

June 26, 1962

J. D. BOTTORF ET AL
AIR DIFFUSING DEVICE

3,040,645

Filed Aug. 29, 1960

2 Sheets-Sheet 1

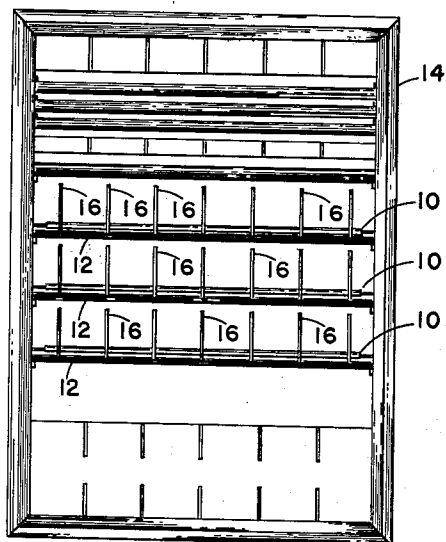


FIG. 1

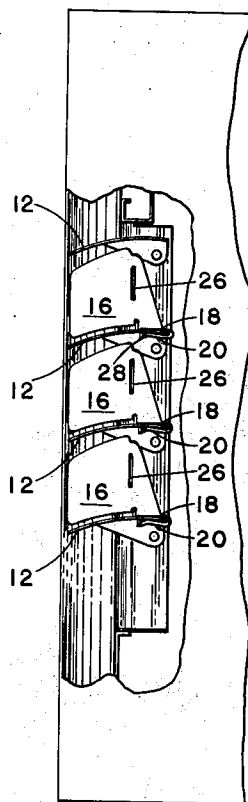


FIG. 2

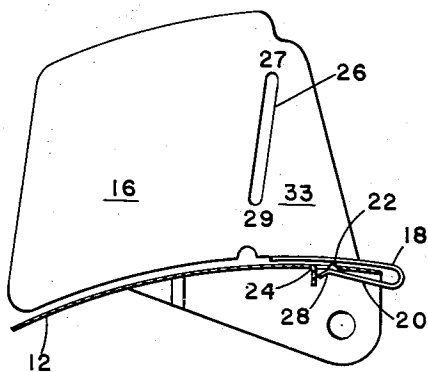


FIG. 3

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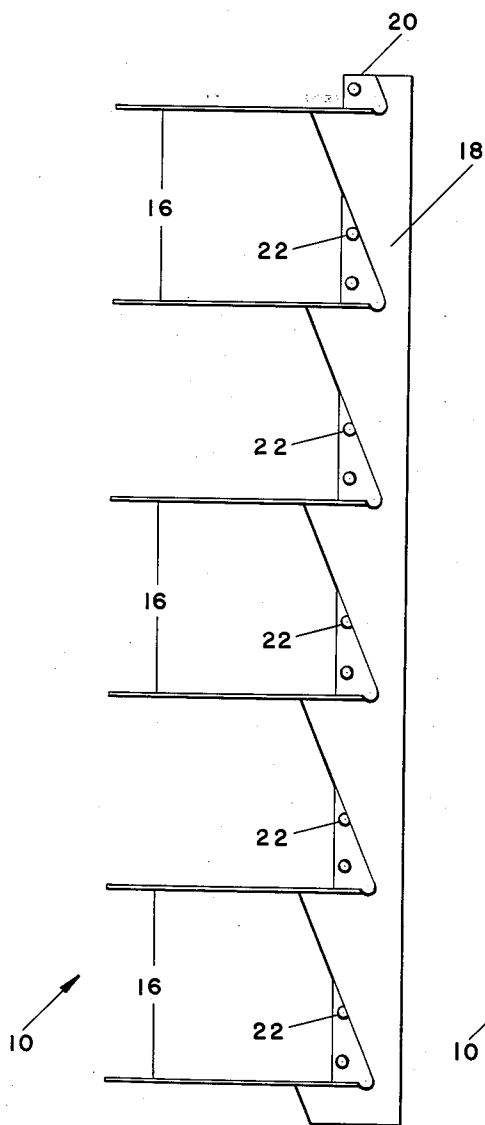


FIG. 5

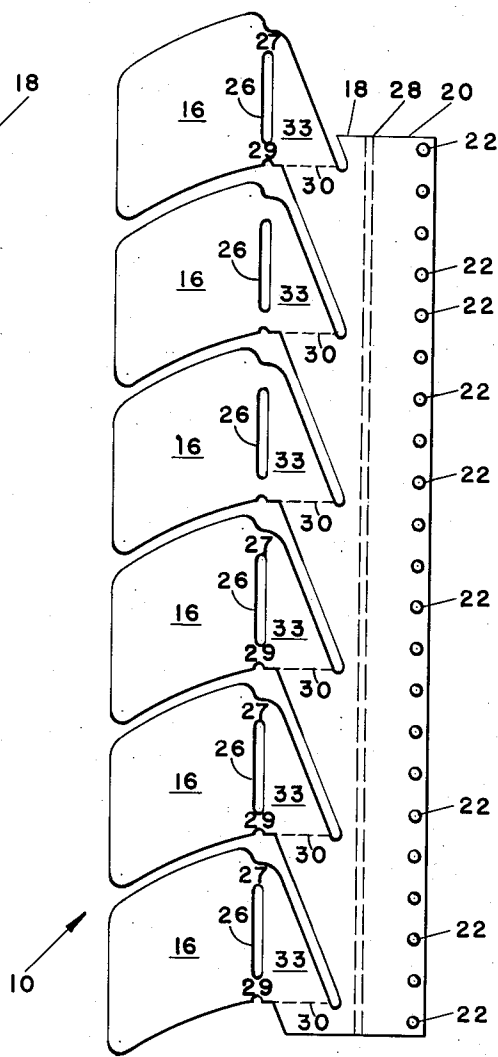


FIG. 4

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AIR DIFFUSING DEVICE

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10 Claims. (Cl. 98-40)

This invention relates generally to an air diffusing device for directing a stream of air or gas and more particularly to an integral horizontal louver strip adapted for use on a unit heater or like apparatus to provide horizontal deflection of a stream of air or gas.

Horizontal louvers have been used on heat exchange units for years to provide vertical adjustment of the air stream passing through such units in order to direct the air to the point of use. In many instances, vertical fin members have also been provided to control the direction of the air stream in the horizontal plane. This invention is an improvement over the vertical pivotally supported louver fin members shown in the patent to Labus et al., 2,621,578.

It is the principal object of this invention to provide an economical one piece air diffusing device which has a multiplicity of fins therein and is readily attached to the horizontal louvers of a heat exchange unit.

Another object of the invention is to provide a one piece air diffusing device which has a plurality of fins which are readily adjustable and which is economical to produce and is easily attached and removed.

A third object of the invention is to provide a sheet metal air diffusing device which has a plurality of fins integral therewith and is adapted to be readily attached to the horizontal louvers of a unit heater.

Other objects and advantages of this invention will become apparent as the specification proceeds to describe the invention with reference to the drawings in which:

FIG. 1 is a front elevational view of a unit heater casing with the air diffusing device of this invention shown attached to the horizontal louvers of the unit heater;

FIG. 2 is a partial side view of the unit heater casing of FIG. 1 in a larger scale with a portion of the side wall broken away to show the air diffusing device attached to the horizontal louvers;

FIG. 3 is a view in an exaggerated scale of one air diffusing device to show the manner of attachment of the louver strip to the horizontal louver;

FIG. 4 shows the air diffusing device after stamping but before the fin members have been formed; and

FIG. 5 shows the completed air diffusing device of this invention.

Referring now to FIG. 1, our new and improved air diffusing device 10 is shown attached to horizontal louvers 12 of unit heater casing 14. This is our preferred use of the air diffusing device but obviously other uses of this device may be made within the scope of the invention.

Air diffusing device 10 consists basically of a plurality of fin members 16 integrally connected to connecting strip 18 which in turn integrally connects to flange member 20. Indentations 22 are provided in flange member 20 to engage apertures 24 in horizontal louvers 12. Elongated openings 26 are provided in fin members 16 to allow the fin members 16 to be bent in the vertical direction without distortion of other portions of the air louver strip 10. It should be noted that elongated opening 26 provides two hinge portions 27 and 29 so that only fin member 16 will be relocated and louver portion 33 will not be distorted.

In use, the air diffusing device is placed on the selected horizontal louver 12 with connecting strip 18 on top of the louver 12 and flange member 20 in the bottom of the

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louver. Air diffusing device 10 is then projected towards the downstream side of louver 12 until flange member 20 abuts stop 28 and indentations 22 engage apertures 24 left by the stamping out of stop members 23. Horizontal louvers 12 are then positioned to deflect the air stream at the desired height and fin members 16 are bent along a line axially through elongated opening 26 to direct the air horizontally to the desired location.

FIGS. 4 and 5 show the air diffusing device 10 after the device has been stamped from sheet metal or other desired material. The blank of FIG. 4 is then bent along line 28 to form connecting strip 18 and flange member 20 and along lines 30 to project fin members 16 perpendicular to flange member 20. It is readily seen that a plurality of fin members are formed from a one piece stamping with a minimum number of manufacturing operations.

The air diffusing device of the present invention is of one piece sheet metal construction which is manufactured with a minimum number of operations and is low in cost. This diffusing device provides a vertical louver with a plurality of deflecting fins which are readily assembled on the horizontal louvers of a heat exchanger and can be readily removed, if necessary. Further, the fin members of the invention can be positioned individually and easily. Also, our air diffusing device provides a structure which can be added later to existing heat exchange units with a minimum of trouble and expense.

Although we have described in detail the preferred embodiment of our invention, we contemplate that many changes may be made without departing from the scope or spirit of our invention, and we desire to be limited only by the claims.

We claim:

1. An air diffusing device for use on the horizontal louvers of a heat exchange unit, said air diffusing device comprising: a one piece sheet metal strip with at least three substantially parallel fin members formed therein, said fin members being substantially perpendicular to said sheet metal strip, a flange member bent from said sheet metal strip and forming a louver receiving pocket with said sheet metal strip, said fin members having a first portion and a second portion, said second portion being adjacent said flange member, and an opening in said fin members between said first and second portions to decrease the rigidity of said fin member to lessen the tendency of said strip to twist when said first portion is angularly displaced from said second portion.

2. The structure of claim 1 wherein said flange member has means formed therein to engage a horizontal louver member of a heat exchange unit to position said air diffusing device on said horizontal louver.

3. The structure of claim 2 wherein said engaging means is a plurality of indentations.

4. The structure of claim 3 wherein said indentations project inwardly towards said one piece metal strip.

5. A ventilating unit comprising: a casing, a horizontal louver in said casing, said horizontal louver having an upstream edge and a downstream edge, and air diffusing device slidably secured on said upstream edge of said horizontal louver, said air diffusing device comprising a one piece sheet metal strip with at least three substantially parallel fin members formed therein, said fin members being substantially perpendicular to said sheet metal strip and said horizontal louver, openings in said fin members to decrease the rigidity of said fin members, a flange member bent from said sheet metal strip and forming a pocket with said sheet metal strip, said pocket receiving said upstream edge of said horizontal louver, and stop means formed out of said horizontal louver to limit the movement of said louver strip on said horizontal louver in the downstream direction.

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6. The structure of claim 5 wherein indentations are formed in said flange member, said indentations engaging the cavity in said horizontal louver left after the formation of said stop means.

7. The structure of claim 6 wherein said horizontal louver is pivotally supported in said casing.

8. A ventilating unit comprising: a casing, a horizontal louver in said casing, said horizontal louver having an upstream edge and a downstream edge, an air diffusing device slidably secured on said upstream edge of said horizontal louver, said air diffusing device comprising a one piece sheet metal strip with at least three substantially parallel fin members formed therein, said fin members being substantially perpendicular to said sheet metal strip and said horizontal louver, a flange member bent from said sheet metal strip and forming a pocket with said sheet metal strip, said pocket receiving said upstream edge of said horizontal louver, and stop means

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formed out of said horizontal louver to limit the movement of said louver strip on said horizontal louver in the downstream direction and leave a cavity in said horizontal louver.

9. The structure of claim 8 wherein indentations are formed in said flange member, said indentations engaging the cavity in said horizontal louver left after the formation of said stop means.

10. The structure of claim 9 wherein said horizontal louver is pivotally supported in said casing.

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