I. W. & R. SHALER.

Projectile.

No. 36,197. Patented Aug. 12, 1862.

Fig. 1.

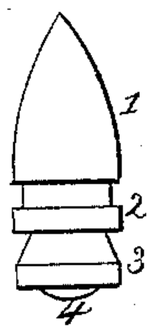


Fig. 2.

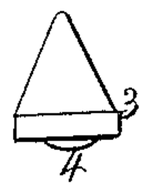


Fig. 3.

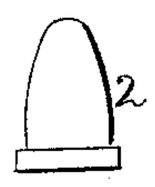


Fig. 4.

Fig. 5.

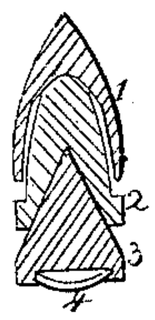


Fig. 6.

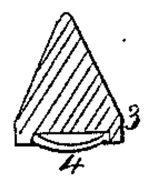


Fig. 7.

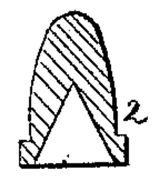


Fig. 8.

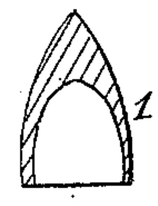
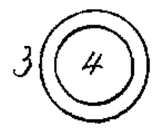


Fig. 9.



Witness { No. P. White, H. James Weston

Ira W. Shaler
Reuben Shaler
By Thos. P. McCown
Atty

UNITED STATES PATENT OFFICE.

REUBEN SHALER, OF MADISON, CONNECTICUT, AND IRA W. SHALER, OF BROOKLYN, NEW YORK, ASSIGNORS TO IRA W. SHALER.

IMPROVEMENT IN COMPOUND BULLETS FOR SMALL-ARMS.

Specification forming part of Letters Patent No. **36,197**, dated August 12, 1862.

To all whom it may concern:

Be it known that we, REUBEN SHALER, of Madison, in the county of New Haven and State of Connecticut, and IRA W. SHALER, of Brooklyn, in the county of Kings and State of New York, have invented Improvements in Projectiles for Fire-Arms, of which the following is a specification.

The principal object of this invention is to provide a projectile for the rifle which shall embody and realize the advantages of the well-known ball and buckshot of the smooth-bore arm, without the disadvantages of wildness of direction, shortness of flight, and intensity of recoil, which are serious objections to the use of the said ball and buckshot.

The said invention consists in a projectile made up in two or more parts, which fit the bore of the barrel, and so constructed that the forward end of each of the parts in rear of the front one enters a cavity in the breech of the one forward of it, and is so formed in relation to it that it separates from it after leaving the barrel of the gun, and makes a slight deviation in its line of flight from that pursued by its predecessor, as hereinafter more fully set forth. Three is, perhaps, the most proper number of parts.

In the drawings, Figure 1 is a side elevation of the said projectile. Fig. 2 is a side elevation of the rear portion of it. Fig. 3 is a side elevation of the middle portion when the projectile is made in three sections or parts. Fig. 4 is a side elevation of the front portion of the said projectile. Fig. 5 is a longitudinal section of the said projectile, the plane of projection being through its center. Fig. 6 is a like section of the rear portion of it. Fig. 7 is a like section of the middle portion. Fig. 8 is a like section of the front portion. Fig. 9 is the rear end view of the projectile.

1 is the front portion of this projectile. 2 is the middle portion, and 3 is the rear portion. The front portion is curved on its exterior surface, as shown in the drawings, and very much in the form of the most approved modifications of the Minié bullet which are now in use. It is sufficiently large at its base or rear end to fit the bore of the gun from which it is intended to be fired. This front portion of the ball is made hollow from the breech nearly two-thirds of its length, as shown, and this cavity is also bounded by a curved line of the form represented. The middle portion of the ball terminates at the forward end in a blunt point, so constructed as to enter the cavity in the front portion and to rest against the metal at the termination of this cavity. It only bears, however, at the point upon the front portion of the ball, the sides of the cavity in the front portion gradually diverging from the middle section of the ball, as shown. The object of this divergence is to prevent the parts from adhering together when discharged from the gun. A shoulder is formed on the middle section of the ball near its base or rear end, and the said base is made the proper size to fit the bore of the gun. The rear section, 3, enters the middle section, 2, in the same manner, only that the cavity in the portion 2 is of less depth and its sides are straight, or nearly so, the point of the back portion of the ball being made to conform in such a manner as to give gradual divergence of the cavity toward its base from the rear section of the bullet. The base or back end of the rear portion, 3, of the bullet is also made of the proper size to fit the bore of the gun; in other words, the bases of the sections 1, 2, and 3 of the bullet are all made of the same diameter. A shallow cavity is made in the breech of the rear portion of this ball or projectile, and a dome-shaped piece of sheet metal is fitted in this cavity to expand the lead at the breech and fill the grooves of the barrel upon the instant of the explosion of the powder.

Operation: When these projectiles are used with the ordinary rifle or musket cartridge, the parts are secured in position by the wrapper of the cartridge; but when they are used with loose powder instead of with fixed ammunition, the parts may be properly connected by wrapping a piece of paper or tin-foil around them. This paper or tin-foil should extend from the base or breech of the projectile to perhaps the middle of the forward section or portion of it. In either case the effective operation, when fired, is the same. The force of the explosion of the powder, of course, first strikes the rear portion of the projectile, forcing in the arch or dome 4, and thereby spreading the base or rear end of the ball and shut-

ting off all escape of gas between it and the barrel. This rear portion or section of the projectile, being forced forward, drives forward the middle portion, and this in its turn acts upon the forward portion; and it is possible, further, that both are, to a certain extent, acted on by the gas of the explosion, a very slight portion of which may escape around the rear section before the force of the powder has had time to drive in the piece 4, and thus entirely shut off the escape of the gases past the breech of the bullet. However this may be, the parts of the bullet probably yield a little to each other, and thus lessen the recoil of the piece. At any rate, it is very much reduced from what is felt from the ball in common use, even though this ball, aggregately, has considerably the greater weight. The portions of this ball separate in their flight. The forward one takes the usual line of projection for a rifle-bullet, or nearly so, and is very accurate in its flight. The others, owing to their less perfect form, and perhaps to other causes not fully understood, turn aside slightly from the path of their predecessors, sufficiently so to be available as separate shots, though not with that wild and injurious deviation which is common in the use of buckshot.

It is necessary for the realization of the result above described of this invention to so construct each part or portion of it that the parts of the rear sections which enter the cavity forward of them shall neither of them bear upon the sides of the cavity at the base of the portion forward of it.

We claim—

The projectile hereinbefore described, made up of two or more parts, each of equal diameter, constructed as set forth, so as to separate from each other, as stated.

REUBEN SHALER.
IRA W. SHALER.

Witnesses for I. W. Shaler:
L. A. ROBERTS,
THOS. P. HOW.
Witnesses for Reuben Shaler:
ELIUS S. ELY,
HENRY L. SHALER.