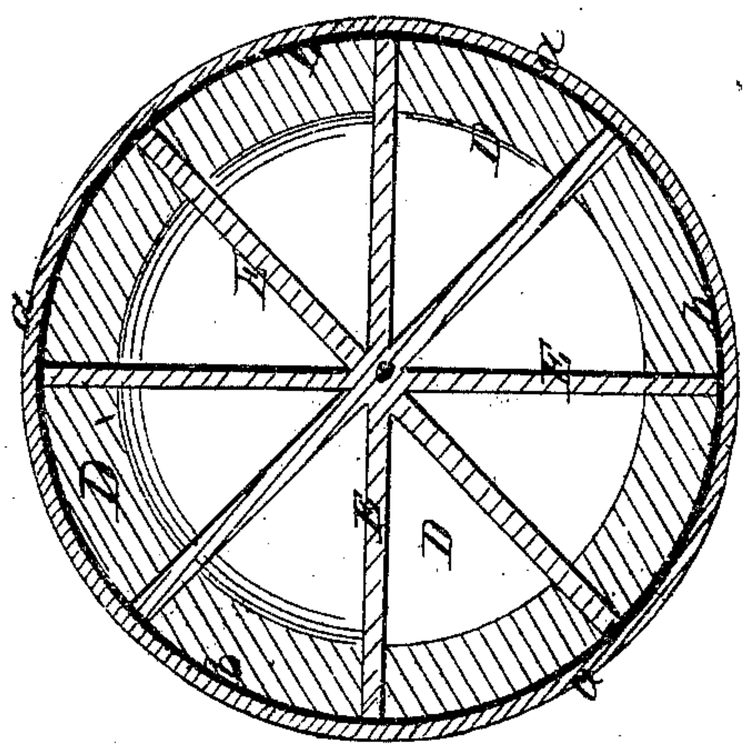
C. T. JAMES.

Projectile.

No. 35,521. Patented June 10, 1862.

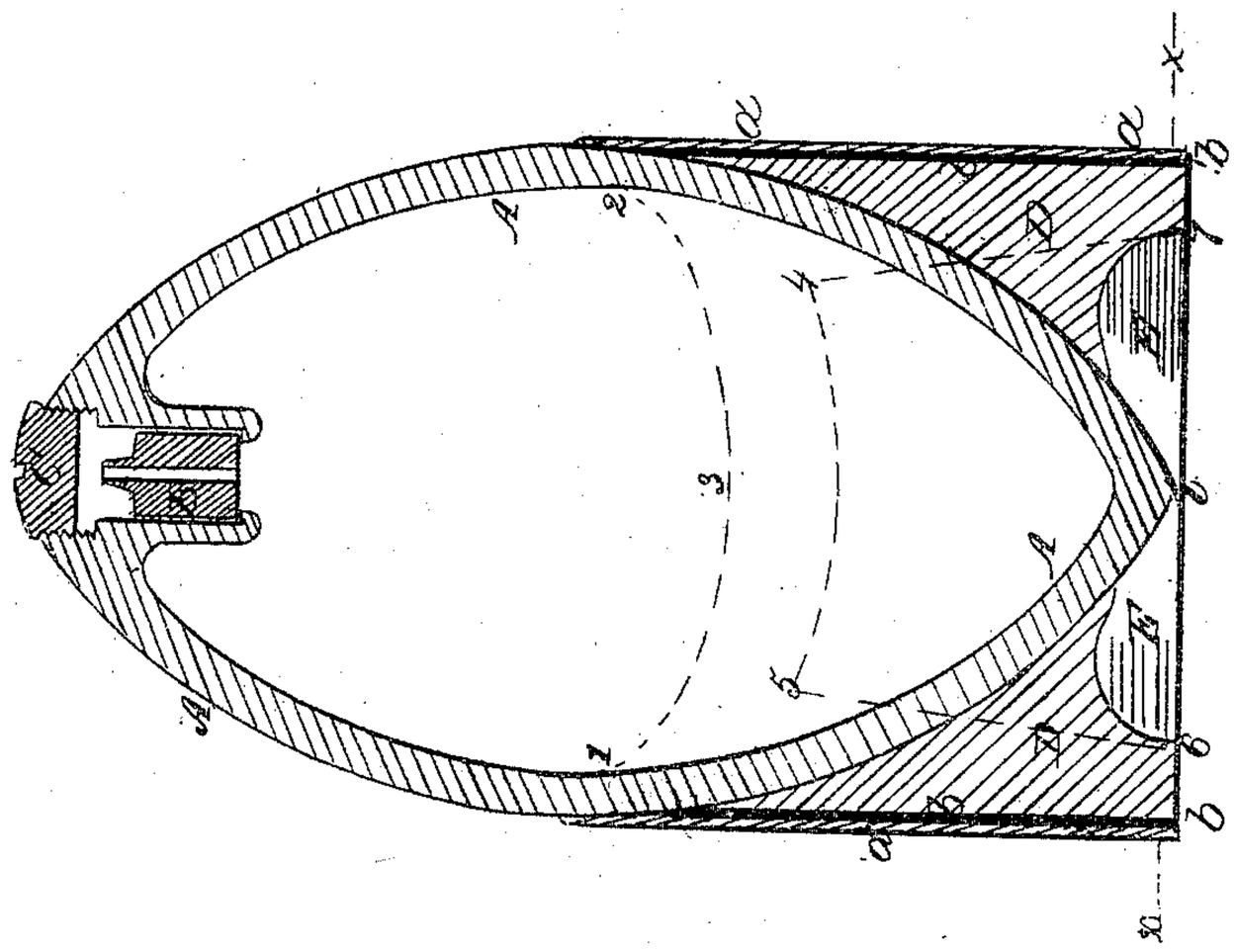
Figure 2.



Witnesses

Chas. T. James.
By attorney
J. Mudd Butler

Figure 1.



UNITED STATES PATENT OFFICE.

CHARLES T. JAMES, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN EXPLOSIVE SHELLS FOR ORDNANCE.

Specification forming part of Letters Patent No. **35,521**, dated June 10, 1862.

To all whom it may concern:

Be it known that I, CHARLES T. JAMES, of Providence, Rhode Island, have invented certain new and useful Improvements in Explosive Shells for Ordnance, of which the following is a specification.

My invention relates to a novel method of construction in shells, and has for its object to increase the capacity of the magazine of the shell without increasing the size of the projectile and without interfering with the expansible portion of the projectile.

In the accompanying drawings, forming part of this application, Figure 1 is a longitudinal section through the center of one of my improved shells, and Fig. 2 is a cross section at the line *x x*, Fig. 1.

In the several figures the same letter denotes the same part of the apparatus.

In Fig. 1 the dotted lines illustrate the form of the shell which has heretofore been employed in connection with the surrounding expansible ring, for preventing windage and filling the grooves of rifled cannon.

My improvement consists in extending the shell portion or magazine of the projectile down toward the base of the latter, as shown, making the magazine or shell portion A in the shape of a prolate spheroid, in combination with a surrounding expansible ring or packing, so arranged as to make the external figure of the base or lower half of projectile cylindrical, as hereinafter more fully explained.

A is the shell portion of the projectile, (of the form illustrated,) which is cast of iron, hollow, in the usual manner, but with triangular flanges or feathers E, arranged radially in cross-section and extending from about the center (longitudinally) of the external surface of the shell A to its lower point. Around this series of feathers or flanges E is placed a cylinder or band, *b*, of some thin metallic substance—for instance, tin—and outside of this band is a cylindrical envelope, *a*, of fibrous or equivalent substance (to prevent abrasion of the bore of the gun.) The spaces between the feathers E are filled in with lead or other soft metal or alloy, as shown at D. This filling of soft metal extends out to and against the internal circumference of the band *b*, as illustrated, and the said filling D, it will be observed, is so shaped at the base of the projectile as to leave the point or apex *i* of the shell A exposed, from which point *i* the said filling is sloped inwardly and then out again to the point 6 7, as fully illustrated. B is the ordinary cone-cylinder, and C the cap-piece, whereby the explosion of the shell is effected in the manner well known.

It will be observed that in the method of construction heretofore employed for this kind of projectiles the magazine or hollow portion for powder and missiles extended down only to the dotted line 1 3 2, while the lower hollow portion included between the points 6 5 4 7 was left void, and communicated with a surrounding expansible ring by means of ducts, through which the explosive gases passed from the hollow space 6 5 4 7 to the said expansible ring, to force it outwardly against the bore of the gun and into the grooves, if rifled. Now, I have utilized the greater portion of the space 6 5 4 7 for magazine purposes, while at the same time I have lost none of the advantages of the expansible ring; and this desideratum I have attained, as hereinbefore described, by extending the shell portion A down toward the base, forming flanges E to sustain the band *b* and envelope *a* and casting, or pouring in a filling, D, of soft metal.

By forming base surface of the filling D in the manner shown the explosion of the charge in the cannon will cause the said filling D to expand, (on the Minié principle,) forcing the band *b*, with its envelope *a*, against the bore of the gun and into the grooves, if rifled, for purposes well known. The shell portion A is rendered better capable of bearing the force of the discharge in the cannon, and will explode, I believe, to better advantage, when shaped substantially as shown and described by me.

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

In combination with the conically-shaped base of the shot of hard metal, an expansible base-piece of soft metal, arranged to operate substantially as described, for the purpose set forth.

In testimony whereof I have hereunto set my hand this 21st day of September, 1861.

CHAS. T. JAMES.

Witnesses:

WM. H. BISHOP,

J. N. MCINTIRE.