Oct. 15, 1963 E. W. BRANDT 3,106,893

PERCUSSION FUZE FOR PROJECTILES

Filed Sept. 11, 1961

Fig. 1

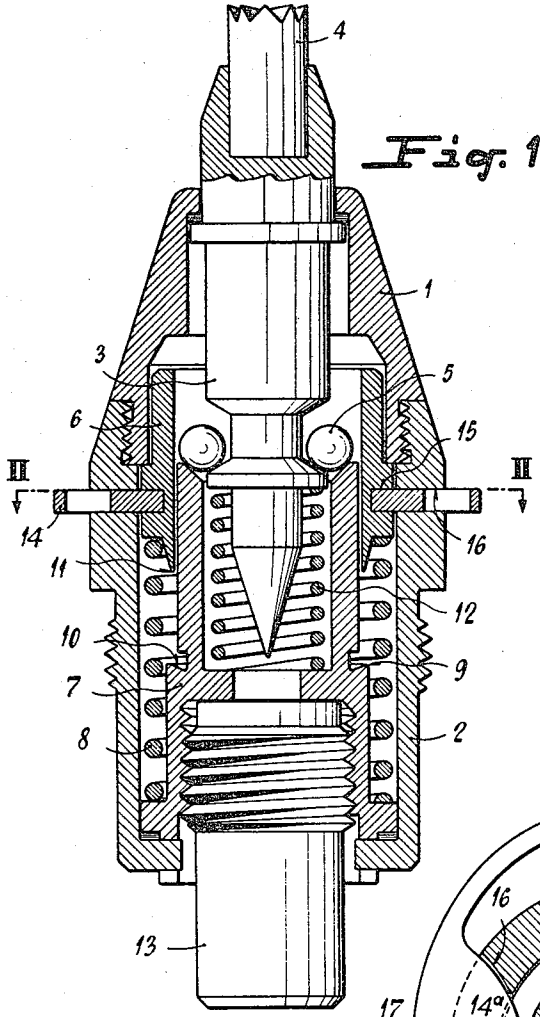
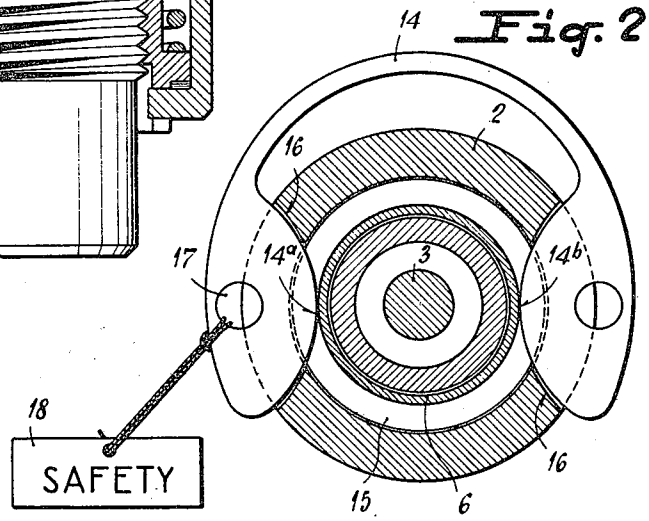


Fig. 2



United States Patent Office

3,106,893
Patented Oct. 15, 1963

3,106,893

PERCUSSION FUZE FOR PROJECTILES

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Filed Sept. 11, 1961, Ser. No. 137,469
Claims priority, application Switzerland Feb. 2, 1961
3 Claims. (Cl. 102—78)

This invention relates to a percussion fuze for a projectile, the fuze being of the kind, comprising, inside a fuze body, a striker fixedly secured to or integral with a projecting head, a detonator carrier adapted to slide in the fuze body, and a safety device which is adapted to lock the striker in relation to the detonator carrrier in a rest or safety position, and which comprises an annular setback element which is withdrawable under the effect of the recoil when the shot is fired, against the action of an elastic member.

A fuze of the aforesaid kind (hereinafter referred to as "a fuze of the kind set forth") operates simultaneously by setback and by inertia, and the safety device is effective on the firing of the projectile equipped with it and in the course of transport and handling in the event of the said projectile falling on its head. Nevertheless, in the event of the projectile falling on its base beyond a certain limit height, safety is not absolute because the said setback device could withdraw in certain cases under the effect of the shock and permit the freeing of the locking means. The fuze would then be armed, the striker being held at a suitable distance from the detonator only by a spacing spring.

It is an object of the present invention to overcome this disadvantage and to impart complete safety to the fuze.

According to the present invention there is provided a percussion fuze of the kind set forth, wherein the fuze is provided with a removable device intended to lock the setback element in the safety position before firing, the removable device being constituted by an elastic spring clip of which the two branches have two diametrically opposite parts arched convexly towards one another, these two parts being adapted to be inserted into an annular groove provided in the said setback element, the fuze body having opposite the said groove two diametrically opposite notches of similar shape to that of the said branches and into which the latter are intended to be introduced by moving them apart against the elastic action which constantly tends to bring the said branches towards one another and to maintain the spring clip secured to the fuze when the said arched parts are in position at the bottom of their respective notches.

In order to enable the invention to be more readily understood, reference will now be made to the accompanying drawings, which illustrate diagrammatically and by way of example the preferred embodiment thereof, and in which:

FIGURE 1 is a longitudinal section of a fuze, and

FIGURE 2 is a cross-section of the fuze shown in FIG. 1 along the line II—II in FIGURE 1.

Referring now to the drawings, there is shown a fuze having a body composed of two parts 1, 2 screwed one on to the other and a striker 3 adapted to slide axially

through the body 1, 2. A projecting head 4 is fixed in a cylindrical space provided at the free end of the striker and comprises a series of indentations adapted to bite into armour.

The striker 3 is held in an inoperative position by a safety device comprising a series of balls 5 housed in a circular groove in the striker 3 and an annular setback element 6 surrounding the detonator carrier 7. In the position of rest the setback element 6 is locked by a spring 8 one end of which rests on the carrier 7 for a primer-detonator 13 which has a threaded portion and which is screwed into the base of the carrier. The latter has on its periphery a shoulder 9 and a groove 10 opposite a series of claws 11 on the setback element 6. A supplementary spring 12 is inserted between the detonator carrier 7 and the striker 3. After the firing of the shot and under the action of the positive acceleration communicated to the projectile carrying the fuze, the setback element 6 moves back against the action of the spring 8. The claws 11 striking against the shoulder 9 of the detonator carrier 7 yield and enter the groove 10. From that moment onwards the setback element 6 is effectively united with the detonator carrier 7 and, having moved backwards, frees the balls 5 which move forward. The fuze is then armed, the striker being held at a suitable distance from the primer detonator 13 only by the spacing spring 12.

The safety device described above is effective on firing and in course of transport and handling when the projectile falls on its head. However, when the projectile falls on its base beyond a certain limit height, safety is not assured because the setback element 6 could in certain cases move back and the claws 11 could become attached to the detonator carrier 7 under the effect of the shock. The liberation of the balls 5 would then arm the fuze.

In order to prevent accidental arming of the fuze and consequently to give it complete safety, the fuze is provided according to the invention with a removable device intended to lock the setback element 6 in the safety position until firing.

This device consists of a resilient spring clip 14 the two branches of which have two diametrically opposite projections 14*a*, 14*b* which are arched towards the inside. These two parts are intended to be inserted into an annular groove 15 provided in the setback element 6. For this purpose, the part 2 of the fuze body has two slots 16 the bottom of each of which has a curvature similar to that of the projections 14*a*, 14*b* of the spring clip. The latter is placed in position by opening out its two branches against the resilient action which tends to bring them constantly towards one another and which enables the spring clip to be held firmly connected to the fuze when the said projections 14*a*, 14*b* are in position at the bottom of the slots 16. The setback element 6 is locked inside the fuze body and the fuze cannot be armed until the spring clip is pulled off.

In order to facilitate this operation, the two branches of the spring clip have apertures 17 in one of which there may be inserted a cord or the like carrying a small plate 18 indicating the nature of the element to which it is attached. It is sufficient to pull on the said plate to open up the spring clip and remove it from the fuze which is then ready for firing. Furthermore the midpor-

tion of the spring clip **14** constitutes a bail by which the clip may be pulled away thus removing the parts **14***a* and **14***b* from the notches **16** and freeing the setback element **6**.

What is claimed is:

1. A percussion fuze comprising a hollow fuze body, a striker slidably carried within said body, a detonator carrier in the base of the body rearwardly of said striker, a setback element surrounding said striker, a spring surrounding said detonator carrier rearwardly of said setback element said spring urging said setback element forwardly, said setback element having a peripheral outer groove, said fuze body having two slots in its wall opposite the groove, and a removable resilient spring clip having diametrically positioned inwardly directed projections removably held in said slots and projecting into said groove.

2. A fuze as defined in claim 1 in which the slots in the fuze body have curvilinear end walls and the projections on the spring clip are similar in outline.

3. A fuze as defined in claim 1 in which the spring clip has an intermediate bail portion spaced from the fuze body.

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