

(No Model.)

P. H. HOLMES.
PROJECTILE.

No. 468,622.

Patented Feb. 9, 1892.

Fig. 1.

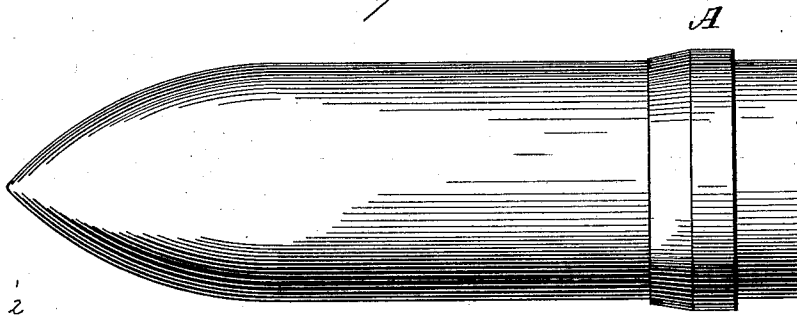


Fig. 2.

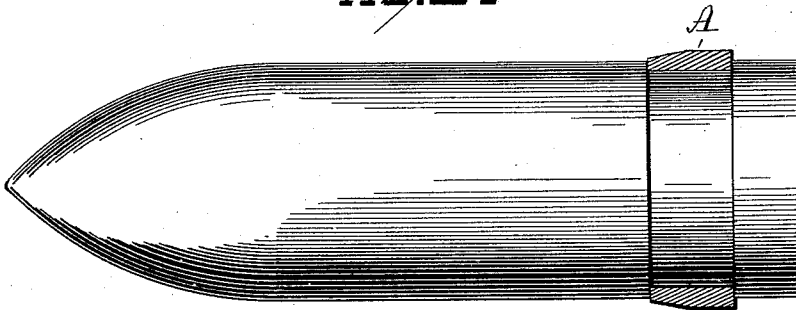


Fig. 3.

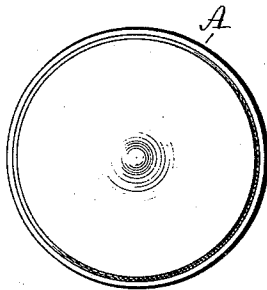
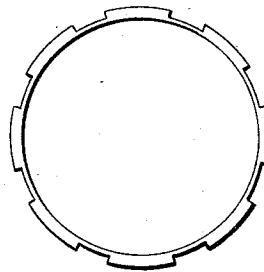


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

PHILIP H. HOLMES, OF GARDINER, MAINE, ASSIGNOR TO THE HOLMES FIBRE-GRAPHITE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 468,622, dated February 9, 1892.

Application filed June 23, 1891. Serial No. 397,189. (No model.)

To all whom it may concern:

Be it known that I, PHILIP HENRY HOLMES, a citizen of the United States, and a resident of Gardiner, Kennebec county, Maine, have invented certain Improvements in Projectiles, of which the following is a specification.

The object of my invention is to provide a projectile with means whereby it will be readily turned on its longitudinal axis as it is forced through the rifled bore of the gun, the material of which the guide is made being such that the rifling will form or groove a way therein; but the guide will have sufficient strength to act as a medium by which the projectile will be turned by the rifling. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a projectile illustrating my improvement. Fig. 2 is a side view showing a guiding-ring in section. Fig. 3 is a section on the line 1 2, Fig. 1, showing the ring previous to its passage through the gun; and Fig. 4 is a view showing the projectile as it leaves the gun.

I have illustrated and will describe my invention as applicable to the guiding-ring of a projectile; but it will be understood, where circumstances require, a different form of guide, such as a segmental guide, which will be formed or grooved by the rifling as the projectile passes through the gun, will be covered by my invention.

In making my improved guide for projectiles I thoroughly mix fiber, preferably wood fiber or equivalent vegetable fiber, in water or other fluid until it is a plastic or semi-plastic mass. It is then placed in a mold, preferably of the shape required for the projectile. If it is a ring A, such as shown in the drawings, the mold is made to correspond to the ring, and has perforations to allow for the escape of the water, either at the inner or outer periphery of the ring, and as the fiber is then subjected to a powerful pressure for the purpose of expelling the liquid from the fiber, and as the liquid is expelled at right angles to the face of the ring, or, in other words, at points radiating from the center of

the ring, the fiber will be turned to a great extent and the grain of the ring will be as indicated in Fig. 3. This matter forms the subject of a separate application filed by me December 13, 1891, Serial No. 417,920. I have found that this gives the best result, although other forms of molds may be used in which the fiber of the ring does not radiate as above described. The compressed fiber is then dried and subjected to a bath of drying-oil or semi-drying oil—such, for instance, as linseed or cotton-seed oil—preferably hot, and after the mass is thoroughly impregnated it is then dried, and in order to hasten this drying process and to obtain the best possible results in the shortest time I dry the article by artificial heat in an oven or retort, the degree of heat being sufficient to harden, set, and solidify the mass by developing a resinous film throughout the mass of fiber. The guide or ring thus formed can be readily grooved or shaped by the rifling of the gun, but will have sufficient strength to withstand the side pressure required. If circumstances require, where the oil—such as linseed-oil—is used the guide or ring may be lubricated either with lubricating oils or fats or mineral lubricants.

A guide made in accordance with my invention will not wear away the bore of the guns, so rapidly as the metallic guides now in use, and will, I think, prolong the life of the gun as well as act as a satisfactory medium through which the rifling will turn the projectile.

In a separate application filed by me on the 23d day of June, 1891, Serial No. 397,188, I have described and claimed a composition of matter in which semi-drying oil is combined with plumbago or plumbago and fiber to serve as a binder, hence I do not claim the same herein.

I claim as my invention—

1. A projectile having a guiding portion adapted to fit the breech of a gun, said guiding portion consisting of finely-divided and compressed wood fiber and a binding ingredient incorporated therewith, thereby forming a hard homogeneous mass, which, as the projectile is fired, is shaped by the rifling of the

gun and serves to rotate said projectile, substantially as set forth.

2. A projectile-guiding ring consisting of finely-divided wood fiber compressed into a
5 homogeneous mass and bound together by resinified oil, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

PHILIP H. HOLMES.

Witnesses:

JNO. E. PARKER,
HENRY HOWSON.