O. GUERRITORE.

PERCUSSION FUSE.

APPLICATION FILED DEC. 19, 1918.

1,327,037. Patented Jan. 6, 1920.

Fig. 1.

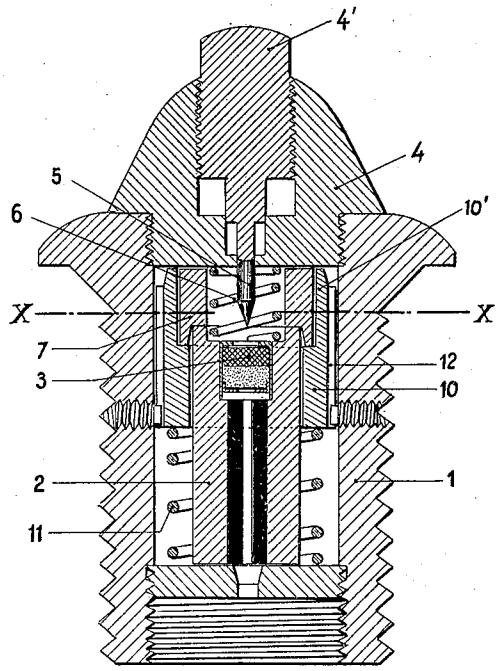


Fig. 2.

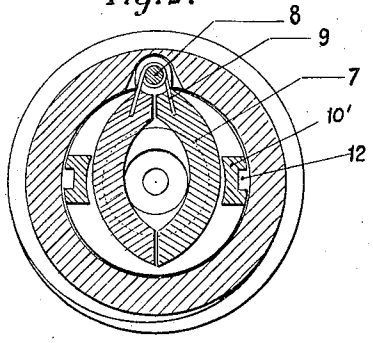


Fig. 4.

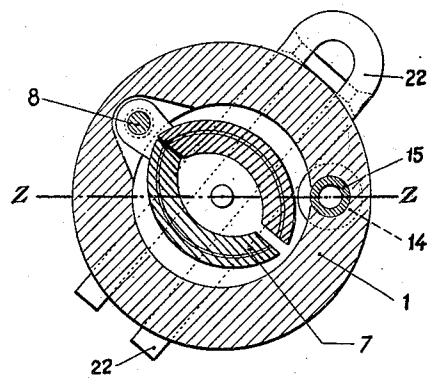
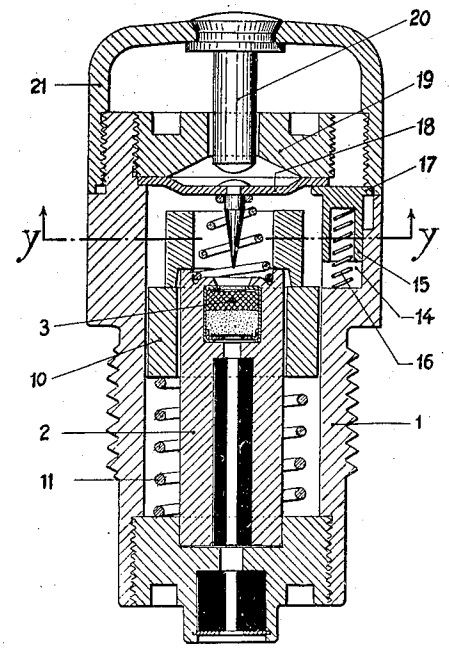


Fig. 3.



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PERCUSSION-FUSE.

1,327,037. Specification of Letters Patent. Patented Jan. 6, 1920.

Application filed December 19, 1918. Serial No. 267,531.

To all whom it may concern:

Be it known that I, ORAZIO GUERRITORE, subject of the King of Italy, and resident of Rome, in the State of Italy, have invented certain new and useful Improvements in Percussion-Fuses, of which the following is a specification.

The invention relates to the percussion fuses of the type in which the percussion pellet is locked in safety position by means of members which are released on firing or at the beginning of the flight, and has for its object to provide an arrangement of parts the size and mutual function of which insure a safe working of the fuse without necessity of great care in the construction.

In the annexed drawing:

Figure 1 is an axial vertical section of a form of construction of the fuse according to the invention,

Fig. 2 is the transverse section taken on line X—X, Fig. 1,

Fig. 3 is the axial vertical section of a modified construction taken on line Z Z of Fig. 4, which shows the transverse section taken on the line Y Y, Fig. 3.

The reference character 1 indicates the body of the fuse bored out to form a cylindrical chamber into which is fitted a graze pellet 2 carrying at its front side the detonator 3. The mouth of the said chamber is closed by a plug 4 provided with an axial needle 5 projecting inwardly toward the detonator, said needle being surrounded by the spiral spring 6, compressed between the plug and the pellet. At the sides of the needle 5 two arc-shaped members 7 are mounted, each pivoted at one end on the bolt 8, so that said members 7 form a sort of pincers which may be normally held in closed position for instance by a spring 9 embracing the bolt 8 and acting on the two members 7.

The rear edge of each of the members 7 is provided with a shoulder and the front end of the pellet 2, in its normal position, bears on to said edge.

The members 7, when in the closed position shown in the drawing, are locked by two bars or projections 10′ extending longitudinally from a sleeve 10 surrounding the pellet 2 and held in its forward end position by a spring 11.

The said sleeve 10 and bars 10′ are provided with two longitudinal slots 12 each engaged by the point of a screw 13.

On shock of discharge, the sleeve 10 sets back by inertia compressing the spring 11, so that the projections or bars 10′ release the members 7 which, under the action of centrifugal force due to the rotation of the shell, move away from each other and come into contact with the walls of the cylindrical chamber.

The members 7 are then locked in the open position by the projections 10′ which, after the first shock, will move again forward with the sleeve 10 under the reaction of the spring 11, the ends of said projections 10′ engaging thus the inner side of the shoulder on the rear edge of the members 7.

The pellet 2 is thus free and on impact or percussion it is driven forward by inertia, carrying the detonator 3 on to the needle 5 so that the explosive charge will be ignited.

When the fuse is to be applied to a nonrotating shell, the construction may be the same as that above described, but in this case the spring 9 is so wound upon the pin 8 as to force the members 7 outwardly. Thus when the projections 10′ set back at the firing, the members move away from each other under the action of the spring and are then held in open position by the ends of the projections 10′ re-advanced with the sleeve 10 by the action of the spring 11.

In order to prevent any possibility of a premature igniting in the bore of the gun or near the muzzle, and so prevent the members 7 moving at the beginning of the flight, a supplemental safety may be provided as shown in Figs. 3 and 4.

It consists of a bolt 15 fitted in a hole 14 bored in the body 1 parallel with the axis of the fuse and at the side of one member 7, said bolt being held in the end position shown by the spring 16.

The said bolt 15 carries at its front end a projection, such as the head 17, and is mounted with respect to the adjacent member 7 in such a position that, when moved back, it locks the said member, the head 17 bearing on the side of the same.

On shock of discharge the bolt sets back by inertia and prevents any displacement of the adjacent member 7, but immediately after the spring 16 jams the bolt 15 forward so that, the sleeve 10 being in the meantime set back, both members 7 are unlocked and they open, being then locked in open position by the spring 11. The pellet 2 is free and on impact it will move forward on to the needle 5 as before stated.

In order to insure the piercing of the det-

onator even in the case that the fuse mechanism fails, the needle 5 may be mounted on a plug 4' the forward end of which projects from the top of the fuse and screwed in the main plug 4 in such a manner that it will be sunk on impact, carrying thus the needle on to the detonator 3. ((Fig. 1).

In Fig. 3 a preferred construction is shown in which the needle 5 is carried on a disk 18 fitted in the chamber of the body 1 and positioned by a rim 19 fixed in the mouth of said chamber. The central hole of said rim serves as a guide for a pin 20 projecting inwardly from a cap 21 which is fixed on the top of the body 1. A safety pin or stirrup 22 inserted between the cap 21 and the rim 19 prevents any forward movement of the pin 20.

When the safety stirrup is withdrawn, any deformation of the cap, which will be provoked by a shock in any direction, causes an axial displacement of the pin 20, the same being guided by the hole of the rim 19, so that the needle 5 is thrust against the detonator 3 carried on the pellet 2.

What I claim as my invention and desire to secure by United States Letters Patent is:

1. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, two pivoted members in front of said pellet controlled by a spring, the pellet bearing on the said members when closed, a sleeve surrounding the pellet, projections on said sleeve to engage the two pivoted members, a spring acting on the rear edge of the sleeve and an axial needle in front of the detonator.

2. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surrounding the pellet, projections on said sleeve to engage the locking means, a spring acting on the rear end of the sleeve, means adapted to engage momentarily the locking means and an axial needle in front of the detonator.

3. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surrounding the pellet, projections on said sleeve to engage said locking means, a spring acting on the rear end of the sleeve, a bore parallel to the axis of the fuse, a spring bolt slidable in said bore, means on said bolt adapted to engage the locking means and an axial needle in front of the detonator.

4. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surrounding the pellet, projections on said sleeve to engage said locking means, a spring acting on the rear end of the sleeve and an axial needle carried in front of the detonator by means not rigidly fixed to the body, said means being adapted to impart an axial displacement to the needle on shock of impact.

5. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surrounding the pellet, projections on said sleeve to engage said locking means, a spring acting on the rear end of the sleeve, means adapted to engage momentarily the locking means and an axial needle carried in front of the detonator by means not rigidly fixed to the body, said means being provided to impart an axial displacement to the needle on shock of impact.

6. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surrounding the pellet, projections on said sleeve to engage said locking means, a spring acting on the rear end of the sleeve, an axial needle carried in front of the detonator, a deformable cap at the top of the fuse and a pin projecting inwardly into said cap and abutting on the needle, and a rim surrounding said pin to guide its displacement on deformation of the cap by shock of impact.

7. In a percussion fuse comprising a body with a cylindrical chamber, a pellet in said chamber, a detonator carried on said pellet, automatically removable locking means in front of said pellet, the pellet bearing on the said means when in operative position, a sleeve surounding the pellet, projections on said sleeve to engage said locking means, a spring acting on the rear end of the sleeve, means adapted to engage momentarily the locking means, an axial needle carried in front of the detonator, a cap at the top of the fuse, a pin projecting inwardly in said cap and in alinement with the needle, and a rim through the hole of which said pin is guided.

Signed at Rome in the State of Italy this 26th day of November, A. D. 1917.

ORAZIO GUERRITORE.

Witnesses:

CARLO TORAY,

MORIO EREOLINI.