No. 809,885. PATENTED JAN. 9, 1906.

L. ABENDROTH.

IMPACT FUSE.

APPLICATION FILED MAY 26, 1905.

Fig. 1.

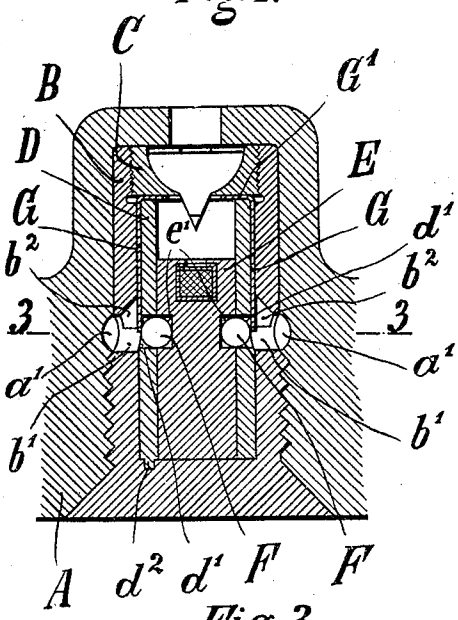


Fig. 2.

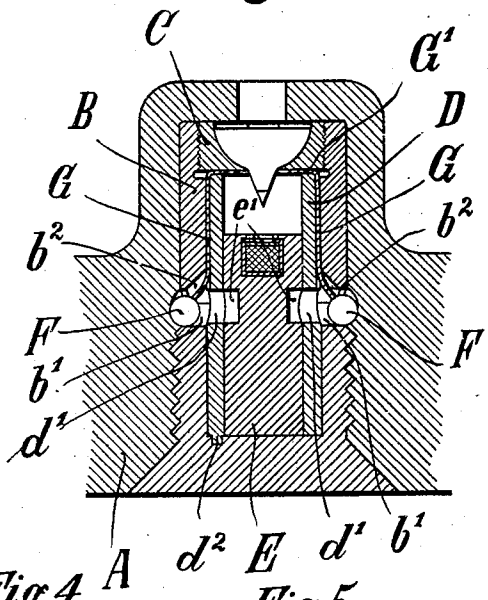


Fig. 3.

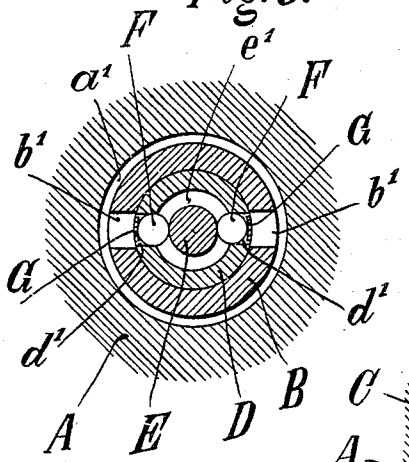


Fig. 4.

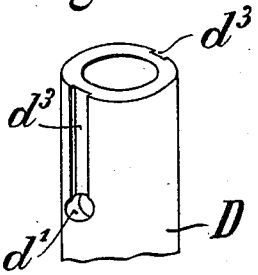


Fig. 5.

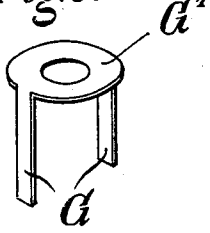
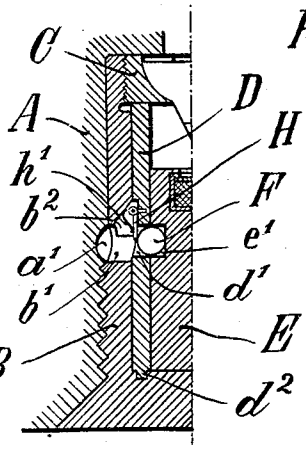


Fig. 6.



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IMPACT-FUSE.

No. 809,885. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed May 26, 1905. Serial No. 262,455.

To all whom it may concern:

Be it known that I, LOUIS ABENDROTH, a subject of the German Emperor, and a resident of 25 Andreasstrasse, Rüttenscheid, near Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Impact-Fuses, of which the following is a specification.

The present invention relates to impact-fuses provided with a securing device, which is withdrawn by the centrifugal force during the rotation of the shot; and the object of the invention is to prevent the return of the withdrawn securing device when the shot hits the target. The means which I employ for the said purpose are of simple construction and reliably hold the securing device in the withdrawn position, thereby excluding the possibility of blind shots.

Two embodiments of the invention are shown as applied to a base-fuse in the accompanying drawings, in which—

Figure 1 is an axial longitudinal section of the secured fuse of one embodiment of the invention and part of the base of the shot. Fig. 2 is a view corresponding to Fig. 1, the securing device being withdrawn. Fig. 3 is a section on line 3 3 of Fig. 1 seen from above. Figs. 4 and 5 are detail views, and Fig. 6 shows a part of a second embodiment of the invention in a view corresponding to Fig. 1.

The fuse-body B, Figs. 1 to 3 and Fig. 6, which is screwed into the base A of the shot, is provided with a central bore receiving a cylindric sleeve D (see also Fig. 4) and closed by the needle-carrier C. The sleeve D fits tightly within the fuse-body B and cannot move in the direction of the axis, and it is held from rotation within the fuse-body by means of a stud d^2, which projects into a recess in the fuse-body. The cylindric primer-bolt E is slidably arranged in the sleeve D. In order to secure the primer-bolt in the position of transport shown in the drawings, the following arrangement is provided: The sleeve D has two perforations d', located diametrically opposite each other, and the cylindric wall of the primer-bolt E is provided with an annular groove e' of rectangular cross-section. The diameter of the perforations d' corresponds to the width of the groove e', (measured in the direction of the longitudinal axis of the fuse.) The location of the groove e' is such that the groove registers with the perforations d' when the primer-bolt E is in the position of transport. When the fuse is in the secured position, Figs. 1, 3, and 6, each of the perforations d', with the adjacent parts of the annular groove e', receives a ball F, which is of same diameter as the perforations, while the depth of the groove e' is equal to the radius of the balls. The balls F, which rest on the bottom of the groove e', prevent the primer-bolt E from moving toward the needle during the transport of the fuse and also prevent the bolt from rebounding from its support (the bottom of the fuse-body B) under the reaction of the shock caused by the firing. The balls F constitute the moving part of the securing device to be withdrawn by the centrifugal force. In order to provide for the withdrawing of the balls, each of the perforations d' registers with a perforation b' in the fuse-body. The perforations b' are coaxial with the perforations d' and are preferably of slightly greater diameter than the perforations d'. Furthermore, the wall of the bore of the base A, which receives the fuse, is provided with an annular groove a'. In the embodiment shown in Figs. 1 to 5 each of the balls F is retained in the securing position by the free end of a sheet-metal strip G′ (See also Fig. 5.) The strips G are integral with a ring G′, which is jammed between the sleeve D and the needle-carrier C. The portion of the strips that is located between the perforation d' and the ring G′ rests in a groove d^3, Fig. 4, in the sleeve, the depth of which corresponds to the thickness of the strips G. The thickness of the wall of the sleeve D is such that when the balls are in the securing position they lie against the bottom of the groove e' and the strips G and the strips assume the straight position shown in Figs. 1 and 5. The strips are of such elastic material and such dimensions that when the balls move outwardly under the action of the centrifugal force the strips can be bent by the balls to such an extent that the balls can reach the position shown in Fig. 2 and that the strips after they have been bent by the balls rebound to assume a position such as that shown in Fig. 2. In order to permit of the strips G being bent by the balls F, recesses b^2 are provided in the fuse-body B, as

shown in Figs. 1 and 2. The free ends of the strips are therefore a sort of spring-flaps, which can swing on an axis which is located in the proximity of the upper edge of the recesses b^2.

The operation of the securing device is as follows: When the gun is discharged, the centrifugal force causes the balls F to move outwardly to the position shown in Fig. 2. The primer-bolt E is thus released and the fuse is ready for ignition. During their outward movement the balls F bend the ends of the sheet-metal strips G so far outwardly until the balls allow the elasticity of the strips to return the strips to the position shown in Fig. 2. In this position the sheet-metal strips prevent the balls F from returning to the securing position under the action of lateral shocks to secure the primer-bolt E against forward movement. Such shocks may be caused by the shot hitting the target sidewise. The sheet-metal strips G thus form both a transport-securing means for the balls and a means for preventing blind shots.

In the embodiment shown in Fig. 6 the ring G′ and the strips G are replaced by a flap H, which is hinged to the sleeve D in the proximity of the upper edge of the recesses b^2 and which is under the action of a spring h', that is secured to the fuse-body B. The mode of operation of this embodiment is similar to that of the embodiment shown in Figs. 1 to 5 with relation to the securing of the balls in the position of transport, Fig. 6, and in the withdrawn position.

Without departing from the scope of my invention I might substitute a short bolt having round ends for the balls F.

Having described my invention, what I claim as new is—

1. In an impact-fuse, the combination with a longitudinally-movable primer-bolt, of centrifugally-operated securing means movable transversely of the bolt to release said bolt, and means projecting into the path of travel of said securing means and constructed to be moved out of the path of said securing means, when said securing means is moved by centrifugal force, to permit the securing means to unlock the primer-bolt, and to move again into the path of the securing means to prevent the said securing means again locking the primer-bolt.

2. The combination with the centrifugally-operated securing means of a fuse, of means moved by the securing means during its outward travel and adapted to enter the path of travel of the securing means after the passage of said securing means to prevent the return thereof.

3. The combination with the centrifugally-operated securing device of a fuse, of means projecting into the path of travel of the movable part of said securing device and holding said part in the secured position; said means being adapted to be displaced by the movable part of the securing device to permit the outward movement thereof and rebounding to secure said part in its outer position.

The foregoing specification signed at Düsseldorf this 13th day of May, 1905.

LOUIS ABENDROTH.

In presence of—
PETER LIEBER,
E. HERBER.