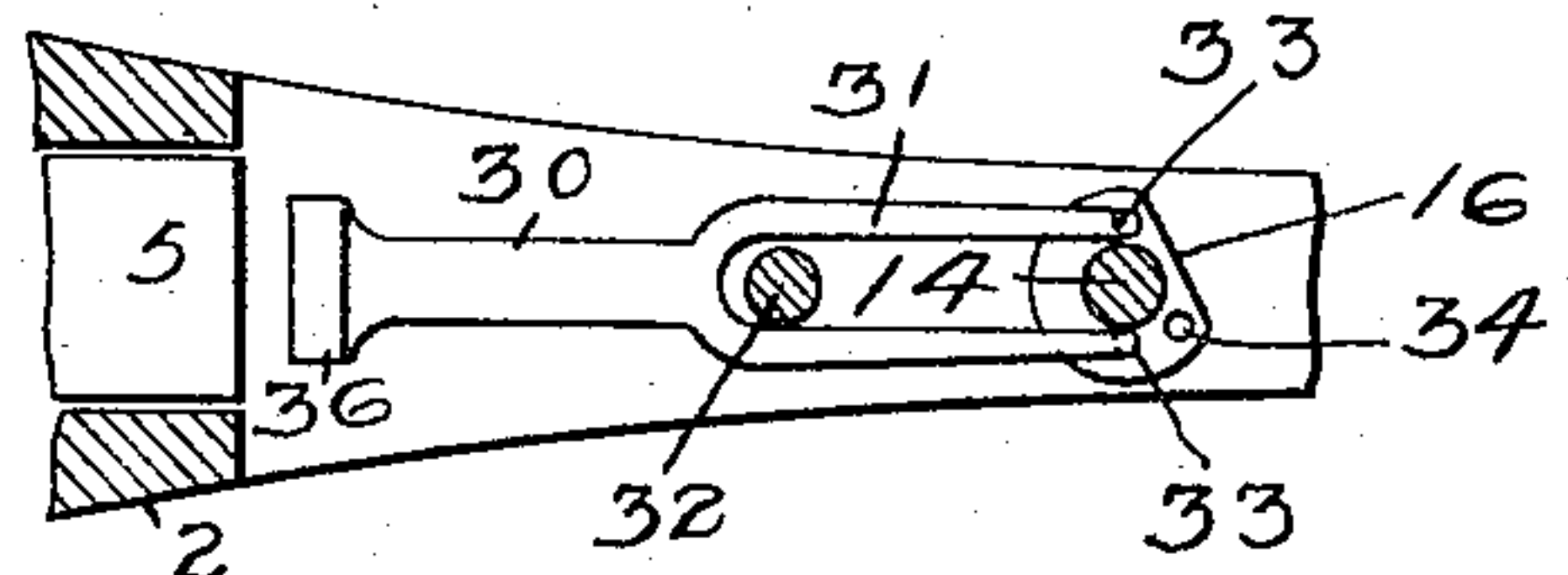


FIG. 8

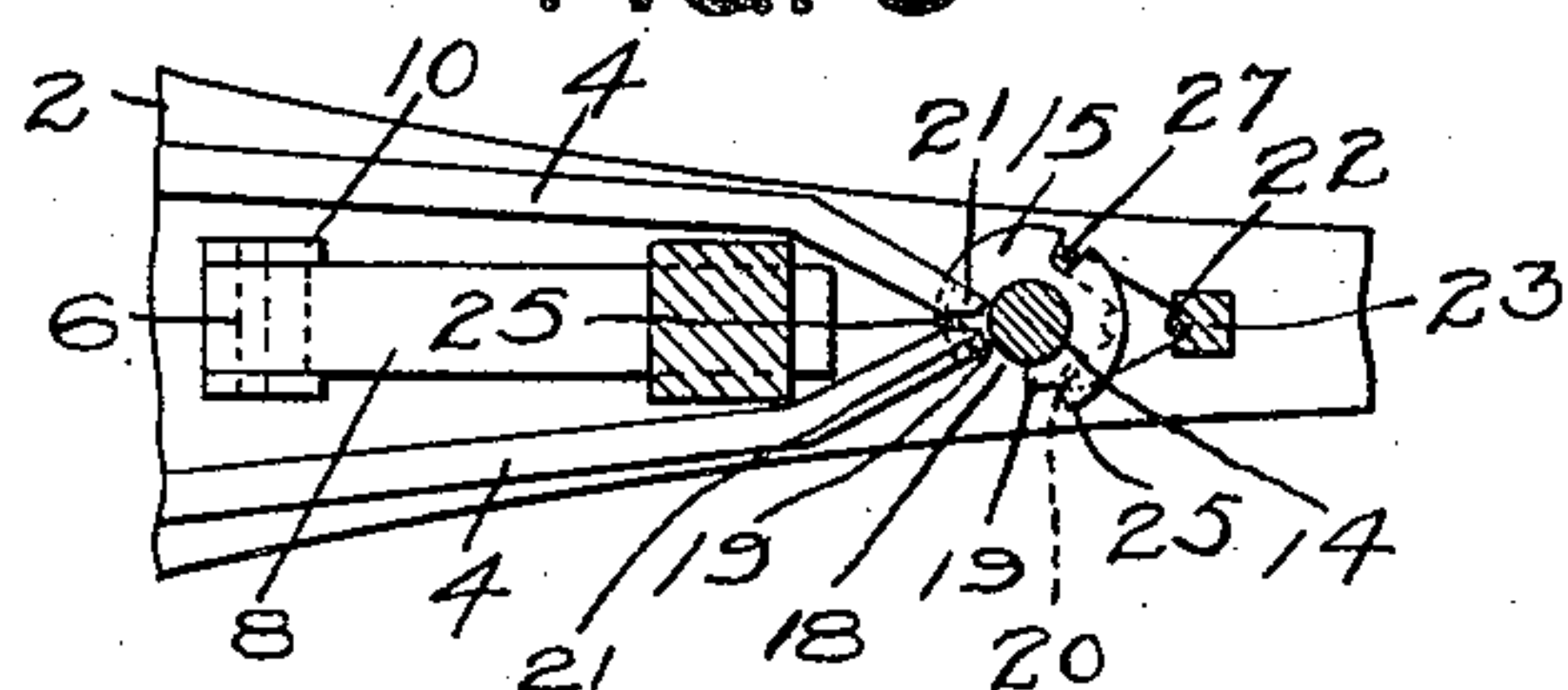


FIG. 9

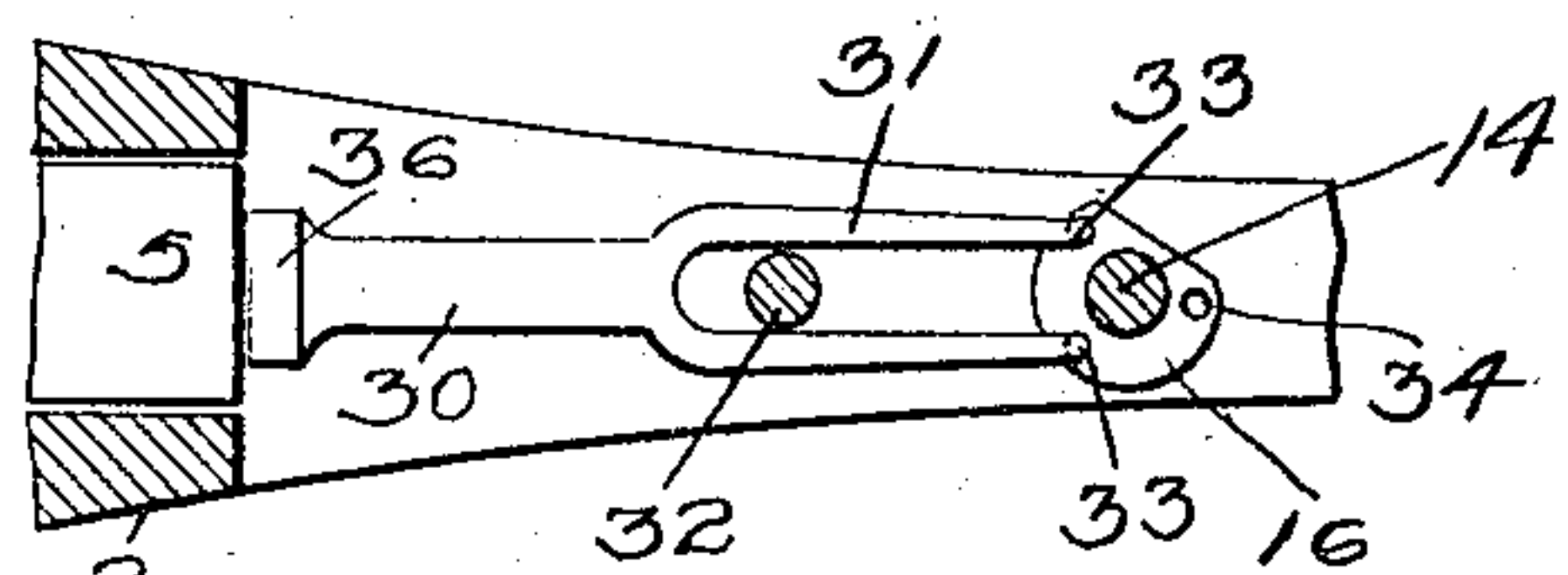


FIG. 10

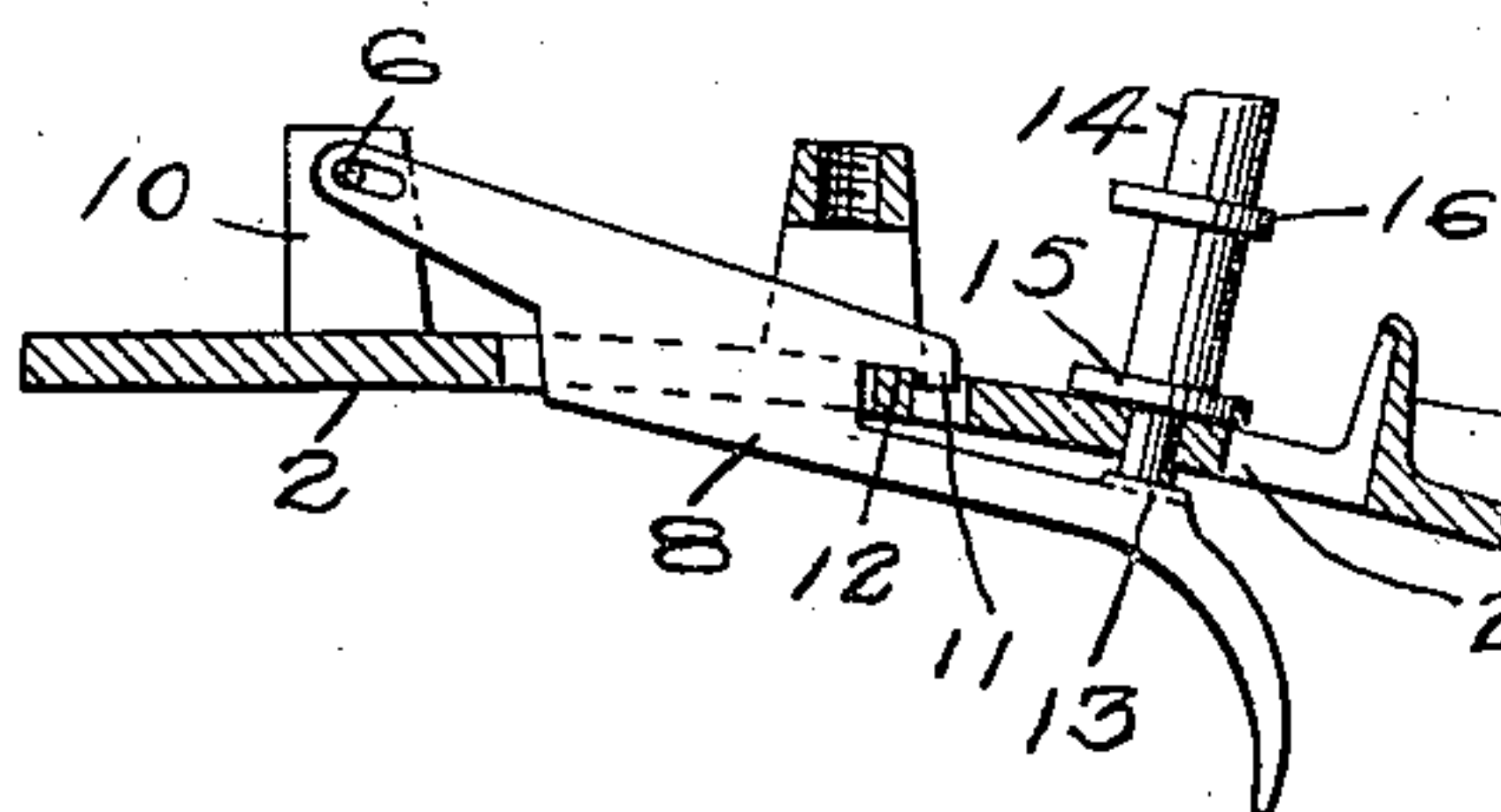


FIG. 11

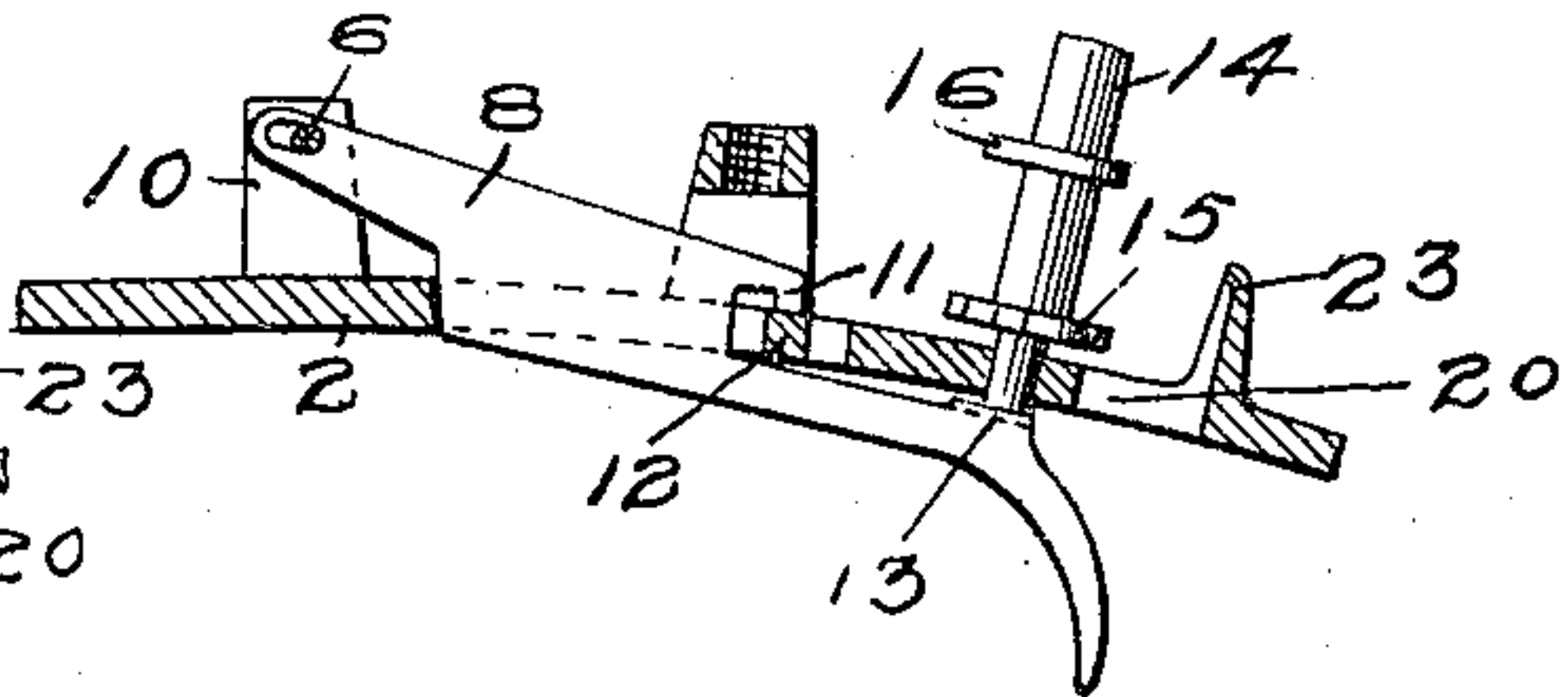


FIG. 12

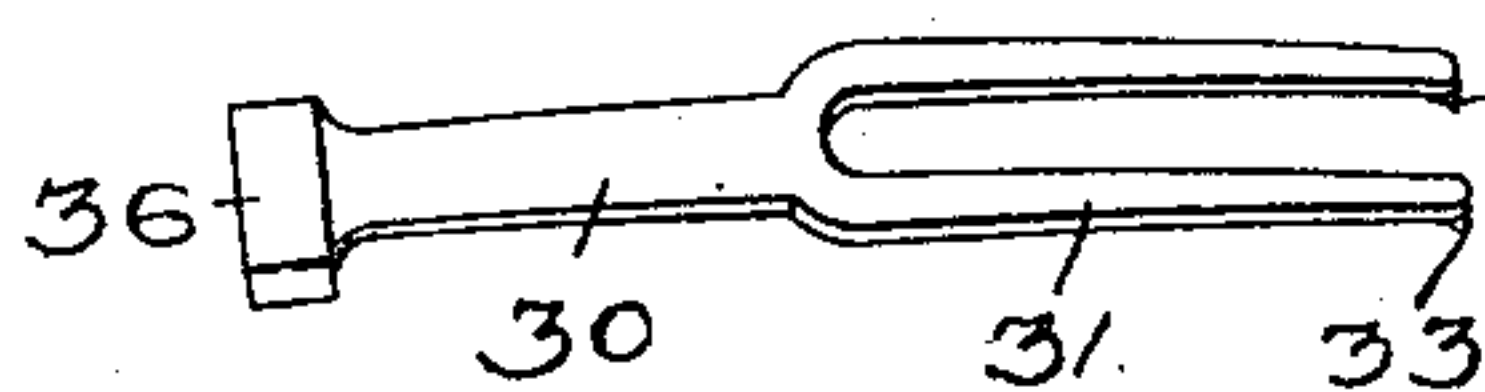
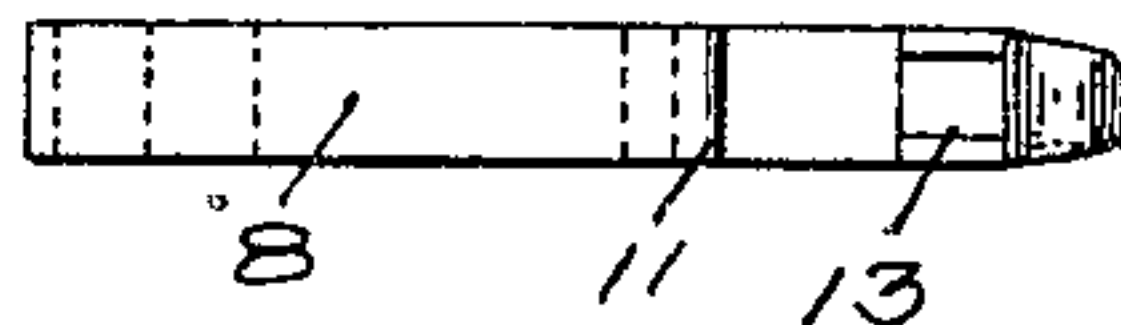


FIG. 13



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SINGLE-TRIGGER MECHANISM FOR GUNS.

No. 894,451.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed May 28, 1907. Serial No. 376,122.

To all whom it may concern:

Be it known that I, ROSS F. MACMICHAEL, a citizen of the United States, residing at Ben Avon, Allegheny county, and State of Pennsylvania, have invented a certain new and useful Single-Trigger Mechanism for Guns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a vertical longitudinal sectional view of a gun lock illustrating my invention, the lock being set at safety; Fig. 2 is a like view showing the parts in position immediately after the right barrel of the gun has been fired; Fig. 3 is a like view showing the parts in position to fire the left barrel of the gun; Figs. 4 and 5 are plan views partly in section showing the position of the firing collar and the retracting arm and collar respectively when the lock is set at safety; Figs. 6 and 7 are like views showing the position of the firing collar and the retracting arm and collar respectively when the lock is in position to fire the right barrel; Figs. 8 and 9 are like views showing the position of the firing collar and the retracting arm and collar respectively, when the lock is in position to fire the left barrel; Fig. 10 is a vertical sectional view showing a side elevation of the trigger and a portion of the firing shaft in the position previous to firing; Fig. 11 is a like view of the same parts in the position they assume after the recoil caused by firing one of the barrels; Fig. 12 is a perspective view of the retracting arm; and Fig. 13 is a plan view of the trigger.

Like symbols of reference indicate like parts wherever they occur.

Heretofore in "one-trigger" guns, difficulty has been experienced to a greater or less degree, from balking and doubling, to overcome which, various mechanisms have been devised, all of which, however, are more or less inefficient, are complicated, require the joint action of intricate parts, and depend either on a time element or on the aid of the trigger finger of the user of the gun. Balking is the failure of the mechanism to respond and fire the second barrel when the trigger is pulled, and doubling is the firing of both barrels simultaneously, or in quick succession, contrary to the volition of the user of the gun.

The object of my invention is to provide simple, durable, and efficient firing mechan-

ism for a one-trigger gun; and to this end it consists in a firing device which acts positively and without any danger of balking, and, to prevent doubling, blocks itself automatically and efficiently and without the intervention of a time element.

I will now describe my invention so that others skilled in the art to which it appertains, may manufacture and use the same.

In the drawing 2 represents the frame of the gun, 3 one of the tumblers, 4 the two sears, 5 the locking bolt, 7 the mainspring, 8 the trigger, and 9 the trigger guard. The trigger 8 is pivoted by means of a slot and pin 6 to the post 10 and it is provided with the stop-lug 11, adapted to be thrown on the rest 12 of the frame 2, and also with the bearing face and slot 13 adapted to bear against the firing shaft 14. This firing shaft 14 is so journaled in the frame 2 of the gun that it is capable of a rotatory movement on its axis and also capable of a vertically reciprocatory movement. Formed on the shaft 14 is the firing collar 15 and the retracting collar 16. The upper end of the shaft 14 extends to the outside of the top of the gun frame 2, where it is provided with a thumb safety lug 17, by means of which the shaft 14 may be partially rotated on its axis in either direction to bring a firing face or lug 19 of the firing collar 15 under either of the sears of the gun. The shaft 14 also extends below the gun frame 2, to enable a reciprocatory movement to be imparted to the shaft by the trigger 8; and thereby cause a firing face or lug 19 of the firing collar to come in contact with and lift one of the sears of the gun for the purpose of firing one of the barrels of the same. This firing collar 15, which may be an integral part of the shaft 14, is cut away at its forward edge, as at 18, to permit the passage of the collar in its reciprocatory movement without any engagement thereof with either of the sears 4. On each side of this cut away portion are the firing faces or lugs 19, one of which, when the shaft 14 is turned sufficiently on its axis, comes first under the shoulder 21 on the end of one of the sears, and by a further partial turn of the shaft 14, after the first sear is elevated out of the way, comes under a like shoulder on the end of the other sear. The shaft 14 may be turned by the thumb safety lug 17 in either direction to bring the firing face or lug 19 under either of the sears.

For the purpose of automatically moving the firing faces or lugs 19 beneath the sear of the other barrel after the first barrel has been fired, a spring 22 is situated in rear of the shaft 14, one end of the spring bearing against a post 23 of the frame 2 and the other end having a shoulder 27 engaging with the firing collar 15 in a notch at 24 in the rear face of the firing collar. When the notch is in its normal position directly in rear of the shaft 14 and the cut away portion of the collar 15 is beneath the sears, the spring 22 can exert its force to move the collar 15 and shaft 14 in only one direction, that is, downwardly. But, when, by means of the thumb safety lug 17, the firing shaft 14 and collar 15 are turned in either direction, to bring the firing lug 19 within the notch under the shoulder 21 of the sears 4, (the shoulder 25, on the periphery of the collar 15 coming in contact with the side of the sear acting as a stop), the force of the spring 22 is exerted on a line outside of the axis of the shaft 14; and, when the trigger 8 has been caused to press the shaft 14 upwardly and thereby raises the rear end of one of the sears, the force of the spring 22 moves the collar 15 on the axis of the bolt 14, carrying the firing face or lug 19 beyond the first sear and under the shoulder 21 of the second sear, the shoulder 25 of the firing collar at the same time coming in contact with the side of the second sear stopping the further movement of the collar 15 under the force of the spring 22 and holding the firing face or lug 19 under the shoulder 21 in position to elevate the rear end of the second sear and fire the second barrel. The further movement of the free arm of the spring 22 and the firing collar 15 are also stopped at this point by reason of the lower end of this arm of the spring reaching the limit of the slot formed in the frame 2, at 20, into which slot, the free end of the spring arm projects.

For the purpose of retracting the firing collar 15 to its normal or safety position after one or both of the barrels have been fired, I employ a forked retracting arm 30, which is shown in perspective in Fig. 12. The forked arms 31 of this arm 30 embrace the frame bolt 32, and the claws 33 on the ends of the arms 31 either bear on the collar 16 or enter the openings in the collar at 34. These claws 33 are square on their rear face and beveled on their forward face in such a manner that the forward movement of one of the holes in the collar will move the arm 30 forward, the square face of the claw engaging in the hole, and a rear movement of one of the holes in the collar will cause a disengagement of the claw engaging therewith, the claw riding out of the hole on its inclined surface and slipping on the collar. It also follows from this construction that a rearward movement of the arm 30 will cause the claw engaged in one of these holes in the col-

lar 16 to move the collar on the axis of the shaft 14. The forward end of the arm 30 is provided with a head 36 which comes within the travel of the rearward movement of the locking bolt 5 after one or both of the barrels have been fired. The arm 30 is formed of spring steel and slightly bowed upwardly to bear against the depending block 35, while the forward end of the arm rests on the trigger post 10. The arm 31 therefore exerts a slight spring force downwardly on the collar 16, sufficient to cause the claws 33 to enter the holes in the collar 16 whenever the claws register therewith. In order to prevent any movement of the shaft 14 laterally away from the trigger 8, the upper face of the trigger is grooved, as shown at 13 in Fig. 13, the lower end of the shaft 14 fitting in the groove and being held therein by the force of the spring 22. The bearing against the downward movement of the shaft 14 may be formed by the trigger instead of by the collar 15, the purpose of this construction being to lessen the friction and to center the trigger in the frame 2.

The operation is as follows: The lock is shown at safety in Figs. 1 and 4 and 5, no portion of the firing collar 15 being beneath either of the sears 4, so that the trigger 8 may be pulled and the shaft 14 lifted without any danger of tripping either sear. To fire the right hand barrel, the thumb safety lug 17 is turned toward the right as far as it will go. This brings the firing lug 19 under the shoulder 21 of the right hand sear 4 and the stop shoulder 25 of the collar 15 coming in contact with the side of the sear stops the further movement of the thumb safety lug 17 and of the shaft 14. By pulling on the trigger 8 the shaft 14 and the lug 19 are raised sufficiently to lift the rear end of the sear of the right hand barrel thereby releasing the tumbler and firing the gun; the parts being then in the position shown in Figs. 2 and 6 and 7.

When the gun is fired at the instant of firing the first barrel, the recoil drives the gun back against the shoulder and, if the charge is very heavy, or if the gun is not held firmly, this will cause the firing finger to leave the trigger 8. The muscles being tense, the finger immediately strikes the trigger again and, if this action is not provided for, it will act as a second pull and discharge the remaining barrel. In the apparatus herein shown and described, if the finger leaves the trigger during the recoil, the trigger, by its own inertia moves forward until the stop lug 11 rides on the rest 12, the pivotal pin 6 traveling in the slot of the trigger. This forward movement of the trigger blocks the action of the shaft 14, until the finger returns to place again on the trigger, and the trigger is intentionally released. This action is entirely automatic, absolutely efficient to block the firing shaft

and prevent doubling, and it is extremely rapid, the shooter not being aware that any movement has taken place. As soon as the shaft 14 is released, it drops under the force of the spring 22, releases the shoulder 25 of the firing collar 15 from contact with the side of the sear of the first barrel and permits the lateral force of the spring 22 to carry the firing lug 19 of the collar 15 under the shoulder 21 of the sear of the second or left hand barrel. By a second pull on the trigger 8, the rear end of this sear is elevated and the gun is fired in the manner already described in connection with the firing of the first barrel. To retract the firing lug 19 the gun is broken in the usual manner and, as the locking bolt 5 moves rearwardly under this breaking of the gun, it strikes the head 36 of the retracting arm 30, pushing the arm back and, as either one of the claws 33 is in its hole in the collar 16, according as to whether the right or left hand barrel is fired first, the collar 16 and the shaft 14 are given a partial rotation, which brings the parts back to the normal safety position shown in Figs. 1, 4, and 5 of the drawings.

I have shown my invention embodied in mechanism adapted to use in connection with the lock mechanism of a gun of standard manufacture. The skilled mechanic will find no difficulty in applying my invention to the lock mechanism of guns of other makes.

It will be apparent to those skilled in the art that many changes may be made without departing from my invention.

The advantages of my invention are found not only in the rapidity and efficiency of the action of the parts when the gun is in the hands of the shooter but also in its simplicity and durability and in the minimum number of parts to be employed in the manufacture of the same. These parts are also of such construction and combination with each other that all lost motion is eliminated as well as delicate parts which are apt to become out of order or inoperative owing to rust, dirt, or gumming of lubricating oil. In addition to this a time element is dispensed with, as well as the use of unnecessary and complicated parts.

It will be noted that the number of moving parts in the mechanism employed by me, are the exact equal to the number of elementary independent movements required in the operation of the mechanism.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a gun-lock, the combination of a plurality of sears, a firing device having firing faces either of which is adapted to be brought initially within reach of one sear, means for automatically bringing the same face within reach of another sear, a trigger adapted to engage with the firing device, and a retract-

ing device adapted to bring the firing device back to its normal and safety position.

2. In a gun-lock, the combination of a plurality of sears, a firing shaft having engaging means adjacent to a safety notch, a device for throwing said engaging means within reach of either sear, means for automatically bringing said engaging means within reach of the other sear, a trigger adapted to engage with the firing device, and a retracting device adapted to bring the firing device to its safety position.

3. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces separated from each other by a safety notch, a thumb device for throwing one of the firing faces into reach of one of the sears, and a pressure device for automatically bringing the firing face from within reach of one sear to within reach of the next adjacent sear as the first barrel is fired.

4. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces either of which is adapted to engage initially with one sear and successively with the other sear, a device for imparting a rotatory movement to the shaft, and a device for retracting the firing shaft.

5. In a gun-lock, the combination of a plurality of sears, a firing shaft having faces each of which is adapted to engage initially with one sear and successively with the other sear, a pressure device adapted to impart a rotatory movement to the shaft in the direction of from one sear to the other, a stop adapted to hold the engaging face of the shaft within reach of the first sear until the first barrel of the gun is fired, and to release the firing shaft and permit the passage of the engaging face to within reach of the second sear.

6. In a gun-lock, the combination of a plurality of sears, a firing shaft having faces either of which is adapted to engage initially with one sear and successively with the other sear, a pressure device adapted to impart a rotatory movement to the shaft in the direction of from one sear to the other, and a retracting device situated in the path of the locking bolt and adapted to impart a reverse rotatory movement to the firing shaft.

7. In a gun-lock, the combination of a plurality of sears, a shaft having firing faces and a safety notch, a thumb safety lug adapted to throw either firing face from safety to within reach of one of the sears, a spring adapted to impart a rotatory movement to the firing shaft and automatically carry a firing face from one sear to the other as soon as the first sear is operated by the firing face, a trigger for operating the firing shaft, and a retracting device situated in the path of the locking bolt and adapted to impart a reverse rotatory movement to the firing shaft.

8. In a gun-lock, the combination of a plurality of sears, a shaft having firing faces and

a safety notch, a thumb safety lug adapted to throw either firing face from safety to within reach of one of the sears, a spring adapted to impart a rotatory movement to the firing shaft and automatically carry a firing face from one sear to the other as soon as the first sear is operated by the firing face, a trigger for operating the firing shaft, and a retracting arm situated in the path of the locking bolt and having one or more claws adapted to engage with the firing shaft when the retracting arm is moved in one direction and to slip when the firing shaft is rotated in a reverse direction.

9. In a gun-lock, the combination of a plurality of sears, a firing shaft having faces each of which is adapted to engage one sear and successively with the other sear, a device for imparting a rotatory movement to the shaft, and a device adapted to slip on its connection with the firing shaft as the firing shaft rotates forwardly and to engage with the firing shaft and impart a reverse movement thereto when the gun is broken.

10. In a gun-lock, the combination of a plurality of sears, a firing shaft having faces each of which is adapted to engage with one sear and successively with the other sear, devices adapted to impart a rotatory movement to the shaft in the direction from one sear to the other and a downward movement to the shaft, a trigger, a pin and slot pivot, a bearing face on the trigger and a rest for the support of the bearing face.

11. In a gun-lock, the combination of a plurality of sears, a firing shaft having a firing face, devices for bringing the firing face from one sear to the other, a trigger slidingly fitted in the frame of the lock, and a stop for stopping the release movement of the trigger under the recoil of the gun.

12. In a gun-lock, the combination of a plurality of sears, a firing shaft having a firing face, a trigger loosely pivoted in the frame and adapted to raise the firing shaft to engage with the sears and to permit the firing shaft to fall and be released, a device for imparting a rotatory movement to the firing shaft to carry the firing face from one sear to the other, and a stop for engaging with the trigger under the recoil to hold the same in raised position and prevent the firing shaft from engaging the second sear until the recoil and rebound is past.

13. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces and an intermediate safety notch adapted to span both sears in safety position, a thumb safety lug, and a spring engaging with the firing shaft at a point outside the axis of the shaft to impart a rotatory movement to

the shaft in either direction when out of normal safety position.

14. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces, means for initially rotating the shaft in either direction, and a spring engaging with the firing shaft at a point outside the axis of the shaft to impart a rotatory movement to the firing shaft in the same direction as the initial movement, and engaging with the lock frame to impart a downward pressure on the firing shaft.

15. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces, means for initially rotating the firing shaft in either direction, a spring engaging with the firing shaft at a point outside the axis of the shaft to impart a rotatory movement to the firing shaft in the direction of the initial movement, and a stop adapted to limit the rotatory movement of the shaft under the pressure of the spring.

16. In a gun-lock, the combination of a plurality of sears, a firing shaft, means for initially rotating the shaft in either direction, a pressure device for imparting a rotatory movement to the firing shaft in the same direction as the initial movement, and a spring retracting device having a slip and catch connection with the firing shaft.

17. In a gun-lock, the combination of a plurality of sears, a firing shaft having firing faces, means for initially rotating the shaft in either direction, a spring for imparting a rotatory movement to the shaft in the same direction as the initial movement, a trigger for raising the shaft to elevate a sear and fire the gun, and a retracting arm adapted to engage with the firing shaft and situated in the path of the locking bolt.

18. In a gun-lock, the combination of a plurality of sears, a firing device, mechanism for bringing the firing device from one sear to the other successively, and a trigger slidingly fitted in the frame of the gun and provided with a stop to engage the frame and prevent its return to normal position.

19. In a gun-lock, the combination of a plurality of sears, a firing device, mechanism for bringing the firing device from one sear to the other successively, and a trigger slidingly fitted in the frame of the gun and provided with means whereby it may be slid into an inoperative position by the recoil of the gun.

In testimony whereof, I have hereunto set my hand.

ROSS F. MacMICHAEL.

Witnesses:

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