April 24, 1934. A. F. TEITSCHEID 1,955,779

FUSE FOR PROJECTILES

Filed Dec. 10, 1931

Fig. 1.

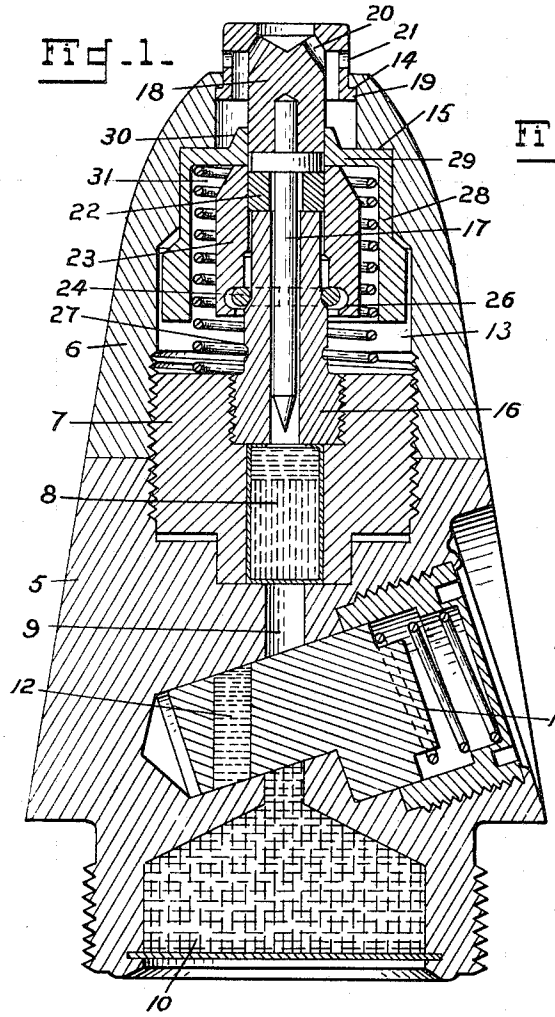


Fig. 2.

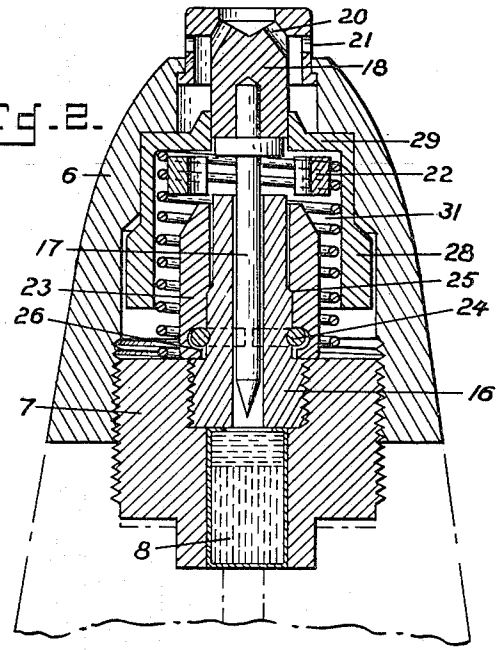


Fig. 3.

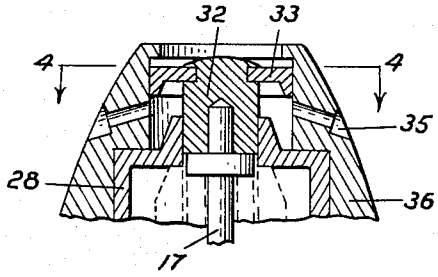
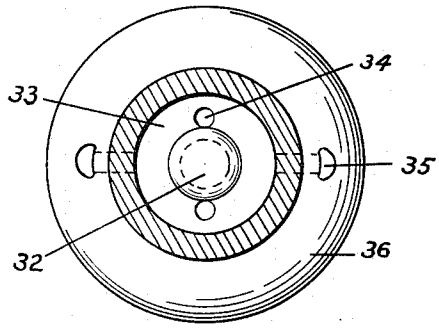


Fig. 4.



INVENTOR.
Alfred F. Teitscheid
BY W. N. Roach
ATTORNEY

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FUSE FOR PROJECTILES

Alfred F. Teitscheid, Wharton, N. J.

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10 Claims. (Cl. 102—39)

(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 the present invention is to provide a bore-safe fuse in which the force of linear acceleration is employed to move one arming member to inoperative position and another arming member temporarily into operative position. A further object is to provide a simple and effective arrangement for holding the first arming member in both operative and inoperative positions.

To these and other ends, the 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 the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a longitudinal sectional view of the improved fuse showing the parts in the safe or unarmed position.

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

Fig. 3 is a detail longitudinal sectional view of a special form of striker head.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

The fuse comprises a casing formed on a body 5 and a head 6 connected together in any suitable manner but preferably by being threaded to an internally disposed plug 7 carrying a primer-detonator 8. A flash passage 9 in the body leads towards a booster charge 10 but is normally interrupted in a well known manner by a transversely disposed bolt 11 having a passage or a relay charge 12 adapted to be moved into alignment with the passage 9 and booster 10 when the bolt is moved during flight under the influence of centrifugal force.

The head 6 is chambered to house the remaining movable elements of the fuse and the chamber 13 is stepped in towards the nose to provide annular shoulders 14 and 15. A tubular guide 16 integral with or secured in the forward end of the plug 7 projects into the chamber 13 and receives the stem of a firing pin 17. The firing pin is fixed in a striker 18 having an external flange 19 adapted to engage the shoulder 14 of the head and limit forward movement of the striker.

The striker shown in Fig. 1 is of the conventional air-balanceable type, having forwardly directed apertures 20 and laterally directed apertures 21. A pair of segmental or half-collars 22—22 embrace the firing pin stem and when positioned between the striker 18 and the tubular guide 16 serve to hold the striker in the foremost position with the point of the firing pin spaced from the primer-detonator 8.

The half-collars are normally confined as seen in Fig. 1, by a sleeve 23 embracing the guide 16 and maintained in operative position by a split ring 24 seated on an inclined shoulder 25 of the guide and partially disposed in an internal annular groove 26 in the sleeve 23. As shown in Fig. 2, when a projectile equipped with the fuse is fired from a gun the force of linear acceleration causes the sleeve to set back. During this action the split ring 24 is forced into the groove 26 of the sleeve and is carried by the sleeve. When the sleeve is arrested by the plug 7 the split ring snaps into an external annular groove 27 in the guide 16 and becomes available to oppose a return movement of the sleeve.

A plunger 28 mounted in the chamber 13 and spaced from the sleeve is provided with an offset 29 positioned forwardly of the sleeve 23 and adapted to engage the shoulder 15 of the head to limit forward movement of the plunger. A flange 30 integral with the inner portion of the offset has substantially the same diameter as the sleeve 23. A spring 31 seated on the plug 7 normally maintains the plunger in the forward position.

In operation the plunger 28 sets back with the sleeve 23 and its weight will assist the sleeve in dislodging the split ring 24 from the inclined shoulder 25 of the guide. Since the plunger follows the sleeve in this movement, the flange 30 on the plunger is available to confine the half-collars when the sleeve 23 has cleared them. When linear acceleration ceases at the muzzle of the gun or a slight distance beyond the muzzle, the plunger is returned to its forward position by the spring 31, and uncovers the half-collars which are free to be thrown outwardly by centrifugal force during flight (Fig. 2). The firing pin and striker are now in the armed position where they are retained by air pressure. The flange 30 serves as a guide to steady the striker. On impact the striker functions in a well-known manner.

In Figs. 3 and 4 the striker 32 includes a head in the form of a disc 33 and this head does not project beyond the nose of the fuse. It contains only the forwardly directed apertures 34 as the

laterally directed apertures 35 are formed in the fuse head 36.

I claim.

1. In a fuse, a body, a head, a plug connecting the head and body, a tubular guide carried by the plug and disposed in the head, a firing pin mounted in the guide, an air-balanceable striker carrying the firing pin, a segmental collar embracing the pin between the striker and the end of the guide, a sleeve slidable on the guide, means for releasably holding the sleeve in position to confine the segmental collar, a spring-pressed plunger having an offset, and a flange on the offset positionable on set-back to temporarily confine the segmental collar.

2. A fuse including a casing, a tubular guide within the casing, a firing pin mounted in the guide, an air-balanceable striker carrying the firing pin, a segmental collar embracing the pin between the striker and the end of the guide, a sleeve slidable on the guide, means for releasably holding the sleeve in position to confine the segmental collar, a spring-pressed plunger having an offset, and a flange on the offset positionable on set-back to temporarily confine the segmental collar.

3. A fuse including a casing, a tubular guide within the casing, a firing pin mounted in the guide and having an enlarged head, a segmental collar embracing the pin between the enlarged head and the end of the guide, a sleeve slidable on the guide, means for releasably holding the sleeve in position to confine the segmental collar, a spring-pressed plunger having an offset, a flange on the offset positionable on set back to temporarily confine the segmental collar, and means for holding the firing pin in safe position when the segmental collar is removed.

4. A fuse including a casing, a tubular guide within the casing, a firing pin mounted in the guide and having an enlarged head, a segmental collar embracing the pin between the enlarged head and the end of the guide, a sleeve slidable on the guide, means for releasably holding the sleeve in position to confine the segmental collar, a plunger engaging the sleeve and operable on set-back to replace the sleeve in confining the segmental collar, and means for restoring the plunger to uncover the collar.

5. A fuse including a casing, a tubular guide within the casing, a firing pin mounted in the guide and having an enlarged head, a segmental collar embracing the pin between the enlarged head and the end of the guide, a sleeve slidable on the guide, means for releasably holding the sleeve in position to confine the segmental collar, a plunger operable on set-back to replace the sleeve in confining the segmental collar, and means for restoring the plunger to uncover the collar.

6. In a fuse, a tubular guide, having a shoulder and a groove, a member mounted for movement in the guide and having a head outside the guide, a segmental collar between the head and the end of the guide, a sleeve slidable on the guide and having an internal groove, a split ring seated on the shoulder of the guide and engaging the sleeve at its groove to hold the sleeve in position to confine the segmental collar, said ring movable with the sleeve on set-back for disposition in the groove of the guide, and means for temporarily confining the segmental collar upon movement of the sleeve.

7. In a fuse, a tubular guide, having a shoulder and a groove, a member mounted for movement in the guide and having a head outside the guide, a segmental collar between the head and the end of the guide, a sleeve slidable on the guide and having an internal groove, a split ring seated on the shoulder of the guide and engaging the sleeve at its groove to hold the sleeve in position to confine the segmental collar, said ring movable with the sleeve on set-back for disposition in the groove of the guide.

8. In a fuse, a tubular guide, a member mounted for movement in the guide and having a head outside the guide, a segmental collar between the head and the guide, a sleeve slidable on the guide, a split ring engageable with the guide and sleeve and normally holding the sleeve in position to confine the segmental collar, means on the sleeve whereby the split ring is carried along with the sleeve on set-back, and means on the guide for reengaging the split ring.

9. In a fuse, a casing having a chamber open to atmosphere at its nose, an annular shoulder provided on the casing at the mouth of the chamber, a movable striker disposed within the chamber and having a head held against extrusion by the shoulder of the casing, an air inlet passage in the head, and an air outlet passage in the casing in rear of the head of the striker and establishing communication between the chamber and atmosphere.

10. In a fuse, a casing having an opening in its nose, a movable striker head disposed in said opening, means on the casing for holding the striker head against movement to an extruded position, an air inlet passage in the striker head and an air outlet passage in the casing directly in rear of the striker head and establishing communication between the opening in the nose and atmosphere.

ALFRED F. TEITSCHEID.