

UNITED STATES PATENT OFFICE.

E. MAYNARD, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 5,126, dated May 27, 1861.

To all whom it may concern:

Be it known that I, EDWARD MAYNARD, of Washington city, in the District of Columbia, have invented certain new and useful Improvements in Fire-Arms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a vertical longitudinal section of a musket constructed according to the principles of my invention; and Figs. 2, 3, 4, and 5 are views of detached or fragmentary portions of the same.

My invention relates to that class of fire-arms which are loaded at the breech of the barrel; and it consists of several distinct parts, which are not necessarily used in connection, but which, when so used, unite in forming a breech-loading fire-arm containing certain valuable qualities not heretofore embodied in such an implement.

The first part of my invention consists in combining, with a musket or other fire-arm whose barrel is disconnected from its breech and is pivoted to the stock at some point intermediate between its butt and its muzzle, a lever beneath the stock, by means of which the barrel is turned upon its pivot to raise and to depress its butt, which lever also locks the barrel to its breech when the butt is depressed and unlocks it therefrom to allow the butt to be raised.

The second part of my invention consists in combining with the improvement above specified a piston breech-pin, which, by the movement of the lever in depressing the butt of the barrel and locking it in place, is made to move the cartridge forward in the barrel and to close the opening at the butt, which also, by the movement of the same lever in unlocking the barrel, is made to open the butt before the latter rises under the action of the lever.

The remaining parts of my invention relate to the construction and arrangement of the several parts of fire-arms, and are designed to add to their efficiency, while they at the same time enable me to alter and modify fire-arms already constructed, and particularly the United States Government musket, in such manner as to embody the improvements above specified with an increase in strength and durability.

The fire-arm represented at Figs. 1, 2, 3, 4, and 5 is an example of a musket so modified. It contains the ordinary stock, A, and the barrel B. The barrel B has its breech sawed off, leaving a straight tube open at both extremities. The stock A is sawed in two pieces or sections at the hinder edge of the band C, and a thin wedge-shaped piece is removed, as shown at *a*. The hinder section is slotted to admit a strap, D, which is more fully represented in elevation and plan at Figs. 4 and 5, and which extends from that part of the stock usually occupied by the breech of the gun in a forward direction to the middle of the band C. The hinder extremity of the front section of the stock is also slotted to admit a short strap, E, which is forked at its hinder extremity to embrace the front end of the hinder strap, D, and extends forward into the front section to strengthen it. The adjoining extremities of the two straps are perforated transversely to admit a screw, *b*, which passes through the band C, the forward portion of the stock, and the holes in the straps, as shown in section at Figs. 1 and 3, thus forming a pivot on which the forward section of the stock and the barrel secured thereto can be turned to raise or depress the butt of the barrel, at the same time firmly securing the band C to the stock and connecting the whole with the strap D. The hinder part of this strap is enlarged, as shown at Figs. 4 and 5, to form the breech of the musket, to contain the piston breech-pin, and to afford means for hanging and moving the lever and connecting it with the movable members upon which it operates. This lever F is bent, its two arms being nearly at right angles with each other. It is pivoted at the intersection of its two arms to ears *c*, which depend from the lower side of the strap D. Its longer arm, when the butt of the barrel is depressed, extends backward in a direction parallel with the lower side of the stock, and is of such form that it constitutes the trigger-guard. The shorter arm of the lever F, which, when the butt of the barrel is depressed, extends downward from the strap D, is forked at its lower extremity, and is connected, by means of a link, *d*, with the lower forked extremity of a stirrup, G, to which the butt of the barrel is firmly screwed. The link *d* extends upward through a slot in the strap D,

which is of the proper size and form, as shown at Fig. 5, to receive the lower extremity of the stirrup G, whose front side, when the butt of the barrel is depressed, bears firmly against the shoulders *e* of the slot, and thus prevents the barrel from being moved forward from the breech by the explosion of the charge. When the butt of the barrel is depressed, the lever, link, stirrup, barrel, and strap occupy the positions in which they are respectively represented in Fig. 1, and when the butt of the barrel is to be raised the lever is moved downward and forward until the parts of the musket before mentioned occupy the positions in which they are represented in red lines in Fig. 1. On inspecting this figure it will be seen that when the butt of the barrel is depressed, the pivot *g*, which connects the lever F with the link *d*, occupies a position a little behind the straight line which passes through the centers of the pivots *k* and *i*. In this position, therefore, any force applied to raise the butt of the barrel will tend to draw the longer arm of the lever upward against the stock or to hold it more firmly in its place. Consequently the lever is made to act as a lock to hold down the barrel, and thus keep the latter in its place. In order to prevent the hinder extremity of the leather from accidentally dropping, it is constructed to spring and catch upon a snug, *j*, projected from the stock. The link *d* is bent to allow the pivot *k*, which connects the lever F with the ears of the strap D, to pass through from side to side. This bent form of the link requires a corresponding increase in the length of the slot in which it moves, and, as it is an important requisite in fire-arms that no place should be left for the entrance and accumulation of dirt, the link is of such shape that its front extremity, when depressed, closes the mouth of the slot.

That portion of the strap D which forms the breech of the gun has a cylindrical socket formed in it to admit a piston breech-pin, H. The latter is of such diameter that it will just enter and close the open butt of the barrel, as shown at Fig. 1, and the socket in which it is inserted is so situated with respect to the barrel that when the butt is depressed the socket forms a continuation of the bore. The hinder extremity of this piston breech-pin is slotted vertically, to admit the upper extremity of a flat bolt, I, which slides vertically in a corresponding slot in the strap, and extends downward into the hinder arm of the lever, which is slotted to admit it. The lower extremity of this sliding bolt is formed into a hook, *k*, which engages upon a pin, *o*, passed transversely through the lever. The upper extremity of the sliding bolt has a slot formed in it to admit a pin, *l*, which passes transversely through the piston breech-pin, and is secured thereto. This slot is of such shape that when the bolt is moved upward its hinder edge, bearing upon the pin *l*, forces the piston-breech forward into the butt of the barrel and locks it in that position, while by re-

versing the movement of the sliding bolt the forward edge of the slot bearing against the pin moves the piston-breech backward in its socket, and thus draws its front extremity out of the barrel. This downward and upward movement of the sliding bolt is effected by the movement of the lever. As the hinder arm of the latter is depressed, the pin *o*, acting upon the hook *k*, draws the bolt downward until the pin, which in its movement describes the arc of a circle of which the lever-pivot *k* is the center, is drawn out of the hook and occupies the position in which it is represented in red lines in Fig. 1, thus leaving the sliding bolt and the piston breech-pin at rest. As this movement of the pin is effected while the link-pivot *g* is moving almost horizontally, or nearly parallel with the barrel, the latter is not appreciably moved until the piston breech-pin is withdrawn from the butt, after which the continued forward movement of the lever will raise the butt of the barrel. When the lever F is turned back to depress the butt of the barrel, the pin *o* re-engages with the hook *k*, and thus returns the sliding bolt to its place, by which operation the piston-breech is moved forward and caused to enter the butt of the barrel. The sliding bolt I is prevented from being accidentally withdrawn from the strap D by a screw, *x*, which passes transversely through a vertical slot, *y*, in the sliding bolt. The butt of the barrel is raised in order that the cartridge may be inserted into it. To facilitate this operation, that portion of the butt which receives the cartridge is bored out somewhat larger than the rest of the barrel. This enlargement of the butt permits the insertion of a larger ball than could be inserted in the muzzle, so that the ball, when the charge is fired, is slugged or caused to pack tightly in the bore. The shoulder formed at the junction of the chamber with the bore also serves to prevent the cartridge from being thrust too far into the barrel.

Cartridges for a gun of this construction should be made slightly longer than the chamber in the butt, so that the tail of the cartridge when in place will project a little beyond the butt of the barrel; hence, when the butt of the barrel is depressed, the projecting extremity of the cartridge will be cut off by the combined action of the edge of the butt of the barrel and the upper edge of the breech, which act upon it like shears. In order to facilitate this operation, and at the same time to provide for wear, the upper portion of the breech is faced with a tempered steel plate, *m*, which is screwed down to the breech, and can be moved forward as its front edge wears away.

The piston breech-pin H is perforated to permit the passage of fire from the nipple on which the percussion-cap or primer is exploded by the hammer of the lock. This perforation extends backward a short distance through the center of the breech-pin until it meets a hole bored transversely into the side thereof.

This latter hole, when the breech-pin is in its most forward position, exactly corresponds with the hole in the tube J, to which the nipple is secured. When, therefore, the piston breech-pin is moved backward in its socket in the operation of raising the butt of the barrel for loading, the transverse hole in it no longer corresponds with that in the nipple-tube, the communication from the nipple to the barrel is broken, and is not re-formed until the breech-pin is moved forward. As this is the last movement which is made in depressing the butt, it is evident that the charge cannot be fired from the nipple before all parts of the gun are in their proper positions. In order to facilitate the firing of the charge, the central perforation of the breech-pin is widened out, as at *p*, Fig. 1, to allow the tail of the cartridge to open, and the powder from the opened tail to distribute itself loosely therein, which distribution insures its more thorough combustion and renders the firing of the charge more certain. In order to prevent the smoke formed in firing from passing backward and clogging the socket of the breech by forming soot therein, a ring-channel, *s*, is formed half in the butt of the barrel and half in the periphery of the piston breech-pin. Suitable openings are also made to allow the gases collected in this ring-channel to pass out into the air.

The foregoing description is deemed by me sufficiently explicit to enable a mechanic skilled in the art of constructing fire-arms to apply my improvements. It is evident that the construction and arrangement of the several parts of such an implement, and the manner of operating them by the lever, may be

modified to a very great extent without departing from the principles of my invention.

What I desire to secure by Letters Patent and claim as my invention in that class of breech-loading fire-arms in which the barrel is disconnected from the breech, and is pivoted at some point intermediate between its butt and its muzzle to the stock, is—

1. A lever beneath the stock, by means of which the barrel is turned upon its pivot to raise and to depress its butt, and is locked to its breech when the butt is depressed, and is unlocked therefrom to allow the butt to be raised, the several members of the implement being arranged and operating substantially as herein set forth.

2. In combination with the above-claimed device, a piston breech-pin which, by the movement of the lever to depress the butt of the barrel and to lock it in place is made to move the cartridge forward in the barrel and to close the butt thereof, and which by the movement of the lever to unlock and raise the barrel is made to unclose or open the butt of the barrel before the latter rises under the action of the lever.

3. The sliding bolt I, constructed with slot and hook, or their equivalents, and arranged as herein set forth, in combination with a lever-handle, for the purpose of imparting motion to the piston breech-pin from the lever beneath.

In testimony whereof I have hereto subscribed my name.

EDWARD MAYNARD.

Witnesses:

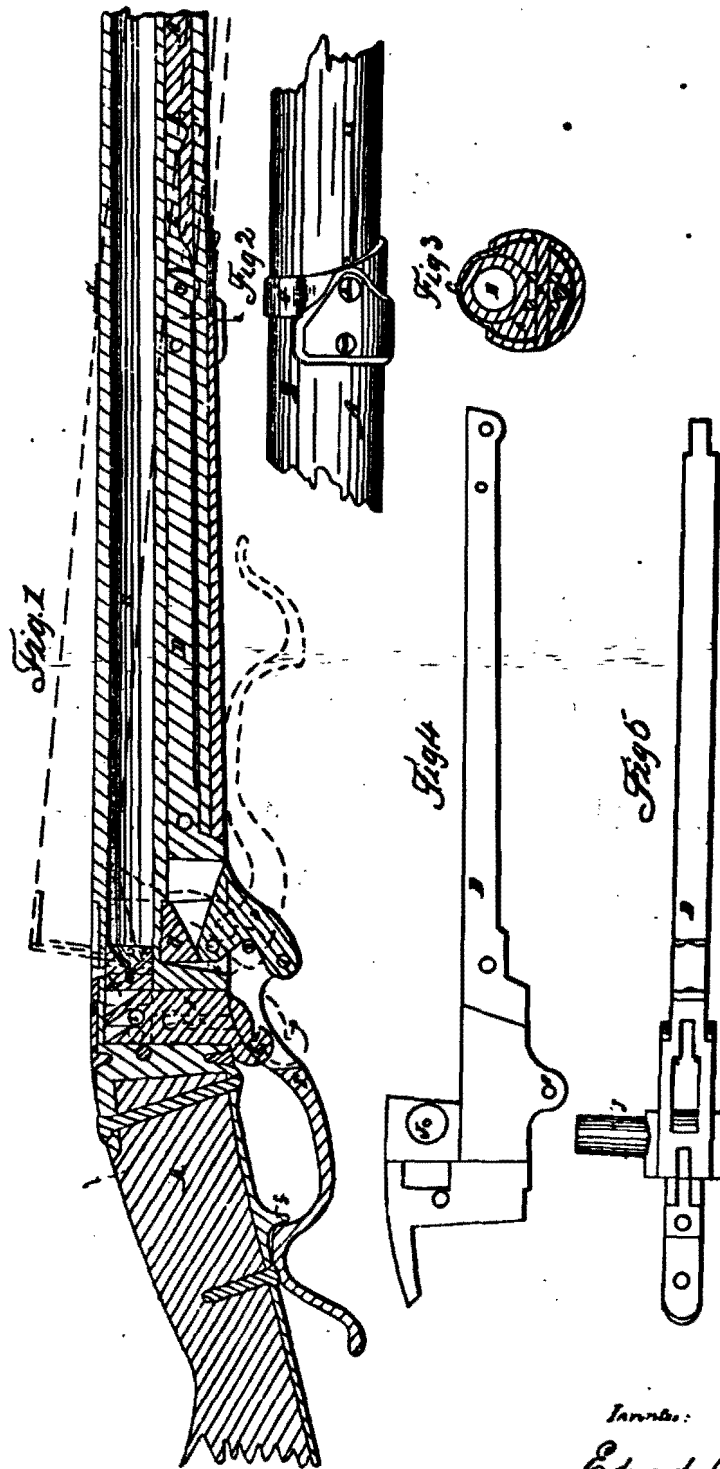
ANTHY. HYDE,
THO. R. SUTER.

E. MAYNARD.

Breech-Loading Fire-Arm.

No. 8,126.

Patented May 27, 1881.



Inventor:
Edward Maynard

UNITED STATES PATENT OFFICE.

EDWARD MAYNARD, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN CARTRIDGES.

Specification forming part of Letters Patent No. 15,141, dated June 17, 1856.

To all whom it may concern :

Be it known that I, EDWARD MAYNARD, of the city and county of Washington, in the District of Columbia, have invented and constructed a new manufacture in the shape of an Improved Article of Fixed Ammunition for Breech-Loading Fire-Arms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification—

Figure 1 being a longitudinal section in a line passing through the center of a piece of my improved fixed ammunition, and Fig. 2 a rear-end view of a piece of said ammunition.

Each piece or cartridge of my said improved fixed ammunition consists of a cylindrical-shaped shell, *a*, of brass, or some other tough and stiff metal, having a centrally-perforated bottom, rendered impervious to air and water by internal packing, then charged with powder, and then combined with a projectile, *b*, of the shape and in the manner substantially as hereinafter set forth.

The exposed portion of the projectile *b* is of a pointed or semi-oval shape, and the portion of said projectile that enters the shell is of a cylindrical shape, of such a size as to closely fit within the shell, and having a sufficient length of bearing surface to insure the point of the projectile being retained in a line with the axis of the shell. To insure a perfectly tight joint between the outer periphery of the projectile and the inner periphery of the shell, annular grooves are formed in the cylindrical portion of the projectile, and filled with any suitable greasy composition. The peripheries of the ledges between the grooves in the cylindrical portion of the projectile, fitting closely against the inner periphery of the shell, will prevent the grease working inwardly to injure the powder, or outwardly to soil anything that the ammunition may be brought in contact with. The said greasy composition serves the purpose of rendering the joint between the projectile and the shell perfectly tight while the ammunition is in a fixed state; and when the ammunition is discharged, the said greasy composition serves to lubricate the bore of the gun.

The perforated back end of the shell may be

closed and made perfectly impervious to air or water by placing one or more disks of waxed or gummed paper against its inner surface before placing the powder within the shell.

The projectile should be pressed into the shell with a sufficient degree of force to insure close contact between the inner end of the projectile and the powder, care being taken in so doing not to turn the point of the projectile out of line with the axis of the shell.

After a cartridge has been discharged, the shell *a* should be removed from the chamber of the gun.

In using my improved fixed ammunition, the projectile is set more accurately within the chamber of the fire-arm than it is possible to set it in the best muzzle-loading target-rifles. The cartridges may be exposed with impunity in any weather, and may be handled roughly with less liability to injury or accident than would be likely to occur from such usage of any other fixed ammunition for small-arms known to me.

The shells may be charged a great number of times, with less apparatus and at less cost than that of the ordinary cartridges, and the expense of the shells is so small as to be quite insignificant when taking into account the great advantages possessed by this ammunition.

As a matter of course, the shells of my improved cartridges must be of such a size as to fit accurately within the chamber of the gun the said cartridges are prepared for.

I am aware that cartridge-cases of a tapering shape have been made of sheet-copper or other hard metal, combined with soft-metal rings, as described and represented in a patent granted to A. E. Barnside, March 25, 1856; and I am also aware that the said cartridge can only be used in a movable breech-piece, and that it does not possess in other particulars the peculiar advantages which distinguish my improved cartridge for breech-loading fire-arms; therefore,

What I claim as my invention, and desire to secure by Letters Patent, as a new manufacture, is—

My improved cartridge for breech-loading fire-arms, composed of a hard-metal cylindrical case, charged with powder and combined with

a projectile of such a shape that, whether the case receive a large or a small charge of powder, the said projectile is self-retained in contact with the powder, in such a position that its point must be coincident with the axis of said case, and a perfectly tight joint formed between said projectile and case, by filling the grooves in the former with greasy matter, substantially as herein set forth.

The above specification of my improved fixed ammunition for breech-loading fire-arms signed this 10th day of April, 1856.

EDWARD MAYNARD.

Witnesses:

Z. C. ROBBINS,
M. H. MANSFIELD.

E. MAYNARD.

Cartridge.

No. 15,141.

Patented June 17, 1856.



UNITED STATES PATENT OFFICE.

EDWARD MAYNARD, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN METALLIC CARTRIDGE-CASES.

Specification forming part of Letters Patent No. 22,565, dated January 11, 1859.

To all whom it may concern :

Be it known that I, EDWARD MAYNARD, of the city and county of Washington and District of Columbia, have invented an Improved Metallic Cartridge for Breech-Loading Fire-Arms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification—

Figure 1 being a bottom view of said cartridge; Fig. 2, a top view of the same; and Fig. 3, a section in the line *a a* of Fig. 2.

My improved metallic cartridge is produced by soldering a steel disk to the exterior surface of the bottom of a brass cup, which is of less diameter than the said disk, and then drilling a small central aperture through the combined brass and steel bottom of said cartridge.

Brass is of such a nature that it is not injured by contact with powder, and it is also of such a nature that when a cartridge made of said metal is loaded and placed in the chamber of a gun it will expand, at the instant of discharging the same, to such a degree as to fill the said chamber and prevent the rearward escape of the gases, and it will almost as instantly resume its normal size again; consequently, the said cartridge can be loaded and discharged a very great number of times without injury to its shape or strength; and the said cartridge may also remain loaded for any length of time without being chemically or mechanically injured by the action of the powder.

The steel disk *b* I shall generally bring to a pretty high temper, and then combine it with the bottom of the brass cup *c* by the process of soldering, which method of procedure will impart to the said disk a spring temper of the proper degree of elasticity. I do not, however, intend to limit myself to the particular temper of the steel disk nor to the manner of combining the same with the brass cup. The projecting periphery of the disk *b* forms a flange which enables the cartridge to be readily taken

hold of by the thumb and finger for the purpose of withdrawing it from the chamber of a gun after it has been discharged, and the said flange also serves the purpose of guarding the bottom of the cartridge against being bruised or indented by rough handling when a large number of the cartridges are transported in boxes or barrels. Another useful quality possessed by the steel portion of my improved cartridge is its power of preserving the small size of the vent-hole after a great number of discharges, which enables said vent hole to be closed perfectly water-tight by simply pressing a little wax into the same with the finger, either before or after changing the cartridge. And again, when one of my improved cartridges has been placed in the opened chamber of the Maynard breech-loading fire arm, the movement which brings the barrel thereof to its proper position for firing produces a severe friction between the bottom of the cartridge and the solid breech-piece of said fire-arm, which friction and pressure is not uniform over the entire surface of the bottom of the cartridge, and, therefore, it will readily be perceived that the said strain would distort and destroy either the barrel or the bottom of a soft metal cartridge thus situated, while it produces no injury upon any portion of my improved cartridge.

The composition of the brass and the temper of the steel portion of my improved cartridge, and also the method of combining the one with the other, I shall vary to suit the requirements of practical experience.

What I claim as my invention, and desire to secure by Letters Patent as a new manufacture, is—

An improved metallic cartridge composed of a brass cup combined with an exterior steel disk, substantially as herein set forth.

EDWARD MAYNARD.

Witnesses:

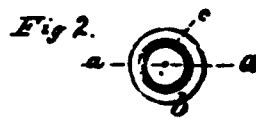
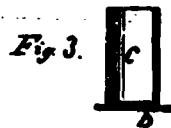
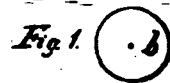
J. H. H. DOLY,
SAM'L. DRURY.

E. MAYNARD.

Cartridge.

No. 22,565.

Patented Jan. 11, 1859.



UNITED STATES PATENT OFFICE.

EDWARD MAYNARD, OF WASHINGTON CITY, DISTRICT OF COLUMBIA.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 26,361, dated December 6, 1859.

To all whom it may concern:

Be it known that I, EDWARD MAYNARD, of the city of Washington and District of Columbia, have invented an Improved Breech-Loading Fire-Arm; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 is a view of the main features of my improved fire-arm as seen from the right-hand side; Fig. 2, a view of a portion of the same as seen from the left-hand side. Fig. 3, a top view of the breech-piece and some of the other parts of the fire-arm, which are either combined with or are contiguous to the breech-piece; Fig. 4, a view of the under side of the breech-piece and some of the parts which are combined therewith; Fig. 5, a section in the line *x-x* of Fig. 3; Fig. 6, a section in the line *y-y* of Fig. 3; and the remaining drawings represent by plan and sectional views various parts of the fire-arm in detail.

Similar letters indicate like parts in each of the drawings.

The form of the breech-piece A and the manner of connecting the same with the barrel B of my improved fire-arm are clearly represented in the drawings. The fulcrum-pin *f*, which forms a portion of the jointed connection between the barrel and the breech-piece, is received into apertures in a pair of ears, *a'* *a'*, at the extremity of the projecting front portion of the breech-piece; and a hook, *c*, on the under side of the barrel fits accurately within the said ears at the same time that it closely embraces the said fulcrum-pin, as shown in Figs. 4 and 5.

The connection of the breech-piece A, the barrel B, and the actuating-lever D with each other is clearly represented in Fig. 5, and may be described as follows: At its fulcrum end the lever D has two parallel projections, which are doubly perforated, as shown in Fig. 11. The fulcrum end of said lever is received into the slot *p'* in the projecting front portion of the breech-piece, and is securely jointed to the sides thereof by means of the pin *u*, which passes through the perforations nearest to the end of the lever. One end of the curved link C is received into the space between the ears *e'* *e'*, which descend from the under side of the

butt of the barrel, and is jointed to said ears by the pin *k'*. The other end of the said curved link passes between the parallel parts of the double fulcrum end of the lever D, and is jointed thereto by means of the pin *l'*, which passes through the perforations near the inner extremities of the said portions of the head of the lever. A shoulder, *d*, descends from the under side of the barrel, between the front ends of the ears *e'* *e'*, which shoulder, when the barrel is thrown into the position shown in Fig. 5, bears against an adjustable block, *b*, that is fitted into a groove in the inner surface of the projecting front portion of the breech-piece, immediately in front of the slot *p'*, and in such a manner that by means of the set-screw *a* the butt-end of the barrel can be brought against the face of the abutment of the breech-piece with any desired degree of tightness. The aforesaid adjustable bearing-block *b* is prevented from being thrown out of its place by the screw *e*, which passes to the said block through an aperture in the aforesaid portion of the breech-piece, which aperture is enough larger than the shank and head of said screw to allow the said block to be moved toward the front or rear to any necessary extent. The beveled front end of the block *b* fits accurately against the beveled head of the adjusting-screw *a*, whose screw-shank passes outwardly through a screw-aperture in the aforesaid portion of the breech-piece, and there presents a rounded and finished appearance, which may be nicked for the purpose of enabling the said screw to be turned from the outer side of the breech-piece. By turning the screw *a* in the proper direction it will readily be perceived that the face of the butt of the barrel can be brought up against the face of the abutment of the breech-piece with a sufficient degree of force to form a close joint between the two, the hook *c* being of such a length as to allow the requisite and necessary longitudinal movement of the barrel upon the fulcrum-pin *f*; but for the purpose of insuring a perfectly tight joint between the abutment of the breech-piece and the butt of the barrel, I insert a flange-bottomed metallic cup, *e*, into the chamber of the barrel, and then so adjust the position of the block *b* as to cause the radiating flange of said cup to be closely embraced between the face of the abutment of the breech-

piece and the annular face of the butt of the barrel when the barrel is brought to the position shown in Fig. 5. The aforesaid metallic cup *c* may be connected to the perforated head of the fulcrum-screw *f* by means of a strap or a chain, to be used with loose ammunition; or any number of flange-bottomed metallic cups of the proper size may be charged with powder and projectiles and be carried to the field by the soldier or sportsman for ready and rapid firing. Each of the aforesaid metallic cups must have a small aperture formed in the center of its bottom to receive the priming-fire, which passes through the central perforation in the abutment of the breech-piece; and I have ascertained by practical experience that the filling of the small apertures in the bottoms of the aforesaid metallic cups with some greasy composition renders them, when charged, perfectly water-proof, while it does not in the slightest degree impede the entrance of the priming-fire. I give the actuating-lever *D* such a shape that when the barrel is in the position for firing shown by Fig. 1 the said lever will form a guard for the trigger. The link *C* must be slightly elastic, and should be made of the toughest and strongest metal. The shape of this link is such that the pivots *m* and *l*, which serve to combine it with the barrel and with the actuating-lever, will be in such positions with relation to the pivot-pin *u* that when the said parts are in the positions shown in Fig. 5 a line projected through the center of the pins *l* and *u* will be tangential to the front side of the pin *l*. This arrangement causes the greatest amount of leverage to be exerted upon the barrel just before the actuating-lever is brought home to its closed position, and therefore the link *C* exerts a considerable degree of retaining force upon the lever *D* after it has reached its closed position. The said lever is protected against lateral strains when it is in its closed position, and it is also held more securely in said position by a short pin, which descends from the under strap, *F*, and enters an aperture in the portion of the lever which bears against said strap, as shown in Fig. 5. The under strap, *F*, projects rearwardly from its connection with the under side of the body of the breech-piece, and is secured to the under side of the stock. The lever *D* can easily be thrown into the position shown in Fig. 2, and when in said position the butt of the barrel is elevated a sufficient distance above the abutment of the breech-piece to entirely uncover the opening to the chamber of the bore for the withdrawal or the reception of the metallic cup *c*. The pin *u*, which connects the extremity of the lever *D* with the breech-piece, is retained in its position therein by the overlapping head of the screw *a'*, whose shank is received into a screw-aperture within the breech-piece; but by turning the pin *u* into the position represented by Fig. 12 a groove, *z*, in a portion of the length

of one side of the same receives a portion of the projecting head of the retaining-screw *a'*, and thereby allows the said pin to be drawn out far enough and only far enough to detach it from its hold upon the lever *D*, and as soon as this has been done the barrel can be readily detached from the breech-piece by unhooking it from the pin *l*, and then drawing the lever *D* up through the slot *p'* in the projecting front portion of the breech-piece.

The above-mentioned pivot-pin *u* carries a right-angular arm, *h'*, upon its front end, which enables the said pin to be easily turned upon its axis, and then withdrawn to the desired extent without the aid of instruments.

To facilitate the removal of the flange-bottomed metallic cup from the chamber of the barrel, I form on opposite sides of the butt of the same rearwardly-tapering and slightly-concave faces *r* and *r'*, of sufficient depth at their after extremities to enable the flange of the cup to be readily taken hold of by the thumb and finger of the user when the barrel is thrown into the position shown in Fig. 2. Within that portion of the breech-piece which is covered by the plate *L*, a recess is formed for the reception of the circular-shaped body of the hammer *E*. The hammer is combined with the mainspring *u* by means of the link *r* and the requisite recesses in the body of the hammer, as shown in Figs. 5 and 6. The gear-spring *O* and the mainspring *u* are both combined with the under strap, *F*, by means of the screw *p*, and from that point the said springs pass forward to the hammer and to the trigger through a notch in the stock and an aperture in the breech-piece. The aforesaid plate *L* is secured in its position upon the breech-piece by the pins *l* and *m*, as shown in the drawings, the former pin also serving as a pivot for the hammer. A perforation in the left-hand side of the breech-piece, which opens into the delivery-throat of the primer-magazine, receives the shank of the burr-headed pin *i*, upon whose inner extremity the ratchet-wheel *h* and the feeding-wheel *g* are placed, and are securely combined therewith by means of a screw, as shown in Fig. 7.

The pawl *j*, which communicates motion from the lower portion of the body of the hammer to the ratchet-wheel *h*, is jointed to the said portion of the body of the hammer, and is always kept in a working position by means of a guiding projection from the breech-piece near the outer extremity of said pawl, and by a spring which projects from its upper side and bears against a projecting pin from the body of the hammer, all as shown in Fig. 6.

For the purpose of preventing the abrasion of the mouth of the chamber during the operation of cleaning out the barrel of my improved fire-arm, I sub- insert therein, preliminary to said operation, an open flaring tube, *P*, substantially as represented in Fig. 13.

Having thus fully described my improved

breech-loading fire-arm, what I claim therein as my invention, and desire to secure by Letters Patent, is--

1. The peculiar manner of connecting the barrel to the breech-piece--viz., the hook *c* on the under side of the barrel taking hold of the pin *f* (or the equivalent thereof) at the front end of the breech-piece, while the link *C*, the lever *D*, and the joint-pins of said link and lever are arranged in such a manner with relation to the slot in the breech-piece and the ears on the under side of the butt of the barrel as to form a treble-jointed and compound leverage connection between the breech-piece and the butt of the barrel of such a character that the barrel can be instantly thrown from a firing position to a loading position, and vice versa, and also of such a character that the barrel can be easily and quickly detached from the breech-piece, or be securely united thereto, substantially in the manner herein set forth.

2. The combination of the metallic block *b*, the screw *e*, and the screw *a* with each other and with the front portion of the breech-piece in such a manner with relation to the shoulder *d* on the under side of the barrel that the joint between the butt of the barrel and the abutment of the breech-piece can be tightened or loosened, substantially in the manner herein set forth.

3. The retaining of the pivot-pin *x* in its position within the breech-piece by means of the overlapping head of the screw *a'*, but this only when the longitudinal groove *z* in one side of a portion of the length of said pivot-

pin is so located that when the pin is turned to the position shown in Fig. 12 (or any other previously-determined position) it may be drawn out far enough and only far enough to detach the said pin from its hold upon the lever *D*, and thereby allow the barrel to be separated from the breech-piece, substantially in the manner herein set forth.

4. When the pivot-pin *x* is retained in its position within the breech-piece by the overlapping head of the screw *a'* in such a manner that it can be loosened by partially turning the same upon its axis, the arm *b'* upon the outer end of said pin, which enables it to be readily turned upon its axis, and partially withdrawn from its place without any mechanical assistance, substantially as herein set forth.

5. When the barrel is connected to the breech-piece in the within-described manner, the producing of a tight joint between the butt of the barrel and the abutment of the breech-piece by combining therewith a flange-bottomed metallic cup, substantially as herein set forth.

6. Giving the opposite faces *r r* of the butt of the barrel such a shape that the flange-bottomed metallic cup *r* can be easily taken hold of by the thumb and finger of the free hand of the user when the barrel is thrown into the loading position, substantially as herein set forth.

EDWARD MAYNARD.

Witnesses:

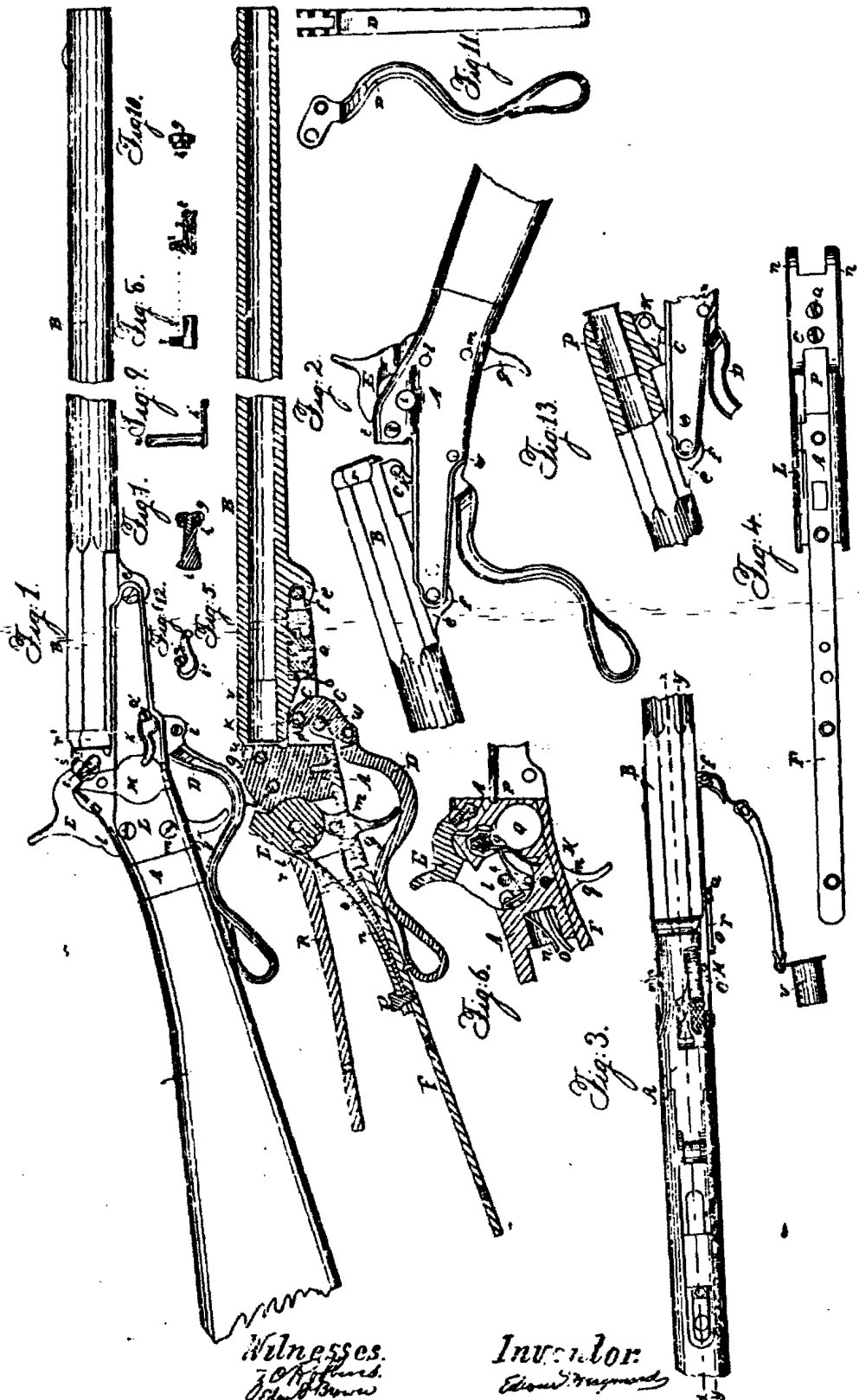
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Breech-Loading Fire-Arm.

No 26.364.

Patented Dec. 6, 1859



Witnesses.
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