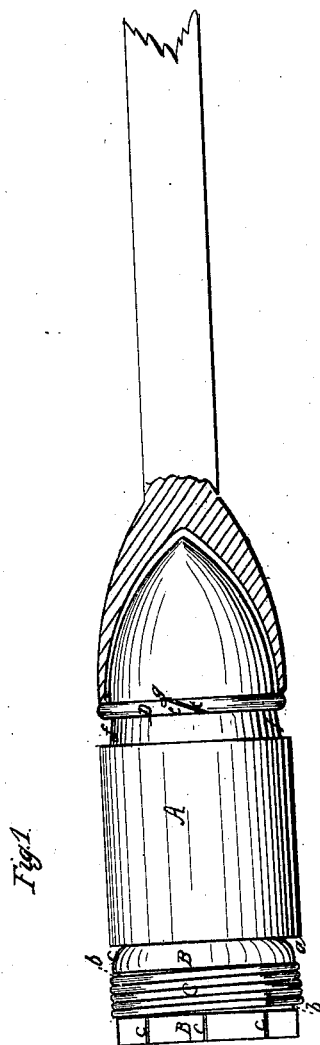
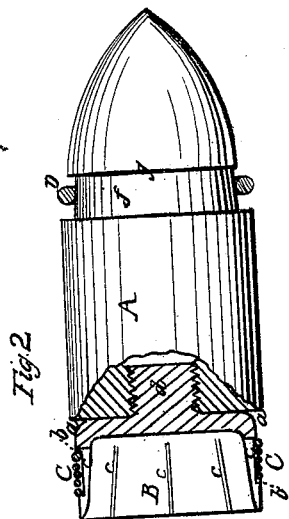
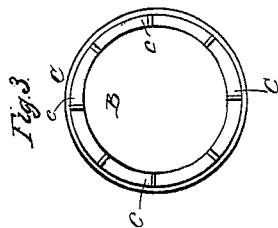


J. W. COCHRAN.
Projectile.

Patented Nov. 8, 1859.

No. 26,016.



Witnesses:

M. Molyneux
C. M. Hughes

Inventor:

J. W. Cochran

UNITED STATES PATENT OFFICE.

J. W. COCHRAN, OF NEW YORK, N. Y.

PROJECTILE FOR RIFLED ORDNANCE.

Specification of Letters Patent No. 26,016, dated November 8, 1859.

To all whom it may concern:

Be it known that I, JOHN WEBSTER COCHRAN, of the city, county, and State of New York, have invented certain new and useful
5 Improvements in Projectiles for Rifled Ordnance; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this
10 specification, in which—

Figure 1, exhibits an exterior longitudinal view of a shot with my improvements, Fig. 2, exhibits an exterior longitudinal view of the body of the shot but shows the packing
15 in section, Fig. 3, exhibits a rear view of the shot.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to prevent
20 windage between the projectile and the bore or rifle grooves of the gun and to obtain a rotary motion of the projectile and to keep the front portion steady during its passage out of the gun, without meeting with either
25 of the two great difficulties which have heretofore generally attended the firing of rifled ordnance viz. the tearing or rapid wearing off of the edges of and the "leading" of the
30 rifle grooves.

To this end my invention consists firstly, in the employment in combination with a cup or cup-like frame of wrought iron or other tough metal attached to and projecting
35 beyond the rear of an elongated or partly cylindrical projectile, of a band formed by winding copper wire or wire formed of other tough and ductile metal or alloy around the exterior of such cup or
40 frame, such band being intended to be stretched by the expansion or spreading out of the cup or frame produced by the explosion of the charge and so caused to fit or enter into the grooves of the gun. And my
45 invention consists, secondly in furnishing the projectile with an expanding ring of copper, brass, or other suitable ductile metal or alloy, not too soft to "lead" the grooves, fitted to a conical surface formed behind a
50 shoulder on the front part of the projectile. This ring has an external diameter not larger than the bore of the gun, and fits easily upon the smaller part of the conical surface when in its normal condition, but, after having been expanded to such a degree
55 as to fit tightly to the bore by driving it back upon the conical surface, it is caused to de-

rive a further expansion to make it enter the grooves, by the action of the cone within it when the projectile is started in the discharge of the gun, and thus is made to assist in preventing windage and in securing
60 the rotary motion of the projectile and also to steady or prevent the vibration of the front part of the projectile during its passage out of the gun.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is the body of the projectile; and B, is the cup-like frame or as I will term it the
70 cup attached to its rear end for the reception of the band C, of copper wire, the mouth of the said cup being turned rearward or away from the body A. The exterior of the cup is of cylindrical form with the exception
75 of its being rounded at *a, a*, (Figs. 1 and 2), where it unites with the body, and its having a groove *b, b*, turned in it to receive the band C, the depth of the said groove being equal to about one half of the thickness of
80 the wire of which the band is composed. As the diameter of the exterior of the band C, is intended to be small enough for it to pass easily into the bore of the gun, that of the cylindrical portion of the exterior of
85 the cup must be considerably smaller than the bore. The sides of the cup are thinned toward the mouth or rear end by giving its interior a conical form as shown in Fig. 2. The said cup has a number of narrow slits
90 *c, c*, which extend from its mouth to its head, and which provide for its expansion laterally to stretch the band C, and force it into the grooves of the gun.

The drawing represents the cup attached
95 to the body A, by its being provided with a screwed stem *d*, which screws into a tapped hole in the body, which is perhaps the best mode of attaching it, but it may be provided with an internally screwed socket to screw
100 onto a thread provided on the exterior of the body. Other modes of attachment might be adopted, but I prefer some mode which admits of its being transported separately
105 to insertion in the gun, as by transporting the projectiles with the cups on the latter would be very liable to injury. In attaching the cup by means of a screw, the direction of the pitch of the screw thread should
110 be such that the rotary motion imparted to the cup by the grooves of the gun will tend

to screw it up tighter against the rear of the body of the projectile. The band C, of copper wire is formed by coiling the wire upon the cup B, and securing its extremities by soldering or other means.

D is the expanding ring applied to the front part of the projectile. This I propose generally to make of a piece of stout copper wire, and to form the ends after the fashion of a scarf joint as shown at *e, e*, in Fig. 1, but to leave them unconnected so that the ring may be capable of expanding. The portion *f, f*, of the projectile to which this ring is fitted is made sufficiently smaller than the bore of the gun to receive the said ring whose external diameter should be such as to let it pass easily into the gun, and is made conical, the smaller part being toward the front of the projectile, and a shoulder *g*, is provided in front of the said part *f*, to confine the ring to the projectile during the insertion of the latter into the gun.

The projectile furnished with the cup and band B, C, and the ring D, may be employed in ordnance loading either at the muzzle or at the breech, but is more especially intended for muzzle loading ordnance. When it has been introduced and sent home to the charge, the ring D is to be driven back upon the conical part *f* of the projectile by means of a cup shaped ramrod such as is shown in section in Fig. 1, till it is so

much expanded by the cone as to cause it to fit tightly to the bore. When the gun is fired the explosion of the charge forces out the sides of the cup B toward the bore, and causes the band C, to be stretched to such a degree as to make it fill the bore and enter the grooves thereof, thus preventing windage and insuring the rotary motion of the projectile, and when the projectile starts the cone *f*, being driven forward into the ring D, causes the latter to be expanded against the bore and driven into the grooves thus making the said ring steady the front part of the ball during its passage out of the gun and making it assist in preventing windage.

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

1. The band C, of copper or other wire applied substantially as described in combination with the cup or cup like frame B, attached to the rear of the projectile, for the purpose herein specified.

2. The expanding ring D, applied substantially as described in combination with a conical surface *f*, formed behind a shoulder on the front part of the projectile, for the purpose herein set forth.

J. W. COCHRAN.

Witnesses:

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C. M. HUGHES.