# PATENT SPECIFICATION

214,790

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Complete Left: Dec. 7, 1923.

Complete Accepted: May 1, 1924.


PROVISIONAL SPECIFICATION.

## An Electrical Igniter of Photographic Flashlight Powder, Capable of Attachment to the Case of a Pocket Electric Flashlamp.

I, JOHN CAREY SWAN (commonly known as John Swan), M.Met. (Master of Metallurgy, Sheffield Univ.) of 1, Stanley Road, Meersbrook, Sheffield, British nationality, do hereby declare the nature of this invention to be as follows :—

The device titled as above is a metal stamping containing at one end a special shaped recess to hold the flashpowder.

The device is shown in the accompanying drawings in which Fig. 1 shows a plan, Fig. 2 a longitudinal section on a line C D, Fig. 1 and Fig. 3 a cross section on a line A B, Fig. 1

The recess is called the flash pan (*a*). An insulator (*b*) is attached to the other end of the stamping by means of a **U**-shaped metal bracket, (*c*) which is either soldered or riveted in some suitable manner to its base (*i.e.*, the stamping). Through the two holes in this insulator pass two metal wire electrodes (*d*) which terminate just above the shallow end of the flash pan. To the ends of the electrodes is attached a fine wire resistor *e*, by means of two slide-on tubular terminals *f*. The wire resistor dips into the flash powder in the shallower and narrower end of the flash pan. The distance between the terminals and so the length of the wire resistor can be varied within limits. This is brought about by turning the electrode ends inwards or outwards. This variation in the length of the wire resistor is in some cases necessary when the voltage, or internal resistance, or both, of the electric battery or cell in use, varies from any cause whatever.

The other ends of the two electrodes are connected by means of electric flexible cable *g* to a miniature screw adaptor which screws into the flash lamp case in place of the incandescent bulb, the stamping being slipped or pushed on the top of the flash lamp case in place of the " lens holding " top.

When the electric circuit is completed the fine wire resistor attains a bright red heat and may or may not fuse. The flash powder is thus ignited.

The metal stamping is primarily designed to fit on the standard size pocket flash lamp case, but may be used separately from such a pocket flash lamp or with any other portable electric lamp and case.

Dated the 8th day of March, 1923.

J. C. SWAN, M.Met.

COMPLETE SPECIFICATION.

## An Electrical Igniter of Photographic Flashlight Powder, Capable of Attachment to the Case of a Pocket Electric Flashlamp.

I, JOHN CAREY SWAN (commonly known as John Swan), M.Met (Master of Metallurgy), of 233, Ecclesall Road, Sheffield, late of 1, Stanley Road, Meersbrook, Sheffield, British 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 :—

The invention relates to portable electric igniters of photographic flashlight powder of the kind in which the powder is ignited by passing an electric current through

a fine wire attached to two insulated electrodes.

The device titled as above comprises a metal stamping containing at one end a shaped recess and an extension piece to hold the flashlight powder.

The igniter is shown in the accompanying drawings (1 sheet) in which

Fig. 1 shows a plan,

Fig. 2 a longitudinal section on a line C D, Fig. 1,

Fig. 3 a cross section on a line A B, Fig. 1.

The extension piece *l* is also a metal stamping to either side of which is attached a wire runner *m*. Each of the two runners slides in two hinge sockets *n* pressed out from the side of the main metal stamping. The extension pan can be pushed over the recess or flash pan *a* when the igniter is not in use, the broken line E F (Fig. 1) indicating its position, and the ends of the wire runners will be at H, the whole of the extension piece thus fitting flush over the main stamping.

The recess is called the flash pan *a*. An insulator *b* is attached to the other end of the stamping by means of a U-shaped metal bracket *c* which is either soldered or rivetted in some suitable manner to its base (*i.e.*, the stamping). Through the two holes in the insulator pass two metal wire electrodes *d* which bending outwards, terminate just above the shallow end of the flash pan. To these ends of the electrodes is attached a fine wire resistance *e* by means of two slide-on tubular terminals *f*. The fine wire is threaded through the terminals which are then pushed on to the electrodes. The wire resistance dips into the flashlight powder in the shallower and narrower end of the flash pan. The distance between the terminals and so the length of the wire resistance can be varied by turning the electrode ends inwards or outwards. This variation in the length of the wire resistance is in some cases necessary when the E.M.F., or internal resistance, or both, of the electric battery or cell in use varies from any cause whatever.

The other ends of the two electrodes are connected by means of electric flexible cables *g* which pass through a hole *h* in the bracket *c* and main stamping to a miniature screw adaptor which screws into the case of a pocket electric flashlamp in place of the incandescent bulb, the stamping being slipped or pushed on the top of the flashlamp case in place of the "lens-holding" top.

When the switch on the electric flashlamp is operated to complete the electric circuit, the fine wire resistance attains a bright red heat, and may or may not fuse. The flashlight powder is thus ignited.

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. An electrical igniter of photographic flashlight powder of the kind described, the powder tray of which is adapted to be mounted on the case of a pocket electric flashlamp in place of the "lens-holding" top, the insulated electrodes being connected by flexible electric cables to an adapter which screws into the case in place of the incandescent electric lamp bulb.

2. An electrical igniter of photographic flashlight powder, as claimed in Claim 1, in which an extension piece is adapted to slide over the powder tray when the igniter is not in use.

3. An electrical igniter of photographic flashlight powder, as claimed in Claim 1 or 2, in which the insulated electrodes are bent outwards at one end so that when the bent ends are turned either inwards or outwards the distance between them is varied.

4. An electrical igniter of photographic flashlight powder as claimed in any of the preceding claims, in which the fine wire resistance is attached to the electrode ends by means of two slide-on tubular terminals.

Dated the 5th day of December, 1923.

J. C. SWAN, M.Met.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1924.

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

FIG.1.

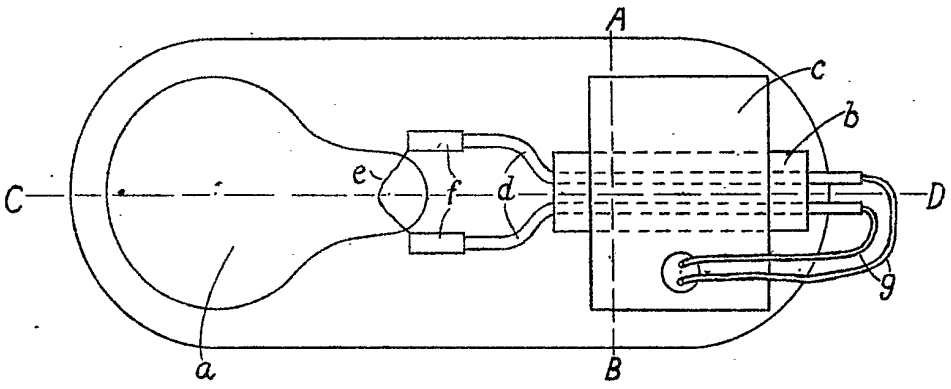



FIG.2.

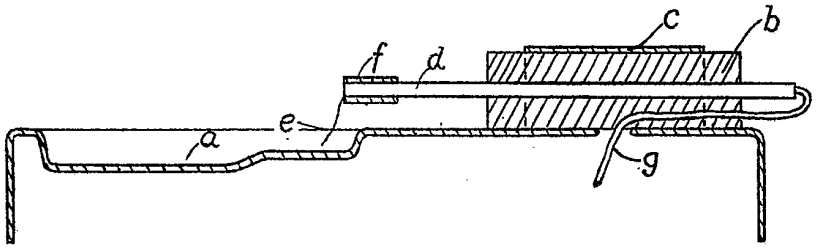
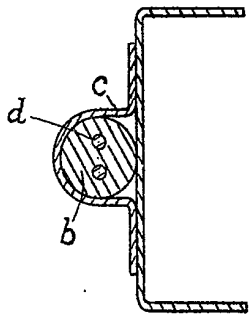
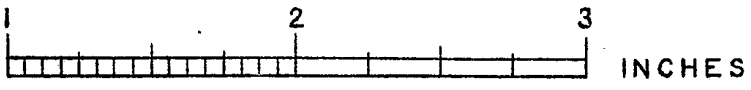



FIG.3.

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

FIG.1.

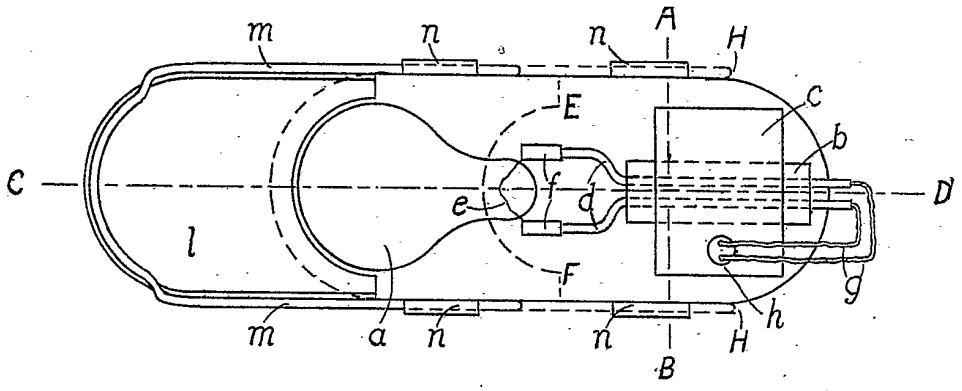



FIG.2.

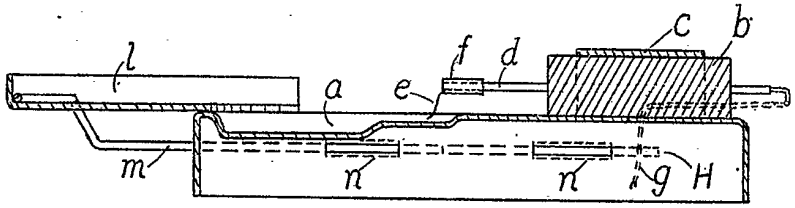
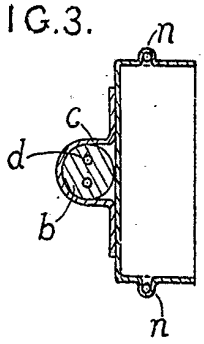



FIG.3.

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