April 16, 1929. E. J. McCORMICK 1,709,272

FUSE FOR PROJECTILES

Filed June 29, 1927

Fig-1-

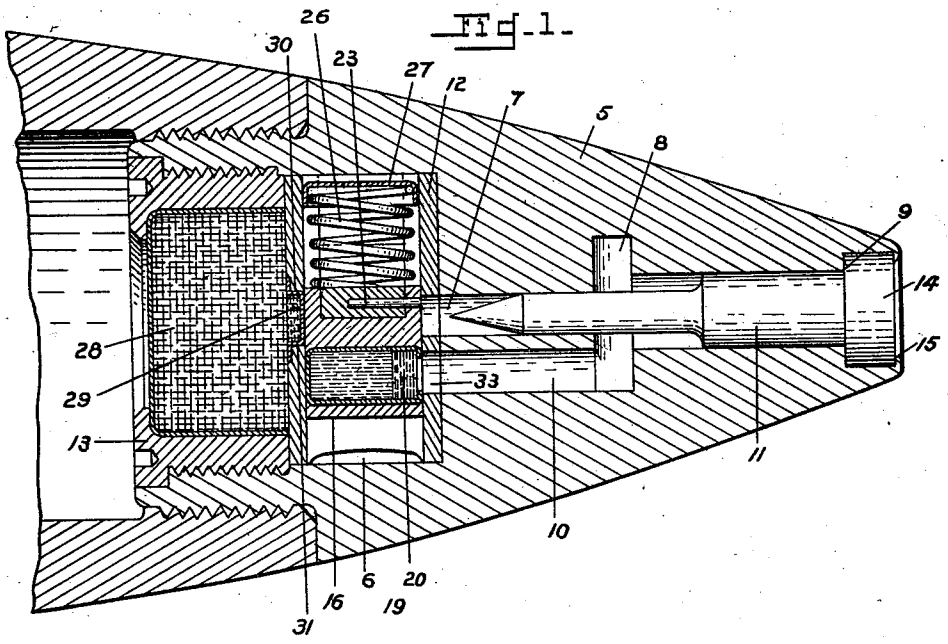


Fig-2-

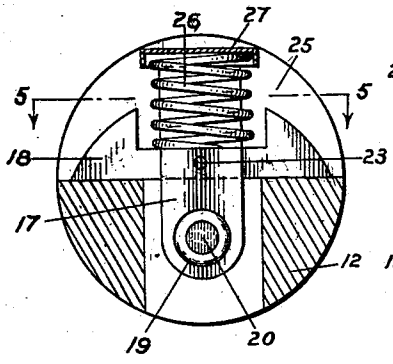


Fig-3-

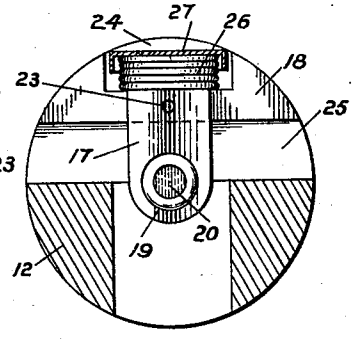


Fig-4-

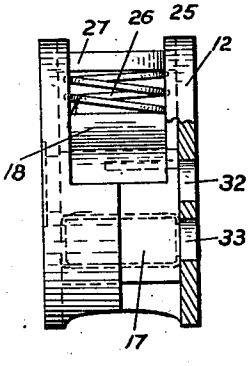


Fig-5-

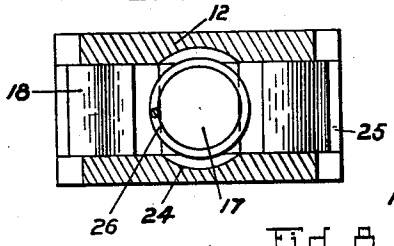


Fig-6-

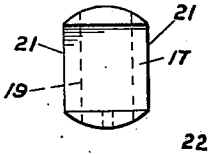


Fig-7-

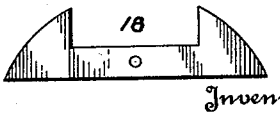
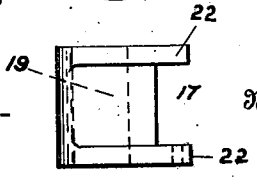


Fig-8-



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UNITED STATES PATENT OFFICE.

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FUSE FOR PROJECTILES.

Application filed June 29, 1927. Serial No. 202,442.

(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.

The principal object of this invention is to provide a fuse body which may be cast in final form to accommodate individual elements of the fuse mechanism. These elements are likewise of simple structure arranged to facilitate fabrication and assembly. The invention also includes a novel bore safe detonator carrier having a maximum displacement in moving from unarmed to armed position.

With the foregoing and other objects in view, my 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 in connection with a point detonating fuse.

Fig. 1 is a longitudinal sectional view of a fuse constructed in accordance with the invention;

Fig. 2 is a transverse sectional view of the detonator carrier housing showing the detonator in unarmed position;

Fig. 3 is a similar view with the detonator in armed position;

Fig. 4 is a view in side elevation of Fig. 2;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2;

Figs. 6, 7 and 8 are detail views of the detonator carrier elements.

Referring to the drawings by numerals of reference:

The fuse body 5 consists of a casting formed with a recess 6 in its rear portion, an axial passage 7 enlarged intermediate its length to form an expansion chamber 8 and also enlarged at its forward extremity in the nose of the body to form a seat 9. A passage 10 parallel to the axial passage 7 establishes another means of communication between the recess 6 and the expansion chamber 8.

The elements of the fuse mechanism consist of a firing pin 11, a detonator carrier housing 12 and a booster casing 13. The firing pin 11 is mounted in the axial passage 7 and has an enlarged base 14 held against the seat 9 by crimping the nose of the body as at 15. On impact the nose of the fuse body 5 is crushed and the firing pin is thereby forced rearwardly to the firing position.

The housing 12 is a cylindrical member held in place by the booster casing 13 and mounts a transversely movable slide 16 which is in the form of a wing headed bolt. The slide for convenience of manufacture is made of two pieces, namely, a bolt 17 and a head 18. The bolt 17 which is provided with an opening 19 for receiving a primer detonator 20 is cylindrical in form and may be symmetrically cut away as at 21 for the purpose of reducing its weight. One end of the bolt is formed with ears 22 for receiving the head 18 which is in the form of a segmental disk having the curvature of the housing 12 and the two pieces may be secured together in any convenient manner as by means of the pin 23.

The housing 12 is prepared to mount the slide by being provided with a diametrical cylindrical bore 24 and a slot 25 of less width than the diameter of the bore and intersecting the bore along lines parallel to the axis thereof. In this manner the winged head of the slide will be in engagement with the walls of the slot 25 to prevent rotation of the bolt and insure the correct positioning of the primer detonator axially of the fuse when the slide moves to the armed position as shown in Fig. 3 under the influence of centrifugal force. The slide is normally held in the unarmed position by means of a helical spring 26 confined by the plug 27.

The disposition of the mass of the slide due to the addition of the winged head 18 not only permits the primer detonator to be well removed from the axis of the fuse but insures the functioning of the slide during flight of the projectile.

In order that there will be no gap between the detonator 20 and the booster charge 28 the latter is formed on its inner end with a central projection 29 enclosed in a cap 30 and adapted to enter an aperture 31 in the under portion of the housing 12. This aperture and likewise the firing pin aperture 32 and vent aperture 33 in the upper portion of the housing all communicate with the transverse bore 24.

The structure of the slide and housing is

of such a character as to permit the employment of any of a variety of well-known locking means for preventing return movement of the slide once it is in armed position.

I claim:

1. A fuse including a body formed with a recess in its rear face and an axial passage enlarged intermediate its length to form an expansion chamber, said body further formed with a passage parallel to the axial passage and establishing communication between the recess and the expansion chamber, a firing pin in the axial passage, a detonator carried in the inner end of the recess and a booster casing in the outer portion of the recess.

2. In a fuse including a body, a cylindrical member axially of the body and formed with a diametrical cylindrical bore and a slot intersecting the bore and of less width than the diameter thereof, and a slide mounted in said member comprising a cylindrical bolt portion disposed in the bore and a segmental head portion having the curvature of the member and disposed in the slot therein.

3. A bore safety device for fuses including a body member, and a transversely movable detonator carrier in the body consisting of a symmetrically cut away bolt portion and a segmental disk head portion having the external curvature of the body member.

4. In a fuse, a centrifugally movable member having an enlarged portion at one end, the inner side of said enlarged portion intersecting the axis of the fuse when the member is in unarmed position and an element of a firing mechanism in said member.

EDWARD J. McCORMICK.