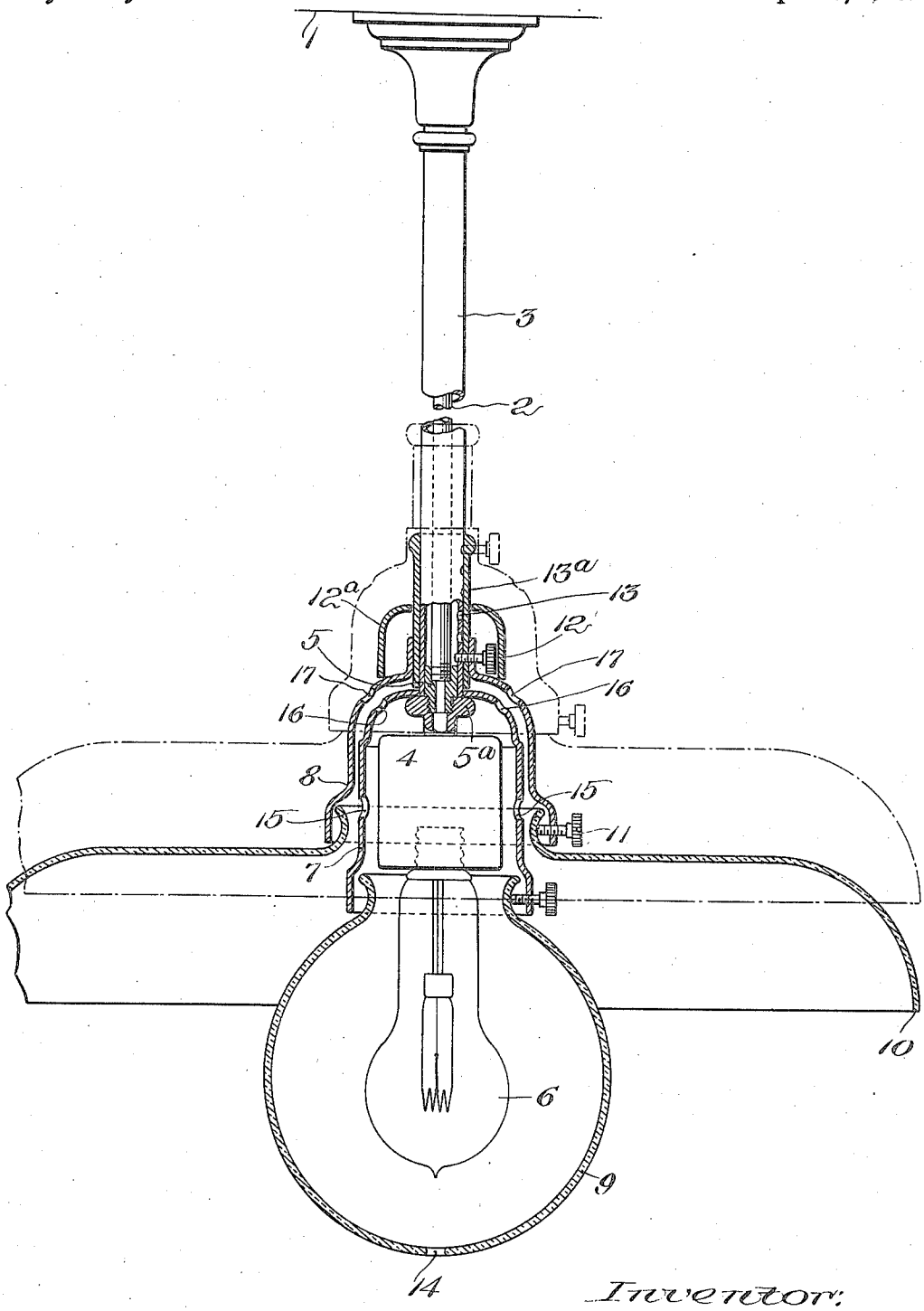
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LIGHTING FIXTURE.

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1,263,531. Patented Apr. 23, 1918.



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UNITED STATES PATENT OFFICE.

DAVID CROWNFIELD, OF CAMBRIDGE, MASSACHUSETTS.

LIGHTING-FIXTURE.

1,263,531. Specification of Letters Patent. Patented Apr. 23, 1918.

Application filed October 8, 1917. Serial No. 195,246.

To all whom it may concern:

Be it known that I, DAVID CROWNFIELD, a citizen of the United States, and resident of Cambridge, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Lighting-Fixtures, of which the following is a specification.

This invention relates to lighting fixtures and more particularly to fixtures adapted to be suspended from the ceiling.

The principal objects of the invention are to unify the elements of a lighting fixture including a transformer and an electric lamp, to inclose the transformer within certain elements of the fixture, to support one or more shades on the transformer housing, to render the shade-supporting element and lamp relatively adjustable so as to adjust the shade in accordance with the sizes of the lamp and transformer, to ventilate the lamp and transformer, and to produce a novel circulation of air through the transformer housing.

In one aspect the invention comprises a supporting stem suspended from the ceiling or the like, a transformer mounted on the lower end of the supporting stem, an electric lamp mounted on the transformer, a canopy surrounding the transformer to conceal and protect it, the canopy being supported by the stem either directly or indirectly and being adapted to support a shade, and a shade mounted on the canopy, the shade preferably being globular and having an opening in the lower portion, and the canopy having one or more openings in its upper portion so that air may be circulated inwardly through the opening in the globe, upwardly around the lamp and transformer, and outwardly through the openings in the canopy. In order more effectually to cool the transformer and the lamp terminals the canopy is preferably provided with two or more sets of openings, one set of the openings being in the region of the lower portion of the transformer and another set of the openings being in the region of the upper portion of the transformer, whereby the heat of the transformer creates a circulation of air inwardly through the lower set of openings, upwardly along the transformer, and outwardly through the upper set of openings.

In another aspect the invention consists of a supporting stem, a lamp mounted on the lower end of the stem, outer and inner canopies extending downwardly from the stem around the base of the lamp, a frosted globe or the like mounted on the inner canopy to surround the lamp and diffuse the light, a light-directing shade mounted on the outer canopy to reflect the light predominantly in one direction, the outer canopy being adjustably mounted on the stem so that the position of the shade relatively to the light source may be varied, and the globe and canopies having openings through which air may be circulated to cool the lamp terminals. When employing certain types of lamp, such as nitrogen filled lamps, it is vitally important to keep the terminals of the lamps cool. I therefore provide a novel system of circulation such that cold air is drawn inwardly through the inner canopy, or between the inner canopy and the globe, or in other suitable manner, in the region of the terminals, and thence upwardly and outwardly through the upper portion of the inner canopy and through the outer canopy. When employing a transformer in the inner canopy the transformer is also cooled by this influx of air.

In the accompanying drawing the figure shows a longitudinal central section through one embodiment of the invention.

This particular embodiment comprises a supporting stem depending from the ceiling 1, the stem comprising an inner tube and an outer tube 3 forming a casing for the inner tube, a transformer 4 mounted on the lower end of stem 2 by means of a nipple 5, a lamp 6 threaded into the transformer 4 in the same manner as a lamp bulb is commonly threaded into a lamp socket, an inner canopy 7 mounted on the tube 3 by means of fitting 5^a secured to nipple 5, an outer canopy 8 mounted on the outer casing 3, a shade or globe 9 mounted on the lower end of canopy 7, and a shade 10 mounted on the lower end of canopy 8 by means of set screws 11. The shade 10 is of the reflecting type and to afford the best illumination it should be properly adjusted relatively to the light source. The lamps vary in length and in the position of the light source relatively to the lamp base, and when using a transformer in the unique situation illustrated it is particularly desirable to provide means for adjusting the outer canopy 8, which carries shade 10, along the axis of the lamp. My preferred means for this purpose comprises a set screw 12 threaded through the upper portion of

the canopy 8, through one of a series of openings or sockets 13 in the tubular casing 3, and through an adjustable sleeve 13ª which covers the sockets 13. The sleeve 13ª has a single perforation for the set screw and is movable with the canopy. Thus the shade 10 may be adjusted to suit transformers of various sizes within the shade and still secure the desired distribution of light. When the canopy 8 and sleeve 13ª are elevated, the canopy 7 which fits outside of tube 3, may also be elevated to afford easy access to the transformer. A shell 12ª slides over sleeve 13ª and serves when in normal position, as shown, both to act as a stop to prevent the screw 12 from accidentally backing out, and also affords a housing to conceal the screw and give the fixture a finished appearance.

In accordance with certain objects of the invention I provide a unique method of cooling the inclosed parts of an apparatus of the character described. The particular manner of attaining these objects illustrated in the drawings comprises an opening 14 in the bottom of globe 9, a series of openings 15 around the lower portion of inner canopy 7, a series of openings 16 around the upper portion of the inner canopy, and a series of openings 17 around the upper portion of the outer canopy 8 preferably registering with openings 16. With this arrangement the heat produced by the lamp 6 and by the transformer 4 will cause air to circulate upwardly through the globe and canopies, the heated air passing outwardly through the openings in the upper portions of the canopies and cool air passing inwardly through opening 14. This upward draft of air also draws cool air inwardly through openings 15 from the space between the two canopies and shades carried thereby. The cool air flowing inwardly through openings 15 serves the important function of cooling the terminals of the lamp bulb, thereby greatly prolonging the life of the lamp, particularly when the lamp is of the nitrogen or similar type. When employing a transformer as illustrated this current of air also functions to cool the inclosed transformer. Of course the air flowing inwardly through the opening in the globe also assists in cooling the terminals and the transformer but inasmuch as this air is heated by the lamp in passing through the globe it is not as effective for cooling the terminals and transformer as the air flowing in at the base of the lamp, and satisfactory results may be obtained without the opening 14. It will be observed that the openings in the upper portions of the two canopies are in alinement, thereby affording free circulation of air therethrough.

While the present invention centers around the transformer disposed between the supporting stem and lamp bulb, and within the canopies and shade 10, certain features of the invention possess marked utility independently of the transformer and are applicable to fixtures in which the lamp bulb is mounted in a socket on the lower end of the supporting stem. When the lamp bulb is so mounted it would extend upwardly into the canopies somewhat farther and the terminals of the lamp would be brought into somewhat closer proximity to the openings 15. Moreover, the vertical disposition of these openings may be varied to suit conditions.

What I claim is:

1. A lighting fixture comprising a supporting stem, a transformer mounted on said stem, an electric lamp mounted on said transformer, a shade-supporting canopy surrounding the transformer, a second shade-supporting canopy surrounding the first canopy, means for adjusting the outer canopy along said stem, and means for supporting said shades upon said stem, the shades having openings through which air may circulate to cool the transformer.

2. A lighting fixture comprising a supporting stem, a transformer mounted on said stem, an electric lamp mounted on said transformer, a shade-supporting canopy surrounding the transformer, a tube surrounding and adjustable on said stem above said canopy and a second shade-supporting canopy mounted on said tube, the first canopy being independently movable along the stem when the second canopy and sleeve are moved away from the first canopy, whereby all the surrounding and inclosing parts can readily be moved on the stem to expose and give access to the transformer.

3. A lighting fixture comprising a supporting stem, a lamp mounted at the end of said stem, a canopy mounted on said stem, a shade mounted on the canopy, means to adjust the canopy and shade along the stem including a series of sockets disposed along the stem, a sleeve surrounding the stem and covering the sockets, and a set screw passing through the canopy and the sleeve and into one of the sockets.

4. A lighting fixture comprising a supporting stem, a lamp mounted at the end of said stem, a canopy mounted at the lower end of the stem, a second canopy mounted on the stem above the first canopy, means for securing the second canopy to said stem, and a movable shell surrounding the stem and inclosing said means.

Signed by me at Boston, Massachusetts, this 25th day of September, 1917.

DAVID CROWNFIELD.