

March 7, 1933.

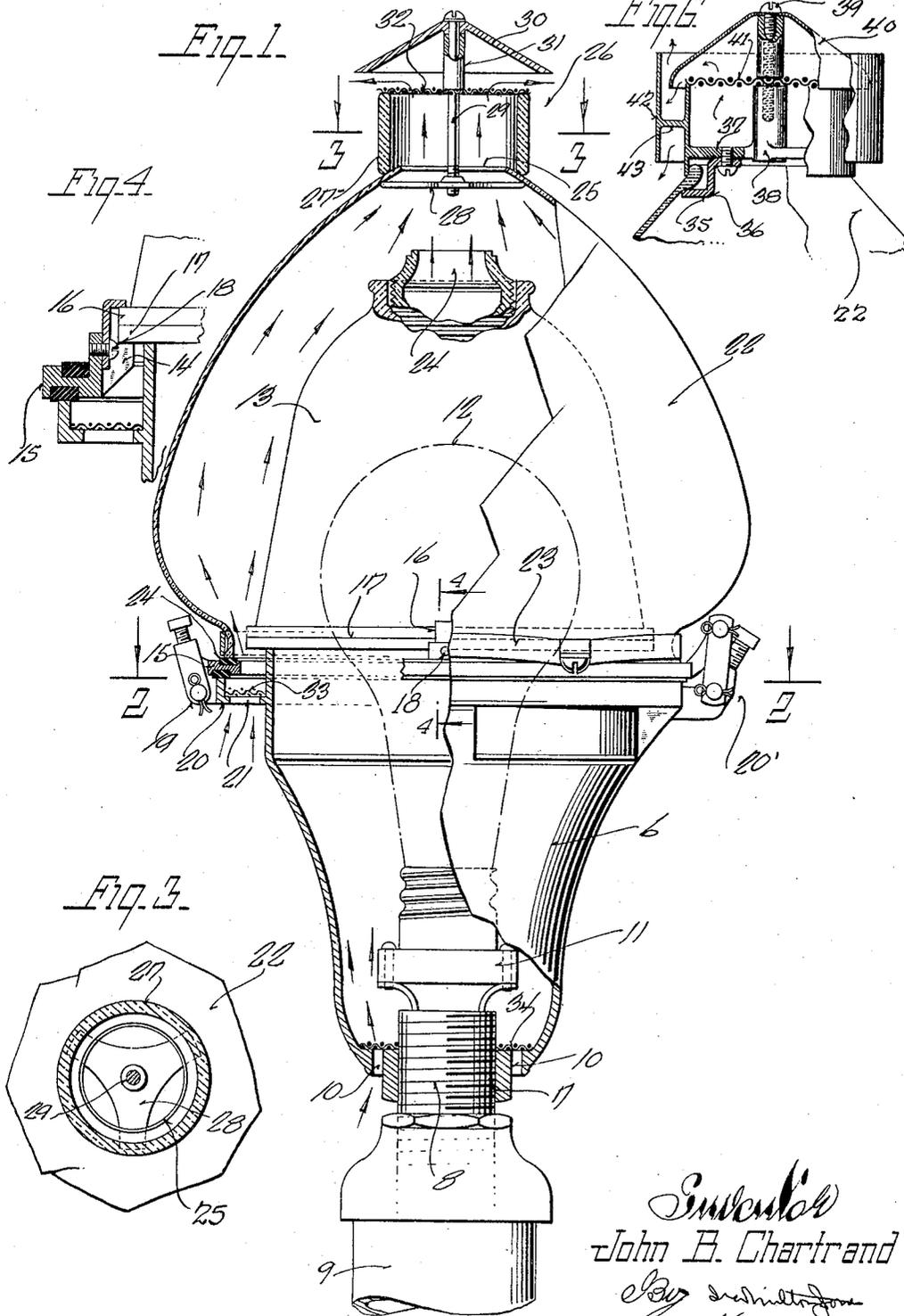
J. B. CHARTRAND

1,900,330

LIGHTING FIXTURE

Filed Aug. 21, 1931

2 Sheets-Sheet 1



Invented
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2 Sheets-Sheet 2

Fig. 2.

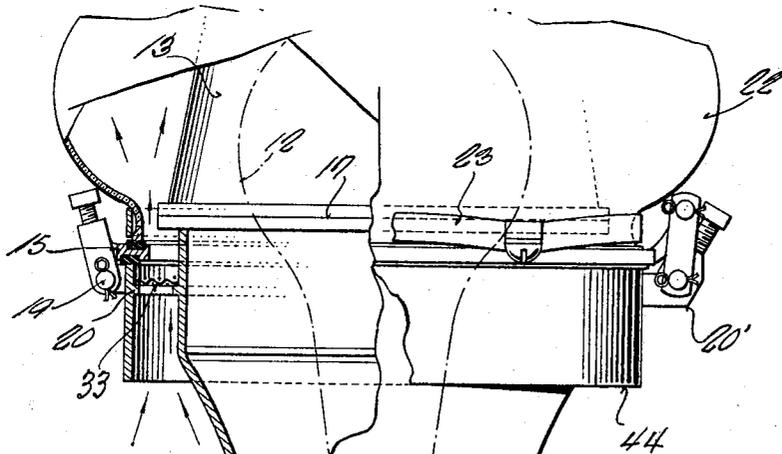
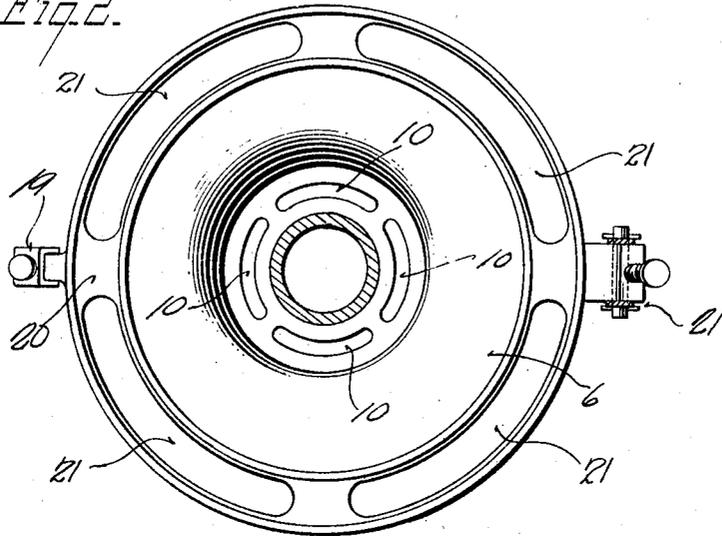


Fig. 5.

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UNITED STATES PATENT OFFICE

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LIGHTING FIXTURE

Application filed August 21, 1931. Serial No. 558,451.

This invention relates to certain new and useful improvements in lighting fixtures, and has as a general object to provide improved means for ventilating the interior thereof.

In totally enclosed lighting fixtures the heat created by the lamp, especially when the large size lamps are employed, is appreciable, and very often causes not only failure of the lamp, but also failure of the shell and socket portion of the fixture as well as breakage of the outer glassware due to rainfall.

Attempts have been made in the past to ventilate these fixtures, but heretofore all means proposed have been inadequate. To provide efficient ventilation, it is desirable that the heat directly adjacent the lamp be carried off without coming in contact with the outer protective globe and it is, therefore, another object of this invention to provide means whereby two air channels are established, one within the other, the inner one carrying off the heat directly from the lamp and the outer one providing a layer of cooler air to protect the outer glassware from excessive heat.

Another object of this invention is to improve the ventilation of a lighting fixture of the character described by providing a chimney-like structure at the hot air exhaust port in the outer globe to increase the velocity of the ventilating air currents rising through the fixture.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate several completed examples of the physical embodiment of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a view partially in side elevation and partially in section of a lighting fixture embodying this invention;

Figure 2 is a horizontal section view taken through Figure 1 on the plane of the line 2-2;

Figure 3 is a horizontal section view taken through Figure 1 on the plane of the line 3-3;

Figure 4 is a detail section view taken through Figure 1 on the plane of the line 4-4;

Figure 5 is a view of part of a lighting fixture similar to Figure 1, but illustrating a slightly modified construction; and

Figure 6 is a view partially in side elevation and partially in section of a slightly modified form of chimney construction.

Referring now more particularly to the accompanying drawings, in which like numerals designate like parts throughout the several views, the numeral 6 represents the body of a lighting fixture which is substantially inverted bell or cup shaped, and has its closed bottom wall provided with a threaded aperture 7 to be adjustably secured on a tubular mounting member 8 supported from a standard 9 or the like. A plurality of openings 10, preferably in the form of elongated annular slots, are formed in the bottom wall of the housing to provide air inlet openings to the interior of the body and substantially encircling the mounting member 8.

A lamp receptacle 11 is supported from the upper portion of the member 8 to receive a lamp 12 which stands in an upright position with its end portion projected above the open top of the cup shaped body member 6 and into a refractor bowl 13 positioned above the upper open end of the body member.

The refractor bowl is of conventional construction and comprises two telescoped glass members having their meeting surfaces provided with prismatic configurations to diffuse the light of the lamp, and the lower periphery thereof rests upon projections 14 extended inwardly from a ring 15 encircling the upper open end of the body member.

The refractor bowl is held assembled with the ring by hook shaped members 16 engaged over an annular rim 17 formed on the peripheral edge of the refractor bowl and secured to the ring 15 by screws 18 or the like.

The ring 15 is of greater diameter than the adjacent portion of the body member to be spaced therefrom and is connected therewith by being hinged, as at 19, to an annular flange 20 extended laterally from the top portion of the body member. A locking device 20' diametrically opposite the hinged connection 19 provides means for locking the ring down onto the flange.

As stated, the ring 15 is spaced from the adjacent portion of the body member and the flange 20 is provided with a plurality of arcuate slots or openings 21 to provide inlet openings to the space between the refractor and the inner wall of a protective glass globe 22 carried by the ring 15 and positioned over the refractor. The protective globe 22 is readily releasably secured on the ring 15 by a spring band 23 connected with the ring 15 and encircling the lower peripheral edge portion of the globe, the ring 15 being provided with a suitable packing 24 to protect the peripheral edge of the globe.

Both the refractor bowl and the protective globe are thus carried by the ring 15, which being hingedly mounted from the body member, enables the protective globe and the refractor to be simultaneously swung to open position to permit access to the interior of the fixture. It is observed that when the ring is in its closed position with the glassware properly positioned above the body member, the refractor bowl substantially contacts with the upper peripheral edge of the body member so that the refractor and the body member form one continuous chamber in which the lamp is totally enclosed.

The top of the refractor has an air outlet opening 24 and the top portion of the protective globe 22 is provided with an outlet opening 25 which is larger than the opening 24. The chamber defined by the body member and the interior of the refractor thus provides an inner passage for ventilating air which is drawn through the inlet openings 10 adjacent the base of the lamp to travel upwardly and carry off the heat from the lamp, and inasmuch as no communication is afforded between this inner channel and the interior of the protective globe 22, except through the exhaust opening 24, the heated air rising through the inner channel is prevented from contacting with the protective glass globe.

The globe 22 is further protected against becoming heated, by cool air entering the openings 21 adjacent the lower peripheral edge of the globe, which air rises along the

inner wall of the globe and thus provides, in effect, a layer of cool air between the protective globe and the excessively hot air within the interior of the fixture. The opening 25 in the top of the protective globe is sufficiently large to exhaust both the air issuing from the refractor, through the opening 24, and that drawn into the interior of the globe through the openings 21.

As will be readily apparent, the provision of air inlet openings both at the base of the lamp and adjacent the lower edge of the protective globe provides maximum ventilating efficiency, as it is the base of the lamp and the outer protective globe which requires the greatest protection against heat.

The efficiency of the ventilation is further improved by increasing the velocity of the air moving through the fixture by providing a chimney structure indicated generally by the numeral 26. This chimney structure may be of any suitable design and in Figure 1 is illustrated as comprising a glass cylinder 27 resting at its lower edge upon the protective globe portion surrounding an opening 25, and being held in position by a spider 28 whose arms engage the inner wall of the protective globe and into which a screw 29 is threaded. The outer headed end of the screw passes through a hood 30 and a bushing 31 resting upon a screen 32.

The screen 32 obviously prevents the entrance of insects to the interior of the fixture, and the hood 30 is preferably projected sufficiently beyond the cylinder 27 to prevent rain from entering the globe. Screens 33 and 34 are also preferably provided at the air inlet openings 21 and 10, respectively, to prevent the entrance of insects to the interior of the fixture.

If desired, the chimney structure may be of the type shown in Figure 6. In this instance, the glass 27 is replaced by a metal cylinder 35 which likewise rests upon the peripheral edge of the opening 25 in the protective globe. The cylinder 35 is held on the protective globe by a plurality of clips 36 which engage under the peripheral edge of the globe and are secured to arms 37 carried by the cylinder and projecting inwardly to support a hub 38. The hub 38 is internally threaded to receive a screw 39 which serves to hold a hood 40 and a screen 41 in position over the top of the cylinder 35.

Encircling the cylinder 35 is a second cylinder 42 which is suitably supported from the inner cylinder by arms 43, and extends sufficiently above the lower edge of the hood to prevent rain from driving beneath the hood and into the chimney structure.

The effectiveness of the air inlet port to the interior of the protective globe, which is afforded by the annular slots or openings 21, may be increased by providing a skirt or

shield 44 as shown in Figure 5. This shield or skirt extends downwardly from the annular laterally extended flange 20.

From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent to those skilled in the art to which an invention of the character described appertains that the provision of independent air channels or passages, one within the other, provides maximum ventilating efficiency, and that the vital elements requiring the greatest protection are thereby afforded adequate protection against over-heating.

What is claimed as new and desired to secure by letters patent is:

1. In a lighting fixture, a substantially cup shaped body member open at its top and provided with an air inlet opening in its closed bottom, lamp supporting means within the body member adjacent its closed bottom adapted to receive the base of an incandescent lamp, whereby the base of the lamp is near the air inlet opening, an inverted glass bowl having an air outlet opening in its closed top and positioned over the open top of the body member whereby air entering the inlet opening at the bottom of the body member and becoming heated by a lamp therein rises through the fixture to be exhausted through the air outlet opening, and means for supporting the inverted glass bowl from the open top portion of the body member so as to provide a second air inlet opening adjacent the bottom of the glass bowl, whereby cool air is drawn into the fixture to pass upwardly along the inner wall of the glass bowl.

2. In a lighting fixture, an open topped body member, a lamp supported within the body member with its base adjacent the bottom portion of the body member, said body member having an air inlet opening adjacent its bottom to admit cool air to its interior adjacent the base of the lamp, a protective globe positioned over the open top of the body member, said protective globe having an opening in its top portion through which air drawn into the body member through said inlet opening and rising upon becoming heated by the lamp is exhausted, and means providing a second air inlet opening adjacent the juncture of the protective globe and the body member whereby cool air is drawn into the fixture to rise upwardly along the inner wall of the protective globe.

3. In a lighting fixture, an open topped body member having an air inlet opening in its bottom, an electric lamp mounted within the body member with its base adjacent the air inlet opening, a protective globe positioned over the open top of the body member with its lower peripheral edge adjacent the body member, perforate means for support-

ing the protective globe from the body member whereby a second air inlet opening is provided between the protective globe and the body member to admit air into the interior of the fixture, and said protective globe having an air outlet opening in its top portion through which air drawn into the fixture through both inlet openings is exhausted.

4. In a lighting fixture, an open topped body member having an air inlet opening adjacent its closed bottom, an electric lamp mounted within the body member with its base adjacent the air inlet opening, a protective globe having an air outlet opening at its top portion and positioned over the open top of the body member with its lower peripheral edge spaced from the body member, an annular flange extended laterally from the body portion to support the protecting globe, and said annular flange having openings which provide a second air inlet opening and through which cool air is drawn to rise upwardly along the inner wall of the protective globe and be exhausted through the opening at its top portion.

5. In a lighting fixture, an open topped body member having an air inlet opening adjacent its closed bottom, an electric lamp mounted within the body member with its base adjacent the air inlet opening, a protective globe having an air outlet opening in its top portion and positioned over the open top of the body member with its lower peripheral edge spaced from the adjacent portion of the body member, and perforate means for supporting the protective globe from the body member to provide a second air inlet opening through which air enters the interior of the fixture to rise upwardly by the heat of the lamp and pass over the inner wall of the protective globe and whereby air entering the air inlet opening at the base of the lamp and rising through the center of the fixture is prevented from contacting with the protective globe.

6. In a lighting fixture, a substantially open topped body member having an air inlet opening at its closed bottom, an electric lamp mounted within the body member with its base near the air inlet opening, a protective globe positioned over the open top of the body member and having an air outlet opening in its top portion whereby air entering the inlet opening at the base of the lamp rises due to the heat of the lamp and is exhausted through the air outlet opening, and means for admitting additional air to the interior of the fixture adjacent the juncture of the protective globe with the body member to provide a layer of cool air between the protective globe and the heated air rising through the center of the fixture.

7. In a lighting fixture, an open topped

body member having an air inlet opening adjacent its bottom, an electric lamp mounted within the body member with its base near the air inlet opening, a refractor bowl positioned over the open top of the body member with its lower peripheral edge substantially contacting with the top of the body member whereby the refractor bowl forms substantially a continuation of the body member, said refractor bowl having an opening in its top portion through which air drawn into the inlet opening and heated by the electric lamp is exhausted, a protective globe surrounding the refractor bowl but spaced therefrom and having its lower peripheral edge portion spaced from the body member, said protective globe having an exhaust opening in its top portion through which the air issuing from the refractor bowl passes, and means for supporting the protective globe from the body member so as to maintain a space therebetween and provide a second air inlet opening through which cool air is drawn to pass upwardly along the inner wall of the protective globe and out through the outlet opening at its top.

8. In a lighting fixture, a substantially cup shaped body member, an electric lamp mounted within the body member, a refractor bowl positioned over the open top of the body member to, with the body member, substantially enclose the lamp, a protective globe positioned over the refractor bowl, with its lower peripheral edge portion spaced from the refractor bowl and having an air outlet opening at its top, the space between the lower peripheral edge portion of the protective globe and the refractor bowl providing an air inlet opening through which cool air is drawn to rise upwardly along the inner wall of the protective globe and be exhausted through the outlet opening at its top, and single means for readily removably mounting the protective globe and the refractor bowl from the top portion of the body member with the refractor bowl substantially contacting with the body member when in its normal position over the body member to close off communication between the interior of the body member and the interior of the protective globe.

9. In a lighting fixture, a substantially cup shaped body member having an air inlet opening in its bottom, an electric lamp mounted within the body member with its base near the air inlet opening, a refractor bowl positioned over the open top of the body member and substantially contacting therewith to, with the body member, enclose the lamp, said refractor bowl having an air outlet opening in its top whereby the body member and the refractor bowl form a chamber through which ventilating air entering the air inlet opening rises to prevent

over-heating of the lamp and its supporting structure, a protective globe positioned over the refractor bowl and having an air outlet opening above the outlet opening in the refractor bowl to exhaust the air issuing from said refractor bowl outlet, and means mounting the protective globe from the body member with its lower peripheral edge portion spaced therefrom to provide a second air inlet opening communicating with the space between the protective globe and the refractor bowl, said space providing a second air passage entirely surrounding the first mentioned air passage through which air rises in contact with the inner wall of the protective globe to pass upwardly through the opening in its top.

10. In a lighting fixture, a cup shaped body member open at its top, an electric lamp mounted within the body member, a refractor bowl substantially engaging the open top of the body member to form a continuation thereof and with the body member enclose the lamp, an annular flange extended from the top portion of the body member, said annular flange having a plurality of screened air passages, a protective globe positioned over the refractor bowl and having an air outlet opening in its top, and means for mounting the protective globe from said annular flange with its lower peripheral edge outwardly of the screened air passages in the annular flange, whereby air passing through the screened openings in the flange enters the space between the protective globe and the refractor bowl to rise upwardly in contact with the inner wall of the protective globe and pass through the opening in its top.

In testimony whereof I have hereunto affixed my signature.

JOHN B. CHARTRAND.