

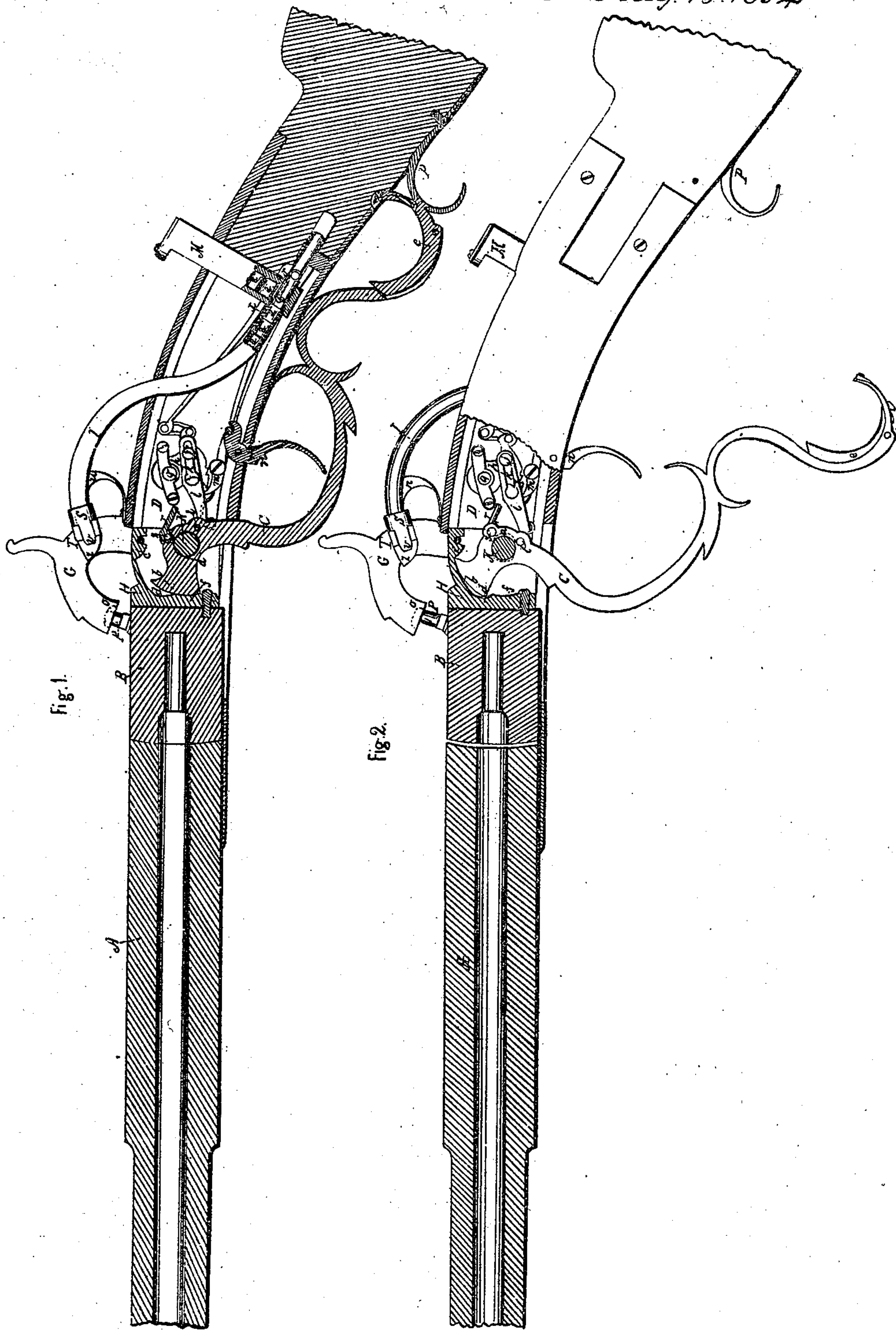
W. F. Sweet

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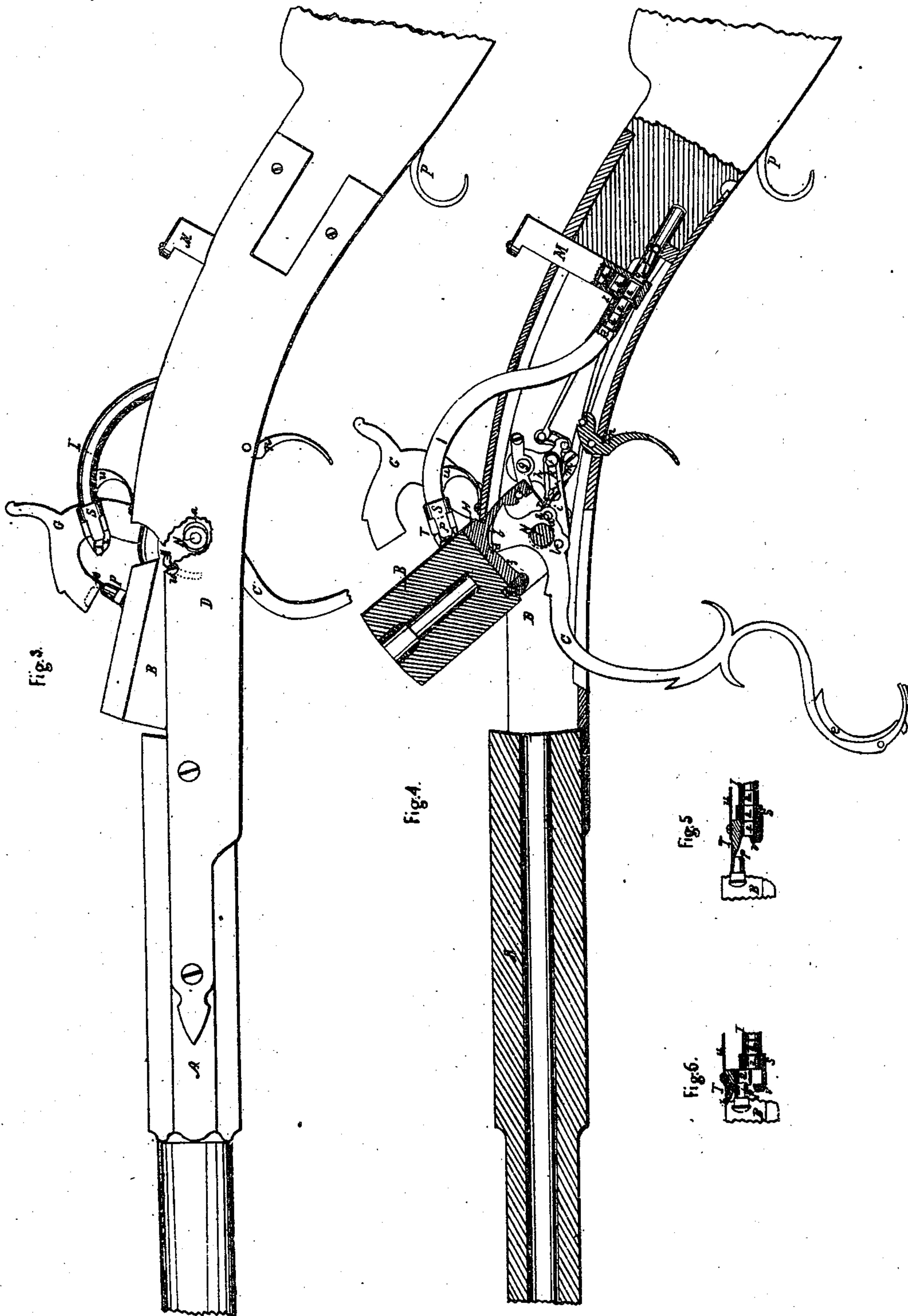
Breech-loading Fire-arm.

N<sup>o</sup> 11536.

Patented Aug. 15. 1854.



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*Breech-loading Fire-arm.*  
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# UNITED STATES PATENT OFFICE.

WILLIAM A. SWEET, OF POMPEY, NEW YORK.

## IMPROVEMENT IN FIRE-ARMS.

Specification forming part of Letters Patent No. 11,536, dated August 15, 1854.

*To all whom it may concern:*

Be it known that I, WILLIAM A. SWEET, of Pompey, in the county of Onondaga and State of New York, have invented a new and 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 part of this specification.

Figure 1 is a longitudinal vertical section through the center of that portion of the gun which is necessary to show my improvements as it appears after being discharged and before reloading; Fig. 2, a similar view showing the positions of the parts after the completion of the first motion in opening the breech for reloading; Fig. 3, a side elevation thereof, exhibiting the relative positions of the hammer and nipple at another stage in the opening of the breech; Fig. 4, a section similar to the above, showing the positions of all the parts when the breech is completely opened, ready to receive the cartridge; Fig. 5, a central horizontal section of the cap-holder, in connection with a view of the nipple just as it reaches said cap-holder; and Fig. 6, a similar section of the cap-holder and view of the nipple at the moment when it begins to enter the cap.

Like letters designate corresponding parts in all the figures.

The first feature of my invention consists in producing the compound longitudinal and vibratory movement of the breech, and afterward immovably securing it in contact with the barrel by a single forward and return motion of the actuating-lever C—viz., by means of the cam-piece H, provided with a shoulder, *c*, a cam-surface, *d*, and a wedge-surface, *f*, against which said lever, acting successively, substantially as hereinafter described, produces, respectively, the backward longitudinal and vibratory motions of the breech, then the forward longitudinal motion thereof, and finally presses it against the barrel with immense force.

Another feature of my invention consists in cocking the gun by the action of the actuating-lever in operating the breech, while at the same time the hammer is free to be raised in the ordinary way, without moving said lever, by means of the link *i*, one end of which is hinged to the lever and the other end provided

with a slot, *k*, that receives a pin, *j*, on the hammer-dog *h*, operating substantially as hereinafter specified.

The next feature of my invention consists in such an arrangement of a broad cavity in the face of the hammer with a sharp edge, *o*, on its rear side, in combination with the compound movement of the breech and the motion of the hammer in a larger circle as to remove the exploded cap from the nipple *p*, substantially in the manner hereinafter set forth.

The last feature of my invention consists in the combination of the mouth-piece S, attached to the extremity of the feeding-tube I, and provided with a notched tongue, *v*, projecting forward from one side, and of the short tube T, which is held in front of said mouth-piece by a spring, *u*, and has a wedge-shaped projection, *z*, extending forward from the side opposite to the tongue *v*, when the whole is situated and arranged in such a manner as to receive the nipple and supply it with a fresh cap whenever the breech is completely opened, substantially as hereinafter specified. The barrel A is firmly secured in the lock-frame D. The charge is inserted by means of the partial removal or opening of the breech portion B, which is provided with a slot, *a*, in its rear end, through which passes a horizontal pivot, N, that forms the axis of its vibratory motion and guide and limit of its longitudinal motion. The length of said slot is just sufficient to allow the required extent of the longitudinal motion of the breech. The front end of said breech may be convex, (as represented in the drawings,) and made to fit accurately into a corresponding concavity in the rear end of the barrel, or may have any other convenient form to fit into a corresponding reverse form in said barrel, for retaining it there with the proper security and in the proper position. The pivot N, which has its ends strongly secured in the lock-frame D, also serves as the pivot or fulcrum of the actuating-lever C. Said lever, when the breech is closed, extends backward beneath the stock of the gun far enough to give it the requisite leverage, and is retained there by a catch, P, into which a detent, *e*, springs, as represented in Fig. 1, where said detent is shown arranged in such a manner that when the thumb is inserted over the lever in order to move it forward,



the pressure thereof will first release the lever from the catch, thereby obviating an additional motion of the hand for that purpose. The lever is so shaped that when retained beneath the stock it forms the guard to the trigger *n*, as in Fig. 1. The short arm of the lever plays in a cavity in the rear and under part of the breech, and terminates in a curved extremity, *b*, concentric, or nearly so, with the pivot *N*. In the upper and front portions of said cavity a cam-piece, *H*, of hardened steel, is secured, against which the lever extremity *b*, (which is also of hardened steel) acts. Said cam-piece is shaped substantially as represented, having a shoulder, *c*, under its upper and rear portion, against which the lever *C* strikes to produce the backward longitudinal and upward vibratory motions of the breech, as represented in Figs. 2 and 4, a cam-surface, *d*, against which the lever acts to produce the forward longitudinal motion of the breech to the barrel, and finally a wedge-surface, *f*, almost concentric with the curved lever extremity *b*, which consequently presses against the breech with immense force, and renders its contact with the barrel perfectly close and inseparable by any force of recoil in discharging the gun, if constructed with the proper degree of strength.

In order to assist in guiding the breech *B* in its motions, I form a slot or groove, *Y*, in one side thereof, into which a pin, *w*, enters from the lock-frame *D*, and whose lower portion is suitably curved to admit the vibratory motions of the breech, and straight at the upper end to allow the longitudinal motions of the breech, in the manner represented in Fig. 3. The downward vibratory motion of the breech is produced by its own weight.

The operation of loading the gun is thus exemplified: Suppose Fig. 1 to represent the discharged gun previous to loading. The operator places his thumb over the detent *e* of the lever *C* and presses downward and forward. The first effect is to release the lever from the catch *P*. Then during the first part of the lever's motion its extremity *b* is relieved in turn from the wedge and cam surfaces *f* and *d* without moving the breech. It then strikes the shoulder *c*, and first draws the breech back horizontally as far as the groove *y*, Fig. 3, will permit into the position exhibited in Fig. 2. The remainder of the motion of the lever, acting against said shoulder, causes an upward vibratory motion of the breech till it reaches the position shown in Fig. 4. The cartridge or charge is then inserted and the lever *C* drawn back till again caught by the catch *P*, producing the reverse of the motions just enumerated, viz: It first allows the breech to fall back to the position shown in Fig. 2, then acting upon the cam-surface *d*, pushes the breech forward against the barrel, and, finally, encountering the wedge-surface *f*, presses the breech against the barrel with such force that no recoil of the discharge can in the least start them asunder, so that there is neither any danger

of blowing away the breech, nor, when accurately fitted, can any gas arising from the explosion of the powder enter the joint between the breech and barrel to corrode it. Thus the greatest desirable strength is obtained, in fact rendering the breech-loading gun practically as secure as a solid barrel. The only motions required of the operator in thus loading the gun are, first, to push the lever *C* forward; second, to insert the cartridge; third, to bring the lever back again to its place. There remains only to cock the gun, remove the exploded cap from and put a fresh cap on the nipple, and these I perform without any motions additional to the above-mentioned three by means of the following devices: The hammer *G* is raised by means of a link, *i*, one end of which is hinged to the lever *C* by the pin *l*, situated at a sufficient distance below the pivot *N* to obtain the proper extent of motion, and the other end is hinged upon a pin, *j*, projecting from the dog *h*, which is permanently secured to the pivot *g* of, and vibrates with, the hammer. It will thus be seen that when the lever *C* is pushed forward to raise the breech *B* the hammer *G* will likewise be raised. It is detained by the ordinary click, *m*, and tripped by the trigger *n*, in the usual manner. It may often be desirable to cock the gun without opening the breech. To enable this to be done I make a longitudinal slot, *k*, of suitable length in the link *i*, as shown in the drawings, in which the pin *j* may slide, and thereby allow the hammer to rise and fall, while the lever *C* remains stationary. The exploded cap is removed from the nipple *p* by the hammer *G*. In the face of the hammer is a hollow or recess considerably larger in diameter than the top of the nipple, which enters it when the hammer falls, as shown by dotted lines in Fig. 1. By reference to the same figure it will be seen that the slotted link *i* is arranged so as to allow the lever *C* to move some distance forward before acting upon the pin *j*. This arrangement is made in order that the hammer *G* may not begin to be raised till the backward longitudinal motion of the breech is nearly completed, and has thereby drawn the nipple backward sufficiently to bring the exploded cap remaining thereon into contact with the rear edge, *o*, of the cavity in the face of said hammer. At this moment the link *i* begins to raise the hammer, causing the sharp edge *o* to graze upward in contact with the cap, and thereby to start it from the nipple. This motion continues till the nipple is just withdrawn from the cavity, as shown in Fig. 2. The breech then begins to be raised while the hammer continues its upward motion; but the pivots of the breech and hammer are so situated that the nipple moves in a direction nearly opposite to that of the face of the hammer in this situation. The result is that said face of the hammer passes transversely over the top of the nipple, as indicated in Fig. 3, and thus sweeps the cap completely off. This device is sure in



its effect when the hammer is raised quickly, as will naturally be the case in loading. A fresh cap is placed upon the nipple by means of a stationary cap-holder, composed, essentially, of a mouth-piece, S, attached to the extremity of a feeding-tube, I, and provided with a notched tongue, *v*, projecting forward from one side, and of a short tube, T, which is held in front of the mouth-piece S by a spring, *u*, and has a wedge shaped projection, *z*, extending forward from the side opposite to the tongue *v* of said mouth-piece. The length and diameter of the tube T are just sufficient to contain a single cap, and the length of the notch in the tongue *v* is just enough to admit said tube, which, when held therein by the spring *u*, exactly corresponds with and constitutes a continuation of the mouth-piece S. In this situation the projection beyond the notch of the tongue *v* partially closes the outer end of the tube T and prevents the caps from falling out, as seen in Fig. 5. The situation of the cap-holder is such that the nipple *p*, as it ascends, will first strike the wedge-face of the projection *z* at the point indicated in Fig. 5. As the nipple ascends still farther it acts against the said wedge-face, and thereby forces the tube T sidewise till the mouth of the cap contained therein is brought precisely to the end of said nipple, as represented in Fig. 6. The last upward motion of the breech finally presses the nipple fully into the cap, which is prevented from receding by the edge of the mouth-piece S having been brought in front thereof by the transverse motion of the tube T, as shown also in Fig. 6. When the nipple again recedes with its cap, the tube T springs back in front of the mouth-piece S, ready to receive another cap, *a*, from the feeding-tube.

In order to constantly supply caps to the cap-holder, a quantity of them is placed at once in a suitable magazine, M. From the bottom of this magazine, which will contain only one cap at a time, the feeding-tube I proceeds, as represented in Figs. 1 and 4. A piston, *q*, is caused to work backward and forward in the bottom of the magazine a distance equal to the length of a cap by means of a rod, *r*, connecting it with a pivot, *s*, in the lever C. This rod is represented in the drawings as broken away, except at the ends, in order not to obstruct the view of the other parts of the lock.

The operation of the piston is obvious. When the breech is raised, as in Fig. 4, it is caused to recede till it allows a cap to fill its place in front from the magazine above, and when the breech again descends to the barrel it is caused to advance till said cap is moved forward its own length, pushing before it, also, through the same space all the caps contained

in the feeding-tube I, as indicated in Fig. 1. By this movement it is evident that an additional cap will be fed to the cap-holder every time the gun is loaded.

The caps, after being pushed forward into the tube I, are prevented from sliding back after the piston by a slight spring, *t*, pressing upon the rear one, or by any other suitable means.

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

1. Producing the compound longitudinal and vibratory movement of the breech, and afterward immovably securing it in contact with the barrel by a single forward and return motion of the actuating-lever C, viz: by means of the cam-piece H, provided with a shoulder, *c*, a cam-surface, *d*, and a wedge-surface, *f*, against which said lever, acting successively, substantially as herein described, produces, respectively, the backward longitudinal and vibratory motions of the breech, then the forward longitudinal motion thereof, and finally presses it against the barrel with immense force.

2. The link *i*, one end of which is hinged to the lever C, and the other end provided with a slot, *k*, that receives a pin, *j*, on the hammer-dog *h*, when arranged and operating substantially as herein specified, for the purpose of cocking the gun by the action of the actuating-lever in operating the breech, while at the same time the hammer remains free to be raised in the ordinary way without moving said lever.

3. The arrangement of a broad cavity in the face of the hammer, with a sharp edge, *e*, on its rear side, in combination with the compound movement of the breech and the properly-regulated motion of the hammer, substantially as herein described, for the purpose of removing the exploded cap from the nipple.

4. The combination of the mouth-piece S, attached to the extremity of the feeding-tube I, and provided with a notched tongue, *v*, projecting forward from one side, and of the short tube T, which is held in front of said mouth-piece by a spring, *u*, and has a wedge-shaped projection, *z*, extending forward from the side opposite to the tongue *v*, when the whole being situated and arranged in such a manner as to receive the nipple and supply it with a cap whenever the breech is fully opened, substantially as herein specified.

The above specification of my improved breech-loading fire-arm signed and witnessed this 5th day of April, 1854.

W. A. SWEET.

Witnesses:

Z. C. ROBBINS,  
J. S. BROWN.