M. GOODFELLOW.

ELECTRIC FLASH LAMP.

APPLICATION FILED AUG. 12, 1921.

1,404,362. Patented Jan. 24, 1922.

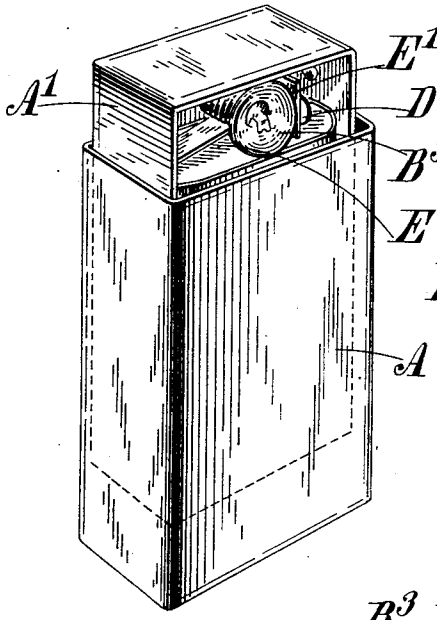


Fig.1.

Fig.3.

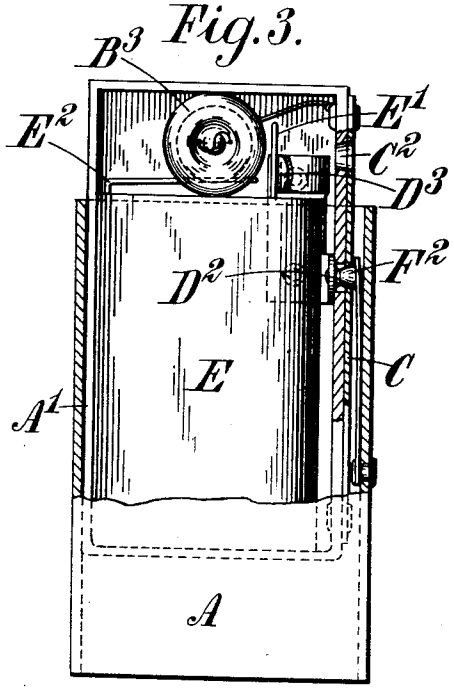
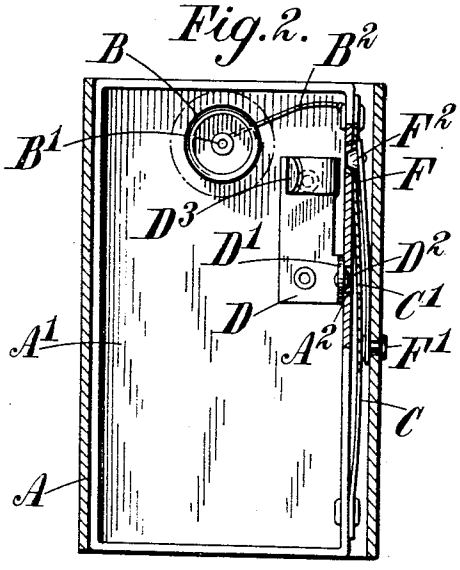


Fig.2.



Inventor

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UNITED STATES PATENT OFFICE.

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ELECTRIC FLASH LAMP.

1,404,362. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed August 12, 1921. Serial No. 491,660.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, MAGNUS GOODFELLOW, a subject of the King of England, residing at London, England, have invented certain new and useful Improvements in Electric Flash Lamps, (for which I have filed application in Great Britain Nov. 30, 1917, Patent No. 115,381 of 1918,) of which the following is a specification.

This invention is for an electric self-contained flash lamp of the type wherein there are employed inner and outer casings whereon the one casing slides relatively to the other and switch mechanism interconnects the two casings so that when the one casing is slid into one position the circuit is closed and when it is slid into the other position it is open.

According to this invention a flash lamp of the type described is characterized by the outer casing being sleeve-like and open at both ends and the inner casing or tray made to carry the bulb as well as the battery in such manner that the bulb is covered by the outer casing in the open circuit position and the inner casing is made to protrude from one end of the outer casing to expose the bulb and close the circuit.

Preferably the lamp is made in the form of a match-box of the type having a sliding interior, which interior in this case carries the bulb and battery, and when pushed partially out exposes the bulb and completes the circuit so that the filament is energized.

In the accompanying drawings—

Figure 1 is a perspective view of a flash lamp according to one method of carrying out this invention;

Figure 2 is a face view of the lamp in longitudinal section showing the switch mechanism; and

Figure 3 is a view similar to Figure 2 but with the parts in a different position.

The same letters indicate the same parts throughout the drawings.

The casing for the lamp is made to resemble in form a match-box having an outer casing A open at both ends and an interior sliding casing or tray A^1. In the tray and near one end of the same a bulb socket B is secured having its central terminal B^1 connected by a wire B^2 to a brass strip C secured on the outer face of one of the sides of the tray A^1. A plate D is secured at the bottom of the tray near the side to which the strip C is fastened and this plate has a lug D^1 which extends outwardly along the inner face of the said side and on the lug is a projection D^2 which lies in an opening A^2 formed in the side of the tray.

The plate D has a tongue D^3 which bears against the terminal E^1 of the battery E. The battery lies in the tray A^1 between the end of the tray and the bulb socket B so that one of its terminals can bear against the projection D^3 as already described and the other terminal E^2 can bear against the side of the bulb socket B. The bulb B^3 screws into the socket in the usual manner thus making one contact for the filament of the bulb through the outer shell, carrying the bulb, and the socket B, the other contact for the filament being through the usual central stud which is insulated from the outer shell and bears against the part B^1, which is also insulated from the socket.

A resilient tongue F is secured by one end to the inner face of one of the sides of the outer casing A being fastened thereto by a rivet as shown at F^1. This tongue lies opposite the strip C and has at its end a tapered contact piece F^2. The strip C has in it a perforation C^1 which lies opposite the orifice A^2 in the side of the tray. The strip also has another perforation C^2 which is near one end of the tray and the side of the tray is recessed or perforated opposite this orifice C^2.

The operation of this lamp is as follows:—

When the tray is in the closed position, as shown in Figure 2, that is in the same position as the interior of a match box would be when the box is closed, the end F^2 of the tongue F is held by the resiliency of the tongue in the orifice C^2 of the strip C. In this position the tongue serves as a locking device to prevent the tray from sliding out, and the circuit is open because no connection exists between the strip C and the plate D. If the tray A^1, however, is pushed out with the bulb end foremost, as shown in Figure 1, the projecting end F^2 of the tongue F is made to ride out of the orifice C^2 and finally drops into the orifice C^1. This end F^2 is shaped to make contact with the sides of the orifice C^1 and also pro-

ject through it sufficiently to make contact with the projection D^2 on the lug D^1 of the plate D. This completes the circuit with the bulb so that the bulb, which is now exposed beyond the outer casing A, will become luminous. The projection F^2 engaging the orifice C^1 in addition to closing the circuit acts again as a detent to prevent accidental displacement of the tray A^1, but it does not prevent the tray from being forcibly pushed in so that the parts can again be brought to the position shown in Figure 2.

It will be observed that the strip C is slightly bowed in Figure 2, so that it stands away from the outer side of the tray, whereas in Figure 3 it lies flat against the same. The object of this is to ensure that the tapered projection F^2 shall make contact with both the strip and the stud D^2. It will be seen that if the tapered projection is made of such dimensions that it will fill the orifice C^1, and then push the strip C flat against the tray A^1 so that its end comes into contact with the stud D^2, metallic contact with both these parts is ensured. It is not essential to have the strip C bowed as the tray is almost sure to be pushed to such a position that one side or other of the orifice C^1 will make contact with the projection F^2, and then all that is necessary is that the projection shall be long enough to ensure contact with the stud D^2.

The resilience of the tongue F whilst operating to cause the end F^2 to engage the orifice C^1 or C^2 is not necessarily dependent only upon this for its engagement as the side of the casing A has some degree of resilience and can also be utilized to urge the end F^2 into either of the said orifices.

It will be appreciated that a lamp according to this invention may be made up in various shapes and the case may be finished in leather or other material as required and decorated according to taste.

It has before been proposed to employ a casing carrying the battery which could slide in one end of an outer casing (which casing was closed at the other end) for the purpose of closing or opening the circuit, but the bulb in this case was carried by the outer casing and always exposed to view; it has also been proposed to provide a walking stick carrying a battery and bulb at its top end with a cover cap which cap when slid upwards exposed the bulb between it and the stick and completed the circuit; no claim is made in the present specification for such devices.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a flash-lamp the combination of an outer sleeve-like casing open at both ends, a tray slidable longitudinally within the said outer casing, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, an automatic switch whereof one part is mounted upon the tray and a co-operating part upon the interior of the casing in such a manner that the circuit is open when the tray is housed within the casing but is closed when the tray is made to protrude sufficiently to expose the lamp-bulb and means to connect a battery within the tray to the lamp-bulb through the said switch, substantially as set forth.

2. In a flashlamp, the combination with an outer sleeve-like casing, and a tray slidable longitudinally therein having substantially the proportions of a match-box with its tray, of means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, an automatic switch whereof one part is mounted upon the tray and a co-operating part upon the casing in such a manner that the circuit is open when the tray is housed within the casing, but is closed when the tray is made to protrude sufficiently to expose the lamp-bulb, one of said switch parts constituting a detent and adapted to engage with that one of the two relatively slidable members upon which it is not mounted and to arrest the same against sliding movement when the circuit is closed, and means to connect the battery within the tray to the lamp-bulb through the said switch, substantially as described.

3. In a flash-lamp the combination of an outer sleeve-like casing open at both ends, a tray slidable longitudinally within the said outer casing, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, a yieldingly controlled detent secured to one of the said two parts which have relative sliding movement, a metal strip secured to the other of the said two parts in such a position as to afford a sliding track for the free end of the detent and provided with an aperture so situated as to receive the detent when the tray is protruded to expose the lamp, a contact-piece supported in such a position opposite the said aperture that the detent when entering the latter makes contact both with the apertured strip and the said contact-piece, and means to connect a battery within the tray in series with the lamp-bulb to the said contact-piece and metal strip, substantially as set forth.

4. In a flash-lamp the combination of an outer sleeve-like casing open at both ends, a tray slidable longitudinally within the said outer casing, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, a resilient tongue secured to one of the said two parts which have relative sliding movement provided with a projection near its free end extending towards the other of the said two parts, a metal strip secured to the said other part in such a position as to afford a sliding track for the said projection upon the tongue and so situated as to receive the projection when the tray is protruded to expose the lamp, a contact-piece supported on the said other part in such a position opposite the said aperture that the projection when entering the latter makes contact both with the apertured strip and the said contact-piece, and means to connect a battery within the tray in series with the lamp-bulb to the said contact-piece and metal-strip, substantially as set forth.

5. In a flash-lamp the combination of an outer sleeve-like casing open at both ends, a tray slidable longitudinally within the said outer casing, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, an automatic switch whereof some parts are mounted upon the tray and co-operating parts upon the interior of the casing in such a manner that the circuit is open when the tray is housed within the casing but is closed when the tray is made to protrude sufficiently to expose the lamp-bulb, a metallic plate within the tray so situated as to press upon one contact-strip of an ordinary dry battery when placed within the tray and also to afford a switch-contact for co-operation with the co-operating parts mounted upon the interior of the casing, substantially as set forth.

6. In a flash-lamp the combination of an outer sleeve-like casing open at both ends, a tray slidable longitudinally within the said outer casing, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, a resilient tongue secured to one of the said two parts which have relative sliding movement provided with a projection near its free end extending towards the other of the said two parts, a metal strip secured to the said other part in such a position as to afford a sliding track for the said projection upon the tongue and so situated as to receive the projection when the tray is protruded to expose the lamp, a metal plate secured to the interior of the tray having a projection extending away from a wall of the tray in such a position as to press upon one connecting strip of an ordinary dry battery when placed within the tray and having a second projection so situated opposite the said aperture in the metal strip as to receive and make contact with the projection upon the tongue when the said projection enters the latter in such a manner as to make contact also with the strip, substantially as set forth.

7. In a flash-lamp the combination of an outer sleeve-like casing and a tray slidable therein having substantially the proportions of a match-box with its tray, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, a resilient tongue mounted upon the interior of the casing and having a metallic projection extending towards the tray, a metallic strip secured to the exterior of a wall of the tray in such a position as to be presented to the said projection on the tongue and provide a sliding track therefor and having an aperture to receive the said projection when the tray is protruded to expose the lamp, a contact-piece supported in the tray adapted to press upon one connecting strip of an ordinary dry battery when placed within the tray so situated opposite to the said aperture as to receive the projection upon the tongue when the latter enters the said aperture and also makes contact with the said metal strip and a connecting conductor extending from one terminal of the lamp-support to the said metal strip, substantially as set forth.

8. In a flash-lamp the combination of an outer sleeve-like casing and a tray slidable therein having substantially the proportions of a match-box with its tray, means to support an electric lamp-bulb within the tray in such a position that it is exposed to view by a sliding movement of the tray within the said casing less than sufficient to withdraw the tray completely from the casing, a resilient tongue mounted upon the interior of the casing and having a metallic projection extending towards the tray, a metallic strip secured to the exterior of a wall of the tray in such a position as to be presented to the said projection on the tongue and provide a sliding track therefor and having one aperture to receive the said projection when the tray is protruded to expose the lamp and a second aperture to receive the said projection when the tray is enclosed within the casing, a contact-

piece supported in the tray adapted to press upon one connecting strip of an ordinary dry battery when placed within the tray so situated opposite the first said aperture as to receive the projection upon the tongue when the latter enters the said aperture and also makes contact with the said metal strip and a connecting conductor extending from one terminal of the lamp-support to the said metal strip, substantially as set forth.

9. In a flashlamp, the combination with an outer sleeve-like member, an inner member constituting a tray slidable longitudinally therein, and means to support an electric lamp-bulb within the tray in such a position that it will be exposed to view by a sliding movement of the inner member in relation to the outer member less than sufficient to withdraw the tray completely from the outer member, of an automatic switch comprising one part that is mounted upon said inner member, and a cooperating part mounted upon the interior of the said outer member in such a manner that the switch is open when the tray is housed within the outer member, but is closed when the tray is made to protrude sufficiently to expose the lamp-bulb, said inner member having two spaced perforations in one of its walls and said second part of the switch constituting a detent adapted to enter said holes in two positions of said inner member, one of said positions corresponding to that in which the switch is closed, and means for connecting a battery within said inner member to the lamp-bulb through the said switch, substantially as described.

In testimony whereof I affix my signature.

MAGNUS GOODFELLOW.