Aug. 30, 1932. C. FOULON 1,874,951

GRENADE AND LANCE GRENADE

Filed May 12. 1931

Fig. 1.

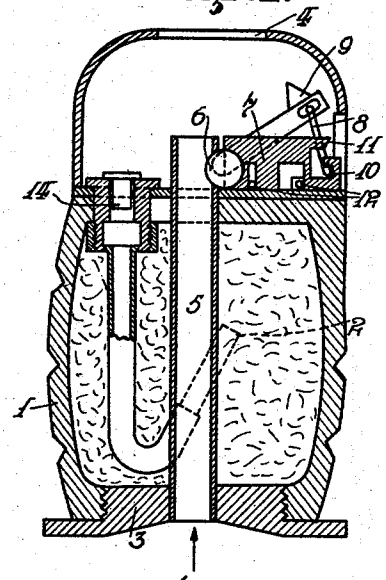


Fig. 2.

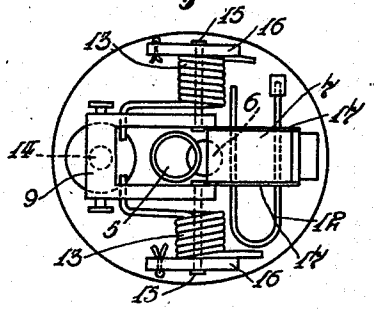


Fig. 3.

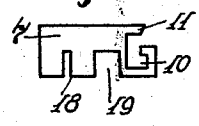
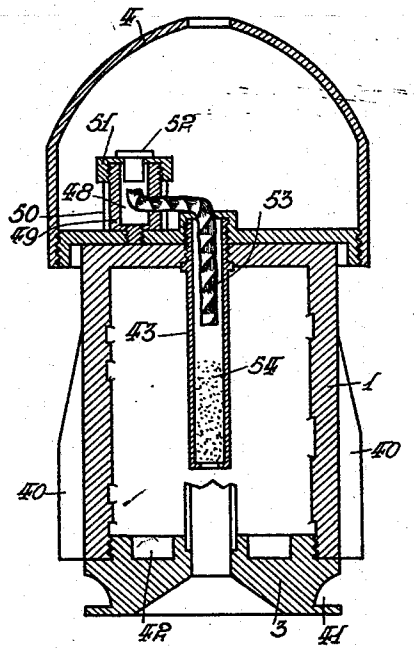


Fig. 4.



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UNITED STATES PATENT OFFICE

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GRENADE AND LANCE-GRENADE

Application filed May 12, 1931, Serial No. 536,817, and in Belgium May 20, 1930.

The present invention has for its object an improved construction of a grenade adapted to be fired by means of a fire-arm, such as a gun, or to be thrown by means of a lance-grenade, both without requiring any modification in the grenade itself before being used.

The object of the invention is to provide in the improved grenade a particular device freeing the firing-pin in two distinct movements, so as to secure constructional simplicity with perfect efficiency.

The invention will be described hereafter with reference to the accompanying drawing, in which a preferred form of embodiment has been illustrated.

Fig. 1 is a longitudinal section of a grenade in conformity with the invention, having its firing-pin locked;

Fig. 2 is a plan view of said grenade, its cap being removed and the firing-pin being freed;

Fig. 3 is an elevational view of the locking block used in this form of embodiment of the grenade; and

Fig. 4 is a longitudinal section of a somewhat modified form of embodiment of the grenade, in which the firing device is arranged outside the grenade body.

With reference to Figs. 1 to 3, the grenade is formed with a body 1, cast in metal, having its wall divided into fragments by variably arranged grooves. Inside said body is adapted the detonator 2 with its primer 14. The open underside of the body 1 is closed by means of a screwed stopper 3 forming base. This stopper has a flange, the diameter of which corresponds to the main diameter of the body 1, said flange being provided for engagement with the retaining hook forming part of the lance-grenade. The opposite side of the body 1 is covered by means of a removable cap 4 having a central opening. 5 indicates a central tube adapted in the body and stopper and constituting the passage for the bullet fired by a gun or the stem of the lance-grenade. A ball 6 is freely lodged in a circular hole of the wall of the tube 5 and pressed therein by the locking block 7, the end face of which has a recess in which the ball is engaged. A U-spring 12 acts to hold the ball in position, said spring being fixed with one leg in the upper side wall of the body 1.

When a bullet or said stem passes through the channel 5, the ball 6 will be radially shifted, as said ball partially obstructs the passage and this radial movement of the ball will shift the locking element 7 of particular shape against the action of spring 12, so as to free a lever 8 forming part of the swinging firing-pin 9, said lever being previously retained in the indentation 10 of the element 7. The freed lever will then abut against the projection 11 of the block 7. The bullet having passed or the stem being removed from the grenade, the U-shaped spring 12 drives the locking element 7 in its original position, so that the firing-pin 9 is completely freed and, under the action of the two helical springs 13—13, said firing-pin will then swing and strike the primer 14, which will ignite the detonator 2 of bent formation. The two springs 13—13 are engaged by a pin 15, which constitutes the pivot pin for the firing-needle 9. The ends of the pivot pin 15 are journalled in upstanding lugs 16 and pass through the guiding slide 17, which holds the locking element 7.

As illustrated in Fig. 3, the locking element 7 is provided with notches 18 and 19, engaging and holding the U-spring 12 and has an L-shaped notch 10, opposite to the ball 6 and over which extends the projection 11.

Referring to Fig. 4, the grenade body 1 is of cylindrical shape with the inner wall divided into fragments. This division into fragments will be preferably of triangular formation for having a maximum of sharp angle formation. The cylindrical shape is preferred to allow the grenade to be loaded with a cast mass of explosive, so as to simplify manipulation and avoid loss of explosive material, and reduce eventual accidents.

The outer wall of the grenade has wings 40 provided for the double intention of constituting guide means for the grenade when fired by means of a gun muzzle attachment

and to force the grenade in a normal position on its trajectory. Furthermore, said wings will impart to the grenade a rotary motion.

The stopper forming bottom is provided with an annular groove 41 to be engaged by the retaining hook of the lance-grenade. The inner wall of the stopper has a circular groove 42 for lodging incendiary or other products.

The firing mechanism is modified so as to remain completely outside the grenade body and is lodged completely under the cap 4, except the detonator support 43, which engages the explosive mass. The primer support 48 is also arranged for securing a fuse at the moment when the grenade will be used.

Said support comprises a tube 49 surrounded by a sleeve 50. The tube is closed by a stopper 51 in which is adapted the primer 52.

The fuse will be preferably made by means of an explosive cast in lead so as to be perfectly preserved. The lead being malleable, the fuse can be shaped in any conformation according to the requirements.

One end 53 of the fuse is connected to the detonator, the other end remaining free until the moment when it will be connected to the primer. The fuse bears graduations, so that it can be adjusted in length with respect to the distance where the grenade has to burst. The detonator 54 is connected to the other end of the fuse engaging the tube 43. This latter tube is closed by means of a screw stopper having a central opening corresponding to the diameter of the fuse which allows the passage of said fuse, so that it can be introduced in the primer support. All the firing means for the grenade are situated outside the grenade body. The other active elements constituting said mechanism are the same as those described with reference to Figs. 1 to 3.

I claim:

1. In a grenade of the type described, a firing mechanism comprising: a spring controlled firing-pin, a lever holding the firing-pin in the inoperative position against the action of said spring, a spring controlled locking element for said lever, means for releasing the locking element, the arrangement being such that the release of the locking element is operated in two phases, substantially as set forth.

2. In a grenade of the type described, a firing mechanism comprising: a spring controlled firing-pin, a lever holding the firing-pin in the inoperative position against the action of said spring, a spring controlled locking element for said lever, a tube passing throughout the grenade body, a ball partially obstructing the passage through an opening in the tube, said ball being held in the opening by the spring controlled locking element, the section of the tube corresponding to that of the bullet or lance-grenade to engage said tube for the purpose set forth.

3. In a grenade of the type described, a firing mechanism comprising: a spring controlled firing-pin, a lever holding the firing-pin in the inoperative position against the action of said spring, a spring controlled sliding block having a pair of abutments engaged by the aforesaid lever in timed relation, a tube passing throughout the grenade body, a ball partially obstructing the passage through an opening in the tube, said ball being held in the opening by the spring controlled locking block, the section of the tube corresponding to that of the bullet or lance-grenade to engage said tube for the purpose set forth.

4. A grenade comprising a cylindrical body, a screwed stopper forming base, a circular flange to said base, wings outside the cylindrical body, variably arranged grooves dividing the inner wall of the body into fragments, a circular groove in the inner side of the stopper, an axial tube passing throughout the body, a detonator fixed inside to the upper end wall of said body, a primer support fixed outside said end wall, a fuse connecting the primer support and the detonator, a spring controlled firing-pin pivoted outside to said end wall and means for locking the firing-pin in the inoperative position.

In testimony whereof I have signed hereunto my name.

CHARLES FOULON.