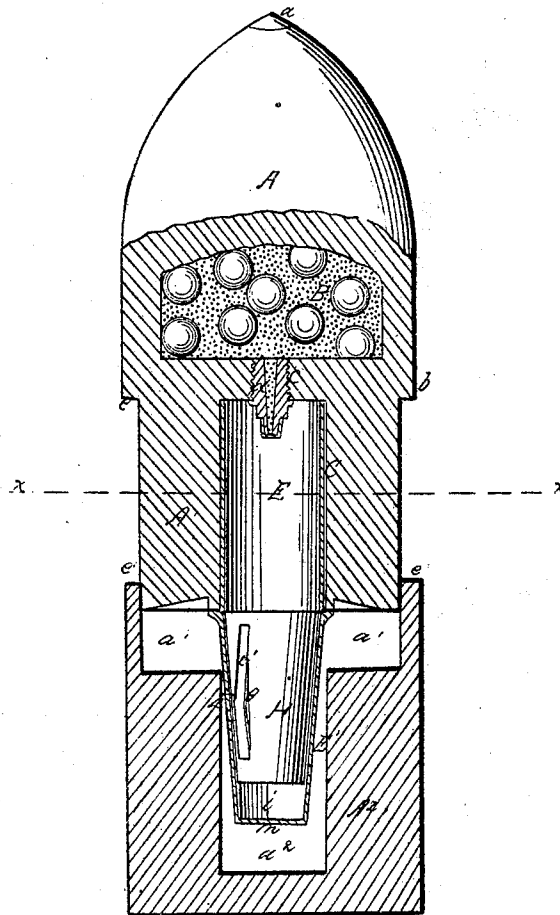


J. J. DRESBACK.  
Shell Fuse.

No. 35,593.

Patented June 17, 1862.

Fig. 1.



Witnesses.

*Sustanus Dietrich*  
*E. J. Jacob*

Inventor.

*John J. Dresback.*  
by  
*Mason Hancock* & *Laurence*  
*his Atty.*

# UNITED STATES PATENT OFFICE.

JOHN J. DRESBACH, OF CIRCLEVILLE, OHIO.

## IMPROVEMENT IN THE EXPLODING DEVICE OF SHELLS.

Specification forming part of Letters Patent No. **35,593**, dated June 17, 1862.

*To all whom it may concern:*

Be it known that I, JOHN J. DRESBACH, of Circleville, in the county of Pickaway and State of Ohio, have invented a new and useful Improvement in Explosive Projectiles for Ordnance; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which the figure is a vertical central section of the lower half of a hollow projectile with my improvement applied to it.

The design of my improvement is to obviate objections to the use of sliding plugs and exploding magazines now proposed in connection with hollow projectiles for the purpose of exploding the cap or "primer." The objection urged is the liability of premature explosion of the projectile either in handling, transporting, or in the "firing" of them from the cannon.

The invention which I have developed is a sliding exploder, which is controlled by a yielding friction induced by a spring or springs or their equivalent between it and the guide or plunger tube in which it works, and by the wedging impact of the exterior of the plunger against the interior surface of the conical-formed portion of the plunger-tube, such friction being sufficient to withstand the rebound of the plunger, which occurs when the projectile is fired out of the cannon, and likewise to retain the plunger out of contact with the cap-nipple until the projectile is suddenly arrested in its flight.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawing.

A represents a projectile with its front end conical, and with a charge-chamber, B, formed between its cone end *a* and its rear cylindrical portion, *b*. In the center of the said cylindrical portion a socket, C, is cast, and through the metal forming the base of said socket a vent, *c*, for the insertion of a cap-nipple, *d*, is formed. Slightly in rear of the chamber B a shoulder, *e*, is formed around the circumference A' of the projectile by reducing the diameter thereof, as shown. Against this shoulder lead packing is intended to abut.

Within the socket a cylindric tube, E, with its upper end open, is inserted up to the cap-nipple, the open end of the tube admitting the said cap-nipple into the tube, as shown. This tube, it will be seen, is cylindric to the extent of that portion of its length which enters the socket C, and below the lower portion, A', of the projectile said tube commences to taper, forming between the lower and upper extremities of the tapered portion of the tube a configuration in the likeness of a truncated cone.

Within and to fit the tapering portion E' of the plunger-tube I have shown a conical plunger, H, which is made of metal, and having one or more elliptic springs, *c'*, secured in grooves *g* cut longitudinally in the plunger, and into which the springs are fitted, as shown. These springs in their greatest expansion will come in frictional contact with the greatest diameter of the tube, and when the plunger H is forced down into the part E', as shown in the figure, will become compressed so as to exert a considerable degree of frictional contact with the conical sides of the lower portion of the plunger-tube. Between the bottom of the plunger H, as shown in said figure, and the bottom *m* of the plunger-tube, it will be seen that a conical space, *i*, is left after the whole length of the plunger has been inserted in said conical portion E', so that if power be applied to force the plunger any nearer to the bottom *m*, the plunger will be wedged tightly within said conical portion, but without being forced against said bottom *m*. Now, supposing the projectile to have been just thrust into a cannon with the front end of the plunger coincident with the line *xx*, and while in such position that the cannon be fired. The consequence will be that the sudden forward movement of the projectile will cause the plunger to fly back toward the rear end of the tube, and if the rear end of the plunger is permitted to strike the rear end of the tube, the rebound of the plunger will be liable to force it forward against the nipple-cap, and so cause a premature explosion of the projectile. This liability attaches under circumstances where the plunger F is permitted to strike against the rear end of the tube, the action of the springs alone not being sufficient to restrain a powerful rebound

of the plunger. But by my mode of construction the plunger cannot strike against the bottom of its inclosing-tube, and the nearer it is made to approach such bottom by the power of the explosion, the more securely it will become wedged within the conical sides of the tube and as no solid resistant comes in contact with the rear end of the plunger, no rebound of the plunger can take place.

In the use of the projectile an additional section,  $A^2$ , of shell (see red outlines) must be fitted over the tube and the reduced cylindrical part  $A'$  of the shell, so as to protect the tube and also compress the lead packing in a manner to insure the rifling of the lead and the rotation of the projectile.

The red outlines show a section,  $A^2$ , of a shell or projectile having a T-shaped socket,  $a' a' a^2$ , cast in it, said socket inclosing the lower portion of the plunger-tube, and a portion of the extremity of the cylindrical part  $A'$  of the shell, and said section being so formed and fitted as to permit of a longitudinal movement upon the main portion of the shell when an explosion in rear of it takes place. By this movement of the section  $A^2$ , the packing around the cylindrical portion  $A'$  between the shoulder  $c$  of section  $A$  and shoulder  $c'$  of section  $A^2$  is compressed and forced into the rifling of the cannon.

The rear portion of the plunger-tube being made of thin metal and of a diameter slightly less than its inclosing parts permits of its expansion when the conical plunger  $H$  is forced therein. The plunger is thus held by an elastic wedging impact within the conical portion of the tube, so that when the projectile is suddenly arrested in its flight and the plunger commences to move forward toward the nipple  $d$ , the springing action of the conical portion of the tube itself will tend not only to relieve it from contact with the plunger, but impart an impulse to its forward movement.

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

In combination with an exploding projectile, a plunger-tube,  $E$ , having a tapered portion,  $E'$ , and a conical spring-plunger,  $H$ , working therein, substantially in the manner and for the purpose set forth.

Witness my hand and seal in the matter of my application for a patent for my improved projectile this 13th day of January, A. D. 1862.

JOHN J. DRESBACH. [L. S.]

In presence of—

GUSTAVUS DIETERICH,  
E. S. JACOB.