(No Model.)

3 Sheets—Sheet 1.

W. H. WHITNEY.

BREECH LOADING FIRE ARM.

No. 304,480. Patented Sept. 2, 1884.

Fig. 1.

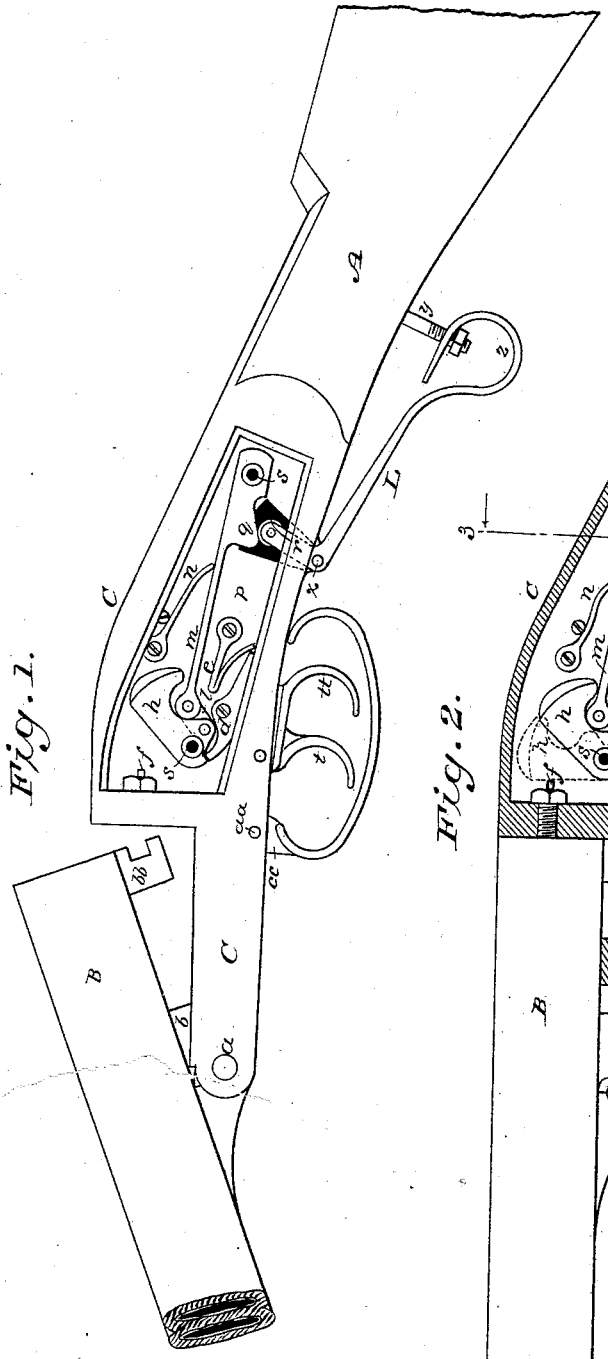

Fig. 2.

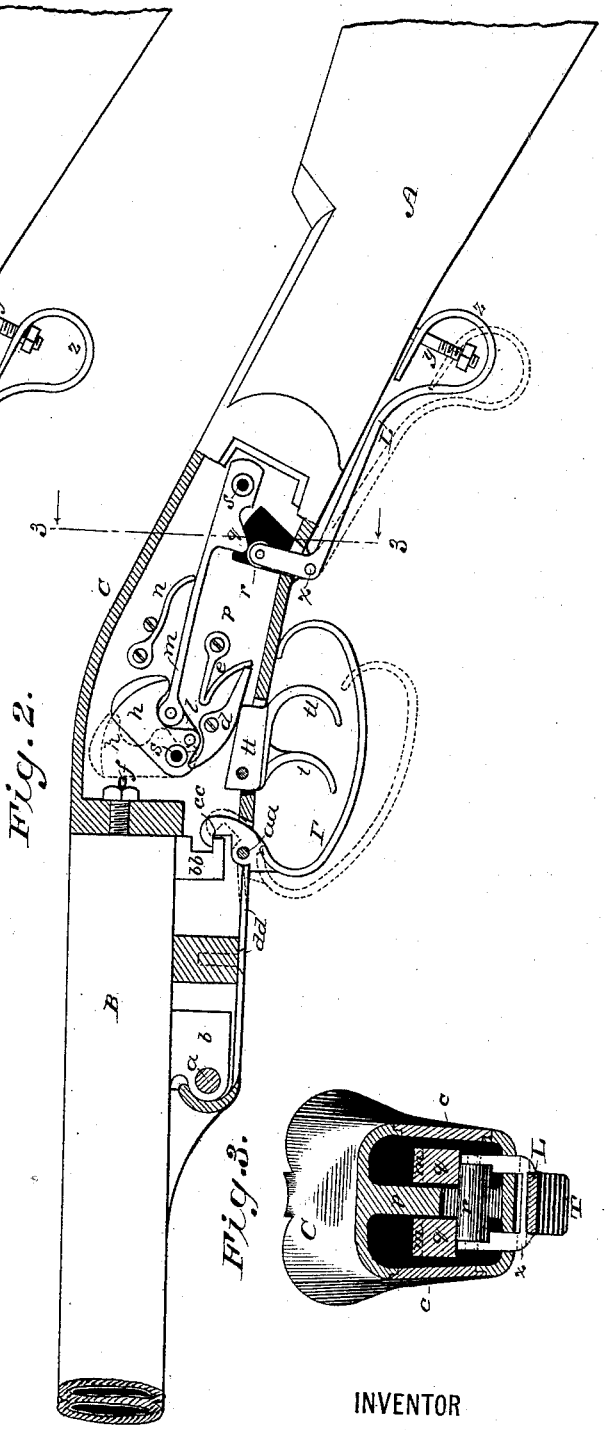

Fig. 3.

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Fig. 4.

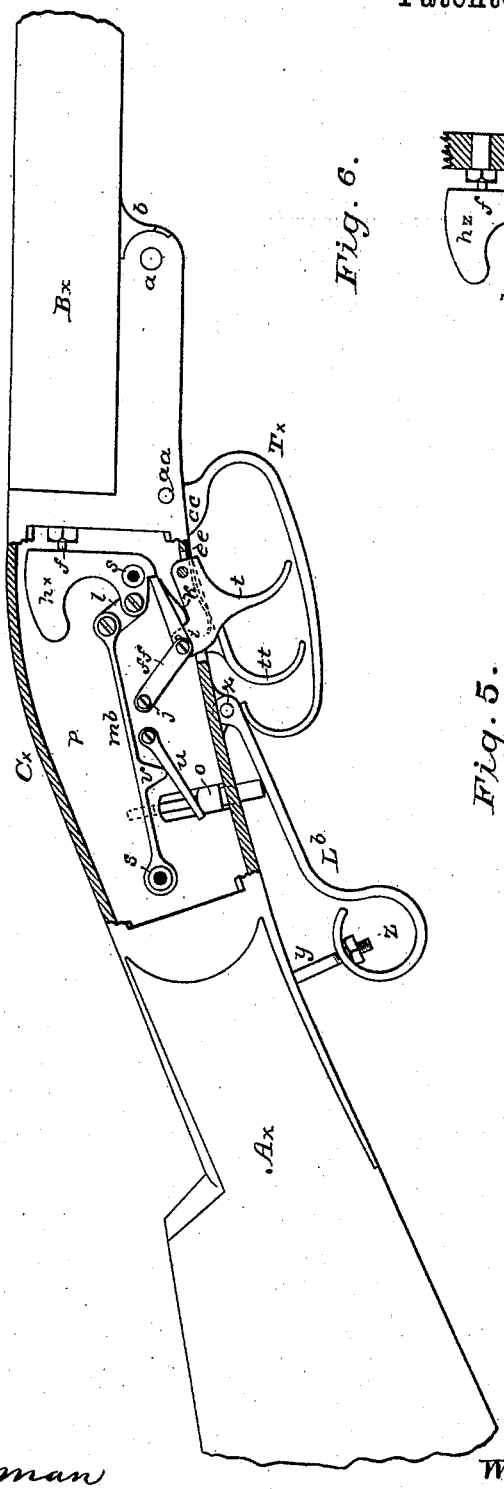

Fig. 6.

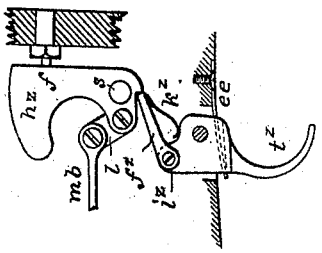

Fig. 5.

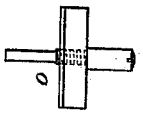

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Fig. 7.

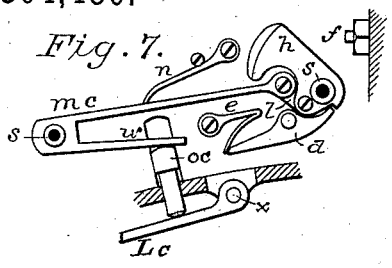


Fig. 8.

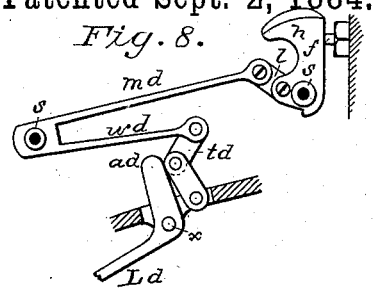


Fig. 9.

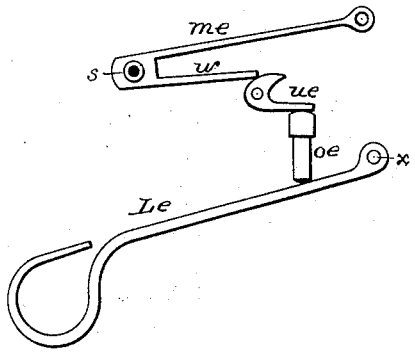


Fig. 10.

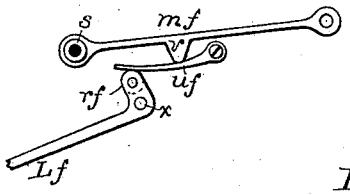


Fig. 11.

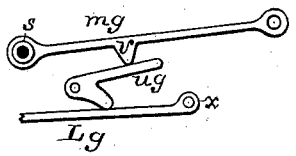
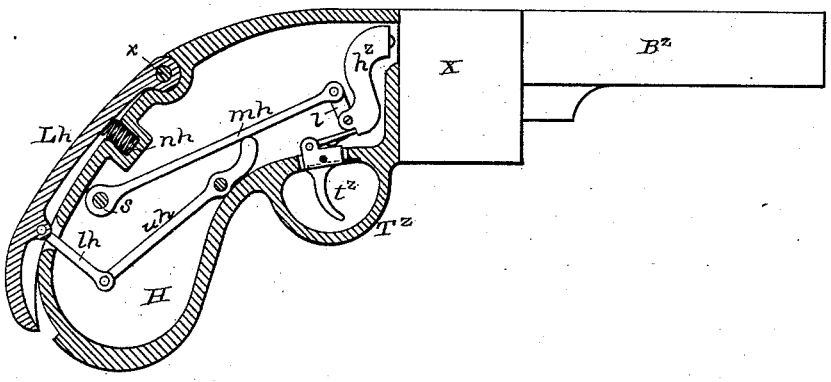


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM H. WHITNEY, OF EAST BROOKFIELD, MASSACHUSETTS.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 304,480, dated September 2, 1884.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WHITNEY, a citizen of the United States, residing at East Brookfield, in the State of Massachusetts, have invented a new and useful Improvement in Breech-Loading Fire-Arms, of which the following is a specification.

This invention consists in certain novel combinations and arrangements of parts, which have been embodied as a whole in a double-barreled breech-loading gun, but may in part be incorporated separately in other fire-arms, single-barreled as well as double-barreled, including revolvers or pistols.

The objects of the respective parts or divisions of the invention are as follows, viz: first, to render the piece secure against premature or accidental discharge, without unnecessary complication, by necessitating the application of external force to the mainspring in a deliberate and at the same time convenient manner, and a subsequent touch or operation of the trigger for each discharge, the hammer being inclosed or "concealed" and adapted to be cocked by other means, either preparatory to or in the act of firing, as may be preferred; secondly, to simultaneously apply the required force to two otherwise independent mainsprings in a double-barreled fire-arm; thirdly, to provide, by a novel combination of parts, for applying the requisite force to a pivoted mainspring with relatively little pressure on the external lever-piece through which the force is applied, and with provision for rendering said lever-piece "self-sustaining," or for retaining it in effective position by the mainspring itself; fourthly, to provide for cocking a concealed hammer, preparatory to firing, after each discharge, through the medium of a mainspring of the aforesaid description; and, fifthly, to provide by the same means for automatically setting said external lever-piece ready for its next effective movement.

Three sheets of drawings accompany this specification as part thereof. Figure 1 of these drawings is a side view of the lock portion of a double-barreled "hammerless" breech-loader in "loading" condition, with the lock-cap or cheek-plate removed from its near side. Fig. 2 is a sectional view of the same from the same side, showing the parts in full lines, "ready for firing," and in dotted lines in other positions. Fig. 3 represents a cross-section on the line 3 3, Fig. 2. Fig. 4 is a sectional side view of another double-barreled breech-loader, illustrating modifications. Fig. 5 represents a front or rear view of a part shown in Fig. 4. Fig. 6 is a sectional side view illustrating another arrangement for cocking from the trigger. Figs. 7 to 12, inclusive, are fragmentary side views of different combinations of parts, illustrating additional modifications in the means for applying force to the mainspring preparatory to firing.

In Figs. 1, 2, and 3, A represents the wooden stock, B the barrels, and C the metallic connecting part or body-casting, of said breech-loader, embodying all the several parts or divisions of this invention in a preferred way. A^x B^x C^x, Fig. 4, represent the corresponding parts of another double-barreled breech-loader; and, in Fig. 12, H represents the handle, X the cylinder, and B^z the barrel, of a revolver embodying the same invention in part. The firing and barrel-fastening devices are all either arranged within or attached to the body-casting C or C^x; and apart from these, the double-barreled breech-loader (represented by Figs. 1 to 3 and 5 and 6 of the drawings) may be of any approved make. The barrels B or B^x are in each case attached to the body-casting C or C^x, at the front extremity of the latter, by a transverse pivot-screw, *a*, passing through a lug, *b*, on the sole of the barrels. This provides in a customary manner for opening the breech by tilting the breech ends of the barrels upward, as illustrated by Fig. 1. For fastening them preparatory to firing, and for readily unfastening them, a second lug, *b b*, projects downward from the rear extremity of the barrels, and is notched in its rear surface. A matching catch, *c c*, is incorporated with the front end of a trigger-guard, T or T^x, which is pivoted at this end by a transverse pivot-screw, *a a*, the axis of which is located in front of the line of strain on said catch, and a flat catch-spring, *d d*, is arranged within the sole of the body-casting at its front end, and held at mid-

length by a countersunk screw, and at its front end within the undercut extremity of the casting, as clearly seen in Fig. 2, its rear end engaging with a shoulder on the trigger-guard in front of its pivotal axis, so as to support said guard in its normal position. (Represented in Fig. 1 and by full lines in Fig. 2.) When the breech is closed after loading, the catch *c c* engages with said lug *b b* automatically, and by lowering the guard by hand, as represented by dotted lines in Fig. 2, and simultaneously tilting the barrels, the breech is readily opened. Said location of the axis of said pivot *a a* in front of the line of lifting-strain on the catch precludes any yielding of the catch under such strain, causing the energy of the latter to be directed toward drawing the rear end of the guard upward against its unyielding support. At the same time the trigger-guard may be as small as may be preferred, and its primary use is in no way interfered with. It is only essential, however, in the present invention that the barrel-fastening devices shall be wholly distinct from the firing devices. The interior of said body-casting C or C^{x} is divided longitudinally by a central vertical partition, *p*, as best seen in Fig. 3, and each side of said partition is provided with drilled and internally-tapped pivotal studs *s s*, which, besides providing holds for screws attaching the cheek-plates *c c*, Fig. 3, in customary manner, form pivotal supports, respectively, for concealed hammers *h* and pivoted mainsprings *m*, of which the latter are inseparably connected to the former at the back of each hammer-hub by links *l*.

Normally, as represented in Figs. 1 and 4, the mainsprings are under no tension. They are put in tension, preparatory to firing, by force applied to them from without by pressing or drawing upward a lever-piece, L, Figs. 1, 2, and 3, or L^{b}, Fig. 4, attached by a transverse pivot, *x*, to the sole of each body-casting in a convenient position. Each of said lever-pieces, L L^{b}, projects rearwardly from its pivot horizontally, or nearly so, and is stayed at its otherwise free rear end by a depending stud-pin, *y*, having its lower end threaded and provided with a stop-nut, and masked by a recurved portion, *z*, of the lever-piece, termed its "ball," which also provides for working the lever-piece by a "pistol-grip." These last-named details are not, however, considered essential.

In the preferred firing device for double-barreled guns shown in said Figs. 1, 2, and 3, the front end of the lever-piece, extended upward so as to project within the body-casting in the form of a rigid arm, is provided at its extremity with an anti-friction roller, *r*, parallel to said pivot *x;* and a cam-wedge, *q*, is formed on each mainspring to coact therewith. The partition *p* is cut away to accommodate the lever-piece extension, and said roller is made long enough to act simultaneously on both mainsprings, (or two shorter rollers and a roller or rollers of any preferred diameter may be used,) so that one and the same lever-piece serves for both sides of the piece. Moreover, owing to said roller and cam-wedge combination, relatively little force applied to the external lever-piece L suffices; and the lever-piece may be rendered "self-sustaining" when its rear end is fully raised, as shown in full lines in Fig. 2, by locating the roller-axis so that it shall then be in or slightly past the line of strain, or the summit of said cam-wedges, in this the effective position of said lever-piece, as represented in Fig. 2. This roller and cam-wedge combination is equally applicable to single-barreled guns and revolvers or pistols. In said effective position of said lever-piece the mainspring *m* is set for firing, with ample energy stored therein. For tripping the hammer *h* to fire the piece, an ordinary trigger, *t* or *t t*, may be employed. In the form shown in Figs. 1 and 2, the trigger *t t* lifts the rear end of a lever-dog, *d*, against the pressure of a small sear-spring, *e*, and disengages the nose of the dog from the single-catch shoulder on the hub of the hammer, permitting the hammer to be thrown by the mainspring against a firing-pin, *f*, (for example,) as represented by dotted lines at *h* in Fig. 2. To restore the firing devices to their condition of rest, (represented in Fig. 1,) another spring, *n*, is attached to each side of the partition *p* above each mainspring, so as to press on the top of the latter. This spring *n*, it will be seen, is put in tension in the act of applying force to the mainspring, and expends its energy in restoring itself and the other parts of the firing device to normal condition, as aforesaid, the lever-piece L returning to its "lowered" position, as shown in dotted lines in Fig. 2, when started from its locked position by a touch, and the hammer *h* returning to its "cocked" position, as shown in full lines.

In lieu of using said cocking-springs *n*, Figs. 1 and 2, the gun, or either side thereof, or a revolver or pistol provided with my said firing device, as regards its mainsprings, may be rendered "self-cocking" in the more common way, as illustrated by Figs. 4, 6, and 12—that is to say, by provision for cocking from the trigger. A preferred device for this purpose is shown in Fig. 4 applied to the front trigger, *t*, of a double-barreled gun. The trigger is supported in normal position by a spring, *e e*, attached to the sole of the body-casting, and is loosely connected at the rear extremity of its head by a slotted lug, *i*, with the middle pivot of a toggle-finger, *f f*, the rear end of which has an unyielding pivotal support, *j*, while its front end engages with the tooth or notch of the hammer-hub to throw back the hammer to cocked position, and in the act becomes disengaged therefrom, so as to allow the hammer *h*^{x} to strike the firing-pin *f* or its equivalent. The front end of the toggle-finger is re-engaged with the hammer tooth or notch by the depression of the middle of the same by the main trigger-spring *e e*, acting through the trigger and said

lug *i* thereon, jointly with the elevation of the front extremity of the toggle-finger, by a little spring, *k*, interposed between this end thereof and the trigger-head, as seen in the figure.

A simpler but less powerful device is represented in Figs. 6 and 12, consisting of a single finger, f^z, Fig. 6, attached to the rear end of the trigger-head by a pivot-joint, i^z, and thrown upward at its front extremity by a spring, k^z, while a main trigger-spring, *e e*, holds the trigger t^z normally in a position in which the extremity of the finger re-engages with the hammer tooth or notch.

For applying force to the mainspring, various modifications of the preferred device represented in said Figs. 1, 2, and 3 have been devised. In the modification represented by Figs. 4 and 5 the front end of the lever-piece L^b simply forms a hinge in connection with said pivot *x*, and at a point behind this engages with the lower end of a cruciform slide, *o*, (seen detached in Fig. 5,) the cross-piece of which works in a vertical slot in the partition *p* of said body-casting C^x, and in turn engages at each end with a lever, *u*, attached at its opposite extremity to said partition by a pivotal screw, and engaging intermediately with a V-shaped projection, *v*, projecting downward from the mainspring m^b at mid-length. Said slide *o* is made in two parts, its vertical member, in the form of a screw, extending through and uniting itself with the other part, to facilitate its introduction. In the modification illustrated by Fig. 7 the lever-piece L^c is similar to the one last described, and acts through a vertical slide, o^c, on the mainspring m^c, the latter having a rigid or nearly rigid lower arm, *w*, to engage with the head of said slide. In the modification illustrated by Fig. 8 the lever-piece L^d has a rigid arm, a^d, which engages with a toggle-strut, t^d, and, by nearly but not quite straightening the same, applies power therethrough in a most effective way to the mainspring m^d, the latter having a rigid or nearly rigid lower arm, w^d, jointed at its front end to the upper end of the toggle-strut. In the modification illustrated by Fig. 9 the lever-piece L^e is simply pivoted at its front end, and acts through a vertical slide, o^e, on a lever-eccentric, u^e, which in turn acts on a rigid or nearly rigid lower arm, *w*, of the mainspring m^e.

In the modification illustrated by Fig. 10 the lever-piece L^f has a rigid arm provided with an anti-friction roller, r^f, (or it may be an eccentric of suitable curve integral with the lever-piece,) engaging with a lever, u^f, which in turn acts on the mainspring m^f through a projection, *v*, on its under side. In the modification illustrated by Fig. 11 the lever-piece L^g is simply pivoted at its front end, and acts through a bell-crank lever, u^g, on the mainspring m^g, through a projection, *v*, on its under side, said lever u^g being so proportioned as to increase motion instead of power, illustrating the use of such means when a lever-piece of sufficient length for the requisite power can be readily used, so as to reduce its projection downward. Finally, in the revolver or pistol modification illustrated by Fig. 12, the lever-piece L^h is adapted to the back of the handle H, having its pivot *x* at its upper end, and connected at its lower end by a link, l^h, with a lever, u^h, within the handle, through which, as illustrative means, power is applied to the mainspring m^h. The latter, in the example, is a single bar, having a pivot, *s*, at its rear end, and connected at its front end by a link, *l*, to the hub of a pivoted hammer, h^z, as in other arrangements hereinbefore set forth. A spiral spring, n^h, reprojects the lever-piece when the grasp thereof is relaxed.

Having thus described my said improvement in breech-loading fire-arms, I claim as my invention—

1. In a breech-loading fire-arm, a mainspring pivoted and inseparably connected with a concealed firing-hammer by a link-joint, in combination with an external lever-piece distinct from the barrel-fastening and cocking devices, and operated by hand, and means for applying power to said mainspring from said lever-piece, substantially as herein specified, whereby said mainspring may be wholly relieved from strain at will, and is adapted to be cocked either automatically or from the trigger, as herein set forth.

2. In a double-barreled fire-arm having the interior of its body-casting divided longitudinally by a vertical partition, a pair of pivoted mainsprings arranged within the respective compartments, in combination with a single lever-piece pivoted to the sole of said body-casting for operation by hand, and a device common to both springs, for transmitting power from said lever-piece to both mainsprings simultaneously, substantially as herein specified, for the purpose set forth.

3. The combination, substantially as herein specified, of a pivoted mainspring connected at its front end to a concealed firing-hammer, and constructed with a downwardly-projecting cam-wedge, and an external lever-piece pivoted below said mainspring, and having a rigid arm provided with an anti-friction roller to engage with said cam-wedge when said lever-piece is operated, to apply power to said mainspring preparatory to firing, said lever-piece being adapted to be retained in effective position by the coaction of the mainspring with said arm through said cam-wedge and roller, as set forth.

4. The combination, substantially as herein specified, of a pivoted mainspring, a concealed firing-hammer, a spring-projected dog for holding said hammer in cocked condition, a trigger for tripping said dog, and a spring applied to said pivoted mainspring for restoring the hammer to cocked condition when the mainspring is freed from tension, for the purpose set forth.

5. The combination, substantially as herein specified, of a lever-piece, a mainspring put in tension by the movement of said lever-piece, a concealed firing-hammer to which said mainspring is connected, a spring-projected dog for holding said hammer normally in cocked condition, a trigger for tripping said dog, and a spring for simultaneously restoring said hammer and said lever-piece to normal condition when the latter is released.

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Witnesses:
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JOHN G. AVERY.