

May 12, 1942.

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2,282,587

VENTILATING AND ILLUMINATING DEVICE

Filed June 28, 1938

2 Sheets-Sheet 1

Fig. 1.

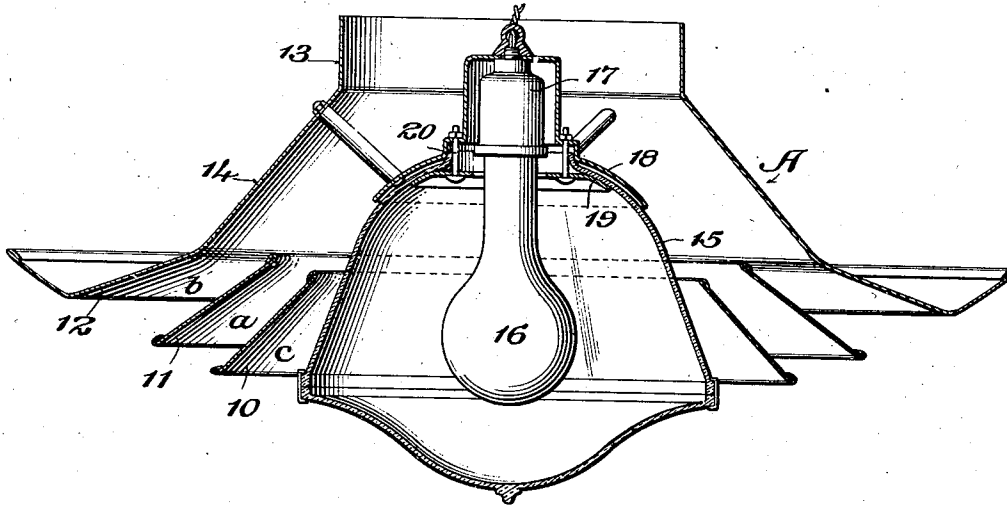
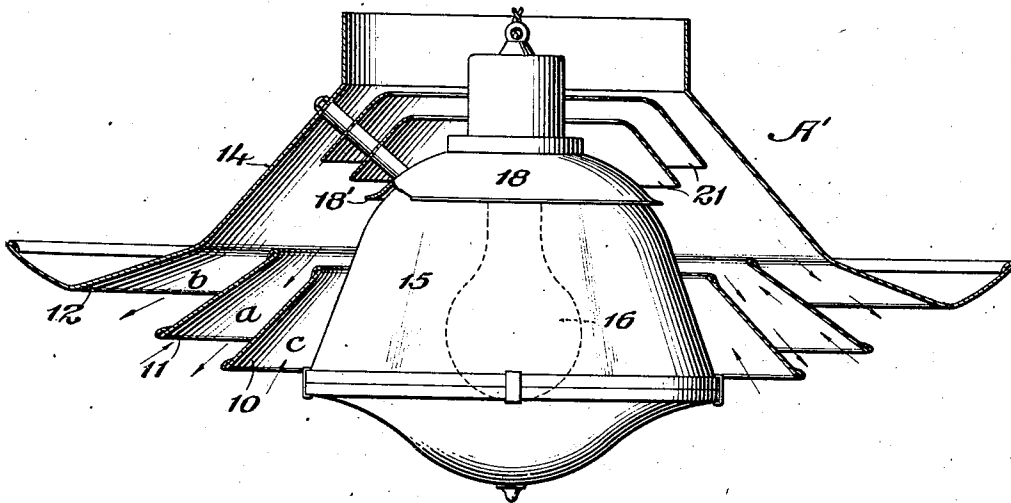


Fig. 2.



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Fig. 3.

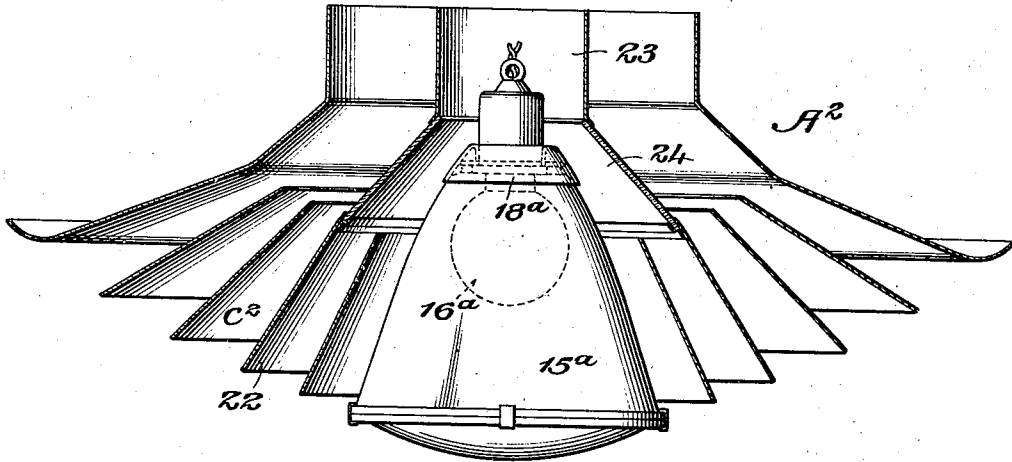
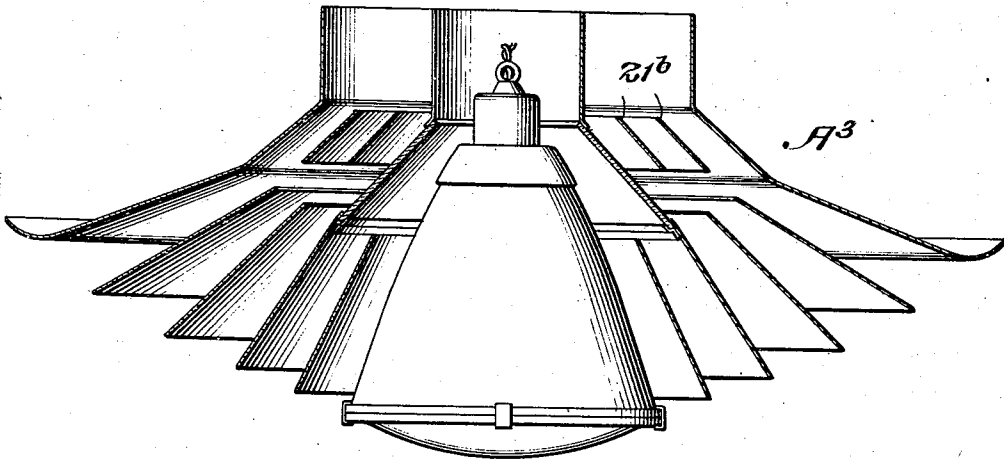


Fig. 4.



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VENTILATING AND ILLUMINATING DEVICE

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14 Claims. (Cl. 240—78)

This invention relates to ventilating and, or, illuminating devices, and has particular reference to a ventilating and, or, illuminating device of the type comprising a plurality of hollow, flaring members disposed in spaced apart relationship to provide a plurality of air and light, or solely light, passageways therebetween, and in which the source of illumination comprises an electric lamp, or lamps, disposed within the innermost of said flaring members.

Generally speaking, the object of the present invention is to provide a device of the character mentioned, either for air diffusion and illuminating purposes, or solely for illuminating purposes, embodying a novel construction such that the different passageways between the flaring members thereof are effectively illuminated by the lamp, or lamps, disposed within the innermost flaring member, whereby the device, when used for air diffusion purposes, is uniformly illuminated and thereby rendered more attractive in appearance, and whereby effective, diffused illumination is obtained regardless of whether the device is used for air diffusion and illuminating purposes, or solely for illuminating purposes.

In connection with a device of the character mentioned and embodying a novel construction to accomplish the purposes stated, another object of the invention is to provide means to exclude light from the neck or rear portion of the device, whereby, despite the illumination of the passageways between the flaring members, the rearmost, interior portions of the device are maintained shadowed or darkened and invisible.

With the foregoing and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the accompanying drawings:

Figure 1 is a central, vertical section through a combined ventilating and illuminating device constructed in accordance with one practical embodiment of the invention; and

Figures 2, 3 and 4 are views similar to Fig. 1 illustrating alternative constructions.

Referring first to the embodiment of the invention illustrated in Fig. 1, it will be observed that the present device, designated generally as A, is of a known type comprising a plurality of hollow, flaring members, open at their ends and

having their smaller or rear ends facing the rear or air inlet end of the device and disposed in spaced apart relationship to provide a series of flaring passageways therebetween, whereby air flowing outwardly through the device is divided into a plurality of separate streams of individually lesser velocities than the mean velocity of the total volume of air supplied to the device, to the end that any sensation of draft, either remote from or in the immediate vicinity of the device, is avoided.

The device A may comprise any suitable number of hollow, flaring members and said members may be arranged in various different relationships to each other, or may have associated therewith any suitable means, whereby air delivered through the device either flows only outwardly through the passageways, or produces in one or more of said passageways an inward flow of air to obtain within the device and in the immediate vicinity thereof, a mixing of the supplied air with the room or enclosure air into which the supplied air is delivered, all in accordance with known practice.

According to the specific embodiment of the invention illustrated in Fig. 1, the device A comprises three successively larger flaring members designated as 10, 11 and 12, respectively, having, as usual, air passageways *a* and *b* therebetween, but, as distinguished from prior common practice, according to which a duct or neck of the same diameter as the smaller end of the larger flaring member is connected directly with the smaller end of said larger member, the said smaller or rear end of the present larger flaring member 12 is connected with an air supply duct or neck 13 of smaller diameter than the rear, open end of said larger flaring member, by a light reflecting flaring member 14. Moreover, a globe 15, preferably of flaring shape, is disposed within the smaller flaring member 10 and preferably is spaced therefrom to provide a third air passageway *c*. Preferably, too, but not necessarily, the globe 15 is closed at its rear end. In any event, the rear ends of the flaring members 10 and 11 are disposed forwardly of the light reflecting member 14, and there is housed by the globe 15 an electric lamp 16 which is disposed relative to the rear ends of the members 10 and 11 so that light rays emanating therefrom may pass directly across the rear ends of said members 10 and 11 against the inner face of the light reflecting member 14. Thus, due to the inclination of the member 14 relative to the axis of the device, and to its disposition rear-

wardly of the flaring members 10 and 11, light rays striking the inner face of the rear portion of said member 14 are reflected more or less forwardly through the passageways *a* and *b* and said passageways are illuminated substantially to the same extent that the passageway *c* is illuminated by light rays passing directly thereacross and being reflected more or less forwardly therethrough by the inner face of the smaller flaring member 10. In short, light is reflected forwardly through all of the passageways and is distributed over a considerable area forwardly of the device. Therefore, the device itself is effectively and uniformly illuminated, which is important from an esthetic standpoint, and, at the same time, the area forwardly and laterally of the device is effectively illuminated by diffused and indirect light.

The member 14 preferably, but not necessarily, has a lesser amount of flare than the outermost flaring member 12 and may be formed integral with either the duct 13 or the flaring member 12 or separate from both said duct and said member 12.

The globe 15 and a socket 17 for the lamp 16 may be mounted within the device in any suitable manner. For example, a globe receptacle 18 may be mounted on the flaring member 14 and a globe support 19, disposed within the globe, may be fastened to the receptacle 18 by screws or other suitable fasteners 20 extending through an opening provided in the rear end of the globe for the accommodation of the lamp socket 17. The socket 17 may either be suspended from above the device or may be mounted on the receptacle 18.

The globe receptacle 18 serves not only as a mounting element for the globe 14, but as a shield to exclude light from the rearmost interior portion of the device, whereby said portion of the device is rendered desirably invisible to a person viewing the device from any angle. Alternatively, and particularly in case there is employed a mounting means for the globe 15 which does not include a receptacle 18 or its equivalent, the rear end portion of the globe itself may be rendered opaque by paint or in any other desired manner; also, the interior face of the duct or neck 13 and the interior face of the reflecting member 14, rearwardly of the reflecting surface of said member, may be painted black to further assist in rendering the rear, interior portions of the device invisible.

Of course, instead of the reflecting member 14 having an inclination different from the inclination of the larger flaring member 12, said reflecting member 14 may have the same inclination as the flaring member 12, and in that event said reflecting member may be comprised of the rear end portion of an outermost flaring member 12 of abnormal length as compared with the other flaring members. Preferably, however, the reflecting member 14 has a lesser inclination than the outermost flaring member 12 not only in order that a practical relationship may be maintained between the cross sectional area of the supply duct or neck 13 and the areas of the inner and the outer ends of the air distributing passageways of the device, but in order that the flaring members 10, 11 and 12 may have desired inclinations and in order that, despite the obstruction offered to air flow by the globe 14, ample space may be provided around said globe for free flow of air from a supply duct or neck 13 of any given diameter to the air distributing passage-

ways of the device. Moreover, the rear ends of the successively larger flaring members, regardless of their number, may be disposed successively rearwardly of one another to intercept light rays emanating from the lamp 16 and to reflect said rays forwardly through the related passageways. Furthermore, the flaring members inwardly of the larger or outermost flaring member may be transparent or translucent for passage of light rays therethrough to illuminate the complete device.

The smaller or innermost flaring member 10 may have its rear end spaced from the globe 14 to provide the passageway *c*, or it may have its rear end in contact with said globe to eliminate the passageway *c*. Moreover, if the rear end of the member 10 is spaced from the globe 14 to provide the passageway *c*, provision may be made for inward flow of air through said passageway by extending the peripheral portion of the globe receptacle 18 into the space between the globe 15 and the reflector member 14 to form a baffle to deflect supplied air from the mouth of the passageway *c* into the passageways outwardly thereof. This is illustrated in Fig. 2, wherein the extended peripheral portion of the receptacle is designated as 18'. If the receptacle extension 18' is provided, air flowing forwardly through the latter mentioned passageways creates a suction effect in the passageway *c* and solely a rearward flow of air therethrough, and air flowing rearwardly through said passageway *c* obviously becomes mixed with the forwardly flowing air. Moreover, the air deflected outwardly by the baffle 18' primarily flows forwardly through the inner portion of the passageway *a* and thereby creates a rearward flow of air through the outer portion of said passageway *a* so that there is effected, within said passageway *a* a mixing of the forwardly flowing air with the rearwardly flowing air. On the other hand, if the space rearwardly of the mouth of the passageway *c* is unobstructed, supplied air will stream forwardly along the globe 14 and flow only forwardly through said passageway.

According to the embodiment of the invention illustrated in Fig. 2 of the drawings, the construction of the device, designated generally as A', is the same as illustrated in Fig. 1, with the exception that, either in addition to the receptacle 18 or its equivalent, or in lieu of said receptacle or its equivalent, a ring or rings 21 is, or are, provided within the light reflecting member 14, rearwardly of the rear ends of the flaring members 10 and 11, to exclude light from the rearmost portion of the device. The ring, or rings, 21, as the case may be, may be formed from any suitable opaque, sheet material and may be of any suitable diameter and depth. Moreover, they may be cylindrical or flaring and may be mounted within the member 14 in any suitable manner. In the present instance, two of said rings of flaring form, disposed in concentric, spaced apart relationship, are employed, and they serve not only as light shields, but to direct the air supplied through the duct or neck 13 initially outwardly toward the mouths of the passageways *a* and *b* so that an ample flow of air to said passageways is obtained.

According to the embodiment of the invention illustrated in Fig. 3, the device designated generally as A², is constructed to extract as well as to supply air. That is to say, the outer or air supply portion of the device is constructed as illustrated and described in connection with Figs.

1 and 2 of the drawings, but instead of the inner wall of the innermost air supply passageway c^3 being comprised of a lamp globe, said inner wall is comprised of an open-ended, hollow, flaring member 22 connected at its rear end to an air extraction duct or neck 23 of smaller diameter than the air supply duct or neck 13^a and extending through the latter duct or neck. There may or may not be provided within the flaring member 22 one or more other open-ended, hollow, flaring members spaced from said member 22, and from each other, to provide within said member 22 one or more flaring passageways to insure that extracted air shall be taken not only from the zone directly forwardly of the device, but from surrounding zones. In any event, there is suitably mounted within the flaring member 22, or within the smaller of any additional flaring member, or members, which may be provided within said member 22, a flaring lamp globe 15^a which forms the innermost wall of the air extraction space within the member 22 and which houses a lamp designated as 16^a.

The flaring member 22 and any additional flaring member, or members, disposed inwardly thereof may be opaque, translucent or transparent, but in any case, at least the connecting element 24 between the rear end of said flaring member 22 and the forward end of the air extraction duct 23, is either transparent or substantially transparent, whether said connecting element be separate from or an integral part of either said duct or said flaring member 22. Moreover, if a flaring member, or members, is, or are, provided within the flaring member 22, the rear end, or ends, of said flaring member, or members, as the case may be, is, or are, disposed sufficiently forwardly with respect to the reflecting member 14^a so that light rays may pass from the lamp 16^a through the connecting element 24 and directly across the said rear ends of said members against said reflecting member for forward reflection by the latter through the air supply passageways of the device. Thereby, the same desirable results are obtained respecting illumination of the device and the area in front of the same as are obtained in constructions of the type illustrated in Figs. 1 and 2.

As aforesaid, the flaring member 22 and any additional member, or members, disposed inwardly thereof may be transparent or translucent for passage of light therethrough not only into the extraction passageways, but also into the flaring air supply passageways. If, on the other hand, the flaring member 22 and the flaring member, or members, inwardly thereof should be opaque, the rear end, or ends, of the member, or members, within said member 22 may be disposed forwardly of the rear end portion of said member 22 so that the latter may serve to reflect light forwardly through said air extraction passageways.

As in the case of the embodiments of the invention illustrated in Figs. 1 and 2, the rear end portion of the globe 15^a preferably is covered by a light shield element 18^a to exclude light from the rearmost portions of the device, and, preferably, too, the interior, rearmost portions of the device are painted black to further assist in rendering them invisible.

According to the embodiment of the invention illustrated in Fig. 4, the construction of the device, designated generally as A³, is the same as illustrated in Fig. 3, with the exception that the same is equipped with a ring, or rings, 21^b as

illustrated and described in connection with the Fig. 2 embodiment of the invention, to exclude light from the rearmost air supply portion of the device and to direct the supplied air toward the outermost of the air delivery passageways.

According to any or all forms of the device, the light reflector 14 and the forward portions of the various flaring members may be, and preferably are, polished to enhance the attractive appearance of the device. Moreover, it is apparent that the device, instead of being used for air diffusion and illuminating purposes, may be used only for air diffusion purposes, or only for illuminating purposes. If it is to be used only for illuminating purposes its rear end may be closed where the air ducts are connected therewith.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. A device of the character described comprising a plurality of successively larger, open-ended hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of open-ended flaring passageways therebetween, means for mounting an electric lamp within the smaller of said members, a flaring reflector member constituting a rearward extension of the larger flaring member and having a lesser amount of flare than said larger flaring member and disposed rearwardly of the rear ends of the intermediate flaring members to intercept light rays emanating directly from a lamp mounted within the smaller of said members and to reflect said rays forwardly through said passageways, said reflector member being open at its rear end, and a neck connected with the rear end of said reflector member for connection with an air duct.

2. A device of the character described comprising a plurality of successively larger, open-ended hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of open-ended flaring passageways therebetween, means for mounting an electric lamp within the smaller of said members, a flaring light reflector constituting a rearward extension of the larger of said flaring members and having a lesser amount of flare than said larger flaring member, the flaring members within the larger of said flaring members having their rear ends disposed sufficiently forwardly with respect to said light reflector and a lamp mounted within the smaller flaring member to permit light rays from said lamp to pass across their rear ends against said reflector for reflection by the latter forwardly through said passageways, said reflector being open at its rear end, and a neck connected with the rear end of said reflector for connection with an air duct.

3. A device of the character described comprising a plurality of successively larger, open-ended hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of open-ended flaring passageways therebetween, means for mounting an electric lamp within the smaller of said members, reflector means disposed rearwardly of the intermediate flaring members to

intercept light rays emanating from a lamp mounted within the smaller of said members and to reflect them forwardly through said passageways, and shield means to exclude light rays emanating from said lamp from the rear interior portion of the device, said shield means comprising a plurality of open-ended, spaced apart, flaring rings disposed within the device rearwardly of the lamp and rearwardly of said flaring members.

4. A device of the character described comprising a plurality of successively larger, open-ended hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of open-ended flaring passageways therebetween, an air supply duct connected to the rear end of the larger of said flaring members, means for mounting an electric lamp within the smaller of said members, a lamp globe within the smaller of said flaring members, reflector means disposed rearwardly of the intermediate flaring members to intercept light rays emanating directly from a lamp housed by said globe and to reflect them forwardly through said passageways, a light shield element covering the rear end portion of said globe and serving to exclude light rays emanating from said lamp from the rear interior portion of the device, and a plurality of open-ended, spaced apart flaring rings disposed within the device rearwardly of the lamp and rearwardly of the rear ends of the flaring members to direct air flowing forwardly through the device toward the outermost passageways and to assist in excluding light rays from the interior portion of the device rearwardly of said rings.

5. A device of the character described comprising a plurality of successively larger, hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of flaring passageways therebetween, means for mounting an electric lamp within the smaller of said members, a lamp housing globe within the smaller of said flaring members spaced from said smaller member to provide an air passageway, and a light shield element covering the rear end portion of said globe and serving to exclude light rays, emanating from a lamp housed by said globe, from the rear interior portion of the device, the marginal portion of said shield element being formed and disposed to deflect air flowing forwardly through the device away from the mouth of the passageway between the smaller flaring member and said globe.

6. A device of the character described comprising a plurality of successively larger, hollow, flaring members disposed in spaced apart relationship with their smaller ends facing the rear end of the device to provide a series of flaring passageways therebetween, an air supply duct connected to the rear end of the larger of said members, an air extraction duct disposed within said air supply duct and connected to the rear end of a smaller of said flaring members, means for mounting an electric lamp within the flaring member to which said air extraction duct is connected, and means for the direct illumination by said lamp of the portion of the device rearwardly

of the flaring members that are disposed outwardly of the flaring member to which the air extraction duct is connected, whereby the passageways between the flaring members outwardly of the flaring member to which the air extraction duct is connected are illuminated.

7. A device as set forth in claim 6 in which the means for the direct illumination by the lamp of the portion of the device rearwardly of the flaring members that are disposed outwardly of the flaring member to which the air extraction duct is connected includes a member through which light may pass and which comprises at least part of the connection between the air extraction duct and the flaring member to which said air extraction duct is connected.

8. A device as set forth in claim 6 in which the means for the direct illumination by the lamp of the portion of the device rearwardly of the flaring members that are disposed outwardly of the flaring member to which the air extraction duct is connected comprises a hollow, flaring member through the wall of which light may pass and which serves to connect the air extraction duct to its related flaring member.

9. A device as set forth in claim 6 in which the connection between the air extraction duct and the related flaring member is of a material to permit the passage of light therethrough, and in which light reflector means is disposed rearwardly of the passageways outwardly of the flaring member to which the air extraction duct is connected, said light reflector means being constructed and arranged to receive light rays directly from the lamp and to cause said light rays to illuminate said passageways.

10. A device as set forth in claim 6 including a lamp housing globe within the smaller of the flaring members spaced from said smaller flaring member to provide an air extraction passageway.

11. A device as set forth in claim 6 including a lamp housing globe within the smaller of the flaring members, and a light shield element covering the rear end of said globe to exclude light from the rearmost portion of the device.

12. A device as set forth in claim 6 including means between the air inlet duct and the rear ends of the passageways outwardly of the flaring member to which the air extraction duct is connected to exclude light from the air inlet duct.

13. In a device of the character described, a lamp globe, a hollow flaring member open at its ends and disposed in surrounding, spaced relationship to said globe to provide an air passageway, means providing another air passageway radially outwardly of said flaring member; and means for deflecting air, supplied forwardly through the device, substantially radially outwardly across the rear end of said first mentioned passageway into said second mentioned passageway, thereby to create a suction effect in and a rearward flow of air through said first mentioned passageway.

14. A device as set forth in claim 13 in which the air deflecting means is comprised by the peripheral portion of a globe mounting receptacle.

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