M. M. MERRITT.

INCANDESCENT LAMP.

APPLICATION FILED FEB. 24, 1906.

1,034,722.

Patented Aug. 6, 1912.

FIG. 1.

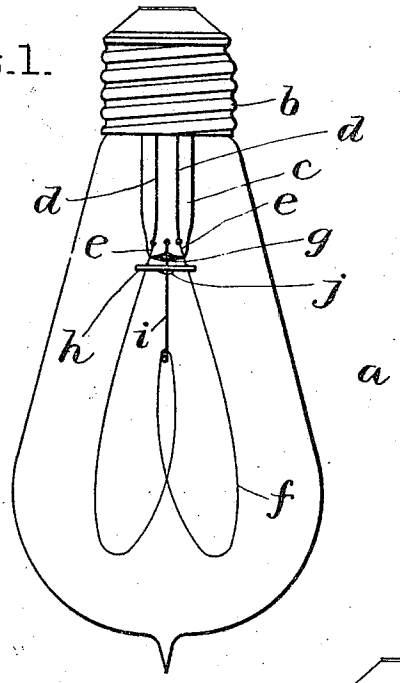



FIG. 2.

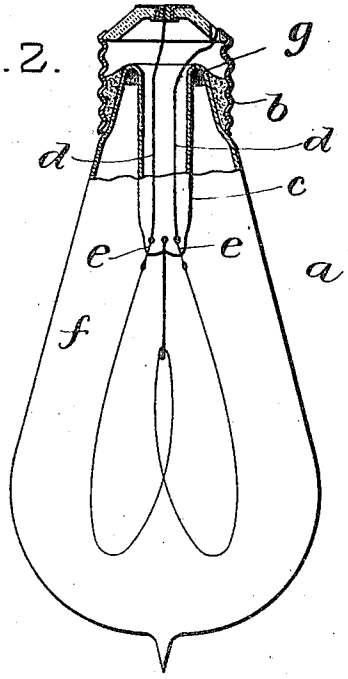
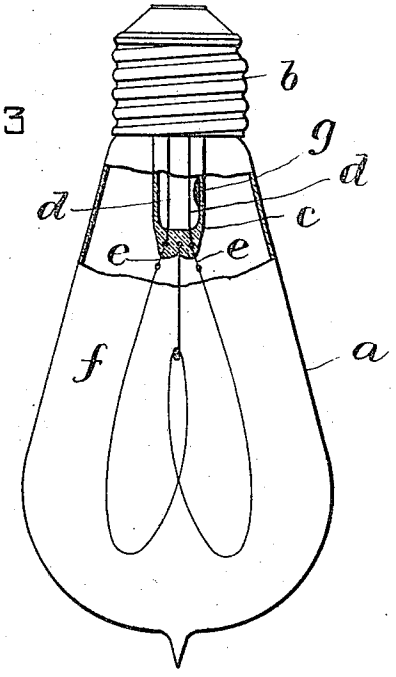



FIG. 3

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# UNITED STATES PATENT OFFICE.

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## INCANDESCENT LAMP.

1,034,722. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed February 24, 1906. Serial No. 302,673.

*To all whom it may concern:*

Be it known that I, MATTHEW M. MERRITT, a citizen of the United States, residing at Middleton, county of Essex, and State of Massachusetts, have invented an Improvement in Incandescent Lamps, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to improvements in incandescent lamps, having more particularly for its object the provision of a lamp so constructed as to prevent, or render commercially impracticable, its renewal, or, in other words, the substitution, or attempted substitution, of a new filament for the old one when the latter is burned out or otherwise rendered useless or inefficient. It is a common practice to purchase at a relatively slight cost high grade lamps thus burned out, open the end or tip of the lamp and replace the old filament with a fresh one. The new filament having been attached to the leading-in wires, the lamp is exhausted by the usual process, the bulb sealed up, and the renewed or converted lamp in condition again for use. This renewing process is frequently conducted by irresponsible persons lacking the necessary skill and knowledge in the art and employing inferior materials, so that its product, in any event an inferior one, is very often a low grade lamp, though having every appearance of a high grade one.

My invention aims to correct this practice, preventing possible injury to the reputation of the maker of the original lamp and deception of the public as well.

My invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one or more specific embodiments thereof, while its scope will be more particularly pointed out in the appended claims.

Referring to the drawings,—Figure 1 shows a lamp embodying one form of my invention, and Figs. 2 and 3 show modifications thereof.

In the described embodiment of my invention I take advantage of the conditions under which certain parts of the renewal process are carried out and provide for the development of certain manifestations when those conditions are present which preferably result in injury of some kind to the lamp.

While other means than those described may be employed and other conditions relied upon to cause the desired manifestations, as well as other results relied upon to cause injury to the lamp or obstruction to the renewal process, in the embodiment of my invention here selected for illustration I so construct the lamp, or provide the same with such means, that, when subjected to a violent or abnormally high degree of heat, the bulb, stem or other essential part of the lamp is injured. In the case of the bulb or the stem the injury may consist of a puncture, due to fracture or other collapse, so as to render it impossible thereafter to maintain a commercial vacuum within the bulb space. This action can readily be effected, for during the process of renewal the lamp is repeatedly subjected to violent heating. For example one of the characteristics of an old or burned-out lamp, and invariably where it has been used any length of time, is a darkening or clouding of the bulb, which is caused by a deposit of finely divided matter thrown off by the filament or joints during incandescence. This deposit is a considerable factor alone in reducing the effective candle power of a lamp and its removal constitutes one of the usual and first steps in the renewing process after the opening of the bulb tip. This is ordinarily accomplished by subjecting the lamp, while the latter is slowly revolved, to some intense heat, such as the heat of an alcohol or hydrogen vapor torch. The heat which is usually imparted to the lamp and necessary to volatilize and drive off the solid deposit is probably not less than 500° or 600° Fah., and, of course, abnormally in excess of any heat to which the lamp bulb is ever subjected during its customary and intended use and greatly in excess of the maximum heat which can be interiorly imparted to the bulb by the incandescent filament. For example, the heating of the bulb of an ordinary sixteen candle power lamp can scarcely exceed 150° Fah. even when the filament is carrying the maximum current of which it is capable. Again, the tip of the lamp is subjected to excessive heat subsequent to the "burning out" of the deposit described. This occurs during the welding on to the

perforated bulb tip of the short glass stem or tubulature through which the subsequent exhaustion of the lamp is effected. This involves the heating of the bulb tip in a blow pipe flame causing, through conduction and radiation, the heating of the other parts of the lamp as well.

Referring to the embodiment of my invention shown in Fig. 1 there is shown a lamp of ordinary construction but provided with means responsive to a high degree of heat for causing injury to the bulb. The lamp there shown is provided with the usual glass bulb *a*, cemented or otherwise secured in the usual fashion to and within the metal socket *b* and having the usual form of glass stem *c*, through which pass the leading-in wires *d* having the sealed-in platinum ends *e*, the latter connected to the filament *f*. During original manufacture of the lamp in some suitable part thereof, preferably within the lamp space, as for example upon the tip of the stem there is placed a deposit, represented at *g*, of some material or substance which is preferably unaffected by the ordinary temperatures to which the lamp is subjected, but, when subjected to such violent heating as accompanies the "burning out" of the bulb deposit, is caused to injure the bulb or other lamp parts. For example, such substance may consist of a suitable quantity of sulfur mingled with graphite paste or other appropriate binder and applied through the aid thereof to the stem tip. Sulfur, when highly heated, produces a deposit which will smear the inner walls of the lamp and render the same unsalable. If removable at all, such deposit can only be removed by such steps as will increase the expense of the renewal process to a prohibitive degree.

To protect the chemical deposit against possible attempts to remove the same by manipulation carried on through the opened end of the bulb there may be provided means, such for example, as the shield *h*, which herein consists of a thin disk of porcelain or other suitable material, secured to the anchor wire support *i* just above the tip of the stem. The sleeve is slit to embrace the filament joints and perforated to be slipped over the anchor wire to which it is secured in any suitable way, as by the glass bead *j*.

Not only the nature of the substance, but its location as well, may be varied as desired, and in Fig. 2 I have shown a lamp where the inserted chemical, which is represented at *g*, is spread upon the inner walls of the bulb, where the latter is joined to the base of the stem. In this position the sulfur or other substance used when heated will tend to spread and smear over the adjacent walls of the bulb. Obviously, this and such other means as may be employed are unaffected by the heat to which the lamp is ordinarily subjected when in use.

My invention is not limited to the production of any particular injury to the lamp or to the injury to any particular part. For example, in Fig. 3 I have shown a substance, represented at *g*, placed interiorly within the hollow part of the stem when the lamp was originally constructed. Such substance is preferably of a volatile nature such that when the lamp is violently heated to a degree safely beyond the maximum heating limit due to ordinary lamp use, an excessive volume of gas will be suddenly produced. Such substance, for example, may consist of a number of grains of gun powder, which, when subjected to the heat of the "burning out" process, will explode, producing sufficient pressure within the stem to rupture or puncture the walls thereof and render the lamp useless without replacing some of its essential parts, which result is a prevention of its commercial renewal.

Where the explosive or volatile substance is placed in the stem, its effect may be made disastrous to the lamp without danger to the operator, for the amount of chemical may be so proportioned as to fracture the walls of the stem without injuring the outer walls of the bulb. The chemical or other substance inserted in the stem may be protected against exterior tampering save by removal of the socket itself through the application of suitable guarding means, as for example, a waterproof filler for the open end of the stem.

The insertion of the chemical or other substance within the stem permits its application to the lamp after the process of lamp construction has been substantially completed. This may be done after the process of exhaustion and after the lamp has been attached to its socket and just before the small perforation in the bottom of the socket has been closed.

Claim—

1. A non-renewable incandescent lamp having a filament, a bulb and means for defacing the walls of the lamp space when the lamp is violently heated.

2. A non-renewable incandescent lamp having a filament, a bulb and means for defacing the walls of the bulb on attempted renewal of the lamp.

3. A non-renewable incandescent lamp having a filament, a bulb and means for defacing the inclosing walls of the lamp space on attempted renewal of the lamp.

4. An incandescent lamp having a filament, a bulb and means within the vacuum space of the lamp for injuring the inclosing walls of the lamp space when the lamp is violently heated.

5. A non-renewable lamp having a filament, a bulb and a substance placed within

the vacuum space of the lamp at the time of its original construction and independent of the electric circuit thereof and adapted to injure the lamp on the external application of an abnormally high degree of heat thereto.

6. A non-renewable incandescent lamp having a filament, a bulb and means within the vacuum space of the lamp for injuring the lamp on attempted renewal thereof.

7. A non-renewable incandescent lamp having a filament, a bulb and fracturing means within the vacuum space of the lamp for injuring the lamp on attempted renewal thereof.

8. An incandescent lamp having a filament, a bulb and a substance placed within the lamp at the time of its original construction and independent of the electric circuit thereof and adapted to work injury to the lamp on the attempted renewal thereof.

9. A non-renewable incandescent lamp having a deposit in a suitable recess thereof of a substance independent of the electric circuit of the lamp, adapted to injure the lamp on the application of a high degree of heat, and means for preventing access to said substance.

10. A non-renewable incandescent lamp having means for injuring the walls of the filament space on the attempted renewal of the lamp, said means comprising an expansion member having a different coefficient of expansion from that of glass, said member being located to contact with the glass walls of the filament space, and adapted thereby to fracture the same on abnormal heating of the lamp.

11. A non-renewable incandescent lamp having means for preventing the renewal thereof, said means comprising an expansion member for causing injury to the lamp on violent heating thereof through the expanion of said member.

12. A non-renewable incandescent lamp having a filament, a bulb, and means within the lamp for fracturing the inclosing walls thereof on attempted renewal of the lamp.

13. A non-renewable incandescent lamp having interior-stem-fracturing means for preventing the renewal of the lamp.

14. A non-renewable incandescent lamp having means for injuring the stem thereof on the attempted renewal of the lamp.

15. An incandescent lamp having a filament, a bulb, and means within the lamp to rupture the walls thereof on the attempted renewal of the lamp.

16. A non-renewable incandescent lamp having a filament, a bulb, and means within the stem to rupture the walls thereof on the application of an abnormally high degree of heat.

17. An incandescent lamp having a filament, a bulb, and means within the lamp for injuring the inclosing walls of the filament space when the lamp is violently heated.

18. A non-renewable incandescent lamp having means to fracture the stem on the attempted renewal of the lamp.

19. A non-renewable incandescent lamp having a filament, a bulb, and expanding means to fracture the lamp walls inwardly on attempted renewal of the lamp.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

MATTHEW M. MERRITT.

Witnesses:
NINA B. SHIRLEY,
THOMAS B. BOOTH.