Jan. 21, 1930. A. ADELMAN 1,744,194

FUSE FOR PROJECTILES

Filed Aug. 16, 1928

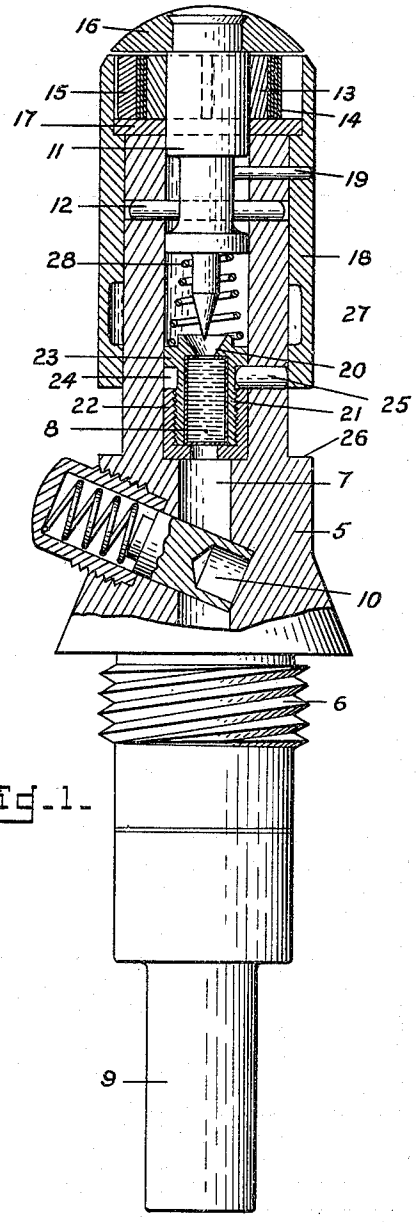


Fig. 1.

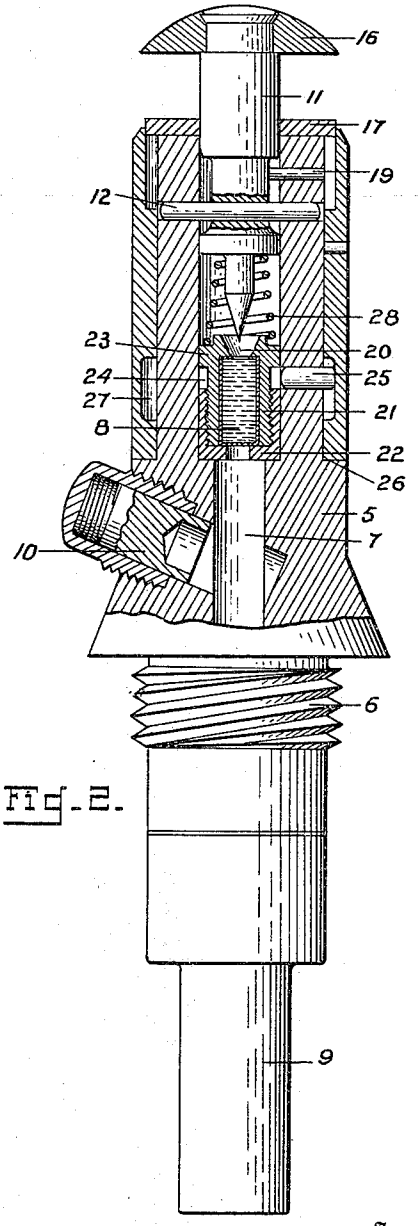


Fig. 2.

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UNITED STATES PATENT OFFICE

ARTHUR ADELMAN, OF CHESANING, MICHIGAN

FUSE FOR PROJECTILES

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(GRANTED UNDER THE ACT OF MARCH 3, 1883, AS AMENDED APRIL 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The subject of this invention is a fuse for projectiles, particularly designed as an improvement on the fuse shown in my Patent 1,672,145, of June 5, 1928.

In the patent a point detonating fuse of the type formed with a long, protruding nose for securing functioning before penetration into the ground was modified to include an inertia plunger which would provide for functioning on graze impact. The inertia plunger extended forwardly around the firing pin to take advantage of the bore safe locking means provided for the firing pin. The firing tests conducted with this fuse revealed an occasional mal-function of the plunger due to a binding action caused by its great length and this condition was more pronounced on graze impact by virtue of a bending of the elongated nose which forms the casing for the plunger.

In the present invention, operation of the plunger is insured by reducing its length and a centrifugally releasable locking pin is associated with the plunger in a manner which will enable it to be controlled by the setback sleeve provided for the bore safe locking means of the firing pin.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A practical embodiment of the invention is illustrated in the accompanying drawings, wherein:

Fig. 1 is a longitudinal sectional view of a fuse constructed in accordance with the invention and showing the parts in the unarmed position;

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

Referring to the drawings by numerals of reference:

The fuse comprises an elongated body 5, threaded as at 6 for attachment to a shell and formed with passage 7 for establishing a means of communication between a front detonator 8 and a rear detonator 9. This passage is normally interrupted by a transverse plunger 10 which is moved aside under the influence of centrifugal force during the flight of the shell.

The direct action element of the firing mechanism is embodied in a firing pin or striker 11 which is held against relative movement with respect to the fuse body by a pin 12 shearable on impact, and also by means of a bore safe device consisting of half blocks 13 embracing the firing pin and held together by a spiral tape 14 having a weighted end 15. The blocks and tape are confined between the head 16 of the striker and a washer 17, freely mounted on the pin directly in front of the fuse body.

The tape is normally prevented from unwinding by means of an external sleeve 18, slidably mounted on the fore part of the body and held in inoperative position by means of a pin 19 which is sheared on setback. Upon rearward movement of the sleeve, the tape is free to be unwound, due to the action of centrifugal force and when this occurs, the blocks are permitted to break away and fall clear.

The indirect action element of the firing mechanism comprises an inertia plunger 20 which is in the form of a two-part casing confining the front primer detonator 8. The front member 21 of the casing is threaded internally to the rear member 22 and when attached, its annular flange 23 is spaced from the rear member to provide a peripheral groove 24 for receiving one end of a pin 25 which is mounted in the fuse body 5. The pin is normally held in engagement with the plunger by an imperforate portion of the external sleeve 18 but when the sleeve has been moved rearwardly on setback and is seated on the annular shoulder 26 of the fuse body a recess 27 on the inside of the sleeve is brought into position opposite the pin so

that the pin is free to be moved under the influence of centrifugal force out of engagement with the plunger.

A spring 28 interposed between the plunger and the rigidly held firing pin serves to prevent forward movement of the plunger during flight after the pin 25 has been removed. Upon retardation of the shell, due to a graze impact, the inertia of the plunger will cause it to move forwardly against the action of the spring and bring the primer detonator 8 into contact with the firing pin.

I claim:

1. A fuse including a body, a striker mounted in the forward end of the body, a shear pin securing the striker to the body, safety means removable during flight interposed between the striker and body, a sleeve mounted externally on the body and movable to the rear on setback to release the safety means, said sleeve formed with a recess on its inner side, plunger in the body, and a centrifugally movable plunger-engaging pin mounted in the body in position to normally be confined by the sleeve and to move into the recess of the sleeve when the sleeve has been moved to the rear.

2. A fuse including a body, a plunger in the body, a pin mounted within the body and engageable with the plunger, a sleeve mounted externally on the body for rearward movement on setback, said sleeve normally confining the pin and having a recess on its inner side brought opposite to the pin when the sleeve is in rearward position.

ARTHUR ADELMAN.