

April 9, 1963

J. F. GARRISON ETAL

3,084,610

HOT AIR DIFFUSER

Filed Sept. 11, 1961

2 Sheets-Sheet 1

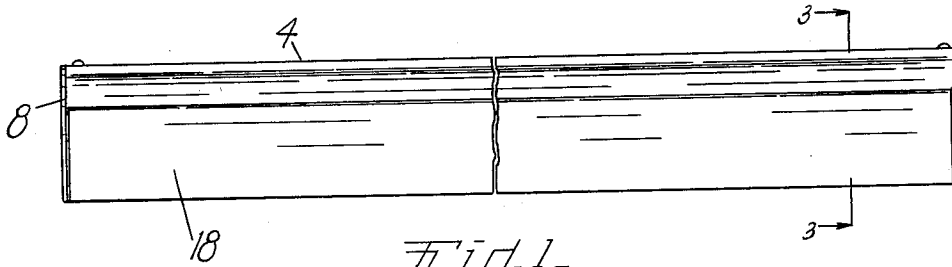


Fig. 1-

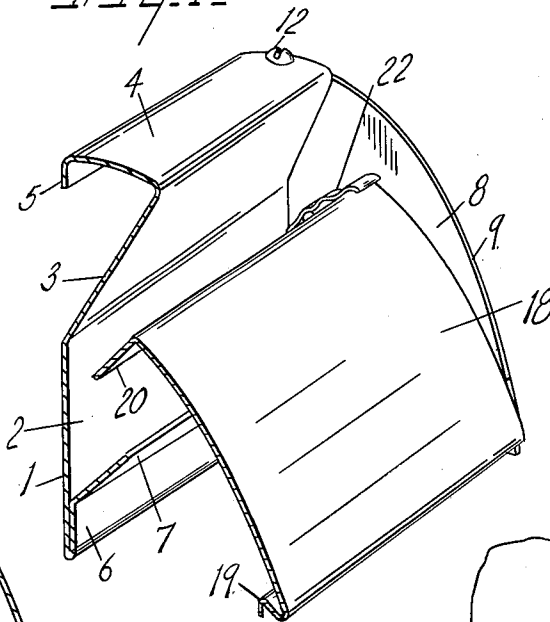


Fig. 5-

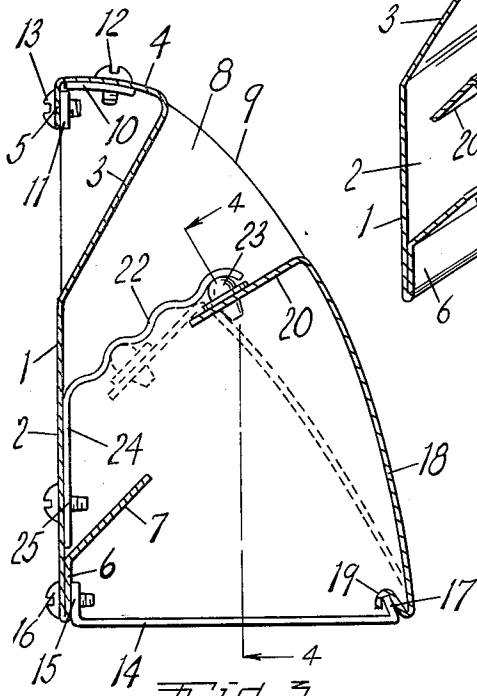


Fig. 3-

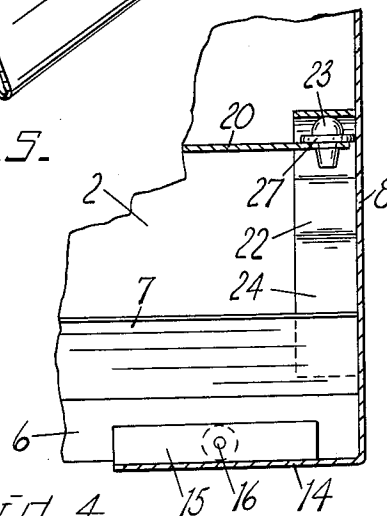


Fig. 4-

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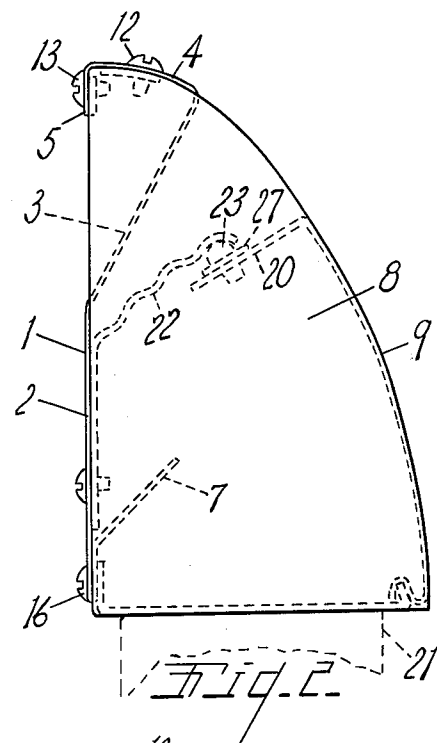
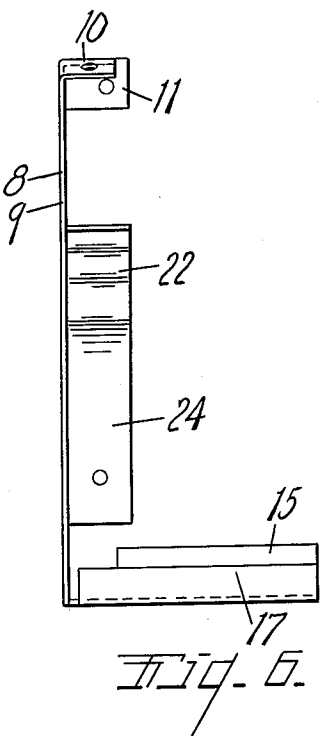
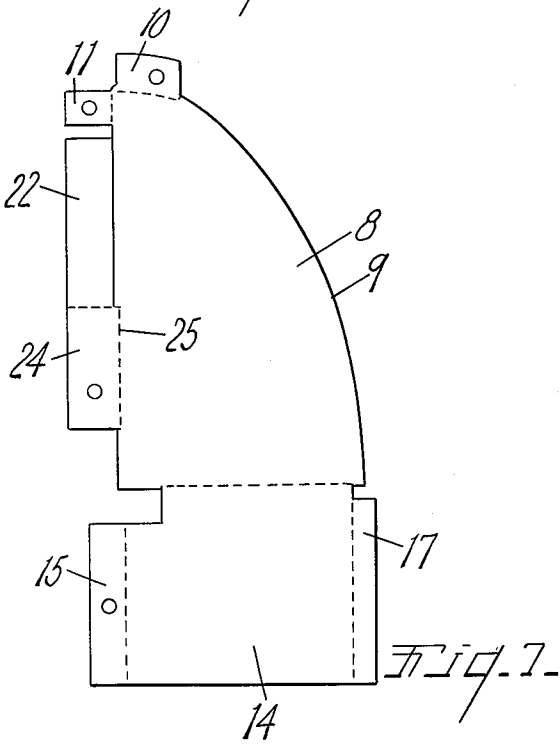
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2 Sheets-Sheet 2



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HOT AIR DIFFUSER

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This invention relates to air diffusers of the type commonly designated as baseboard or wall diffusers. The main objects of this invention are:

First, to provide an air diffuser of the wall or baseboard type in which the front portion or wall also constitutes a damper.

Second, to provide an air diffuser of the above stated type in which there are no adjustably associated parts requiring accuracy or close fitting, or which are subject to vibration as a result of variations in air current passing therethrough.

Third, to provide an air diffuser structure in which the parts may be readily adapted to diffusers of widely varying length without requiring structural variations other than the length of the unitary rear wall and top member and of the front wall damper member.

Fourth, to provide a combined front wall and damper member which is tiltably or swingably supported and may be assembled with or disassembled relative to the associated parts.

Fifth, to provide an air diffuser assembly of the type described in which relatively few screws or bolts are required.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

FIG. 1 is a fragmentary front elevational view of an air diffuser damper unit embodying our invention.

FIG. 2 is an end elevational view thereof, certain of the parts between the end walls being indicated by dotted lines.

FIG. 3 is a vertical cross sectional view on a line corresponding to line 3-3 of FIG. 1.

FIG. 4 is a fragmentary longitudinal sectional view on a line corresponding to line 4-4 of FIG. 3.

FIG. 5 is a fragmentary front perspective view illustrating the front wall and damper member in one inwardly adjusted position.

FIG. 6 is a front view of one of the end members.

FIG. 7 is a blank of the end member illustrated in FIG. 6.

It will be understood that the air diffuser of the application is made in varying lengths to meet particular installation requirements, and one of the attained objects of the invention, as stated, is that this variation in length may be accomplished without any change in structural features or details.

The embodiment of our invention illustrated comprises a unitary rear wall and top member designated generally by the numeral 1 and including an upright lower portion 2 of substantial vertical width and of the desired length, and including a forwardly inclined portion 3 terminating at its upper edge in a top member 4 which has a downwardly projecting flange 5 on its rear edge. The member 1 has an inwardly and upwardly projecting flange 6 on its lower edge terminating in a forwardly and upwardly projecting air deflector member 7 extending from end to end thereof.

In the embodiment illustrated, the end walls 8 have forwardly curved front edges 9 and they are provided with inwardly projecting lugs 10 and 11 which are overlapped by the top member and the flange 5, see FIG. 3,

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the top being secured to these lugs by the screws 12 and 13 respectively. The end walls have inwardly projecting base portions 14 having upturned flanges or lugs 15 on their rear edges disposed on the inner sides of the bottom portions of the rear wall and secured thereto by means of the screws 16. These bottom members have upwardly projecting inwardly inclined flange-like pivot members 17. The combined front wall and damper member 18 is curved to correspond to the curvature of the front edge of the end walls, see FIG. 3, and it is provided with an inwardly projecting integral flange 19 of downwardly facing channel section which is supportedly engaged with the pivot members 17 on the bottom members, see FIG. 3.

The front wall damper member 18 is provided with an inwardly and downwardly projecting flange-like deflector 20 on its upper edge which is disposed in vertically spaced relation to the flange 7 and coacts therewith in distributing the air longitudinally within the diffuser, entering therein through the conduit, conventionally illustrated at 21 in FIG. 2, and which commonly does not extend the full length of the diffuser.

To adjustably support the member 18 on its pivot support 17, the springable tongue-like keeper members 22 are provided, in the embodiment illustrated these being transversely corrugated providing a series of keepers, as is illustrated in FIGS. 2, 3 and 5 and with which the detents 23 mounted on the inturned flange 20 coact. These keepers, in the embodiment illustrated, are integral portions of the end walls, see the blank thereof in FIG. 7, in which the keeper support portion 24 is connected to the rear edge of the end wall at 25. In FIG. 7 these end wall units are simply shown in a blank, fold lines being indicated by dotted lines. The rearwardly projecting portions 20 of the wall member 18 are provided with detents 23, which, in the preferred embodiment of the invention, are formed of non-metallic plastic material and which have laterally projecting flange-like portions 27 which are in sliding engagement with the inner sides of the end walls, see FIG. 4. The main purpose of such engagement is to center the member 18 between the end walls and to prevent the edges thereof being in scraping engagement with the inner sides of the end walls so that the finish on the inner sides of the end walls is not scraped or damaged by the adjustment of the member 18, as is illustrated by dotted lines in FIG. 3. This engagement with the keeper members also serves to hold the member 18 in assembled relation to the associated parts, and it is only necessary in assembling or disassembling to engage the downwardly facing channel-like flange 19 with the pivot flanges 17 on the base member and insert the detents under the keepers. Another advantage of this arrangement is that it prevents vibration of the parts when subjected to varying air flow.

We have illustrated and described our invention in a highly practical embodiment thereof. We have not attempted to illustrate modifications which might be desirable for certain adaptations or installations, as it is believed that this disclosure will enable those skilled in the art to embody or adapt our invention as may be desired.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, said top portion having a downwardly extending flange on its rear edge, end walls having inwardly projecting lugs at their upper ends disposed on the inner sides of and to which said top member and its said downwardly projecting flange are supportedly con-

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nected, said end walls also having inwardly projecting base portions to which the rear wall is connected, said base portions having flange-like pintle members at their front edges, a front wall and damper member having an inturned flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, keeper members having support portions at their inner ends disposed upon and fixedly secured to the rear wall member to project forwardly therefrom and with their outer edges in thrust engagement with the end walls, said keeper members having forwardly projecting transversely corrugated portions providing a plurality of keepers, and detents fixedly mounted on said inwardly projecting portion of said front wall and damper member in coacting relation with the under sides of said keeper members, said detents being of non-metallic material and having sliding engagement with the inner sides of said end walls with the ends of the front wall damper member in spaced relation to the end walls and constituting end thrust supports for said front wall damper member.

2. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, end walls having inwardly projecting lugs at their upper ends to which said top member is supportedly connected, said end walls also having inwardly projecting base portions to which the rear wall is connected, a front wall and damper member hingedly mounted on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, keeper members having support portions at their inner ends disposed upon and fixedly secured to the rear wall member to project forwardly, said keeper members having forwardly projecting transversely corrugated portions providing a plurality of keepers, and detents fixedly mounted on said inwardly projecting portion of said front wall and damper member in coacting relation with the under sides of said keeper members, said detents being of non-metallic material and having sliding engagement with the inner sides of said end walls with the ends of the front wall damper member in spaced relation to the end walls and constituting end thrust supports for said front wall damper member.

3. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, said top portion having a downwardly extending flange on its rear edge, said member having an inturned lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls having vertical rear edges and forwardly curved rearwardly inclined front edges disposed at the ends of said rear wall and top member and having inwardly projecting lugs at their upper ends disposed on the inner sides of and to which said top member and its said downwardly projecting flange are supportedly connected, said end walls also having inwardly projecting base portions provided with upwardly projecting flanges on their rear edges to which the rear wall is connected, said base portions having upturned inwardly inclined flange-like pintle members on their front edges, a front wall and damper member of curved vertical section corresponding to the curvature of the lower portions of the front edges of said end walls and having an inturned flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, and coacting keepers and detents on said end

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walls and front wall and damper member for supporting it in its adjusted position as a damper.

4. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, said top portion having a downwardly extending flange on its rear edge, said member having an inturned lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls having inwardly projecting lugs at their upper ends to which said top member is supportedly connected, said end walls also having inwardly projecting base portions provided with upwardly projecting flanges on their rear edges to which the rear wall is connected, said base portions having upturned inwardly inclined flange-like pintle members on their front edges, a front wall and damper member of curved vertical section corresponding to the curvature of the lower portions of the front edges of said end walls and having an inturned flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, and coacting keepers and detents on said end walls and front wall and damper member for supporting it in its adjusted position as a damper.

5. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, said top portion having a downwardly extending flange on its rear edge, said member having an inturned lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls having vertical rear edges and forwardly curved rearwardly inclined front edges disposed at the ends of said rear wall and top member and having inwardly projecting lugs at their upper ends disposed on the inner sides of and to which said top member and its said downwardly projecting flange are supportedly connected, said end walls also having inwardly projecting base portions provided with upwardly projecting flanges on their rear edges to which the rear wall is connected, said base portions having upturned flange-like pintle members on their front edges, a front wall and damper member of curved vertical section corresponding to the curvature of the lower portions of the front edges of said end walls and having an inturned flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, and means for adjustably supporting said front member.

6. An air diffuser including a unitary rear wall and top member comprising an upright lower portion and a forwardly inclined upper portion of substantial vertical width terminating at its upper edge in a rearwardly projecting top portion, said member having an inturned lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls having vertical rear edges and forwardly curved rearwardly inclined front edges disposed at the ends of said rear wall and top member and having inwardly projecting lugs at their upper ends disposed on the inner sides of and to which said top member is connected, said end walls also having inwardly projecting base portions provided with upwardly projecting flanges on their rear edges to which the rear wall is connected, said base portions having upturned flange-like pintle members on their front edges, a front wall and damper member of curved vertical section corresponding to the curvature of the lower por-

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tions of the front edges of said end walls and having an intumed flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, and means for adjustably supporting said front member.

7. An air diffuser including a rear wall having an intumed lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls connected to said rear wall to project forwardly therefrom, said end walls having inwardly projecting base portions provided with upturned flange-like pintle members on their front edges, a front wall and damper member having intumed flanges of downwardly facing channel section supportedly engaged with said pintle members on said end members, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, keeper members provided with a plurality of keepers disposed on the inner sides of said end walls, and detents fixedly mounted on the inwardly projecting portions of said front wall and damper member in coacting relation with the said keeper members, said keeper members acting to adjustably support said front member, said detents being of nonmetallic material and having thrust sliding engagement with the inner sides of the end walls and acting to hold the ends of the front wall damper member in spaced relation to the end walls and coacting with said keeper members to prevent vibration of said front wall damper member.

8. An air diffuser including a rear wall having an intumed lower portion terminating in a forwardly and upwardly projecting flange-like deflector of substantial width spaced vertically from the lower edge of the rear wall, end walls connected to said rear wall to project forwardly therefrom, a front wall and damper pivotally mounted on said end walls, said front member having an inwardly and downwardly projecting flange-like deflector on its upper edge, keeper members provided with a plurality of keepers disposed on the inner sides of said end walls, and detents fixedly mounted on the inwardly projecting portions of said front wall and damper member in coacting relation with the said keeper members, said keeper members acting to adjustably support said front member.

9. An air diffuser including a rear wall, end walls to which said rear wall is fixedly connected and projecting forwardly therefrom, said end walls having inwardly projecting pintle members thereon, a front wall and damper member having an intumed flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, keeper members supportedly mounted on said rear wall to project forwardly therefrom at the inner sides of said end walls, said keeper members being provided with a plurality of aligned keepers, and detents mounted on said front wall in coacting sliding engagement with said keeper members, said detents being of nonmetallic material and having lateral thrust engagement with the inner sides of said end walls.

10. An air diffuser including a rear wall, end walls to which said rear wall is fixedly connected and projecting forwardly therefrom, said end walls having inwardly projecting pintle members thereon, a front wall and damper member having an intumed flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, keeper members supportedly mounted on said rear wall to project forwardly therefrom at the inner sides of said end walls, said keeper members being provided with a plurality of aligned keepers, and detents mounted on said front wall in coacting sliding engagement with said keeper members.

11. An air diffuser including a rear wall, end walls to which said rear wall is fixedly connected and projecting forwardly therefrom, a front wall and damper member

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mounted for tilting adjustment between said end walls, keeper members disposed at the inner side of said end walls provided with a plurality of keepers, and detents mounted on said front wall in coacting sliding engagement with said keeper members, said detents being of nonmetallic material and having lateral thrust engagement with the inner sides of said end walls.

12. An air diffuser including a rear wall, end walls to which said rear wall is fixedly connected and projecting forwardly therefrom, a front wall and damper member mounted for tilting adjustment between said end walls, keeper members disposed at the inner sides of said end walls provided with a plurality of keepers, and detents mounted on said front wall in coacting sliding engagement with said keeper members.

13. An air diffuser including a rear wall and a top, end walls projecting forwardly from said rear wall and fixedly connected thereto, a front wall and damper member hingedly connected at its lower edge to said end walls in spaced relation to the top, springable keeper members mounted on said rear wall and having forwardly projecting keeper members each provided with a series of aligned keepers, and detents mounted on said front wall and damper member in coacting relation with said keeper members, said detents being of nonmetallic material and having frictional sliding engagement with the inner sides of the end walls with the ends of the front wall and damper member in spaced non-frictional relation to the inner sides of the end walls.

14. An air diffuser including a rear wall and a top, end walls projecting forwardly from said rear wall and fixedly connected thereto, a front wall and damper member hingedly connected at its lower edge to said end walls in spaced relation to the top, springable keeper members mounted on said rear wall and having forwardly projecting keeper members each provided with a series of aligned keepers, and detents mounted on said front wall and damper member in coacting relation with said keeper members.

15. An air diffuser including a rear wall, end walls fixedly connected to said rear wall to project forwardly therefrom, said end walls having inwardly projecting base portions provided with upturned flange-like pintle members on their front edges, a front wall and damper member having an inwardly projecting flange of downwardly facing channel section supportedly engaged with said pintle members on said end members, keeper members disposed at the inner sides of said end members and provided with a series of aligned keepers, and detents on said front wall and damper member coacting with said keeper members, said keeper members acting to urge said front wall bearing members upon and in retaining engagement with said pintle members.

16. An air diffuser including a rear wall, end walls fixedly connected to said rear wall and projecting forwardly therefrom, members projecting upwardly from said end walls, a front wall and damper member having downwardly facing bearings supportedly and releasably engaged with said pintle members, keeper members disposed on the inner sides of said end members, and detents on said front wall and damper member coacting with said keeper members, said keeper members acting to urge said front wall bearing members upon and in retaining engagement with said pintle members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,942,137	Connell et al. -----	Jan. 2, 1934
2,627,800	Brandes -----	Feb. 10, 1953
2,780,979	De Roo -----	Feb. 12, 1957
2,844,234	Brandes -----	July 22, 1958
3,002,443	Brandes -----	Oct. 3, 1961