Sept. 3, 1957 H. S. BROWN 2,805,356

ELECTRIC SAFETY LAMP

Filed July 22, 1953

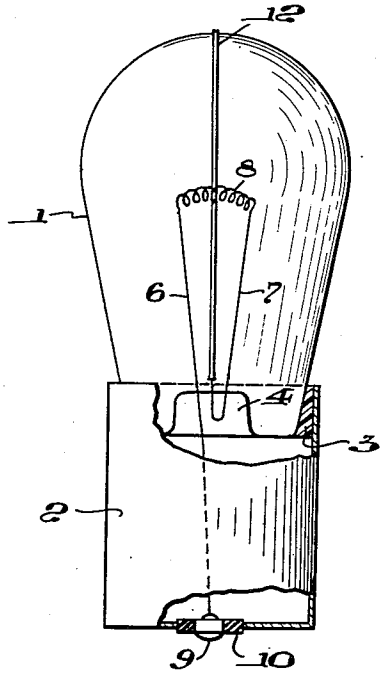


Fig. 1.

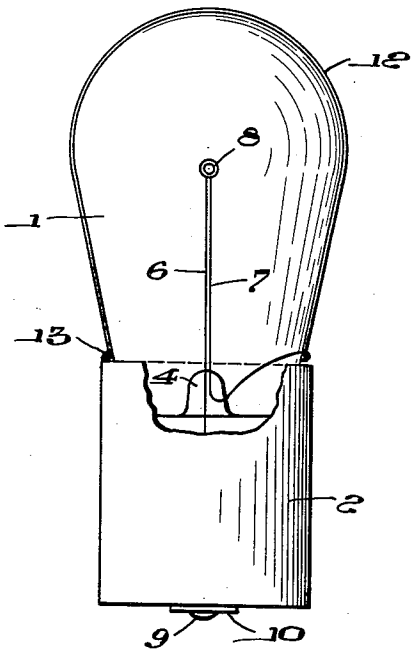


Fig. 2.

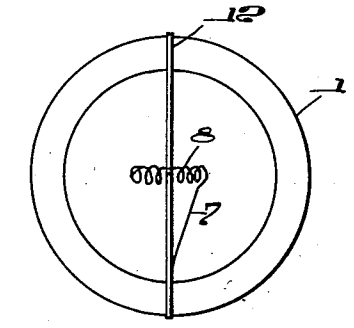


Fig. 3.

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ELECTRIC SAFETY LAMP

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2 Claims. (Cl. 313—315)

This invention relates to electric lamps that may be used in explosive atmospheres.

Electric lamps for miners and the like frequently are used in locations where filaments of the lamps, if exposed to the atmosphere while incandescent would cause explosions due to explosive gases in the atmosphere. The filaments sometimes become exposed, due to the accidental breaking of the glass envelopes or bulbs in which they are sealed. Attempts have been made to avoid this danger by opening the electric circuit outside of a broken lamp before the dangerous gas can reach the lamp filament, but this requires movement of the lamp or some element of the circuit which may take too long to be effective or which may fail to take place because of sticking.

It is among the objects of this invention to provide an electric lamp which is safe to use in explosive atmospheres, which has a self-containing circuit breaking feature that always works, which does not require the moving of any elements in order to break the circuit, and which is inexpensive to produce.

In accordance with this invention a filament is mounted in any convenient manner in the glass envelope of a lamp. One end of the filament is connected with a base terminal. The other end of the filament is connected with a brittle conductor that is connected to the second terminal, such as the metal base of the lamp. The brittle conductor is joined to the glass envelope in such a way that if the envelope is broken the conductor is broken with it, thereby always opening the circuit to the filament at the same instant the glass is broken. Preferably the brittle conductor extends lengthwise of the envelope along its opposite sides and across its outer end. The conductor may be cemented to the glass or fused to it.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a side view of my lamp with parts of the base broken away;

Fig. 2 is a side view with the lamp turned 90° from the position of Fig. 1; and

Fig. 3 is an outer end view of the lamp.

Referring to the drawings, the usual evacuated glass bulb or envelope **1** has its inner end set in a metal cup-like base **2**, where it is retained by a hardened plastic material **3**. Sealed in a central glass boss **4** integral with the inner end of the envelope are two wire leads **6** and **7** that extend toward the opposite end of the envelope. The ends of these leads inside the envelope are connected to and support the opposite ends of the lamp filament **8**. The opposite end of one of the leads extends away from the envelope and is soldered to a base terminal button **9** mounted in an insulating ring **10** secured in the center of the end wall of the base **2**. The other lead **7**, however, instead of extending laterally to the side of the base which forms the other terminal, extends out through the side of the bulb beyond the base and has its outer end

joined to a conductor **12** that extends around the envelope to the opposite side of the base, to which the conductor is soldered at **13** to complete the circuit through the filament.

According to this invention, the conductor **12** is a fragile or brittle element that is joined intimately to the envelope so that if the envelope is broken the conductor will be broken with it to break the circuit. The conductor can be some such material as copper or silver that is printed or plated on either the inner or outer surface of the glass. In the drawings it is shown on the outer surface. If desired, the conductor can be fused on the glass by covering it with a coating of silica or the like. Although the conductor could be wrapped around the envelope, it is preferred that it extends from the base outward along one side of the envelope and then across its rounded outer end and back along its opposite side to the base. This arrangement makes it nearly impossible to break the lamp without breaking the conductor. If desired, constant pressure can be applied to the envelope by a spring pressed wire loop in a well known manner so that the glass envelope will collapse even though it is fractured only slightly.

It will be seen that with this safety lamp it is unnecessary to provide any exterior means for opening the circuit in case the glass envelope is broken. Furthermore, breaking of the circuit and of the envelope occur simultaneously, and since the latter cannot occur without the former, dependability and safety are inherent in this lamp. There is nothing about the safety feature to get out of order, and it is not expensive to build it into the lamp. The lamp is safe to use with any socket that it will fit. Although only one filament is shown in the lamp, it will be apparent that the invention also is applicable to multi-filament lamps.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A safety lamp comprising a glass envelope, a lamp filament therein spaced from the envelope, terminal members at one end of the envelope, a wire lead connecting one of the terminals with one end of the filament, a second wire lead having one end connected to the other end of the filament, and a brittle conductor connecting the opposite end of the second wire lead in series with the other terminal, said conductor being joined rigidly to said envelope and extending around its outer end in a position to be broken if the outer end of the envelope is broken.

2. A safety lamp comprising a glass envelope, a lamp filament therein spaced from the envelope, terminal members at one end of the envelope, a wire lead connecting one of the terminals with one end of the filament, a second wire lead having one end connected to the other end of the filament, and a narrow brittle conductor band connecting the opposite end of the second wire lead in series with the other terminal, said conductor band extending lengthwise along opposite sides of the envelope and across its outer end and bonded to the envelope.

References Cited in the file of this patent

UNITED STATES PATENTS

563,319	Scribner	July 7, 1896
2,165,193	Wilbur et al.	July 4, 1939