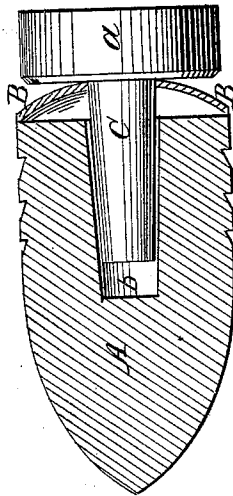


E. D. WILLIAMS.

Projectile.

No. 37,145.

Patented Dec. 9. 1862.



Witnesses.
Edw. W. Hodgson
James Caird

E. D. Williams Inventor

UNITED STATES PATENT OFFICE.

ELIJAH D. WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ELONGATED BULLETS.

Specification forming part of Letters Patent No. 37,145, dated December 9, 1862.

To all whom it may concern:

Be it known that I, ELIJAH D. WILLIAMS, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Elongated Bullets; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a central longitudinal section of a bullet with my improvement on a scale much larger than the natural size.

This invention consists in the combination, with an elongated expanding bullet, of a headed pin and a concave expanding disk, the disk having its concave side against the base of the bullet, and the pin entering the cavity thereof and operating to produce the flattening of the disk, by which it is caused to expand against the walls of and enter the rifle-grooves of the gun.

It also consists in so fitting the pin to the cavity of the bullet, to produce the expansion of the cylindrical portion of the exterior thereof that the forward part of the said portion shall be first expanded, thus causing the friction against the bore of the gun to begin as far forward as the bullet shall bear against the bore, by which means the bullet will be more quickly and perfectly upset, its friction will be more evenly distributed, and its center of gravity made more nearly to coincide with the center of the bore of the gun, all conditions necessary to accuracy.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

A is the bullet. B is the expanding disk; and C the pin. The disk is made of a piece of some flexible sheet metal—as zinc—having a central hole large enough for the passage of the pin, and is stamped or pressed to a concavo-convex form, in which its circumference is about the same as that of the cylindrical portion of the bullet—that is to say, just as large as will permit it to pass easily through the bore of the gun. The pin may be made of hard wood or of some metal or alloy harder than the bullet. An alloy of one part of antimony

to nine parts of lead will serve the purpose if the bullet is of lead. The head *a* of the pin may be of the same or rather less circumference than the bullet and disk. The length of the pin from the front of the head to the point should be a little less than the depth of the cavity of the bullet, and a little greater than that of the cylindrical portion of the exterior of the latter. The cavity *b* of the bullet and the pin are both slightly tapering, smallest in front, the pin being rather less taper than the cavity, and fitting tight enough at its point within the cavity, when its head is against the convex side of the disk and the concave side of the disk is against the bullet, as shown in the drawing, to prevent it from dropping out of the bullet and enable it to retain itself and the disk in place before and during the insertion of the bullet in the gun. When the charge is fired behind the bullet, the explosive force acting against the head *a* drives the pin forward into the cavity *b* of the bullet, thus causing the expansion of both the bullet and the disk, as bullet, disk, and pin move forward in the bore of the gun, the expansion of the bullet being produced by the action of the pin in the cavity *b*, and the expansion of the disk being produced by its being flattened by the head of the pin. Owing to the difference in the taper of the pin and the cavity of the bullet and the pin fitting tightest at its point, the bullet commences to expand in the front part of its cylindrical portion, thus causing its friction against the bore to commence in that part, and as the pin continues to move forward the expansion of the bullet is gradually continued toward the base, while at the same time its cylindrical portion is constantly upset in rear of where the expansion is taking place by the pressure of the head of the pin transmitted through the disk. The bullet is thus caused to become very solid throughout the whole length of its cylindrical portion, its friction is more evenly distributed, it is caused to obtain a good hold in the grooves, and its axis made to coincide with that of the bore of the gun, and extremely accurate shooting is thus produced.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with an elongated expanded bullet, of a pin, C, and expanding disk B, applied substantially as herein specified.

2. Fitting the pin to the cavity of the bullet in the manner substantially as herein specified, whereby the expansion of the bul-

let is caused to commence in the front part of its expanding portion and to be gradually continued toward the rear, as herein set forth.

E. D. WILLIAMS.

Witnesses:

EDWD. W. HODGSON,

R. GAWLEY.