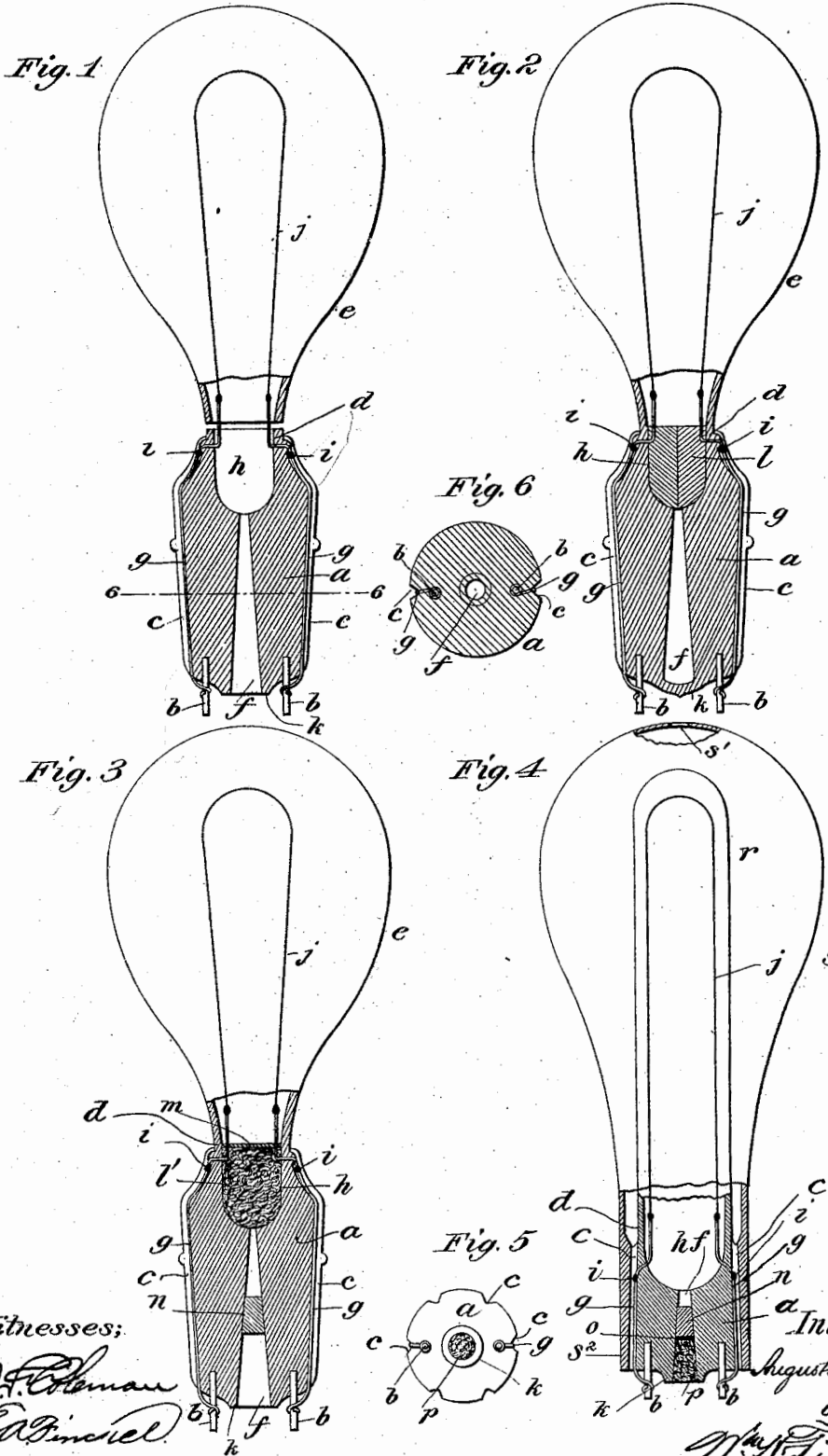


(No Model.)

A. C. CAREY.
INCANDESCENT LAMP.

No. 517,432.

Patented Apr. 3, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

AUGUSTUS C. CAREY, OF LAKE PLEASANT, MASSACHUSETTS.

INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 517,432, dated April 3, 1894.

Application filed February 3, 1894. Serial No. 498,974. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS C. CAREY, a citizen of the United States, residing at Lake Pleasant, in the county of Franklin and State of Massachusetts, have invented a certain new and useful Improvement in Incandescent Lamps, of which the following is a full, clear, and exact description.

The purpose and object of this invention is to construct the butt of a stoppered or other incandescent electric lamp without a cap and without running the leading-in wires through the length of the butt. It is well known that glass and all metals with the possible exception of platinum, when combined, expand and contract under the influence of heat and cold unequally, and in the case of wires passed through glass butts, this law results in the wires becoming loose and admitting air into the bulb, thereby impairing the efficiency of, if not destroying, the lamp. In my invention, I form the butt of glass or equivalent vitreous or ceramic substance, molded to fit the sockets of the installation upon which the lamps are to be used, thereby dispensing with the brass caps ordinarily used. I mold the contact wires in this glass butt, and provide longitudinal grooves in the outside face of the butt to receive the leading-in wires, which leading-in wires are passed through holes in the inner end of the butt and sealed therein by a glass or equivalent seal, whereby are avoided the evils incident to passing the leading-in wires through the butt.

Having thus stated the principle of my invention, I will proceed now to describe the best mode in which I have contemplated applying that principle and then will particularly point out and distinctly claim the part or improvement which I claim as my invention.

In the accompanying drawings, illustrating my invention, in the several views of which like parts are similarly designated, Figure 1 is a sectional elevation of one form of lamp embodying my invention, showing the bulb ready to be fused onto the butt. Fig. 2 is a similar view showing the lamp in readiness for use. Fig. 3 is a similar view showing the same sort of lamp closed in a different manner. Fig. 4 is a sectional elevation of my exhausted tube lamp with an atmospheric bulb,

and also illustrative of another form of sealing or closing the exhaust opening in the butt. Fig. 5 is a bottom plan view of the butt of Fig. 4. Fig. 6 is a cross section taken in the plane of line 6-6 Fig. 1 and looking toward the bottom of the sheet.

In the several forms of my invention shown in the drawings, the butt *a* is made of glass or equivalent mineral substance, composition or material, and in a form adapted to the kind or system of installation to which the lamps are to be applied.

In Figs. 1, 2 and 3 the butt is constructed for use in a Sawyer-Man installation, and it is adapted to be applied in the ordinary socket of such installation without the use of a brass-cap, such as is commonly necessary. This butt has molded in it the contact wires or pieces *b, b*, and its sides are provided with longitudinal grooves *c, c*. The top or inner end of the butt is made hollow and its annular wall *d* is of about the thickness of the bulb *e*, which is fused to said wall, although the said bulb and butt may be made integral, and if made integral the filament will be inserted from the outer opened end and the bulb be exhausted from such end, in the usual way; but I prefer the first named construction, namely, making the bulb and butt separately and fusing them together, the filament being applied before the bulb and butt are fused together and the exhaustion of the bulb being effected through an opening *f* in the butt, as will appear presently. The leading-in wires *g, g*, are made fast to the contact pieces *b, b*, by soldering or otherwise and extend thence through the grooves *c, c*, to the wall *d* and are passed through transverse holes in such wall within the cavity *h* surrounded by said wall, and sealed in said holes by glass or other equivalent air-tight sealing medium. I have shown the leading-in wires as made in two parts which are united by soldering or otherwise at *i* outside the bulb, but do not limit my invention to this construction. The filament or carbon or other incandescent element *j* is applied to the inner ends of the leading-in wires in any approved manner, either permanently, or with capability of renewal when broken or burned out. The bulb *s* then applied by fusing its neck to the wall *d*, and the lamp is then ready for ex-

hausting. The exhausting tube is applied to the flange *k* and the vacuum produced in the usual manner, after which the butt is sealed as in Fig. 2.

5 In order to strengthen the hollow end of the butt and to afford a support for the leading-in wires within the lamp, I may fill up the cavity *h* with a filling *l*, Fig. 2, made in sections so as to permit exhausting and before
10 sealing on the bulb and afterward these sections may be united by compression or otherwise as desired or practicable. This filling may subserve the additional purpose, if of a material of slight or no heat conductivity, of
15 preventing the absorption of heat by the butt, and a good filling for this purpose may be fibrous asbestos *l'* and the like, as in Fig. 3 with or without a shield or cover *m* of mica.

20 Instead of closing the exhaust hole *f* by fusing it, I may employ a ground glass or other plug *n* for that purpose, see Fig. 3; and this plug may be sealed in with a layer of quicksilver *o* and a filling *p* of cement or other substance, Fig. 4, added after the plug
25 is seated, to insure an air-tight stoppering of the hole *f* in the contingency of hard usage. But the exhausting and stoppering of the bulb and butt are not herein claimed, the same being reserved for a future application.

30 In Figs. 4 and 5, the butt is supplied with an exhausted illuminating tube *r*, and the bulb *s* is applied as a shield or "globe" for the said tube. This bulb is provided with a vent *s'*, and its opposite end has a tubular
35 neck *s²* which receives and surrounds the butt. The butt is provided with a number of longitudinal grooves *e*, two of which receive the leading-in wires and all of which serve as vents for the circulation of air through the
40 bulb and around the tube *r* to carry off the heat and thus prevent undue heating. The neck *s²* is to be adapted to be inserted in any socket.

What I claim is—

45 1. An incandescent lamp having a butt of moldable electrically non-conductive mate-

rial, shaped to fit any socket, having external longitudinal grooves, contact pieces molded in its end, and leading-in wires connected with said contact pieces and laid in said grooves, 50 substantially as described.

2. An incandescent lamp having a butt of moldable electrically non-conductive material, shaped to fit any socket, having external longitudinal grooves, contact pieces molded 55 in its end, and leading-in wires connected with said contact pieces and laid in said grooves and passed thence through the inner end of the butt and hermetically sealed therein, substantially as described. 60

3. In an incandescent lamp, a butt of molded electrically non-conductive material, shaped to fit the socket of a lamp, contact pieces molded in the outer end of the butt, longitudinal external grooves and an inner 65 annular wall provided with transverse holes, combined with leading-in wires connected with said contact pieces, laid in said grooves and passed through the holes in the annular wall and sealed therein hermetically, sub- 70 stantially as described.

4. In an incandescent lamp, a butt of molded electrically non-conductive material, shaped to fit the socket of a lamp, contact pieces molded in the outer end of the butt, a 75 number of longitudinal external grooves and an inner annular wall provided with transverse holes, combined with an illuminating tube inclosing the incandescing element, leading-in wires connected with said contact 80 pieces, laid in two of said grooves and passed through the holes in the annular wall and sealed therein hermetically, and an external surrounding ventilating and protecting bulb applied to the butt, substantially as described. 85

In testimony whereof I have hereunto set my hand this 19th day of December, A. D. 1893.

AUGUSTUS C. CAREY.

Witnesses:

JOHN J. MEEHAN,
ARTHUR FITCH.