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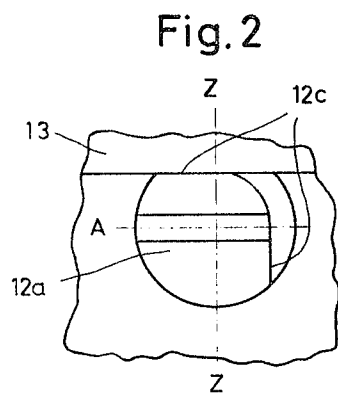
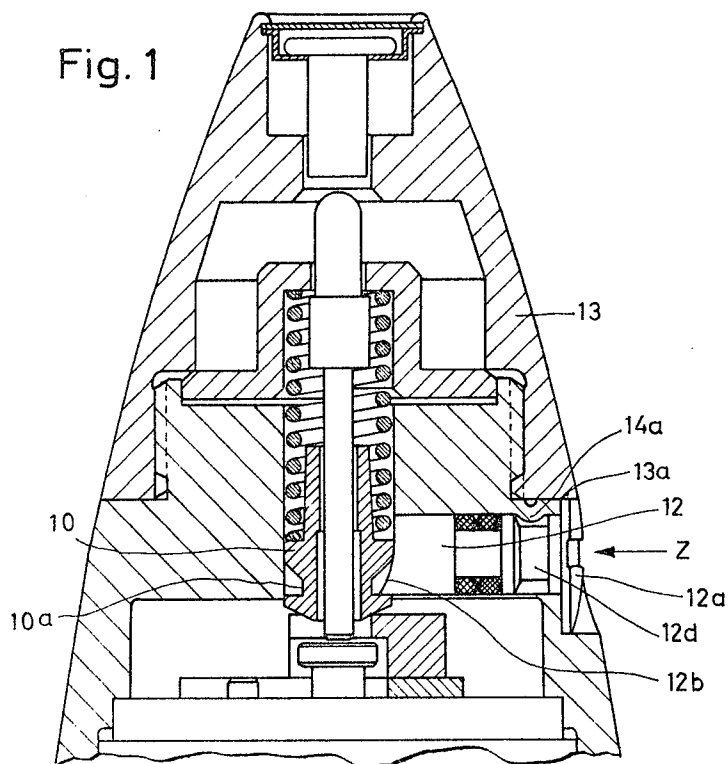
P. KAISER ETAL

3,380,384

SELF-DESTROYING FUSE

Original Filed Aug. 31, 1964

3 Sheets-Sheet 1



INVENTORS
Paul Kaiser
Josef Müller
Watson, Cole, Grindle & Watson
Attys.

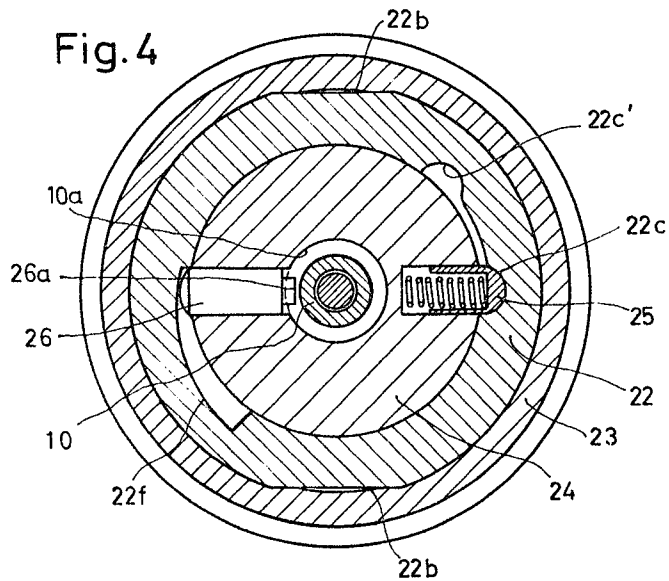
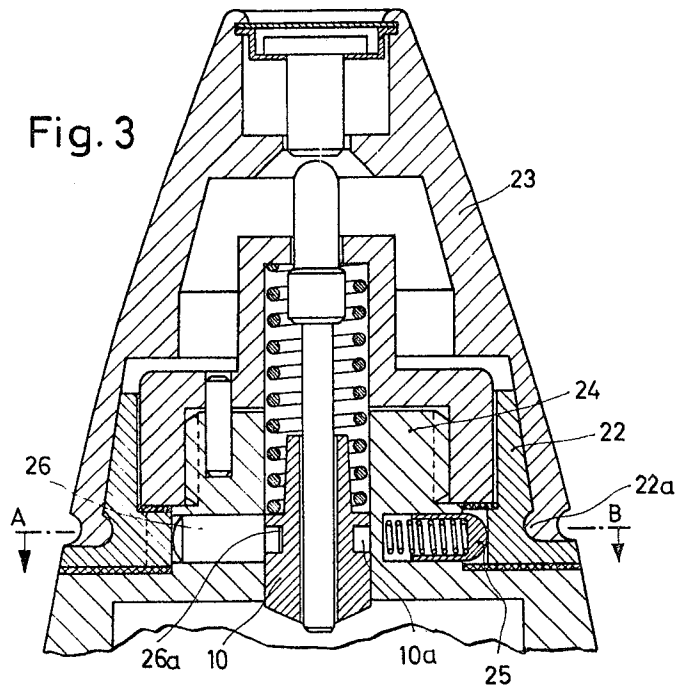
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Josef Müller
Watson, Cole, Grindle & Watson
Attys.

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P. KAISER ETAL

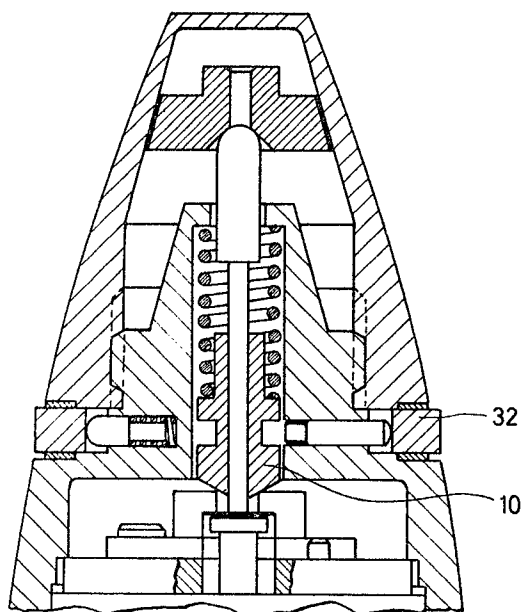
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Fig. 5



INVENTORS
Paul Kaiser
Josef Müller

Watson, Cole, Grindle & Watson
Attys.

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SELF-DESTROYING FUSE

Paul Kaiser, Schramberg, Wurttemberg, and Josef Müller, Schramberg-Sulgen, Wurttemberg, Germany, assignors to Messrs. Gebrüder Junghans Aktiengesellschaft, Schramberg, Wurttemberg, Germany, a corporation of Germany

Continuation of application Ser. No. 393,141, Aug. 31, 1964. This application Apr. 5, 1967, Ser. No. 649,754
5 Claims. (Cl. 102—71)

ABSTRACT OF THE DISCLOSURE

A self-destroying fuze having sensitive impact ignition as a self-destroying ignition device with a spring loaded hammer sleeve, a setting element to block the hammer sleeve operable from the outside of the fuze and the hammer sleeve having an external annular groove into which the setting element projects.

This application is a continuation of applicant's application filed August 31, 1964 under Serial No. 393,141, now abandoned.

Self-destroying fuzes are double fuzes which act as impact fuzes and automatically detonate after a certain time if the target is missed. When using such fuzes, it is frequently desired to cut-out the self-destroying device so that the fuze responds only on impact.

The self-destroying device normally comprises a striker-spring loaded hammer sleeve which is maintained under stress until the twisting speed of the projectile has dropped below a predetermined figure. In order to cut-out the self-destroying device, the stressed hammer sleeve can be blocked from the outside by a setting element.

For this purpose a radial setting bolt is preferably arranged in the wall of the fuze body at the height of the head of the hammer sleeve and has at its inner end a nose with a curved end face which engages in an annular groove on the outer side of the hammer sleeve head and in free position allows the passage of the hammer sleeve head. At the same time a known disc-shaped head is provided on the outer end of the setting bolt and has two flattened surfaces at right angles to each other with rounded-off connecting surface for determining the turning positions of the bolt, so that each flattened surface bears against the rear face of the fuze cap when the setting bolt is in operative position. In a modified form of construction the cut-out device consists of a radial centrifugal locking bolt mounted in an extension support on the front end face of the fuze shaft, which bolt engages with its inner end in an annular groove in the outer side of the hammer sleeve head and bears with its outer end against a run-on ramp in the inner wall of the rotatable fuze cap, whereby diametrically opposite the centrifugal locking bolt in the wall of the extension support a spring bolt is mounted which snaps into two notches in the inner wall of the fuze cap which are at an annular distance apart equal to the length of the run-on ramp. In a simpler form of construction the run-on ramp and the notches can be in a rotatable ring which is arranged between the rigid fuze cap and the fuze shaft.

Several embodiments of the invention are illustrated by way of example in the accompanying drawings in which:

FIG. 1 is a longitudinal section through a fuze point incorporating the first embodiment;

FIG. 2 is a plan view of the setting bolt;

FIG. 3 is a longitudinal section through a fuze point

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incorporating the second embodiment of the cut-out device;

FIG. 4 is a cross-section taken on the plane IV—IV of FIG. 3;

5 FIG. 5 is a longitudinal section through a fuze point incorporating the third embodiment of the self-destroying control.

Fuze parts which are not necessary for explaining the invention are not described.

10 The known hammer sleeve 10 of the self-destroying device is loaded in known manner by a striker spring. At the rear end of the hammer sleeve 10, which is constructed in the form of a head, an annular groove 10a is cut. Adjacent this annular groove a radial setting bolt 12 is 15 mounted in the wall of the fuze body and sealed yet can turn in its bore. This bolt 12 has at its inner end a head, the end face of which is provided with a nose 12b and bevelled in the form of a curve. When this nose is in locking position it engages in the annular groove 10a in the hammer sleeve 10. If the bolt 12 is turned through an angle of 90°, FIG. 2, the end of nose 12b allows the 20 hammer sleeve to pass through the curved bevel.

The setting bolt 12 has on its outer end a disc-shaped head 12a which is countersunk in the wall of the fuze shaft and has a screw nick or slot. The grooved head 25 12a has two flattened portions 12c at right angles to each other. The common corner between them is rounded in such a manner that when the setting bolt is turned each flattened portion can bear against the rear face 13a of the fuze cap 13 and limits the turning of the bolt.

30 To prevent the setting bolt 12 from moving accidentally out of its seat, an annular groove 12d is cut in the bolt shank behind the disc-shaped head 12a and a bead 14a punched out from the front face of the fuze shaft wall engages in this groove 12d.

35 For cutting-out the self-destroying device, the setting bolt is turned so that the nose 12b on its inner end face engages in the annular groove 10a in the hammer sleeve 10. Only the impact detonating device of the self-destroying fuze can now function. If the self-destroying device is to be again rendered operative, the setting bolt 12 40 is turned through an angle of 90° so that the curved side of the end nose 12b, which corresponds to the contour of the hammer sleeve 10, allows this sleeve to pass.

45 In another embodiment of the cut-out device illustrated in FIGS. 3 and 4, the self-destroying fuze has a known setting cap 23 in the rear end of which a ring 22 is fitted which is rigidly connected with the setting cap by a bead 22a on the edge of the cap 23 and by the flattened portions 22b. This ring has an internal recessed run-on ramp 22f and opposite thereto two internal recesses or notches 22c, 22c' at an angular distance apart 50 equal to the length of the recessed ramp 22f. The ring 22 turns with the setting cap 23 on a support 24 which is formed on the roof of the fuze shaft. In the wall of the support 24 a centrifugal locking bolt 26 and a spring bolt 25 are arranged diametrically opposite each other. The locking bolt 26 is loosely mounted in its bore seat and its outer end engages in the run-on ramp 22f, whereas 55 its inner end has a central nose 26a which can engage in an annular groove 10a in the outer wall of the hammer sleeve 10.

The diametrically opposite spring bolt 25 has an internal pressure spring which forces it outwards so that it can engage in one of the notches 22c, 22c' and thus fix the setting cap 23.

60 If the setting cap 23 is turned so that the locking bolt 26 is pushed inwards by the bottom of the ramp 22f, its end nose 26a enters the annular groove 10a in the hammer sleeve 10 and fixes the hammer sleeve. This state is

illustrated in FIG. 3. It shows the blocked position. If the setting cap is then turned into the self-destroying position in which the spring bolt 25 snaps into the notch 22c', the inner end of the locking bolt 26 is no longer held in engagement with the annular groove 10a by the run-on ramp 22f so that the locking bolt is loose in its guide bore. The centrifugal force produced by the rotation of the projectile then becomes operative with the result that the locking bolt slides into the deep end of the run-on ramp and its nose 26a releases the hammer sleeve, in that its nose 26a passes out from the annular groove 10a in the sleeve 10. The self-destroying device is then released and again operative.

Appropriate index markings are provided on the fuze.

A third embodiment of the self-destroying device control is illustrated in FIG. 5 and represents a simplification of the embodiment shown in FIGS. 3 and 4.

Here a setting ring 32 is used instead of the setting cap as operating element and is arranged between the rigid fuze cap and the fuze shaft. Its function is similar to that of the setting cap shown in FIG. 3, so that a special description is unnecessary.

We claim:

1. In a self-destroying fuze having sensitive impact ignition, a self-destroying ignition device comprising a firing pin, a spring loaded hammer sleeve, surrounding the firing pin, a setting element to block the hammer sleeve and which can be operated from outside the fuze, and said hammer sleeve having an external annular groove into which the setting element projects.

2. In a self-destroying fuze according to claim 1, in which the setting element is in the form of a rotatable setting bolt mounted in a fuze body, the bolt in a blocking position engaging in the annular groove in the hammer sleeve to lock the same and in a free position allowing the passage of a hammer sleeve head.

3. In a self-destroying fuze according to claim 1, in which the setting element is in the form of a rotatable setting bolt mounted in a fuze body, the bolt in a blocking position engaging in the annular groove in the hammer sleeve to lock the same and in a free position allowing the passage of a hammer sleeve head, and the setting

bolt having on an outer end a disc-shaped head with a screw slot for turning the bolt and the disc-shaped head having two flattened portions at right angles to each other and a rounded off portion at the junction of the two flattened portions to limit the rotation of the setting bolt, so that in operative position each flattened portion bears against a rear face of a rigid fuze cap.

4. In a self-destroying fuze according to claim 1, in which a rotary fuze cap, a radial centrifugal locking bolt, and a spring bolt are provided with the locking bolt arranged in an extension support at the front end of the fuze and engages with its inner end in an annular groove in the hammer sleeve and bears with its outer end against a run-on ramp cut in the rotary fuze cap, the spring bolt being diametrically opposite the locking bolt in a wall of the extension support and can snap into either of two notches in the fuze cap arranged at an angular distance apart equal to the length of the run-on ramp.

5. In a self-destroying fuze according to claim 1, in which a rotary fuze cap, a radial centrifugal locking bolt, and a spring bolt are provided with the locking bolt arranged in an extension support at the front end of the fuze and engaging with its inner end in an annular groove in the hammer sleeve and bears with its outer end against a run-on ramp cut in the rotary fuze cap, the spring bolt being diametrically opposite the locking bolt in a wall of the extension support and can snap into either of two notches in the fuze cap arranged at an angular distance apart equal to the length of the run-on ramp, and in which a rotatable setting ring is provided with the run-on ramp and the notches being arranged therein.

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BENJAMIN A. BORCHELT, *Primary Examiner.*

G. H. GLANZMAN, *Assistant Examiner.*