

# PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

## Improvements in and relating to Magnesium or like Flash Powder Lamps.

I, HEINRICH KLAPPROTT, of No. 50, Mühlenstrasse, Hamburg, Germany, of German nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an improvement in or relating to magnesium flash powder lamps of that type in which an arm holding a match or a candle is moved by spring power towards the magnesium or other flash powder and ignites the same.

In a device of this type it has previously been proposed to use a match clamped onto the arm and moved by spring power over a match box or over a friction surface, so that it is lighted whereupon the lighted match is pushed into the magnesium powder. This manner of ignition is unreliable and problematic as if the match is lighted and pushed into the flash powder it frequently happens that the powder is dispersed. In order to obviate these inconveniences and to ensure a reliable ignition without dispersing of the powder, according to the invention a lighted candle or a slow match is attached to the arm and moved by the spring towards a fuse embedded in the powder so that the flash powder is not directly but indirectly lighted by the candle.

In order that the invention may be clearly understood, I shall proceed to describe the same with reference to the two forms of construction shown by way of example on the accompanying drawing, wherein:—

Fig. 1 is a plan view,  
Fig. 2 a longitudinal section, and  
Fig. 3 a cross section on line A—B of Fig. 1 showing the first form of construction.

Fig. 4 shows in horizontal section,  
Fig. 5 in longitudinal section, and

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Fig. 6 in cross section on line C—D of Fig. 5 the second form of construction.

Referring to Figs. 1—3 *a* is an oblong box with removable cover *b*. A small clockwork movement *l* is fixed in said box upon one of the longitudinal sides, the last gear wheel *h* of this movement meshing with a rack *c* which is guided between two rails *g* so that it can project through the end wall of the box *a*. The rack *c* has at its front end a spring sleeve *r* designed to serve as holder for a candle *s* or for a slow match.

The magnesium or like flash powder is placed into a cavity of the cover *b* (Fig. 3) and a fuse *n* is embedded with one end in the flash powder, its other end hanging over the edge of the cover *b*. The rack *c* is pulled out of the box *a* whereby the spring of the clockwork *l* is wound up. The rack is held by hand or by a locking pawl. After the candle *s* has been lighted the rack *c* is released and pulled into the box *a* through the action of the spring of the clockwork, so that the flame of the candle *s* coming in contact with the free end of fuse *n* (see Fig. 2 dotted lines) ignites the fuse, whereby the flash powder is ignited. All the parts of the device are enclosed in the box *a* with the exception of the candle holder *r* which however is normally in such close contact with the end wall of the box that the lamp can be packed safely; none of the parts being liable to damage.

In the second form of construction (Figs. 4—6) no clockwork mechanism is provided but merely a helicoidal spring *f* for pulling the arm *o* against the fuse *n*. A sleeve *m* is fixed upon the bottom of the case *a* in which the tubular arm *o* is mounted. The helicoidal spring *f* is fixed with one end to the rear end of arm *o* and with the other end to the rear wall of the case *a*. The spring *f* is guided in sleeve *p*. The tubular arm *o* has at its front end the spring sleeve *q* for the

candle *s*. The arm *o* and its guide sleeve *m* have each near the rear ends a lateral slot designed to receive the hook-shaped end of a two-armed lever *u* which by the action of a blade spring *v* is pressed into said slots which register when the arm *o* is pulled out as shown on Fig. 4 and Fig. 5. In this position of arm *o* the helicoidal spring *f* is under tension.

10 If now, the flash powder being placed upon the cover *b* and the candle *s* being lighted, the lever *u* is made to oscillate, which can be done from a distance with the aid of a push rod *w* or the like, the hook-shaped end of said lever goes out of the slots so that the arm *o* is released and pulled in by the action of spring *f*. The flame of the candle *s* comes thus in contact with the free end of the fuse *n* and the flash powder is ignited. The force of the spring is calculated so that it is just sufficient to pull arm *o* slowly into the box so that the sleeve *q* comes softly in contact with the end plate of box *a* and no shocks are caused. Instead of the push rod *w* being attached to the left hand end of the lever *u* a string could be attached to the right hand side of said lever to pull the hook-shaped end directly out of the slot (see arrow Fig. 4).

The flash lamp is fixed in convenient manner to a fixed object serving as support.

Having now particularly described and

ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A magnesium or like flash powder lamp having an arm carrying an ignited slow match or candle at its outer end and moved by a spring in a straight line to ignite a fuse embedded in the flash powder, said arm consisting of a rack (*c*) mounted in guides (*g*), and a clockwork mechanism (*l*) the gear wheel (*h*) of which meshes with said rack, substantially as described and shown.

2. A magnesium or like flash powder lamp having an arm carrying a lighted slow match or candle at its outer end and moved by a spring in a straight line to ignite a fuse embedded in the flash powder, the ignition mechanism comprising a straight arm (*o*) with a slow match or candle holder (*q*) at the outer end, a guide (*m*) for said arm (*o*), a spiral spring (*f*) attached to the inner end of said arm and to the casing (*a*) and a locking lever (*u*) for the arm (*o*) adapted to be brought out of the locking position in a convenient manner, substantially as described and shown.

Dated this 25th day of October, 1921.

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[This Drawing is a reproduction of the Original on a reduced scale.]

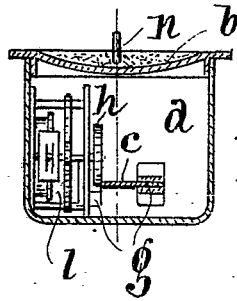
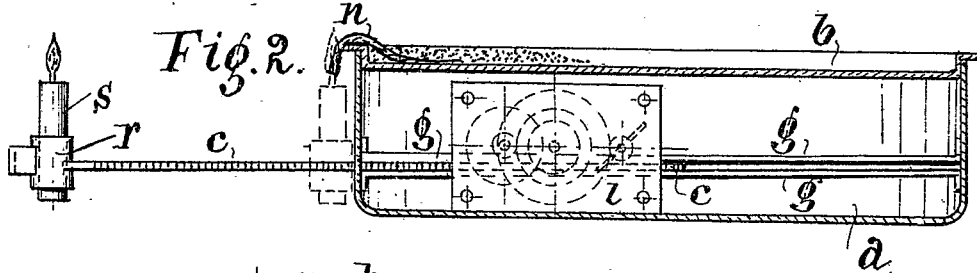
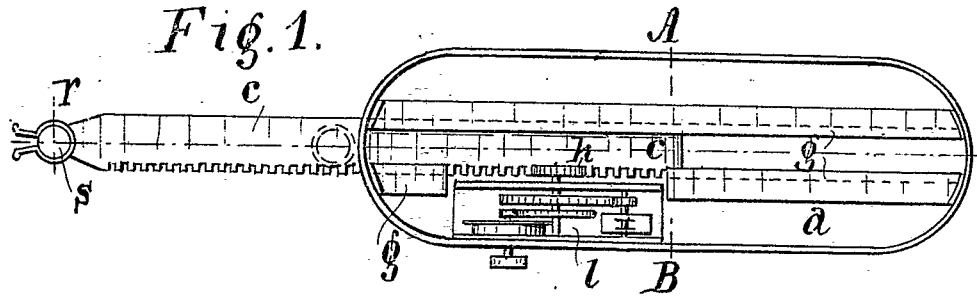


Fig. 3.

Fig. 6.

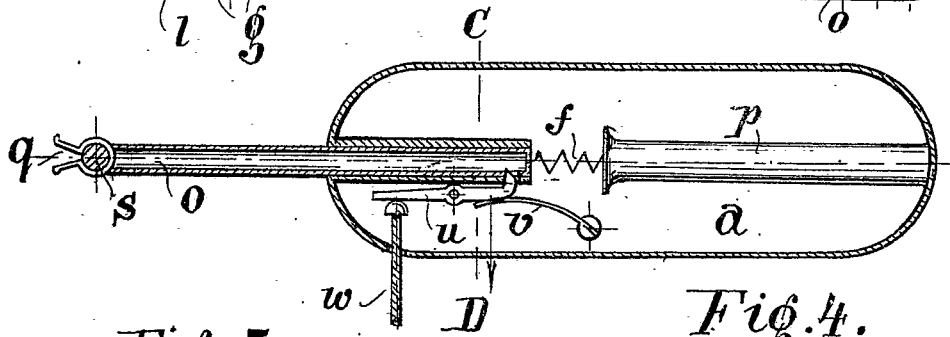
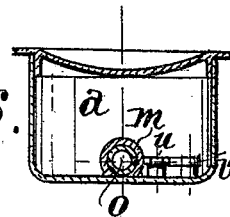


Fig. 4.

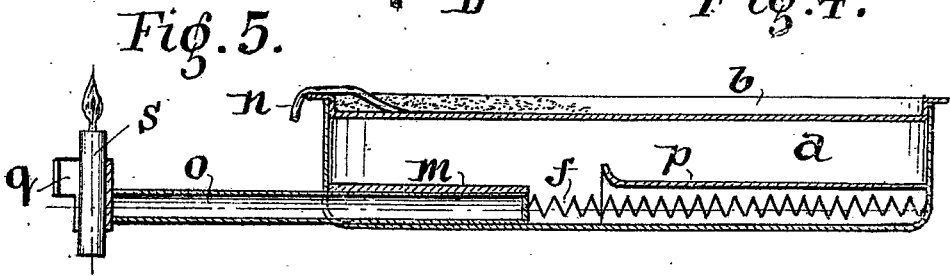


Fig. 5.