P. D. VAN ESSEN.
DELAY ACTION FUSE.
APPLICATION FILED AUG. 21, 1912.

1,089,994. Patented Mar. 10, 1914.

Fig. 1.

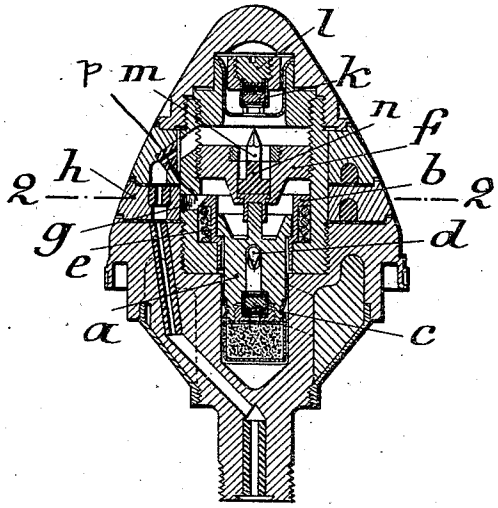
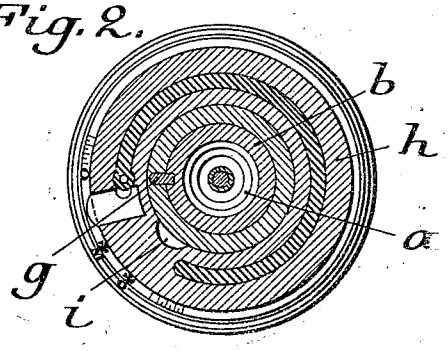


Fig. 2.



WITNESSES
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DELAY-ACTION FUSE.

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To all whom it may concern:

Be it known that I, PIETER DANIEL VAN ESSEN, captain of artillery, a subject of the Queen of the Netherlands, residing at 19 Celebetstraat, Haag, Netherlands, have invented certain new and useful Improvements in Delay-Action Fuses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a percussion or combined time and percussion fuse, the known idea of adjusting the length of the free path between the ignition members being, so that according to the length of this path the explosion may take place either immediately on impact, or after a short delay.

According to the present invention the arrangement is such that one of the two ignition members is under the action of a spring, which tends to bring both the ignition members into a position, in which on impact the explosion occurs at once, but the member acted on by the spring can only move into this position, if a locking bolt has been released.

The invention is shown in the accompanying drawing as applied to a combined time and percussion fuse, in which—

Figure 1 is a longitudinal section and Fig. 2 a section on line 2—2 of Fig. 1.

In the example shown, the plunger *a* is surrounded by a sleeve *b*. It carries at its after end the priming cap *c* and is preferably constructed so as at the same time to act as a detonator holder. A spring *e* tends to press forward the sleeve *b* and with it the plunger *a* and to bring them into a position, in which the priming cap *c* is contiguous to the firing pin *d*. In the position shown in the drawing the distance between the priming cap *c* and the firing pin *d* is such that a certain interval of time must elapse after impact before *c* and *d* come in contact.

Usually the plunger *a* is in the position shown in the drawing, in which some delay occurs in the explosion after impact. When the gun is fired the inertia of the plunger *l* carrying the priming cap *k* causes the latter to be pierced by the firing pin *m* in known manner. This firing pin is fixedly supported in a holder *f*, forming a part of the fuse. This holder also forms a stop for the sleeve *b* in its outward movement. When it is desired that the explosion be not instantaneous, but delayed until impact, the plunger *a* occupies the position shown in Fig. 1. The air cushion between the plunger and the holder *f* serves to prevent movement of the plunger during flight. The timing rings are ignited in known manner with which the present invention is not concerned, and also at the same time a slow burning pellet *n* is ignited, which previously prevented the plunger *a* from moving forward, when the gun was fired, and also acted as a safety device during transport. The pellet burns away during the flight of the projectile and on percussion the plunger *a* shoots forward and when the priming cap *c* comes in contact with the firing pin *d* the percussion fuse is fired with the small delay due to the time taken in traversing the distance between *c* and *d*.

To prevent instantaneous explosion upon impact by the spring-impelled movement of the sleeve *b*, I provide a lock *g* in the form of a sliding bolt which fits in a portion of the housing and is held projected to engage a beveled edge *p* of the sleeve *b* by the inner wall of the timing ring *h*. If it is desired that the shell shall be exploded immediately on striking without any delay, the timing ring *h* is turned around, until a recess *i* in its inner circumference is opposite the bolt *g*. As the pellet *n* is burnt away during the flight of the projectile, the spring *e* presses the inclined surface *p* of the sleeve *b* against the bolt *g* and pushes it back into the recess *i* and throws forward the sleeve *b* and with it the plunger *a* into a position in which it is held by the holder *f* of the firing pin *m*. In this position the priming cap *c* is contiguous to the firing pin *d* and the ignition occurs immediately on the impact of the shell. The withdrawal of the bolt *g* from the locking position is assisted by the centrifugal force acting on the bolt.

I claim as my invention:—

1. In a fuse for shells, relatively movable explosive members, the normal movement between said members serving to effect a delayed or retarded explosion, spring actuated means for positioning one of said members relatively to the other so that an explosion will occur immediately on impact, and means for rendering the last mentioned means inactive.

2. In a fuse for shells, fixed and movable

explosive members, a sleeve surrounding said movable member, a spring acting on said sleeve to position said movable member relatively to said fixed member whereby an explosion may be produced immediately on impact, means for holding the said sleeve as against the tension of said spring, said movable member being movable independently of said sleeve, when the latter is so locked, for producing a delayed explosion.

3. In a fuse for shells, fixed and movable explosive members, a sleeve surrounding said movable member, a spring acting on said sleeve to position said movable member relatively to said fixed member whereby an explosion may be produced immediately on impact, a lock for holding said sleeve as against the tension of said spring, and means for releasing said lock, said movable member being movable independently of said sleeve, when the latter is so locked, for producing a delayed explosion.

4. In a fuse for shells, fixed and movable explosive members, a sleeve surrounding said movable member, a spring acting on said sleeve to position said movable member relatively to said fixed member whereby an explosion may be produced immediately on impact, a laterally movable bolt for engaging and locking said sleeve, and a rotatable ring having a recess designed to coincide with said lock, said movable member being movable independently of said sleeve, when the latter is so locked, for producing a delayed explosion.

5. In a fuse for shells, a fixed ignition member, a movable ignition member, a safety pellet for preventing any motion of the movable member, until after the shot has been fired, a spring tending to move the movable member into a position in which explosion occurs immediately on impact, means for locking the said member against the action of the spring and means for releasing the locking device.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

PIETER DANIEL VAN ESSEN

Witnesses:

W. DE HAAN,

P. WILDERING.