No. 775,689. PATENTED NOV. 22, 1904.

A. SWAN.

BASE FOR INCANDESCENT LAMPS.

APPLICATION FILED MAR. 27, 1903.

NO MODEL.

Fig. 1.

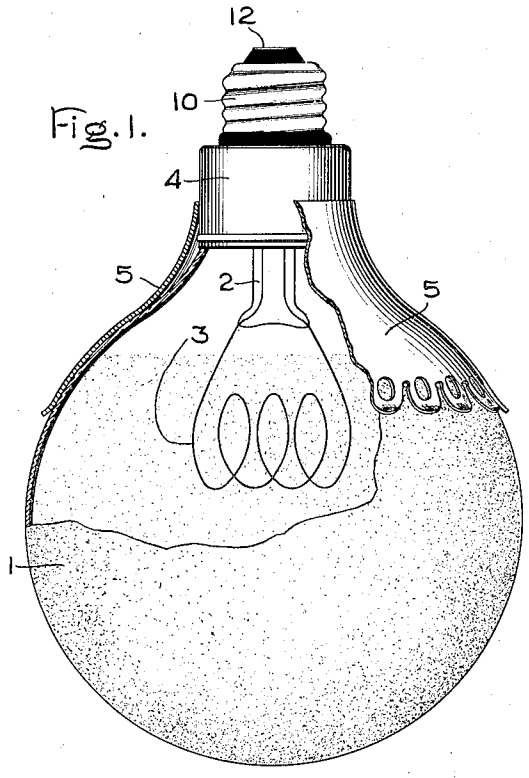


Fig. 2.

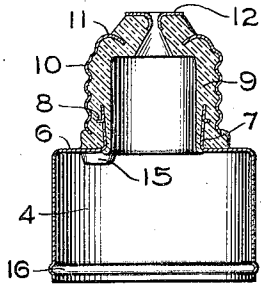


Fig. 3.

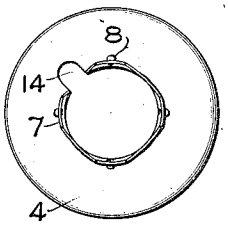
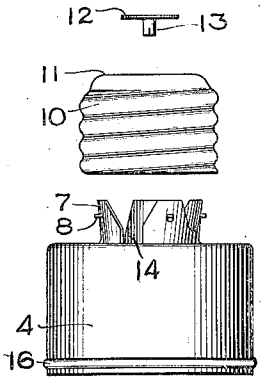


Fig. 4.



Witnesses:
George A. Thornton.
Helen Orford

Inventor:
Alfred Swan,
by Albert G. Davis,
Atty.

No. 775,689. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

ALFRED SWAN, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BASE FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 775,689, dated November 22, 1904.

Application filed March 27, 1903. Serial No. 149,828. (No model.)

To all whom it may concern:

Be it known that I, ALFRED SWAN, a subject of the King of Great Britain, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Bases for Incandescent Lamps, of which the following is a specification.

This invention relates to a base for an incandescent lamp by which the lamp is held in a suitable socket and electrical connection made between the lamp-terminals and the terminals of a working circuit.

In the common type of incandescent lamps the lamp-bulb is blown from a glass tube the diameter of which approximates the diameter of the metallic shell which forms one terminal of the lamp. The neck of the bulb fits into the shell of the base and is held by a suitable cement, the small surface of the neck of the bulb to which the cement adheres being quite sufficient to insure a firm joint on account of the small size and light weight of a bulb of that type. It has been found desirable, however, to make bulbs much larger than those now in general use, and for this purpose a glass tube of greater diameter must be used from which to form the bulb. Such a bulb therefore could not be sealed in the common type of base, as the neck is the same size as the original glass tube. This neck could of course be contracted to the size of the shell; but in that case a joint between the bulb and shell would not be of sufficient strength to form a good support for the bulb, and, besides, it would add expense to the product. The size and shape of the larger bulb require that a greater portion of the glass surface of the bulb be held by the cement, and a bulb-holder of larger diameter than the ordinary shell is therefore necessary. At the end opposite that in which the bulb-stem is mounted this holder must be rigidly secured to terminals by which the lamp may be inserted in the sockets now in general use to connect it in circuit. As the bulb-holder extends out beyond a socket, it is important that it should be insulated from the parts which carry the current, for otherwise a person might receive a severe shock while inserting a lamp in a socket or removing it therefrom. The liability to receive a shock would be increased in some types of lamps in which a metallic reflector is used fitting closely around the holder and resting on the upper portion of the bulb. It would be difficult to handle such a lamp without touching the reflector, which would of course complete a circuit to the holder.

In view of the above-enumerated requirements I have provided a cylindrical metallic bulb-holder partially closed at one end and slightly larger in diameter than the glass tube from which the bulb is blown, and I find that the exterior surface of that portion of the neck which fits into the holder, owing to its increased diameter, affords a surface for the adhesion of the cement sufficiently large to insure a rigid and strong joint between the bulb and holder, that the necessity for altering the size of the neck after the bulb is blown is thus obviated, and that the bulb is rendered more attractive in appearance by preserving the customary proportions. Furthermore, I secure to but insulate from the partially-closed end of the holder the parts which form the lamp-terminals and which hold the lamp in the socket, so that the completed base comprises three metallic parts rigidly secured together, but insulated one from another. Two of these parts form the circuit-terminals and are made in any of the forms that have gone into general usage to permit using the lamps in existing sockets. The third part forms the bulb-holder and is expanded so as to receive a bulb-neck larger than the neck of the ordinary incandescent lamp. To insulate the metallic parts from one another, I prefer to use a filling of glass, which not only is an excellent insulator, but when reduced to a fluid state can be run in between the parts and molded into the desired form.

The features of novelty embodied in my invention will be definitely pointed out in the claims appended hereto.

The construction of my improved lamp-base will be set forth in detail in the following description, which will be the better understood

by reference to the accompanying drawings, in which I have illustrated the lamp-base as equipped with the Edison type of terminals, though it is to be distinctly understood that Thomson-Houston, Westinghouse, or any other terminals may be used instead.

In the drawings, Figure 1 represents an elevation of an incandescent lamp provided with my improved base, the bulb and shade being broken away and sectioned, in part, to better illustrate the construction. Fig. 2 is a sectional view of the completed base. Fig. 3 is a top view of the bulb-holder before being united to the other parts, and Fig. 4 is an elevation of the three metallic parts of the base.

In Fig. 1, 1 is a lamp-bulb blown from a glass tube which is larger in diameter than the threaded shell of an Edison base used with standard constant-potential sockets. The stem 2, carrying the filament 3, is fused to the bulb in the ordinary manner. The globe-holder 4 is a cylindrical shell partially closed at one end and of a diameter slightly greater than the tube from which the bulb is blown, so that the bulb-neck fits into it and is sealed in by a suitable cement. The holder 4 may be provided with a groove 16 on its inner side near the open end to increase the strength of the sealed joint. Around the holder and over a portion of the bulb is the reflector 5, its contact with the holder necessitating the insulation of the latter from the lamp-terminals.

The construction of the base is best shown in Fig. 2. The inner edge of the partially-closed end 6 of the holder 4 is provided with upwardly-extending flanges 7, which are embedded in the glass 9 and to which the glass adheres. These flanges 7 may be punched to form tangs 8 to give additional strength to the joint between the glass and the holder. Secured to the holder 4, but insulated therefrom by the glass 9, is the threaded shell 10, held in place by the adhesion of the glass to its inner surface. This shell is preferably formed with a dome-shaped bottom, as indicated at 11 and as described in my application, Serial No. 53,882, filed April 1, 1901, to reduce the waste of material and turned under slightly to form a flange which interlocks with and is embedded in the glass. The center contact is preferably a thin circular metallic piece 12, provided with a hollow stem 13. This is also secured to but insulated from the shell 10 and holder 4 by the filling of glass, and the end of the stem 13 is flared over, as shown in Fig. 2, by the plunger which molds the glass, so as to form an interlocking joint with the glass.

The use of glass as an insulator is a distinct advantage, as it may be run in around the metallic parts in a fluid state while they are held in the proper relative position in a suitably-shaped mold and then pressed into the form shown in Fig. 2 by a plunger. In cooling the glass adheres to the metallic parts, forming a firm bond between the parts and making the base practically moisture-proof and air-tight.

The closed-in portion 6 of the holder 4 is cut away between two of the flanges 7, as indicated at 14 in Figs. 3 and 4, so that one of the leading-in wires of the lamp may be drawn through this opening and soldered to the shell. A button of glass is formed around the edge of this opening, as indicated at 15, to prevent electrical connection to the holder. The other leading-in wire is drawn through the hollow stem 13 of the center contact 12 and soldered thereto. The holes in which the leading-in wires are soldered are filled with solder, making the base moisture-proof.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A base for an incandescent lamp, comprising metallic contacts to which the lamp-wires are attached, and a metallic bulb-holder secured to but insulated from the contacts by glass, said bulb-holder having a flange formed thereon which is embedded in the glass.

2. A base for an incandescent lamp, comprising a threaded-shell contact, a center contact, and a bulb-holder, secured to but insulated from one another, said bulb-holder having a flange formed thereon which is embedded in the insulation.

3. A base for an incandescent lamp, comprising a shell contact and a center contact by which the lamp is connected in circuit, a bulb-holder of larger diameter than the shell contracted at one end to a diameter less than that of the shell, and a single filling of vitreous insulating material securing the contacts and bulb-holder together but insulating them one from another.

4. A base for an incandescent lamp, comprising insulated contacts, and a cylindrical bulb-holder partially closed at one end by a contracted portion integral with the cylindrical portion thereof and having said end secured to the contacts.

5. A base for an incandescent lamp, comprising a shell contact and a center contact insulated from each other, and a cylindrical bulb-holder of larger diameter than the shell partially closed at one end by a contracted portion integral with the cylindrical portion thereof and having said contracted portion secured to the contacts.

6. In a base for an incandescent lamp, in combination with a shell and center contact, a bulb-holder of greater diameter than the shell contracted at one end to a diameter smaller than the shell and having a flange on the contracted edge adapted to fit within the shell.

7. A base for an incandescent lamp, comprising a threaded shell and a contact insulated from each other, and a bulb-holder of greater diameter than the shell contracted at one end

to a diameter less than the shell and secured to but insulated from the shell.

8. A base for an incandescent lamp, comprising insulated contacts, and a cylindrical bulb-holder partially closed at one end by a contracted portion integral with the cylindrical portion thereof and having said end secured to but insulated from the contacts.

9. A lamp-base having a shell, a contact and a bulb-holder of greater diameter than the shell secured together but insulated one from another, said bulb-holder having a contracted portion at one end integral with the main portion and provided with a flange on the contracted edge.

10. A lamp-base having a shell, a contact, and a bulb-holder of greater diameter than the shell, secured together but insulated one from another, said bulb-holder having one end contracted and fitting within the shell.

11. A lamp-base having a threaded metallic shell and a metallic center contact secured together but insulated one from another, and a bulb-holder of greater diameter than the shell having one end contracted to a diameter less than the shell and fitting within the same.

12. A lamp-base having a metallic shell and contact secured together but insulated one from another, and a bulb-holder of greater diameter than the shell secured thereto and provided with an opening through which one of the lead-wires of the lamp is adapted to extend for connection to the shell.

13. A lamp-base having a threaded metallic shell, a metallic center contact secured to but insulated from the shell, and a bulb-holder of greater diameter than the shell secured thereto and having an opening therein through which one of the lead-wires of the lamp is adapted to extend for connection to the threaded shell.

In witness whereof I have hereunto set my hand this 25th day of March, 1903.

ALFRED SWAN.

Witnesses:

S. N. WHITEHEAD,

JOHN E. MITCHELL, Jr.