J. H. DALE.

ELECTRIC LIGHT FIXTURE.

APPLICATION FILED APR. 3, 1915.

1,254,210.

Patented Jan. 22, 1918.

Fig. 2.

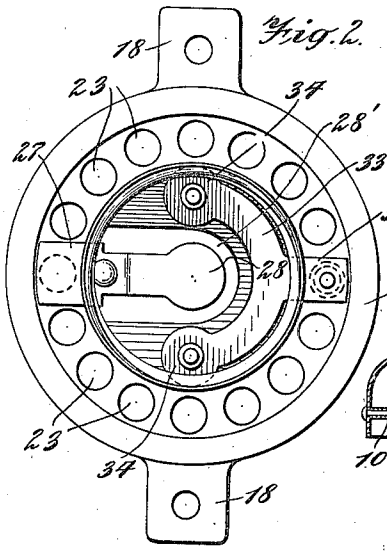


Fig. 3.

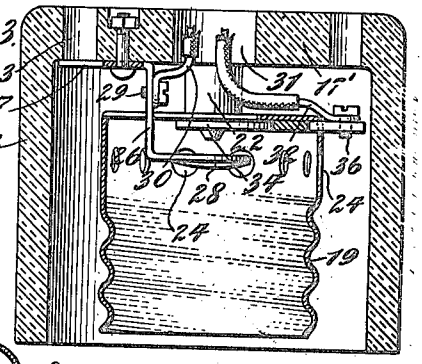
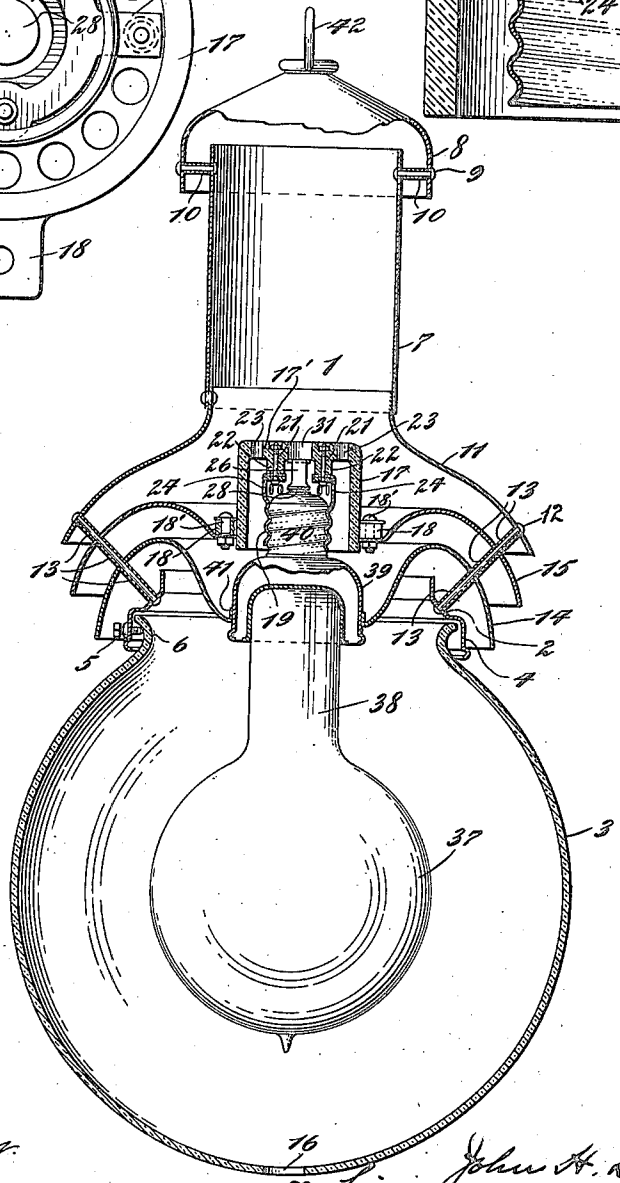


Fig. 1.



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UNITED STATES PATENT OFFICE.

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

ELECTRIC-LIGHT FIXTURE.

1,254,210. Specification of Letters Patent. Patented Jan. 22, 1918.

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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-Light Fixtures, of which the following is a full, clear, and exact description.

This invention relates to electric light fixtures for incandescent lamps and has for its primary object the provision of means for cooling the lamp and its supporting socket. The fixture is therefore especially applicable for use with "nitrogen" lamps which, as is well known, after they have remained lighted for a short period, become highly heated and reach a temperature at which the lamp bulb and its base, as well as the supporting socket, are seriously affected and are caused to rapidly deteriorate.

Nitrogen lamps, owing to their high candle power and their brilliancy, are rapidly superseding arc lamps for illuminating large areas, as in street lighting, and more specifically my invention contemplates a fixture which is suitable for installations of this character and comprises a base and a globe, which, together form a hollow weather-proof casing around the lamp and its supporting socket. The fixture is provided with ventilating passages through which air circulates after the inclosed lamp has been lighted for a short period, and the ventilating passages are preferably arranged so that the lamp bulb and the base of the lamp, and the supporting socket are separately cooled by air currents which take different paths through the fixture.

The invention also contemplates a novel form of socket in which the threaded shell and other metallic parts of the lamp socket are exposed to the direct action of air currents which pass through ventilating passages in the porcelain block or other supporting member for these parts.

Other objects and features of the invention will be brought out in the detailed description and will be particularly pointed out in the appended claims.

In the embodiment of the invention illustrated,

Figure 1 shows a vertical section of the lamp and fixture;

Fig. 2 is an enlarged view showing a bottom plan of the novel form of socket; and

Fig. 3 is an enlarged central section through the socket at right angles to the section shown in Fig. 1.

In the embodiment of the invention illustrated, the fixture consists generally of a hollow support or base 1 having at its lower end an annular shade holder 2 which is secured to a spherically-shaped globe 3 of translucent or transparent material, the general outline of the fixture being similar to a common type of fixture at present used for arc lamps. The shade holder 2 is of the usual type and has a flange 4 which carries a plurality of headed screws 5, the points of which engage the rim 6 of the globe and hold it against displacement.

The base or support 1 consists of a hollow cylindrical casing or shell 7 over which is secured a dome-shaped piece 8, which is of greater diameter than the shell and fits down a slight distance over the upper edge of the casing to which it is secured by means of pins or rivets 9 which carry spacing sleeves 10 to maintain the dome and casing concentric with an intervening space between the two through which the air in the interior of the casing may readily flow.

Fastened to the lower edge of the cylindrical shell is a flaring skirt 11, which, at its outer end, is of somewhat greater diameter than the diameter of the shade holder 2 to which it is secured by the relatively long pins or rivets 12, so as to leave a considerable space between the shade holder and the skirt. Mounted on the pins 12 in the space between the skirt 11 and the shade holder 2 are two annular members 14 and 15 of sheet metal, which are maintained in spaced relation on the pins 12 by the spacing sleeves 13. The lower member 14, which will be hereinafter referred to as the diaphragm or partition, is spaced slightly from the shade holder 2 so that a passage is left between the two, and the upper member 15, hereinafter referred to as the deflector, is equally spaced from the skirt 11, and the diaphragm 14, so as to provide two passages or spaces through which air may enter the interior of the base or support 1. A ventilating opening 16 is also provided in the bottom of the globe 2.

Mounted in the centrally disposed open-

ing in the deflector 15 is a lamp socket comprising a porcelain block 17 having laterally disposed lugs 18 at its lower end provided with openings therein through which the bolts 18′ pass to secure it to the deflector. The block 17 which is preferably cylindrical in shape is hollow and is closed at one end by a wall 17′, the other end being open to provide a recess or open chamber for the metallic threaded shell 19. The shell 19 which is of the usual construction is supported in spaced relation to the inner face of the end wall 17′ upon posts or pedestals 22 projecting from the end wall 17′ into the chamber. The diameter of the recess or chamber in the porcelain block is also considerably greater than the threaded shell so that there is an annular space between the shell and the side walls of the chamber.

Passing through the end wall 17′ of the block and leading to the recess or chamber therein are a plurality of circularly-arranged spaced ventilating openings or passages 23. Ventilating openings 24 are also provided in the upper end of the shell 19, the purpose of which will be later described.

The center contact spring of the socket comprises a metallic strip 26 which has its ends parallel and bent at substantially right angles to its intermediate portion to form a substantially Z-shaped piece. One end 27 of the spring is secured to the inner face of the end wall 17′, and the other end carries an enlarged head 28 which forms the center contact and is centrally disposed within the shell 19, the spring passing to the interior of the shell through a suitable opening 28′ in its end face. A binding post 29 is positioned in any desired location on the spring to which is secured one of the conductors 30 leading to the socket, which conductor passes through a centrally disposed opening 31 in the socket 17 which also serves as a ventilating opening. The metallic shell is electrically connected to the other conductor 32 by means of a yoke-shaped piece 33 which is positioned within the threaded shell and has enlarged heads 34 which, together with the shell are supported by the posts 22, by means of the bolt 21. Projecting from the yoke-shaped piece is an arm 35 passing through a suitable opening in the threaded shell to the exterior thereof, which arm carries a binding post 36 to which the electrical conductor is secured.

The form of nitrogen lamp shown is in general similar to the type of lamp which has been adopted and comprises a spherically-shaped bulb 37 having an elongated neck 38. The lamp base consisting of the skirt 39 and screw plug 40 may be spaced from the neck of the bulb as is shown in my co-pending applications Serial Nos. 11,983 March 4, 1915 and 12,298 March 5, 1915. A centrally disposed opening within the partition or diaphragm 14 is of sufficient size to permit the skirt 39 of the lamp base to pass therethrough so that its screw plug may be fitted into the metallic shell 19, the edge of the wall of the circular opening in the diaphragm being preferably bent upwardly to provide a flange 41 which fits snugly against the skirt of the lamp and thus prevents the passage of air at this point.

The fixture may be suspended or supported in any desired manner as by the bracket of a lamp post, in which instance, a ring 42 may be provided which passes through the upper narrow end of the dome-shaped piece 8. After the lamp has remained lighted for a short period of time, the heat of the lamp and its socket will cause a circulation of the air within the fixture which will carry away the heat radiating from these parts and therefore prevent them from reaching an excessively high temperature. This is due to the formation of the ventilating passages described, since the air surrounding the lamp bulb 37 and inclosed within the globe 3 when heated, rises and passes out through the annular passage or space between the shade holder 2 and the diaphragm 14, and the cooler air enters the bottom of the globe through the opening 16. The current of air which is thus produced will maintain the lamp bulb relatively cool. As a part of the heat generated within the lamp bulb is communicated to its base; *i. e.* the skirt 39 and the screw plug 40, the threaded shell 19 as well as the spring contact 26 becomes heated and will therefore heat the air in the annular space between the shell and the wall of the cylindrical block 17. This heated air rises and passes out through the ventilating openings 23 and 31 and the cooler air surrounding the fixture enters the bottom of the socket through the annular passage between the diaphragm 14 and the deflector 15. It may here be noted that due to the downwardly curving outer portion of the diaphragm 14, the hot air passing out from the interior of the globe is directed downwardly and will not therefore mix with the cool air entering the space between the diaphragm 14 and the deflector 15. The heated air passing through the openings 23 is carried through the casing 7 and passes into the surrounding atmosphere through the passage-way between it and its dome-shaped top 8. The current of air which is set up in this manner continues to flow as long as the lamp remains lighted and since the shell 19 is spaced from the walls of the chamber or recess in which it is mounted, practically the entire surface of the shell is exposed and it will therefore be prevented from reaching an excessively high temperature. The contact spring 26, as well as the contact yoke-piece 33 are also exposed to the

air currents and will therefore also be cooled in the same manner. The air will also pass through the interior of the shell 19 above the screw plug 40 through the ventilating openings 24 and 28', so that all metallic parts of the socket are exposed to the constantly changing air currents.

The cylindrical block is also cooled by means of the current of air which passes into the interior of the base or support through the passage-way between the deflector 15 and the skirt 11.

While I have shown and described the socket in connection with a specific form of lighting fixture, yet it is apparent that the socket may be used alone to advantage or with other forms of fixture, and it is not my intention to limit the use of the same to the specific type of fixture shown, but only by the scope of the appended claims.

I claim:—

1. A socket for electric lamps comprising a base having ventilating passages therethrough, a metallic shell mounted in said base having ventilating passages in communication with said first named ventilating passages, and a contact mounted in said base and projecting into said shell.

2. A socket for electric lamps comprising a base and metallic shell mounted therein, said base and shell each having ventilating passages therein communicating with each other.

3. A socket for electric incandescent lamps comprising a base having a chamber therein and a central ventilating passage in its top communicating with said chamber, a metallic shell mounted in said base having an opening in its top communicating with the opening in said base, and a contact mounted in said chamber projecting through said opening in said shell, said opening in said shell being of greater size than said contact.

4. A socket for electric incandescent lamps comprising a base having a chamber therein and ventilating openings communicating with said chambers, a metallic shell mounted in said chamber in spaced relation to the walls of said chamber and having ventilating openings therein communicating with the ventilating openings in said base, and a contact mounted in said chamber projecting through an opening in said shell, said opening in said shell being of greater size than said contact and communicating with the ventilating opening in said base.

5. A socket for electric lamps comprising a base having a chamber formed therein, a metallic shell mounted in said chamber in spaced relation to the walls thereof, said base having ventilating passages in said base communicating with said chamber and said shell having ventilating openings therein also communicating with said chamber.

6. A socket for electric lamps comprising a base having a chamber formed therein, a metallic shell mounted in said chamber in spaced relation to the walls of said chamber, ventilating passages in said base communicating with said chamber and other ventilating openings in said shell communicating with the passages in said base.

In witness whereof, I subscribe my signature, in the presence of a witness.

JOHN H. DALE.

Witness:

WALDO M. CHAPIN.