March 12, 1957 P. W. G. VAN DEN BROEK 2,785,015

NOZZLE FOR OR PROVIDED ON AN AIR DISTRIBUTING BOX

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Fig. 1

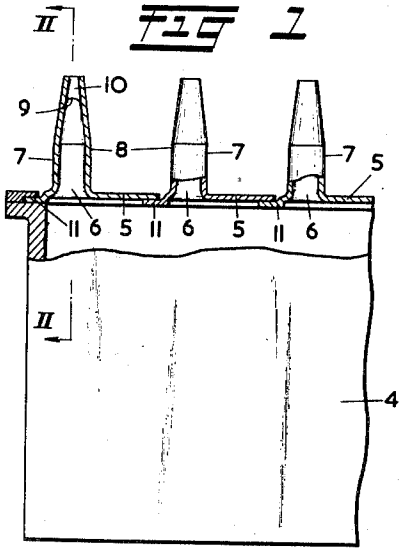


Fig. 2

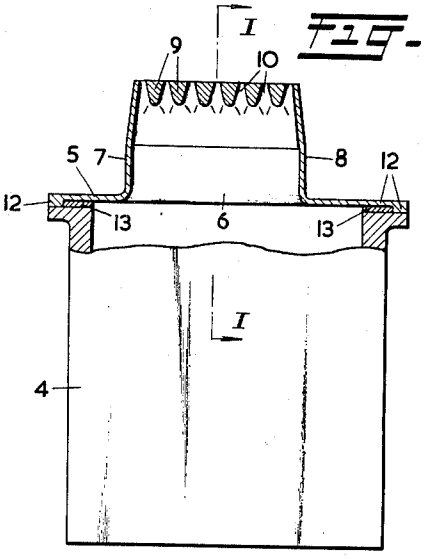
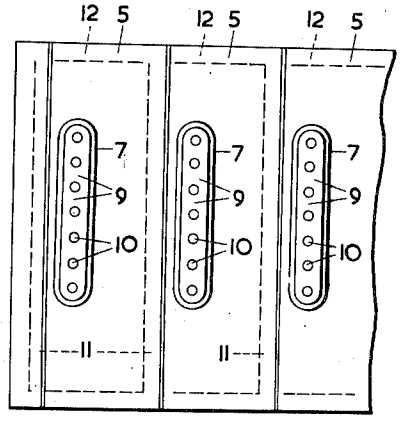


Fig. 3



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2,785,015

NOZZLE FOR OR PROVIDED ON AN AIR DISTRIBUTING BOX

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4 Claims. (Cl. 299—141)

This invention relates to a nozzle for or provided on an air distributing box and comprising a flat tube which, at least internally, grows narrower towards its outlet end and which with its wide inlet end is joined to the edge of an appropriately shaped hole in a plate. Such nozzles are known. In said known nozzles the tube has minimum dimensions in the direction in which the air flows therethrough; the narrowing towards the outlet end of said tube is only caused because the tube is formed by bending up the edges of an incision provided in the plate and has no functional significance, therefore.

A larger or smaller number of nozzles thus constructed may be secured on the air distributing box in side by side relationship and in a direction normal to the longitudinal axis of the tube profile in order to cover said air distributing box which is open at the upper side. The variation in the number of nozzles may be obtained by cutting a larger or smaller piece from the plate of each nozzle. The number of said nozzles is dependent on the amount of air which, being supplied under a certain pressure, is to flow through the box and the nozzles per unit of time. In view thereof the nozzles are preferably so constructed that their plates admit of being laid on the edge of the air distributing box in coplanar and in abutting relationship, which plates will then overlap one another like roofing tiles.

Now the invention resides in that the tube of the nozzle in the direction of air flow has a length of at least three times its largest transverse width and that at its outlet end said tube is divided by transverse partitions into substantially round channels which likewise grow narrower towards the last named end and which each have a length of the order of their largest diameter. Such a nozzle opens up the possibility to still further control the amount of air flowing out of the box per unit of time by cutting a larger or smaller piece off the walls of the tapering channels and thus to increase to the desired degree the total free passage area of the outlet openings of the said channels. In many cases it may even be desirable to provide the cut below the partitions separating the channels, so that the outlet opening of the nozzle will have the shape of one single elongated slot, the width of which is larger according as the cut is provided farther away from the outlet end of the tapering channels.

Naturally it is advisable to manufacture the nozzle from a material which easily admits of being cut or sawn. Ebonite and all kinds of other synthetic materials are suitable therefor.

In illustration of the invention an embodiment of the nozzle will be described with reference to the accompanying drawing in which:

Fig. 1 is a front view of a portion of an air distributing box, the nozzles of which are partly sectioned in vertical direction according to line I—I in Figure 2;

Fig. 2 is a side view of said box, partly sectioned according to the line II—II in Fig. 1;

Fig. 3 is a plan view of what is shown in Fig. 1.

An air distributing box 4 open at the top is connected to the delivery line (not shown) of a fan; the walls of said box are preferably internally lined with a fibrous material and in addition the box may contain baffles (likewise covered with such a material) which compel the air entering the unit to flow via a zigzag path towards the upper side of the box. Said measures have for their object to dampen the sound of the rapidly flowing air.

On the upper edge of the box 4 a few nozzles according to the invention are provided; Figs. 1 and 3 show three of said nozzles. Each nozzle comprises a flat, rectangular plate 5 which adjacent one of its long sides is provided with a broad slot 6. Along the edges of said slot the material of the plate 5 continues into an upstanding, flat tube 7 the width of which is constant over the lower part up to the level 8, but upwards of said level said width grows gradually smaller. In the upper portion of the tube 7 a plurality of lands 9 is provided in such a manner that substantially round channels 10 which grow narrower in upward direction, are formed.

At the left hand side—according to Figs. 1 and 3—of the tube 7 the plate 5 has an appreciably smaller width than at the right hand side and it has a stepped portion 11 there, the lower side of which stepped portion is located below the under side of the plate, so that two plates laid against each other with their long sides in abutting relationship overlap each other like roofing tiles (Fig. 1). Along its short sides each plate has a thickened edge 12 the lower side of which is flush with the lower side of the stepped portion. The plates 5 are secured on the upper edge of the box 4 by means of screws (not shown), a packing strip 13 being interposed between said plates and said upper edge.

By sawing a strip off each plate 5 at the right hand side according to Figs. 1 and 3 the width of said plate is reduced, so that the number of nozzles per air distributing box 4 and thus the total free passage area for the air may be increased. For the rest we refer to what is stated in the introduction to this specification.

I claim:

1. An air distributing box for an air-conditioning conduit comprising, in combination, wall means defining a chamber for admission of the air to be distributed, one side of said chamber being open, and a plurality of inter-engageable plates removably positioned in engagement with said wall means to close said open side, each of said plates being formed with an elongated aperture and having a flattened tube extending from the edges of said aperture away from said chamber, the length of said tube being at least three times as great as its largest transverse width and said tube having an outlet end remote from said plate, said outlet end being divided by transverse partitions into a plurality of channels of substantially circular cross-section, the portion of the walls of said tube adjacent said outlet opening converging toward said opening and the walls of said channels converging toward their outlet ends, each of said channels having an axial length of the order of its largest diameter.

2. An air distributing box for an air-conditioning conduit comprising, in combination, wall means defining a chamber for admission of the air to be distributed, one side of said chamber being open, and a plurality of inter-engageable rectangular plates removably positioned in over-lapping relationship in engagement with said wall means to close said open side, each of said plates being formed with an elongated aperture and having a flattened tube extending from the edges of said aperture away from said chamber, the length of said tube being at least three times as great as its largest transverse width and said tube having an outlet end remote from said plate, said outlet end being divided by transverse partitions into a plurality

of channels of substantially circular cross-section, the portion of the walls of said tube adjacent said outlet opening converging toward said opening and the walls of said channels converging toward their outlet ends, each of said channels having an axial length of the order of its largest diameter.

3. An air distribution plate adapted to form at least a portion of one wall of an air distributing box for an air-conditioning conduit, said plate being formed with an elongated aperture, a flattened tube extending from the edges of said aperture at right angles to the plane of said plate, the length of said tube being at least three times as great as its largest transverse width and said tube having an outlet end remote from said plate, said outlet end being divided by transverse partitions into a plurality of channels of substantially circular cross-section, the portion of the walls of said tube adjacent said outlet opening converging toward said opening and the walls of said channels converging toward their outlet ends, each of said channels having an axial length of the order of its largest diameter.

4. An air distribution plate adapted to form at least a portion of one wall of an air distributing box for an air-conditioning conduit, said plate being rectangular in form with a flanged edge for overlapping engagement with a like plate and being formed with an elongated aperture, a flattened tube extending from the edges of said aperture at right angles to the plane of said plate, the length of said tube being at least three times as great as its largest transverse width and said tube having an outlet end remote from said plate, said outlet end being divided by transverse partitions into a plurality of channels of substantially circular cross-section, the portion of the walls of said tube adjacent said outlet opening converging toward said opening and the walls of said channels converging toward their outlet ends, each of said channels having an axial length of the order of its largest diameter.

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