

Jan. 8, 1946.

A. F. TEITSCHIED

2,392,430

FUSE

Filed Feb. 12, 1942

Fig. 1-

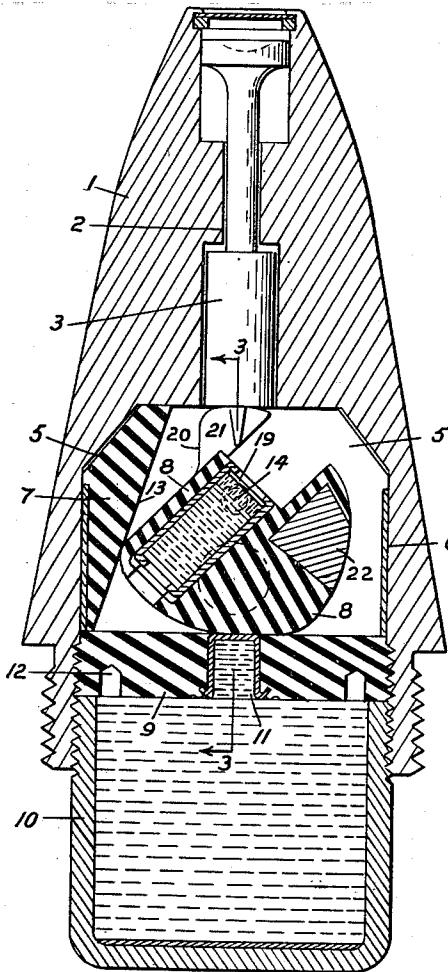


Fig. 2-

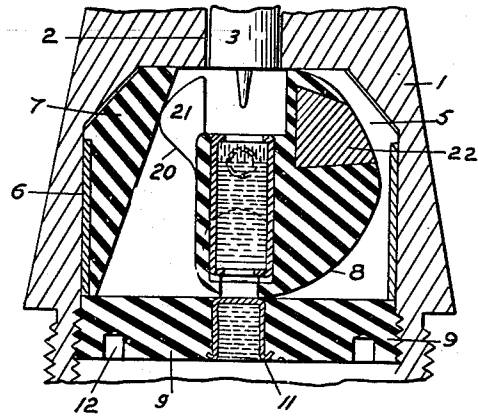
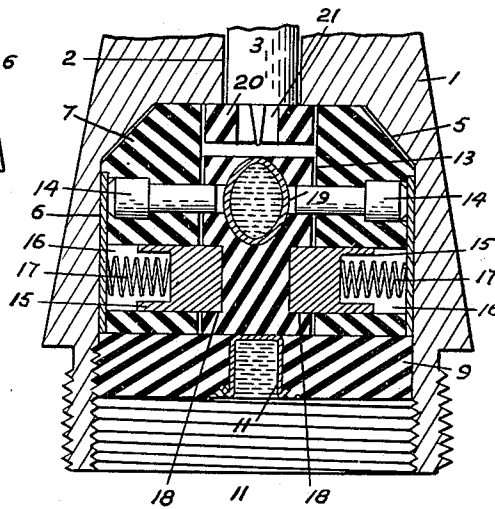


Fig. 3-



Inventor
Alfred F. Teitscheid

By *G. F. Kessenich & J. W. Church*

Attorneys

UNITED STATES PATENT OFFICE

2,392,430

FUSE

Alfred F. Teitscheid, Wharton, N. J.

Application February 12, 1942, Serial No. 430,587

1 Claim. (Cl. 102—79)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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

This invention relates to projectile fuses and in particular to the type having a rotatable firing member positioned by gyration of the projectile of the type shown in French Patent 687,004 and in British Patent 475,596.

The fuse embodies safety features also operating on the centrifugal principle. It is simple of construction and lends itself to manufacture either from die castings or plastics in addition to the conventional methods of manufactures, as from bar stock.

It is therefore an object of the invention to produce a fuse which shall be safe in handling and armed by centrifugal force in firing and comprising a minimum number of parts.

It is a further object of the invention to produce a fuse having a centrifugally operated arming member of non-metallic material.

To these and other ends, the invention consists in the construction, arrangement and combination of elements described hereinafter and pointed out in the claim forming a part of this specification.

A practical embodiment of the invention is illustrated in the accompanying drawing wherein:

Figure 1 is a view in axial section of a fuse embodying the invention, showing the safe position,

Figure 2 is a fragmental view, similar to Figure 1 and showing the fuse in armed position, and

Figure 3 is a fragmental sectional view taken on the line 3—3 of Figure 1.

Referring to the drawing by characters of reference there is shown a projectile nose piece 1 carrying in an axial passage 2, a firing pin 3 and a dust cap 4. Inserted in an enlarged chamber 5 is a sleeve 6 surrounding a bearing member 7 for the fuse rotor 8. Threadedly received in the rear of the chamber 5 is a retainer and partition 9, and a booster container 10. The partition 9 has an intermediate ignition component 11 for transmitting the detonation to the booster, and the partition may be equipped with spanner holes 12.

The rotor 8 is received in a slot 13 in the bearing member 7 and is rotatable about pins 14 in the bearing member. Centrifugal blocks 15 in bores 16 in the bearing member are urged by springs 17 into engagement with bores 18 in the rotor 8 to maintain the rotor in safe position.

Contained in a bore in the rotor 8 is a primer

capsule 19, alignable with the firing pin and ignition component 11 in one position of the rotor 8.

The rotor is designed to contact the rear wall of the slot 13 of the bearing member 7 and the partition 9 to limit rotation of the rotor 8 in the clockwise sense, and in this position, an upstanding portion 20 of the rotor 8 underlies the firing pin to restrain the rearward motion of the same, being slotted as at 21 to receive the point of the firing pin.

In the preferred form, the rotor comprises a non-metallic material, and a heavy insert 22 is provided in order to shift the center of gravity away from the axis of rotation of the projectile. However, proper location of the center of gravity may be provided for in the design of a metal rotor.

On firing the projectile, setback forces are at first predominant, acting on the center of gravity of the rotor to rotate the same in a clockwise sense, acting on the firing pin to further bind the rotor, and acting on the safety bolts to prevent their withdrawal.

After abatement of setback forces, the centrifugal forces come into play, first withdrawing the blocks 15, and then aligning the primer 19 by tending to bring the center of gravity of the rotor 8 into the direction of the force, that is to say, radially of the projectile. This leaves the firing pin free and on impact it is forced into the primer.

The rotor, bearing member, sleeve and partition, any or all of them may consist of molded Bakelite or any other of the known plastics, such as formaldehyde urea, cellulose derivatives, vinyl compounds, methacrylates, casein products or lignin. In addition to the prepared resins, natural resins may also be employed and the broad term "non-metallic" is intended to include, for example, such substances as hard and soft rubber, wood, paper and leather, and in general any organic or fibrous material.

The use of a light material for the rotor permits of the displacement of the center of gravity by means of a heavy insert without unduly increasing the size of the rotor.

The sleeve 6 not only serves as a reinforcement for the bearing member 7 but also permits assembly prior to insertion in the projectile.

I claim:

In a centrifugally armable fuse having a chamber, a firing pin axially mounted therein and entering said chamber, a bearing member in the chamber and having a slot therein, a rotor pivoted in said slot and having a primer maintained at an angle to the axis of the firing pin when the fuse is in unarmed position, the rotor being

formed with a portion engaging the side wall of the bearing member when in said unarmed position to limit the rotation of the rotor in clockwise direction, and a projection on the rotor engaging the firing pin when the rotor is at the limit of its clockwise movement to lock the firing pin in unarmed position, said projection being also adapted to engage the side wall of the bearing member to limit the anticlockwise movement of the rotor when, by centrifugal force, the rotor is rotated to bring the primer in line with the firing pin, the rotor also being provided with oppositely disposed recesses below its pivotal point, and spring-

back blocks slidably mounted in the bearing member and extending into said recesses and normally locking the rotor against rotation said blocks having a substantial lower bearing surface in the recesses of the rotor and in the bearing member to augment the effect of setback forces, said blocks being adapted to be acted upon by initial setback forces to prevent the withdrawal of the blocks until after the cessation of said forces, when the said blocks are withdrawn from said recesses by centrifugal forces to allow the rotor to operatively respond to centrifugal forces to arm the fuse.

ALFRED F. TEITSCHIED.