J. W. COCHRAN.

Projectile.

No. 25,951. Patented Nov. 1, 1859.

Fig. 1.

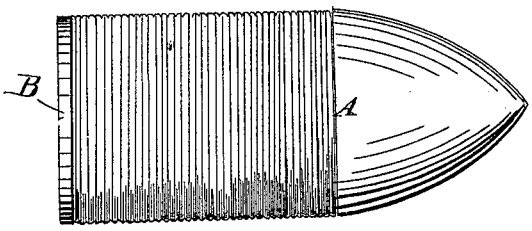


Fig. 2.

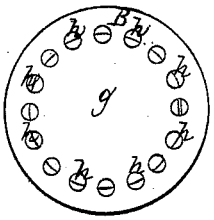


Fig. 3.

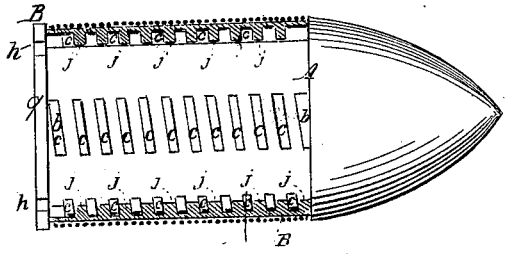


Fig. 4.

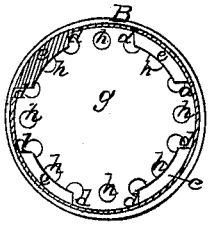


Fig. 5.

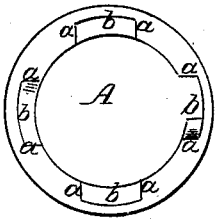
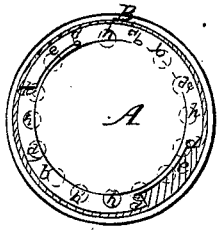


Fig. 6.



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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PROJECTILES FOR ORDNANCE.

Specification forming part of Letters Patent No. **25,951**, dated November 1, 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 external longitudinal view of a shot with my improvement complete. Fig. 2 is a rear view of the same. Fig. 3 exhibits a longitudinal view of the same, partly in section. Fig. 4 is a transverse section of the shirt or outside case of the shot. Fig. 5 is a rear view of the body of the shot without the shirt or case. Fig. 6 is a transverse section of the shot complete.

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

My invention relates to the application to the exterior of a projectile (shot or shell) for rifled ordnance of a shirt or case of soft metal, to be expanded by the admission to its interior of the gases eliminated by the explosion of the gunpowder when the gun is fired, and thereby caused to enter the rifle-grooves of the gun, and so to receive and give to the projectile a rotary motion.

My improvement consists in so constructing the shirt or case and the projectile to which it is applied and so combining them that the passages for the gas to expand the shirt or case are formed between the projectile and the shirt or case, and with their entrances in the shirt or case itself, without perforating and thereby weakening the projectile, and that the shirt or case may be carried separate from the projectile, and thereby in a great measure prevented from being bruised or otherwise injured in transportation, but may be put on instantaneously by the gunner preparatory to the insertion of the projectile in 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, (a shot,) and B is the shirt which is applied to make it complete. The projectile is of what is commonly known as the "cylindro-conoidal form," but may be of any other partly-cylindrical form. The shirt B extends from the breech or rear end to where the point commences, and covers the breech or rear of the body A. The part of the body A which receives the shell upon it contains two or more longitudinal grooves, *a a*, and the projecting portions *b b* between these grooves, having a cylindrical exterior, are formed into portions of a screw-thread, as shown at *c c* in Fig. 3. The interior of the shell is formed with longitudinal grooves *d d* to correspond with the projecting portions *b b* of the body, and with longitudinal projections *e e* to correspond with the grooves *a a* of the body, and the said projections *e e* are formed into portions of a screw-thread, as shown at *j j*, Fig. 3, to correspond with the portion *c c* of the screw-thread on the body. In the breech *g* of the shirt there are a number of apertures, *h h*, which range with the grooves *d d*. The casting of which the shell B is composed may have its cylindrical exterior of a size to fit easily to the bore of the piece from which it is to be fired; but I have represented it as sufficiently smaller to allow it to receive a covering of wire, *i i*, which is wound tightly upon it. As this wire covering constitutes a separate invention, it is not necessary to describe its purpose, and in the further description of the present invention it will be considered as a portion of the shirt.

In the transportation of these projectiles, the bodies A and shirts B are packed separately, to prevent the injury to which, owing to the great weight of the projectiles, the shirts mights be liable in carrying a number of projectiles together with their shirts on. To attach the shirt to the body, preparatory to the introduction of the projectile into the gun, the open front end of the shirt is placed against the rear end of the body with the projections *e e* of the shirt opposite to the recess *a a* of the body, and the recesses *d d* of the shirt opposite to the projections *a a* of the body, and the shirt is slipped directly forward on the body till its breech *g* arrives near the breech or rear end of the body, and is then turned to bring its screw-thread *j j* into the screw-thread *c c* of the body. It is only necessary to turn the shirt in this manner a little way to bring its breech close up to the breech of the body, and so secure it, so that it may remain upon the body while the projectile is fired.

In the firing of the projectile the gases eliminated from the powder by its explosion pass through the apertures *h h* of the shirt into the passages *k k*, (shown in Fig. 6,) that are formed by the combination of the recesses *a a* and *b b*, and by their expansive force act upon the whole length of the shirt, which constitutes the entire bearing-surface of the projectile, and so causes the shirt to be expanded or stretched in such a manner as to make it fit lightly to the bore of the gun and enter the grooves, and thus not only to prevent windage, but cause the projectile to have a rotary motion imparted to it by passing along the grooves.

The manner of fitting the shirt to the body of the shell may be considerably modified—as, for instance, the body may be simply corrugated or grooved longitudinally, and the shirt may have one or more longitudinal projections to enter the grooves or corrugations of the body to prevent it turning, and have a pin inserted through one side of it into the body to confine it longitudinally to the body; but in any case I make the passages by which the gas arrives at the interior of the shirt with their entrances in the shirt, and with the portion that is not in the shirt itself between the shirt and body of the projectile.

This invention is applicable to projectiles for either breech or muzzle loading rifled ordnance.

The shirt may be made of lead, brass, or any composition metal that is capable of stretching.

I do not claim furnishing a projectile with a band of soft metal and with vents extending from its rear to the interior of the said band for the purpose of admitting the gases of the burned powder to act upon the interior of and expand the said ring; but

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

Constructing and combining the body of the projectile and its shirt or case of soft metal, substantially as herein described—to wit, so that the passages for the gases of the exploded powder are formed partly in the body of the projectile and partly in the shirt or case, with their entrances in the shirt or case, without perforating the body of the projectile, and that the shirt can be carried separately from the body and slipped on when required for use in such manner as to remain secured thereon during the flight of the projectile, as herein set forth.

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Witnesses:

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