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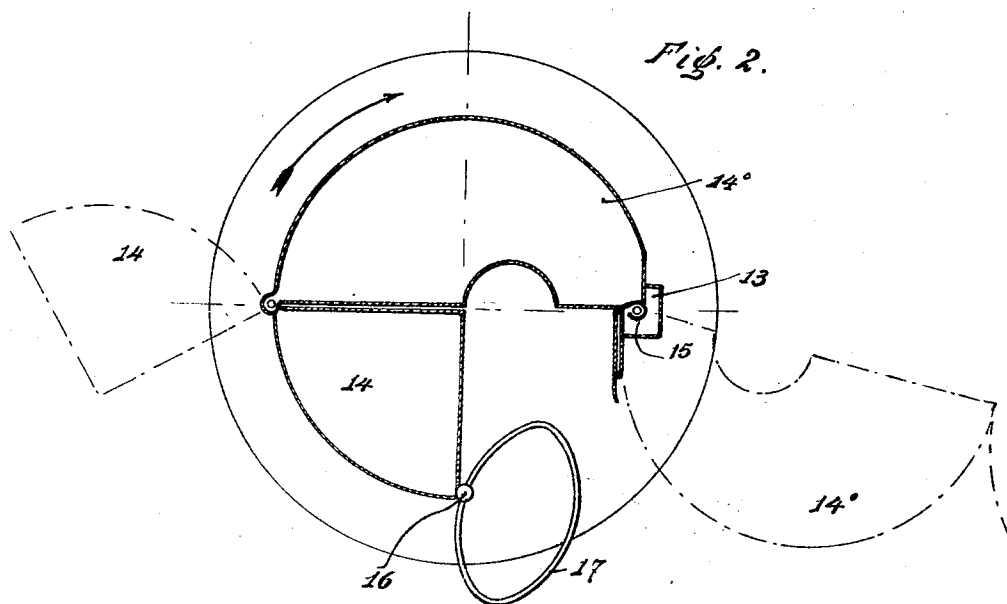
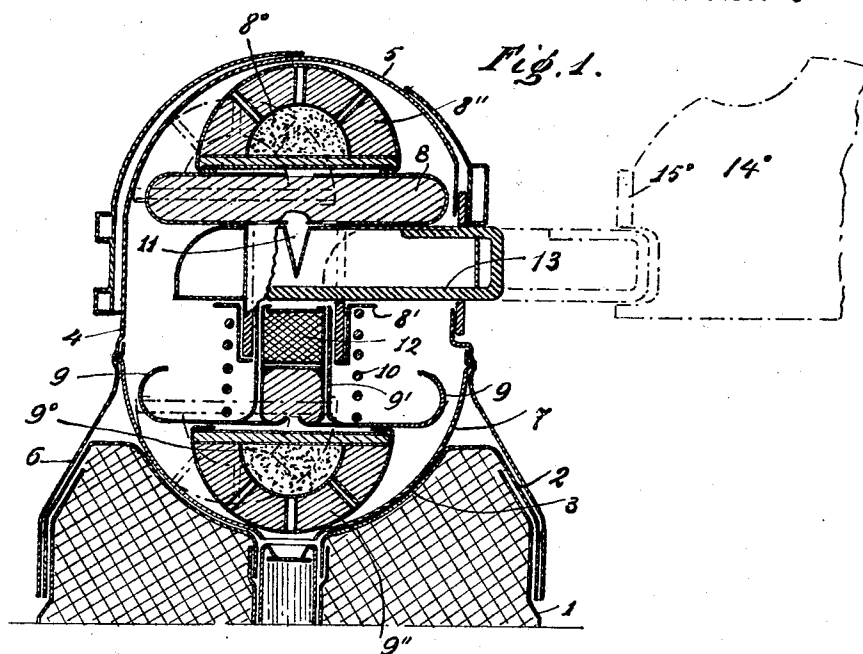
L. SAVANI

1,826,190

PERCUSSION FUSE FOR BOMBS AND OTHER PROJECTILES

Filed June 25, 1930

2 Sheets-Sheet 1



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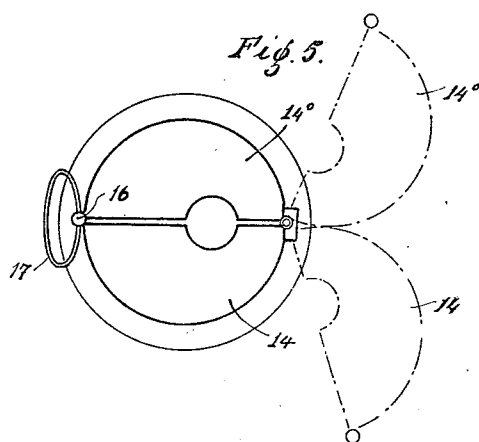
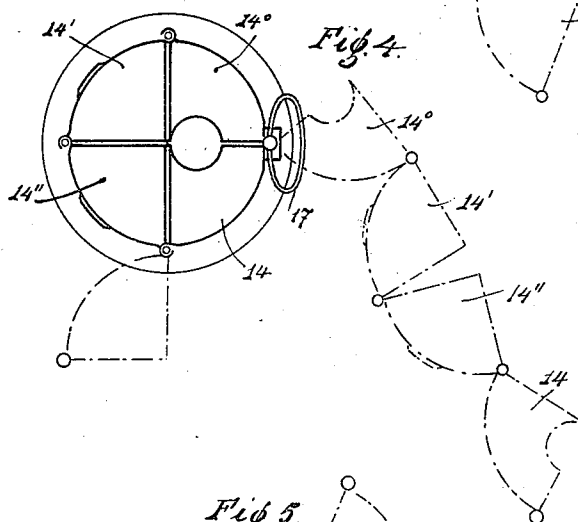
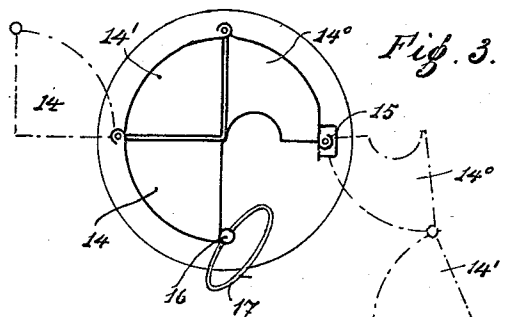
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PERCUSSION FUSE FOR BOMBS AND OTHER PROJECTILES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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PERCUSSION FUSE FOR BOMBS AND OTHER PROJECTILES

Application filed June 25, 1930, Serial No. 463,768, and in Germany July 24, 1929.

A great number of devices for fuses for bombs and other similar projectiles are known, by which endeavours have been made to obtain the explosion of the charge by the effect of an internal percussion produced automatically by the lightest shock of the projectile against any obstacle whatever, no matter what might be the direction of the said shock; but there is not even one which is exempt from the reproaches of artillerymen, for one reason or another. Usually the two masses placed in the body of the fuse, and destined to produce the percussion by reason of their momentum, do not possess the freedom of movement which is necessary to secure a delicate sensibility. One of the essential reasons which makes the obtaining of this liberty difficult, is the need to adopt a safety device, fit to prevent all possibility of accidental explosion and always ready to disengage rapidly in order to give full freedom to the percussion masses as soon as the projectile is thrown.

The present invention has as its aim the resolution of the above mentioned problems by means of a new and perfected arrangement of the percussion masses and of their holders, together with a suitable arrangement of the safety device.

The annexed drawings show by way of illustrative, though not limiting, example, a method of execution applied to a bomb which can be thrown by hand or by the aid of any other suitable means.

Fig. 1 is an axial section of the head of the aforesaid bomb provided with a fuse according to the present invention and with a safety device having two shells (segments).

Fig. 2 is a front view of the said device.

Figs. 3-5 represent the front view of various other similar devices fashioned differently.

In the form of execution illustrated, the body of the bomb 1 containing the explosive charge has the neck 2 and the head 3 shaped suitably to allow the fuse to be adjusted thereon. This fuse is enclosed in a cowl 4 of semi-ovoidal shape 5 in front and, at the back, is shaped as a sleeve or collar 6 adjustably fitting onto the neck 2 of the bomb. In the

opening of the aforesaid cowl 4 a base, convex to the outside, is screwed so as to form a closed, hollow, ovoidal body in which the members for firing the fuse are lodged.

The fuse device consists of two discs 8, 9 provided with tubular stems 8', 9' one sliding in the other, and forming the axial guide of a helical spring 10 suitable for keeping the discs apart. Disc 8, able to hold an explosive, is provided with a striker 11, and disc 9 carries the detonating charge enclosed in its tubular stem 9'. A slide 13 mounted to slide transversely in the cowl 4 and guided between disc 8 and stem 9', prevents any movement of approach between striker and detonator. The slide is connected with a device suitable to control its withdrawal to be described later. The two discs 8, 9 rest against two half-spheres 8'', 9'', consisting essentially of a heavy, easily fusible material, which may contain explosive charges 8°, 9°. These half spheres can roll or slide over the internal surfaces of the semi-ovoidal portion 5 and of the curved base 7; the respective radii of curvature are so chosen that any movement of the half spheres, whether a rolling or a sliding movement, will correspond to a forced neutral approach of the two discs 8-9, forced by the aforesaid half-spheres. But these movements are not possible so long as the slide 13 is in position. They become possible and inevitable as soon as the slide is withdrawn, and they are produced, against the action of the spring 10 at the moment when the bomb encounters any obstacle whatever, through the shock following in any direction from the effect of the momentum (energy) of the two heavy masses 8'' and 9''. The perfect freedom of movement, in all directions, of the aforesaid masses, and the mutual approach of the two discs 8 and 9 which they inevitably cause, no matter what may be the direction of their movement, insures an absolute sensibility and perfect action for every possible direction of shock against any obstacle whatever.

The device for controlling the withdrawal of the slide 13 in order to put the bomb into a state of action must also be, in its turn, absolutely certain in action. The four meth-

ods of executing this device as shown in Figs. 2 to 5 fulfill this condition, and in these methods the slide is hinged to a bonnet formed of several shells or segments, hinged to each other and covering the head of the cowl, to which the aforesaid bonnet is fastened by the aid of a pin which may be extracted by any suitable means at the moment of projecting the bomb.

10 In the arrangement as shown in Figs. 1, 2, the bonnet has only two shells or segments, joined together by a hinge; the first one is hinged at 15 to the slide 13 and the last is fixed to the cowl 4 by the aid of the pin 16 provided with a ring 17. If, at the moment of projecting the bomb the pin 16 is extracted, the shell 14 will open causing shell 14° to open and this, in its turn, will withdraw the slide 13 from the cowl.

20 In the arrangement as shown in Fig. 3, the bonnet is formed of three shells 14°—14'—14, and in the case of Fig. 4 it is formed of four shells 14°—14'—14''—14, the first being hinged to the slide and the last being fixed to the cowl by the pin 16; in the case of Fig. 5 there are two shells 14° and 14, hinged to the slide and fixed to the cowl by the pin, but in all these cases the action is identical with that of Fig. 2.

30 Naturally the shape, the arrangement and the material forming the different parts described may vary, without departing from the scope of the present invention.

What I claim is:

15 1. A percussion fuse for bombs and similar projectiles, comprising a striker, a detonating charge, two tubular members to which the striker and detonating charge are respectively attached, said two members being slidably mounted so as to telescope, a spring for spacing said two members, a slide also spacing said two members and adapted to be withdrawn before the bomb is cast, and two hemispheres independent of the two tubular members, the striker and the detonating charge, and bearing against the two tubular members, said two hemispheres being hollow to receive the explosive charge.

0 2. A fuse as set forth in claim 1, wherein the hemispheres contain explosive material.

3. A fuse as set forth in claim 1, wherein the two tubular members to which the striker and the detonating charge are attached are lenticular in shape, the explosive being positioned between them.

5 4. A fuse as set forth in claim 1, wherein the slide is hinged to a bonnet formed of several spherical shells hinged together, the bonnet being attached to the bomb by the aid of a pin which is extractable when the bomb is cast.

In testimony whereof, I affix my signature.

LUIGI SAVANI.