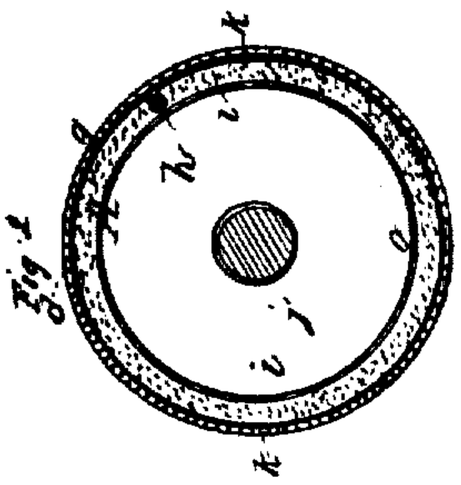
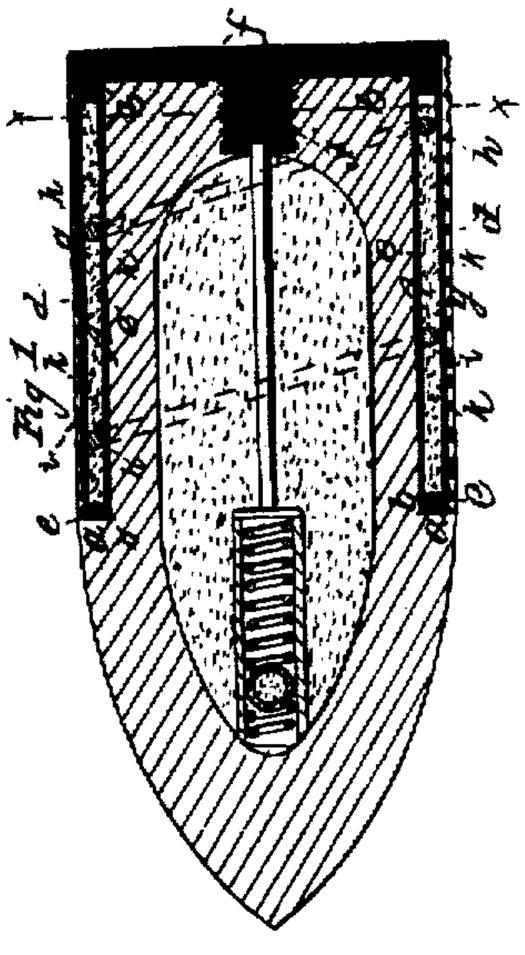
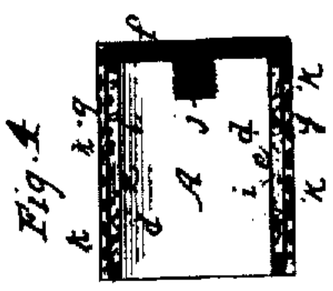
J. W. COCHRAN.

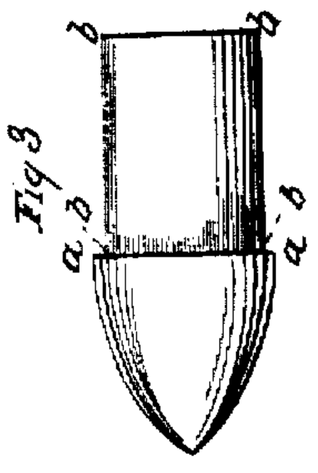
Shell.

No. 26,337. Patented Dec. 6, 1859.









Witnesses:

Mich'l Hughes

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Inventor:

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PROJECTILES FOR RIFLED ORDNANCE.

Specification forming part of Letters Patent No. **26,337,** dated December 6, 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 a central longitudinal section of a percussion-shell with my invention applied. Fig. 2 is a transverse section of the same in the plane indicated by the line *x x* in Fig. 1. Fig. 3 is an exterior longitudinal view of the body of the shell. Fig. 4 is an exterior view of the double case.

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

My invention consists in fitting a projectile with a hollow case, jacket, or band of metal, having within it a chamber for the reception of gunpowder, gun-cotton, or other explosive substance to be ignited by fire from the charge of the gun, for the purpose of causing the said case, jacket, or band to be at the same time expanded toward the bore and rifle-grooves of the gun and compressed around the projectile, and thereby preventing windage between the projectile and the bore and grooves, and causing the rotary motion derived by the case, jacket, or band from the rifle-grooves to be imparted to the projectile.

It also consists in the employment, in combination with an expanding jacket or case applied to a projectile, of an outer covering of copper or other wire cloth to constitute a packing between its exterior surface and the bore and grooves 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.

In applying the invention to projectiles of elongated or partly-cylindrical form, as illustrated in the drawings, I make that portion *b b* of the projectile commencing at the rear and extending forward to or nearly to where the conical or conoidal part commences of cylindrical form, but much smaller than the bore of the gun, leaving a broad shoulder, *a*, in front of it, as shown in Figs. 1 and 2. To this part *b b* of the projectile the jacket A is fitted to slip on easily from the rear, said jacket being composed of an inner cylinder, *e*, and an outer cylinder, *d*, united at their front ends by a flange or ring, *c*, and having their ends connected by a breech-piece, *f*, which covers the rear end or base of the projectile. The space *i*, between the cylinders *e d*, constitutes the chamber for powder or other explosive material. The external cylinder, *d*, has such a diameter that when the outer covering, *g*, of wire-cloth is applied the jacket will pass easily along the bore of the gun. This covering is soldered to the outer cylinder, *d*, at each end. The cylinders *e d* may be made of any light ductile metal, as sheet copper or brass, or tin-plate; and to strengthen the jacket sufficiently to prevent its being injured by rough handling, I propose to employ between the cylinders a wire, *h*, of sufficient thickness to fill the space *i*, coiled two or three times round within the said space, and soldered to one of the cylinders. The outer cylinder is provided with a number of very small holes, *k k*, for the entrance of fire from the charge of the gun to the chamber *i*. These holes are left open, but a larger hole provided for charging the chamber *i* is closed. In the example represented the breech-piece *f* is furnished with a screwed stem, *j*, which screws into a tapped hole in the rear of the projectile, to attach the jacket thereto; but such attachment, though serving infallibly to prevent the jacket coming off during the flight of the projectile, may not be absolutely necessary.

The hollow case or jacket, constructed as above described, need not be applied to the projectile till just before its insertion in the gun; and as, owing to the heaviness of the projectiles and the lightness of the jackets, the latter would be liable to be broken or bruised if transported upon the former, I propose to pack the jackets separately from the projectiles for transportation. The projectile with the jacket on may be inserted at the breech or muzzle of the gun, but the jacket is applicable with greater advantage to projectiles for muzzle-loading guns. When the gun is fired, the fire from the charge passes between the bore and the exterior of the jacket and through the meshes of the wire-cloth and the holes *k k* to the chamber *i*, probably before the projectile starts, or at any rate before it has moved far,

and so sets fire instantaneously to the whole of the charge in the said chamber *i*, which, by its explosion, expands the outer cylinder, *d*, toward the bore and causes it and its packing *g* to fill the bore and grooves, and compresses the inner one, *c*, tightly around the projectile, thus preventing windage and causing the jacket to derive a rotary motion from the grooves and impart the same to the projectile.

If the outer cylinder, *d*, be made of copper or any very ductile metal or alloy, the packing of wire-cloth may not be absolutely necessary to fill the bore and grooves; but I consider the use of such packing to be highly advantageous in any case.

Instead of a jacket, one or more hollow bands filled with powder, may be used, fitted to grooves provided for them in the projectile. A single hollow band of this kind may be applied to a spherical projectile.

The hollow case, jacket, or band may have provided within it a chamber to contain water or other lubricating material, such chamber to burst when the gun is fired.

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

1. Fitting a projectile with a hollow case, jacket, or band containing gunpowder or other explosive material, which, when ignited by the firing of the charge of the gun, will, by its explosion, cause the said case, jacket, or band to be expanded toward the bore of the gun, and to be compressed around the projectile, substantially as and for the purposes herein set forth.

2. In combination with an expanding case, jacket, or band applied to a projectile, the use of an outer covering of wire-cloth to constitute a packing, substantially as and for the purpose herein specified.

J. W. COCHRAN.

Witnesses:

MICH. HUGHES,

J. W. MOLYNEUX.