

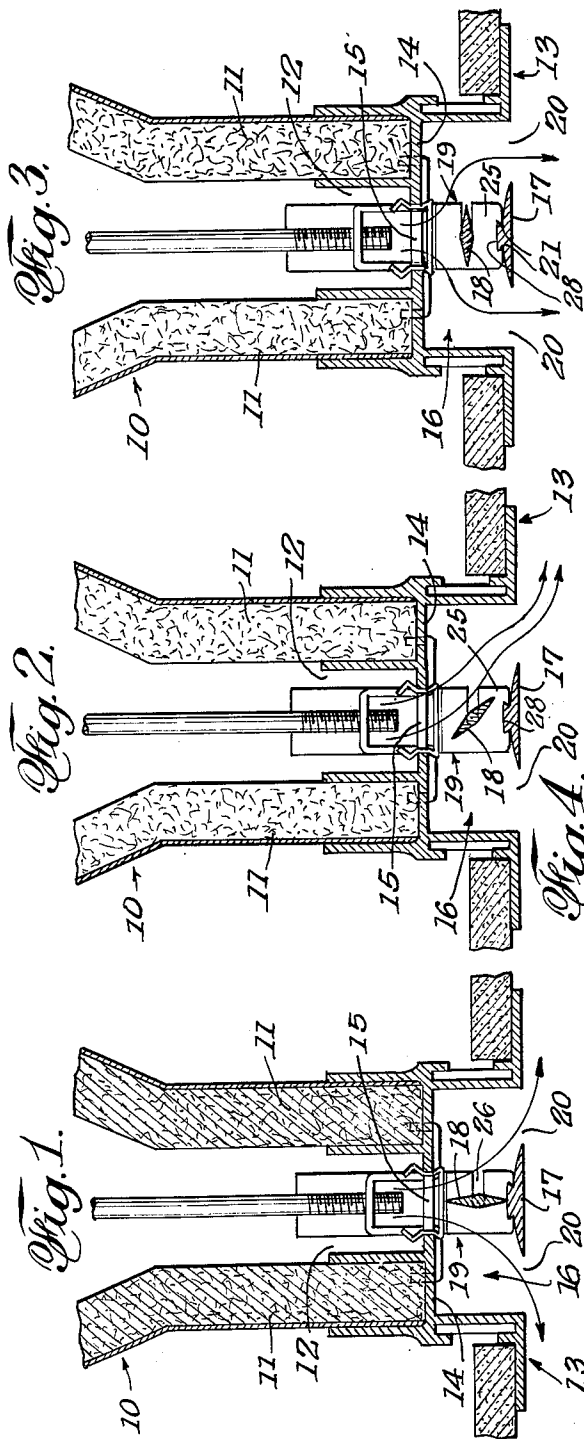
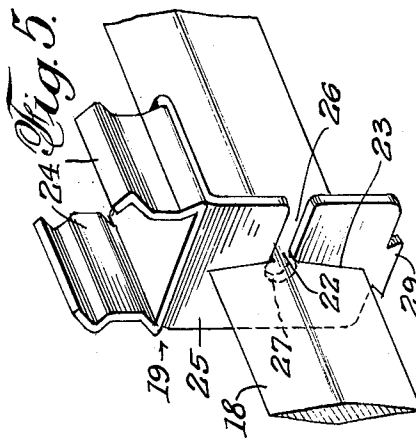
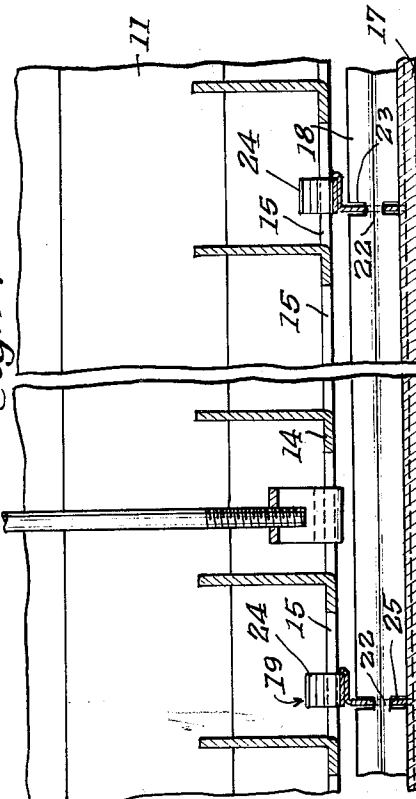
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DUCT WITH AIR-DISTRIBUTING MEANS

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DUCT WITH AIR-DISTRIBUTING MEANS

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This invention relates to an air duct structure with air-distributing means, the same being an improvement of the structure disclosed in application Serial No. 58,799, filed September 27, 1960, entitled "Ceiling Duct Structure."

An object of the present invention is to provide, in a ceiling duct for conducting cold or warm air for cooling, heating or ventilating purposes and which embodies a flow diverter in the outlet of said duct, means to control, and thereby vary, the type of air flow emanating from the duct outlet. The means of the present invention embodies features, in combination, by means of which the exiting air may be directed to flow laterally or downwardly, or have a flow intermediate lateral and downward directions. Also, the means of the present invention may be combined to direct most of the flow in a desired direction, thereby enabling efficient air flow control.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description, and which is based on the accompanying drawing. However, said drawing merely shows, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is a broken cross-sectional view of the lower portion of an air duct and showing the present improvements adjusted to provide a uniform lateral flow of air from the duct in both directions from the duct outlet.

FIG. 2 is a similar view showing the improvements adjusted to provide a lateral flow of air in one direction.

FIG. 3 is a similar view showing the present means adjusted to provide a downward air flow.

FIG. 4 is a broken longitudinal sectional view as taken through the vertical center of the duct, as in the position of FIG. 1.

FIG. 5 is an enlarged and fragmentary perspective view showing details of the invention.

The duct structure in which the present air-distributing improvements are incorporated comprises a duct 10 that is formed to have lower end walls 11 that define between them a longitudinal opening or throat 12. An extrusion-type member 13 is disposed so as to receive said duct walls 11 and to provide a bottom closure for said duct; said member 13 has a transverse wall 14 in which is provided a series of openings 15 that are open to the duct throat 12. Said member 13 is provided with a longitudinal channel 16 that is open at the bottom and into which air from openings 15 discharges. The above generally-described means are disclosed in full detail in the above-mentioned application.

According to the present invention, the air-distributing means comprises a fixed vane 17 disposed centrally of the channel 16 and preferably along the lower open portion thereof, an adjustable vane 18 disposed in said chan-

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nel between the wall 14 and the vane 17, and hanger clips or the like 19 having snap-retention engagement with member 13 and supporting the vanes 17 and 18 in operative position.

The vane 17 comprises a generally narrow and elongated member that has a width substantially smaller than the width of channel 16 so that, because of its central position in said channel, longitudinal discharge throats 20 are formed between the sides of channel 16 and the side edges of the vane 17. In this instance, the top surface of vane 17 is provided with longitudinal undercut edges 21.

The vane 18, as can best be seen in FIG. 4, has longitudinally spaced bearing or axle portions 22, the same being defined by cutaway grooves 23. The cross-sectional form of vane 18 may vary, as desired. As shown, the same has a thickened center portion that tapers toward the opposite edges of the vane.

The hanger clips 19 may be advantageously made of spring metal and comprise three essential portions. A pair of opposed spring arms 24 that have snap-retention engagement with the wall 14 of member 13 by intrusion through an opening 15 in said wall, constitutes one of said essential portions, although the particular design or form of said arms may be varied, or their equivalent used to connect the clip to the wall 15. A second essential portion is shown as a wall 25 that depends from the arms 24 and is arranged transversely so that a slot 26 in said wall will allow one of the axle portions of the vane 18 to be pushed into a bearing hole 27 at the center of the wall. The third essential portion of said clip comprises a groove 28 with undercut sides formed in the lower edge of wall 25 and in which are received the mentioned undercuts 21 in the strip 17.

Regardless of the form taken by the clips 19, the same comprise means to hold the vanes 17 and 18 in operative position so the same may control the character and direction of flow of the air discharged from the duct 10, according to the adjusted position of the vane 18. The arrows shown in FIGS. 1, 2 and 3 show how the two vanes cooperate to obtain variations in the flow, downward, laterally, mainly to one side, or combinations thereof.

The mentioned groove 28 in the clip wall 25 may be replaced by a dovetail tongue 29, as in FIG. 5, the vane 17 being provided with a corresponding groove instead of the undercut edges 21.

Two or more axle portions 22 may be provided in each length of vane 18 and a corresponding number of clips may be used accordingly.

It will be noted that the appearance of the device is in no wise changed regardless of variations in the adjusted positions of the vane 18, since the vane 17 has a fixed relationship to the member 13.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. In a duct structure, a pair of spaced parallel longitudinal walls defining an air-discharging throat, a longitudinal inverted channel disposed beyond the ends of said walls, said channel comprising a transverse wall having openings through which air from the throat enters the channel, and channel side walls forming lower extensions to the mentioned parallel walls, a fixed vane disposed in said channel between and spaced from the side walls there-

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of to divide the channel into two side throats each defined between one of said side walls of the channel and an edge of the vane, removable support means depending from said transverse wall to support said fixed vane, and an angularly adjustable vane disposed in the channel between the fixed vane and the transverse wall of the channel, said angularly adjustable vane being rotatably mounted on said support means whereby the flow through the two side throats may be varied according to the angular adjustment of the adjustable vane.

2. In a duct structure according to claim 1, removable clip means interconnecting said fixed and adjustable vanes with openings in said transverse wall of the channel disposed to support said vanes from said transverse wall.

3. In a duct structure according to claim 1, means interconnecting said fixed and adjustable vanes with the transverse wall of the channel to support said vanes from said wall, said interconnecting means comprising a set of longitudinally spaced clips connected to the fixed and adjustable vanes and provided with resilient portions having snap-retention engagement with the mentioned edges of the openings in said transverse wall of the channel.

4. In the air discharging throat of a duct structure, an inverted longitudinal channel having a transverse wall with air-passing openings therein and having side walls depending from the side edges of the transverse wall; at least two clips each comprising a pair of transversely spaced spring arms extending upwardly through said open-

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ings in the transverse channel wall and in snap-retention engagement therewith, each of said clips having a transverse wall depending from said spring arms; a longitudinal stationary vane affixed to the lower end of the depending walls of the said clips and disposed between and in spaced relation to the side walls of the channel to form two side air-passing throats, and a longitudinal adjustable vane rotationally engaged with said depending walls of the clips and disposed between the transverse channel wall and the stationary vane to proportionally divert air moving toward said throats from the openings in the transverse wall according to the angular adjustment of the adjustable vane.

5. In a duct structure according to claim 4, said transverse depending walls of the clips having slots therein that extend from one edge of said wall to the middle thereof, and the rotational vane being provided with reduced axle portions that are rotationally engaged in said slots.

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