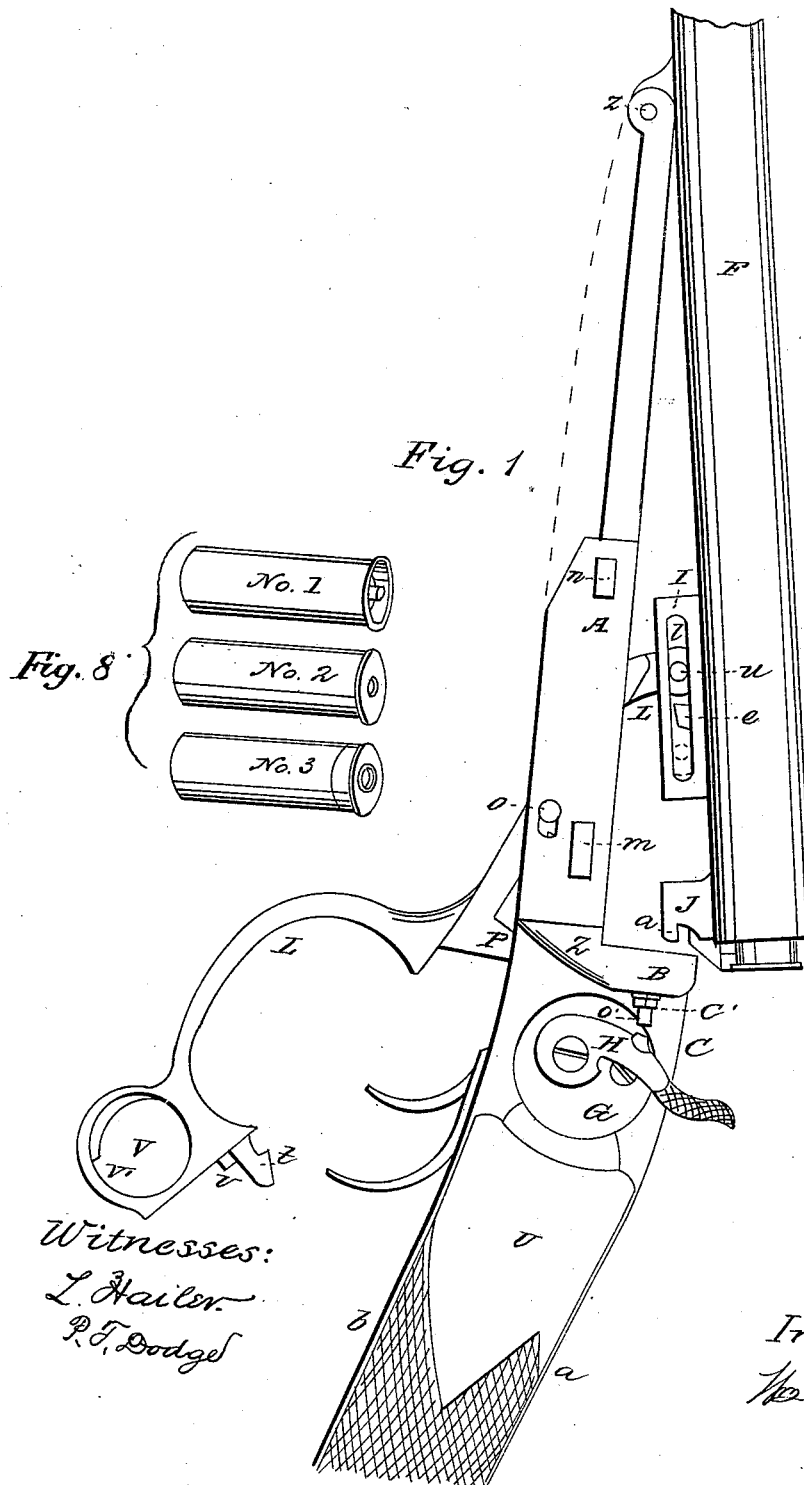


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Breech-Loading Fire-Arm.

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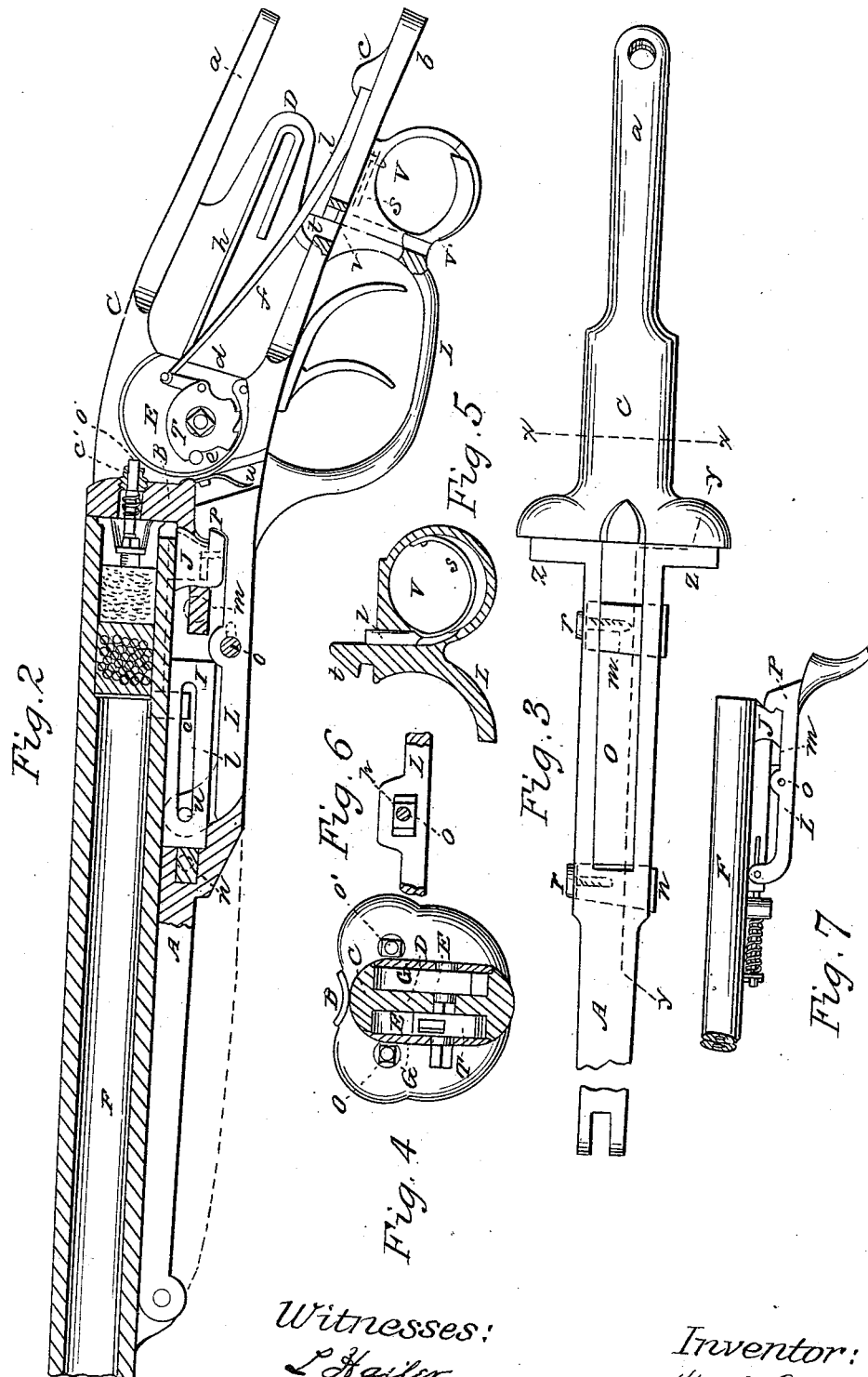


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Patented March 14, 1871.



Witnesses:
L. Hailer.
D. T. Dodge

Inventor:
Wm C. Dodge

United States Patent Office.

WILLIAM C. DODGE, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 112,763, dated March 14, 1871.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM C. DODGE, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Breech-loading Guns; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My present invention relates to breech-loading fire-arms, and consists in certain improvements upon the gun patented to me September 20, 1864, the improvements in this case having reference more to the details of construction—the general features being the same as described in my former patent.

In the drawing—

Figure 1 is a side elevation of the central portion of the arm complete, with the front portion of the stock detached;

Figure 2 is a similar view, with a portion shown in section on the line *y y* of fig. 3;

Figure 3 is a top plan view of the frame, shown separately;

Figure 4 is a transverse vertical section taken on the line *x x* of fig. 3;

Figures 5, 6, and 7 are views representing certain modifications; and

Figure 8 represents the styles of cartridge-shells to which the gun is adapted.

The object of my invention is to produce a sporting arm that can be loaded and fired with rapidity, that will use ammunition or cartridges of various styles, and that shall consist of but few parts or pieces, so that it may readily be made by machinery, as military arms have heretofore been made, and thus furnish a superior breech-loading sporting-gun at greatly reduced rates, whereby they may be generally substituted for the old style or muzzle-loading gun now so generally used.

In constructing the arm I hinge the barrels to the frame at the extreme front end of the stock, and tip them both up and down at the breech by means of a lever-guard, which latter also operates the cartridge-ejector, as described in my patent of September 20, 1864, and as shown in the drawing.

In making a gun on my plan I first construct a metal frame or foundation-piece, consisting of a front arm, A, a breech or recoil-plate, B, and a neck or rear part, C, which latter contains the locks, and has its rear portion extended or prolonged to form tangs for securing the stock V, as shown in figs. 1, 2, and 3.

This frame may be made of cast or wrought metal, though I much prefer the latter, in which case it will be formed in dies of suitable form, and finished with milling-tools. It may be made of separate pieces, and then united so as to form a frame of the requisite shape and size; but I much prefer to make it of a single solid piece, and preferably of good wrought-iron or steel.

The front part or arm A of the frame is made in the form of a straight bar, of proper length to extend from the breech to the point where the barrels are to be hinged or pivoted, the rear portion of the arm, for about one-third of its length, being mortised, as shown in fig. 3, for the reception of the front arm of the lever-guard, and also the lugs upon the under side of the barrels, as shown in fig. 2.

At the point where rear end of the barrels terminate the frame has a breech-piece or recoil-plate, B, formed by an enlargement, projecting both vertically and laterally far enough to entirely cover the rear ends of the barrels when in place, as shown in figs. 1, 2, and 3, it being of sufficient thickness on each side to render it strong enough to resist the strain caused by the discharge of the gun.

From the rear of the breech B the frame extends back about two inches, thus forming a neck, C, which is oval in form transversely, as shown in fig. 4, it being as wide vertically as the neck or gripe of the stock, and about half as thick, it being thus reduced in thickness so as to permit the hammers to be placed outside of it and still be in line with the firing-pins *o*, which pass through the breech B on each side direct to the center of the rear end of each barrel, as shown in figs. 2 and 4; and from the rear end of this neck C there extends, on the upper side, a tang, *a*, and on the lower side another tang, *b*, as shown in fig. 2, for securing the stock U, which is shown applied in fig. 1.

This neck has a recess, E, formed in each side, as represented in figs. 2 and 4, leaving a solid plate or web, D, at the center, which extends back, as shown in fig. 2, far enough to receive and hold the parts forming the lock.

In fig. 2 I have represented two styles of springs for the lock, one being the old style or bent spring, *h*, and the other a straight spring, *f*. If the former style be used, then the plate D will be made as there represented, and the spring *h* will be secured to the plate D the same as such springs are usually secured to the ordinary lock-plate. If, however, the straight spring *f* be used, then the plate D need not extend back beyond the point indicated by the red line *d*, the spring in that case being secured to the tang *b* by a lug, *c*, and adjusted by a set-screw, *i*, as shown in fig. 2; or the lug may be dispensed with, and the

spring *f* be secured to the tang *b* by a screw instead, it being optional as to which style of spring shall be used. In either case the plate *D* will form the bearing for the inner journal of the tumblers *T*, as shown in fig. 4, their outer journals having their bearings in a plate, *G*, on each side, which plate is fitted so as to cover the recess *E* and come flush with the outer face of the neck *C*, as shown in figs. 1 and 4.

By this construction it will be seen that the locks are made in or a part of the frame, the web or central plate *D* serving as the lock-plate, the lock for one barrel being secured to it on one side, and that for the other barrel on the opposite side; and thus I dispense entirely with separate locks or lock-plates as heretofore used for double guns.

The wood of the stock *U* will be cut away at its center vertically, between the tangs *a* and *b*, far enough to leave room for the springs *h* or *f*, but will extend forward to the plate *C* on each side, as shown in fig. 1; so as to entirely cover and protect the rear portion of the locks on each side.

The barrels are hinged to the front end of the arm *A* by a pin, *k*, as shown in figs. 1 and 2, and to the under side of the barrels, near their rear end, are secured two lugs, *I* and *J*, which fit into the mortise in the arm *A* when the barrels are shut down, as shown in fig. 2.

In front of the rear lug *J*, I make a mortise transversely through the arm *A*, and fit therein a strong wedge, *m*, having its rear face standing at right angles to the arm *A* to form a bearing for the front face of the lug *J*, and thereby lock the barrels securely to the frame.

This wedge *m* has its opposite face inclined slightly, and there is a screw, *r*, fitted into its narrow end, with a head slightly larger than the mortise in which the wedge fits, so that by turning the screw *r* the wedge will be drawn further in, and as its inclined edge bears against the shoulder of the mortise it will be thereby shoved bodily back and made to press more tightly against the lug *J*, and thereby hold the barrels tight and firm against the breech *B*.

If desired, another similar wedge, *n*, may be placed in front of the front lug *I*, and made to operate in the same manner as shown in figs. 2 and 3. By this means I am enabled to compensate for any wear that may occur on the lugs from continued firing, and thus keep the barrels tight, and prevent the looseness or rattling of the barrels on the frame, which is a serious objection to guns of this class as heretofore constructed.

It is obvious that the wedges may be omitted, and that a solid cross-bar may be formed in the mortise for the lug *J* to bear against, the front lug *I* also bearing against the shoulder of the arm *A* at the front end of the vertical mortise or slot *O*, and in guns of small caliber intended for light loads, and especially those of cheaper quality, this form may answer; but in all first-class guns, and especially those using heavy charges, I prefer to use one if not both of the wedges.

The cartridge-ejector or retractor is intended to be operated by the lever-guard, the same as in my patent hereinbefore referred to, and it may have its stem made in the form of a small rod, fitting in a hole between the barrels, as represented in dotted lines in fig. 2, with a feather or flange, *e'*, at its front end for the front end of the lever-guard *L* to strike against when the barrels are thrown up, as shown in red in fig. 1.

A similar flange or feather is also formed on the rear part of the retractor-stem, which feather works in a slot cut lengthwise through the lug *J*, there being a recess formed in the lower edge of this feather, into which the point of a screw, from the bottom of lug *J*, projects, and thus serves as a stop to limit the movement of the ejector, and also to prevent it from

being shoved or dropped entirely out, this feather and the screw being shown in dotted lines in fig. 2.

The lug *I* is slotted both vertically and horizontally, as represented in figs. 1 and 2, the vertical slot serving to receive and guide the front end of the lever-guard *L* and the front feather *e'* of the ejector, the horizontal slot serving to receive a pin, *u*, which passes transversely through the end of the lever *L*, thus connecting the lever to the barrels.

This pin *u*, while being fast in the lever, moves or slides freely in the slot *l*, so that when the rear end of the lever is thrown down the front end, with the pin *u*, will traverse the slot from front to rear, thereby causing the rear end of the barrels to be elevated, and as they rise also shoving back the ejector, as shown in red in fig. 1.

The rear end of the rear feather on the ejector-stem *I* make inclined, as represented in red in fig. 1, so that when the barrels are closed this incline will strike against the face of the breech *B* and thus shove the ejector home to its seat, without the use of any spring.

It is obvious, however, that instead of making the lug *I* so long, and slotting it as described, it may be made in the form of a simple plain lug, like *J*, and the ejector-stem then be extended straight through a hole in both lugs, and protrude in front of the front lug far enough to receive a spiral spring, as represented in fig. 7. In that case, the stem of the ejector will have a slot made in it at the proper point between the two lugs, and the end of the lever will be bifurcated or forked, so as to embrace the stem of the ejector at that point, and have the pin *u* pass through it and the slot in the stem, as represented in fig. 7, in which case the pin may be screwed into the lever and thus hold it secure.

Either or both of these forms of lug and attachment of the lever and ejector may be used, as may be found most convenient in practice.

In this style of gun it is necessary that the barrels shall be securely locked in position when fired, and in my former patent I described a separate lock-bolt for that purpose; but inasmuch as I find it difficult and expensive to arrange the lock-bolt as there described, I have invented a different plan.

In both cases I lock the barrels down by means of a notch, *a'*, in the rear face of the lug *J*; but instead of the sliding bolt previously used, I now form a hook, *P*, on the upper side of the lever-guard *L*, which, as the lever is shoved forward, engages in the notch *a'* and thus locks the barrels securely in place.

The lever-guard *L*, in order to permit this hook to slide in and out of the notch *a'*, has its pivot or fulcrum-pin *o* moving in a slot made in the arm *A* of the frame, as shown in fig. 1, and by dotted lines in fig. 2.

By this means it will be seen that the lever *L* can have imparted to it a slight to-and-fro movement longitudinally of the frame, this movement being just sufficient to force the hook *P* in or out of the notch *a'*.

In order to insure the entry of the hook into the notch, I locate a flat spring, *w*, in the recess in the frame, just behind the hook *P*, so that, as the latter is brought to its position by drawing up the lever *L*, the inclined rear face of the hook will strike against the spring *w*, which will thus tend to force the lever bodily forward, and thereby cause the hook *P* to engage in the notch *a'* and lock the barrels securely in place.

The upper shoulder or face of the hook *P* bears against the solid wall of the recess above it, so that it is impossible for the barrels to be thrown up, or to move at all by any springing of the hook or the lever, of which it is a part.

It is obvious that, instead of making the slot for the pin *o* in the frame, it may be formed in the lever

L, the operation and result being the same in either case.

To prevent the wear on the pin *o*, caused by its sliding in the slot, or of the lever sliding on it, I propose, if necessary, to make the parts as represented in fig. 6. In that case I form in the lever a slot of sufficient size to receive a block or bearing, *p*, through which a hole extends to receive the pin *o*, the pin in this case being screwed fast in the arm A, and the lever sliding on the block *p*, while the lever and the block turn together on the pin *o*.

It is obvious that, instead of having the hook P lock into a notch in the rear face of the lug J, it may be arranged so as to have it lock into a notch on the front side of the lug, the wedge *m* being dispensed with in that case. In such case the spring *w* would also be dispensed with, and in lieu thereof one would be arranged to shove the lever backward, which might be done by inserting a spiral spring in the slot in the lever L, in rear of its pivot *o*, the slot being made proportionably longer.

In order to secure the lever-guard L firmly in position when closed and at the same time permit it to be readily unlocked and operated, I construct its rear portion as represented in figs. 1 and 2. It will there be seen that from its upper face, near its rear end, there projects a hook, *t*, which fits into a hole in the lower tang *b*, as shown in fig. 2, this hook having its front face inclined as shown, so that as the lever is brought up to its position the point of the hook *t* will enter the hole in the tang, and the inclined face of the hook, bearing against the front wall of the hole in the tang, will thereby draw the lever back until it has come to its place, at which time the hook P will be opposite the notch *a'*, and the notch in the hook *t* will be in line with the tang, when the spring *w* will force the lever forward, causing the hook P to lock the barrels securely in place, and the hook *t*, at the same instant and by the same movement of the lever, being made to engage with the tang *b*, as shown in fig. 2, thereby securing the lever L in position.

In order to prevent the accidental displacement of the lever L, I locate a small sliding-bolt, *v*, in a hole in the lever L, just in rear of the hook *t*, as represented in fig. 2.

This bolt *v* has its upper end of proper size to fill the hole in the tang *b* after the hook *t* has entered it and been shoved forward, the bolt *v* having a spring, *s*, connected to it, as shown in dotted lines in fig. 2, to force its upper end up into the hole behind the hook *t*, and thus prevent the possibility of the lever L being moved until the bolt *v* is drawn out of the hole in the tang.

In order to readily withdraw the bolt *v* from the hole when it is desired to unlock or move the lever, the bolt *v* is provided with a thumb-piece, *v'*, which works or fits into a slot cut in the lower side of the ring V attached to rear end of the lever L, as shown in figs. 1 and 2. Or, if preferred, the bolt *v* may be made as shown in fig. 5, in which it and the spring *s* are made in a single piece, the spring being secured at its rear end to the ring V, and thus serves both as a spring and a thumb-piece for withdrawing the bolt.

To ignite the charge, I use a firing-pin, *o'*, which is fitted in a small hole in the breech B, directly opposite the center of the end of each barrel, as shown in figs. 1, 2, and 4.

These firing-pins I make with a shoulder on them, against which a spiral spring bears, as shown in fig. 2, the hole in the breech B being enlarged most of the way through, to form a chamber for the reception of the spring and the shoulder or collar on the pin *o'*, the two being held in by a short tube, *c*, made in the form of a nipple and screwed into the breech B behind the shoulder on the pin, the latter sliding loosely in

the tube *c* and in the hole in the front part of the breech B, as represented in fig. 2.

As shown in fig. 4, these pins *o'* protrude from the rear face of the breech, close alongside of the neck *c*, so as to be directly in line with the hammers H, which thus strike against their rear ends and drive them straight forward against the cap or fulminate of the cartridge, thus making the gun sure-fire—far more so than where the firing-pins are much inclined.

In order to get the necessary motion or sweep to the hammers, their journals should be placed as low as possible in the frame or neck C, as represented in figs. 2 and 4.

By this arrangement of the firing-pins the gun is made a central-fire gun, and with it I am enabled to use either of the three styles of cartridge-shells represented in fig. 8, of which—

No. 1 represents a metal tube having its rear end closed and recessed, with a nipple fitted therein, as represented in section in fig. 2, the nipple not coming out quite even with the rear end of the shell, so that when a cap is placed on the nipple, and the shell is inserted in the barrels, the latter can be shut down without danger of exploding the charge by accidentally hitting the cap against the breech when closing the barrels.

These shells are intended for permanent use, they being capable of being reloaded and used as often as desired.

No. 2 represents an ordinary copper shell, center-primed, which, if used, is fired once and then thrown away.

No. 3 represents a shell having its body made of paper or pasteboard, with a metal head, and being also center-primed.

As all these shells have the fulminate located at the center, or point where the firing-pin *o'* strikes, it is obvious that either style may be used at pleasure, without any change in the gun.

The dotted line in fig. 1 represents the outline of the front portion of the stock, which is applied separately from the rear portion U, the shoulders *z* below the breech B being recessed on their front face to receive and hold the rear end of the front stock, its front end being secured by a screw to the arm A of the frame, at any suitable point, or by the loop and pin ordinarily used.

By these improvements I am enabled to produce a breech-loading gun that is extremely simple, cheap, strong, and durable, and that is adapted to the use of a variety of cartridges, and in every way adapted to the wants of the public.

Having thus described my invention, what I claim is—

1. A frame for a double-barreled breech-loading gun, consisting of an arm at the front for hinging the barrels to, a breech or recoil piece for covering the rear open ends of the barrels, and a neck or rear portion, constructed substantially as described, whereby the locks may be located within the same, while the hammers are located outside thereof, substantially as set forth.

2. The lever-guard L, provided with the hook P, or its equivalent, arranged to lock the barrels in position, substantially as described.

3. One or more adjustable wedges, applied to the arm A of the frame, substantially as set forth, for adjusting or tightening up the barrels to the breech, to compensate for any wear of the parts.

4. The lock-bolt *v*, arranged to lock the lever-guard in position, substantially as herein described.

WILLIAM C. DODGE.

Witnesses:

H. B. MUNN,
P. T. DODGE.