E. H. PLUMACHER.

PERCUSSION FUSE FOR SHELLS.

No. 193,345. Patented July 24, 1877.

FIG. 1.

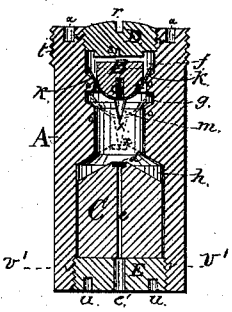


FIG. 5.



FIG. 4.



Fig. 2.

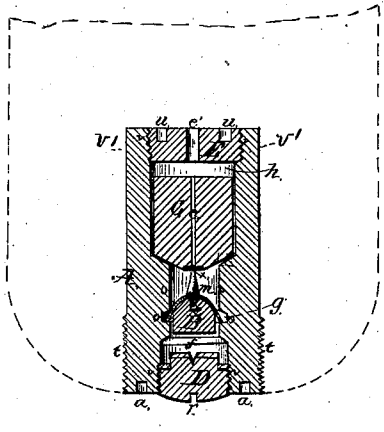


Fig. 3.

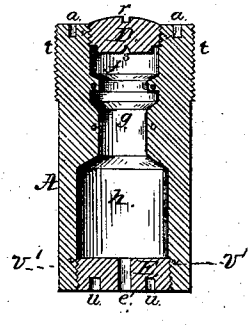


Fig. 6.



Fig. 7.



WITNESSES.

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IMPROVEMENT IN PERCUSSION-FUSES FOR SHELLS.

Specification forming part of Letters Patent No. **193,345**, dated July 24, 1877; application filed June 11, 1877.

To all whom it may concern:

Be it known that I, EUGENE HERMANN PLUMACHER, of Nashville, in the county of Davidson, State of Tennessee, have invented certain new and useful Improvements in Percussion or Concussion Fuses for Projectiles for Ordnance; and I do hereby declare that the following is a full, clear, and exact description thereof, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

I have invented a percussion or concussion fuse for use in ordnance-projectiles that, when charged, may be handled and transported with perfect impunity, with no possibility of danger from explosion, which consists in a percussion-fuse tube the interior of which has three peculiar-shaped communicating chambers of different sizes, a screw-cap, a screw-bottom, a winged needle-discharging plunger in the upper chamber, and a charged plunger in the lower chamber, the two plungers being kept apart by the third smaller or intervening chamber, as will more clearly be shown by reference to the accompanying drawings and following specifications.

Similar letters of reference indicate corresponding parts.

Figure 1 is a vertical section of the charged fuse in repose, top end up. Fig. 2 is a vertical section of the charged fuse at the point of striking, after having been discharged from the gun, top end down. Fig. 3 is a vertical section of the empty fuse-case. Fig. 4 is a plan of a steel spring as cut from the sheet. Fig. 5 is an edge elevation of the steel spring bent for use. Fig. 6 is the needle or discharging-plunger, the spring fixed. Fig. 7 is an elevation and plan of the percussion-plunger.

In external appearance the fuse-tube A is an ordinary cylinder, having a screw-thread, *t*, cut to a proper depth at one end on the periphery, by which it is screwed into the fuse-hole of the projectile. It is made of the size usual for percussion-fuses, so that it may be used in any pattern of elongated shell. The cavity of this cylinder is tapped at both top and bottom at *v v'*, and is provided with a screw-cap, D, and a screw-bottom, E, and the interior is divided, by abutting shoulders *o o*, into three different-sized chambers, *f*, *g*, and *h*, in which the sliding plungers operate. The screw-cap D has a groove, *r*, that it may be handled by a screw-driver, and an indent, *s*, on the lower side, to admit the point *x* of the needle *m*, should it be deemed necessary to reverse the discharge-plunger when shipping the projectile. The screw-bottom E has key-holes *u u*, by which it is screwed, &c., and an escape-hole, *e'*, through its axis, to permit the passage of fire into the magazine of the shell. The discharging-plunger B is a cone-crowned piece of metal, smaller in diameter than either of the chambers, with a tapped hole, *c*, in the apex, into which a pointed steel needle, *m*, is screwed, holding in place by a shoulder on the needle a many-pointed steel spring, *k*. The steel spring *k* is just sufficiently stiff to hold the plunger in place, and to prevent it from being forced into the center or chamber *g* by any power less than the impact produced by the discharge of the projectile from the gun. This plunger is contained, needle-point down, in chamber *f;* but by the impact produced by the discharge of the gun it is thrown forward, and secured by the flaring springs in chamber *g*. Sliding plunger C, incased in chamber *h*, is larger and heavier than the plunger B, is of cylindrical shape—a body of metal, with a cone-shaped crown, having through its axis a hole, *e*, in which is secured, by a drop of varnish or other suitable material, the fulminating-powder or pill *d*. Through this hole also passes the fire into the magazine of the shell.

The parts having been constructed as shown, and the plungers secured in their respective chambers, the complete fuse screwed into a projectile, the whole is ready for use, and may be handled as roughly as necessary, or even permitted to fall from a great height, with no danger from explosion. But to make it still more secure for transporting, by unscrewing the cap D the needle-plunger B can be taken out and reversed, securing the point *x* of the needle *m* in the indent *s* in the lower side of the cap, thereby rendering the shell as harmless as a solid shot.

When fired, the impact produced upon the projectile by discharging the gun from which

it was thrown forces plunger B from its normal position into center chamber *g*, where it is held, at the bottom, by the narrow entrance to the lower chamber, and from the top by the ends of the many-pointed spring coming in contact with projecting shoulder *o o*, dividing chamber *f* from *g*, the point of the needle *m* protruding into the larger chamber *h*. Then, by the check on the projectile when striking, plunger C is thrown violently forward onto plunger B, the point of the needle *m* entering and discharging the pill or fulminating-powder *d*, thereby exploding the shell. (See Fig. 2.)

Having now fully described my device, what I esteem as my invention, and ask to protect by Letters Patent, is—

1. The needle-discharging plunger B, in combination with spring-guard *k* and a recessed fuse-case, substantially as shown and described.

2. A cylindrical percussion-plunger, truncated at the top, provided with a fire-channel, *e*, and charged with a fulminating-powder or pill, in combination with a fuse-case having a projecting or pointed discharging-anvil, substantially as shown and described.

3. A fuse case or tube with three chambers of different sizes and forms, provided with a screw-cap and screw-bottom, in combination with the needle-plunger, with spring-guards, and the percussion-plunger, substantially as described and set forth.

4. The needle-pointed discharging-plunger B, with spring-guards, in combination with percussion-plunger C, substantially as and and for the purpose described.

5. Cone-crowned percussion-plunger C, with fire-channel *e*, charged with a pill or a fulminating-powder, in combination with needle-discharging plunger B, having spring-guards *k*, and the cylindrical fuse-case, divided into three chambers by interior projecting shoulders, and provided with a cap-screw and bottom screw, the latter having a fire-escape channel, *e'*, substantially as and in the manner described.

In testimony that I claim the foregoing invention I have hereunto set my hand this 9th day of June, 1877.

EUGENE HERMANN PLUMACHER.

Witnesses:

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VERNON DORSEY.