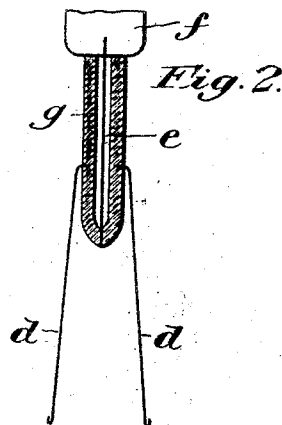
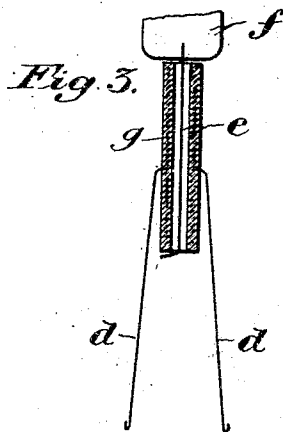
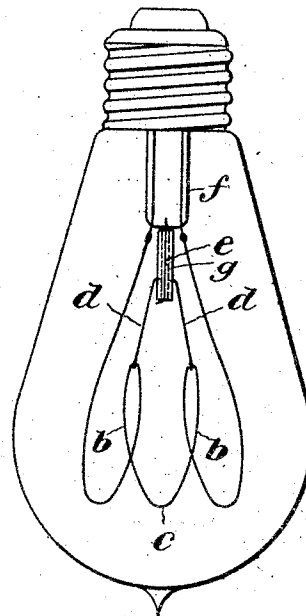


M. M. MERRITT.
INCANDESCENT LAMP.
APPLICATION FILED NOV. 27, 1905.

1,062,836.

Patented May 27, 1913.

Fig. 1.



Witnesses:
Horace A. Croisman.
Robert H. Hammler.

Inventor:
Matthew M. Merritt.
by Emory South Powell
Attys

UNITED STATES PATENT OFFICE.

MATTHEW M. MERRITT, OF MIDDLETON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

INCANDESCENT LAMP.

1,062,836.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed November 27, 1905. Serial No. 289,187.

To all whom it may concern:

Be it known that I, MATTHEW M. MERRITT, a citizen of the United States, residing at Middleton, in the 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 incandescent lamps and more particularly to methods of and means for anchoring or supporting the filaments therein.

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

Referring to the drawings,—Figure 1 shows a lamp provided with a filament which requires support at a plurality of points intermediate its ends, the same being anchored, according to the one embodiment of my invention which is submitted to illustrate the principles thereof; Fig. 2 shows on an enlarged scale the anchor carrying sleeve with its two connections or supports employed in that form of my invention illustrated in Fig. 1, the same being secured to a supporting wire by one method; and Fig. 3 shows the same secured to a different wire by another method.

Referring to the drawings and particularly to Fig. 1, I have there shown a lamp having a filament for which, on account of its length and shape, involving as it does a plurality of coils or loops, it is desirable to provide anchor supports *a, a* at a plurality of points, intermediate its ends. It will of course be understood that this form of filament is illustrative only and it will be obvious, as is hereafter more particularly set forth, that my invention has useful application to widely differing forms and constructions both of filaments and lamps.

In the relatively short anchored filaments which are of general manufacture and use to-day and which occur in lamps, for example, of the 110 volt class, there is ordinarily but a single loop or coil and a single anchor support for such a filament is sufficient. This ordinarily comprises a single

upright anchor wire sealed at one end into the stem of the lamp, mid-way between the ends of the filament and connected at its opposite end to the nearest portion of the filament loop.

In lamps of the type shown in Fig. 1, which has a double coil filament such as is typical for instance of a 220 volt lamp, the single anchor support of the single coil lamp has ordinarily been duplicated, the two supporting wires being individually, except as to location and perhaps dimensions, substantially the same construction as the single supporting wire of the 110 volt lamp.

The employment of a plurality of anchor wires sealed into the stem of a lamp although heretofore deemed desirable and for many forms of filaments necessary, has been found to possess several disadvantages. For example, the sealing-in of two anchor wires instead of one increases the chance of breakage and consequent leakage, for the supporting wires *a, a* become highly heated through their connection with the filament and tend to crack the glass where joined thereto. This is evidenced in actual practice by the large percentage of lamps which under usage are cracked or broken at the end of the stem. Moreover, a specially constructed stem, that is, one provided with a pair of anchor wires sealed therein, must ordinarily be provided for a multi-coil filament and a different one, that is, one having a single central anchor wire, for a single-coil filament. Again it will be obvious that with the now generally adopted form of stem, it is difficult, and in fact practically impossible to provide anchor supports for the filament at more than two points, the space in the stem end available for the sealing-in of anchor wires being practically consumed.

By the use of my invention, when carried out as in the described embodiment, the chances of breakage from the connection between the anchor support and the stem are reduced to a minimum, while still providing a plurality of points of anchor attachment for the filament; moreover, if desired, substantially the same construction of stem may be employed for either a single-coil or multi-coil filament, and, whether on the installation of the filament in the first place or on the renewal thereof, the same lamp-base,

stem and globe may be used interchangeably with either type of filament. It may also be possible to anchor the filament not only in two but in three, four or any number of points in the length thereof, if, for any reason, such anchoring seems desirable.

In Fig. 1, where I have shown for illustrative purposes one embodiment of my invention, the loops *b, b* of the filament *c* are anchored at the usual points, but by means of the two separate anchor supports, *d, d* connected to the single anchor support *e*, the latter sealed in or otherwise suitably secured to the stem *f* of the lamp. The support *e* may be of any suitable material or shape, but the same preferably, as shown, consists of a single wire support sealed into the stem intermediate the filament ends, and preferably as is ordinarily done in connection with single-coil filaments.

The branch wires or supports *d, d*, which should be electrically separated to prevent short circuiting the intervening portion of the filament, may be connected to the support *e* in any suitable way, but for constructional advantages, and to permit its ready application and manipulation with reference to a lamp having a previously sealed-in anchor wire, I prefer to attach them to a perforated or otherwise formed insulating body such as the insulating sleeve *g*, which may readily be engaged with and attached to the anchor wire *e*. The sleeve *g* may be, and preferably is, a piece of small glass tubing, into the sides of which the inturned ends of the supports *d, d*, may be welded by merely softening the sides of the tube in the blow pipe flame, this providing at the same time a firm and efficient connection and presenting an insulating body between the ends of the wires.

In the renewal of a lamp, for example, an aperture may first be formed in the tip end of the bulb opposite the stem, as is usual, and the sleeve or anchor carrier *g* with its attached connections, when formed as described and as shown in Fig. 2, may be entered through the opening and slipped over the end of the anchor wire *e*. To this it may be secured either fixedly in any suitable way, as by welding the end of the same to the single anchor wire, (see Fig. 2) or it may be somewhat loosely attached thereto, as by bending over the projecting upper tip of the anchor wire *e* (see Fig. 3) to prevent escape of the sleeve therefrom, while permitting more or less movement of the sleeve lengthwise on the upright support.

While the welding or other mode of fixedly attaching the anchor carrier to the sealed-in support may be preferable in many instances, that mode of fastening which permits some degree of play between the sleeve and the anchor wire is advantageous and particularly so with certain filaments, such

for instance as large filaments, for the sleeve is then permitted to follow more or less the expansion and contraction of the filament without straining the same, as might occur were the anchor wire perfectly rigid, and less heat is conducted to the sealed-in wire. The lamp having been prepared by the insertion of the anchor wires as described, the filament may then be installed in the usual way.

Not only does the use of a single anchor support of itself decrease the chances of breakage at the point where the anchor wire is sealed into the stem, but, where my invention is carried out in some way similar to the specific one illustrated, the carrier *g* acts, not merely as an effective radiator of heat conducted from the filament thereto, causing such heat to be dissipated before it reaches the junction of the anchor wire and the stem, but, when formed separate from the anchor wire, and particularly when loosely mounted thereon, the carrier has a heat insulating space between it and the anchor support, all this tending to prevent the deleterious effect of the heat transmitted from the filament to or toward the stem.

My invention is especially advantageous in its bearing upon the renewing of lamps, that is, the replacing of a burned out or otherwise damaged filament by a fresh filament through a small opening made for that purpose in the tip of the lamp bulb.

By the use of my invention the manufacturer of renewed lamps may, if desired, place a filament requiring a plurality of anchor supports in a lamp that was originally made with but one anchor wire or filament support, the only addition necessary being the employment of an anchor carrier, like the sleeve *g*, with its supports *d, d*, or the like. The end of the sealed-in wire having been cut off to the right length, the anchor carrier with its previously attached wires, being perforated, is readily placed on and over the projecting sealed-in wire, with an ease which is desirable where the manipulation must be carried on through the small restricted opening in the end of the lamp bulb. One advantage possessed by a sleeve in this operation is that it brings the ends of the anchor support at a previously ascertainable position so that no fitting need be done after the support is in position. Through the use of this invention, therefore, the manufacturer of renewed lamps is required to keep in stock old or damaged lamps of but one style, namely, those having the single filament support. These may be renewed into lamps having either the single filament or the double filament support.

The present manufacturing practice lies in the direction of filaments designed with

a view to effective light radiation and of such form, shape and construction as to require, or make highly desirable, a plurality of anchor supports. It therefore follows that, in a lamp provided with a filament constructed perhaps according to earlier usages in the art and having relatively inferior light-distributing qualities, my invention permits the substitution for that filament, whether the latter is impaired through usage, or unimpaired, of a new filament of superior light-distributing qualities for which two or more anchor supports are desirable or necessary, thus, in effect converting an inferior lamp into a superior one.

While I have disclosed and described in detail one embodiment of my invention sufficient to give an adequate comprehension thereof, it is to be understood that the same includes within its scope extensive modifications thereof and wide departures therefrom and many variations in construction and manipulation which will be obvious to those skilled in the art, all of which are unnecessary for me to refer to or suggest herein.

Claim:

1. An incandescent lamp provided with a filament, a stem through which the filament connections enter, a single metallic anchor wire sealed into said stem, a glass sleeve upon said wire, and electrically separated branch wires sealed into said sleeve and connected respectively to different points in the length of said filament.

2. An incandescent lamp provided with a filament, a stem, a single metallic anchor wire sealed into said stem, a sleeve upon said wire, and a plurality of electrically separated anchor wires fastened to said

sleeve and connected respectively to different points in the length of said filament.

3. An incandescent lamp having a filament, a stem, a metallic anchor support sealed into said stem, a perforated body of insulating material secured to said support, and a plurality of electrically separated anchor wires secured to said insulating material and at their opposite ends connected respectively to different points in the length of the filament.

4. The combination with a plurality of filament loops of a metallic anchor support and a plurality of electrically separated supports by which the various filament loops are supported and which are connected to said anchor support by a perforated carrier movably mounted thereon.

5. An anchor carrier for an incandescent lamp comprising a hollow elongated sleeve adapted to be placed upon a filament support, and a plurality of electrically separated connections secured to said sleeve and adapted to be attached to separated points in the length of the lamp filament.

6. An anchor support for a lamp filament comprising an elongated supporting member adapted for attachment to the lamp, said member being perforated for application to a suitable projecting part on the lamp and separate, anchoring supports secured to said member.

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

MATTHEW M. MERRITT.

Witnesses:

THOMAS B. BOOTH,
CHAS. E. PIERCE.