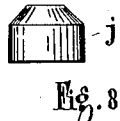
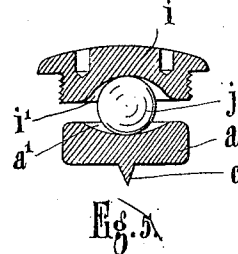
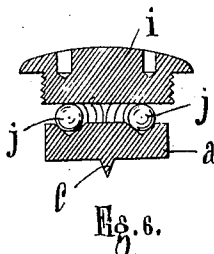
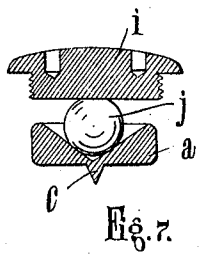
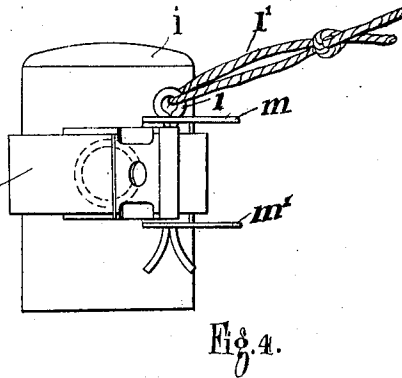
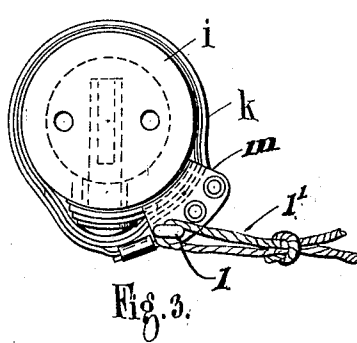
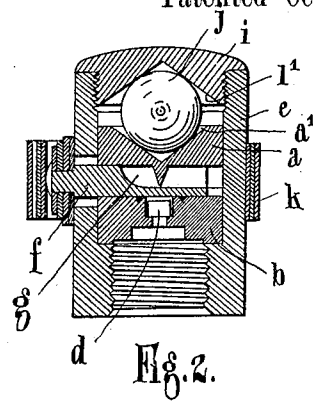
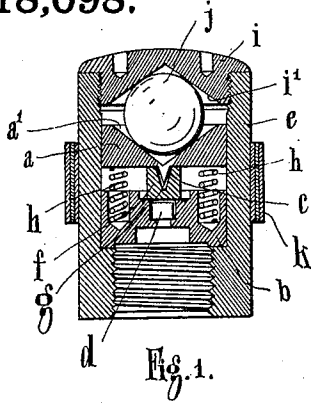


A. H. MIDGLEY.
 PERCUSSION FUSE FOR EXPLOSIVE PROJECTILES.
 APPLICATION FILED MAY 23, 1917.

1,318,098.

Patented Oct. 7, 1919.



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UNITED STATES PATENT OFFICE.

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PERCUSSION-FUSE FOR EXPLOSIVE PROJECTILES.

1,318,098.

Specification of Letters Patent.

Patented Oct. 7, 1919.

Application filed May 23, 1917. Serial No. 170,545.

To all whom it may concern:

Be it known that I, ALBERT HENRY MIDGLEY, a subject of the King of Great Britain and Ireland, and residing at Warple Way, Acton Vale, in the county of Middlesex, England, have invented certain new and useful Improvements in and Relating to Percussion-fuses for Explosive Projectiles, of which the following is a specification.

This invention relates to an improved percussion fuse for explosive projectiles and more particularly for projectiles intended to be used with a smooth bore gun, such as a Stokes gun of the kind having two relatively movable members carrying the striker and the percussion cap respectively, and a ball or equivalent member mounted between the member carrying the striker and the fuse casing, the member carrying the striker being constructed so as to be capable of moving only in the direction between the two members carrying the striker and the cap respectively and both its surface and that of the part of the fuse holder which co-operate with the ball, or its equivalent, being shaped in such a manner that the latter is able to produce a wedge action in addition to its being able to move axially.

The percussion fuse constructed according to the present invention, comprises a fuse holder, two axially but not laterally movable members, a striker on one of the members, a percussion cap on the other member, a safety member for positively keeping apart from each other the two members carrying the striker and the percussion cap, respectively, and capable of being removed from its safety position during the flight of the projectile, springs for keeping the said two members apart after the removal of the safety member, and a loose member freely supported on the movable member carrying the striker and held in position solely by the latter member together with said spring and the fuse holder, the surfaces of the member carrying the striker and of the fuse holder which are in contact with the loose member and the contact surfaces of the latter being relatively shaped in such a manner as to be capable of producing a wedge action.

The invention also consists in arranging that in addition to the member carrying the

striker, also the member carrying the percussion cap, shall be movable.

In the accompanying drawings which illustrate the invention, by way of example.

Figures 1 and 2 are two sectional elevations taken at right angles to each other, while

Figs. 3 and 4 are a plan view and an elevation respectively of the percussion fuse constructed according to the present invention.

Figs. 5-10 illustrate various forms of construction and modes of mounting of the ball, or equivalent member, between the pellet carrying the striker and the stationary part of the fuse.

Referring to the drawings, two movable blocks *a* and *b* carrying the striker *c* and the percussion cap *d* respectively, are mounted within the fuse holder *e*, being separated from each other by a safety member *f* interposed directly between the striker *c* and the percussion cap *d*, the striker and the percussion cap being preferably arranged centrally and the safety member *f* provided with a depression *g* for receiving the striker. Two or more springs *h* are interposed between the two blocks for keeping the latter apart after the safety member has been removed from its safety position. The upper surface of the block *a* carrying the striker is provided with a central conical seat *a*¹, the end cover *i* of the fuse holder *e* being also provided with a similar conical seat *i*¹, and a ball *j* being interposed between said block *a* and end cover *i*, the upper and lower surfaces of the ball thus abutting against said conical seats *i*¹ and *a*¹ provided on the end cover *i* and on the block *a* respectively.

The operation of the fuse hereinbefore described is as follows:—Before the projectile to which the fuse is attached is thrown, the safety-pin *l* is removed by hand from the holes in the metal lugs *m m*¹ attached to the tape *k*. The rotation imparted to the projectile when thrown causes the tape to unwind itself and to be automatically removed from the fuse, together with the safety member *f* attached thereto, whereby the projectile is rendered alive.

Upon the safety member *f* being thus removed from its position, the two blocks *a*

and *b* are kept apart by the springs *h* interposed between them until the shell to which the fuse is attached strikes against an obstacle after it has been fired. As the shell strikes the obstacle the ball *j* is forced out of its position by the impact thereby moving laterally and owing to the wedging action of the arrangement also in the direction of the block *a* on which it is seated, the latter thus being forced toward or thrown against the other pellet *b*, whereby the striker *c* is caused to strike against the percussion cap *d*.

It will also be seen that if the shell strikes the obstacle endwise, *i. e.*, on the fuse end, the ball *j* will be forced by the impact to move in the direction of the block *a* on which it is seated, without any lateral movement, thereby causing the block *a* to operate as hereinbefore referred to. If the shell strikes the obstacle endwise, *i. e.*, on the shell base first, the block *b* will be forced by impact to move in the direction of the block *a*.

Instead of providing the block on which the ball is seated and the end cover of the fuse holder with conical seats, such seats may be shaped in various other ways, which will have the same effect, (see Fig. 5), and instead of both said parts being thus formed only one of them may be provided with a conical or equivalent seat. (See Fig. 6.)

Further, instead of providing one single ball arranged centrally, a plurality of smaller balls may be mounted in a circular groove which is suitably shaped to produce the effect above referred to. (See Fig. 7.) Moreover, instead of the movable member being constructed in the form of a ball, the same may be constructed in any other form. For instance, it may be formed of a short cylindrical member, one or both ends of which is or are formed in the shape of a

truncated cone or cones, (see Figs. 8 and 9 respectively), which shape may however be varied in any other suitable way which would produce the desired effect. (See Fig. 10.)

I wish it to be understood that the invention is in no way limited to the mode of construction hereinbefore described as the same may be modified in various respects without in any way departing from the spirit of the invention.

What I claim is:—

A percussion fuse for explosive projectiles having a fuse holder, two axially but not laterally movable members, a striker provided on one of the movable members, a percussion cap provided on the other movable member, a safety member for positively keeping apart from each other the two members carrying the striker and the percussion cap, respectively, and capable of being removed from its safety position during the flight of the projectile, springs for keeping the said two members apart from each other after the removal of the said safety member, and a loose member freely supported on the movable member carrying the striker and held in position solely by the latter member together with said springs and the fuse holder, the surfaces of the member carrying the striker and of the fuse holder which are in contact with the loose member and the contact surfaces of the latter being relatively shaped in such a manner as to be capable of producing a wedge action, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification.

ALBERT HENRY MIDGLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."