Aug. 30, 1927.

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H. WORKMAN

ELECTRIC INCANDESCENT LAMP

Filed Feb. 7, 1923

Fig.1.

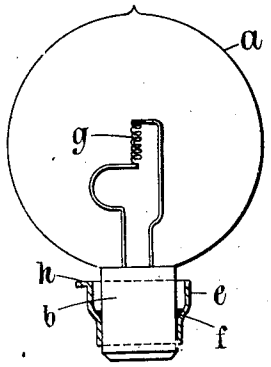


Fig.3.

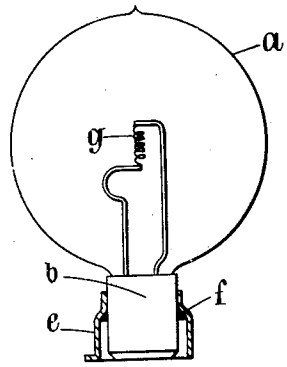


Fig.2.

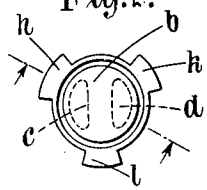


Fig.4.

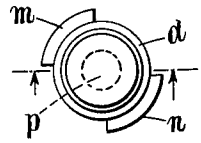
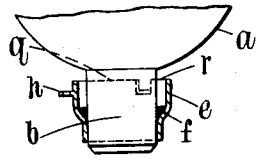


Fig.5.



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UNITED STATES PATENT OFFICE.

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ELECTRIC INCANDESCENT LAMP.

Application filed February 7, 1923, Serial No. 617,631, and in Great Britain July 5, 1922.

This invention relates to electric incandescent lamps and to lamp holders therefor. The principal object of the invention is to provide for the correct locating of the filament of an electric incandescent lamp in relation to its lamp holder or to an optical reflector or lens system by which the light emitted from the lamp is directed and controlled. This invention is particularly applicable to lamps used for light projection purposes and more particularly to motor car head lamps.

Electric incandescent filament lamps for signalling purposes are at present made so that when the lamp is inserted in position in its holder the filament occupies the desired position in relation to the holder and reflector but in this case a special cap fitted with a long stem and a special lamp holder are employed.

In the case of motor car head lamps it is usually required to locate a closely wound type of filament correctly in relation to a reflector of parabolic or other form. It may be required for example to bring the axis of a pillar filament into line with the axis of the reflector, while bringing the ends of the filament within a prescribed range either in front or behind a focal point, or between two foci in the case of a lamp having a reflector made up in parts whose foci are at different points on the axis.

The present invention enables lamp bulbs fitted with caps of the usual type and with single, or double pole contacts, to be used in conjunction with lamp holders provided with spring pressed terminals and at the same time enables the lamps to be adjusted so that when fitted in position in the lamp holders their filaments will be in the required position without any subsequent adjustment.

To this end the invention mainly consists in an electric incandescent filament lamp bulb having a cap and single or double pole contacts of the usual character and having a fitting piece secured to the cap and adjusted so that the incandescent filament is located in a fixed definite position in relation to the parts of the fitting piece which engage with the lamp holder when the fitting piece is inserted in the lamp holder in the working position.

In order that the invention may be clearly understood and readily carried into effect, some examples of incandescent electric lamps furnished with fitting pieces in accordance with the present invention are illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of the lamp showing the fitting piece in section;

Figure 2 is a plan of Figure 1, with the lamp bulb removed;

Figures 3 and 4 are similar views of a second form of lamp; while

Figure 5 is a view similar to Figure 1, of yet another form.

Referring first to Figures 1 and 2, a lamp *a* is shown having a cap *b* with the usual double pole contacts *c*, *d*. The fitting piece is in the form of a tubular ferrule *e* and is secured to the lamp cap *b* by an adhesive binding material, in the actual case illustrated, by solder which is seen at *f*. The ferrule *e* has its lower end of reduced diameter for a short length so as to fit rather loosely upon the cap *b*, so that prior to securing the ferrule *e* to the cap *b*, the lamp as a whole and consequently the filament can be adjusted relatively to the ferrule in an axial direction and the lamp can be slightly swung relatively to the ferrule to adjust the position of the filament *g* until it lies exactly in the axis of the ferrule *e*. The upper end of the ferrule *e* has lugs *h*, *k*, *l*, of which the lug *h* is wider than the other two and these lugs serve for securing the lamp in the bayonet lamp holder. The form of lamp illustrated in Figures 1 and 2 is particularly adapted for use in a lamp holder, such as is illustrated in Figures 1 to 7 of the drawings accompanying my patent application Serial No. 617,632, filed February 7, 1923. Such a lamp holder enables the advantages of the present invention to be fully employed because such a lamp holder is arranged to be firmly fixed in its correct position relatively to a parabolic reflector or the like.

The bulb *a* and the fitting piece *e* are temporarily held in a suitable fixture in which the bulb can be adjusted along the axis of the fitting piece *e* and the filament can be swung relatively to that axis as already referred to. Then relative adjustment is carried out until the fitting occupies the desired position relatively to the lamp filament. The fitting piece *e* is then secured by cement, solder or the like to the cap *b*. The lug *h* is made wider than or of a different shape from the other two lugs to ensure that the lamp shall be placed in the correct angu-

lar position in the lamp holder so that the terminals *c*, *d* shall register correctly with the contact studs of the lamp holder, as in this case, double pole contacts are illustrated fitted in the lamp cap.

If desired the lower reduced end of the ferrule *e* may be made with holes or notches into or through which the solder *f* can flow in order to secure the ferrule *e* to the cap *b*. The arrangement illustrated in Figures 3 and 4 is similar to that shown in Figures 1 and 2 and the same reference letters have been applied, so that separate description is unnecessary. It is only necessary to point out that in Figures 3 and 4, the lamp cap as illustrated is only furnished with one contact *p* arranged centrally, the other end of the filament being, of course, as is usual connected to the outer casing of the lamp cap *b*. A cap having double pole contacts could of course also be used with this form of fitting piece if desired. Further, in these figures, the reduced part of the ferrule *e* is at the end nearer the lamp bulb, so that the lugs corresponding to *h*, *k*, *l*, are at the end of the cap remote from the bulb *a*. Also instead of three lugs *h*, *k*, *l*, only two lugs *m*, *n*, are provided giving only a two point contact but such contact extends over a sector shaped area at each side including an angle of almost a right angle. Consequently the form of lamp illustrated in Figures 3 and 4 can be more conveniently used, for example, with a lamp holder of the construction illustrated in Figures 14 and 15 of the drawings accompanying the specification of my patent application Serial No. 617,632, filed February 7th, 1923.

In Figure 5, another modification of the form of fitting piece illustrated in Figure 1 is shown. The fitting piece is again in the form of a tubular ferrule *e* and has three horizontal lugs near its upper end of much the same shape as the lugs *h*, *k*, *l*, in Figures 1 and 2. However, these lugs are formed by slitting the ferrule *e* from its upper edge and turning down the lugs outwardly. The parts of the ferrule between the lugs are allowed to remain standing projecting upwardly as seen at *q*, *r*. This construction has the advantage that these upstanding portions, part cylindrical in shape, can engage with the internal interrupted flange of a lamp holder, as illustrated in Figures 8 to 11 of the drawings accompanying the specification of my patent application Serial No. 617,632, filed February 7th, 1923.

Although the invention has been described as applied to lamp bulbs for use in motor car head lamps, yet it will be obvious that it is also applicable to lamp bulbs and lamp holders for any purpose requiring accurate locating of a filament in relation to an optical projection system. A practical advantage of the invention is that the pole pieces as in ordinary lamp bulbs may be used for contact making purposes with ordinary spring terminals in the lamp holder, the attached fitting pieces being positioned for locating and securing purposes only (unless they provide earthed return connections).

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. An electric incandescent lamp comprising in combination a bulb, a filament mounted therein, a lamp cap of usual construction with a metallic casing secured to said bulb, a lamp contact carried in said lamp cap and a sleeve shaped fitting piece formed to fit within a lamp holder and having a part making annular contact with the outside of said lamp cap, said part having such narrow axial width that the lamp cap is capable of rocking therein and means for securing said fitting piece to said lamp cap in a pre-determined position both axially and laterally with respect to said filament.

2. An electric incandescent lamp comprising in combination a bulb, a filament mounted therein, a lamp cap of usual construction secured to said bulb, a lamp contact carried in said lamp cap and a tubular fitting reduced at one end to fit loosely said lamp cap and to form a resting place for solder by which said fitting piece is secured to said lamp cap in a pre-determined position both axially and laterally with reference to said filament.

3. An incandescent electric lamp comprising in combination a bulb, a filament mounted therein, a lamp cap of usual construction secured to said bulb, a lamp contact carried in said lamp cap and a tubular fitting piece encircling said lamp cap formed with outwardly turned lugs adjacent the end of the fitting piece nearest to the lamp bulb and reduced at the opposite end to fit loosely said lamp cap and to form a resting place for solder by means of which said fitting piece is secured to said lamp cap in a predetermined position both axially and laterally with reference to said filament.

4. An electric incandescent lamp comprising in combination a bulb, a filament mounted therein, a lamp cap of usual construction secured in said bulb, a pair of lamp contacts carried in said lamp cap and a metallic tubular fitting piece formed at one end with three outwardly turned flat spaced lugs, one being of different dimensions from the others, said fitting piece being reduced at the opposite end to fit loosely said lamp cap and to form a resting place for solder by means of which said fitting piece is secured to said lamp cap in a pre-determined position both axially and laterally with reference to said filament.

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