2 Sheets—Sheet 1.

J. A. DAHLGREN.

Projectile.

No. 1,982.
No. 32,986.

Patented Aug. 6, 1861.

Fig. 1

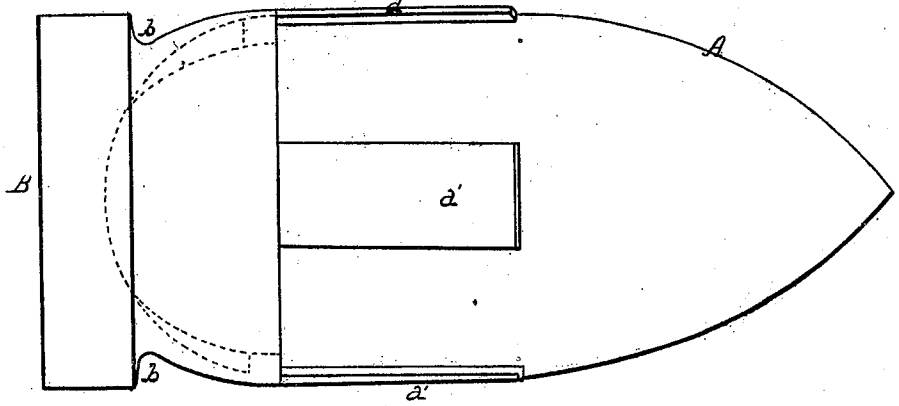


Fig. 2

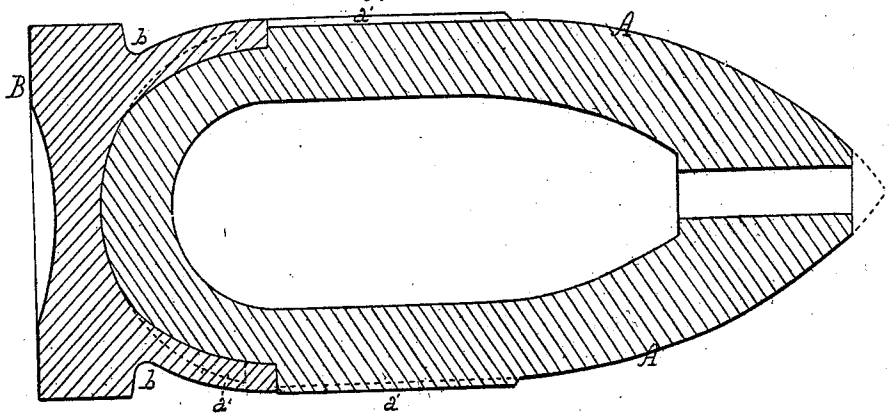
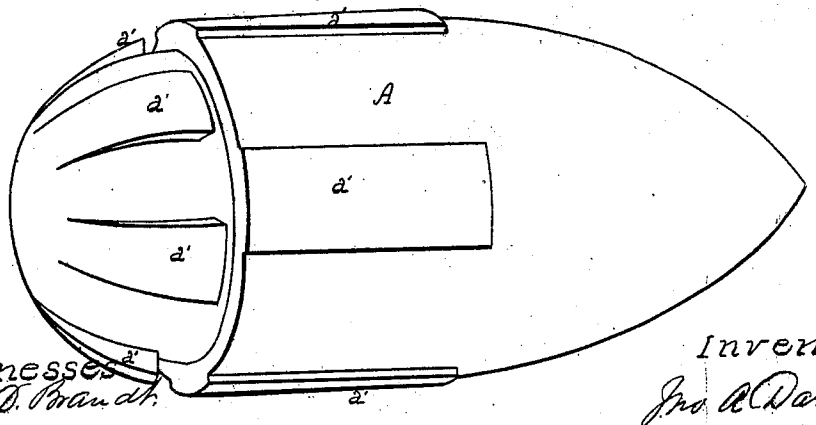


Fig. 3



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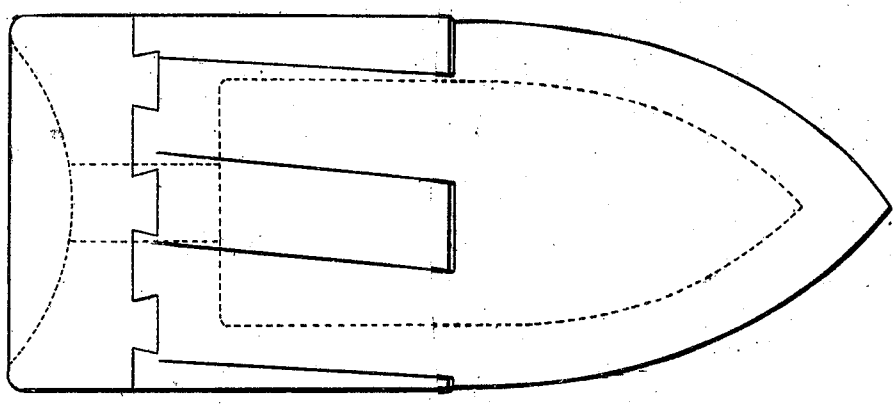
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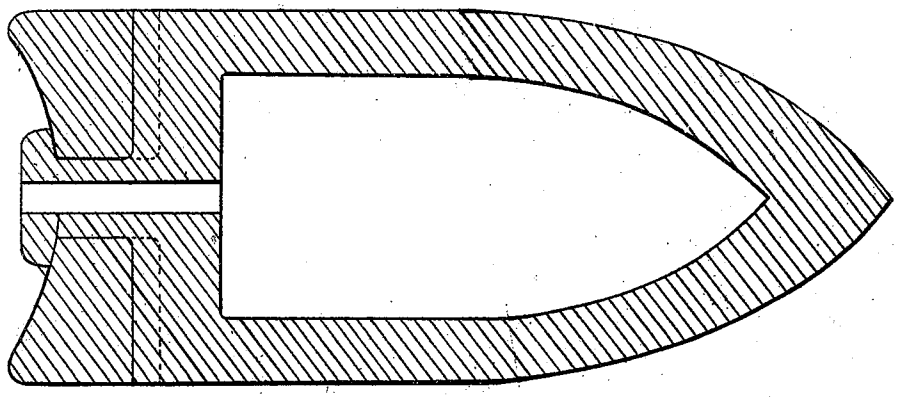
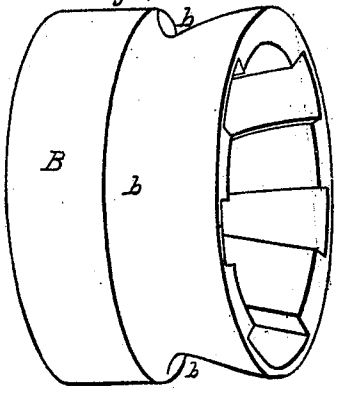


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN A. DAHLGREN, OF PHILADELPHIA, PENNSYLVANIA.

PROJECTILE FOR RIFLED ORDNANCE.

Specification of Letters Patent No. 32,986, dated August 6, 1861.

To all whom it may concern:

Be it known that I, JOHN A. DAHLGREN, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Elongated Projectiles for Rifled Cannon, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1, represents a side elevation of a projectile embracing my improvements. Fig. 2, represents a longitudinal section of the same at the line x, x, of Fig. 1. Fig. 3, represents in perspective the iron body of the projectile detached from its base, and Fig. 4, represents in perspective the soft metal base of the projectile detached from the body.

The projectile consists of two parts:—First, the body A, usually made of a conoidal, egg, or pear shape, and made of cast-iron or other hard metal. Secondly, the base or bottom B, made of lead or other soft metal.

The body of the projectile when intended to be used as a shot, may be made solid or hollow. When intended to be used as a shell, it must be made hollow, filled with gunpowder or other suitable explosive material, and fitted with a fuse in the usual manner. In Fig. 2 a hollow projectile is represented which may be used either as a shot or shell.

The body of the projectile may be divided into three parts, viz:—The middle which is cylindrical,—the fore end which is conical,—and the rear end, which may also be conical, but I prefer to make it hemispherical. The rear end of the body is made with protuberances (a' Fig. 3,) so shaped that when the bottom is cast on the body, these protuberances will be embedded therein and thereby unite the two firmly together. The middle of the body is cast with a series of ribs a, projecting about one tenth (.10 in.) of an inch from its surface. These ribs are to be turned to a diameter two hundredths of an inch (.02 in.) less than that of the bore of the gun. The width of these ribs is about eight hundredths (.08) of the circumference of the projectile. These ribs I prefer to incline to the axis of the projectile like the threads of a screw, and to make their inclination to correspond in degree and direction with the rifle grooves of the bore of the gun out of which the projectile is to be fired. The object of these ribs is:—First, to diminish the bearing surface of the projectile against the bore of the gun. Secondly, by their oblique action against the air during the flight of the projectile from the gun, to assist in steadying it and in keeping it from deviating from the direction in which the gun is aimed.

The process of casting the body of the projectile is so obvious to a person skilled in the art of casting metals, that it requires no description here.

When the body of the projectile is finished, it is to be placed in the bottom of a mold of the proper shape to leave a space above it the counterpart of the soft metal bottom. This space is then poured full of molten lead or other suitable soft metal, and when cool the fins or ragged corners of the lead should be trimmed off, and the projectile will then be completed if it is a simple projectile. If it however, is to be filled with combustible matter and fitted with a fuse, that is to be done in the usual manner which every competent pyrotechnist understands. If the soft metal should chill so as to prevent it from running into the scores in the end of the iron body and filling them, the body may be heated and then this difficulty will be avoided. It is important that the bottom should adhere closely to the rear end of the body that the projections a' may be well embedded in the soft metal to resist the wrenching action of the rifling when the gun is discharged. The deep groove (b) in the periphery of the bottom, is to be filled with lubricating matter. When this projectile is discharged from a rifled gun, the force of the explosion of the powder first drives the soft bottom forward upon the conical or spherical rear end of the body of the projectile, which has the effect of compressing or wedging out the periphery of the soft metal bottom into close contact with the rifled surface of the bore, filling the rifle grooves with the soft metal so as to prevent windage and compel the projectile in passing through the bore to rotate on its own axis, like a screw in the rifle grooves. The lubricating matter by the expansion of the bottom, being forced out against the surface of the bore renders it less liable to become foul.

The soft metal base and hard metal body

admit of being variously constructed at their conterminous parts as for example the rear end of the body may be flat and made with radial dove-tail grooves and the bottom may be cast on it and caused to adhere by filling the grooves, and in this case the compression of the bottom by the force of the explosion against the rear end of the body would cause its periphery to expand into and fill the rifle grooves. To render this result more certain the rear end of the bottom may be made concave. So too the bottom may be made separately and connected to the body by screws or rivets. These modified plans of construction I deem inferior to that which is first described.

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

The elongated projectile herein described, with a hard metal body united to a soft metal bottom, substantially as herein described.

In testimony whereof I have hereunto subscribed my name.

JNO. A. DAHLGREN.

Witnesses:
A. B. NORTON,
JNO. D. BRANDT.