

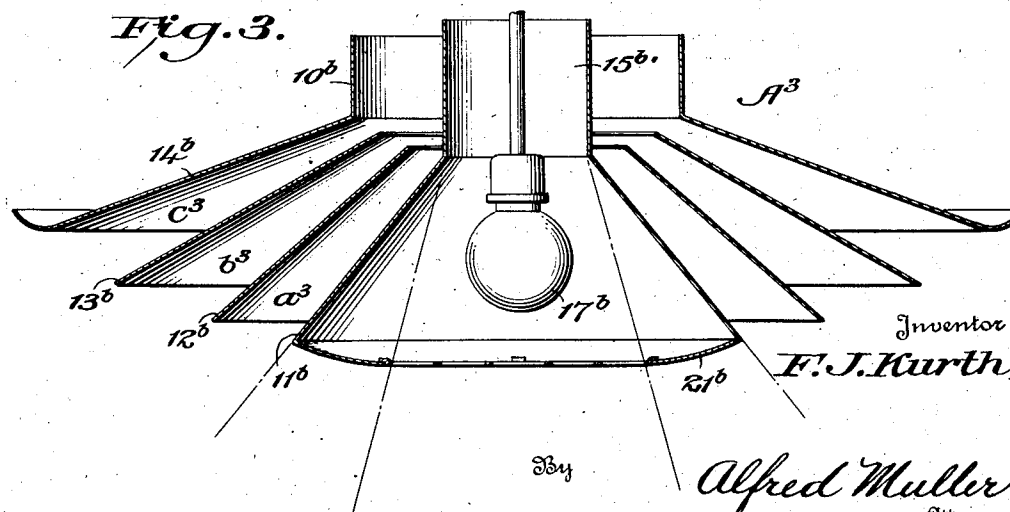
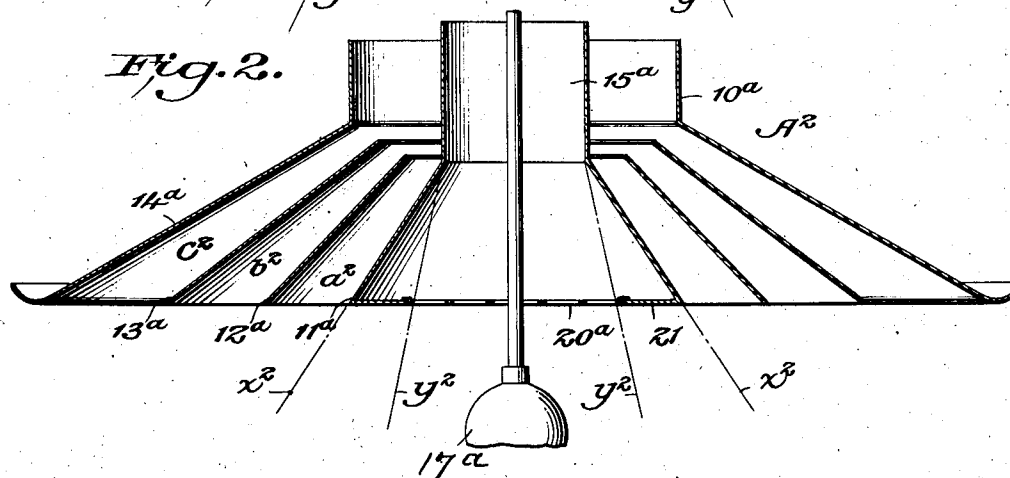
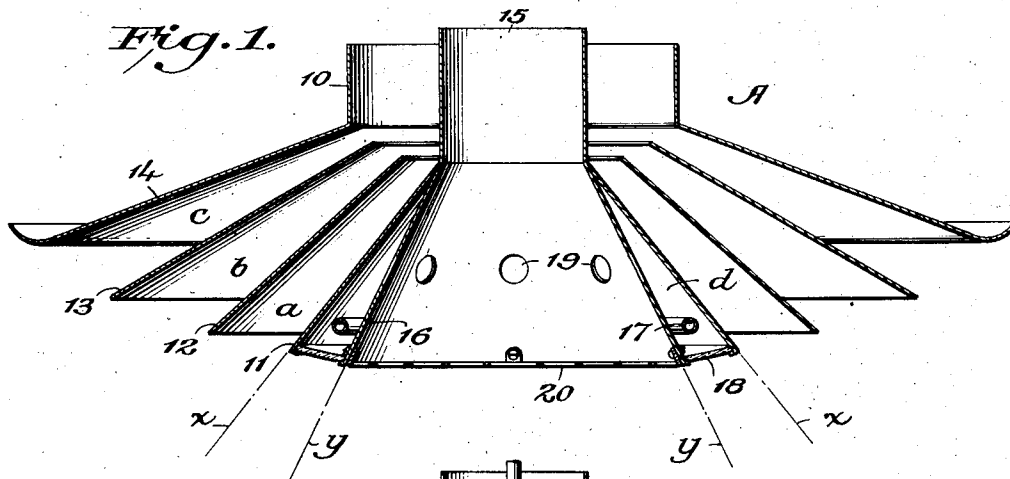
Sept. 16, 1941.

F. J. KURTH

2,255,849

COMBINED VENTILATING AND ILLUMINATING DEVICE

Filed Aug. 9, 1938



Inventor

F. J. Kurth,

By

Alfred Muller
Attorney

UNITED STATES PATENT OFFICE

2,255,849

COMBINED VENTILATING AND
ILLUMINATING DEVICEFranz J. Kurth, New York, N. Y., assignor to
Anemostat Corporation of America, a corpora-
tion of Delaware

Application August 9, 1938, Serial No. 223,816

2 Claims. (Cl. 240—78)

This invention relates to ventilating devices of the general type comprising a plurality of open-ended, hollow, flaring members disposed in spaced apart relationship to provide a plurality of separate air distributing passageways therebetween, and has particular reference to improvements in devices of this general type which are constructed for both the supply of air to and the extraction of air from a room or other enclosed space.

When constructed for the extraction as well as for the supply of air, devices of the character referred to usually include, at the center thereof, an air extraction duct the forward end portion of which is flared and is comprised by the smaller or innermost flaring member of the air supply portion of the device. Because of this arrangement, air is extracted from a cone-like or flaring area in front of the device, (assuming the device to be of circular shape as viewed from the front) and the supplied air is delivered from the device in the form of a hollow body around the cone-like body of air being extracted, the interior of the hollow body of supplied air being of the same size and shape as the exterior of the body of air being extracted, due to the front end portions of the air extraction duct and the air supply portion of the device being separated from each other only by the thin wall comprising both the forward end portion of the air extraction duct and the smaller or innermost flaring member of the air supply portion of the device. It thus happens that, in prior devices of the character mentioned which are constructed for both the supply and the extraction of air, the supplied and the extracted bodies of air are directly contiguous to each other and, therefore, a considerable portion of the supplied air is drawn into the air extraction duct as rapidly as it is delivered through the air supply portion of the device and before it can serve any useful purpose. Accordingly, one special object of the present invention is to provide a device of the character mentioned for both the supply and extraction of air, which device embodies a novel construction to cause the supplied and the extracted bodies of air to be separated in front of the device by a so-called "dead air" space of suitable width, whereby any wasteful extraction of any part of the supplied air immediately upon being delivered from the device and before it has circulated in the room or other enclosure, and thus has served its intended purpose, is effectively avoided.

Another special object of the present invention is to provide, in novel association with a de-

vice of the character mentioned, illuminating means disposed so that its heat is carried off by the extracted air.

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 a device of the general character mentioned embodying the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawing and defined in the appended claims.

In the accompanying drawing:

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

Figures 2 and 3 are views similar to Fig. 1 illustrating other practical embodiments of the invention.

Referring to the drawing in detail, first with particular reference to the embodiment of the invention illustrated in Fig. 1, it will be observed that the device, designated generally as A, comprises an air delivery or supply portion composed of a plurality of successively larger, open-ended, hollow, flaring members disposed in mutually spaced relationship to provide a series of separate, flaring passageways therebetween, whereby air supplied to the device through a supply duct connected with the smaller or rear end of the largest flaring member, is divided into a plurality of separate streams and thereby is delivered substantially draftlessly forwardly of the device. The air supply duct is designated as 10, the successively larger flaring members, of which four are illustrated in the present instance, are designated as 11, 12, 13 and 14, respectively, and the three successively larger, flaring passageways between said members are designated as a, b and c, respectively. As will be understood, the flaring members may be of circular or any other desired shape in cross section and the inner ends of some or all of them may be formed, or may have associated therewith suitable means, in accordance with known practice, whereby the supplied air creates a suction effect and either a partial or a complete rearward or inward flow of air in certain of the passageways, whereby there is caused a mixing within the device of the supplied air with the room air into which the supplied air is delivered. Since, however, the cross sectional shape of the flaring members and the relative disposition of their inner ends is immaterial insofar as concerns the present invention, it may be assumed that said members are of cir-

cular shape in cross section and that air flows only outwardly through all of the passageways.

Within and concentric with the air supply duct 10 is a smaller, air extraction duct 15, the forward end portion of which is disposed within the smallest flaring member 11 and is comprised by a flaring member 16 having a lesser amount of flare than said member 11. In this connection, either of the flaring members 11 or 16 may be formed as a part of the duct 15 and the other may be formed as a separate element, or both of said flaring members may be formed separately from said duct 15 and from each other, or they may be formed in one piece with each other and either integral with or separately from said duct 15. In any event, the smaller, rear end of the member 11 engages either the duct 15 or the flaring member 16. Therefore, the innermost portion of the body of supplied air cannot flow directly forwardly from the device, but is deflected outwardly by the member 11 around a cone-like space in front of the device defined by a forward projection of the surface of the member 11, as indicated by the light dot and dash lines x . Similarly, the extracted air is drawn from a cone-like space in front of the device defined by a forward projection of the surface of the member 16 indicated by the light dot and dash lines y . Now, as is apparent, due to the member 16 having a lesser amount of flare than the member 11, the cone-like body of air flowing to the extraction duct is separated from the interior of the body of supplied air flowing forwardly from the device by a "dead air" space (between the light dot and dash lines x and y) in which the air, theoretically, is not moved either forwardly or rearwardly. Consequently, any wasteful extraction of the supplied air immediately upon being delivered from the device and before it has circulated in the room or other enclosure and thus has served its intended purpose, is effectively avoided.

Between the members 11 and 16 is, of course, a flaring space, designated as d , in which may be located, if desired, any suitable illuminating means such, for example, as one or more electric light bulbs or a "neon" tube designated as 17. Whether the space d does or does not contain illuminating means, the forward end of said space may or may not be closed by a ring 18 of any suitable material, said ring being transparent or translucent if illuminating means is contained in said space d . Moreover, if illuminating means is contained in the space d , the member 16 desirably is either perforated, as indicated at 19, or has its rear end spaced from the member 11 and from the duct 15, so that the extracted air draws air from the space d and thus carries off heat from the illuminating means. Of course, if the space d is in communication with the air extraction duct, the forward end of said space d is closed to maintain the aforesaid "dead air" space forwardly of the device. Obviously, a single, solid flaring member may be used in lieu of the two spaced flaring members 11 and 16.

Preferably, but not necessarily, the forward end of the member 16; i. e., the forward end of the air extraction duct, is covered by a grille, register or the like, designated as 20.

Referring now particularly to the embodiment of the invention illustrated in Figure 2, it will be observed that the device, designated generally as A^2 , is of the same general construction as illustrated in Fig. 1 in that it comprises an air

supply duct 10^a, a plurality of successively larger, open-ended, hollow, flaring members 11^a, 12^a, 13^a and 14^a disposed in mutually spaced relationship in front of said air supply duct and defining a plurality of flaring air distributing passageways a^2 , b^2 and c^2 therebetween, and an air extraction duct 15^a disposed centrally of the device. However, as distinguished from the Fig. 1 embodiment of the invention, the front ends of the flaring members 11^a, 12^a, 13^a and 14^a are disposed in a common plane, and in lieu of the flaring member 16 of the Fig. 1 construction, the flaring member 11^a, to the rear end of which is connected the air extraction duct 15^a, is provided at its front end with an inwardly extending ring-like flange 21 which serves the same purpose as the forward projection of the flaring member 11 of the Fig. 1 construction. In other words, the area in front of the device from which air is drawn into the air extraction duct 15^a is defined by forward projections of straight lines y^2 extending from the smaller end of the flaring member 11^a across the inner edge of the flange 21, and since these lines are spaced inwardly from forward projections x^2 of the flaring member 11^a, it follows that a "dead air" space exists forwardly of the device between the supplied air and the body of air being drawn into the air extraction duct.

As in the case of the Fig. 1 embodiment of the invention, a grille, register or the like 20^a preferably is employed at the front of the flaring member 11^a.

If the Fig. 2 embodiment of the invention is equipped with illuminating means, such means may be located rearwardly of the flange 21, as suggested by the Fig. 1 construction, or centrally within the flaring member 11^a behind the grille or the like 20^a, or forwardly of said grille or the like as shown. In either case, the extracted air obviously serves to carry off heat from said illuminating means, designated as 17^a.

Referring now particularly to the Fig. 3 embodiment of the invention, it will be observed that the device, designated generally as A^3 , is of the same general construction as illustrated in Figs. 1 and 2 in that it comprises an air supply duct 10^b, a plurality of successively larger, open-ended, hollow, flaring members 11^b, 12^b, 13^b and 14^b disposed in mutually spaced relationship in front of said air supply duct and defining a plurality of flaring air distributing passageways a^3 , b^3 and c^3 therebetween, and an air extraction duct 15^b disposed centrally of the device.

As in the case of the Fig. 1 embodiment of the invention, the front ends of the successively larger flaring members of the Fig. 3 embodiment of the invention are successively stepped rearwardly, but as in the case of the Fig. 2 embodiment of the invention, the forward end of the flaring member 11^b of the Fig. 3 embodiment of the invention is provided with a ring-like inwardly extending flange 21^b which serves the same purpose as the flange 21 of the Fig. 2 embodiment of the invention. Fig. 3 further illustrates illuminating means 17^b in the form of an electric lamp disposed centrally within the flaring member 11^b.

According to any of the different embodiments of the invention, some or all of the flaring members may be transparent or translucent to permit light from the illuminating means to illuminate other than the central portion of the device. Moreover, according to the broader aspects of the invention, it obviously is not neces-

sary to divide the space between the largest flaring member and the air extraction duct into a plurality of separate passageways. On the contrary, the flaring members within said space may be eliminated and said space may be uninterrupted. Furthermore, according to any of the different embodiments of the invention, the flaring members may have their front ends disposed in a common plane, as shown in Fig. 2, or stepped rearwardly, as shown in Figs. 1 and 3, and the illuminating means may be located as suggested by any of Figs. 1 to 3. Also, in any case where the smallest flaring member is provided with a ring-like, inwardly extending flange, such flange may be either integral with or separate from said flaring member.

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 combined ventilating and illuminating device comprising an air extraction duct, a hollow flaring member around the forward or air inlet end portion of said duct, said member being forwardly flared relative to the forward or air inlet end portion of said duct and being en-

gaged at its rear end with said duct, thereby defining around the forward or air inlet end portion of said duct a forwardly flaring space closed at its rear end, illuminating means disposed within said space, and a second hollow flaring member surrounding said first mentioned flaring member in spaced relationship thereto and providing an air supply passageway in surrounding relationship to said air extraction duct.

2. A combined ventilating and illuminating device comprising an air extraction duct, a hollow flaring member around the forward or air inlet end portion of said duct, said member being forwardly flared relative to the forward or air inlet end portion of said duct and being engaged at its rear end with said duct, thereby defining around the forward or air inlet end portion of said duct a forwardly flaring space closed at its rear end, illuminating means disposed within said space, the forward end portion of said duct having openings for flow of air from said space into said duct, means of a material through which light may pass and through which air cannot pass closing said space forwardly of said illuminating means, and a second hollow flaring member surrounding said first mentioned flaring member in spaced relationship thereto and providing an air supply passageway in surrounding relationship to said air extraction duct.

FRANZ J. KURTH.