

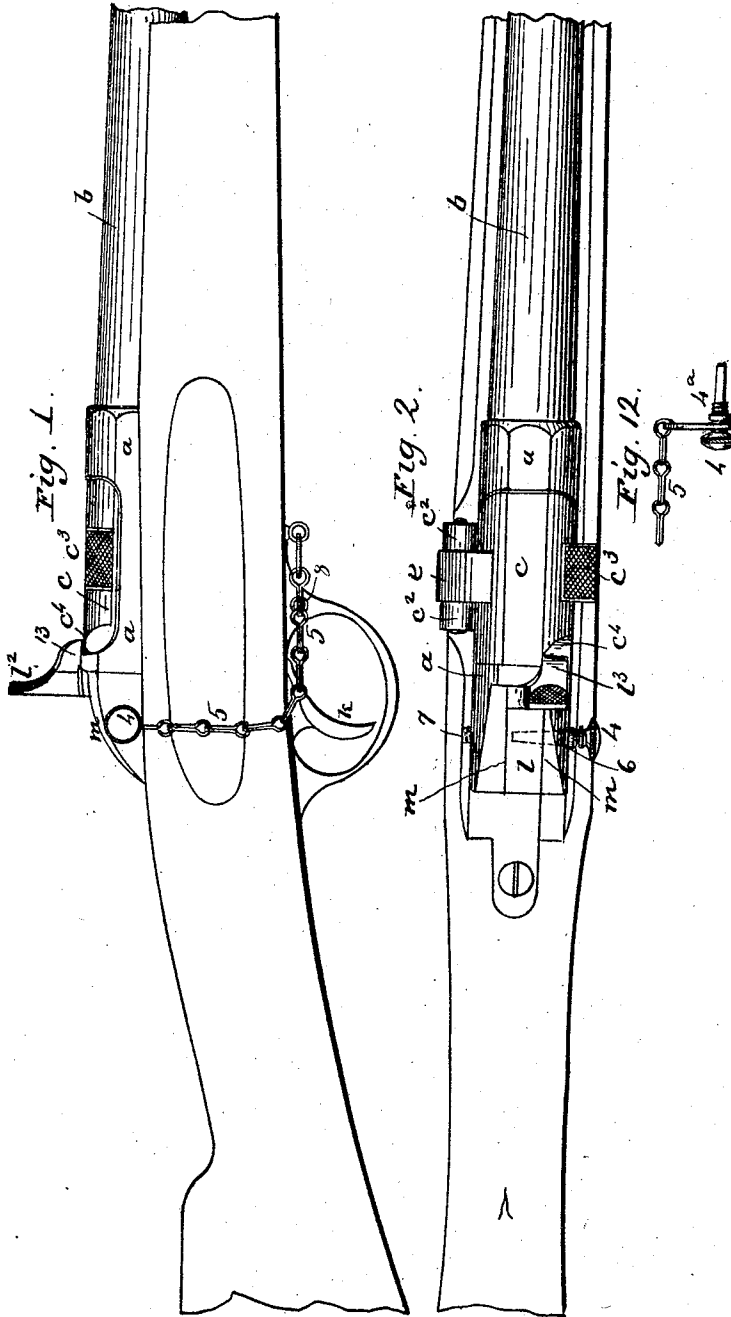
6 Sheets—Sheet 1.

J. R. COOPER.

Breech Loading Fire Arm.

No. 84,938.

Patented Dec. 15, 1868.



Witnesses:

George Shaw
Richard L. Smith.

Inventor:

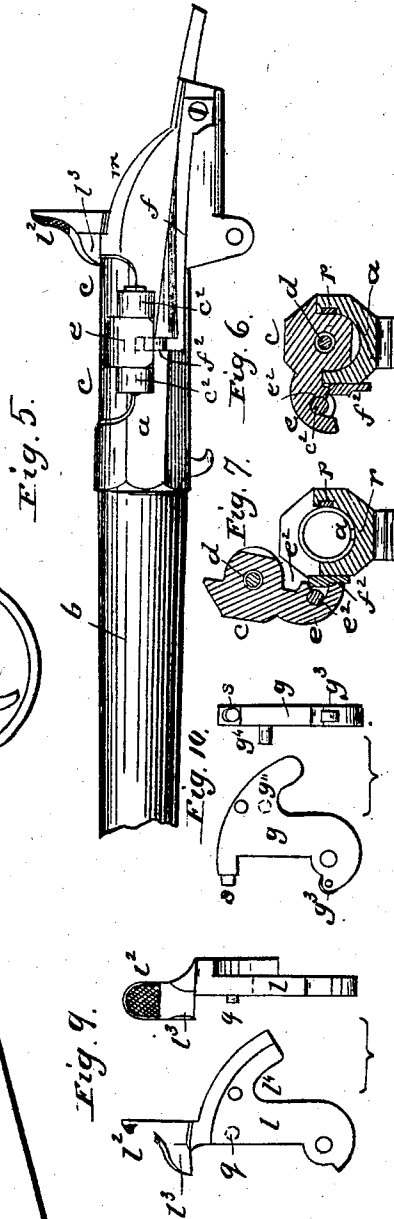
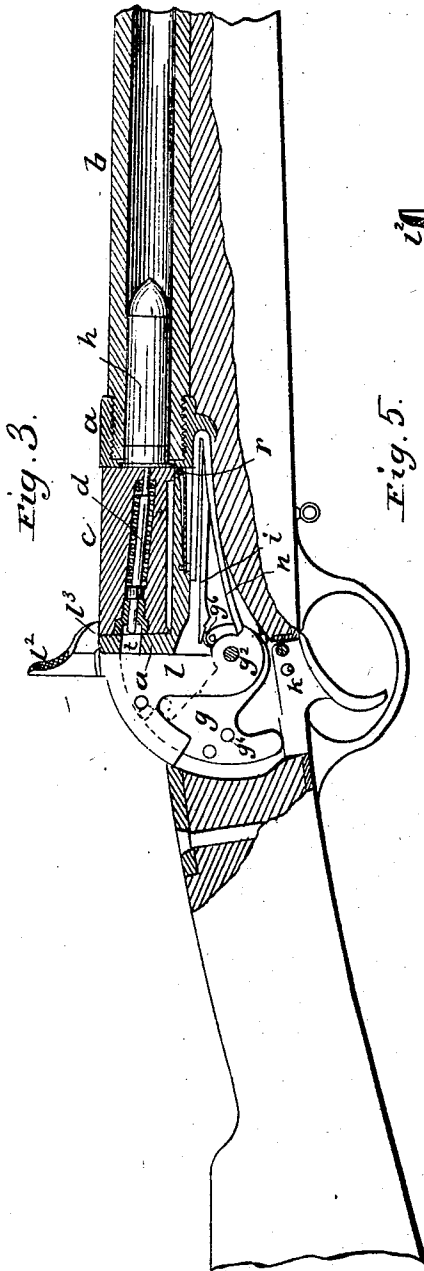
Joseph Rock Cooper

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Breech Loading Fire Arm.

No. 84,938.

Patented Dec. 15, 1868.



Witnesses:
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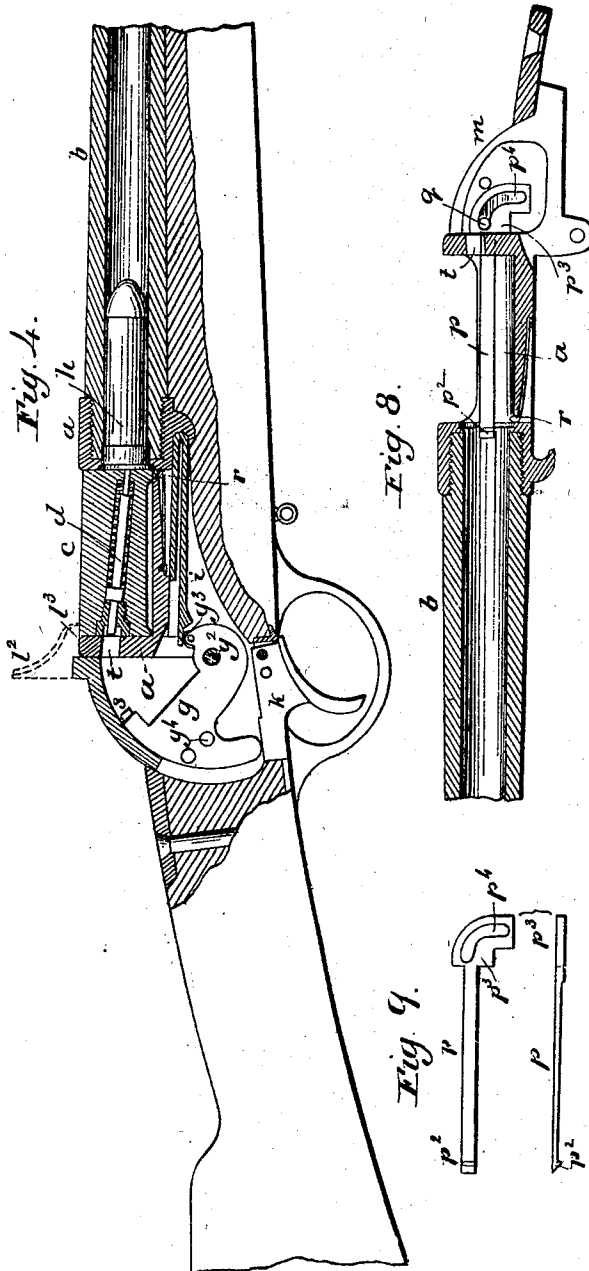
Inventor:
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Breech Loading Fire Arm.

6 Sheets—Sheet 3.

No. 84,938.

Patented Dec. 15, 1868.



Witnesses:
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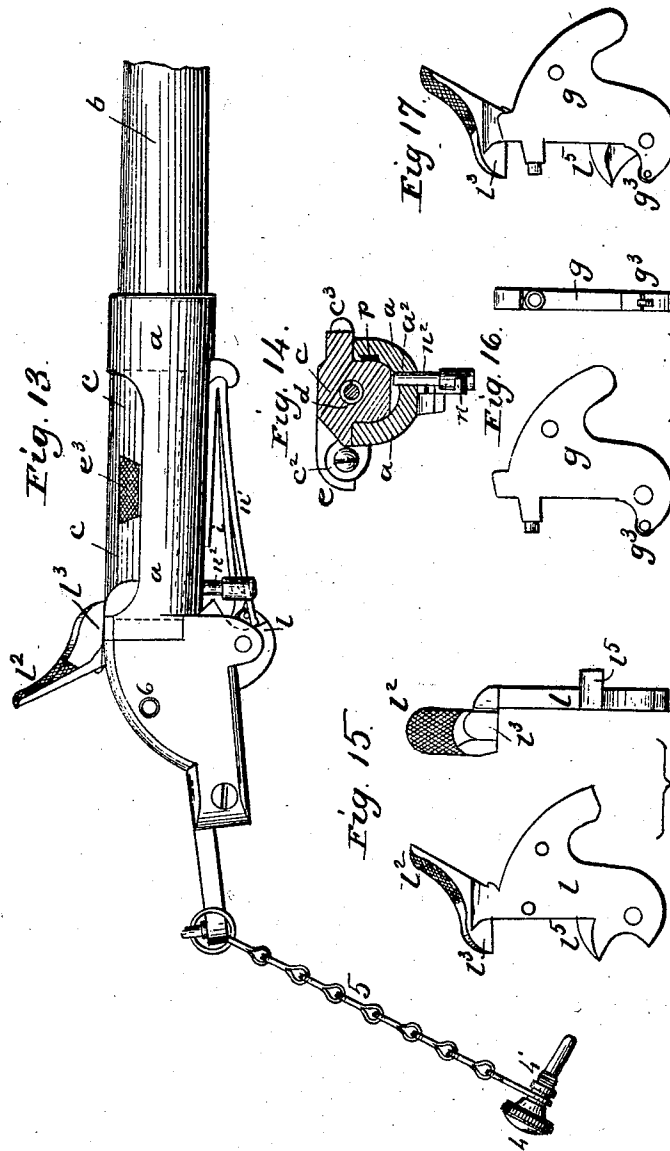
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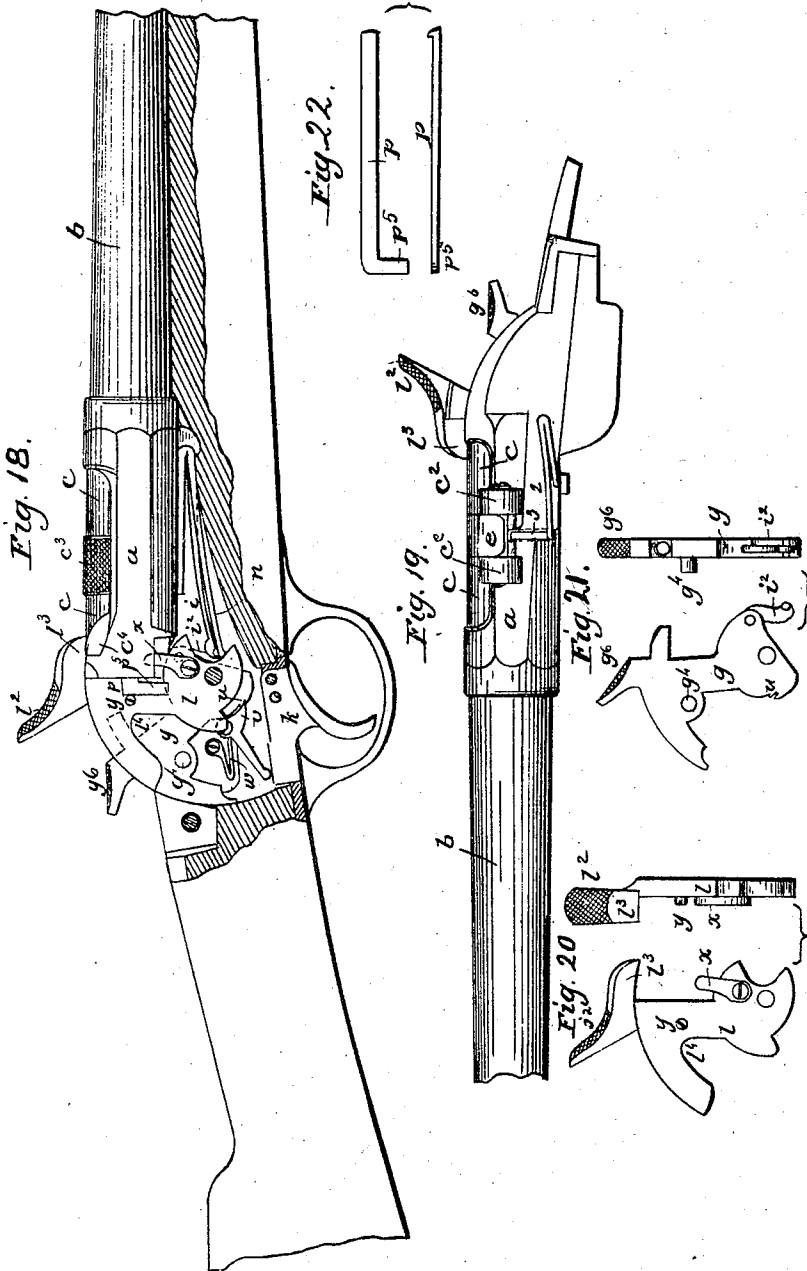
Witnesses:
George Shaw
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Inventor:
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Breech Loading Fire Arm.

No. 84,938.

Patented Dec. 15, 1868.



Witnesses:
James S. ...
Richard ...

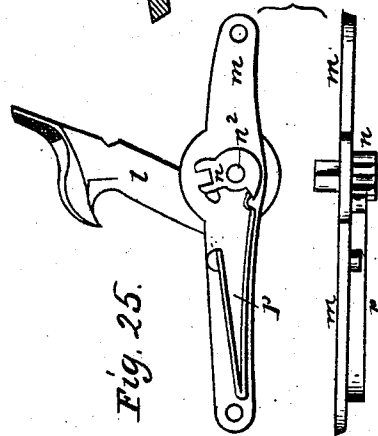
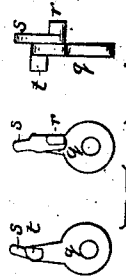
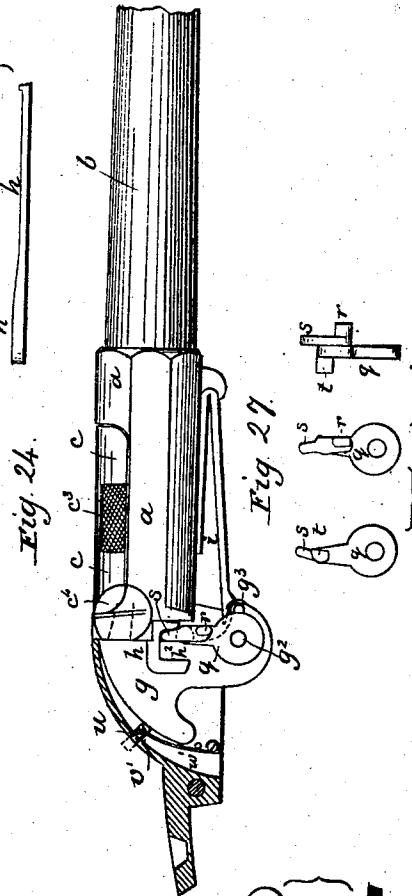
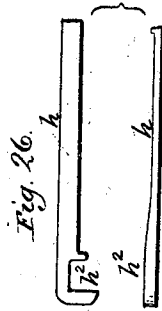
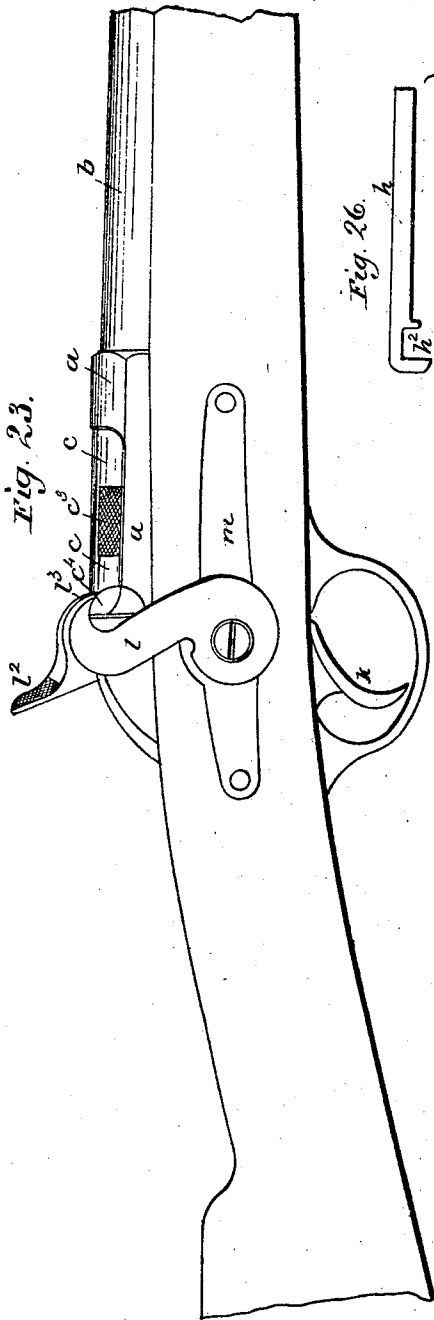
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Breech Loading Fire Arm.

No. 84,938.

Patented Dec. 15, 1868.



Witnesses:
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JOSEPH ROCK COOPER, OF BIRMINGHAM, ENGLAND.

Letters Patent No. 84,938, dated December 15, 1868.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

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

To all to whom it may concern:

Be it known that I, JOSEPH ROCK COOPER, of Birmingham, in the county of Warwick, England, gun-manufacturer, a subject of the Queen of Great Britain, have invented or discovered new and useful "Improvements in Breech-Loading and other Fire-Arms;" and I, the said JOSEPH ROCK COOPER, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof; that is to say—

My invention consists, first, in constructing and arranging the parts of breech-loading fire-arms, in the manner hereinafter described, whereby the opening of the breech, the withdrawal of the case of the exploded cartridge, and the cocking of the hammer are effected at one operation. My invention is especially applicable to central-fire guns, but may also be applied to guns in which the firing is not central. I close the breech of the gun by means of a closing-block, hinged to the side of the shoe, or breech-chamber, and capable, by turning upon its hinge, of being shut down into or raised from the said breech-chamber. A spring, acting on the joint of the closing-block, lifts it from the breech-chamber, and supports it in its raised position when the said block is at liberty to move. The hammer is jointed on the under side of the barrel, and on its liberation, by pressure upon the trigger, is forced upwards by a spring, and made to strike the striker and discharge the cartridge. On the centre, on which the hammer turns, is an arm or lever, which works in a slot at the back of the breech-chamber. The top of this lever is provided with a comb or thumb-plate, by which it is moved. A spring presses the said lever into its raised or original position. A projection on the front of this lever projects over the breech-block, when the latter is shut down, and fixes it in its place during the discharge. On shutting down the breech-block, it presses upon the inclined upper side of the said projection, and, forcing it back, causes it to snap over the said block and bolt it down. When the said arm or lever is depressed, it bears against the front of the hammer, and carries the hammer down until it reaches its cocked position. The cartridge-case extractor consists of a bar, sliding in a slot in the breech-chamber. The said bar carries at its front a hook, against which the rim of the cartridge bears, and at its rear end engages with the lever described. When the said lever is drawn back, it draws back the extractor, and when the said lever advances, the extractor moves forward. To charge the gun, the lever is pulled back. The block is thereby liberated and thrown up, and the case of the exploded cartridge withdrawn from the barrel, the descending motion of the lever also cocking the hammer. On releasing the lever, it returns by the action of its spring, the projection on its front being pressed back on the closing of the breech-

block, and made to snap over and fix the said block down. In order the more certainly to secure the raising of the closing-block on the drawing back of the lever, the lever-spring is made to bear against a pin, which passes through the breech-chamber. By the operation of the said spring, the breech-block is started from its depressed position with great force on drawing back the lever. Instead of making the lever depress the hammer to full cock, it may be made to depress it only to half cock. The hammer, in this case, is provided with a comb or plate, by which it can be brought to full cock by the application of the thumb.

My invention consists, second, in preventing the accidental discharge of breech-loading and other fire-arms, by the adaptation or use of a bolt or pin, made to pass transversely through or against such part or parts of the fire-arm as will cause the said bolt or pin to fix the hammer, or to fix such other part of the fire-arm as will prevent the discharge of the fire-arm.

Having explained the nature of my invention, I will proceed to describe, with reference to the accompanying drawings, the manner in which the same is to be performed.

Figure 1 represents, in side elevation, and

Figure 2, in plan, the breech-end of a breech-loading gun constructed according to my invention, the breech-block being shut down, and the parts of the gun being in position for discharge.

Figures 3 and 4 are longitudinal vertical sections of the gun, (a portion being omitted in fig. 4.)

Figure 5 is a side elevation of the breech-end of the gun separated from the stock.

Figures 6 and 7 are transverse sections of the gun, fig. 6 representing the block closed, and fig. 7, the block open.

Figure 8 represents a longitudinal section of fig. 5, without the breech-block, and

Figures 9, 10, 11, and 12 are parts of the gun.

The same letters and figures of reference indicate the same parts in each figure of the drawings.

a is the shoe, or breech-chamber, at the rear end of the barrel *b*, and

c is the breech-block, hinged or jointed at *c'* to the side of the said breech-chamber. By turning the block *c* upon its joint, it is capable of being shut down into or raised from the breech-chamber.

In the said block is the striker *d*, by which the cartridge is discharged.

The said block *c* is jointed to the side of the breech-chamber by the knuckle *e*, the under side of which knuckle is shaped in the manner best seen in figs. 6 and 7.

A spring, or spring-lever, *f f'*, is fixed to the side of the breech-chamber, in the manner seen in fig. 5. The free end, *f'*, of the said spring-lever *f*, is bent at right angles to the other part, and the top of the said part *f'* bears upon the knuckle *e* at *e'*. When the block *c*

is at liberty to move, the said spring-lever $f f^2$ lifts it from the breech-chamber a , and also supports it in its raised position.

By an examination of figs. 6 and 7, the manner in which the spring-lever operates upon the knuckle e , and raises and supports the breech-block, will be readily understood.

g is the hammer of the gun, turning on the pin or centre g^2 , and urged upwards to strike the striker d , and discharge the cartridge h by means of the main-spring i .

An arm on the hammer g carries a small roller, g^3 , against which the free end of the spring i bears.

The upper side of the trigger k bears upon the under side of the hammer g .

When the hammer g is cocked or depressed, in the manner hereinafter described, it is retained in that position by the roller g^3 , on its arm being advanced so far under the main-spring i that the said spring no longer tends to give the said hammer motion on the pin or centre g^2 .

By pressing upon the trigger k , the hammer g is slightly raised, and by the changed position of the roller g^3 , and arm carrying it, with respect to the main-spring i , the said spring i raises the said hammer, and causes it to discharge the gun.

The trigger k may be dispensed with, and the tail of the hammer g lengthened, so as to project from the body of the gun. In this case, the finger may be applied directly to the tail of the hammer g , for the purpose of discharging the gun. Or, instead of the trigger, a pin, passing through the side of the gun, and inclined on its upper side, may be made to raise the hammer, and discharge the gun.

Although, where a full-cock action of the hammer is required, I prefer to use the arrangement of the hammer and main-spring described and represented, yet I do not limit myself to the said arrangement of the hammer and main-spring.

On the centre g^2 , on which the hammer g turns, is an arm or lever, l , working in a slot, m , at the back of the breech-chamber a .

The top of the said lever l is provided with a comb or thumb-plate, l^2 , by which it is moved.

A spring, n , acting against the tail of the said lever l , presses the said lever into its raised position, as represented in fig. 3.

In fig. 4 the lever l is omitted, in order the better to exhibit the position of the cocked hammer g .

The hammer g is shown separately in fig. 10, and the arm or lever l is shown separately in fig. 9.

A projection, P , is made in front of the thumb-plate l^2 of the lever l , for the purpose of fixing the breech-block c in its place during the discharge of the gun.

After the block c has been raised from the breech-chamber a , the projection P occupies the position represented in figs. 1, 2, 3, and 5, and on the shutting down of the block c , the curved or inclined end of the projection c^1 , of the block c , presses upon the inclined upper side of the projection P , and, forcing it back, causes it to snap over the said block, and bolt the said block down.

The hammer g is provided with a pin, g^4 , which enters the recess at l^1 in the lever l , when the latter acts upon the said hammer. When the said lever l is depressed by its thumb-plate l^2 , it bears against the pin g^4 , on the hammer g , and carries the hammer down until it reaches its cocked position, in which position it is retained by the main-spring i , as hereinbefore explained.

On loosing the lever l , it is returned to its raised position by the action of the spring n , leaving the hammer in its cocked position.

When the lever l is raised, the slot at m , in which it works, is closed by the curved upper side of the said lever. (See the plan, fig. 2.)

p is the cartridge-case extractor, working in a slot in the side of the breech-chamber a , opposite that at which the breech-block is jointed.

The bar of the extractor has a hook, p^2 , at its front end, and a plate, p^3 , at its rear end.

The said plate p^3 is provided with a curved slot, p^4 , in which slot a pin, q , on the lever l , works.

The extractor is shown separately in fig. 11, and its position in the gun is best seen in fig. 8.

When the lever l is depressed, to open and cock the gun, the pin q traverses the nearly horizontal part of the slot p^4 without operating upon the extractor. When, however, the lever l is depressed sufficiently low to permit of the liberation of the block c , the further motion of the said lever carries the pin q into the nearly vertical part of the slot p^4 , and the said pin now draws back the extractor p . On the return of the lever l to its raised position, the hook of the extractor is advanced to its place in the barrel by the action of the pin q and slot p^4 .

In loading breech-loading fire-arms, it is necessary to hold the fire-arm in such a position that the muzzle-end of the barrel is not much higher than the breech-end, or there is danger that the cartridge will fall from the barrel into the breech-chamber, or shoe, and be thereby injured or accidentally discharged on the closing of the breech.

I prevent the falling of the cartridge from the barrel into the breech-chamber, in whatever position the gun may be held, in the following manner:

In the under side of the breech-chamber a , and projecting through the said chamber, I place a spring-stud, r , which, when the breech-block is raised, springs in front of the recess in the mouth of the barrel, which the rim of the cartridge occupies when placed in the barrel. (See fig. 8.) By means of the spring-stud r , the cartridge is held in its place in the barrel before the block c is shut down, and the gun can thereby be loaded with the barrel in a vertical or inclined position, that is, with the muzzle-end of the gun situated higher than the breech-end of the gun.

The action of the gun is as follows:

The parts of the gun being in the relative positions represented in figs. 1, 2, and 3, the gun is ready to be discharged. On pressing upon the trigger k , the hammer g is forced upwards by the action of its spring i , and the head s of the said hammer, passing through the hole t in the rear end of the breech-chamber a , strikes upon the rear end of the striker d in the block c , and causes the front end of the said striker to explode the cartridge h , and discharge the gun.

In order to recharge the gun, the lever l is pulled back, by pressing the thumb upon its comb, l^2 . The breech-block being liberated, is thrown up, and maintained in its raised position, as represented in fig. 7, by the action of the spring-lever $f f^2$. The depressing of the lever l has at the same time, by the action of the pin q and slot p^4 , withdrawn the extractor p , and brought into the breech-chamber a , from the barrel b , the case of the exploded cartridge. The said lever l has also, in its descending motion, depressed and cocked the hammer g . Immediately after the lever l has been depressed, and has effected the operations described, the thumb may be removed from it, when it returns, by the action of the spring n , to the position represented in the drawings, the projection P of the said lever coming over the rear end of the open breech-chamber. The exploded cartridge-case is now removed from the breech-chamber a , and a fresh cartridge may be introduced into the barrel. On introducing the cartridge, its rim presses back the spring-stud r , which, when the cartridge is in its place, bears against the said rim, and holds the cartridge in the barrel. The breech-block c is now shut down, by its handle or thumb-plate c^1 , the said block pressing back in its motion the projection P on the lever l . When the block

has been completely shut down, the said projection *f* snaps over the block *c*, and securely fixes it down. The gun is now ready to be discharged, as illustrated in the drawings.

The gun may be provided with mechanism for starting the breech-block on the drawing back of the lever *l*.

This arrangement of my invention is represented in connection with the gun shown in figs. 13, 14, 15, 16, and 17—

Figure 13 representing a side elevation of the gun, (without the stock);

Figure 14, a transverse vertical section of the same;

Figure 15, the cocking-lever;

Figure 16, the hammer; and

Figure 17, the lever and hammer combined.

Near the free end of the spring *n*, which raises the lever *l*, a pin, *n*², is connected, in the manner shown in the cross-section, fig. 14.

The upper end of the pin *n*² passes through and works in a hole at *a*², in the bottom of the breech-chamber *a*, and, when the breech-block *c* is in its place, bears upon the under side of the said block. As the lever *l* is drawn back to open the breech, the spring *n* is raised and brought into a state of tension. The pin *n*², carried by the said spring, is consequently raised, and made to bear with great force upon the block *c*, and start the said block *c* from the breech-chamber *a*. As the lever *l* is raised by the spring *n*, the said spring descends, carrying with it the pin *n*² to the position represented in the drawing. The bottom of the breech-block *c* is cut away, to permit it to shut down without interfering with the projecting upper end of the said pin *n*².

In this arrangement, the lever *l* has a projection, *P*, formed upon it, which, when the said lever is depressed, strikes against the face of the hammer *g*, and carries the said hammer down to its cocked position.

Figure 18 represents, partly in side elevation and partly in longitudinal vertical section, another gun, containing my improvements, in which said gun the hammer is provided with half-cock mechanism.

Figure 19 is an elevation of the same, without the stock, taken from the opposite side of the gun to that at which the elevation of fig. 18 is taken.

Figure 20 represents the lever separately;

Figure 21, the hammer separately; and

Figure 22, the cartridge-case extractor separately.

In addition to the half-cock mechanism, the arrangements for actuating the cartridge-case extractor, and for raising the breech-block, are different in figs. 18 and 19 from those represented in figs. 1 to 11 of the drawings.

l is the lever for holding down the breech-block, for depressing the hammer *g*, and for actuating the extractor *p*.

n is the spring, for raising the said lever *l*.

The hammer *g* is furnished with mechanism similar to that of the hammer or cock of an ordinary gun; that is to say, the tumbler of the said hammer *g* is furnished with half-cock and full-cock bents at *u*, and also with a sere, *v*, for engaging with one or other of the said bents.

w is the sere-spring.

The said sere *v* turns on the side of the breech-chamber, and its longer arm is acted upon by the trigger *k*, in the ordinary way.

The main-spring *i*, of the hammer, is connected to the said hammer by the ordinary link, *i*².

The hammer *g* has a comb, *g*⁶, for bringing it to full cock by the thumb.

In this arrangement, both the lever *l* and hammer *g* project through the slot behind the breech-chamber, as represented in figs. 18 and 19.

After the discharge of the gun, and on depressing the lever *l*, the said lever carries down, in the man-

ner hereinbefore explained, the hammer *g*, the sere *v* falling into the half-cock bent at *u*, in the tumbler of the hammer, and holding the said hammer in its half-cocked position.

The gun having been reloaded, and the breech-block bolted down, the hammer *g* is brought to full cock by pressure on the comb *g*⁶ of the said hammer, when the gun may be discharged by pulling the trigger *k*.

In this arrangement, the front end, *p*⁵, of the extractor *p*, is turned at right angles to the other part, and the said part, *p*⁵, is operated upon by means of a fixed arm, *x*, and stud *y*, on the lever *l*.

On depressing the lever *l*, to open the breech-chamber, the fixed arm *x* acts against the part *p*⁵, and withdraws the cartridge-case extractor *p*, and when the lever *l* is raised, the said extractor *p* is returned to its place by means of the stud *y* acting against the part *p*⁵, as will be understood by an examination of fig. 18.

Instead of employing a spring-lever for acting against the knuckle *e* of the breech-block *c*, a doubled spring, of the kind represented in fig. 19, and marked 2, may be used. In this case, the free end of the said spring 2 is connected with a sliding bar, 3, working in a slot in the breech-chamber; the upper end of the said bar 3, acting upon the knuckle of the block *c* in the manner hereinbefore described with respect to the spring-arm or lever *f f*².

The parts of the gun, figs. 18 and 19, which I have not described, are marked with the same letters as corresponding parts in figs. 1 to 11.

Instead of placing the lever, by which the breech-block is held down, the hammer cocked, and the cartridge-case extractor worked, at the back of the breech-chamber, as in the several arrangements hereinbefore described, the said lever may be placed outside the gun, in the position usually occupied by an ordinary cock or hammer.

This arrangement of my invention is represented in figs. 23, 24, 25, 26, and 27 of the drawings—

Figure 23 representing a side elevation of the gun;

Figure 24, the same, partly in section, without the stock; and

Figures 25, 26, and 27 are parts of the same.

g is the hammer of the gun, of the kind hereinbefore described, turning on the pin or centre *g*², carried by bearings on the under side of the breech-chamber.

l is the lever, situated at the side of the gun, by which the block *c* is held down, the hammer *g* cocked, and the extractor *h* worked.

The said lever *l* turns in the plate *m*, which plate is fixed to the stock of the gun.

On the axis of the lever *l*, and situated on the inner side of the plate *m*, is a forked arm, *n*.

The return motion of the lever *l* and arm *n* is effected by the spring *p*, bearing against the tail of the said arm *n*, as seen in the separate view, fig. 25.

A hole, *n*², is made in the forked arm *n*, which fits loosely upon the pin or axis *g*², of the hammer *g*.

Also, turning loosely upon the axis *g*², of the hammer *g*, is a second arm, *q*, shown separately in fig. 27.

The said arm *q* is provided with three projections, *r s t*. With the projection *r* the fork of the arm *n*, of the lever *l*, engages, and thereby, on the motion of the said lever, gives a corresponding motion to the loose arm *q*. The projection *s*, of the arm *q*, engages between the fork *h*², of the extractor *h*, shown separately in fig. 26, and the projection *t*, of the said arm *q*, bears in front of the hammer *g*.

On pulling back the lever *l*, the forked arm *n* gives motion to the loose arm *q*, which latter arm, by means of its projections *s t*, depresses and cocks the hammer *g*, and withdraws the cartridge-case extractor *h*.

On loosing the lever *l*, it is raised by the spring *p*,

and the cartridge-case extractor is at the same time pushed back by the arm *f* acting upon the opposite side of the fork of the said extractor.

As the hammer of the gun in this arrangement is concealed, I provide the said gun with an indicator, by means of which the position of the hammer is readily ascertained. This indicator consists of a small rod, *u*¹, sliding radially in a slot at *v*¹, made in the side of the breech-chamber, a spring, *w*¹, acting on a pin or projection on the said rod, pressing it towards the hammer *g*.

The edge or periphery of the hammer *g* is eccentric to the axis *g*², on which it turns, so that when the hammer is cocked, the said eccentric edge bears upon the rod and projects it outwards, as indicated in dotted lines, and thus indicates that the hammer is cocked.

On the discharge of the gun, the indicator *u* is returned to the position represented by the action of the spring *w*.

The indicator described and represented, may be applied to the guns previously described, and the said indicator may be employed for discharging the gun, by giving it a position more nearly horizontal than that represented. By making a shoulder at the back of the head of the hammer, against which the end of the indicator abuts, pressure on the said indicator causes it to start the hammer, and thereby to discharge the gun.

The several arrangements of parts hereinbefore described, may be applied to guns in which the closing-block is hinged to the open breech-end of the barrel, instead of to the side of the breech-chamber, or shoe.

The various lock-actions hereinbefore described, may be applied to double breech-loading guns and pistols, as well as to single breech-loading guns and pistols, and to breech-loading fire-arms, in which the breech is opened and closed in ways different from that hereinbefore described, and illustrated in the accompanying drawings.

In figs. 1, 2, and 13, the bolt or pin which I use for preventing the accidental discharge of the gun is represented. In the said figs. 1, 2, and 13, the bolt or pin is marked 4, and the said bolt is represented separately in fig. 12. In figs. 1 and 2, the bolt 4 is attached, by a chain, 5, to the trigger-guard, and in fig. 13, to the tang of the breech-chamber.

In the sides of the rear end of the breech-chamber, at 6, 7, fig. 2, screwed holes are made, of a size proper to receive the screwed part 4^a, of the said bolt or pin 4, and in the hammer *g* and lever *l*, holes are made, of a size proper to receive the plain stem of the pin or bolt.

When the bolt or pin 4 is screwed into the hole 6, in the right-hand side of the breech-chamber, as represented in the drawing, it enters the holes in the lever *l* and hammer *g*, and fixes the said parts down, and thereby makes the whole mechanism of the gun incapable of motion.

When the hammer *g* has been cocked, and it is wished to fix it in its cocked position, the bolt or pin 4 is screwed into the hole 7, in the left-hand side of the breech-chamber. The bolt or pin in this case passes transversely in front of the cocked hammer *g*, and prevents its accidental discharge, the lever *l* being at liberty to move, so that, if necessary, the breech-block *c* may be raised, and the breech-chamber *a* and the contents of the barrel be examined before the discharge of the gun. Or a bolt or pin, of the kind represented, may be passed through a hole in the breech-block *c*, and made to engage in a hole or depression in the striker *d*, and thereby prevent the advance of the said striker, should the gun be accidentally discharged.

When the bolt is not in use, it may be screwed in a hole, 8, in the trigger-guard, or other convenient part of the gun.

In the case of double guns, the bolt or pin may pass through a hole, which permits it to fix the discharging and breech-loading mechanism of both barrels; or a separate bolt or pin and hole may be used for each barrel.

Instead of making the bolt or pin screw into the hole in the breech-chamber, or other part of the gun, the bolt or pin may be made plain, and be made to fit the hole tightly.

Although I prefer to connect the bolt or pin to the fire-arm by a chain, or other connection, yet I do not limit myself thereto, as the bolt may be detached from the fire-arm, and carried in the pocket, to be used as occasion may require.

The bolt or pin described and represented, is applicable to all kinds of single and double muzzle-loading and breech-loading guns and pistols.

Having now described the nature of my invention, and the manner in which the same is to be performed, I wish it to be understood that I do not limit myself to the precise details herein described and illustrated, as the same may be varied without departing from the nature of my invention; but

What I claim as my invention, is—

1. In breech-loading fire-arms, such as described, the combination, with the breech-block, cartridge-extractor, and hammer, of an independent vibratory or pivoted lever, having an independent return movement for locking the breech-block, and connected with said parts in the manner set forth, so that by the action of said lever the opening of the breech, the withdrawal of the cartridge, and the cocking of the hammer may be effected at one operation, as specified.

2. The combination, with the hammer and breech block and shoe, of the lever *l*, and its actuating-spring, in the manner described; so that while the lever, in its backward movement, carries with it and cocks the hammer, it will be caused by its spring to return, independently of the hammer, in position to effect the locking of the breech-block as set forth.

3. Lifting the hinged breech-blocks of breech-loading fire-arms from the breech-chambers or shoes of the said fire-arms, and supporting the said blocks in their raised position by means of a spring or spring-lever, arranged and operating upon the joint of the block, substantially in the manner hereinbefore described, and illustrated in the accompanying drawings.

4. In connection with the breech-chamber and hinged block, the combination and arrangement of parts described, and illustrated in the accompanying drawings, for starting the breech-block from the breech-chamber, or shoe, on releasing the said block.

5. The spring-stud for retaining the cartridge in the barrel, constructed and arranged in the breech-chamber, as hereinbefore described, and illustrated in the accompanying drawings, so that the said gun may be loaded, with the muzzle-end of the barrel raised higher than the breech-end.

6. The improvement or improvements hereinbefore described, and illustrated in the accompanying drawings, in preventing the accidental discharge of breech-loading and other fire-arms, that is to say, by means of a detachable or removable bolt or pin, made to pass, from the exterior of the gun, transversely through, or bear against such part or parts of the fire-arm as will cause the said bolt or pin to fix the hammer, or fix such other part of the fire-arm as will prevent the discharge of the fire-arm.

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