ROTATIONALLY ACTIVATED FUZE

Lewis C. Dixon, Mount Airy, Md., assignor to the United States of America as represented by the Secretary of the Army

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4 Claims. (Cl. 102—79)

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

This invention relates to a rotationally activated fuze. More specifically, it relates to a fuze that arms by rotation about a principal axis of the fuze. After arming, the fuze fires by a sudden deceleration of the rotation.

In the drawings, FIG. 1 shows a section through the unarmed fuze. FIG. 2 shows a section through the fuze after the retaining detents have been moved out by centrifugal force. FIG. 3 shows a section through the fully armed fuze. FIG. 4 shows a section through the fuze at moment of firing.

More particularly, the fuze consists of a stator casing which is shaped to contain the several pivoted rotating elements therein. Of these, 6 and 8 are firing pins which consist of pivoted weights having integral pins 26, 26. Perforations 24, 24 are drilled cavities which assist in creating the desired unbalance in the weights. Elements 10 and 12 are detents, pivoted about pins 14 and 16 and biased by springs 18 and 20 respectively. These springs bear against the detents on one side and pins 20 and 22 on the other side. The detents are thus biased inwardly against the pivoted firing pins as shown in FIG. 1 with the result that firing pins 6 and 8 are not free to rotate until detents 10 and 12 are moved out of the way by centrifugal force as shown in FIG. 2. The bias on these detents is such that they move outwardly prior to or simultaneously with the movement of the rotary firing pins. As the rotational velocity increases, the rotary firing pins, due to their unbalance, begin to turn and ultimately assume the position shown in FIG. 3. As they reach this position, rounded lugs 25, 25 on each firing pin encounter opposite sides of pivoted primer holder 28. As the primer holder rotates into the position shown in FIG. 3, the primers 30, 32 positioned in each end of holder line up with the firing pins after which the fuze is armed.

In order to fire, it is necessary that there be a sudden deceleration of the rotation at which time the rotary firing pins will reverse their rotation with respect to the body of the fuze, and impinge on the primers as shown in FIG. 4. Primer holder 28 is center bored as shown at 34 and this bore is vented through a transverse bore through the pivot at 36. Thus when the fuze fires, ignition of the munition of which the fuze is a part takes place through pivot 36 at right angles to the fuze. This makes the fuze especially adaptable to spherical free falling munitions that are rotated about a horizontal axis during their free fall.

There are several advantages inherent in a fuze of this structure. It is symmetrical and balanced in weight about its axis. By proper unbalancing of the firing pins, it can be made to arm at any desired rotational velocity. Having armed, it is fired by a sudden reduction in rotational velocity such as might be occasioned by striking the ground. Due to the symmetrical structure of the fuze, it is armed by rotation about its principal axis which is the axis of the primer holder. The fuze can therefore occupy a central position in the munition so that the rotational axis of the munition and of the fuze coincide.

I claim:

1. A fuze comprising a hollow fuze body, a centrally positioned and symmetrically pivoted primer holder within said fuze body, said primer holder having primers diametrically positioned in each end thereof, two rotary firing pins pivotally mounted one at each end in said fuze body and adjacent each end of said primer holder and in mechanical cooperation with said primer holder, the pivotal axis of said primer holder and of said firing pins being parallel and in a common plane, said rotary firing pins having impact and balancing portions on opposite sides of the pivotal axis of said firing pins and being unbalanced about said pivotal axis with the impact portion being heavier than the balancing portion.

2. A fuze in accordance with claim 1 wherein two pivoted detents are positioned one beside each rotary firing pin, said detents being centrifugally actuated and serving to hold the rotary firing pins in unarmed position until the rotation of the fuze reaches a predetermined velocity.

3. A fuze in accordance with claim 1 wherein the rotary firing pins pivot in the same direction under centrifugal force.

4. A fuze in accordance with claim 1 wherein the primer holder contains a primer in each end and is bored out to carry the ignition out through a hollow pivot of the pivoted primer.

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BENJAMIN A. BORCHELT, Primary Examiner.

SAMEUL FEINBERG, ARTHUR M. HORTON,

L. H. HALLACHER, G. H. GLANZMAN,

Assistant Examiners.