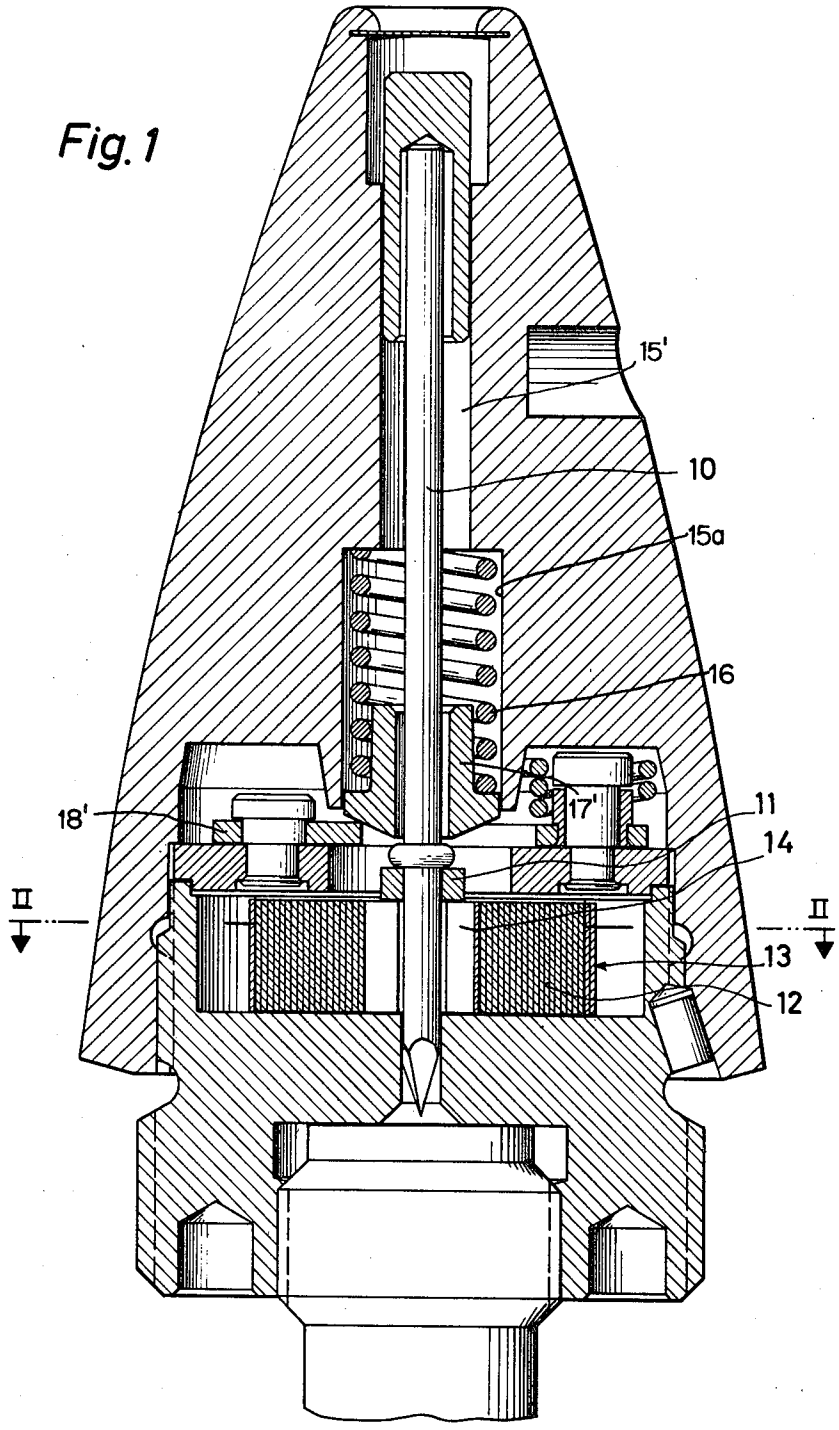
June 23, 1970 R. WEBER ET AL 3,516,359

CENTRIFUGAL SPIRAL BAND LOCKING DEVICE, ESPECIALLY FOR SELF-DESTROYING FUZES

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Fig. 1



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Fig. 2

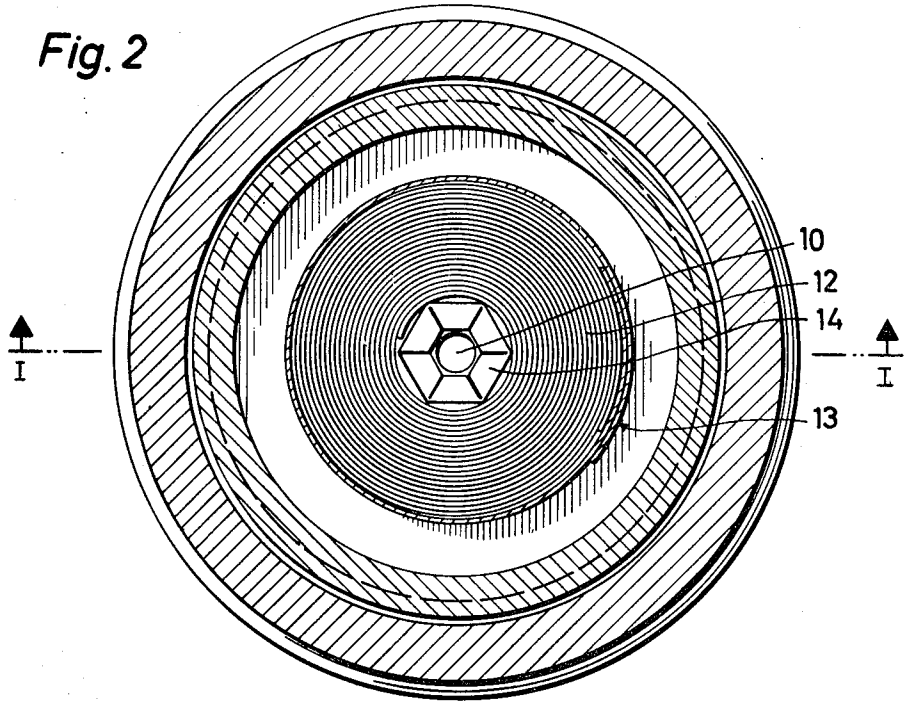
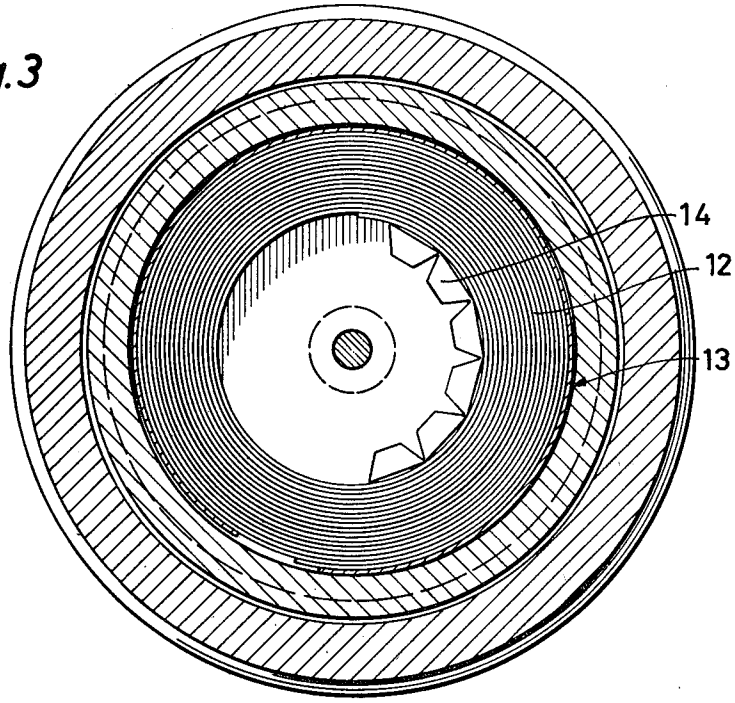


Fig. 3



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Fig. 4

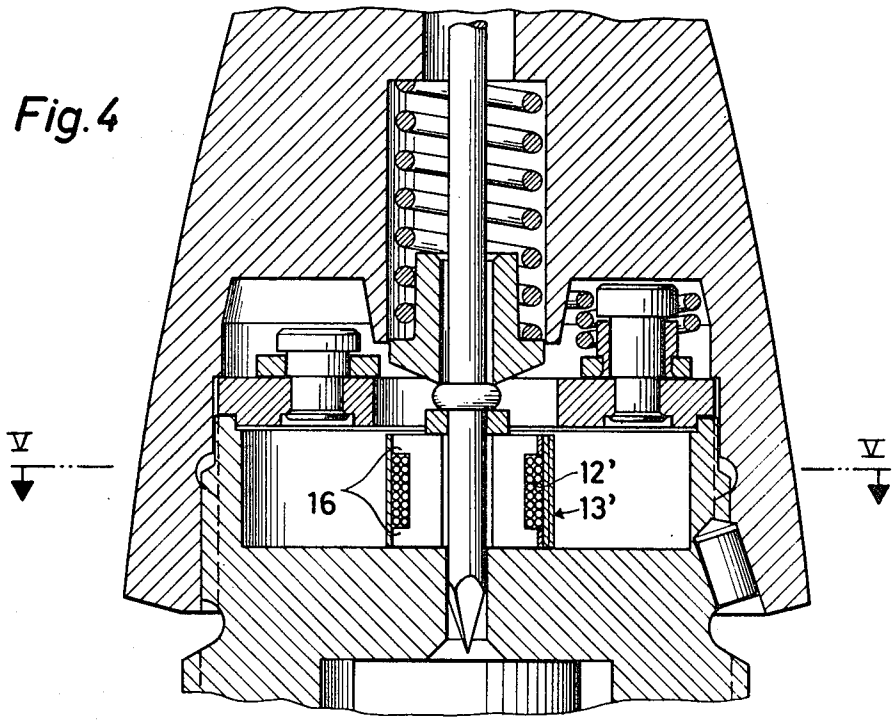
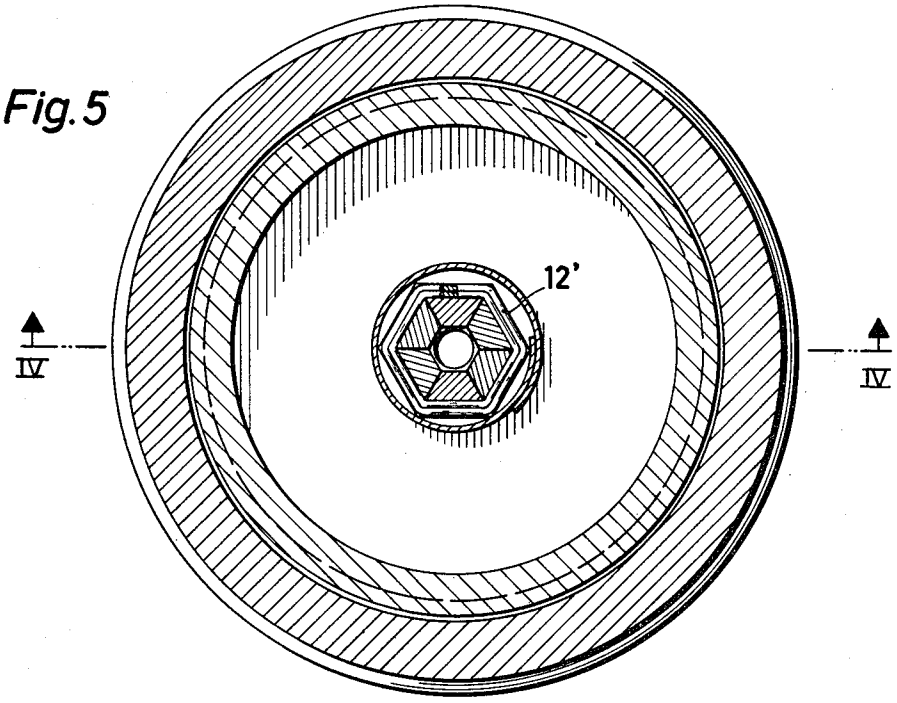


Fig. 5



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Fig. 6

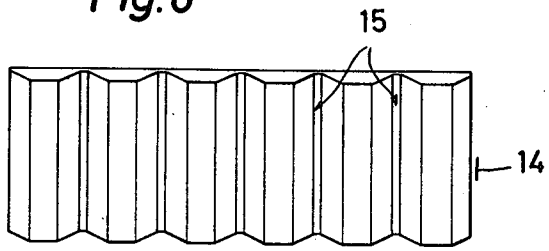


Fig. 7

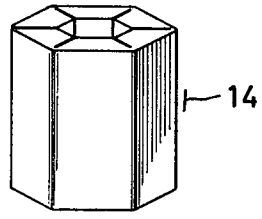


Fig. 8

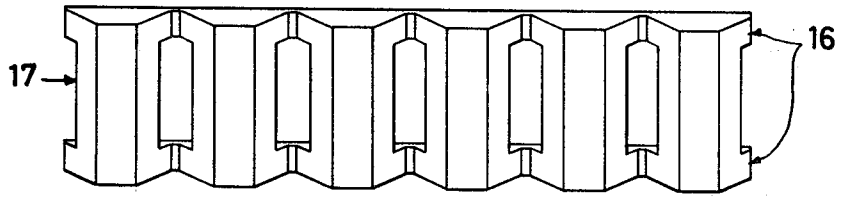
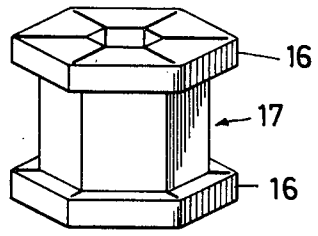


Fig. 9



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CENTRIFUGAL SPIRAL BAND LOCKING DEVICE, ESPECIALLY FOR SELF-DESTROYING FUZES

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Continuation-in-part of application Ser. No. 418,216, Oct. 14, 1964. This application Jan. 25, 1968, Ser. No. 700,472

Int. Cl. F42c *15/22, 15/04, 15/20*

U.S. Cl. 102—79 2 Claims

ABSTRACT OF THE DISCLOSURE

A fuze for rotating projectile with direct impact ignition and a self-destroying device, in which a fuze body has a firing pin and various elements including a locking device with a core sleeve of a plurality of connected elements within a centrifugal spiral member.

This application is a continuation-in-part of the copending application Ser. No. 418,216 filed Oct. 14, 1964, now abandoned.

It is known in connection with rotating projectile fuzes to lock the axial firing pin bolt by a centrifugal spiral element located behind a collar on the pin bolt. The centrifugal spiral element is wound around a core sleeve in which a centrifugal segment is mounted which engages behind the firing pin bolt flange. Its flying out and consequently the release of the pin bolt are retarded by the centrifugal spiral element.

Such a core sleeve is generally produced by turning and milling; a machining operation which is expensive.

The object of the invention is to simplify and reduce the cost of this locking device. It saves the centrifugal segment mounted in the core sleeve and can be produced by a cheap stamping or embossing process.

These advantages are attained in that, according to the invention, the core sleeve consists of a thick profiled band the inner side of which has transverse notches of triangular cross-section which are so deep that coherent band elements of quadrangular cross-section are formed, the number of notches and their angle of slope being so chosen that, when the band is bent to form the sleeve, its outer surface forms a polygon. It may also be advantageous to provide an outer flange on the upper and lower edges of the profiled band.

Two embodiments of the invention are illustrated by way of example in the accompanying drawings, in which;

FIG. 1 is a longitudinal section taken on line I—I of FIG. 2, which shows a self-destroying fuze with the new locking device;

FIG. 2 a cross-section taken on line II—II of FIG. 1 showing the fuze in locked condition;

FIG. 3 is a similar view to FIG. 2 showing the fuze in released condition;

FIG. 4 is a part longitudinal section of the fuze taken on line IV—IV of FIG. 5;

FIG. 5 is a cross-section taken on line V—V of FIG. 4, showing the fuze in locked condition;

FIG. 6 is a diametric view of the inner side of the profiled band;

FIG. 7 is a diametric view of the profiled band bent to form the winding core;

FIG. 8 is a diametric view of a modified form of construction of the profiled band, viewed from the inner side thereof, and;

FIG. 9 is a diametric view showing the band according to FIG. 8 bent into the form of a winding core.

In FIG. 1 only the parts of the fuze are shown which are of importance for the invention. Element **10** is the firing pin bolt in the space **15'** and on to which the flange **11** is lipped from the rear. Behind this, in position of rest, is a core sleeve **14**, around which a centrifugal band spiral **12** is wound which is held in wound state by a blade spring **13** bent in the form of a ring.

The band spiral **12** preferably consists of a soft material such as Cu or Al, whereas the ring-shaped blade spring **13** holding it together is of hard spring steel.

The core sleeve **14** is made from a thick section band which is shown in stretched state in FIG. 6. It has on its inner side a number of notches **15** of triangular cross-section. They are of such a depth that the band is divided in to coherent elements. The number of these elements corresponds to the intended shape of the core sleeve, which is to be polygonal. The angle of slope of the sides of the triangular cross-sections must correspond to the angle between the radii of the polygon.

The profiled band shown in FIG. 6 has six band elements the outer surfaces of which form a hexagon. The thickness of the profiled band should only be so great that the firing pin bolt can still pass through the centre of the sleeve.

As can be seen from FIG. 1, the hexagonal sleeve is directly behind the firing pin bolt **11.** The centrifugal band spiral **12** is wound around the outer side of the sleeve **14** and in turn is held together in position of rest by the centrifugal band spring **13,** shown in FIG. 2. Through the rotation of the fuze, the leaf spring **13** bends open and bears against the inner wall of the fuze bore. Then the centrifugal band spiral **12** unwinds and bears against the inner side of the bent blade spring **13.** Finally, the centrifugal force also causes the winding sleeve **14** to expand and bear against the inner side of the centrifugal band spiral wound on it. As a result, the pin bolt **10** is relieved of its support and released, as shown in FIG. 3.

Making the core sleeve by merely bending a stamped or embossed profiled band enables the fuze to be easily assembled, the assembly being further facilitated by the fact that the centrifugal band spiral can be wrapped around the polygonal wall of the core sleeve without it being necessary to hold or fix the spiral band.

Owing to the omission of the centrifugal segment hitherto located in the core sleeve, the sleeve can be smaller so that more space is available for the centrifugal spiral which then results in a longer safety period in front of the barrel.

Another advantageous construction of the new core sleeve is shown in FIGS. 4, 5, 8 and 9.

Here the sleeve is again composed of a coherent profiled band bent in the form of a polygon. In this case the profiled band has on its upper and lower edges an external flange **16** so that a recess **17** is formed between the two flanges.

In this form of construction the centrifugal spiral **12'** is wound in the recess and consists of a multilayer wire coil which is held by the centrifugal band spring **13'.**

This locking device operates in the same manner as that already described.

It is further pointed out that the core sleeve **14** is directly mounted around the thin shaft of the firing pin **10** and therefore for this reason the outer circumference of the sleeve is small and further for this reason a comparatively larger space is created for a long centrifugal safety band **12.** The space **15** has provided therein a spring **16'** and a hammer sleeve **17'** to cooperate with the pin **10.** Between the fuze head and the pin **10**

there is provided a space **15'** and adjacent the hammer sleeve **17'** there is provided a centrifugal decomposing device having an end member to lock the hammer sleeve **17'** in position which may be set free so that then the spring **16'** will force the hammer sleeve **17'** on the flange **11** and the firing pin can pierce a detonator.

We claim:

1. A core element for use in a fuze of a projectile to surround a firing pin comprising a plurality of interconnected members forming a sleeve around the pin with each member having a plurality of plane figure surfaces each in the configuration of a polygon.

2. A core element according to claim **1**, in which each end of the sleeve is provided with a circumferential flange.

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U.S. Cl. X.R.

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