The invention described herein may be used by the Government, or any of its officers or employees in prosecution of work for the Government, or by any other person in the United States, without payment to me of any royalty thereon, in accordance with the act of March 3, 1883. The subject of this invention is a locking device for fuses.

In the type of fuses which are provided with a stationary and a movable element of a firing mechanism it is usual to lock the movable element until the projectile is in flight, so that on impact the movable element may be forced through inertia to contact the stationary element. If the movable element is loosely mounted or unrestrained, it may creep forward under action of its own weight to contact the stationary element and explode the shell in flight, or if held in unarmed position until impact, one or both of the locking members may be driven back to safe position to effectually prevent movement of the movable element and render the fuse inoperative.

According to the present invention, the plunger or movable element is free to creep or be moved forward during flight until in a position to prevent return of the locking members to unarmed position on impact. The movement beyond this position is resisted by a sleeve and tension element, which brings the plunger to rest before it contacts the stationary element of the firing mechanism.

In addition, by this construction, any desired distance between the movable and stationary element may be maintained during the flight of the projectile and the interval of delay between impact and explosion can be regulated by the mere positioning of the various parts.

Other equally important objects and advantages are: to provide a fuse which will be reliably safe in transportation and storage; positive in functioning on impact; simple in fabrication and assembly; and, possessing a minimum number of parts.

The principle embodied in the present invention may equally well be applied to a nose or base fuse for artillery projectiles or a nose or tail fuse for drop bombs.

To these and other ends, my invention consists in the construction, arrangement, and combination of elements, described hereinafter and pointed out in the claims forming a part of this specification.

A practical embodiment of my invention as applied to an artillery point detonating fuse is illustrated in the accompanying drawings, in which:

Fig. 1 is a longitudinal sectional view of the improved fuse showing the position of the various elements when in unarmed or safe position; and

Fig. 2 is a similar view showing the parts in armed position.

Referring to the drawings by numerals of reference:

A fuse body 10 formed with a cavity 11 carries in its nose portion a fixed firing pin 12, the point end of which projects into the cavity.

Slidably mounted in the cavity 11 is a cylindrical plunger 13, which is centrally bored to form a flash duct 14 leading from a primer 15 to the base of the plunger. The primer 15 is carried in a cup 16 which is held in place by a plug 17 threaded into a recess in the forward face of the plunger.

The rear portion of the plunger is formed with an annular flange 18, which is adapted after limited movement of the plunger to engage the rim 19 of a sleeve 20, which embraces the base of the plunger.

A tension element, specifically a coil spring 21, encircling the plunger and confined between the rim 19 and an internal annular shoulder 22 of the body 10, is provided for resisting further movement of the plunger after it contacts the rim of the sleeve.

A centrally apertured metal disc 23 is secured to the base of the body 10 and forms a closure for the cavity 11 to confine the plunger assembly.

The plunger is normally locked in unarmed position, as shown in Figure 1, by two opposite centrifugal pins 24, which are adapted to be moved outward to release the plunger when the projectile attains a predetermined rotational velocity in flight. If the fuse is to be used in a drop bomb which has no rotational movement in flight any suitable form of locking mechanism may be substituted.

In operation, when the locking pins 24 are moved to release the plunger, the plunger
under the action of its own weight or through any other means incorporated for the purpose will creep or be moved forward (to the position shown in Figure 2) a sufficient distance to obstruct the return of the locking pins, which is the distance between the flange 18 of the plunger and the rim 19 of the sleeve, when further movement will be prevented by the spring 21. This position of the plunger will be maintained during flight and on impact the force of inertia will cause the plunger to overcome the resistance of the spring 21 and be moved to the forward wall of the cavity 11, during which movement, the firing pin will prime the primer. The position of the plunger when brought to rest by the spring 21, may be at any distance short of the firing pin according to the interval of time desired to elapse between impact and explosion.

It will be readily understood that the position of the firing pin and primer may be reversed without interfering with the operation of the fuse.

While in the foregoing there has been illustrated and described such combination and arrangement of elements as constitute the preferred embodiment of my invention, it is nevertheless desired to emphasize the fact that interpretation of the invention should only be conclusive when made in the light of the subjoined claims.

I claim:

1. A fuse including a body formed with a cavity, an element of a firing mechanism carried by the body, a cylindrical plunger slidably mounted within the cavity, said plunger formed with an annular flange, an element of a firing mechanism carried by the plunger, a sleeve embracing the base of the plunger, said sleeve formed with a rim normally spaced from the flange, a coil spring encircling the plunger and confined between the body and the sleeve, and centrifugally released locking pins carried by the body and positioned adjacent the forward face of the plunger when said plunger is in unarmed position.

2. A fuse including a body formed with a cavity, a plunger slidably mounted in said cavity, an annular flange formed on the base of said plunger, locking members carried by the body for releasably holding the plunger in unarmed position, a sleeve embracing the base of the plunger, said sleeve formed with a rim normally spaced from the flange when the plunger is in unarmed position, means for preventing movement of the sleeve until impact, and said plunger adapted to move forward during flight until stopped by the sleeve whereby to prevent return of the locking members.

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