No. 694,157. Patented Feb. 25, 1902.

T. C. JOHNSON.

AUTOMATIC FIREARM.

(Application filed Sept. 16, 1901.)

(No Model.) 2 Sheets—Sheet 1.

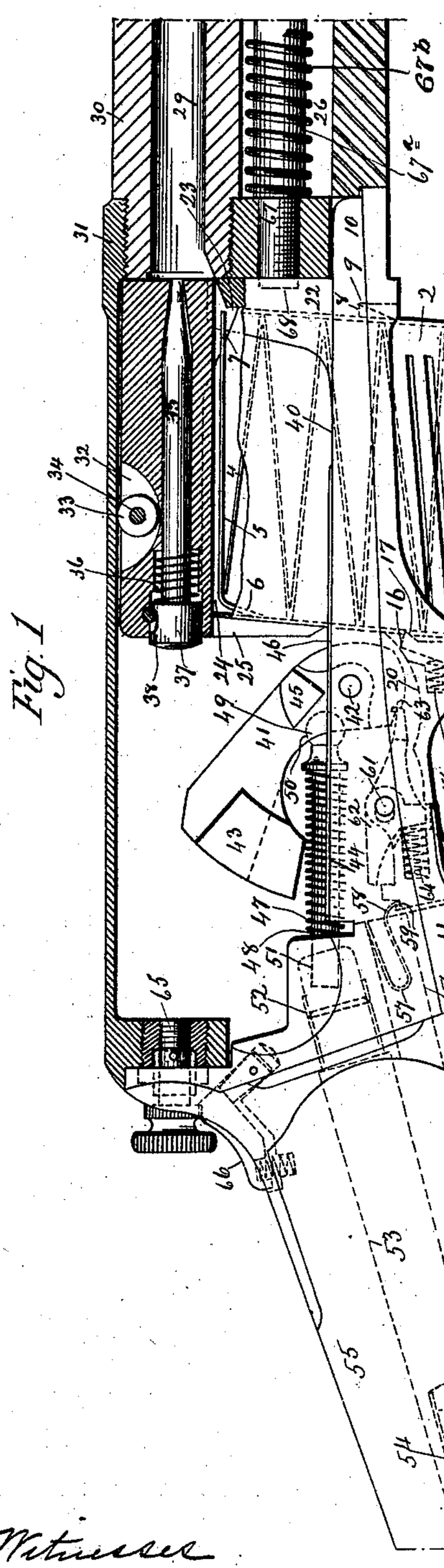

Fig. 1

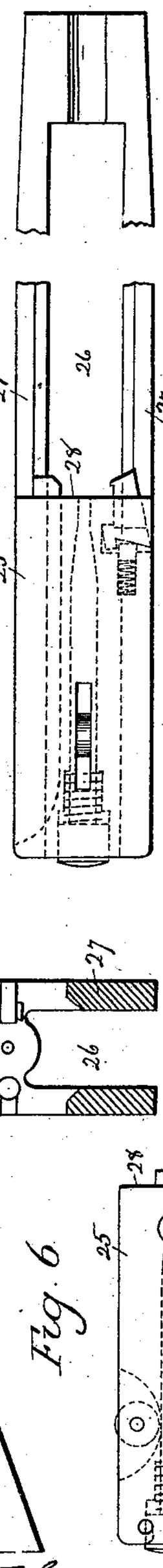

Fig. 5

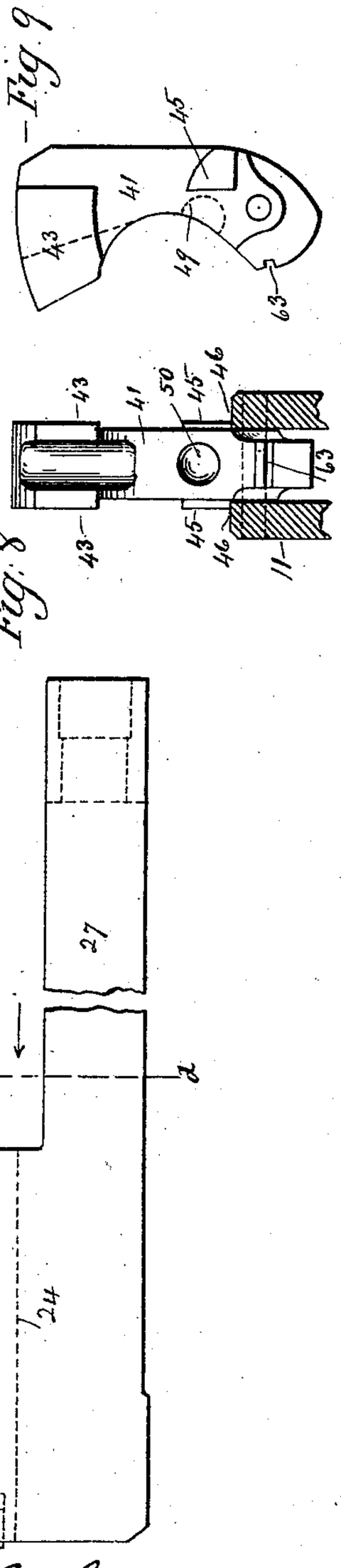

Fig. 8

Fig. 9

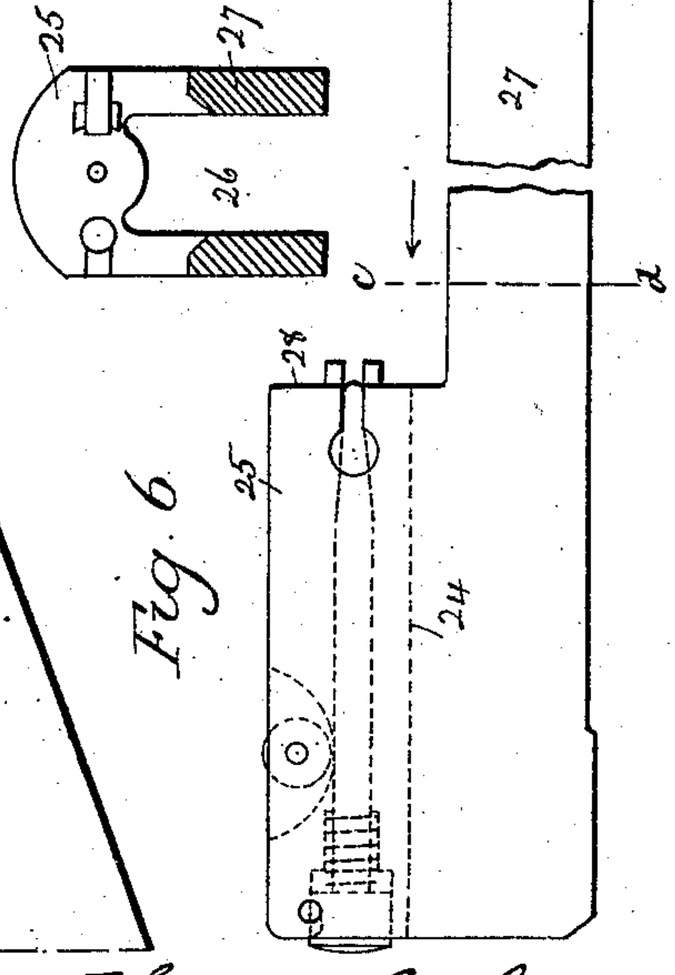

Fig. 7

Fig. 6

Witnesses
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(No Model.) 2 Sheets—Sheet 2.

Fig. 2

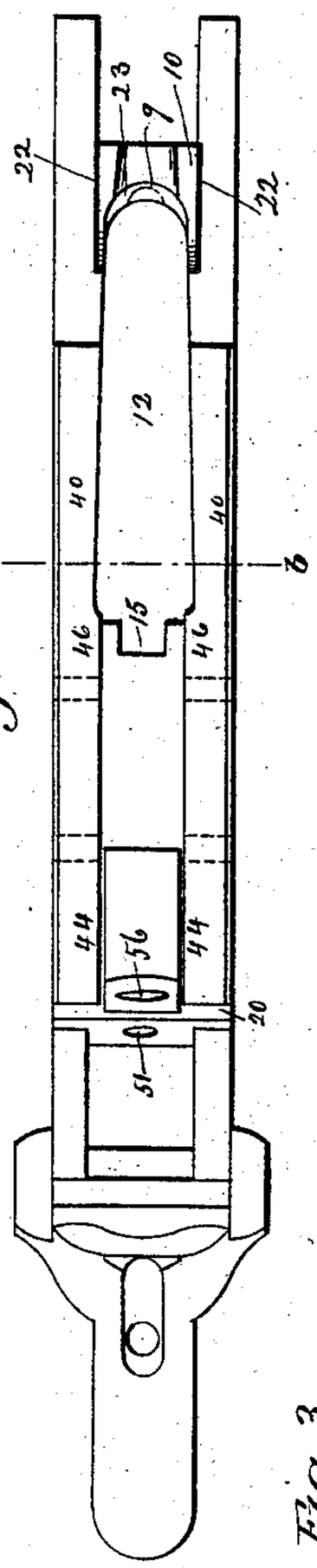


Fig. 10.

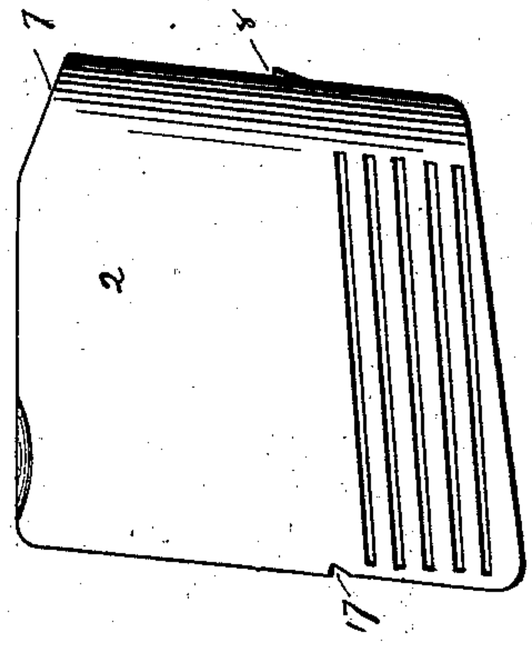


Fig. 12.

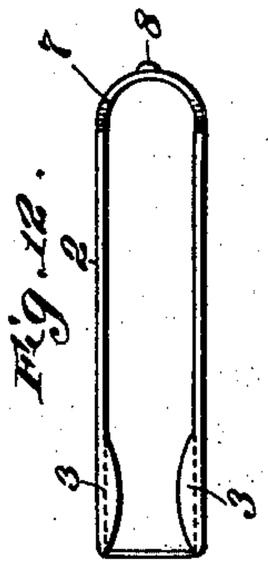


Fig. 11

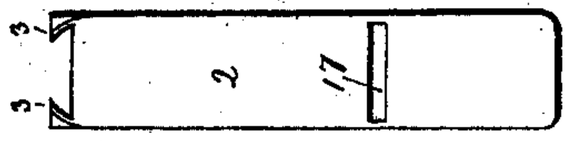


Fig. 4

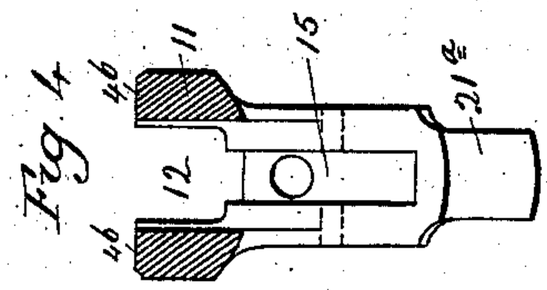
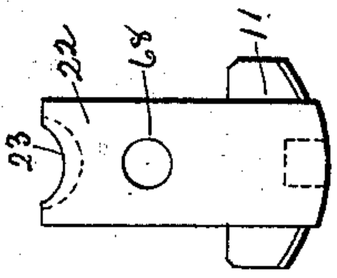


Fig. 3



Witnesses.
J. W. Shumway.
Clara L. Reed.

Thomas C. Johnson
Inventor.
By Attys Seymour & Earle

UNITED STATES PATENT OFFICE.

THOMAS C. JOHNSON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO WINCHESTER REPEATING ARMS CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

AUTOMATIC FIREARM.

SPECIFICATION forming part of Letters Patent No. 694,157, dated February 25, 1902.

Application filed September 16, 1901. Serial No. 75,452. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. JOHNSON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Automatic Firearm; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters 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, partly in side elevation and partly in vertical section, of an automatic firearm constructed in accordance with my invention; Fig. 2, a detached plan view of the lower tang of the arm; Fig. 3, a detached view in front elevation of the lower tang; Fig. 4, a detached view of the lower tang in cross-section on the line *a b* of Fig. 2; Fig. 5, a detached plan view of the bolt with its central portion broken away; Fig. 6, a corresponding view of the bolt in side elevation; Fig. 7, a view of the bolt in cross-section on the lines *c d* of Fig. 6 looking in the direction of the arrow *e;* Fig. 8, a view of the hammer in rear elevation, together with portions of the tang which are shown in cross-section; Fig. 9, a detached view in side elevation of the hammer; Fig. 10, a detached view in side elevation of the box-magazine; Fig. 11, a view thereof in rear elevation. Fig. 12 is a plan view thereof.

My invention relates to an improvement in that class of firearms in which the breech mechanism is automatically operated for reloading and recocking the arm by the firing of the same, the object of the invention being to produce a box-magazine arm of the character described constructed with particular reference to effectiveness, durability, convenience, and fewness of parts.

I may here state that my present invention may be considered as containing the application of the box-magazine principle to the automatic firearm of United States Patent No. 681,481, granted August 27, 1901, on my application filed April 26, 1901.

In carrying out my invention as herein shown I employ a sheet-metal box-magazine 2, having the upper edges of its side walls turned inward at their rear ends to form two cartridge-retaining lips 3 3, preventing the cartridges from being forced upward out of the magazine by the cartridge-feeding spring 4, located within the magazine and supporting the follower 5, the rear end of which is turned downward to form a guide-arm 6. The forward upper corner of the magazine is cut away to form a segmental clearance-opening 7 to permit the cartridges to be readily fed out of it. The forward wall of the magazine is formed with a stop 8, preferably struck forward out of the metal of the magazine and designed to engage with a stop-receiving notch 9, formed in the inner wall or face of the forward bridge or web 10 of the lower tang 11 of the arm, whereby the magazine is held against undue upward movement in the tang. For the reception of the said box-magazine the tang 11 is formed forward of its longitudinal center with a magazine-opening 12, corresponding in profile to the horizontal section of the magazine which fits within it, but not loosely enough to give it more play than is required for the easy introduction and removal of the magazine. The stop projection 8, before mentioned, limits the upward movement of the box-magazine in the opening 12. For preventing the magazine from dropping downward out of the arm after its introduction thereinto I employ a locking-dog 13, swinging upon a pivot 14, and located in a recess 15, formed in the tang 11, and leading out of the rear end of the said box-magazine opening 12. The nose 16, formed at the upper end of this dog, is designed to enter a notch 17, formed in the rear wall of the box-magazine, the nose being constantly urged to enter the said notch by means of a small spiral spring 18, located in a counterbore 19, formed in the rear bridge or web 20 of the tang 11. The lower end of the said dog 13 extends into a slot 21, formed for its reception in the forward wall of the trigger-guard 21^a, so that by moving the finger forward in the guard the dog 13 may be swung so as to release the magazine for its removal from the arm.

To prevent the magazine from tilting either forward or sidewise, I locate an upright post 22 upon the forward end of the tang 11 and provide a deep semicircular recess or groove

23 in the rear face of this post for the reception of the rounded forward end of the magazine, which is thus held against tilting or lateral swerving.

When the magazine is in position in the arm and secured in the manner above described in the lower tang 11 thereof, the upper portion of the magazine extends up into a clearance-space 24, formed in the lower face of the body 25 of the breech-block when the same is in its closed position. When, on the other hand, the breech-block is in its open position, the magazine extends up into the spring-space 26, formed between the two parallel arms 27 of the forward extension of the breech-block, which, as I may now explain, belongs to that class of breech-blocks which are not positively locked for the purpose of taking the shock of recoil, but which are made to contain a quantity of metal proportioned to the weight of the bullet and its velocity, so that the shock of the recoil will be absorbed by the aggregate mass of the breech-block, which, in a sense, therefore "balances" the recoil. For that reason I shall speak of the breech-block as a "balanced" breech-block to distinguish it from positively-locked breech-blocks. I shall also speak of the forward extension of the breech-block as its "balancing" extension. In the construction described it will be seen that at all times the breech-block, either as to its body portion or as to its balancing extension, fits over and embraces the upper portion of the box-magazine, which remains, of course, at rest, while the breech-block rides back and forth over it astride. The recoil-face 28 of the breech-block is brought into line with the uppermost cartridge in the box-magazine, so as to engage with the cartridge and force the same forward under the lips 3 3 of the magazine and into the chamber 29 of the barrel 30, the butt-end of which is secured into the forward end of the receiver 31 of the arm. The said body portion 25 of the breech-block is formed with a recess 32, receiving an antifriction-roller 33, mounted upon a pin 34 and engaging with the under face of the upper wall of the receiver 31, the top of which is in this case closed. The firing-pin 35, mounted in the breech-block, is provided with a spiral retracting-spring 36 and with a head 37, formed with a groove 38 for the reception of a stop-pin, which limits the endwise movement of the firing-pin. As the breech-block moves back and forth its lower edges ride upon the flat bearing-surfaces 40, formed by the upper edges of the two long sides of the tang 11.

The swinging hammer 41 is mounted upon a pin 42, the ends of which are supported in the sides of the tang. At its upper end the hammer is provided upon its opposite sides with two corresponding stop shoulders or projections 43. The rear edges of these stop-shoulders strike the bearing-surfaces of the tang at the points 44, Fig. 2, so as to limit the rearward and backward movement of the hammer under the sharp blow which it receives from the breech-block during the swift recoil excursion thereof. The said hammer is also provided near its lower end with two corresponding stop shoulders or projections 45, located upon its opposite sides in position for engagement of their lower edges with the flat bearing-surfaces of the tang 11 at about the points 46, Fig. 2, whereby the hammer is prevented from being thrown too far forward in case it should be released by pulling of the trigger when the arm is taken down.

The hammer-spring 47 is coiled around a rod 48, the forward end of which is formed with a ball 49, which is entered into a shallow socket 50, formed in the rear face of the hammer, thus establishing a ball-and-socket joint between the hammer and the rod. The rear end of the said rod is entered into a round hole 51, formed in the rear bridge or web 20 of the lower tang 11, the said hole 51 opening into a chamber 52, formed by boring out the tang for the reception of the tang-bolt 53, the rear end of which is threaded for the reception of the stock-bolt 54, which secures the stock 55 to the tang. Directly below the opening 51 I form in the tang a socket 56, receiving a flat sheet-metal U-shaped trigger-spring 57, the projecting longer lower limb of which is turned downward to form a hook 58, which enters a notch 59, formed in the trigger 60, which is hung upon a pin 61, which also forms a pivot for the sear 62, the forward end of which enters a notch 63, formed in the heel of the hammer. A sear-spring 64, located in the trigger, coacts with the sear; but the construction of the trigger and sear need not be detailed, as it is the same as the construction of the corresponding parts of the arm of my patented invention already referred to, the only difference being in the trigger-spring.

My improved gun is a take-down arm provided with a take-down screw 65, similar to that shown and described in my said prior patent, and also provided with a safety-dog 66, corresponding to that shown and described in my pending application, Serial No. 72,237, filed August 16, 1901.

The forward end of the lower tang 11 is coupled to the receiver 31 of the gun, whereby the said end of the tang is supported by means of a dowel-like rearward extension 67 of the guide-rod 67^a, which corresponds to a similar guide-rod shown and described in my said prior patent. The said dowel-like extension 67 enters a socket 68, formed to receive it in the front face of the post 22 of the lower tang 11. By thus forming the guide-rod 67^a with the rearward extension for supporting the forward end of the lower tang I reduce the number of parts in the gun. The said guide-rod 67^a is encircled by a coiled spring 67^b, which is employed to return the breech-block to its closed position, during which movement the said block pushes the cartridges out of the magazine and into the chamber of the gun-barrel. Although the mass

of the breech-block is designed to take the shock of recoil, it is of course true that some of the recoil is absorbed by this spring, which, in a sense, adds weight to the block.

It will be understood that in using my improved gun the box-magazine is removed and filled and then put back in place. It is to be noted that the taking down of the gun in no wise disturbs the box-magazine, so that the gun may be taken down for the purpose of transportation or cleaning or examination without disturbing its box-magazine.

It is apparent that in carrying out my invention the same changes may be made in the construction herein shown and described. I would therefore have it understood that I do not limit myself to the exact construction set forth, but hold myself at liberty to make such changes and alterations as fall within the scope and spirit of my invention.

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

1. In an automatic firearm, the combination with the lower tang thereof, the same having a box-magazine opening, of a removable box-magazine adapted to be passed upward into the said opening from which it is removed for being filled with cartridges, and a balanced breech-block adapted to stride the upper portion of the box-magazine so as to move back and forth over the same.

2. In an automatic firearm, the combination with the tang thereof, the same having a box-magazine opening, of a removable box-magazine passing upward into the said opening from which it is removed for being filled with cartridges, and a balanced breech-block adapted to stride the upper portion of the box-magazine so as to move back and forth over the same and formed with a rigid balancing extension into which the magazine extends when the block is in its open position.

3. In an automatic firearm, the combination with the lower tang thereof, the same having a box-magazine opening, of a removable box-magazine passed upward into the said opening from which it is removed for filling it with cartridges, a balanced breech-block adapted to stride the magazine for moving back and forth over the projecting upper portion thereof and a locking-dog mounted in the tang and engaging with the rear portion of the magazine for holding the same in place in the said opening in the tang.

4. In an automatic firearm, the combination with the tang thereof, the same having a box-magazine opening, of a box-magazine passed upward into the said opening, a balanced breech-block adapted to stride the projecting upper portion of the box-magazine over which it moves back and forth, and a guide-post located upon the forward end of the tang and receiving the forward, upper portion of the said box-magazine which it holds against tilting and lateral deflection.

5. In an automatic firearm, the combination with the lower tang thereof, the same being formed with a box-magazine opening, of a box-magazine adapted to be passed upward into the said opening, a stop for limiting the upward movement of the magazine in the said opening, a locking-dog located at the rear end of the magazine for holding the same in place against downward movement, a guide-post located upon the tang and coacting with the front end of the magazine, and a balanced breech-block having its lower portion adapted to clear the projecting upper portion of the magazine, which it strides, and over which it moves back and forth.

6. In an automatic firearm, the combination with the lower tang thereof, of a recoiling breech-block, and a swinging hammer mounted in the said tang and provided at its upper end with one or more stop shoulders or projections which engage with the tang and limit the rearward swinging movement of the hammer under the recoiling action of the breech-block.

7. In a take-down automatic firearm, the combination with the lower tang thereof, of a recoiling breech-block, and a hammer pivotally mounted in the said tang, and provided with one or more stop shoulders or projections adapted to engage with the tang for limiting the forward swinging movement of the hammer in case the same should be released when the gun is taken down.

8. In a take-down automatic firearm, the combination with the lower tang thereof, of a hammer pivotally mounted in the said tang and provided with one or more stop shoulders or projections for engaging with the tang to limit the rearward movement of the hammer, and with one or more stop shoulders or projections for engaging with the tang, for preventing an undue forward movement of the hammer in case the same is released by the pulling of the trigger when the gun is taken down.

9. In an automatic firearm, the combination with the tang thereof, the said tang having its rear transverse web or bridge formed with a hole, of a swinging hammer having a socket formed in its rear edge, a rod the forward end of which enters the said socket and the rear end of which passes through the said hole, and a hammer-spring encircling the said rod and impinging at its rear end against the forward face of the said bridge or web.

10. In an automatic firearm, the combination with the lower tang thereof, the same having a trigger-spring socket, of a flat, sheet-metal U-shaped trigger-spring, the lower leg of which is extended, forms a hook, and a trigger engaged by the said hook.

11. In an automatic firearm, the combination with the lower tang thereof, the same having its rear web or bridge formed with a hole, and with a trigger-spring socket located below the said hole, a hammer pivotally mounted in the said tang, a rod connected with the hammer at its forward end and at its rear

end entering the said hole in which it plays freely back and forth, a spiral hammer-spring encircling the said rod, a U-shaped trigger-spring entered into the said socket and formed with a projecting hook, and a trigger engaged by the said hook.

12. In a take-down automatic firearm, the combination with the tang and the receiver thereof, of a balanced breech-block, a guide-rod for the same projecting rearward through the forward end of the said receiver and constituting a take-down dowel, and a socket formed in the forward end of the tang and receiving the said dowel for supporting the forward end of the tang.

13. In an automatic firearm, the combination with the receiver and the tang thereof, the latter having a box-magazine opening, of a removable box-magazine passing upward into the said opening from which it is removed for being filled with cartridges, a breech-block formed with a large clearance-space for the reception of the upper end of the magazine over which it rides back and forth, and also formed with two rigid forwardly-extending arms having a space between them into which the magazine extends when the block is in its open position, and a rod fixed to the forward end of the receiver and supporting the said arms as they move back and forth with the said block.

14. In an automatic firearm, the combination with the receiver and the tang thereof, the latter having a box-magazine opening, of a box-magazine passing upward into the said opening from which it is removed for being filled with cartridges, a balanced breech-block formed with a large recess receiving the upper end of the magazine which rides back and forth over it and having two rigid forwardly-extending parallel arms constituting a balancing extension, a rod fixed in the forward end of the receiver and located between the said arms which move back and forth with respect to it and which are supported by it, and a spring located upon the said rod and located in the said space between the arms which space receives the upper end of the magazine when the breech-block is in its open position.

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

THOMAS C. JOHNSON.

Witnesses:
DANIEL H. VEADER,
G. W. ALLEN.