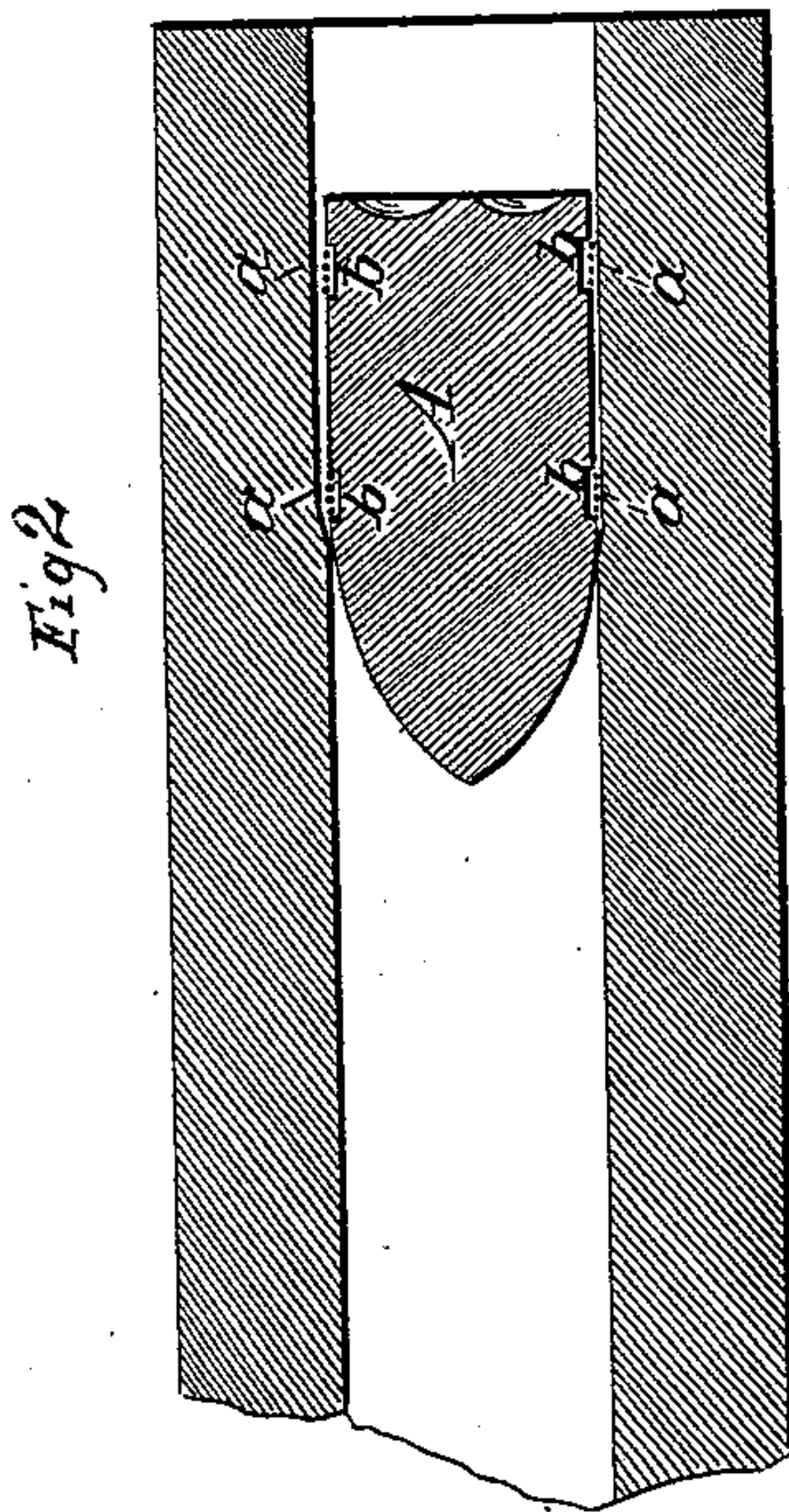
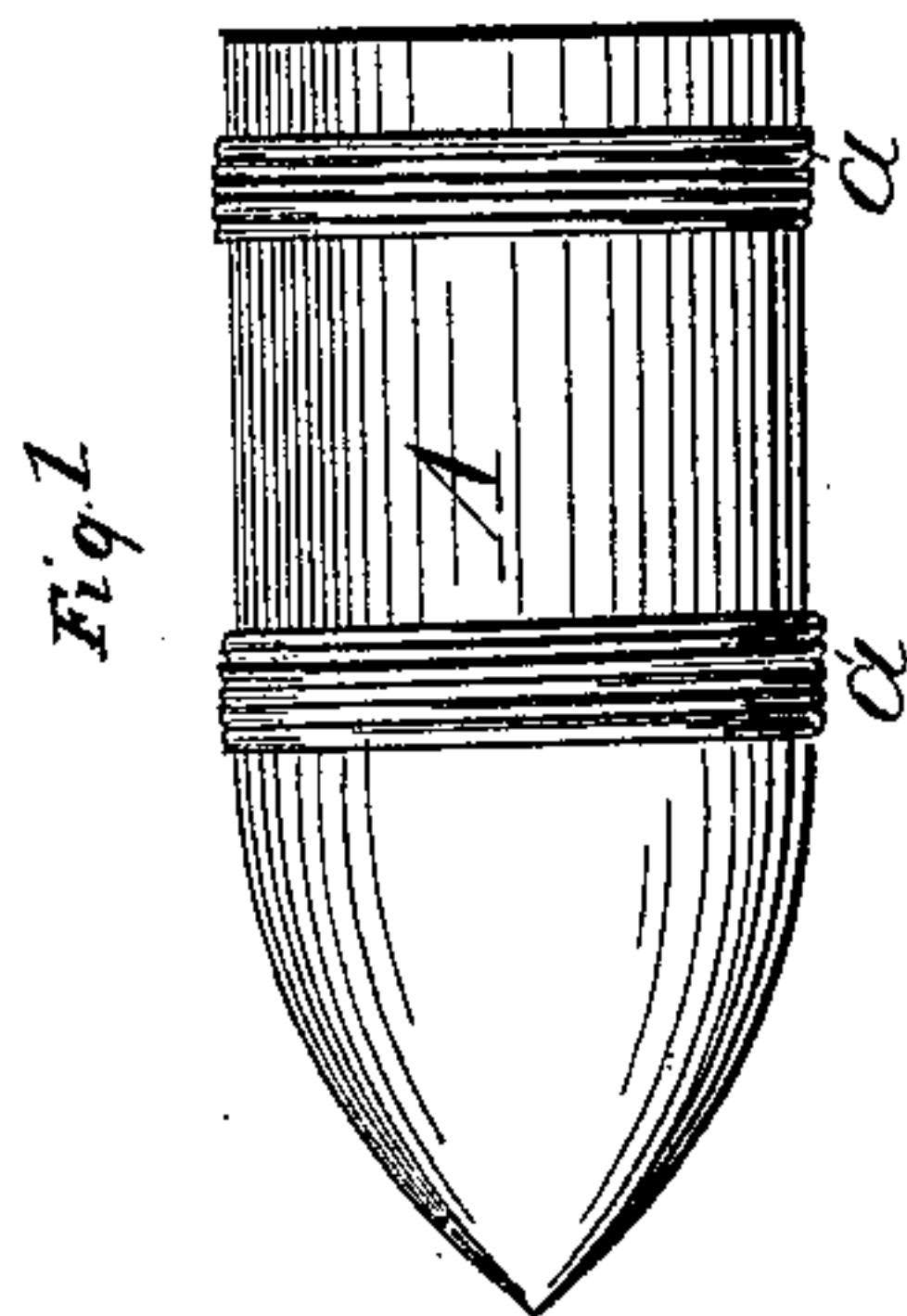


J. W. COCHRAN.
Projectile.

No. 26,017.

Patented Nov. 8, 1859.



Witnesses:
M. M. Livingston
C. McHughes

Inventor:
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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PROJECTILES FOR RIFLED ORDNANCE.

Specification forming part of Letters Patent No. 26,017, 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 a new and useful Improvement 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 specification, in which—

Figure 1 is an outside view of a shot with my improvement. Fig. 2 is a central section of the same, exhibiting it placed in the chamber of a cannon.

Similar letters of reference indicate corresponding parts in both figures.

Much difficulty has heretofore been experienced in the use of rifled ordnance from the want of some effective method of making the projectiles fit the grooves of the piece in such a manner as to cause a rotary motion to be imparted to them.

In the use of naked-projectiles with fins or grooves of the solid metal, or of projectiles with bands or cups or casings of iron, the grooves of the gun are rapidly worn out, and in the use of projectiles with bands or casings of lead or other soft metal much inconvenience is experienced from the "leading" of the grooves.

The object of this invention is to obviate this difficulty; and to this end the nature of the said invention consists in the application, to a projectile of cylindrical or partly cylindrical form, of a covering, or of one or more bands formed of a coil or coils of wire, of copper or other tough and ductile metal, wound around the whole or around a portion or portions of the cylindrical part of the projectile. The wire thus applied, being caused to stretch in the direction of its length, either by the driving of the projectile into the grooved portion of the bore of the piece, or by the expansive action upon an inner shirt of soft metal of the gases evolved by the explosion of the charge, is caused to enter and fill or fit the grooves in such a manner as to insure the rotary motion of the ball. I am at present led by experiment to prefer for this purpose a wire of copper or of some metal or alloy plated with copper; but a wire made of any of the alloys of copper or of any ductile

metal or alloy that will not adhere to the grooves of the piece may be used.

In applying the invention to projectiles for breech-loading rifled ordnance, I wind the wire directly upon the body of the projectile, either continuously along the whole or the greater portion of the cylindrical part of the projectile or upon portions of such cylindrical part near the ends thereof, to form two bands, as in the drawings, where A represents the body of the projectile, and *a a* the wire, so as to obtain a bearing for the wire against the bore of the piece at or near both ends of the cylindrical portion of the shot. One or more shallow grooves or recesses, *b b*, Fig. 2, should be formed in the body of the projectile, of a depth less than the thickness of the wire, to receive the covering or bands, and the turns of the coil or coils of wire should be close together, to prevent their displacement, and the ends of the wire should be secured either by inserting them into holes in the body of the shot or by soldering them to the next coil, or by other suitable means. The piece in which the so covered or banded projectiles are to be used should have its bore in front of the chamber of such size that the body of a projectile might pass easily through it, but the chamber should be so much larger that the projectile with the bands upon it will fit easily but snugly within it. When the projectile is impelled forward by the explosion of the charge, the wire in passing from the chamber into the smaller portion of its bore will be subject to such a drawing action that it will be caused to enter the grooves. In applying the invention to projectiles for muzzle-loading rifled ordnance the wire should be wound upon a thin shirt of brass, copper, or other metal capable of being expanded, and into which the gases evolved by the explosion of the charge shall be allowed to enter for the purpose of expanding such shirt and stretching the wire longitudinally, so that it may enter the grooves, the bore of the piece being parallel and the grooves extending all the way to the breech.

This invention affords especial convenience for the application of grease or other lubricating material to the projectiles, as the slight recesses left between the turns of the coil or coils of wire will hold a sufficient quantity of such material, applied before the insertion of

the projectile in the gun, and so far from adhering to and injuring the edges of the grooves the wire will have the effect of keeping them bright and clean, the wear produced by copper wire upon the grooves of an iron gun being scarcely appreciable.

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

The application, to a projectile for rifled

ordnance, of a covering, or of one or more bands composed of a coil or coils of copper or other wire wound upon its exterior, substantially as herein described, for the purpose specified.

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