

Jan. 28, 1941.

F. J. KURTH

2,229,747

AIR DISTRIBUTING DEVICE

Filed Feb. 23, 1939

Fig. 1.

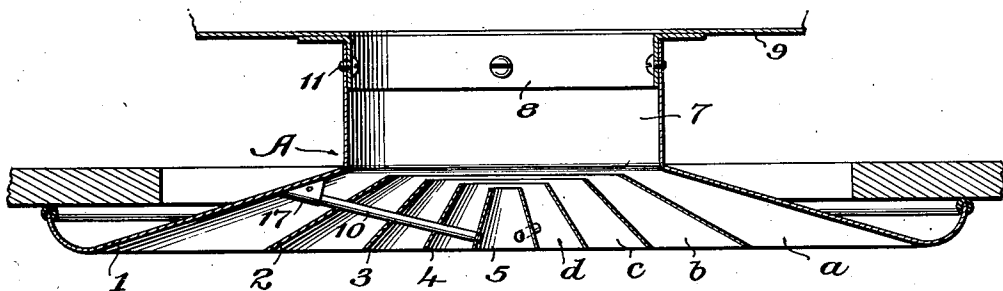


Fig. 2.

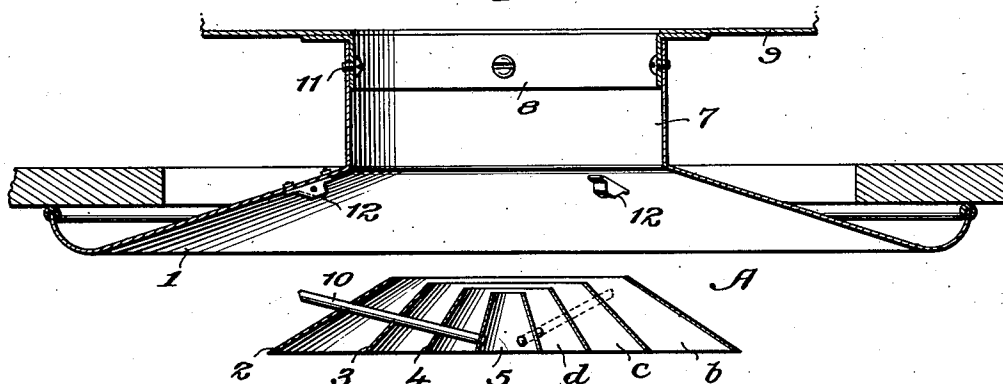


Fig. 3.

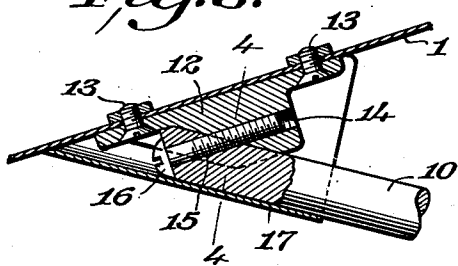


Fig. 6.

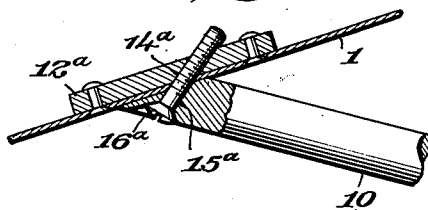


Fig. 5.

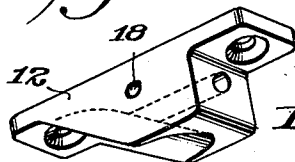
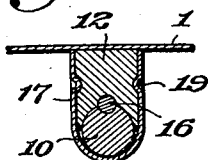


Fig. 4.



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UNITED STATES PATENT OFFICE

2,229,747

AIR DISTRIBUTING DEVICE

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Application February 23, 1939, Serial No. 258,080

11 Claims. (Cl. 98—40)

This invention relates to ventilating apparatus, and has particular reference to improvements in devices for effecting the diffused delivery of air from air supply ducts into rooms and other enclosures and, in some cases, for both the supply and exhaust of air to and from rooms and other enclosures.

One general type of device with which the invention particularly is concerned, comprises a series of successively smaller, open-ended, hollow, flaring members spaced successively forwardly of one another to provide therebetween a series of flaring passageways for flow of air there-through. In some instances the rear, open ends of the members are disposed relatively to each other to cause supplied air to flow forwardly through all of the passageways. In other instances the rear, open ends of the members are disposed relatively to each other to cause the supplied air to flow forwardly through only certain of the passageways and to produce a rearward flow of air through other of the passageways. In still other instances, air exhaust means extends centrally through the device. In practically all instances the rearmost member, which may be of either flat or flaring form, includes, in surrounding relationship to the opening therein, a rearwardly extending neck through the instrumentality of which the device is connected with an air supply duct and through which supplied air flows to the device.

In mounting a device of the type mentioned the neck thereof usually is engaged telescopically with a companion neck portion of the air supply duct and is fastened thereto by bolts, screws or the like or by bayonet or equivalent joints. In any event, it is essential in most cases to have ready access to the interior of the neck of a device of the type mentioned while the rearmost member of the device is operatively positioned relative to the air supply duct and relative to the ceiling or other wall through which the air supply duct extends, not only to enable proper fitting and mounting of the device during its original installation, but to permit convenient adjustments and repairs of such auxiliaries as volume control dampers, light fixture connections and the like which may be disposed within the neck of the device or within the air supply duct.

Heretofore it has been usual to rigidly fasten together the forwardmost flaring members of a device of type mentioned by means of struts, and to detachably fasten said forwardmost members to the rearmost member by means of screws ex-

tending forwardly through the rearmost member into the rear ends of the struts. This enabled removal of the forwardmost members to afford access to the neck of the device while the rearmost member was operatively positioned, provided there was sufficient space between the rearmost member and the ceiling or other wall to afford access to the screws at the rear of the rearmost member, as heretofore was usually the case.

However, in many instances it now is desirable to have the rearmost member disposed either in contact with, or closely adjacent to, the ceiling or other wall with which the device is associated. In fact, the ceiling or other wall now frequently is recessed to accommodate the rearmost member, particularly if it is of flaring form. In such cases, access cannot be had to the rear of the rearmost member. Consequently, serious difficulties have been experienced not only in properly fitting and mounting devices of the type mentioned as heretofore constructed, but in gaining access to and through the necks thereof when, for any reason, that has been required.

Accordingly, the general object of the present invention is to provide a device of the type mentioned embodying simple, practical, always readily accessible means for securely, detachably fastening the forwardmost members of the device as a unit to the rearmost member, thus to avoid the difficulties mentioned.

With the foregoing general object 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 drawing and defined in the appended claims.

In the accompanying drawing, wherein like characters of reference denote corresponding parts in related views:

Figure 1 is a central longitudinal section through an air distributing device embodying the features of the invention.

Figure 2 is a view similar to Figure 1 showing the forwardmost members of the device separated from the rearmost member of the device.

Figure 3 is an enlarged detail section through one of the devices detachably connecting the unit comprised by the forwardmost members of the device to the rearmost member of the device.

Figure 4 is a cross section on the line 4—4 of Fig. 3.

Figure 5 is a perspective view of the block of one of the connecting devices; and

Figure 6 is a view similar to Fig. 3 illustrating an alternative construction.

Referring to the drawing in detail, first with particular reference to the embodiment of the invention illustrated in Figures 1 to 5, it will be observed that the air distributing device illustrated in the present instance and designated generally as A, is of a well known type comprising a series of successively smaller, open-ended, hollow, flaring members, designated as 1, 2, 3, 4 and 5, spaced successively forwardly of one another to provide therebetween a series of flaring passageways, designated as a, b, c and d. It will also be observed that, in accordance with usual practice, the larger or rearmost member 1 includes, in surrounding relationship to the opening in the rear end thereof, a rearwardly extending neck 7 through the instrumentality of which the device is connected with a companion neck portion 8 of an air supply duct 9 and through which air flows from said duct to the device.

As aforesaid, in some instances the rear, open ends of the members of a device of the general type illustrated are disposed relatively to each other to cause supplied air to flow forwardly through all of the passageways, while in other instances said members are disposed relatively to each other to cause the supplied air to flow forwardly through only certain of the passageways and to produce a rearward flow of air through other of the passageways. In either case the device functions, generally speaking, to effect a diffused, substantially draftless distribution of the supplied air. Also as aforesaid, in some instances air exhaust means may extend centrally through the device. Moreover, in devices of the type mentioned the rearmost member may be flat or it may be of flaring form and the members in advance thereof may have various different dispositions relative thereto and to each other. In this connection and so far as concerns the present invention, the specific construction and mode of operation of the device is immaterial. Accordingly, the device illustrated and designated generally as A may be considered as representative of any device of the same general type presenting, as heretofore constructed, the difficulties heretofore mentioned.

Usually the members of a device of the type illustrated are connected together by struts such as the struts designated as 10. These struts usually extend through the forwardmost members and are fixed thereto, and that is true of the struts of a device embodying the improvements constituting the present invention. However, whereas the struts of prior devices have been connected to the rearmost member by means of screws extending forwardly through the rearmost member into the rear ends of the struts, the struts of a device constructed in accordance with the present invention are connected to the rearmost member of the device by fastening means which are always readily accessible from in front of the rearmost member. Accordingly, regardless of the disposition of the rearmost member relative to a ceiling or other wall, the unit comprised by the forwardmost members of the device may readily be separated from the rearmost member to permit convenient access through the latter to the neck of the device and to the duct for properly and expeditiously fitting and mounting the rearmost member, as well as for making adjustments of and repairs to aux-

iliaries such as volume control dampers, light fixture connections or the like which may be disposed within the neck of the device or within the air supply duct. For example, screws 11 are illustrated in the present instance as being employed for connecting the neck 7 to the air supply duct neck 8 over which the neck 7 is telescopically engaged. In fitting the rearmost member, the positions of holes to be formed in the neck 7 to accommodate the screws 11 must be marked while the rearmost member of the device is held operatively positioned, and thereafter said screws must be inserted and tightened from the inside of the neck 8. Obviously, by separating the forwardmost members of the device from the rearmost member thereof, access may be held to the neck of the device for the purpose of marking the positions of the screw holes to be formed in the neck 7 and for thereafter manipulating the screws to mount the device while the rearmost member is held operatively positioned.

As illustrated in Figures 1 to 5, the means for detachably connecting the struts 10 to the rearmost member 1 comprises, for each strut, of which there usually are three, a block 12 fastened by screws or rivets 13, or by any other suitable means, against the front face of the member 1 at a point to be engaged by the rear end portion of the related strut 10 when the unit comprised by the forwardmost members of the device is properly positioned relative to the rearmost member. At its outer end the block 12 is inclined to have the rear end portion of the related strut engage flatly thereagainst, while formed in said block, parallel, or substantially parallel, to the wall of the member 1, is a screw accommodating hole 14 which opens through the said inclined outer end of the block. Moreover, the rear end portion of the related strut has formed transversely therethrough a hole 15 which aligns with the hole 14 when the strut is operatively positioned relative to the block 12. The hole 15 is of a size to freely accommodate a screw 16 to be passed therethrough and threaded into the hole 14 for the purpose of detachably fastening the strut 10 to the block 12. Moreover, when the unit comprised by the forwardmost members of the device is operatively positioned relative to the rearmost member 1, the hole 15 is readily accessible through the rearmost passageway a for insertion of the screw 16, and the screw, when applied, is readily accessible through said passageway for removal. Accordingly, the unit comprised by the forwardmost members of the device may readily be detached from the rearmost member 1, as illustrated in Fig. 2, to afford access to and through the neck of the rearmost member 1 for any desired purpose, and thereafter may equally as readily be fastened to said rearmost member.

Preferably, but not necessarily, the inclined, outer end portion of the block 12 is recessed to provide a seat to accommodate the rear end portion of the strut, thus to facilitate proper positioning of the strut against said inclined end. Moreover, the outer side portion of the strut 10 adjacent to its rear end preferably is cut perpendicularly to the hole 15 to afford a flat face against which the head of the screw 16 may take flat bearing.

Since, in most devices of the type mentioned, air flows rearwardly through the rear or laterally outwardly disposed portions of the passageways, and since the irregularities of the block 12 and the rear end portion of the strut 10 might

result in the setting up of undesirable noises by the flow of air thereover, a cover 17 is provided for said block and the rear end portion of the strut 10. This cover is formed from thin sheet material and is of U-shape in cross section and of substantially triangular shape as viewed in side elevation. It is resilient and of a size to be snapped over the block 12 with its rounded, side connecting portion disposed outwardly of and embracing the strut and with the rear edges of its side walls engaging the front face of the member 1. It thus serves to cause a smooth, even, noiseless flow of air around the block and the rear end portion of the strut.

- 15 To retain the cover 17 on the block 12, the sides of the block may have suitable indentations 18 to accommodate suitable inwardly directed protuberances 19 on the side walls of the cover.
- 20 According to the alternative embodiment of the invention illustrated in Figure 6, the means for detachably fastening the struts 10 to the rearmost member 1 of the device comprises, for each strut, a block 12^a fastened in any suitable manner against the rear face of the rearmost member of the device. In that case the rear end of each strut is cut at an inclination to engage flatly against the front face of the member 1, and through the rear end portion of each strut is formed a hole 15^a to accommodate a screw 16^a. The hole 15^a extends from the outer side of the strut at a rearward and inward inclination through the flat, rear end thereof and aligns with a similarly extending threaded hole 14^a in the block 12^a and with a companion hole in the rearmost member 1 when the unit comprised by the forwardmost members of the device is operatively positioned relative to the rearmost member of the device. Therefore, the screws 16^a may readily be passed through the holes 15^a in the struts and threaded into the holes 14^a in the blocks 12^a to fasten the unit comprised by the forwardmost members of the device to the rearmost member of the device, and may equally as readily be removed to detach the said unit from the said rearmost 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.

55 I claim:

1. A device of the character described comprising a rearmost member having an opening and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a series of open-ended, hollow flaring members in front of and spaced from said rearmost member and from each other to provide therebetween a series of passageways communicating with said neck, means rigidly connecting together the members of said series for attachment to and detachment from said rearmost member as a unit, and means between said rearmost member and the rearmost of said series of members detachably mounting said unit upon said rearmost member.

2. A device of the character described comprising a rearmost member having an opening and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a series of open-ended,

hollow flaring members in front of and spaced from said rearmost member and from each other to provide therebetween a series of passageways communicating with said neck, means rigidly connecting together the members of said series for attachment and detachment as a unit to and from said rearmost member, and fastening means cooperating with said connecting means to detachably mount said unit upon the rearmost member, said fastening means being disposed between the rearmost member and the rearmost of said series of members.

3. A device of the character described comprising a rearmost member having an opening and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a series of open-ended, hollow flaring members in front of and spaced from said rearmost member and from each other to provide therebetween a series of passageways communicating with said neck, means rigidly connecting together the members of said series for attachment to and detachment from said rearmost member as a unit, and screw means separate from said connecting means and cooperating with the latter to detachably mount said unit upon said rearmost member, said screw means being disposed between said rearmost member and the rearmost of said series of members for manipulation to attach said unit to and to detach it from said rearmost member.

4. A device of the character described comprising a rearmost member having an opening and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a unit comprising a series of open-ended, hollow flaring members in front of and spaced from said rearmost member and from each other to provide therebetween a series of passageways communicating with said neck, struts connecting together the members of said unit, blocks fixed to the rearmost member, and screws extending through said struts and threaded into said blocks to detachably mount said unit upon said rearmost member, said screws being accessible at the front of said rearmost member for manipulation to attach said unit to and to detach it from said rearmost member.

5. A device of the character described comprising a rearmost member having an opening and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a unit comprising a series of open-ended, hollow flaring members in front of and spaced from said rearmost member and from each other to provide therebetween a series of passageways communicating with said neck, struts connecting together the members of said unit, blocks fixed to the rearmost member at the front thereof, the rear end portions of said struts being seated against the outer ends of said blocks, and screws extending through the rear end portions of said struts and threaded into said blocks for detachably fastening said unit upon said rearmost member.

6. A device as set forth in claim 5 in which the outer end portions of the blocks are recessed to provide seats to accommodate the rear end portions of the struts.

7. A device as set forth in claim 5 in which the screws extend in the same general direction as the adjacent wall portion of the rearmost member.

8. A device as set forth in claim 5 including a cover engaged over the rear end portion of each

strut and its related block to cause a smooth, even, noiseless flow of air around the strut and block.

- 5 9. A device as set forth in claim 5 including a cover engaged over the rear end portion of each strut and its related block to cause a smooth, even, noiseless flow of air around the strut and block, said cover being of U-shape in cross section and having the portion thereof which connects its
10 sides rounded and disposed outwardly of the strut and block and having the free edges of its sides disposed closely adjacent to the front face of the rearmost member of the device.

- 15 10. A device as set forth in claim 4 in which the blocks are disposed at the rear side of the rearmost member.

11. A device of the character described comprising a rearmost member having an opening

and a neck extending rearwardly therefrom in surrounding relationship to said opening for connection with a duct, a series of open-ended, hollow, flaring members in front of and spaced from said rearmost member and from each other to 5 provide a series of passageways communicating with said neck, struts rigidly connecting together the members of said series for attachment to and detachment from said rearmost member as a unit, said struts having rear end portions extend- 10 ing rearwardly beyond the rearmost of said series of members, and means disposed between said rearmost member and the rearmost of said series of members for detachably connecting the rear end portions of said struts to said rearmost mem- 15 ber, thereby to detachably connect said series of members to said rearmost member.

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