Feb. 17, 1931. S. D. DEEVY 1,792,631

FUSE FOR PROJECTILES

Filed Jan. 9, 1929

Fig. 1.

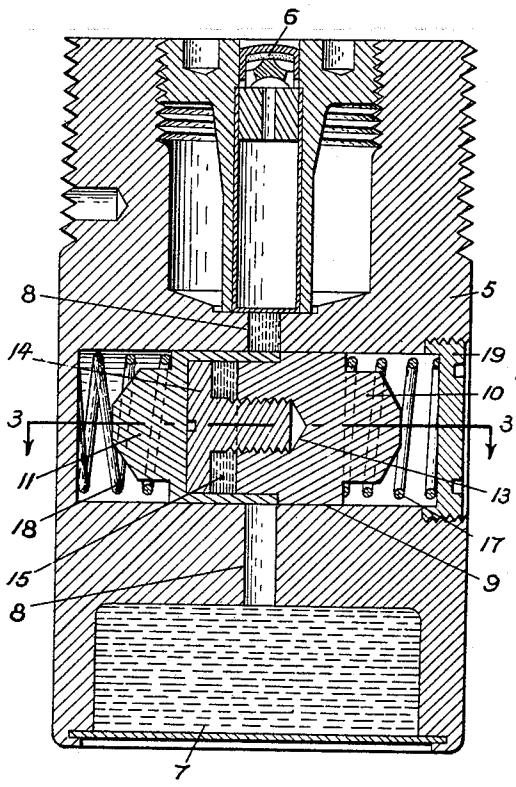


Fig. 2.

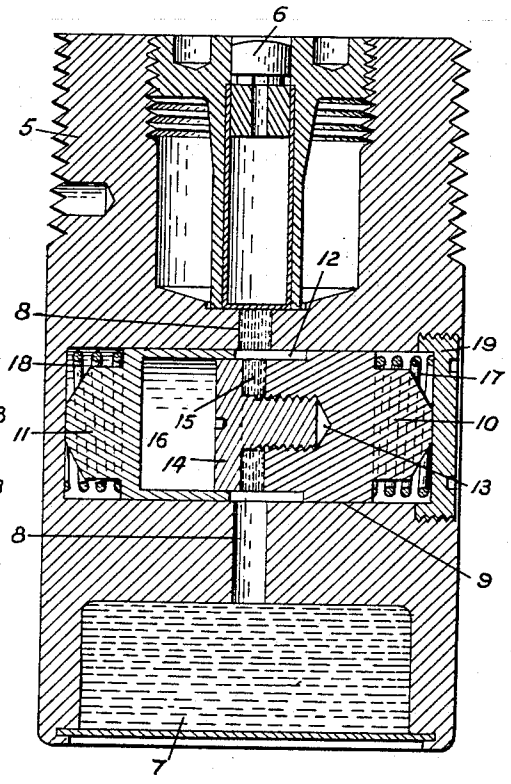


Fig. 3.

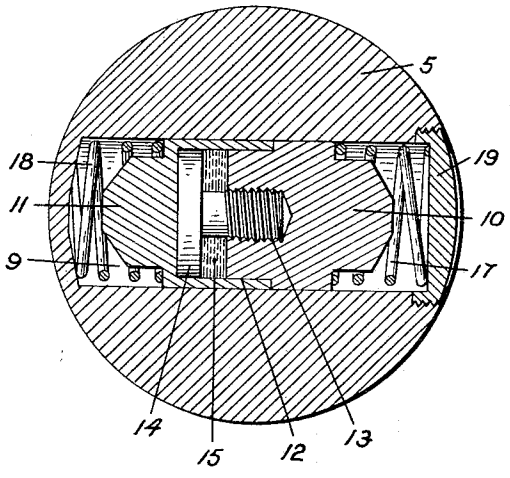
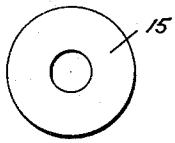


Fig. 4.



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UNITED STATES PATENT OFFICE

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FUSE FOR PROJECTILES

Application filed January 9, 1929. Serial No. 331,285.

(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.

This invention relates to a fuse for projectiles and is especially designed to overcome difficulties experienced in the fabrication and functioning of the type of explosive train disclosed in Patent 1,172,637.

In bore safe devices which consist of an interrupted explosive train or an interrupted path of detonation transmission, there is an element transversely mounted in the fuse so as to be movable by centrifugal force to establish continuity.

The principal object of this invention is to provide such a transverse element which will facilitate fabrication, loading and assembly and which will be capable of carrying an annular detonator of sufficient capacity to permit the elimination of relay trains between the primer and booster charge.

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 the improved fuse showing the parts in the unarmed position;

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

Fig. 3 is a sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a view of the annular pellet.

Referring to the drawings by numerals of reference:

There is shown a fuse block 5 carrying a primer 6 and a booster charge 7 in opposite ends and having an axial flash passage 8 establishing communication between these two elements of an explosive train. The block is formed with a transversely disposed cylindrical passage 9, intersecting the axial passage 8 and housing the detonator carrier 10 and its guard 11 both of which are cylindrical and have a sliding fit in the passage.

The inner portion of the detonator carrier 10 is reduced as at 12 and formed with a central bore 13 tapped to receive the stem of a retaining member 14, specifically a screw, whose head is of the same dimension as the reduced portion 12. An annular pellet 15 of a detonating material is confined between the head of the screw and the face of the carrier.

The inner portion of the guard is formed with a large cavity 16 so that when assembled to the carrier it will receive the inner reduced portion thereof carrying the detonator. The carrier and its guard are normally held against separation in the unarmed position by means of springs 17 and 18, the latter seated on the end wall of the passage 9 and the former confined by a screw plug 19 which when attached to the fuse body closes the aperture. In this position the detonator 15 is out of alignment with the flash passage 8 and the guard is interposed between the detonator and the flash passage. The additional safety feature provided by obstructing the flash passage permits the allowance of greater tolerance between the sliding members and the wall of the transverse passage and also reduces the sliding movement to a minimum inasmuch as a positioning of the detonator only a slight distance out of alignment will satisfy the prescribed safety requirement of the fuse.

The arming of the fuse is accomplished in the usual manner during flight of the projectile when the detonator carrier and the guard will move outwardly in opposite directions under the influence of centrifugal force until brought to rest against the ends of the passage 9 as seen in Fig. 2. When thus separated the guard will have uncovered the flash passage and the carrier will have positioned the detonator in line with the flash passage 8.

Because of the annular shape of the detonator pellet, its alignment with the flash passage will be unaffected by rotation of the carrier. The particular shape of the pel-

let, besides being easy to load, also contributes a decided advantage in its formation as it can readily be made in a press and the question of exact dimensioning is of no importance. As distinguished from this, a cylindrical pellet of tetryl can not be made with any degree of certainty as to a specified size and dimension.

The assembly of the detonator carrier unit to the fuse involves merely the simple operation of inserting it in the passage 9 without any consideration being given to the alignment of any of its elements.

I claim:

1. In a fuse, a block having a transverse passage, a primer in one end of the block, a booster charge in the other end of the block, a flash passage establishing communication between the primer and booster and interrupted by the transverse passage, centrifugally separable cylinders of equal diameter in the passage, one of said cylinders having a reduced portion encased within the other, a retaining member secured axially to the reduced portion, an annular detonator held against the end face of the reduced portion by the retaining member, means for holding the assembled cylinders in position with the encasing portion of the one cylinder obstructing the flash passage and the detonator carried by the encased cylinder out of line with the flash passage.

2. In a fuse having spaced combustible elements and a communicating flash passage, centrifugally separable cylinders of equal diameter mounted to intersect the flash passage, one of said cylinders having a reduced portion encased by the other, an annular detonator carried by the encased portion, means for holding the assembled cylinders in position with the encasing portion of the one cylinder obstructing the flash passage and the detonator carried by the encased cylinder out of line with the flash passage.

3. In a fuse having spaced combustible elements and a communicating flash passage, centrifugally separable cylinders of equal diameter mounted to intersect the flash passage, one of said cylinders having a reduced portion encased by the other, a detonator carried by the encased portion and means for holding the assembled cylinders in position with the encasing portion of the one cylinder obstructing the flash passage.

4. In a fuse, a transversely mounted carrier having an axial threaded opening, a retaining member threaded in the opening and having a head conforming in shape and size to the carrier and an annular pellet of a combustible material confined between the head of the retaining member and the end face of the carrier.

5. In a fuse, a transversely mounted carrier, a retaining member securable to one end thereof and a preformed annular pellet of a combustible material confined between the retaining member and the end face of the carrier.

STEPHEN D. DEEVY.