(No Model.)

D. M. MEFFORD.

PROJECTILE.

No. 298,996. Patented May 20, 1884.

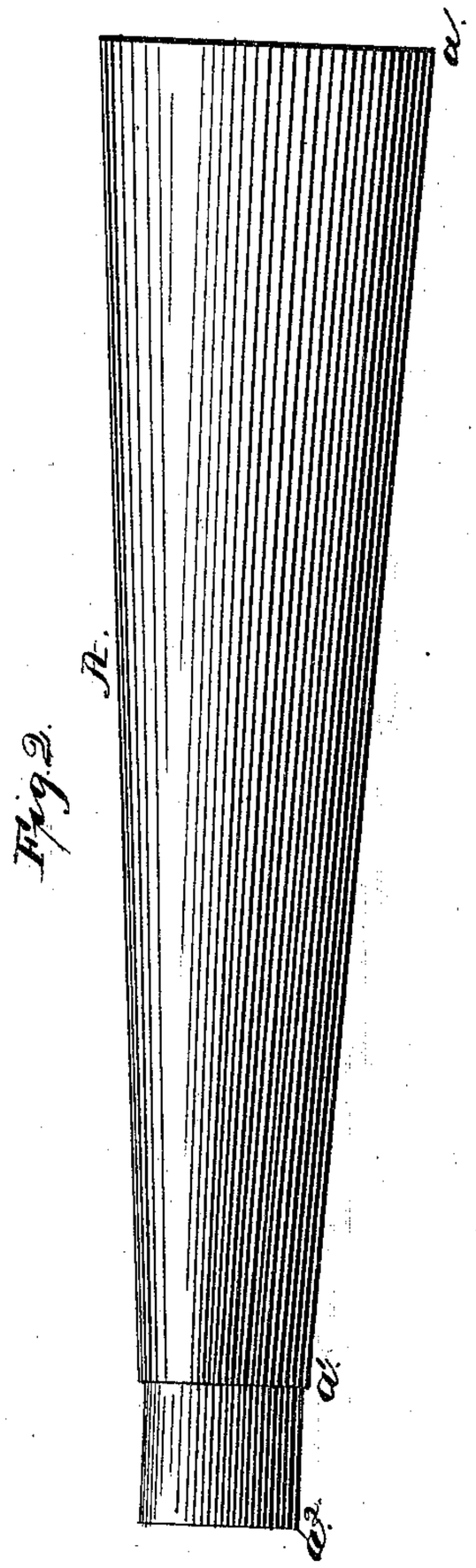

Fig. 2.

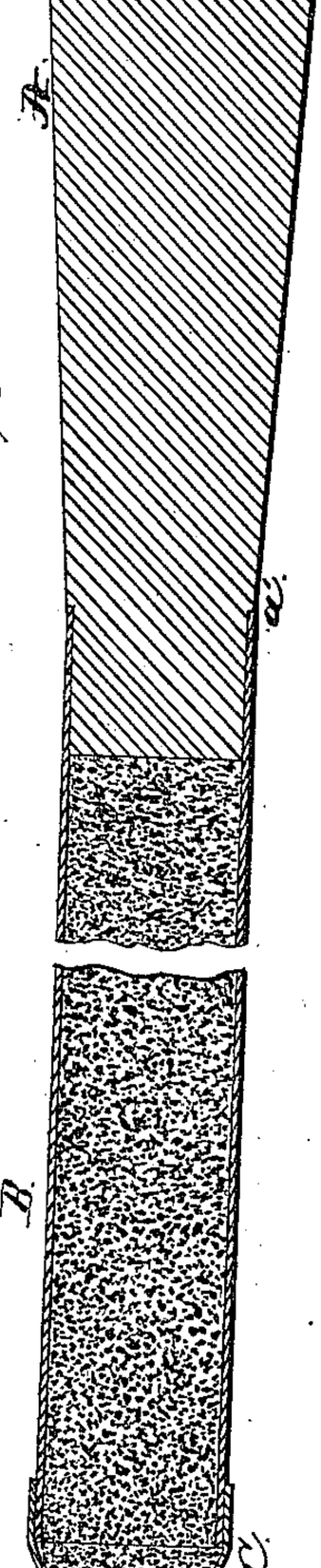

Fig. 1.

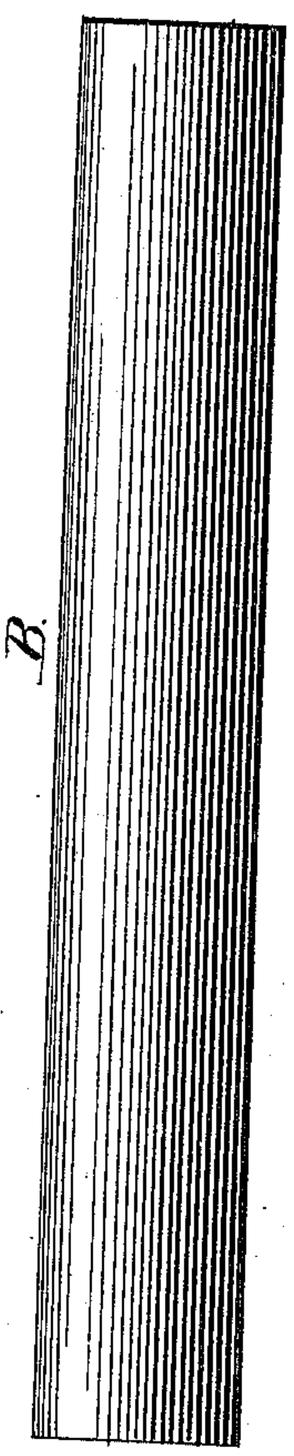

Fig. 3.

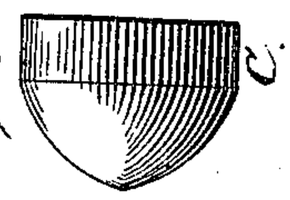

Fig. 4.

Witnesses.
H. A. Clark.
Philip Hawley

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His attorneys.

UNITED STATES PATENT OFFICE.

DAVID M. MEFFORD, OF TOLEDO, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF PART TO ARMOR J. FAIR, OF DETROIT, MICHIGAN, AND HARVEY D. WINSOR, OF NEW YORK, N. Y.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 298,996, dated May 20, 1884.

Application filed October 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. MEFFORD, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Projectiles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to projectiles specially intended to be charged with dynamite or other high explosive.

The object of my invention is to produce a projectile which will be self-centering in the gun when fired; also, to dispense with all devices to give a rotary motion to an elongated projectile. My projectile is specially intended for use with my system of pneumatic ordnance.

In the drawings, Figure 1 is a longitudinal section, partly broken away, of my improved projectile. Fig. 2 is an elevation of the conical base. Fig. 3 is an elevation of the tube which forms the chamber for the explosive. Fig. 4 represents the cap or cover which closes the end of the chamber.

A represents the base-piece of the projectile. This piece is preferably of wood, but in instances may be made of sheet metal, closed at the ends, and, if necessary, filled with sawdust or other light material. It is important that the specific gravity of this base-piece shall be small. It is to form about one-half of the length of the projectile, and, excepting the short cylindrical portion which enters the tube which contains the charge, is preferably the frustum of a cone. The sides may in some instances be a little concave or convex from *a* to *a'*; but by repeated experiment I have reached best results with the frustum of a true cone. The diameter of this frustum is preferably about twice as great at *a* as at *a'*.

The tube or shell B, which contains the charge of dynamite or other high explosive, is a true cylinder, of metal, and of such thickness as to give the necessary weight to the front end of the projectile. This tube may be slightly reduced in diameter at the end which enters the cap or cover C; or the cover may be made to close into the tube, and held by a flange from entering too far.

The cap C is merely a cover of cast or sheet metal. It may be of lead or similar metal, which will give weight to the point of the projectile, and is not intended to be very thick, as it is desirable to bring the dynamite charge into close proximity to the object sought to be destroyed by its explosion. A fulminate-cap may be placed in the center of the cap or cup, as at *c;* but usually the charge of dynamite will be exploded by the shock when it strikes an object, and no fulminate is needed. Of course the cap C may be permanent with tube B.

The projectile should not be loaded until about to be used. Then, if a fulminate-cap is used, the cap or pellet is placed loosely in cover C, and the tube B is placed in the cover, the cover end being downward. Tube B is then filled with dynamite or similar explosive from the open end. This holds the fulminate cap in place with sufficient force and exactness. The base-piece A is then joined to the tube B by passing the cylindrical portion $a' a^2$ into the tube above the dynamite. The projectile is now loaded and ready for firing.

The projectile is specially intended for use with a pneumatic cannon of the general character shown in my Patent No. 279,965, of June 26, 1883. The projectile is loaded into the gun from the breech, and lies in the bottom of the bore until the piece is discharged. I have found that with a projectile of this construction no device is necessary to center the front end of the projectile in the chamber of the gun, for although the bore of the gun is equal to the greatest diameter of the base-piece A, and said piece has no appreciable length of bearing-surface to fit the bore, save only what may be called the circumferential line at *a*, yet by reason of the pressure of the air on the flat base when the valve is opened, or for some other reason, the projectile is perfectly centered, as is evidenced by the perfect regularity and evenness of its flight, demonstrated by actual use on a scale of considerable dimensions.

What I claim is—

1. The projectile described, consisting of the cylindrical front portion and the frusto-conical rear portion, having a closed or solid base, the whole being free from all projections

for centering or rifling purposes, substantially as described.

2. The combination, with the cylindrical tubular portion B, of the frustum A, having a cylindrical portion, a' a^2, adapted to enter and close the rear of said tube, the whole constituting a projectile free from projections, substantially as described.

3. The combination of the hollow cylinder B, the frustum A, adapted to enter and close the rear of said tube, and the cap C, forming a cover to said tube, the whole constituting a projectile free from external projections for centering or rifling purposes, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID M. MEFFORD.

Witnesses:
B. F. MORSELL,
W. A. BARTLETT.