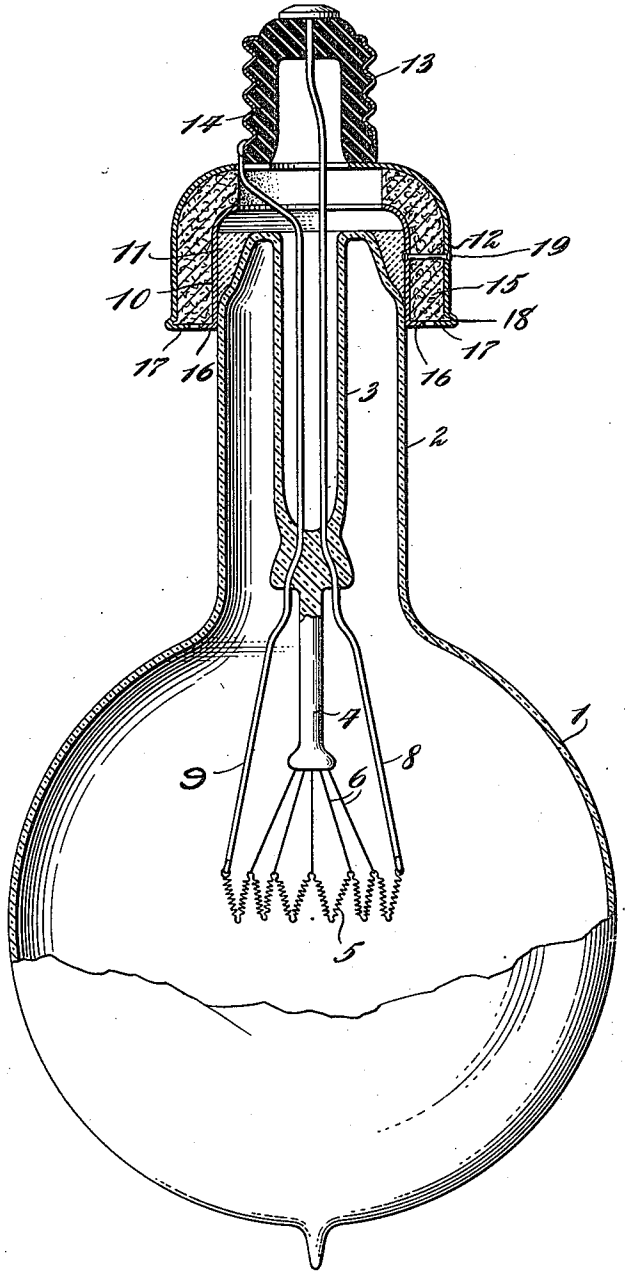
J. H. DALE.

ELECTRIC INCANDESCENT LAMP.

APPLICATION FILED MAR. 4, 1915.

1,271,858.

Patented July 9, 1918.



Witnesses:

Geo. A. Gahney

Henry Mosbley.

Inventor

John H. Dale

By his Attorneys

Rosenbaum, Stockbridge & Boast

UNITED STATES PATENT OFFICE.

JOHN H. DALE, OF NEW YORK, N. Y., ASSIGNOR TO DALE LIGHTING FIXTURE CO., INC., A CORPORATION OF NEW YORK.

ELECTRIC INCANDESCENT LAMP.

1,271,858. Specification of Letters Patent. Patented July 9, 1918.

Application filed March 4, 1915. Serial No. 11,983.

To all whom it may concern:

Be it known that I, JOHN H. DALE, a citizen of the United States, residing at the city of New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Electric Incandescent Lamps, of which the following is a full, clear, and exact description.

This invention relates to electric incandescent lamps and more particularly to a type of lamp which has been recently developed, and known as the "nitrogen" lamp, which is of intense brilliancy and high candle power. The heat generated in such a lamp is also very high, possibly due to the circulation of the nitrogen gas within the sealed bulb, the heat of the filament being carried to the lamp bulb and transmitted by conduction to the lamp base in sufficient quantities to heat the latter to a temperature considerably higher than that which is considered safe by underwriters. Frequently the temperature to which the base is heated is sufficiently high to take the temper from the spring contacts and other metal parts of the base and connecting socket, as well as giving rise to other serious objections to the commercial use of lamps of this character. It is the purpose of my invention to prevent or lessen the transmission of the heat from the glass bulb to the lamp base and to thereby keep down the temperature of the base. To accomplish this I provide between the neck of the bulb and the lamp base an intervening space or chamber which is preferably filled with a suitable heat insulating material, such as asbestos cement, mineral wool, asbestos fiber and the like.

In the accompanying drawing, I have shown in the one figure one embodiment of my invention, the view being partially in section to more clearly show the parts.

The lamp bulb which is shown is of the usual shape which has been adopted for "nitrogen" lamps, and comprises a substantially spherical-shaped body portion 1 and an elongated cylindrical neck 2. Joined to the upper end of the neck 2 is the depending hollow glass post or stem 3 carrying at its lower end the pedestal 4. The filament 5 is closely coiled similar to a spring and is supported from the pedestal 4 by means of radiating arms 6. The current is led to the filament by means of the conductors 8 and 9, respectively, which are of sufficient cross section and rigidity to aid in sustaining the filament in position. These conductors pass through the closed lower end of the hollow post 3 and through the interior of the post to the upper end of the neck of the lamp where they are connected to the lamp base, as will be later referred to.

In the practical embodiment of my invention, where a surrounding layer or ring of heat insulating material is interposed between the lamp base and the neck of the bulb, a skirt 10 is preferably provided which is similar to the one which is used in the existing forms of nitrogen lamp. The skirt 10 is secured to the upper end of the neck of the bulb by an annular filling of cement 11 in the usual manner. This filling of cement, while unaffected by the heat in the sense that it will not disintegrate or lose its adhesiveness under the action of heat, is not a heat insulator as commonly understood, and the heat of the glass bulb is transmitted through it to the skirt 10, which will therefore be heated to approximately the same temperature as the walls of the neck of the lamp bulb. The skirt 10 is also in direct contact with the lamp bulb adjacent its lower edges and the heat will also be transmitted to this skirt for this reason. The lamp base in the embodiment shown is entirely distinct from the skirt 10 and consists of a skirt 12 upon which is secured a screw plug 13, by means of the glass insulation 14 filling a portion of the screw plug. The skirt 12 surrounds the skirt 10 and while of a similar shape to the skirt 10 is of considerably larger diameter so that there will be a space or chamber separating the two, thus preventing the heat of the lamp bulb from being transmitted by conduction to the skirt 12. In order to increase the heat insulating properties of this chamber, it is preferably filled with a heat insulating material 15 such as asbestos cement, asbestos fiber, or the like, which prevents the transmission of heat by radiation which would occur if an air chamber alone were used between these parts.

Where a layer or ring of asbestos cement is used, it also serves to rigidly support the lamp base in place upon the lamp bulb, since the adhesive quality of asbestos cement is sufficient to cause it to adhere to the surface of the metal skirts, while it might not be sufficient to cause it to adhere to the glass itself if the skirt 10 were not used. The

lower edges of the two skirts 10 and 12 are preferably bent over, as at 16 and 17, respectively, to produce a more secure connection between the two skirts and their intervening layer of insulating material, the outer skirt 12 being preferably provided with an annular bead 18 to aid in obtaining this connection. The annular flanges 16 and 17 are, however, not brought into contact with each other so that the heat of the skirt 10 is not conducted to the skirt 12.

In assembling the parts where an asbestos cement filler is used between the two skirts, the outer skirt 12 and screw plug are first secured together in the usual manner by the glass insulation 14, and are then reversed to bring the open end of the skirt 12 up. The skirt 10 is then centrally positioned within the same where it is held, and the plastic asbestos cement is then poured into place, the material being prevented from filling the space between the bottoms of the two cup-shaped members or skirts in any suitable manner. The free edges of the skirts are then bent over, as shown in the drawing. The skirt 10 may then be secured to the neck of the lamp by the same operation as is required to secure the ordinary lamp base. The center contact of the screw plug 13 is connected to the conductor 9, while the conductor 8 is soldered to the lower end of the screw plug in the usual manner, giving a complete incandescent lamp.

Even where asbestos cement is used as the filler it is desirable, in order to rigidly support and prevent the inadvertent separation of the lamp base from the bulb, due to the failure of the asbestos cement to hold, to provide further connecting means between the skirts 10 and 12. This may be accomplished by pins 19, three or more in number, which rigidly unite the two skirts 10 and 12 and maintain them in their spaced relation. These pins may be of metal or, if desired, of some non-heat conducting material, but even if metal pins are used the amount of heat which is transmitted through them from the skirt 10 to the outer skirt 12 is negligible. In this manner the lamp base will be more rigidly secured to the lamp bulb than where the asbestos cement is alone depended upon to secure the connection.

The supporting pins 19 are indispensable where asbestos fiber, mineral wool or other material of a non-adhesive nature is used as a filler to form the heat insulating layer. It has been found from experimental tests that asbestos cement is a better conductor of heat than is asbestos fiber or mineral wool, for which reason a filler of the last named materials is preferred. Where fiber or wool is used, it is packed tightly in the chamber formed between the two skirts 10 and 12 after they have been secured together by the pins or screws 19. The edges of the skirts are bent over, as before, to provide annular flanges 16 and 17 which serve to hold the material in place.

While I have shown one specific embodiment of my invention, yet in so far as I am aware it has not heretofore been attempted to form between the neck of the lamp bulb and the lamp base a chamber which is preferably filled with a ring or layer of heat insulating material, and while I deem the construction shown, which includes the skirt 10 secured to the lamp neck, the most practical one, yet I do not wish to be limited by this specific construction, but only by the scope of the claims appended hereto.

I claim:

1. An electric incandescent lamp comprising a lamp bulb and a lamp base, a member secured directly to the lamp bulb, supports extending from said member and connected to said lamp base rigidly supporting said base spaced from said lamp bulb, and heat insulating material interposed in the space between said base and bulb.

2. The combination with an incandescent lamp bulb and its base of a connecting insulator introduced between the bulb and base and comprising a double-walled cup-shaped body, insulating material contained between the walls thereof, the neck of the bulb being sealed into the cavity of said cup, and the base being attached axially to the outside of said cup, substantially as described.

In witness whereof I subscribe my signature in the presence of two witnesses.

JOHN H. DALE.

Witnesses:
WALDO M. CHAPIN,
JOSEPH A. BUCKLEY.