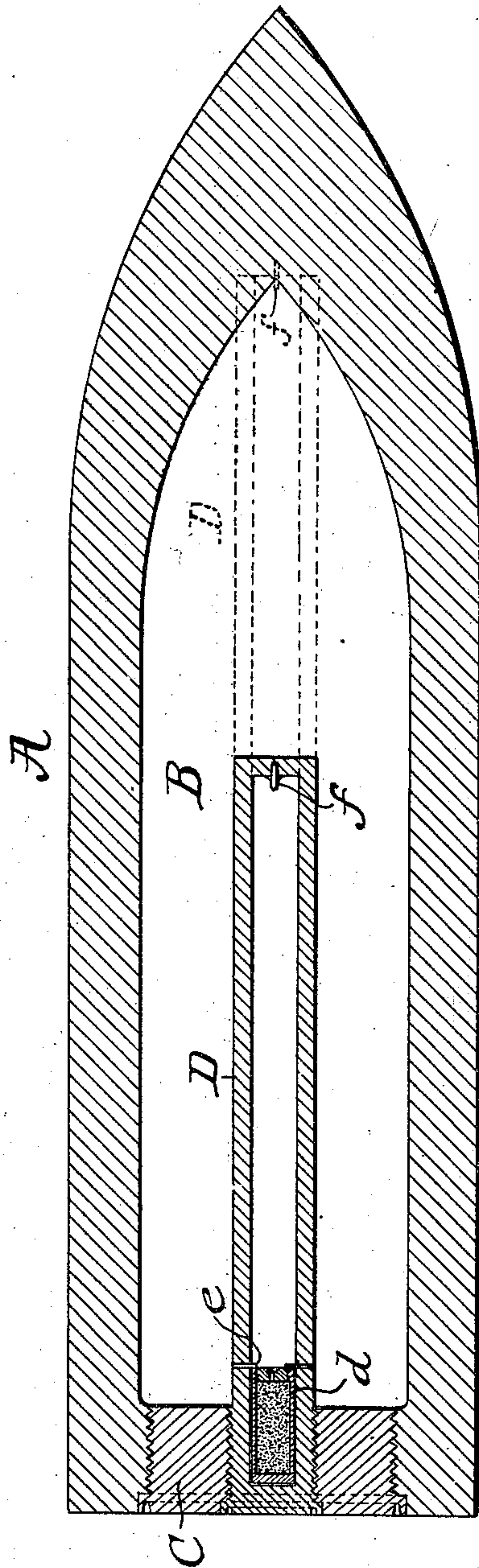


(No Model.)

P. R. ALGER & H. MAXIM.
DETONATING FUSE.

No. 549,088.

Patented Oct. 29, 1895.



Witnesses:

J. E. Hutchinson
Josh. H. Milam

Inventors:

Philip R. Alger and
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by
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attys

UNITED STATES PATENT OFFICE.

PHILIP R. ALGER, OF THE UNITED STATES NAVY, AND HUDSON MAXIM, OF
NEW YORK, N. Y.

DETONATING FUSE.

SPECIFICATION forming part of Letters Patent No. 549,088, dated October 29, 1895.

Application filed April 13, 1895. Serial No. 545,610. (No model.)

To all whom it may concern:

Be it known that we, PHILIP R. ALGER, of the United States Navy, and HUDSON MAXIM, residing in the city, county, and State of New York, citizens of the United States, have invented certain new and useful Improvements in Detonating Fuses, of which the following is a specification.

The present invention relates, generally, to detonating delay-fuses, and particularly to those adapted for use in shells containing high explosives.

The object of the invention is to provide means by which the fuse is prevented from detonating at the occurrence of the shock of retardation upon the shell striking the armor or other target and is sufficiently delayed in exploding until the armor has been pierced, and also to means by which the detonating material is relieved from friction due to the rotation of the shell during flight.

To these ends the improvements consist in supporting a plunger-body or mass of detonating material or detonator at the rear end of a fuse-tube that is preferably carried by the base of the shell and extends forward, more or less, through the chamber of the shell containing the high explosive, and thus provides a space through which the plunger-body or detonator may travel by its inertia upon the retardation of the shell in striking the target and render it possible to delay its explosion until the shell has more or less penetrated the armor or passed through it, whereby the destructive effect of the shell is materially increased.

The head of the fuse-tube is provided with means for exploding the detonator—as, for instance, a pointed anvil, against which the detonator strikes upon reaching the forward end of the tube, whereupon it will be exploded, blowing up the tube and exploding the charge of high explosive. The holder containing the detonating material or detonator is held loosely at the rear end of the fuse-tube and is normally prevented from accidental dislodgment by one or more shear-pins carried by the tube, which are severed at the moment of impact of the shell with the target to free the detonator and permit it to travel forward along the tube, and the loose mounting of the detonator-holder enables the shell to rotate

without subjecting the detonating material to the friction of rotation. To lessen the friction between the holder and the tube the holder may be oiled or greased upon its exterior.

A better understanding of the improvement will be had from a brief description of a practical embodiment thereof shown in the accompanying drawing.

In the figure the shell or projectile A may be of any usual form, providing an interior chamber B for containing the charge of high explosive and having a base C screwed or otherwise secured in its end. This base C carries the fuse-tube D, which may be screwed therein and projects a more or less distance forward through the charge-chamber toward the forward end of the shell. As shown in full lines, the tube terminates about midway the length of the chamber, and, as shown in dotted lines, extends to the forward end of the chamber. The length of the tube will govern the degree of retardation before the detonator will be exploded.

The detonating material is contained within a holder or case *d*, of thin material, normally supported at the rear of the tube and prevented from accidental dislodgment by a pair of shear-pins *e*, extending in front of the holder. The forward end of the tube is provided with a rearwardly-extending pointed anvil *f*, against which the holder strikes as it reaches the forward end of the tube to explode the contained material.

What is claimed is—

1. In a shell having a chamber for an explosive charge or the like, a guide extending forward into said chamber, and a plunger body composed entirely of detonative material free to move longitudinally in the guide by the inertia of the material to prevent immediate detonation and that of the explosive charge upon the striking of the shell, as set forth.

2. In a shell, a closed tube extending from its base toward its end, a holder of thin material to contain a plunger body composed of detonative material mounted in said tube and free to move longitudinally in the tube by the inertia of the material to prevent immediate detonation and rupture of the tube upon the striking of the shell, and a shear pin normally

holding the holder against longitudinal movement, as set forth.

3. In a hollow shell, a guide tube extending longitudinally through the chamber of the shell, a holder for a mass of detonative material supported loosely at the rear of the tube and independent of the rotation of the shell and movable in the tube by the inertia of the material to prevent immediate detonation,

and means at the forward end of the tube to detonate the material, as set forth.

In testimony whereof we have affixed our signatures in the presence of two witnesses.

PHILIP R. ALGER.
HUDSON MAXIM.

Witnesses:

GEO. H. GRAHAM,
H. N. Low.