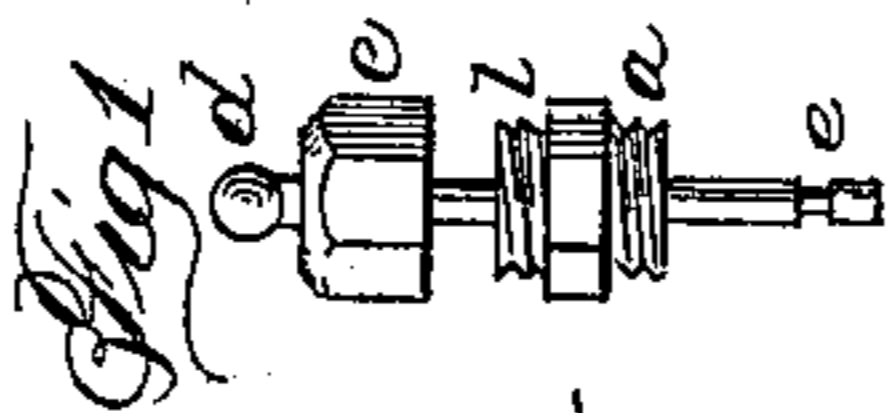
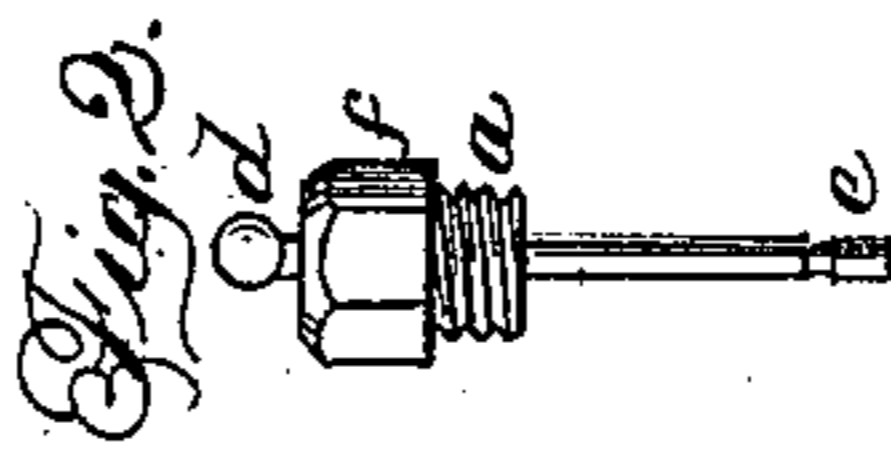
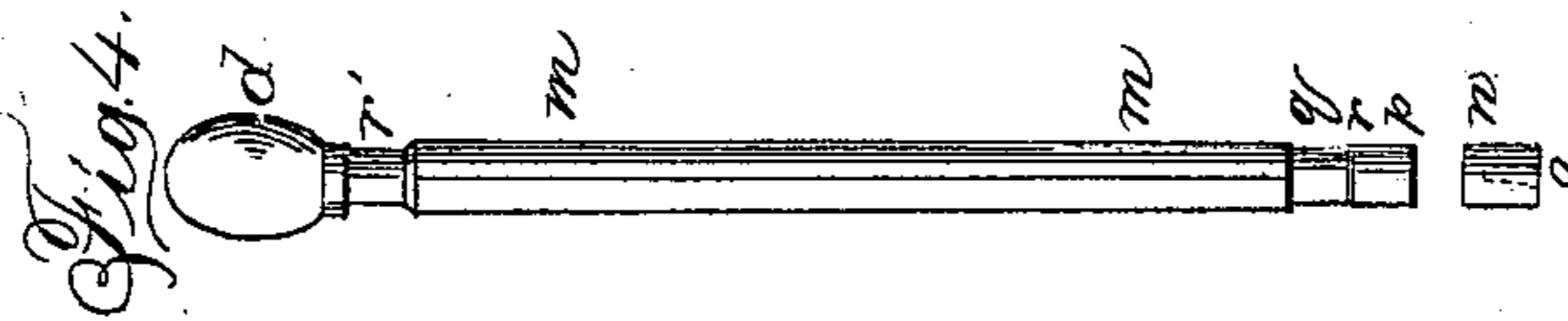
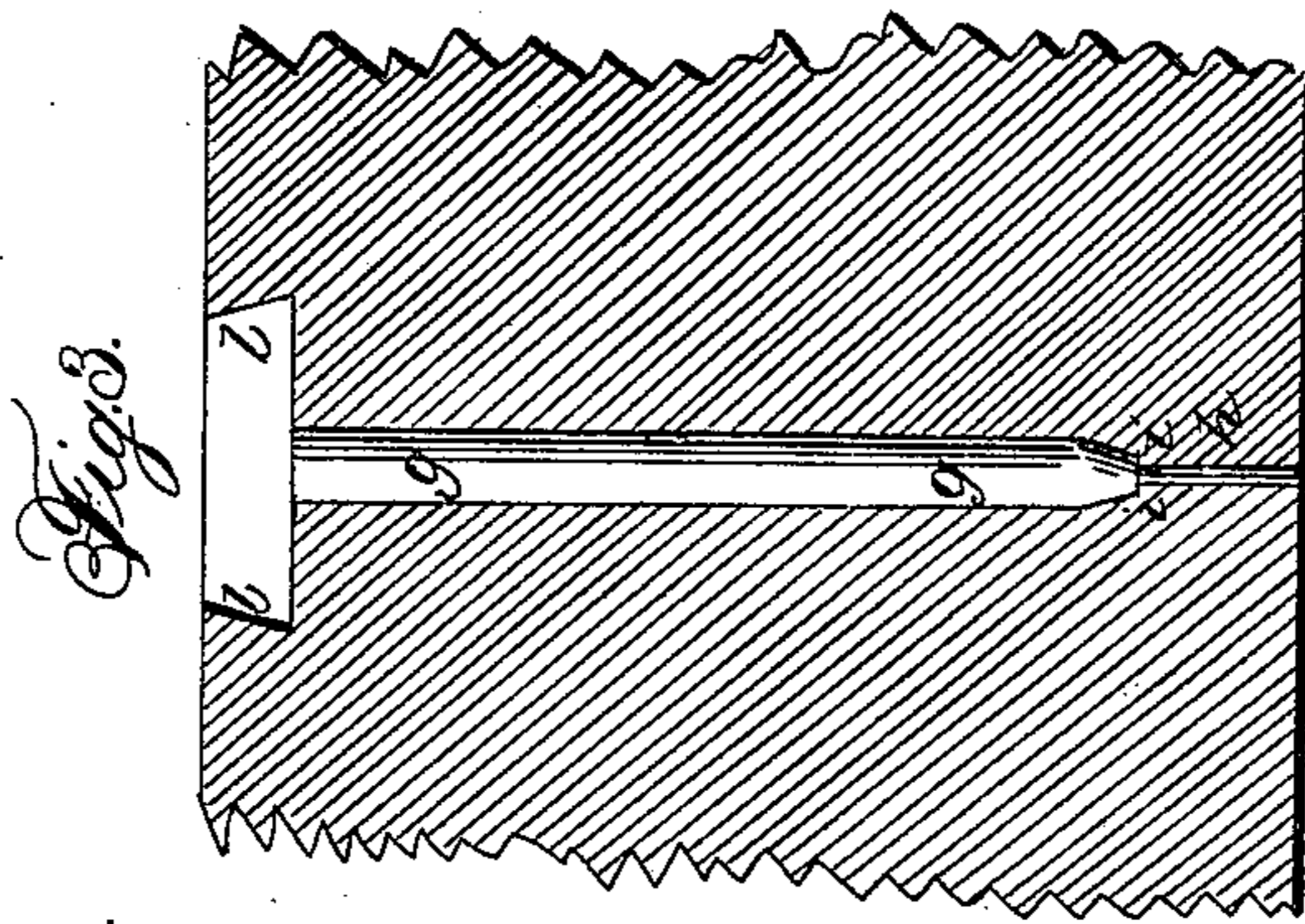
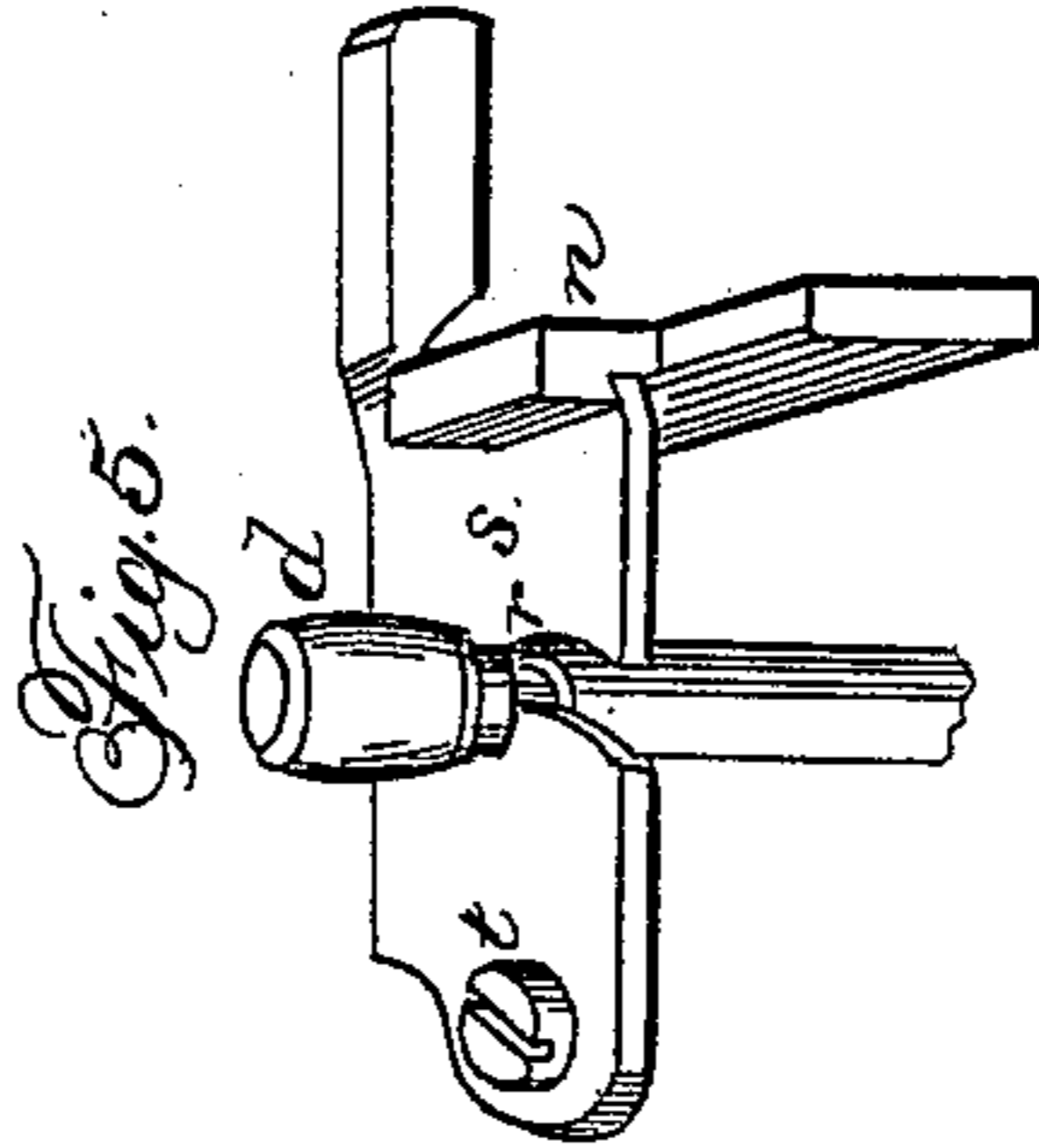


J. SHAW.

Lock for Fire-Arms.

No. 1,958.

Patented Jan. 30, 1841.



UNITED STATES PATENT OFFICE.

JOSHUA SHAW, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE MANNER OF DISCHARGING FIRE-ARMS OF VARIOUS KINDS, WHETHER OF THE SMALLER KIND—AS PISTOLS, GUNS, &c.—OR PIECES OF ORDNANCE.

Specification forming part of Letters Patent No. 1,958, dated January 30, 1841.

To all whom it may concern:

Be it known that I, JOSHUA SHAW, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and improved manner of discharging fire-arms of various kinds, said improvement being equally applicable, under proper modifications, to the discharging of small-arms—such as pistols, fowling-pieces, rifles, muskets, and others—and also to the discharging of pieces of ordnance, of which the following is a specification.

In making the discharge, I ignite the powder constituting the charge by means of a percussion-cap charged with fulminating-powder in the ordinary way; but when used for the discharging of small-arms I employ percussion-caps of a size considerably smaller than those in common use, and for the discharge of cannon they need not be larger than those now employed with small-arms. A distinguishing feature of my invention is the manner of employing or using these caps, which, under all the modifications thereof, is by placing them upon one end of a cylindrical rod or wire of steel, which rod or wire, for distinction sake, I will call a "piston," and inserting said piston, with the cap on the end thereof, into a cylindrical opening occupying the place of the ordinary touch-hole, or otherwise conveniently situated, said opening being adapted in size to the piston, which is to slide freely, but closely, within it. The cylindrical piston is to be a trifle larger in its diameter than the outside diameter of the cap which is to be placed upon it, its end being turned down or reduced in size, so as to pass into and to be embraced by the cap. The hole or opening into which the piston is to pass is to contain in some of it a piece or pieces of leather, cork, or other elastic substance which is to embrace the piston, and thus render the passage air and water tight, while at the same time said material will serve by its elasticity to hold the piston in place.

In small-arms the hole or opening through which the piston passes may be of equal bore or diameter throughout, as the piston is in some cases to be of sufficient length to enter the chamber of the barrel and to extend across it, so that the percussion-cap which is placed upon its end may be brought into contact with

the interior of the chamber on the side opposite to that at which it entered, and it is manifest that if the outer end of the piston be then struck by a hammer or mallet the percussion-cap will explode and the gunpowder will be ignited.

In pieces of ordnance there are sundry objections to the allowing of the piston to extend across the chamber of the gun, and from the thickness of the breech in arms of this description a sufficient depth is obtained in the solid metal for the operation of the piston without its entering the chamber of the gun. In using my piston with the percussion-cap at its end for the discharging of pieces of ordnance, I bore a hole in the manner and generally in the place of the ordinary touch-hole, such hole being of the size of the piston intended to be used—say of three-sixteenths of an inch in diameter, more or less—and extending down nearly to the chamber of the gun—say, within a fourth or half of an inch thereof—and through this remaining part I drill a hole of much smaller size—say, one-sixteenth of an inch, more or less, in diameter—until it enters the chamber. The piston must be of such length as to extend down to the bottom of the larger portion of the bore, and to rise to a sufficient height above the top of it for the action of the hammer by which it is to be struck. Its lower end, or that which enters the bore, is, as above stated, to be turned down so as to form a nipple for the reception of the percussion-cap.

The percussion-cap which I use under this modification of my invention I have improved in such manner as adapts it especially to the object in view. This improvement consists in the making a small hole—say one-sixteenth of an inch in diameter—through the center of what in the ordinary cap is its closed end, this being done before the cap is charged with percussion-powder. When the piston is inserted in the bore, having a percussion-cap of the kind just described on its lower end, if the piston be struck by a hammer or mallet on its upper end, the cap will explode and the ignited percussion-powder will pass through the hole in the head of the cap, and through the small part of the bore under it into the chamber of the cannon, where it will ignite the powder. I sometimes drill a small hole

into the end of the piston in the direction of its axis, which hole may be from an eighth to a fourth of an inch in depth, and of the same size with that in the percussion-cap, and also with that leading into the chamber of the gun. This hole is to be filled with common gunpowder, which will be ignited by the percussion-powder. By using this device the percussion-caps may be very lightly charged with percussion-powder, the gunpowder greatly aiding in causing the discharge of the cannon. This is a point of considerable importance, as the destructive influence of the percussion-powder upon the parts with which it is in direct contact is thereby to a considerable extent obviated. It may also be remarked that the percussion-cap which remains upon the piston after the discharge, has the effect of protecting it and the adjacent parts from injury by the percussion-powder.

I will now exemplify, by reference to the accompanying drawings, the manner in which my improvements may be carried into actual operation.

Figures 1 and 2 represent modes in which it may be conveniently applied to small-arms. In Fig. 1 *a* is a perforated screw-nut, which screws into the barrel at the place usually occupied by the touch-hole, or in any other preferred situation. The end of this screw is to be flush with the inside of the chamber. *b* is a screw on the upper part of this nut, upon which there is fitted a screw-cap, *c*. The cavity in this cap is somewhat deeper than the length of the screw *b*, in order to admit of the insertion of a piece of leather or of some other elastic substance, through which the stem of the piston *d e* is to pass. This stem is to be made perfectly cylindrical, and the holes in the nut and cap through which it passes are to be made perfectly true, and nicely adapted to it in size, so that such pistons may slide in and out easily, and yet have no shake. Fig. 2 shows a similar device, but more simple in its construction. *a* is a screw-nut, which screws into the barrel, but does not pass through into the chamber, there being a solid portion of the barrel below it, with the exception of an opening of such size only as to admit the piston to pass through it. The elastic material, under this arrangement, is placed beneath the screw *a*, and is pressed between it and the part of the barrel beneath it. The head *f* of the screw-nut, together with its screw-part *a*, receive the piston *d e*, as in Fig. 1, its whole construction and operation being substantially the same. The length of this piston is, under this arrangement, to be such as to extend across the chamber of the piece to be discharged. The small percussion-cap is received on its inner end, *e*, and this must be, as before remarked, somewhat smaller in diameter than the piston. These percussion-caps are in other respects constructed in the ordinary manner. Any required number of these pistons, armed with their caps, may be conveniently carried by arranging them in

holes prepared for their reception in the stock or breeching part of the gun or pistol, or they may be disposed of in any way that will admit of their being readily applied when wanted.

Fig. 3 is a section through the touch-hole part of the breech or vent-field of a piece of ordnance, showing the manner in which I drill or bore through this part for the insertion of the piston and the exploding of the cap; and Fig. 4 is the piston. *g g* is the part of the bore which is to receive the cylindrical piston, Fig. 4, and *h* the lessened aperture leading from the lower end of *g g* into the chamber of the gun, thus leaving a shoulder at *i i*, against which the percussion-cap is to be forced when the discharge is to take place. I have said that the bore *g g* should be perfectly cylindrical, and this is true, excepting that there is a slight contraction at its lower end in the part which embraces the percussion-cap at the time of the explosion, this part being made slightly conical to the height of from an eighth to a fourth of an inch, which causes it to embrace the cap the more closely after the blow and still allows it to be readily withdrawn, as the slightest motion relieves it from the conical termination.

I have in the application of my improvement to cannon devised a very simple mode of using an elastic substance through which the piston is to pass and by which the entrance through the opening *g g* is rendered air and water tight. I make a countersink, *l l*, at the upper end of the bore *g g*, in which I insert a piece of cork having a hole through the middle of it, through which hole the piston will pass and by which it will be closely embraced. This cork may be firmly held in place by small asperities on the sides of the countersink by widening the countersink a little toward its bottom, or in various other ways. If preferred, an elastic substance may be held down by means of a perforated screw-nut inserted in the vent-field; but I think the cork inserted as above described is preferable, as I have found it to be perfectly efficient, and it may be readily and instantaneously renewed. I prefer in all cases to make the pistons of tempered steel. They are accurately turned and ground, and fitted to the perforations prepared to receive them. In Fig. 4 *n* is a section of the copper cap which is to be placed on the lower end of the piston *m m*. This cap is perforated at *o* prior to its being charged with the percussion-powder, the opening being equal in size, or nearly so, to the perforation at *h*. The lower end, *p*, of the piston is turned down to receive the cap, and it is diminished in diameter at the part *q*, so as to have a shoulder at *r*, above which the copper cap rises, and the upper edge of the cap is to be slightly bent inward, so as to embrace this shoulder, and this may be readily effected by holding a piece of steel—say one of the pistons or a tool kept for the purpose—upon the edge of the cap after it is in place and rolling it over upon a table. By this

means it is made to embrace the piston so firmly as to insure its being withdrawn with it after the discharge, while without this precaution it would be liable to be left behind. The dotted lines at the lower end of the piston show the perforation sometimes made for containing gunpowder. The discharge is made by allowing a hammer to strike on the head d of the piston, and this may be done by hand; but it will usually be effected by means of a lock constructed in any convenient form and adapted to the piece to which it is to be applied.

Having described the manner in which I apply my piston and its percussion-cap for the discharge of pieces of ordnance, I will now observe that I intend sometimes, and shall probably prefer, to adopt a similar arrangement in small-arms—that is to say, to use a piston which shall not enter the chamber of such arms, but which shall be contained entirely within the tubular screw-nuts represented in Figs. 1 and 2, or within tubular pieces analogous thereto. In this case I shall use also the perforated percussion-caps like those used for the discharge of cannon, and allow the percussion-powder to pass therefrom into the chamber of the piston or the gun through a perforation smaller than that which receives the piston, the whole arrangement of the apparatus being in this case substantially the same with that described in my application of it to cannon, the main difference being in the size only of the respective parts. From the smallness of the openings through which the discharge is made from the percussion-cap into the powder forming the charge, or from the smallness of the section of the piston used in small-arms when said piston is allowed to pass through the chamber, the reaction from the discharge tending to throw the piston out will be but small, and it will be held down by the force of the spring acting upon the hammer of the lock, when a lock is used. When the piston is to be struck by hand, a button attached to the vent-field of the gun and bearing on the piston near its upper end may be used for checking the rise of the piston from the force of the discharge. Fig. 5 shows the manner in which this button may be affixed. d is the head of the piston, and immediately under

this head there is a shoulder, r' , made by turning the shank of the piston so as to form a neck smaller than the shank. s is a steel button, which turns on a screw at t , and passes under a catch, u , at its opposite end. The neck of the piston is embraced by the notch in the button s , and is thus held from being blown out. The neck is of sufficient length to give the requisite play to the piston, which can be drawn out when the button is turned back.

In cannon and other fire-arms constructed as herein described the vent is not only rendered air and water tight, but the escape of fire and smoke through it is effectually prevented, as has been proved by numerous trials.

Having thus fully described the nature of my improvement, and shown the manner in which I carry the same into operation, what I claim as constituting my invention, and desire to secure by Letters Patent, is—

1. The effecting of the discharge of fire-arms by placing a percussion-cap on the end of a cylindrical rod or piston formed for the purpose in the manner herein set forth, such piston with its cap being made to pass through an opening adapted thereto either in the body of the breech of the piece to be discharged, or through tubular pieces screwed into or otherwise attached to it, said piston being of such length as shall adapt it to the respective modifications of my apparatus, as above described—that is to say, I claim the passing of such a piston through a tubular opening, allowing it to reach across the chamber, as in my first-described modification; or I pass it into a cylindrical opening extending nearly to the chamber, where a shoulder is formed by diminishing the size of the aperture in the manner and for the purpose set forth, the respective parts concerned in the discharge being constructed and operating substantially as herein fully made known.

2. The improvement in the percussion-cap, consisting of the perforation through the middle of what is usually its closed end, in the manner and for the purpose described.

JOSHUA SHAW.

Witnesses:

THOS. P. JONES,
GEORGE WEST.