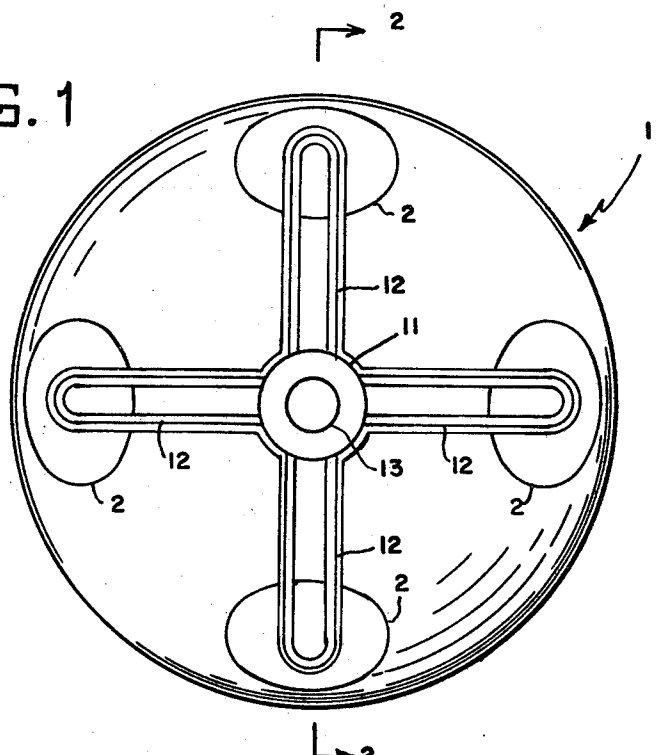
March 3, 1970 T. A. AXELSON 3,498,219

TRIP LINE SENSOR AND RELEASE MECHANISM FOR MUNITION

Filed June 19, 1968

FIG. 1



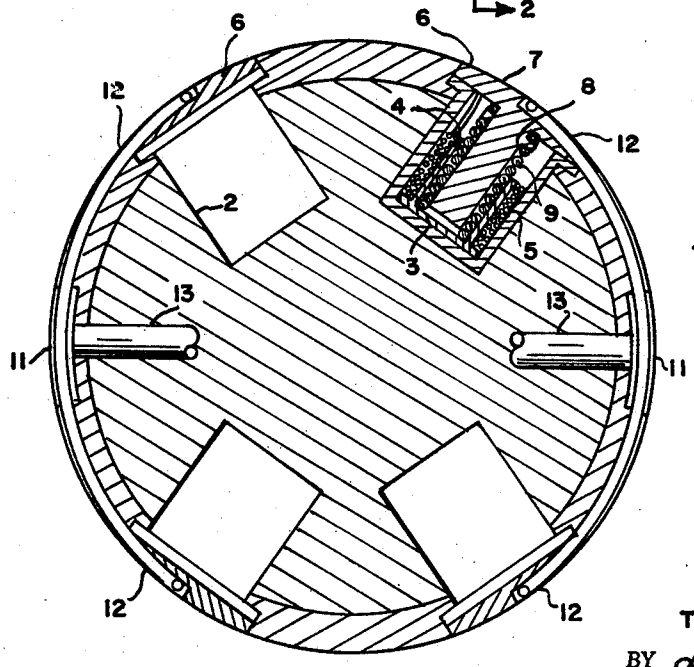


FIG. 2

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TRIP LINE SENSOR AND RELEASE MECHANISM FOR MUNITION

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U.S. Cl. 102—8 3 Claims

ABSTRACT OF THE DISCLOSURE

A spherical munition has wells regularly spaced around its surface. Each well contains a trip line wound on a reel with one end attached to an arming mechanism and the other end attached to a cover held in place by a spring. Upon release of the spring an ejection means projects the cover thereby unwinding the trip line and arming the munition.

The present invention pertains to explosive devices, such as mines and grenades, and more particularly to the deployment of trip line sensors from a randomly oriented spherical munition. Munitions of this type are planted by dropping them from aircraft or hand placing them into the paths of advancing troops or infiltrators. Trip lines are ejected from the muntion with the inner ends secured to arming means for detonating the munition. When a person or object comes into contact with the trip line the resulting tenson in the line triggers the arming means and the munition is exploded.

In the prior art it was necessary that the munition be planted with a certain orientation, otherwise it would be possible that the well carrying the trip line would be oriented so that the trip lines would not be ejected to their fullest extent possible or not ejected at all.

In the present invention eight trip wells are recessed on the surface of a spherical munition with each well located at one of the vertices of a regular hexahedron inscribed within the sphere. The trip lines are stored within the wells on either a stationary reel or a reel attached to the well cover. A compression spring is used to eject the well cover to which the trip line is attached, the well cover acting as an anchor for the deployed trip line. Two formed four-fingered springs mounted on separate stems are compressed to cover each trip line assembly. Upon release of the stems by an internal fuze mechanism, the springs return to a free position with a snap action and the well covers with the trip lines are ejected by the compression springs in all directions.

Accordingly, the objects of this invention are to provide a munition where at least four trip lines will be ejected in opposite directions regardless of munition orientation and to provide a munition having a novel spring release trip wire mechanism.

Other objects and advantages will be apparent from the following detailed description and accompanying drawing of the preferred embodiment in which:

FIGURE 1 is a plan view of a munition constructed according to the invention; and

FIGURE 2 is a sectional view on line 2—2 of FIGURE 1 but with only one of the trip well mechanisms shown in detail.

Referring now to FIGURE 1 a spherical munition 1

has eight trip line wells 2 recessed in the surface with each well 2 located at one of the vertices of a regular hexahedron inscribed within the sphere.

As shown in FIGURE 2 each trip line well 2 contains a stationary reel 3 of hollow cylindrical configuration having an open end 4. Wound around the reel 3 is a trip line 5 having its one end secured to an arming means (not shown) and the other end attached to well cover 6. Well cover 6 comprises a circular base 7 with a cylindrical portion 8 projecting therefrom. A means for ejecting the well cover 6 away from the munition 1 lies in well 2 and may be a simple compression ejection spring 9 disposed around the cylindrical portion 8 of well cover 6 and lying within the stationary reel 3. The well covers 6 are held in place by a releasably holding means, which may be a spring 11 having four fingers 12 projecting from a stem 13 as shown in FIGURE 1. In the embodiment shown there are two springs 11 with each spring 11 controlling four of the eight trip line assemblies. In the locked position the outer ends of fingers 12 are urged away from stem 13 and hold well covers 6 in the well. Stems 13 are locked by a fuze mechanism (not shown) within the munition. On release of the stem 13 by the internal fuze mechanism, the springs 11 return to a free position with a snap action. This movement provides a simultaneous and unobstructed release of the well covers 6. The well covers 6 are then ejected outwardly by the ejection springs 9. As the well covers 6 propel outwardly they unwind the trip lines 5 from reel 3; and the trip lines 5, upon being fully extended, arm the munition. Arming means are known in the art and may be of a type as shown in U.S. Patent 2,826,990 assigned to the assignee of the present invention. After the munition is armed the well covers 6 act as an anchor for trip lines 5. Upon a person or object coming in contact with one of the trip lines 5 the arming means detonates the munition.

In a modification of the above embodiment the stationary reel 3 may be replaced by a reel pivotally supported on the well cover as shown in Patent 2,826,990.

While various modifications and changes will occur to those skilled in the art after a study of the present disclosure I intend to be limited only by a broad interpretation of the attached claims.

I claim:

1. A munition comprising: a body having a plurality of wells recessed in the surface, a cover for closing each of said wells at the surface of said body, a spring means for ejecting said cover from said munition and a trip line located in said wells, said trip line secured at one end to an arming means and at the other end to said cover, means for releasably holding said covers over said wells, said munition being operatively in any orientation and said wells being spaced around said body so upon release of said holding means at least one trip line will be ejected to its fullest extent without regard to munition orientation.

2. A munition according to claim 1 wherein a hollow stationary reel is secured in each of said wells, said trip line is wound around said reel, said cover has a base portion and a cylindrical portion projecting from the base portion, said spring means for ejecting said cover is disposed around said cylindrical portion of said cover, and said cylindrical portion and said spring fitting within the hollow reel.

3. A munition according to claim 1 wherein each of

said wells are located at the vertices of a regular hexahedron inscribed within said body thereby comprising eight wells, said means for releasably holding said covers includes a spring having four fingers projecting from a stem, said stem being locked within said body and each finger holding one cover on its respective well whereby upon release of said stem said well covers are projected from said body.

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SAMUEL W. ENGLE, Primary Examiner

U.S. Cl. X.R.

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