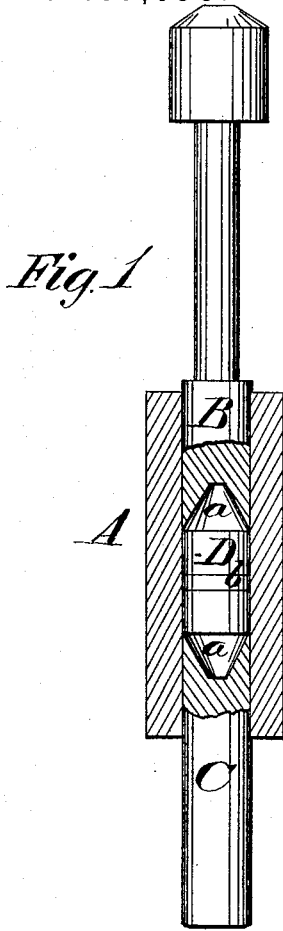


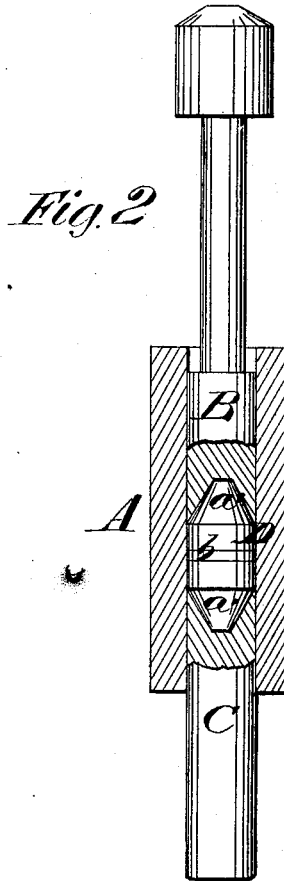
W. D. HILLIS.  
 Device for Swaging Bullets.

No. 163,656.

Patented May 25, 1875.

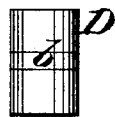


*Fig. 1*

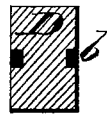


*Fig. 2*

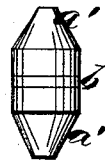
*Fig. 3*



*Fig. 5.*



*Fig. 4*



WITNESSES  
*Robert Everett*  
*Et Al*

INVENTOR  
*William D. Hillis.*  
*Chapman and Fossum & Co*  
 ATTORNEYS

# UNITED STATES PATENT OFFICE.

WILLIAM D. HILLIS, OF ELGIN, ILLINOIS.

## IMPROVEMENT IN DEVICES FOR SWAGING BULLETS.

Specification forming part of Letters Patent No. **163,656**, dated May 25, 1875; application filed February 27, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM D. HILLIS, of Elgin, in the county of Kane and State of Illinois, have invented a new and valuable Improvement in Projectiles for Small Arms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figures 1 and 2 of the drawings are representations of longitudinal sections of my device, and Figs. 3, 4, and 5 are views of the blanks and finished articles.

This invention has relation to improvements in dies for forming projectiles; and the invention consists in the combination of dies and a tubular block for forming double-pointed bullets, as will be hereinafter more fully described.

In the annexed drawings, A designates a tubular block of metal, the diameter of the bore being equal to that of the small arm for which the projectile is to be made. B represents a plunging-die, having an actuating-shaft or handle for the same; and C, a setting-die. Dies B and C are adapted to be inserted, the former from above and the latter from below, into the bore of block A; and the lower end of die B, as well as the upper end of die C, is provided with a tapering recess, *a*, in the shape of a conoidal or conical frustum—the depth as well as the diameters of the said recesses being exactly equal. D, in Fig. 3, represents a cylindrical leaden or composition block, of such a diameter as to be snugly received into the bore of the forming-block A, out of which I propose to form the projectile shown in Fig. 4. Setting die C is inserted with its recessed end upward into the lower end of block A; leaden block D is then dropped into the bore and plunger B placed therein above the same, as shown in Fig. 1; the latter is then forcibly depressed, either by being struck with a hammer or by a suitable reciprocating shaft, while the setting-die C rests upon an immovable bed, and block D forced into recesses *a*, completely filling the same. By this means block D is made to assume the form shown in Figs. 2 and 4; and, owing to the great pressure to which

it has been subjected, its density is made equal throughout, so that there is an equal weight of material at each side of the center of length; hence, when the projectile is thrown from a fire-arm, either smooth-bored or rifled, all tendency to over-ending is effectually done away with, and its range greatly increased. In rifled fire-arms, the spiral motion imparted to this projectile by the grooved bore, not having to contend with and overcome the tendency to over-ending always accompanying a single-pointed bullet, is more regular, continuous, and rapid, and, in consequence, the curve of its trajectory is greatly lengthened, and its range greatly increased.

In practice, I propose to have a groove cut transversely in the cylindrical part of my improved double-pointed bullet at exactly the center of its length, either before or after its compression, in which groove will be placed and rigidly secured, in any suitable manner, a thread packing, *b*, for the purpose of wiping out the weapon at each discharge; but it may be, at pleasure, dispensed with.

Where the groove and its packing are used, cylindrical block D will be molded, when it will present the appearance shown in Fig. 5, in cross-section; but when the groove is dispensed with, the blocks will cut off from a cylindrical bar in suitable lengths.

This construction of bullet enables me to put either end *a'* foremost into the barrel of the piece, and when it is discharged causes no vacuum to be formed at its rear end, thus materially adding to the length of range obtained thereby.

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

In a device for forming a double-pointed bullet, the setting-die C, and the piston-die B, each having an equal recess, *a*, in the shape of a conical or conoidal frustum in combination with a tubular block, A, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM D. HILLIS.

Witnesses:

WILLIAM OWEN,  
R. W. PADELFOED.