A. L. VARNEY.
Projectile.

No. 217,756. Patented July 22, 1879.

Fig. 1.

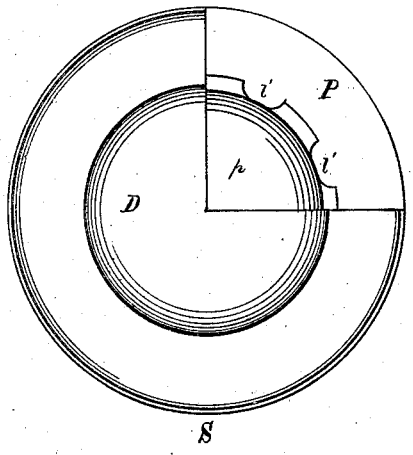
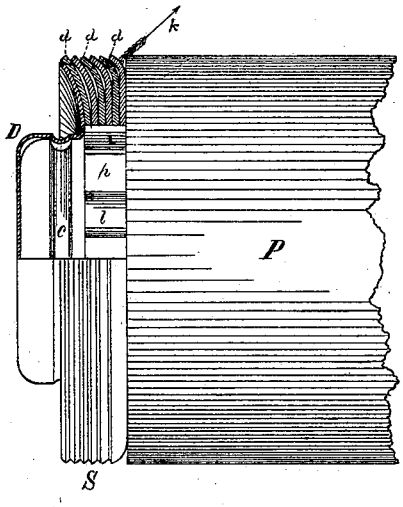


Fig. 2.



WITNESSES.

Henry Walters
L. L. Hardin

INVENTOR.

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UNITED STATES PATENT OFFICE.

ALMON L. VARNEY, OF WEST TROY, NEW YORK.

IMPROVEMENT IN PROJECTILES.

Specification forming part of Letters Patent No. **217,756**, dated July 22, 1879; application filed May 13, 1879.

To all whom it may concern:

Be it known that I, ALMON L. VARNEY, of West Troy, in the county of Albany and State of New York, have invented certain Improvements in Projectiles for Rifled Guns; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification.

My invention is confined to the "sabot," or that part of the projectile which, under the initial pressure of discharge, is supposed to be expanded into the grooves of the rifling, and to follow them to the muzzle, thus giving the desired rotation to the projectile; and it is the object of my invention to provide a sabot of such design as shall properly fulfill its functions even under moderate powder-pressures, cause little friction, lubricate the bore at each discharge, and be cheaply and conveniently manufactured.

My invention consists of a sabot made of thin metallic disks or rings, put together in layers, and in such numbers as will produce a sabot of sufficient thickness. These disks or rings are curved or bent at different angles, so as to allow small spaces between the layers—an arrangement which facilitates expansion, and at the same time provides protected receptacles for a lubricant.

The construction is clearly illustrated in the accompanying drawings, in which corresponding letters represent corresponding parts.

Figure 2 represents a side elevation of the rear portion of a projectile with one quarter of the sabot removed, so as to show a sectional view of the same.

P is the body of the projectile. *p* is a projection or protruding neck at the base having depressions *l l*, &c., into which are fitted corresponding interprojections on the interior circumferences of the rings *d d d*, &c., for the purpose of preventing the independent rotation of these rings upon the projectile when the former are forced along the rifling.

Fig. 1 represents a rear end view of the projectile, P being the body of the projectile, as before, *p* the protruding neck, and *l l* the depressions to which the disks *d d d*, &c., in Fig. 2 are made to conform.

The interior circumferences of the disks, as well as their outer peripheries, are in close contact, and, being of different curvature or dish, there will obtain small spaces between the disks, which may be filled with a suitable lubricant, and the whole sabot thus made up is secured to the projectile by an outer disk, D, having a curvature conforming to the adjacent disk of the sabot, and a cup-shaped recess in the center fitting over that part of the neck *p* which projects beyond the sabot and crimped into the groove *c*. It is probably only necessary to crimp the disk D slightly in attaching the sabot, as the powder-pressure will doubtless complete the process and force it to the bottom of the channel *c*, thus securing the sabot S as a whole firmly to the projectile.

It may be of advantage to vary the thickness and number of the disks composing the sabot to suit projectiles of different calibers and weights, also the thickness of the outer disks for such projectiles to facilitate forming and crimping.

The advantage of a sabot of this construction over one of the same exterior form, but solid, is obvious. In the latter case it would take an enormous powder-pressure to expand it into the rifling of the gun. It would be but partially or imperfectly expanded, even under the maximum pressure of discharge, to remain unchanged from the point of the bore where the maximum pressure occurs to the muzzle, whereas, by constructing the sabot in layers, it is expanded as it were in detail, and is not only effective through a wider variation of initial powder-pressure, but is kept distended throughout the passage of the projectile in the bore. Furthermore, by providing small holes in the direction of the arrow *k*, the lubricant is expressed by the flattening of the disks and thrown over the projectile in front of the sabot, thus lubricating the bore at each discharge.

I am aware that metallic disks with curved surfaces have been used to "take the grooves"

of rifled guns, to serve as gas-checks, &c., by being flattened against the base of the projectile, and I do not claim, broadly, the use of a number of such disks in the construction of a sabot for a rifle-projectile; but

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

A sabot composed of a number of metallic concave disks of different dish having interior polygonal or broken openings to fit over a protruding neck of corresponding shape on the base of the projectile and secured thereto by an outer disk covering the entire base of the projectile and crimped into a groove around the neck thereof, substantially as and for the purpose hereinbefore set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ALMON L. VARNEY.

Witnesses:

HENRY WALTERS,

T. I. HARDIN.