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H. JUNGHANS

2,130,720

CENTRIFUGAL FUSE

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Fig. 1.

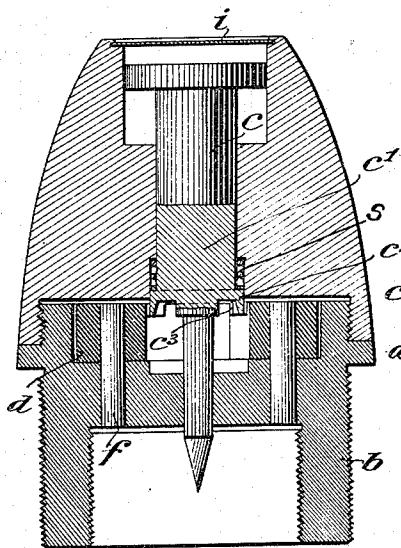


Fig. 3.

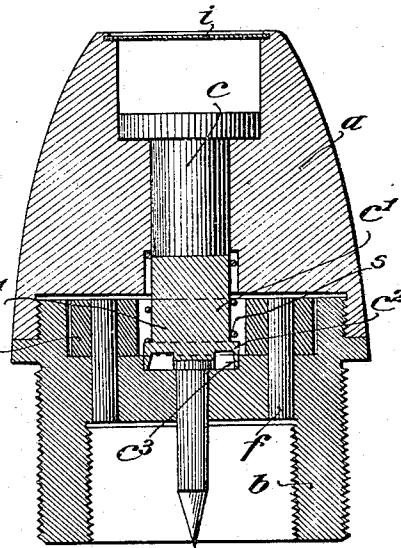


Fig. 2.

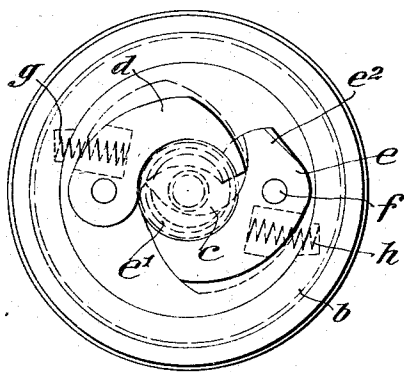
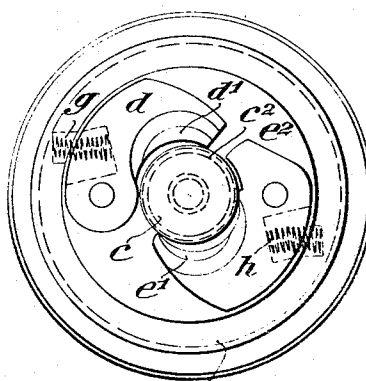


Fig. 4.



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CENTRIFUGAL FUSE

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4 Claims. (Cl. 102—39)

The invention relates to detonators with centrifugal jaw arrangement for securing the ignition pin and has for its object to provide special means for securing the centrifugal jaws.

According to the invention, the centrifugal jaws are locked in the rest position owing to the fact that the ignition pin holds them together by means of a locking arrangement.

In a suitable form of construction according to the invention the locking arrangement consists of a projection arranged on the ignition pin, which is formed of an annular recess in the ignition pin and in the safety position engages with projections of the centrifugal jaws. In order to facilitate the swinging out of the centrifugal jaws when the centrifugal force is exerted, the surface of the ignition pin recess which lies opposite the projections is provided with an inclination.

According to a further feature of the invention, a locking device is provided which prevents the ignition pin projection from leaving the centrifugal jaws in the inoperative position of the parts. Moreover, resilient means may be arranged on the centrifugal jaws so that the latter must overcome an increase resistance in their movement in the outward direction.

A constructional example of the invention is illustrated in the accompanying drawing, in which:

Figure 1 is a longitudinal section of the detonator with the parts in the safety position,

Figure 2 is a plan view of the detonator parts according to Figure 1, the cap being removed,

Figure 3 is a longitudinal section of the detonator according to Figure 1, the ignition pin lying in the position ready for operation, and

Figure 4 is a plan view of the detonator parts according to Figure 3.

In the axis of the detonator casing formed of the cap *a* and the base *b*, is situated the ignition pin *c* adapted to slide in the axial direction. Two centrifugal jaws *d* and *e* are arranged in a recess in the base and are adapted to carry out pivotal movements about pins *f*. While in the inoperative position, these centrifugal jaws lie under a collar *c*₁ on the ignition pin and thus ensure it against axial movement in the direction of the primer (not shown). In the collar *c*₁ of the ignition pin, a recess is produced by an annular flange *c*₂ having a cam surface *c*₃ in which the centrifugal jaws *d* and *e* engage. On the upper sides of the centrifugal jaws are situated segments *d*₁ and *e*₁ engaging behind the flange of the ignition pin, so that the centrifugal jaws are prevented from swinging out. The collar of

the ignition pin therefore carries out a double function: first, by the placing of the centrifugal jaws under this collar the ignition pin is prevented from moving into the firing position, and thereupon the collar holds together the centrifugal jaws by its special construction according to the invention, so that they are locked in the inoperative position of the parts by the weight of the ignition pin. In order further to increase the pressure of the ignition pin, a helical spring *s* may be provided for this purpose, which is mounted about the ignition pin or collar *c*₁.

The arrangement of the centrifugal jaws with respect to one another is such that although the jaws both press against the inner edge of the recess of the ignition pin under the action of centrifugal force, only one of the centrifugal jaws *d* can rock out when the ignition pin is lifted, whereupon, after the jaw *d* has reached its terminal position, the centrifugal jaw *e* commences to move. This is achieved by a lug *e*₂ provided on the jaw *e*, by which this jaw is locked in the safety position until the centrifugal jaw *d* after rocking out completely no longer lies in the path of the lug *e*₂ and has consequently released the jaw *e*.

In order to lengthen the period of time in which the centrifugal jaws *d* and *e* traverse their path, helical springs *g* and *h* mounted against the centrifugal jaws are provided, the counter-pressure of which must also be overcome by the centrifugal jaws on their rocking movement in the outward direction.

The safety device according to the invention operates in the following manner:

Owing to the firing, the ignition pin *a* presses with its annular flange *c*₂ against the groove of the centrifugal jaws *d* and *e* under the force of inertia acting during the drive, and holds them together until the acceleration of the projectile upon leaving the barrel ceases. When the projectile is situated outside the barrel, the pressure of the ignition pin is overcome by the centrifugal force which has meanwhile been set up, the centrifugal jaws lifting the ignition pin until the projections *d*₁, *e*₁ are released, by pressing against the inclined surface of the ignition pin recess. At first only the centrifugal jaw *d* can move outwards, the centrifugal jaw *e* being locked by the lug *e*₂ in its movement until the jaw *d* has completely traversed its path. Not until then does the centrifugal jaw *e* swing outwards, whereby the ignition pin is released for the sensitive percussion action.

Having now particularly described and ascer-

tained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A direct impact percussion fuse comprising
5 an ignition pin, a collar for said pin having an axially and downwardly extending flange, centrifugal jaws pivotally mounted and cooperating with said ignition pin and each jaw having an axially and upwardly extending flange, said collar being
10 provided on the pin at the upper side of the jaws and the flanges of the jaws in the normal position and in radial extension lie behind the flange of the collar of the ignition pin so that the pin interlocks the jaws in the normal position and
15 must be moved forwardly at first under the influence of centrifugal force acting upon the jaws before the jaws can move freely outwardly, and

a spring associated with the collar to constantly urge the ignition pin into the centrifugal jaws.

2. A direct impact percussion fuse according to claim 1, in which a base is provided in which the centrifugal jaws are pivotally mounted, and in which a spring is provided in the base for each jaw to force said jaws inwardly around their pivot pins.

3. A direct impact percussion fuse according to claim 1, in which each jaw and the collar have cooperating bevelled contacting faces.

4. A direct impact percussion fuse according to claim 1, in which one of the jaws is provided with a lug normally interlocking with a portion of the other jaw so that the jaws will release the pin one after the other.

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