

H. H. HENDRIX.
PROJECTILE.
APPLICATION FILED JAN. 3, 1910.

966,744.

Patented Aug. 9, 1910.

Fig. 1.

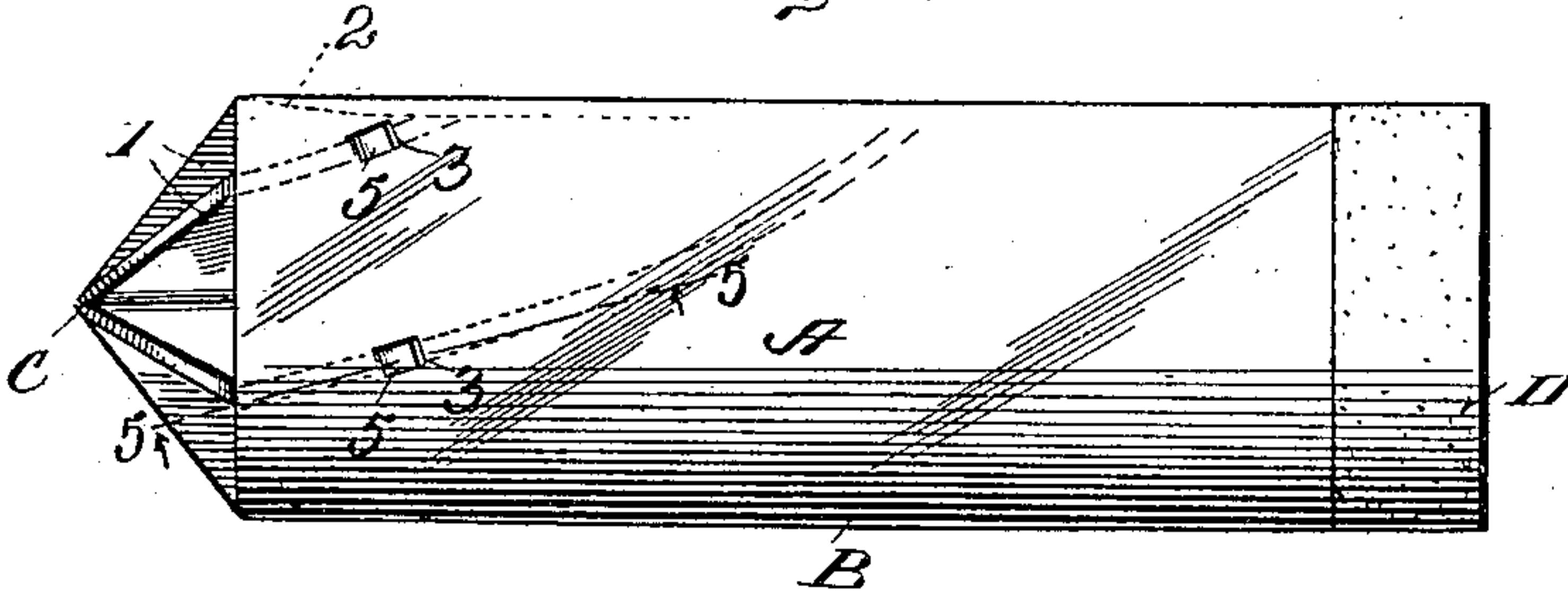


Fig. 2.

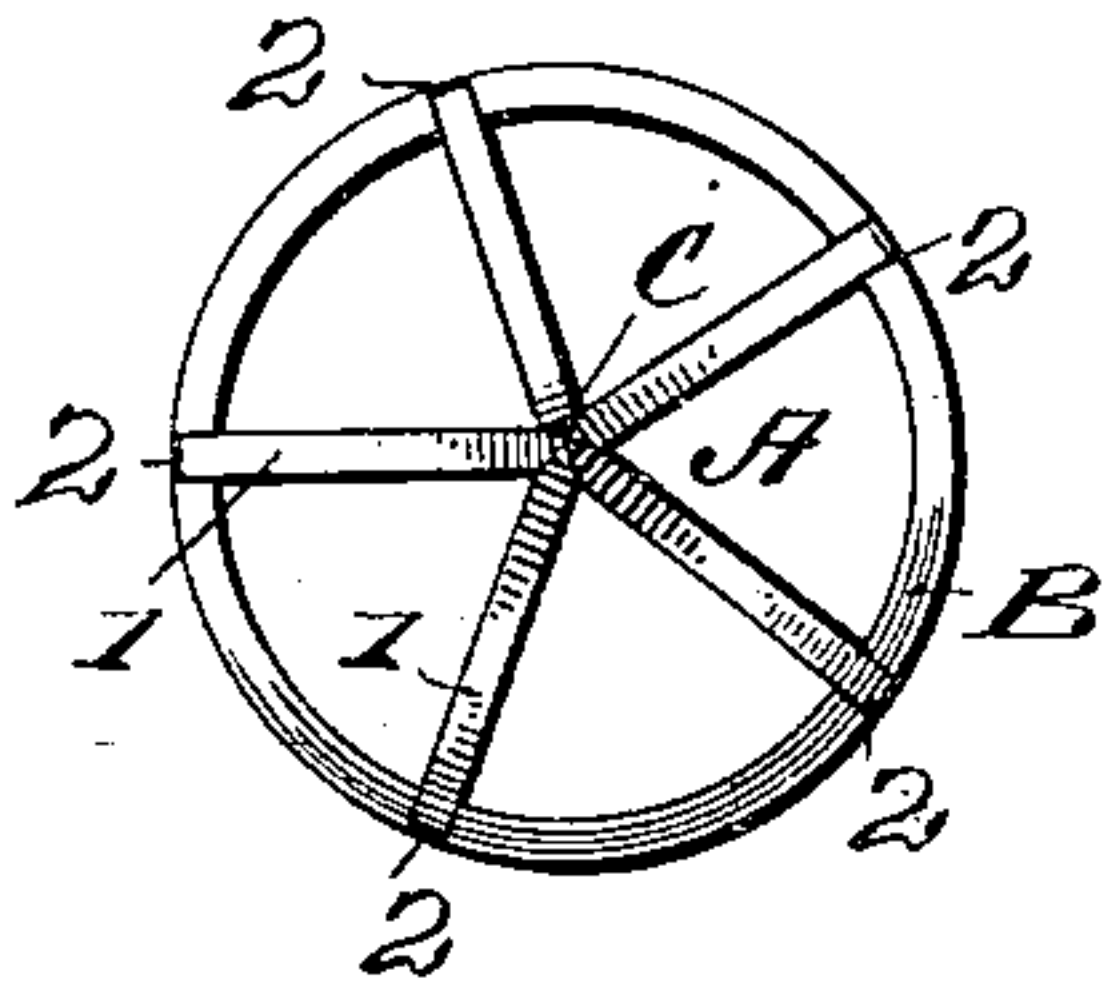


Fig. 3.

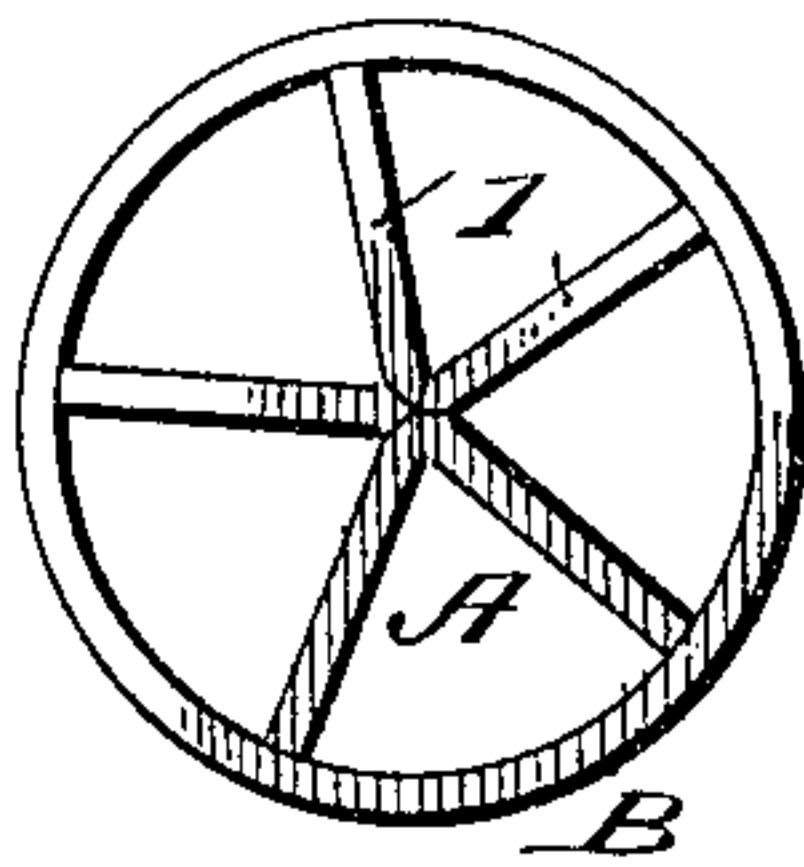


Fig. 4.

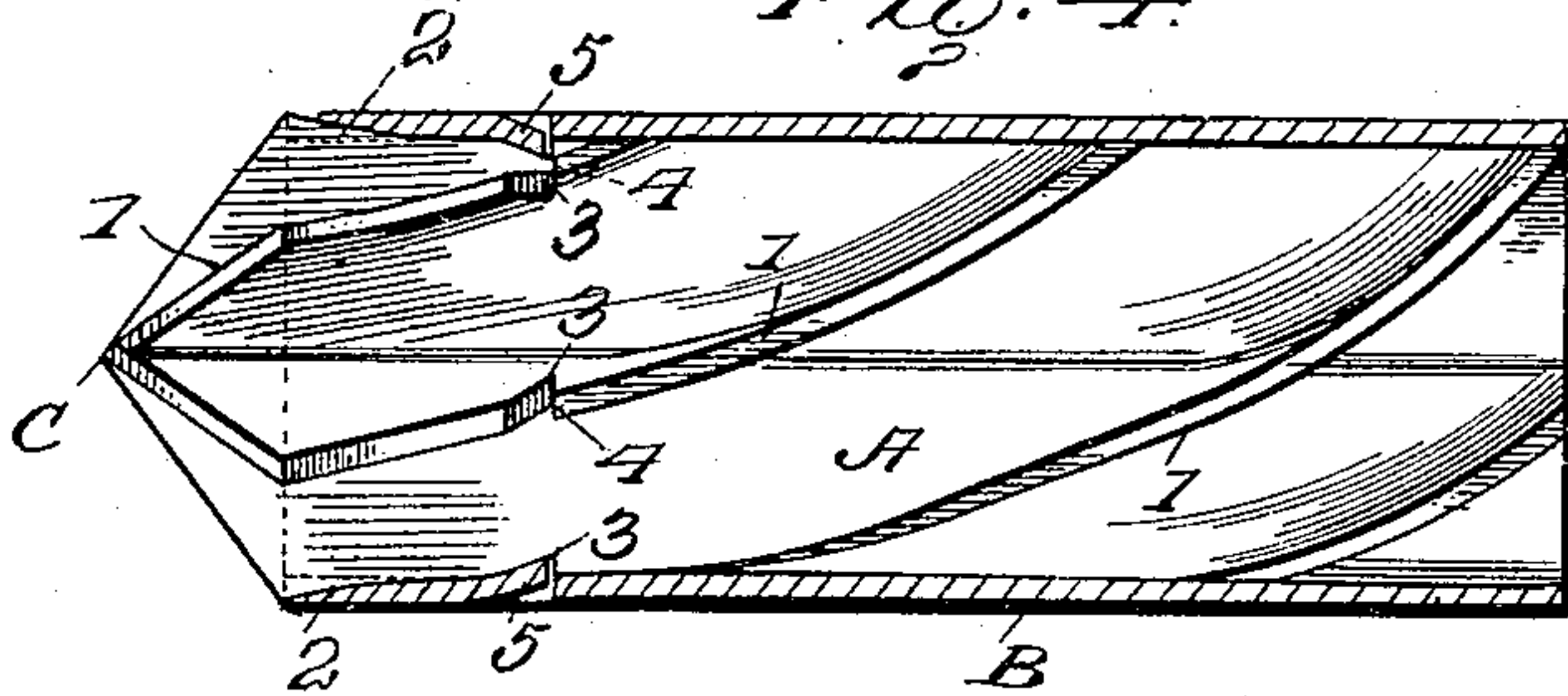


Fig. 5.

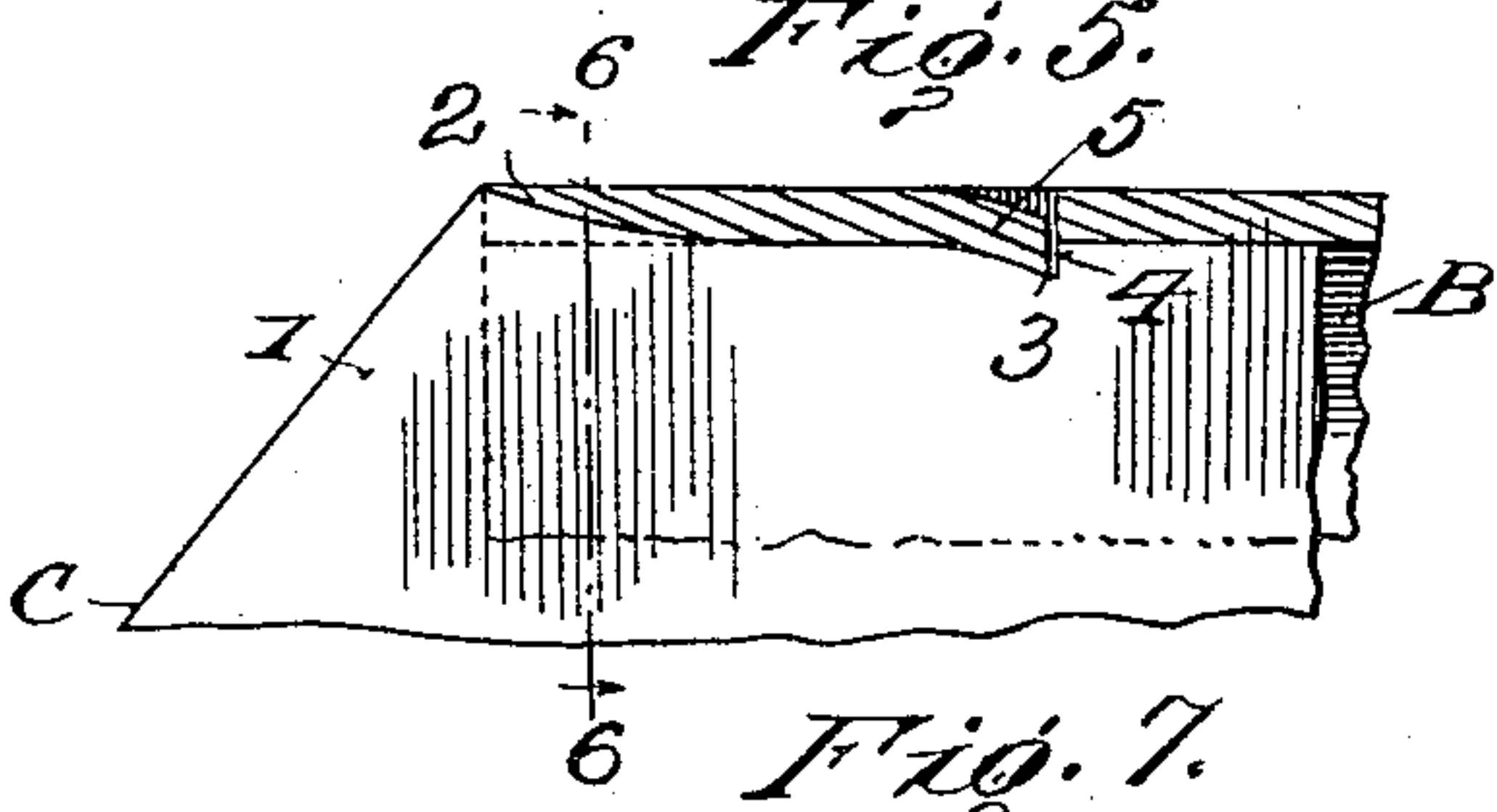


Fig. 6.

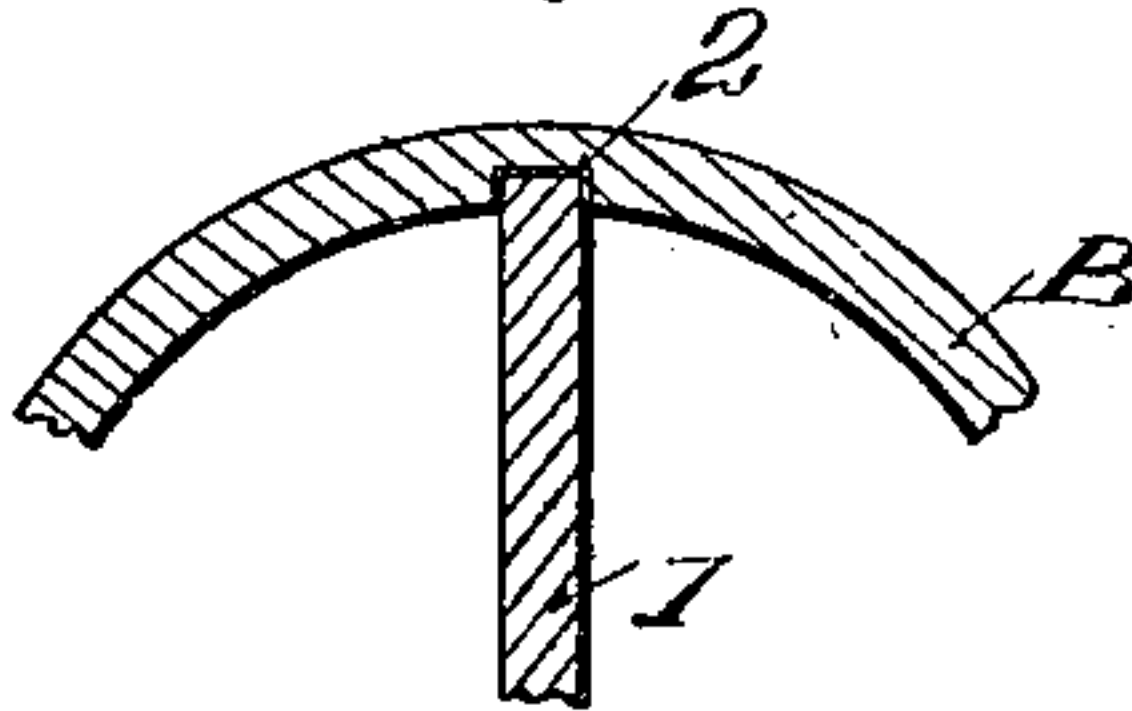


Fig. 7.

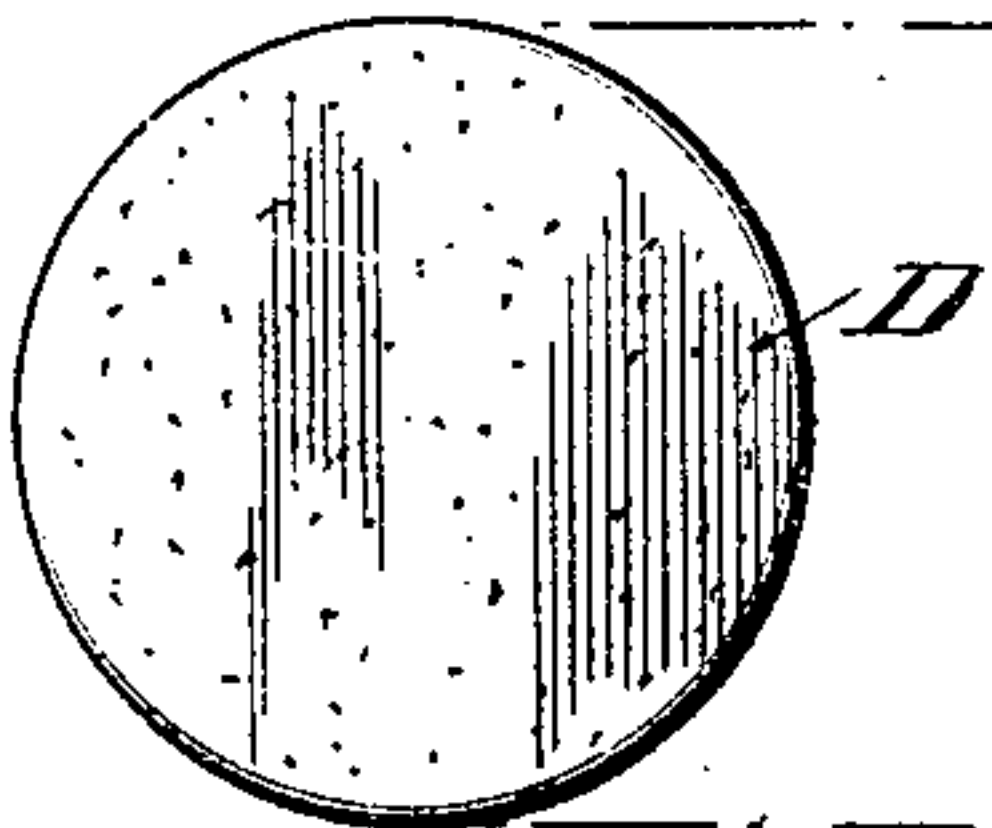


Fig. 8.



Witnesses
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PROJECTILE.

REISSUED

966,744.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed January 3, 1910. Serial No. 535,910.

To all whom it may concern:

Be it known that I, HARRISON H. HENDRIX, a citizen of the United States, residing at Powell Station, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Projectiles, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates particularly to projectiles intended for firing from smooth bore and rifle guns, provision being made in the projectile for imparting rotation thereto by the action of the atmosphere during the flight of the projectile.

The object of the invention is to produce such a projectile adapted for accurate flight and for economical manufacture and to be used in a smooth bore gun, in order that, in the use of the projectile, there may be freedom from fouling and clogging of the gun and the disasters following such fouling and clogging.

A characteristic of my projectile is its adaptation to spread or "bur" at the forward end upon making impact against a hard body.

In the accompanying drawings, Figure 1 is a side elevation of my projectile; Fig. 2 is a front elevation; Fig. 3 is a rear elevation without the closing member; Fig. 4 is a sectional side elevation of the projectile; Fig. 5 is an enlarged detail section on the line 5—5 of Fig. 1; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is a rear elevation and Fig. 8 a side elevation of a disk or closing member applied to the rear end of the projectile.

Referring to said drawings, A is the body of the projectile. This is combined with a shell or tube, B, and a disk-form closing member, D, as hereinafter described. Said body is composed of steel or other hard metal and has any desired number of wings, 1, which are approximately radial in a cross section of said body but extend parallel to each other and slightly oblique or out of parallel to the axis. And the obliquity of said wings is preferably gradually increased, so that said wings become slightly curved lengthwise, the curvature gradually increasing from the front to the rear end of said body, as shown in the drawings. From the rear toward and almost to the front end of said body, said wings extend to the same distance from the axis of said body, thereby

adapting said body to fit closely within the cylindrical tube, B. But the outer edges of the forward portions of said wings gradually extend out farther and farther from the axis of said body, to or almost to the outer surface of said tube or shell, the latter being formed with internal notches or grooves, 2, for receiving said wings. Said shell is only long enough to cover the outer edges of said wings, and said body projects forward to the front end of said shell to form an obtuse, conical point, C, the length of said point being approximately equal to one-third the diameter of said projectile. The outer edges of the wings and the inner face of the shell may be formed with inter-engaging irregularities so as to normally hold the body and the shell together. For this purpose, a notch 3, may be cut into the outer edge of any desired number of wings, 1, preferably in such manner as to form a shoulder, 4, directed toward the front end of the body to receive the rear end of a depressed portion of the wall of the shell, as a tongue, 5, formed in the shell, B, opposite said edge of said wing and directed toward the rear and against said shoulder. Said tongue and said shoulder engage each other to prevent rearward movement of the shell upon the body during the discharge and flight of the projectile.

The disk-form closing member, D, is of substantially the same diameter as the shell or tube, B, and extends across the rear end of said shell and said body and receives the pressure of the explosion gases, forming a cover for the openings between the wings, 1, and said shell or tube. This serves to give the projectile the full force of the expansive action of the explosion gases and also prevents said gases from passing through the oblique passages of the projectile and causing the latter to rotate in the direction opposed to the direction designed to be given to the projectile by the atmosphere through which the projectile is flying. The disk, D, need not be attached to the end of the projectile; but it is preferable to so attach it by some sort of adhesive or other means which will readily allow automatic detachment during the discharge of the projectile from the gun, said disk then falling out of the course of the projectile as does an ordinary wad in an ordinary cartridge.

In operation, the projectile is placed into a smooth bore gun in front of an explosive charge. Said charge is then exploded, the

force thereof going against the disk, D, and driving the entire projectile forward, said disk, as above stated, leaving the course of the main portion (the body, A, and the shell, B,) of the projectile, and such main portion going forward in a direct course. While the projectile thus traverses its course, the air rushes through the passages between the wings, 1, and the shell, B, from the front to the rear, bearing against the oblique faces of said wings and thereby causing a rotation of the projectile. The entrance of air into said passages is facilitated by making the point of the body, A, obtuse, as shown by the drawings and above described. If said point were acute, it would tend to spread the air outward over the front edge of the shell, B, without entering said passages. In this manner the projectile moves without change in its organization until the point strikes a sufficiently hard object to cause such a sudden arrest of the body, A, as will cause the shell, B, to slide forward over said body, the front end of the shell, on account of the outward extension of the wings, 1, splitting along and adjacent the grooves or notches, 2, and the intermediate portions of the shell flaring or "burring" outward until they meet the hard body or object against which the point of the body, A, has struck, and then flaring or "burring" still further, if the momentum of said shell is sufficient and the body against which impact has been made is hard enough. In thus moving, the depressed portions, 5, of the shell move forward away from the shoulders, 4.

The shell, B, is preferably formed of some relatively soft metal, in order that it will not injure the bore of the gun and in order that it may be readily secured to the body, A.

I claim as my invention:

1. A projectile comprising a body, a cylindrical shell, and a closing member, said shell surrounding said body and said body having approximately radial, longitudinal wings which are parallel to each other and out of parallel to the axis of said body and have irregularities in their outer edges making engagement with corresponding irregularities in said shell, and said body extending forward of the forward end of said shell, substantially as described.

2. A projectile comprising a body, a cylindrical shell surrounding said body, and a closing member, said shell having interior notches or grooves at its forward end, and said body having approximately radial, longitudinal wings extending into the notches of said shell and arranged parallel to each

other and out of parallel to the axis of said body, and said body extending forward of the forward end of said shell, substantially as described.

3. A projectile comprising a body, a cylindrical shell surrounding said body, and a closing member, said shell having interior notches or grooves at its forward end, and said body having approximately radial, longitudinal wings extending into the notches of said shell and arranged parallel to each other and out of parallel to the axis of said body, and the outer edges of said wings having notches and the wall of said shell being pressed into said notches, and said body extending forward of the forward end of said shell, substantially as described.

4. A projectile comprising a body, a cylindrical shell, and a closing member, said shell surrounding said body and said body having approximately radial, longitudinal wings which are parallel to each other and out of parallel to the axis of said body and have irregularities in their outer edges making engagement with corresponding irregularities in said shell, and said body being obtusely pointed forward of the forward end of said shell, substantially as described.

5. A projectile comprising a body, a cylindrical shell surrounding said body, and a closing member, said shell having interior notches or grooves at its forward end, and said body having approximately radial, longitudinal wings extending into the notches of said shell and arranged parallel to each other and out of parallel to the axis of said body, and said body being obtusely pointed forward of the forward end of said shell, substantially as described.

6. A projectile comprising a body, a cylindrical shell surrounding said body, and a closing member, said shell having interior notches or grooves at its forward end, and said body having approximately radial, longitudinal wings extending into the notches of said shell and arranged parallel to each other and out of parallel to the axis of said body, and the outer edges of said wings having notches and the wall of said shell being pressed into said notches, and said body being obtusely pointed forward of the forward end of said shell, substantially as described.

In testimony whereof I have signed my name, in presence of two witnesses, this 27th day of December, in the year one thousand nine hundred and nine.

HARRISON H. HENDRIX.

Witnesses:

JAMES A. MCBATH,
H. A. JOHNSON.