(No Model.) 2 Sheets—Sheet 1.

D. MOORE.

SABOT FOR HIGH EXPLOSIVE PROJECTILES.

No. 338,762. Patented Mar. 30, 1886.

Fig. 1.

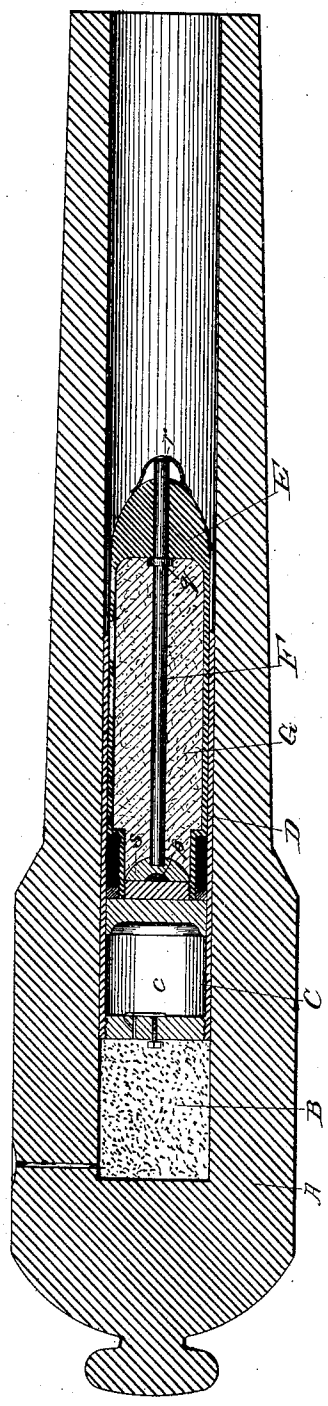
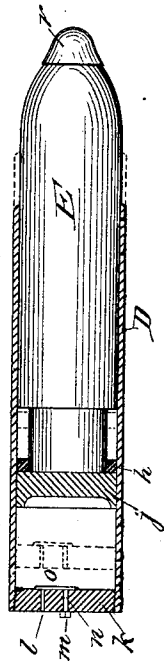


Fig. 2.



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Fig. 4.

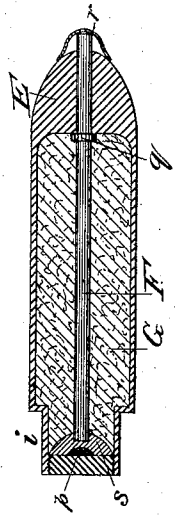


Fig. 6.

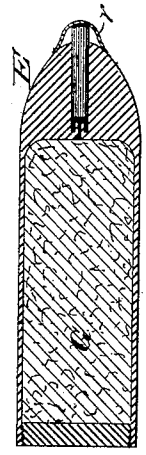


Fig. 3.

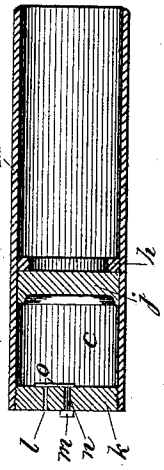
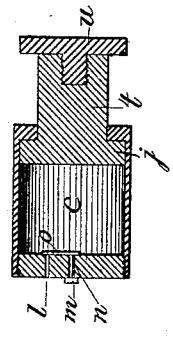


Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL MOORE, OF BROOKLYN, NEW YORK.

SABOT FOR HIGH-EXPLOSIVE PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 338,762, dated March 30, 1886.

Application filed June 9, 1885. Renewed February 1, 1886. Serial No. 190,557. (No model.)

To all whom it may concern:

Be it known that I, DANIEL MOORE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Appliances for Discharging Dynamite Projectiles, of which the following is a specification.

My invention relates to projectiles in which are contained dynamite or like powerful and sensitive explosive substances, discharged from cannons or fire-arms by ignition of a charge of gunpowder; and it consists of certain devices, hereinafter fully described, whereby a shell or projectile of any size or weight containing a required quantity of dynamite may with a proper quantity of ordinary gunpowder be discharged or fired from a gun or fire-arm without danger of igniting or exploding the dynamite within the bore of the gun, by action of the exploded gunpowder, the dynamite remaining intact and unaffected within the projectile until it shall have passed out of the gun and reached the desired point.

In the drawings, Figure 1 illustrates a longitudinal central section of a gun charged with gunpowder, and my improved air-cushion and projectile. A is the gun; B, the powder; C, the air-cushion; D, the case; E, the projectile; F, the igniting-rod; G, the dynamite.

Fig. 2 is a longitudinal view of the projectile, case, and air-cushion. Fig. 3 is a longitudinal central view of the case and air-cushion. Fig. 4 is a similar view of the projectile proper. Fig. 5 illustrates a construction of the air-cushion differing from that of Fig. 3, and which is used in conjunction with a projectile constructed as shown at Fig. 6.

Similar letters refer to similar parts throughout the several views.

The cylindrical case D, Fig. 3, may be made of any suitable material, and is provided at *h* with an inner annular projection. This projection *h* is perforated at its center equal in diameter with the diameter of the lower section of the projectile, as shown at *i*, Fig. 4. The disk *j* is fitted into the case D below the projection *h*, and the base-piece *k* then screwed into the bottom of the case D, as shown, thus forming the air-chamber *c*. This base-piece *k* is perforated at *l*, and is also provided with a headed pin, *m*, passing through it, as shown at *n*. The inner end of this pin *m* carries a fly-piece, O, that may be turned by means of the head of the pin *m*.

The ignition of the fulminate (shown at *p*, Figs. 1 and 4) for exploding the dynamite is effected by means of the rod or plunger F, Figs. 1 and 4. This rod F is provided with a collar, *q*, Figs. 1 and 4, to prevent its movement forward, and its end, projecting beyond the solid head of the projectile, is covered with a hood, *r*. The lower end of this rod F sets in a recess formed in a thin metallic dome, *s*, Figs. 1 and 4, directly over the fulminate *p*, which it ignites, when the projectile strikes, by breaking the dome *s*.

The air-chamber C may be charged at any time, to any required degree of pressure, by turning the pin *m*, so as to carry away from the aperture *l* the fly-piece or arm *o*. The air-tube of an air-pump is then attached to the outer end of the opening *l*, the air forced into the chamber C by means of the air-pump, and the fly *o* then turned over the aperture *l*, after which the air-tube of the air-pump may be detached. The case D thus at its lower end is an air-cushion, and the projectile E, which is reduced in diameter at its rear end, (see Fig. 4,) so as to pass through the projection *h* within the case D, and rests upon the disk *j*, and is thus connected, as shown in Figs. 1 and 2, is ready for firing.

On firing the gun, the case D, with its air-chamber, moves forward before the inertia of the projectile is overcome, thus causing the disk or piston-head *j*, on which rests the base of the projectile, to compress the air within the chamber *c* to a sufficient degree, as shown by dotted lines, Fig. 2, to carry forward the projectile with the case, the action of the air-cushion preventing the explosion of the dynamite within the gun.

The modified construction of the air-cushion and of the projectile, as shown in Figs. 5 and 6, may be preferable, and the manner of their construction is so clearly shown in said Figs. 5 and 6 as to require no extended description. By this mode of construction, Fig. 5, it will be observed that the movable disk *j*, as shown

in Fig. 3, forms the solid head of a movable piston, *t*, the upper end of which is provided with a disk, *u*, (fastened thereto by means of a screw,) which forms a base on which rests the projectile constructed as shown in Fig. 6. This modification obviates the necessity of reducing the rear end of the projectile, as shown at *i*, Fig. 4.

Several well-known devices have heretofore been used to discharge projectiles containing dynamite without exploding the same within the gun; but such has been the nature of the devices as to either limit the amount of propelling force, weight, range, and effect of the shell or projectile, or that the appliances for charging the gun were inconvenient, cumbersome, and required too much time.

By the use of my device of a compressed-air cushion all the above-mentioned objections are removed, so that a projectile or shell of any desirable weight and size, containing any desirable quantity of dynamite, with a sufficient quantity of gunpowder to give the required range to the projectile, may be fired from any ordinary smooth-bore or rifled gun without danger of exploding the dynamite of the projectile within the gun.

It is evident that my device of a compressed-air cushion placed in a gun between the powder-charge and the base of a projectile may be utilized for the discharge of projectiles other than those containing dynamite or like substances from a gun, and especially so in that class of cannon of great weight and caliber, as such guns require at their first and second re-enforce to be of great thickness and weight, that they may sustain the great pressure at such parts, caused by the sudden expansion of the gas generated by the explosion of the powder, before the inertia of the projectile is overcome or it commences its forward movement.

It is evident that by using my air-cushion in a gun of such class, discharging heavy projectiles with a large quantity of powder, such guns may be greatly reduced in weight and bulk of material at the first and second re-enforce, and yet successfully resist the strain thereon, (for the reason that the instantly gradual moving forward of the air-cushion relieves the strain on said parts of the gun, and counteracts the usual sudden shock produced when the explosion of the powder-charge acts directly upon the projectile while it is at a dead rest,) thereby greatly reducing the cost of said guns, and rendering them more convenient in handling and in transportation.

The devices for admitting and retaining the compressed air within the air-chamber *c* may be any of the various well-known devices other than those shown in said Figs. 1, 2, 3, 5. Therefore I do not confine myself to any special device for said purpose; and, also, in the construction of said air-cushion it may be varied as may be desirable, and I therefore do not confine myself to any special mode of construction of it.

The gist of my invention consists in the construction of an air-cushion, substantially as described, so as to attain the result as hereinbefore specified.

What I claim is—

1. A sabot for projectiles, consisting of an air-tight casing filled with compressed air, and a sliding piston in said casing, said piston being held outward by the compressed air, substantially as described.

2. In combination with the air-tight casing containing compressed air, a sliding piston in said casing, which piston is held outward by the compressed air, and a projectile which enters the casing and bears against the piston, as set forth.

3. In combination with the air-tight casing which has a charging-orifice, a stopper covering said orifice, and a sliding piston in the casing, held outward by compressed air, all constituting a sabot, substantially as described.

Signed at Brooklyn, in the county of Kings and State of New York, this 11th day of May, A. D. 1885.

DANIEL MOORE.

Witnesses:

FRANK S. MOORE,

ANDREW W. STEIGER.