M. ZERONI.

PERCUSSION-FUSE FOR PROJECTILES.

No. 194,210. Patented Aug. 14, 1877.

Fig. 1.

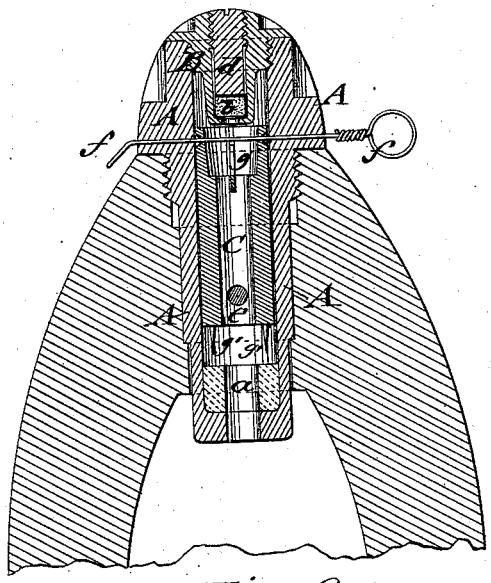


Fig. 2.

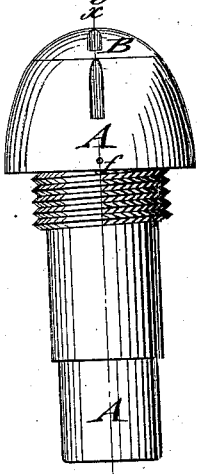
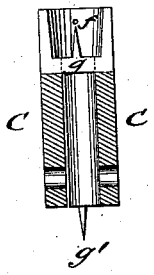


Fig. 3.



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MAX ZERONI, OF WITTEN, GERMANY.

IMPROVEMENT IN PERCUSSION-FUSES FOR PROJECTILES.

Specification forming part of Letters Patent No. **194,210**, dated August 14, 1877; application filed July 23, 1877.

To all whom it may concern:

Be it known that I, MAX ZERONI, of Witten, Germany, have invented a new and Improved Percussion-Fuse for Projectiles, of which the following is a specification:

This invention has for its object a percussion-fuse which can be applied to projectiles of all kinds, and which offers greater advantages than those heretofore in use as regards safety and possibility of being transported with the projectile without danger of explosion. The fuse affords, also, a greater security and promptness in regard to the ignition of the projectile.

The invention consists of a bolt-casing with suitable retaining base-plate and priming device, in connection with a sliding needle-bolt that is retained during the flight of the projectile by base-pins, and forced into the priming the instant resistance is offered to the projectile. A frangible lead pin secures the needle-bolt to the casing, together with a detachable safety-wire that retains the needle-bolt in position, and prevents any danger of premature explosion until it is withdrawn.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved percussion-fuse for projectiles on line *x x*, Fig. 2; Fig. 2, a side view of the bolt-casing, and Fig. 3 a detail vertical central section of the needle-bolt detached.

Similar letters of reference indicate corresponding parts.

Referring to the drawing, A represents the bolt-casing, which is screwed into the point of the projectile, and provided with an interior base-plate, *a*, of suitable material.

The priming-screw B has a primer, *b*, and retaining-screw *d*, and is secured, in the customary manner, in the end of the bolt-casing.

A tubular needle-bolt, C, is arranged in the interior of the casing A, and retained in position, first, by a frangible lead pin, *e*, that passes through bolt and casing, and next by a safety device, *f*, that passes through the head of the casing and the upper end of the needle-bolt C.

The needle-bolt C is provided with a central needle, *g*, that enters into the primer *b* when the bolt is released, and with base pins or needles *g'*, that enter into the base-plate *a* of the casing, and retain the needle-bolt during the discharge of the projectile from the gun, the base-plate being for this purpose made of soft material.

The fuse is set into each prepared projectile, and the safety brass wire passed through the bolt-casing and needle-bolt, and bent over at one end, so that the safety-wire cannot drop out. The safety-wire supports the frangible lead pin, and affords full security during transportation.

Before setting the projectile into the gun the brass wire is simply drawn out, and thereby the projectile is made ready for use.

The discharge or firing off of the gun produces, by the resistance of the plunger due to its own inertia, the breaking of the frangible lead-pin, and thereby the liberating of the needle-bolt, which is pushed back, and then retained by the base-needles catching in the base-plate.

The retention of the needle-bolt by the base-needle and base-plate prevents the explosion of the projectile in the gun, or directly when leaving the muzzle. The needle-bolt is retained until the projectile has started on its trajectory.

The rotation given to the projectile during its flight will loosen the needle-bolt from the base-plate, so that at the least resistance from snow, water, or other obstruction, the bolt will be pushed forward so as to strike the priming and cause the explosion.

By the use of my invention the gunner has the projectile instantly ready for loading by merely withdrawing the safety-wire.

The frangible lead pin is only broken by extraordinary shocks, as in firing the projectile is prevented from exploding when it is merely dropped accidentally to the ground, which feature forms an essential security to the gunner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a percussion-fuse, the combination of the bolt-casing, having a suitable priming device, with a needle-bolt retained by a safety-wire and frangible pin, substantially in the manner and for the purpose set forth.

2. The combination of the bolt-casing, hav-

ing retaining base-plate and suitable priming-screw, with a sliding needle-bolt, having top center pin and retaining base-pins, substantially as and for the purpose specified.

3. The combination with a bolt-casing, having retaining base-plate and priming-screw, with a needle-bolt and frangible retaining-pin, substantially as and for the purpose described.

4. In a percussion-fuse, a tubular needle-bolt, having central top pin and base-pins, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of April, 1877.

MAX ZERONI.

Witnesses:
C. HIRSCH,
JULIUS LAUPMANN.