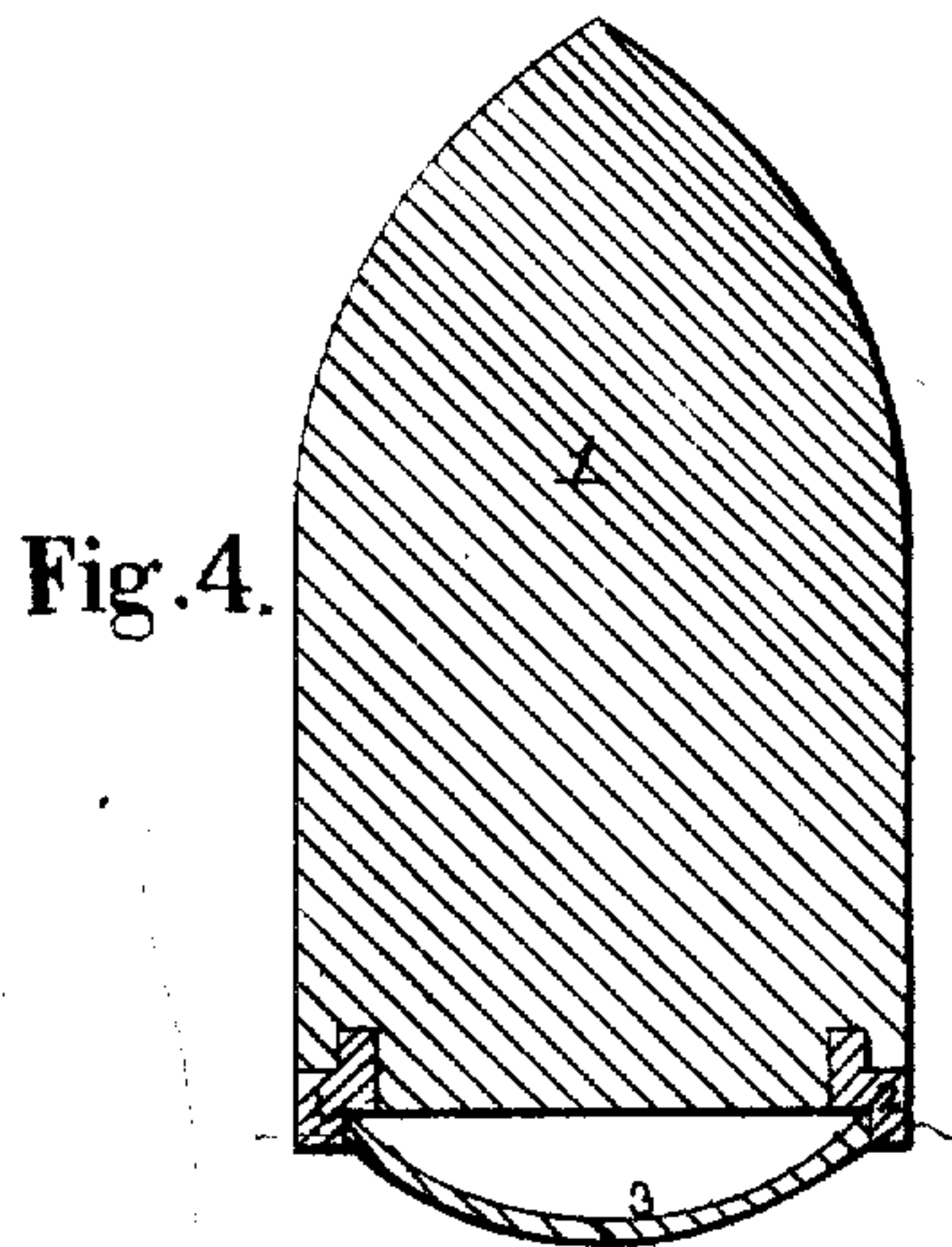
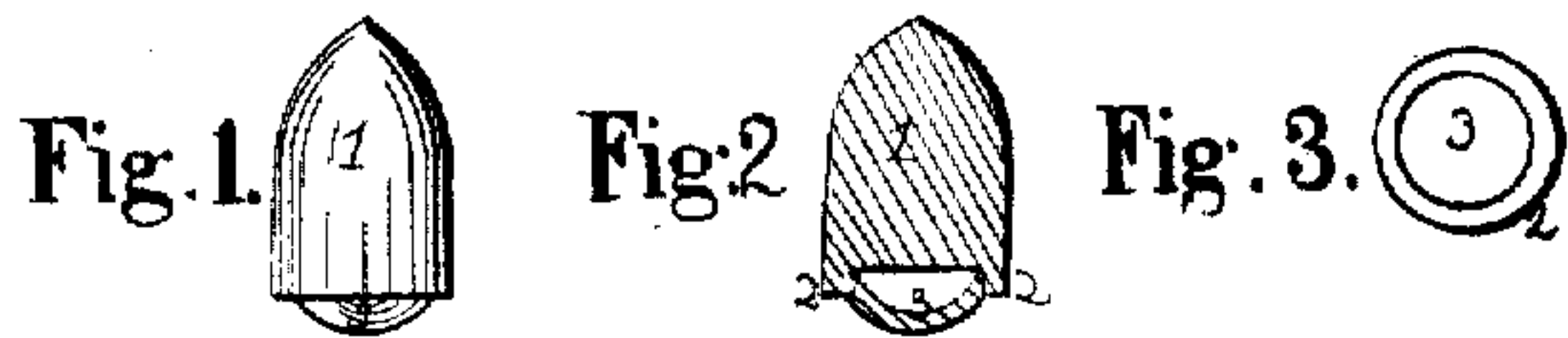


R. SHALER.

Projectile.

No. { 1,840. }
 { 32,844. }

Patented July 16, 1861.



Reuben Shaler
By Thos. P. How
Atty

Witness: { D. S. Gallagher
 J. M. Hottelway

UNITED STATES PATENT OFFICE.

REUBEN SHALER, OF MADISON, CONNECTICUT.

PROJECTILE FOR FIREARMS.

Specification of Letters Patent No. 32,844, dated July 16, 1861.

To all whom it may concern:

Be it known that I, REUBEN SHALER, of Madison, in the county of New Haven and State of Connecticut, have invented an Improvement in Projectiles for Firearms, the construction and operation of which I have described in the following specification and illustrated in its accompanying drawings with sufficient clearness to enable competent and skilful workmen in the arts to which it pertains or is most nearly allied to make and use my invention.

Various attempts have been made to cause rifle and musket balls to fit snugly to the sides of the barrel in their discharge therefrom and thus prevent the escape of the gas which is generated by the explosion of the powder, and which constitutes the motive force. To accomplish this purpose has been found no less difficult than desirable especially with regard to the rifle, where in order to prevent leakage, the bullet must of necessity fit into and entirely fill the grooves. Experiments carefully made show conclusively that no bullet now known to the public satisfactorily accomplishes this purpose.

The object and purpose of my said invention is to produce a bullet which shall perfectly fit the sides of the barrel, and prevent the escape of gas during its discharge therefrom. I accomplish this purpose by making a shallow recess or cavity in the breech of the ball and fitting a dome shaped or arched piece of sheet metal into this cavity in such a manner as to cause the pressure of the powder upon it to throw out the edges of the bullet at the breech so as to make them fit snugly against the sides of the barrel, and fill the grooves, if there are any, as hereinafter more fully set forth.

I have illustrated my invention in the accompanying drawings, as follows:

Figure 1 is a side elevation of the bullet. Fig. 2 is a vertical longitudinal section, showing the parts beyond the center, and parallel in its plane of projection to Fig. 1. Fig. 3 is a breech view.

1 is the body of the bullet, which is presumed to be made of the usual material,—lead. It is made in the external form of what is known as the conical bullet, being tapered to a dull point at the forward end, but at the rear end made to fit with reasonable approximation the caliber of the barrel, and to give it steadiness of direction at the outset as well as for other useful purposes, the

sides are made parallel for a considerable portion of its length. Its form is clearly represented in the drawings. At the breech of this bullet there is a shallow cavity formed leaving the narrow rim 2, projecting from the main body of the bullet. This rim must be very narrow or it will not so efficiently accomplish the purpose intended and at the same time be otherwise unobjectionable. Its proper width proportioned to the size of the bullet is shown in the drawings. Into the cavity thus formed I fit a dome shaped or concavo-convex piece of lead or zinc or other suitable metal 3, as shown in the drawings. To secure this from the possible contingency of falling out before it is inserted in the gun, I prefer to swage in the edges of the flanges at the butt of the bullet, after the piece 3, is put in, though if made to fit very closely, this operation may perhaps be satisfactorily dispensed with. This bullet, constructed as I have described, is adapted to use with any kind of small fire arms, and answers the purpose for which it was designed in a manner which is entirely satisfactory.

In using this bullet no patch is in any case required even in a muzzle loading gun, for the action of the rammer in driving the charge home, by applying force which operates on the crown of the piece 3, expands the butt of the ball and causes it to fit snugly. The action of the powder by driving the crest of the crown inward toward the butt of the bullet produces so forcible an effect in pushing out the base of the ball as to drive the lead into the grooves of a rifle, completely filling them and giving them their utmost efficiency, as well as entirely preventing any windage or escape of gas at the sides of the bullet.

By actual experiments carefully tried with this bullet and the best Minié balls it is found that this improvement causes a large gain of force and effect, and also superior accuracy of direction, the latter probably owing to the facts that this construction allows the weight of the bullet to be better balanced for accurate firing, that it gives greater effect to the rifling, and also that the butt of this bullet while made to fit closely is not liable to rupture or derangement of its form by the force employed to drive it into contact with the barrel.

Fig. 4 shows an arrangement of parts by which this improvement is made applicable

to artillery practice, and is a sectional elevation. In this arrangement 1 is the cast iron portion of the ball, which is recessed to receive the ring 2, as shown in the drawing.
5 This ring 2 is afterward cast into the butt of the iron ball and forms a flange answering of the flange 2, in the other drawings. The plate 3 is applied precisely in the same way as that already described for small
10 arms, and accomplishes the same result. In this case the flange 2, and the plate 3, may be of zinc or an alloy of lead and zinc.

Having thus fully described my said invention I claim—

Providing the butt or rear end of a bullet 13 with the flange 2 and the concavo-convex spreading plate 3, so arranged as to operate in connection with each other substantially as and for the purpose set forth.

REUBEN SHALER.

Witnesses:

L. A. ROBERTS,
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