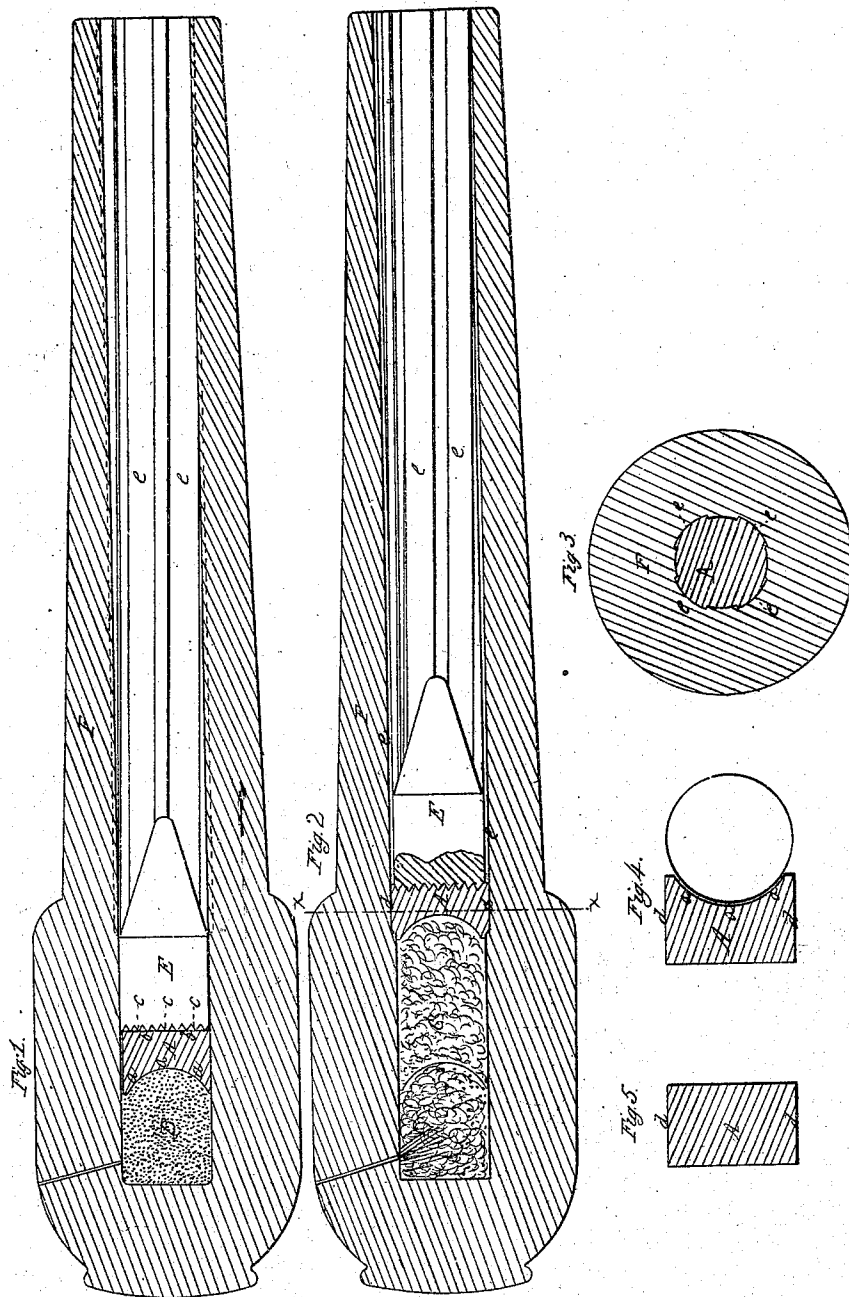


J. N. BIRD.
INDIA RUBBER WAD FOR PROJECTILES.

No. 36,879.

Patented Nov. 4, 1862.



Witnesses:
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UNITED STATES PATENT OFFICE.

J. N. BIRD, OF TRENTON, NEW JERSEY, ASSIGNOR TO HORACE H. DAY, OF NEW YORK CITY.

IMPROVEMENT IN INDIA-RUBBER WADS FOR PROJECTILES.

Specification forming part of Letters Patent No. 36,870, dated November 4, 1862.

To all whom it may concern:

Be it known that I, J. N. BIRD, of the city of Trenton, in the county of Mercer and State of New Jersey, have invented a new and Improved Wad for Ordnance as well as Small-Arms, and to be used in connection with solid elongated shot, solid round shot, round and elongated shell; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming a part of my specification, and to the letters of reference marked thereon, like letters in the several figures indicating the same or analogous parts, and in which drawings—

Figure 1 is a sectional view, showing my improved wad in position in a rifled cannon in connection with an elongated projectile, which may be supposed to be either a solid shot or a "shell," and just ready to be "fired off;" Fig. 2, a like view with the wad and projectile in the act of being fired from the cannon; Fig. 3, a cross-section of Fig. 2 in the line *xx*; Fig. 4, a view showing the application of my improved wad to round shot or shell; and Fig. 5, a sectional view of a wad of cylindrical form, but plane-faced ends.

The object of my invention is the production of a wad for small-arms and ordnance, which shall be composed of a homogeneous undivided elastic mass of matter, not subject to deterioration from ordinary rough usage in handling and transportation, which shall not be affected by exposure to the weather, which may be used in connection with an elongated shot or shell, so as to assist in rotating the same according to the twist of the rifle-grooves in the gun from which such shot or shell may be fired, which shall prevent all "windage," which shall relieve the breech of the gun from undue sudden pressure of the gases at the moment of ignition of the powder, which shall lessen "recoil," which shall not "stick" to or "foul" the bore, but operate to clean rather than clog it, and which shall not cling to or retard the projectile after it shall have left the muzzle of the gun.

A sufficient description of the material composing my improved wad will be to state that it may be made of an india-rubber compound similar to the "car-spring" compound; or it

may be made the same as "rag packing," the composition of which is well known to manufacturers of rubber steam-packing. An excellent wad can be made of one part, by weight, of rubber to two parts, by weight, of the usual scraps out of which rag packing is made, which will greatly cheapen the wad.

In molding my wad it is fashioned into the form of a section of a cylinder having one of its ends or faces concave, as at *a* in Figs. 1 and 4, the wad in the figures being shown in red and indicated by the letter A.

When used with an elongated shot or shell, as represented in Figs. 1 and 2, the breech of the projectile is creased or corrugated, as indicated in said figures, and the wad is inserted in the gun with its concave face in contact with the powder or the cartridge. When so used, the plane face *b* of the wad will abut against the points or corrugations *c* of the projectile, leaving spaces between the wad and the projectile before the explosion takes place, as represented in Fig. 1. Upon the powder B becoming ignited and converted into gases, as at C, Fig. 2, the wad will become compressed and its diameter increased, so as to pack its periphery *d d* firmly against the bore and into the grooves *e* of the gun F, thus preventing windage, while at the same time the plane face of the wad will be forced into the creases or corrugations in the breech of the projectile E, as clearly shown in Fig. 2, thus causing the projectile to rotate according to the twist of the rifle-grooves *e* of the gun. The wad A, acting as an elastic cushion between the projectile and the pressure of the gases when the powder is exploded, allows the shot or projectile to start gradually from its state of rest, and thus by the condensing of the wad affording a relief to the powerful pressure of the gases at the breech of the gun at the moment of the explosion, as well as easing or relieving the gun from violent recoil.

From the vulcanizing of the material of which the wad is composed it is evident that the wad will resist a powerful heat, and is therefore not liable to fuse and adhere to the interior of the gun in its discharge, as would be the case if the wad were made, for instance, of gutta-percha or lead.

When my wad is used in connection with

round shot, their relative position will be as indicated in Fig. 4, the ball or projectile H resting in the cavity of the wad with the plane face of the wad against the powder or cartridge, as the case may be. If thought advisable, my wad can readily be secured to the projectile in the ordinary way of securing balls to wooden wads by strips of tin.

When used in connection with hollow elongated projectiles, my wad affords this peculiar advantage: to wit, that more of the interior of the shell can be utilized for contents of a destructive nature, since no portion of the body of the shell is occupied by bands to prevent windage, the use of which necessarily contracts the space available for the insertion of bullets and other like missiles.

I sometimes contemplate covering the wad

with a sheet of "duck" cloth thoroughly impregnated with rubber. In such case the cloth will be cemented to the wad, so that the impregnated duck will come in immediate contact with the interior of the gun when "fired" therefrom.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

A vulcanized india-rubber wad for ordnance and small-arms, applied and operating substantially in the manner and for the purpose described.

J. N. BIRD.

Witnesses:

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