Oct. 2, 1934. C. H. BRASELTON 1,975,499

CONSTANT ILLUMINATION ELECTRIC LAMP

Filed May 17, 1932

Fig. 1.

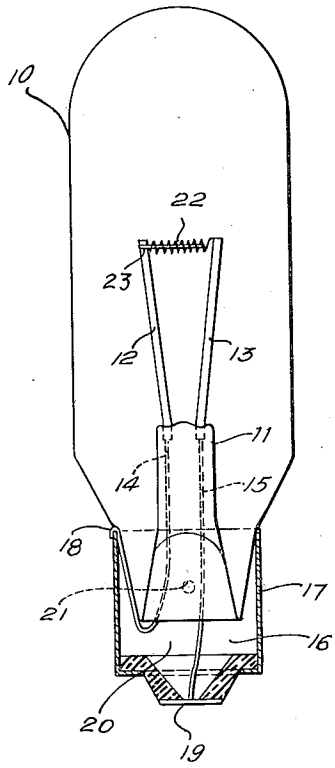
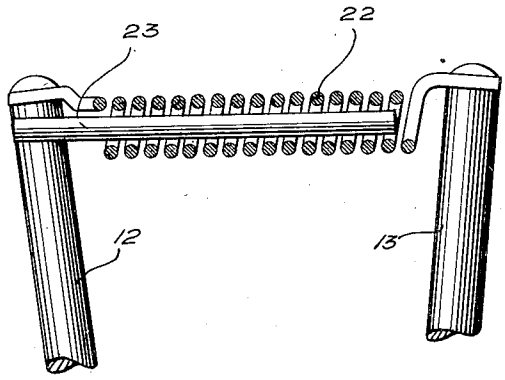


Fig. 2.



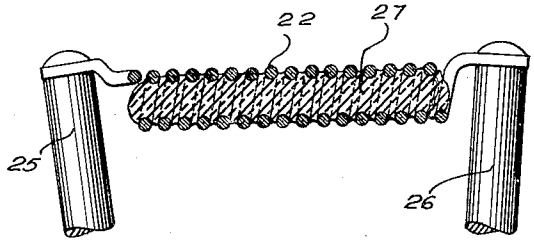


Fig. 3.

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CONSTANT ILLUMINATION ELECTRIC LAMP

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Application May 17, 1932, Serial No. 611,812

7 Claims. (Cl. 176—16)

This invention relates to electric lamps and particularly to that type adapted to give a constant illumination such as the lamp used as an exciter lamp in sound-on-film motion picture projection. In the production of sound from a motion picture film a light is directed in a thin slit through the sound track of the film and falls upon a light sensitive cell which is connected to an amplifier and a loud speaker, and as the film is moved at a constant speed across the path of light the light and shade variation on the sound track of the film cause light and shade modulations of the light falling upon the light sensitive cell with the result that the sound is produced in accordance with the variations on the film. Inasmuch as a lamp energized by alternating current tends to flicker as the current rises and falls this flicker will effect the light sensitive cell and produce a hum in the loud speaker corresponding to the alternating current cycle. Therefore it has heretofore been found necessary to energize the exciter lamp in a sound motion picture apparatus by direct current and for this purpose it is often necessary to install a motor generator set to convert the alternating current usually furnished by the commercial source into direct current.

It is one of the objects of the present invention to provide a lamp which may be energized by alternating current without the flicker which usually accompanies a lamp so energized so that constant illumination is produced with no deleterious hum results.

Another object of the invention is to provide a lamp in which the temperature of the filament is maintained substantially constant in spite of energization by alternating current.

Other objects of the invention will be apparent as the description thereof proceeds.

The invention has been illustrated in the accompanying drawing in which:

Fig. 1 is a side elevational view partly in section of an exciter lamp embodying the invention;

Fig. 2 is a greatly enlarged elevational view partly in section of the light emitting element of the lamp of Fig. 1; and

Fig. 3 is an enlarged sectional elevation of a modified form of light emitting element.

Referring now more specifically to the drawing the invention is shown incorporated in a lamp having a tubular envelope 10 of glass or other suitable transparent material having an inwardly turned press 11 fused to the envelope in a manner well known in the art. The press 11 has two support rods 12 and 13 sealed in it and extending upwardly inside of the envelope and these rods are connected to two wires 14 and 15 which pass through the press for making the necessary electrical connections for the lamp. A base 16 is shown similar to the bayonet-slotted base of an automobile lamp and comprises a metal sleeve 17 to which the wire 14 may be soldered, as at 18, and a central downwardly extending button 19 which is separated from the sleeve 17 by suitable insulating material 20 and may be connected to the wire 15. The sleeve 17 may be provided with a pair of diametrically extending pins 21 for engaging slots in a socket to hold the lamp in proper position with respect to the apparatus with which it is used.

The two supports 12 and 13 may be diverged slightly from each other so that the tops of the supports are further apart than the bottoms and between the tops of the supports I position a filament 22 which is preferably wound in a coil whose diameter is in the neighborhood of $\frac{1}{16}$ inch and which may be formed of any of the high resistance metals used for lighting filaments such as tungsten, tantalum, or the like.

Thus constructed the lamp is similar to those now in general use which are used as exciter lamps in motion picture sound reproduction but in the present invention I provide a rod 23 of refractory metal such as tungsten, tantalum, molybdenum, or the like extending through the center of the coil but spaced from the turns thereof and connected as by welding to one of the support rods, shown in this case as the support rod 12. The free end of the rod 23 terminates as indicated a short distance from the support rod 13 so that there is no connection between that end of the rod and the filament.

The presence of the rod of refractory material in the coil 22 acts as a heat ballast so that the heat stored up in the rod 23 helps to heat the coil 22 and maintain its temperature constant during the period when the flow of current in the circuit is crossing the zero mark. Thus the lamp may be used with commercial alternating current lines such as those operating on 60 cycles and will produce practically as constant a light as though it were energized by direct current.

While the metal rod 23 shown in Figs. 1 and 2 may perhaps be preferred it is also possible to use the construction shown in Fig. 3. Here the coil 24 is shown supported between two rods 25 and 26 and the interior of the coil is filled with a material 27 which may be any suitable refractory insulating material which may be molded or forced

into the interior of the filament. This material has an effect similar to the rod 23 of Figs. 1 and 2 in that the additional mass in the filament stores up heat and helps maintain the temperature constant even though the filament is energized by alternating current.

With such a device it is possible to operate a sound-on-film motion picture apparatus without the necessity for providing direct current for the exciter lamp. While the lamp has been described, however, in connection with such an exciter lamp it is to be understood that the invention is applicable to any use where it is desired to iron out the irregularities of light caused by fluctuating current and to produce a constant illumination.

Many modifications of the invention may be resorted to without departing from the spirit thereof and I do not wish to limit myself therefore to what has been shown and described except as such limitations occur in the appended claims.

What I desire to secure by Letters Patent and claim is:

1. In a device of the class described a filamentary resistance wire, means comprising an electrically open circuited mass closely adjacent to said wire but out of contact therewith for maintaining the temperature of said wire at a constant value when said wire is energized.

2. In a device of the class described a filamentary resistance wire, a rod of refractory material closely adjacent to said wire but out of contact therewith for maintaining constant the temperature of said wire and a common support for one end of said wire and for said rod and a support for the other end of said wire.

3. In a device of the class described a filamentary resistance wire, means to support one end of said wire, means to support the other end of said wire, and a bar of refractory material attached to one of said supports and extending closely adjacent said wire but out of contact therewith.

4. In a device of the class described a filamentary resistance wire wound in the form of a coil, means to support one end of said coil, means to support the other end of said coil, and means providing additional mass mounted on one of said support means and out of contact with said coil for eliminating temperature fluctuation.

5. In a device of the class described a coil of filamentary resistance wire, means to support one end of said coil, means to support the other end of said coil, and a refractory rod mounted only on one of said supporting means and extending into said coil but out of contact therewith.

6. In a device of the class described a filamentary coil of resistance wire, means to support one end of said coil, means to support the other end of said coil, and a rod of tungsten extending into said coil and supported only on one of said supporting means but out of contact with said coil.

7. In a device of the class described a coil of filamentary resistance wire, a pair of spaced supports, said coil being positioned in a straight line between said supports, and a rod of tungsten wire extending into said coil and attached to one of said supports and terminating adjacent the other support but out of contact therewith and out of contact with said coil.

CHESTER H. BRASELTON.