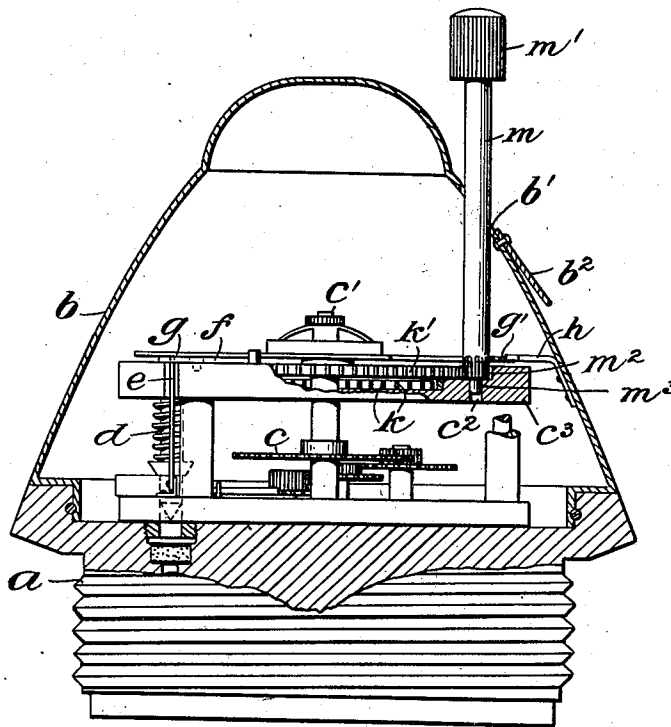


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TIME FUSE FOR EXPLOSIVE PROJECTILES.
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1,227,720.

Patented May 29, 1917.



Attest:
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UNITED STATES PATENT OFFICE.

WALTER M. WILHELM, OF SWARTHMORE, AND KENNETH RUSHTON, OF WYNNWOOD, PENNSYLVANIA.

TIME-FUSE FOR EXPLOSIVE PROJECTILES.

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Specification of Letters Patent.

Patented May 29, 1917.

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To all whom it may concern:

Be it known that we, WALTER M. WILHELM and KENNETH RUSHTON, citizens of the United States, and residing, respectively, at Swarthmore, in the county of Delaware, in the State of Pennsylvania, and at Wynnewood, in the county of Montgomery, in the State of Pennsylvania, have invented certain new and useful Improvements in Time-Fuses for Explosive Projectiles, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

In time fuses as heretofore constructed, in which the release of the firing-pin at the predetermined time is effected by the operation of a clock movement, driven by a spring, the clock movement is mounted on the base of the fuse and is covered by a cap which is mounted rotatably on the base; before the base and cap are assembled the clock-spring is wound up, being inaccessible after the cap has been applied to the base, and for the purpose of enabling the instant of explosion to be determined, according to the requirements at the time of firing, a coupling is provided between the cap and the controlling disk or wheel which is carried frictionally by the clock movement, so that by rotation of the cap the controlling disk may also be rotated through the desired angle; the coupling between the cap and the controlling disk is so constructed and arranged that it will be disengaged either through centrifugal action or through the action of inertia at the time when the projectile is discharged from the gun; means are also provided for preventing movement of the clock-train until it is released on firing. As the time between the assembling of the fuse and its use may sometimes be considerable, the clock-spring may deteriorate or suffer some change through being kept continuously under tension. It is the object of this invention to provide means whereby not only may the clock-spring remain relaxed until the time of use and be then put under tension, but also the provision of means independent of the coupling between the cap and the controlling disk to prevent starting the clock-train may be avoided. In accordance with the invention the staff of the clock-spring is provided with a winding

gear which may be engaged by a winding pinion introduced at the time of use of the projectile through an aperture provided for that purpose in the cap, so that the winding of the spring may take place immediately before the use of the projectile. The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated and in which,—

The figure is a view, partly in section and partly in elevation, of a time fuse which embodies the invention.

The fuse to which the invention is shown in the drawing to be applied is substantially of ordinary construction, except as hereinafter indicated, comprising a base *a*, adapted to be threaded into the body of the projectile; a cap *b* which is mounted rotatably on the base *a* and covers and protects the clock movement which is indicated generally at *c*; and a firing mechanism which includes a spring-actuated firing-pin *d*, a sear *e* and a trigger-leaf *f*, which is controlled by a controlling disk *g* provided with a releasing notch *g'* carried frictionally on the staff *c'* of the clock movement and having a coupling *h* between itself and the cap *b*. The clock movement is driven by a spring *k* in the usual manner, one end of the clock-spring being connected to a winding gear *k'*. The cap *b* is provided at any convenient point with an aperture *b'* and a pivoted cover *b''* for such aperture, the aperture being so placed as to permit the introduction of a key *m* provided at one end with a milled head *m'* and at the other end with a winding pinion *m''* adapted to engage the winding gear *k'*, and with a centering point *m'''* to enter a seat *c''* formed therefor in the frame plate *c'''*.

At the time when the fuse is to be used, the cap *b* is rotated to place the aperture *b'* in line with the seat *c''* and the key *m* is then introduced and the winding pinion placed in mesh with the winding gear *k'*. The spring *k* may then be wound up or placed under tension. When the spring has been wound, the key may be withdrawn from engagement with the winding gear and the cap *b* may be rotated to a point indicated on a scale formed either on the base or on the cap, carrying with it, through the coupling *h*, the controlling disk *g*

whereby the time movement may be set so as to bring about the explosion at the desired instant.

5 It will be understood that details of construction of parts involved in the present invention will be varied to suit different conditions of use and that the invention is not restricted to the particular construction shown and described herein.

10 We claim as our invention:

In a time fuse for an explosive projectile, the combination of a base, a cap rotatable on the base, a firing mechanism, and a clock

movement to control the release of the firing mechanism, and comprising a driving 15 spring and a winding gear therefor, and provided with a seat for a winding pinion, the cap being provided with an aperture to be brought into alinement with said pinion seat to permit the introduction of 20 a winding pinion for engagement with the winding gear.

This specification signed this 7th day of August A. D. 1916.

WALTER M. WILHELM.
KENNETH RUSHTON.