

UNITED STATES PATENT OFFICE.

BENJ. F. SMITH, OF SOUTH HADLEY, MASSACHUSETTS.

IMPROVEMENT IN THE CONSTRUCTION OF FIRE-ARMS.

Specification forming part of Letters Patent No. 1,422, dated December 5, 1839.

To all whom it may concern:

Be it known that I, BENJAMIN F. SMITH, of South Hadley, in the county of Hampshire and Commonwealth of Massachusetts, have invented, constructed, and applied to use a new and useful Improvement in the Construction of Fire-Arms; and I do hereby declare that the following is a full and exact description thereof with reference to the accompanying drawings.

In the drawings hereunto annexed, Figure 1 represents an external view of that part of the gun to which my improvement is attached, and exhibiting so much of my improvement and lock as is ordinarily seen. Fig. 2 exhibits a sectional view of the stock and an outer view of the lock as placed within the same. Fig. 3 is a longitudinal section of the barrel and lock, showing its internal arrangement and combination; Fig. 4, an enlarged view of the spur-lever, springs, and spur; Fig. 5, a top view of the set; Fig. 6, the trigger; Fig. 7, the tumbler, and stirrup which connects it with the mainspring.

The principal feature in which this gun varies from those in common use consists in igniting the charge within the cartridge with which the gun is loaded. These cartridges are formed in the following manner: The outer casing, *a*, Fig. 3, consists of paper, formed to suit the caliber in the usual manner. Within this casing, and at the bottom, is placed the quantity of powder *v* necessary for the charge. Above and next to the powder is placed the torpedo or wad *c*. Into the center of the lower end of this torpedo is inserted a small quantity of percussion-paste or other substance, which ignites by being pierced with the point of a needle. This torpedo is formed of paper, wood, or other suitable substance. Above this torpedo is placed the shot or ball *d*, and the paper secured over the end of the same, and the cartridge is complete. These cartridges are formed in size so as to admit of the gun being loaded without the use of a rod, and when placed in their proper position within the barrel of the gun they are secured by means of a spur, as hereinafter described.

Having given this brief description of the general principle, I now proceed to particularize the various parts, many of which are old. To such I make no claim.

In the description the same letters of reference refer to the same parts in the different figures.

In the drawings, Figs. 1, 2, A represents the stock; B, Figs. 1, 2, 3, the barrel. The upper surface of this gun is perfectly plain and smooth without projections. All that is seen of the lock is attached to the under side, as seen at Fig. 1. The breech-pin C, Figs. 2, 3, is attached to the breech of the barrel by means of a screw being formed on the outer surface of that part which enters the barrel in the usual manner. On the inner end of this pin there is formed or attached in any convenient manner a small projecting tube, D, extending into the barrel as far as is necessary, to form a suitable receptacle around it for dirt that may accumulate within the chamber of the barrel. Having thus formed a depot for the dirt accumulated, each successive cartridge is received and held on the point of the tube in precisely the same position. The upper surface of that part of the pin that is without the barrel is bent and secured to the stock in the ordinary manner. Near the center of this projection, on the underside, a small stand, E, projects downwardly and supports the outer end of the spindle or large part of the needle F, as shown at Fig. 2. The inner end of this spindle has for its guide the center of the pin, as shown at Fig. 3. From the inner end of this spindle projects the needle G, which ignites the charge. This needle has for its guide the tube D, as shown at Fig. 3. The needle may be formed from the inner end of the spindle, or attached thereto in any applicable manner. The method here used is by forming a hole the size of the needle through the entire length of the spindle, excepting so much of the outer end as is occupied by the head of the needle and inner end of the screw H, Fig. 3. The aperture formed for the screw being larger than that of the needle, the head of the needle is received within the spindle and prevented from entering farther than the bottom of this aperture by the shoulder formed by the different diameters of the two concentric circles formed by the juncture of the different sized apertures. The needle being inserted within the spindle, the screw is applied, thus confining it firmly within the spindle, as at Fig. 3. Near the center of the spindle a

projection extends downward and connects with the long arm of the tumbler I by means of the link J, as seen at Figs. 2, 3. This connection gives to the spindle and needle the reciprocating motion by the counteraction of the hand-lever K and mainspring L. From the bottom of the external part of the breech-pin a projecting arm extends back sufficiently far to receive the levers, tumbler, and trigger, which are placed within this arm, being formed with an opening sufficiently large to receive them, as shown at Figs. 2, 3. Attached to this arm, upon the under side, is a plate, M, which covers a part of the before-mentioned opening, and is on a line with the under part of the stock, and forms the external finish of that part of the lock, as shown at Figs. 2, 3. The hand-lever K being in its ordinary position against the stock of the gun, as at Fig. 1, is brought down, as at Fig. 3, by means of hand. This lever has its fulcrum at *o*, Figs. 2, 3, 8. By this movement of the lever the lower or back projection, *e*, on the inner end acts upon the front or adjacent part of the tumbler *f*, forcing it up by turning on its fulcrum *o*, withdrawing the needle from the barrel, and this operation having cocked the gun it is retained in that position by the catch *g* on the trigger N acting upon a reversed catch, *h*, on the tumbler. Adjacent to the trigger is a stirrup, *j*, projecting upward, and forming the connecting-link between the tumbler and mainspring L, as at Figs. 2, 3, 7, in the ordinary manner. Back of the trigger is the set O, which is used to prevent accidental discharge of the gun. Its upper surface is represented at Fig. 5. This set moves freely on its fulcrum at *o*, and by having a notch formed in the front end, and by bringing the long part over the trigger, its action is arrested by removing the long part. The notch allows free action to the trigger for discharging the piece at pleasure. Over the set, and confined by the same screw that forms the fulcrum for the set, a small spring, P, is placed, which acts upon the trigger to keep it in contact with the tumbler. Beneath the barrel of the gun is placed the spur-lever Q, having its fulcrum at the small stand *n*, which connects it with the barrel. At the forward end is attached

the spur, which enters the barrel and confines the cartridge. This spur is not firmly affixed, but susceptible of a slight movement, to allow it free action without binding. The opposite end of the lever is bent upward, and is operated and moved upward by the hand-lever. When the lever K is removed, it is forced down by the spring *i*, as shown at Figs. 2, 3, 4. Should the resistance against the spur be such as to prevent the lever from returning and bringing the hand-lever to its place, a small spring, *k*, is attached to the under side of the lever, and acts only when the lever is arrested. This spring is just sufficient in strength to bring the hand-lever to its place against the stock. There may be applied a spring and catch for holding this lever, and the small spring dispensed with.

The method of loading is performed by bringing the hand-lever from its position at Fig. 1 to the position at Fig. 3. By this movement the needle and spur are withdrawn and the gun cocked. While in this state the cartridge is inserted, the hand-lever is then replaced, and the spring *i* forces the spur against and confines the cartridge. It is then ready to be discharged in the usual manner.

Having thus described the construction and operation of my improved gun, I now proceed to point out those parts that are of my own invention.

I do not claim, separately, the needle for igniting the charge or the spur for holding the cartridge; but

I do claim—

1. The combination of the needle and tumbler, and the combination of the spur, horizontal lever, and tumbler, as herein described.
2. The peculiar construction of the hand-lever, by which it operates upon the tumbler and spring end of the horizontal lever at the same time, for the purposes of removing the needle and spur, so as to admit the cartridge and cocking the gun at the same operation, as herein described.

BENJ. F. SMITH.

Witnesses:

EDWARD S. MAY,
LEVI TAYLOR.