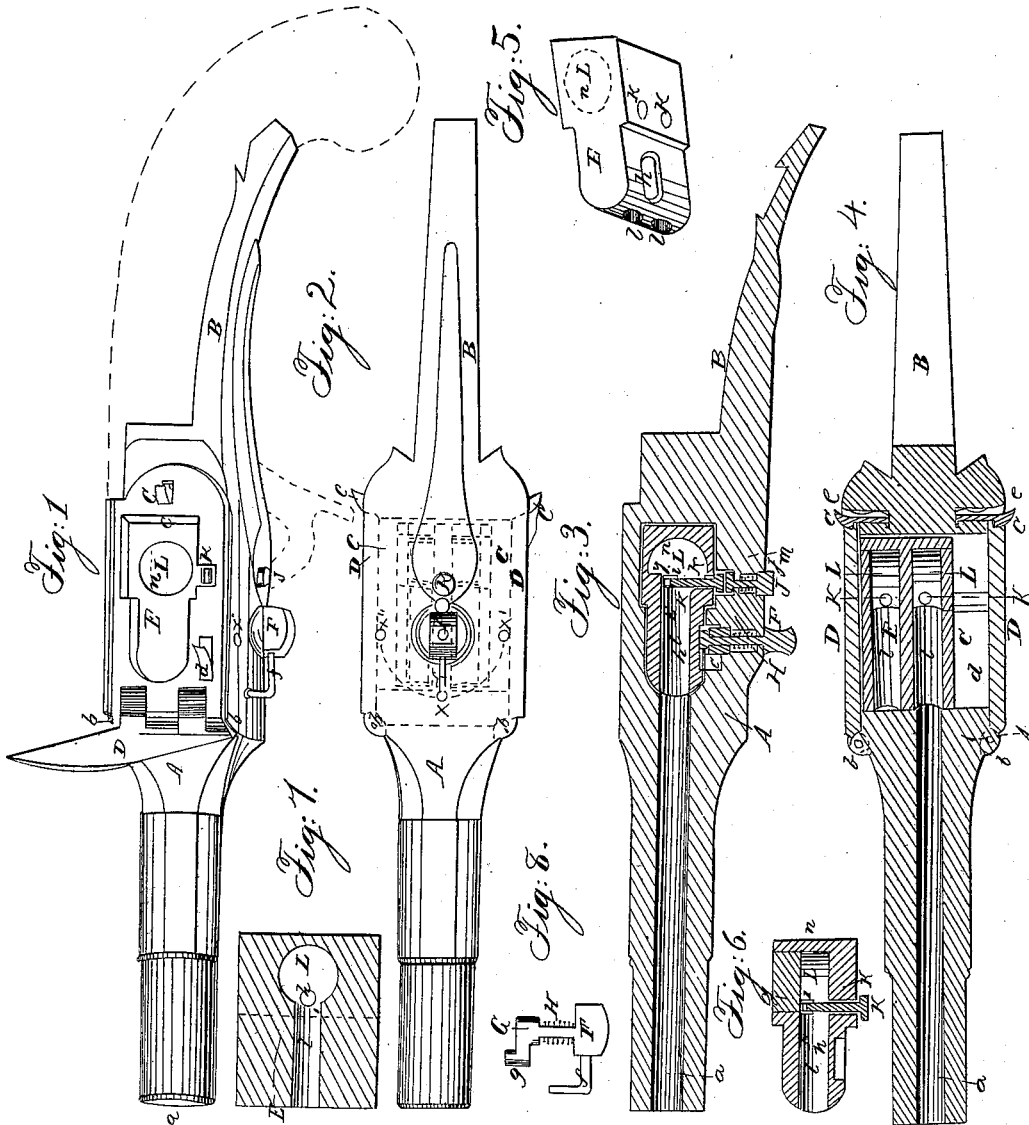


VITTUM & STEVENS.
Breech-Loading Fire-Arm.

No. { 2,556. }
 { 33,560. }

Patented Oct 22, 1861



Witnesses.

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UNITED STATES PATENT OFFICE.

FRANCIS J. VITTUM AND EDGAR M. STEVENS, OF BOSTON, ASSIGNORS TO
ALFRED B. ELY, OF NEWTON, MASSACHUSETTS.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 33,560, dated October 22, 1861.

To all whom it may concern:

Be it known that we, FRANCIS J. VITTUM and EDGAR M. STEVENS, of Boston, in the State of Massachusetts, have invented certain new and useful Improvements in Fire-Arms, Guns, &c., which are fully described and represented in the following specification and accompanying drawings.

In the drawings, Figure 1 is a perspective view of a portion of a gun with double-chambered breech-piece inserted. Fig. 2 is an under side view of the same. Fig. 3 is a vertical section of the same. Fig. 4 is a horizontal section of the same. Fig. 5 is a perspective view of the double-chambered sliding breech-piece, the axis of the cylinders running horizontally. Fig. 6 is a vertical section of a single-chambered breech-piece, the axis of the cylinder being perpendicular. Fig. 7 is a horizontal section of the last named. Fig. 8 is a view of the crank for operating the sliding breech-piece.

Our improvements are of such a nature that, while with ordinary caps and powder in common form a less quantity of powder may be used, the whole of the powder may be essentially consumed in the charge-chamber, the cap may be placed inside the chamber and near to the ball, the cap may be exploded by means of the ordinary hammer, the explosive noise may be diminished, the projectile force may be increased, the cap and charge may be protected from dampness and wet, the recoil may be very essentially lessened, and a sliding or movable breech-piece with two or more chambers may be adapted to one barrel.

The following is a description of the drawings:

A B are the barrel and breech detached from the stock, *a* being the bore; and C, a cavity or chamber in the rear for receiving the movable breech-piece E. This cavity C is closed by hinged doors or lids D, hinged at *b*, and fastened, when shut, by spring-catches *c*, having their springs at *e*. *d* is a small flat spring to throw open the doors when released from the catches.

E in Figs. 1, 2, 3, 4, and 5 is a double-charge chambered double-barreled breech-piece, and in Figs. 6 and 7 is a single-chambered single-barreled breech-piece, L being the charge-chambers and *l* the barrels thereof.

F H G *g* is a crank for operating the sliding breech-piece, F being a button on the under side of the gun, to be turned with the fingers. G is an arm of the crank within the cavity C, having a projecting pin, *g*, which takes into the slot *h* of the sliding breech-piece. Around the crank-shaft H (which is smaller than the button) and arm is a spiral spring for the purpose of pressing the projecting pin *g* of the crank-arm upward and into the slot *h* of the sliding breech-piece.

f is an index-finger attached to the button F and taking into the holes *x x'*. When the finger *f* is at *x*, neither of the barrels of the double-charge chambered breech-piece is in a line with the bore of the gun-barrel. When it is at *x'*, one of the barrels is in line, and when at *x''* the other. When the sliding breech-piece is to be inserted into or taken out of its cavity C, the crank must be placed with its index-finger at *x*, and then pulled downward far enough to bring the pin *g* below the surface of the cavity, a space being cut for that purpose. The sliding breech-piece may have a small rack cut upon it, and it may be operated by means of a small geared wheel and lever, the latter being outside and being itself an index; or it may be operated directly by means of a lever adapted for the purpose.

J *j* is a spring-tumbler having one head, J, on the under side of the gun, and another head, *j*, in the cavity C, while the shank *m*, smaller than either, is surrounded with a spiral spring pressing it downward. K is a cap-pin, with its cap *i*, having a head on the lower side and passing up through the breech-piece at *k* into the charge-chamber and striking upon a flat surface or projection at *y*.

i is a cap upon the cap-pin, which is placed directly over the spring-tumbler. The hammer striking upon J, the cap *i* is exploded against *y*. The positions of the cap-pin and spring-tumbler may be reversed, or in some cases the tumbler may penetrate the charge-chamber from the opposite side and be made to strike directly against the cap.

In charging the chamber L the cap-pin is capped and inserted, and then the powder is introduced through the barrel *l*; or the powder may be first deposited. The ball is then inserted into the barrel *l* and rests against the cap-pin, or, if desired, against a slight flange

around the orifice of the chamber, as at *o* in Fig. 7. The breech-piece, if movable, may be then inserted into the cavity C, ready for firing.

Where there is a single charge-chamber to a barrel of the gun, it need not be movable, but may be made in the breech of the gun. In this case the cap-pin and cap may be inserted either from above or below, with a sliding or hinged lid to shut over it, through or in which the spring-tumbler may operate; or the tumbler may be inserted from the other side as a fixture to the charge-chamber and meet the cap. The cap-pin may be made large and screwed into the charge-chamber or held in by a spring or other mechanical means, and in such case the powder may be inserted through the hole for the cap-pin, and the pin and cap inserted afterward. If this hole be made large enough, the ball may be placed in its seat through the orifice before the powder is introduced.

In order to accomplish the principal beneficial results of our invention, our charge-chambers are made very materially larger in diameter than the bore of the barrel, and of a capacity exceeding the bulk of the charge which need ordinarily to be used, the mechanical change and effects of which (differing from those of any chambers heretofore made) we believe to be so considerable as to be patentable. The best form we have found to be that of a flat cylinder, the thickness from end to end being equal to the diameter of the bore of the barrel. The diameter of the cylinder may be usually twice that of the barrel, which for all ordinary purposes is as good a proportion as can be used. This cylindrical charge-chamber we have placed with its axis in any position perpendicular to the axis of the barrel; but we prefer it either perpendicular to the top side and bottom side of the gun, as in Fig. 6, or to the side of the gun, as in Fig. 3.

In charging the chamber we do not usually fill it with powder, but only from two-thirds to three-fourths full—say to the dotted line *n*. If filled, the powder should lie loosely in it, that there may be a considerable amount of air in it. With this form of chamber we have found that a small charge of powder will develop a larger projectile force than a larger charge in ordinary guns. The explosion of a cap alone in our chamber we have found to propel a ball with very considerable force—much greater than from any other gun heretofore made. In this form of chamber, and by placing the cap in its front part, we are enabled to burn essentially all the powder in the chamber, while by the position and explosion of the cap, the ball being started from

its inertia, the whole explosive force of the powder with a portion of that of the cap is essentially expended in the direct forward propulsion of the ball. The noise of the explosion is essentially diminished, so that we have found that the report of one of our ordinary charges oftentimes does not exceed that of a cap exploded in the ordinary manner. The recoil of the gun is also very materially lessened, and in some cases rendered almost imperceptible.

For large guns we think our form of chamber may prove very valuable. By means of our double-chambered sliding breech we obtain all the essential benefits of a double-barrelled gun, and one particularly useful for sporting purposes. Both cap and powder are entirely protected from the weather.

We are aware that charge-chambers have been made a little larger than the bore of the gun; but that has been the case, so far as we can learn, only in rifled arms, and then ordinarily the larger size is substantially such only as would be obtained by cutting away the lands of the rifling and leaving the bore the size of the depths of the grooves; and this has been for the purpose of introducing a ball or cartridge-case with this slight additional size, so that, being driven forward, the ball may be forced into and fill up the grooves and prevent windage; but no powder-chambers for guns have ever been made essentially and materially larger than the bore before ours, nor in such manner nor for such purposes.

As we believe we are the first to demonstrate the advantages in guns of a reverberatory charge-chamber materially larger in diameter than the bore of the barrel, the same for all ordinary uses exceeding in capacity the bulk of the powder to be used, we do not desire to be limited to the exact forms described, but claim any analogous or equivalent devices for producing like results by substantially similar means.

What we claim, therefore, and desire to secure by Letters Patent, is—

1. The charge-chamber materially larger in diameter than the bore of the gun, and containing a charge of powder less in bulk than the area of said chamber, substantially as and for the purposes set forth.

2. The device for moving and locking the laterally-moving chambers, constructed and operating substantially as set forth.

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Witnesses:

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