July 30, 1957 B. SHABERMAN 2,800,852

DIFFUSER FOR HOT AIR REGISTERS AND THE LIKE

Filed June 15, 1954 2 Sheets-Sheet 1

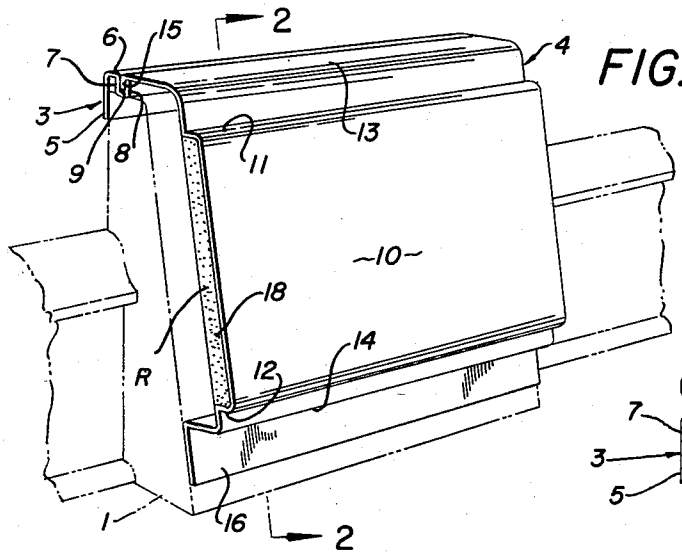


FIG. 1

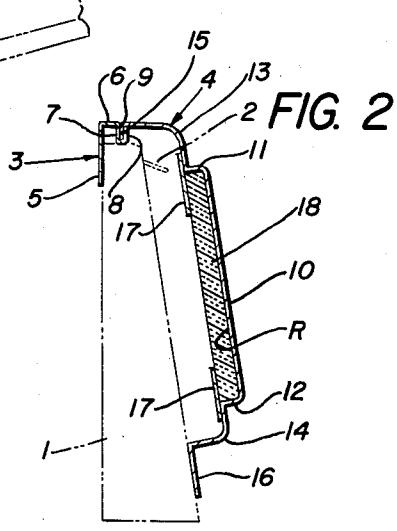


FIG. 2

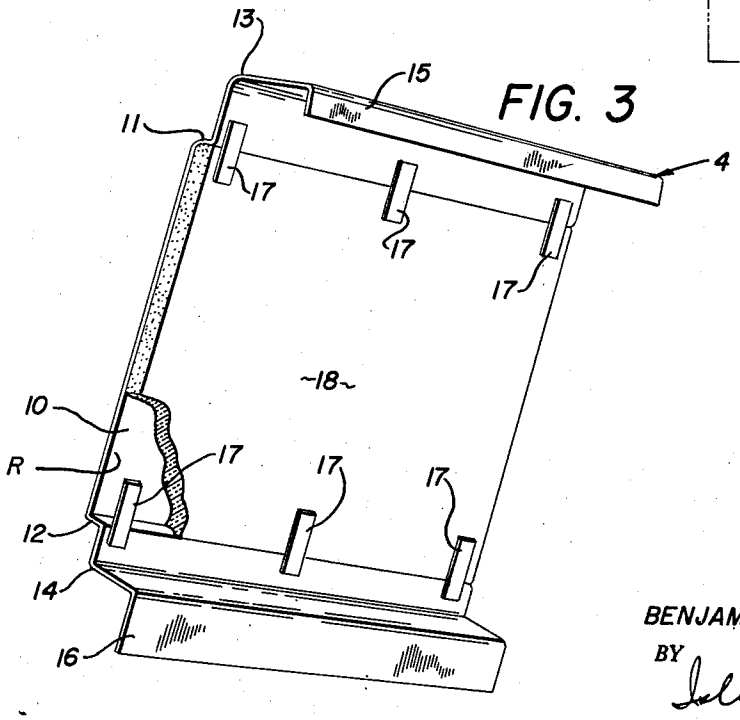


FIG. 3

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July 30, 1957 B. SHABERMAN 2,800,852

DIFFUSER FOR HOT AIR REGISTERS AND THE LIKE

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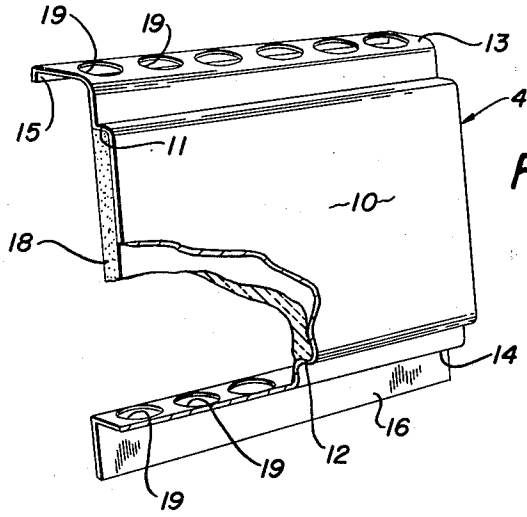


FIG. 4

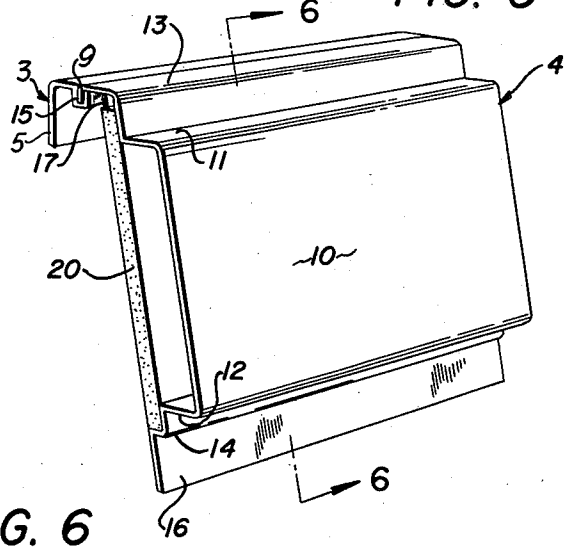


FIG. 5

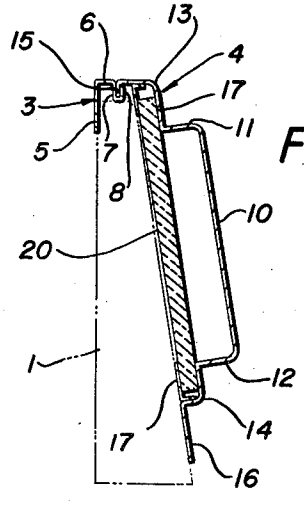


FIG. 6

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DIFFUSER FOR HOT AIR REGISTERS AND THE LIKE

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7 Claims. (Cl. 98—108)

This invention relates generally to diffusers for hot air registers and the like.

Hot or cold air issuing from registers and the like usually blows directly on individuals seated or standing in the path of such air, causing discomfort and annoyance to such individuals.

Moreover, air blown into a room in this manner is used inefficiently for heating or cooling purposes, and usually carries with it some dust and dirt which collects on furniture and on the walls, and creates unsightly dirty streaks or areas on the walls and ceilings of the room. In addition, the registers, being directly open to the atmosphere, become receptacles for dust and dirt resulting from sweeping or cleaning of the rooms.

The present invention has as its primary object the provision of a diffuser for hot air registers and the like, which is effective to divert the flow of air from such registers in such a manner as to cause the air to flow in streams substantially parallel with the register, so that it cannot blow directly upon individuals seated or standing in front of the register.

Another object of the invention is to provide a diffuser of the character described, which greatly increases the efficiency of heating or cooling of the room, and avoids the creation of drafts as well as the creation of dirt streaks on the walls.

A further object of the invention is to provide a register of the character described, which muffles the sound or noise of the furnace blower to a great extent.

A still further object of the invention is to provide a diffuser of the character described, having embodied therein a filter which absorbs most of the dust or dirt which usually issues from the register, which filter can be easily replaced when it becomes dirty.

Other objects and advantages of my invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same:

Fig. 1 is a perspective view, showing a preferred form of diffuser embodying the invention;

Fig. 2 is a cross-sectional view, taken on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view, showing the rear of the diffuser shown in Fig. 1;

Fig. 4 is a view similar to Fig. 1, but showing a modification of the diffuser;

Fig. 5 is a view similar to Fig. 4, but showing another modification, and

Fig. 6 is a cross-sectional view, taken on the line 6—6 of Fig. 5.

Referring more particularly to Figs. 1 to 3 inclusive of the drawings, reference numeral 1 designates a conventional baseboard register for admitting heated air into a room from a central heating system or the like, such register being usually provided with a damper which is controlled by means of a handle or lever 2.

The diffuser of the present invention preferably comprises two separate units, designated respectively by reference numerals 3 and 4. That unit designated by reference numberal 3 is a support for that unit designated by reference numeral 4, and consists of a single strip of metal, of a length substantially coextensive with that of the register 1, and bent or formed to provide a flat wall body portion 5, a flange 6 extending forwardly and horizontally from the upper edge of the body portion 5, a downturned flange 7 extending from the forward edge of the flange 6, and rebent as at 8 to provide an upwardly opening channel 9 for a purpose to be presently described. It may be noted at this point that the flange 7, while substantially parallel with the body portion 5, extends downwardly only about half the height of the body portion 5. This permits a substantial part of the body portion 5 to be clamped between the wall W of the room and the register 1, by merely loosening the screws which secure the register to the wall sufficiently to permit insertion of said part between the wall and register, and the flange 7 pushed downwardly until it engages the register, whereupon the screws are again tightened to thereby tightly secure the unit 3 in position.

The unit 4, which is the diffuser proper, is also preferably made from a single sheet or strip of sheet metal, which is bent or formed to provide a central body portion 10 of substantially rectangular form, having inwardly extending flanges 11 and 12 at its upper and lower edges respectively, which form a pocket or recess R, for a purpose to be presently described, and curved flanges 13 and 14 extending from the inner edges of the flanges 11 and 12 respectively. The flange 13 terminates in a downturned flange 15 of a height substantially equal to the depth of the channel 9, while the flange 14 terminates in a downturned flange 16 of somewhat greater height than the flange 15.

The unit 4 further includes sheet metal clips 17 which are spot welded or otherwise secured to the inner faces of the flanges 13 and 14 adjacent the recess R, and which serve to removably clamp a replaceable filter 18 in the recess R. The filter 18 is a sheet of Fiberglas or like material, and is substantially coextensive in area with the portion 10 of the unit 4, and of a thickness substantially the same as the thickness of the recess R.

The unit 4 is secured in position over the register 1 by sliding the flange 16 thereof into the channel 9. This automatically positions the diffuser proper in desired position with relation to the register, with the flanges 11, 12, 13 and 14 spacing the body portion 10 of the diffuser the desired distance from the front face of the register, the flange 16 bearing against the lower edge of the front face of the register.

With the diffuser mounted in relation to the register in the manner described, hot or cold air issuing from the register will not blow directly upon individuals seated or standing directly in front of the register, a condition which is not only objectionable to such individuals, but which is inefficient from the standpoint of heating or cooling the room. Instead, the hot or cold air issuing from the register is directed by the diffuser in such a manner as to blow laterally outwardly from the spaces between the register and the ends of the diffuser. This prevents such air from blowing directly onto the individual, and results also in several other advantages.

The air thus issuing from the ends of the diffuser blankets the entire wall of the room, and greatly increases the efficiency of heating or cooling, as will be readily understood, the wall acting to reflect a great part of such air. Drafts are eliminated, as well as the creation of dirt streaks on the walls.

The diffuser, as well as the filter 18 also serve to muffle the sound or noise of the furnace blower to a great extent, and the filter absorbs most of the dust or dirt which

usually issues from the register. The filter can be easily replaced when it becomes dirty. The diffuser is also effective to prevent dirt and dust in the room from entering the register.

The easy removability of the diffuser from the unit **3** without the use of tools is an important advantage, both from the standpoint of permitting quick and easy replacement of the filter, and from the standpoint of permitting damper operation or adjustment of the register, when that is desired.

The diffuser has several additional advantages, including the fact that it provides an attractive appearance for the register, which is normally somewhat unattractive in appearance, and the fact that it can be manufactured and sold at relatively low cost, permitting an entire set of diffusers to be purchased for the home for a few dollars.

While the diffuser has been described particularly with reference to hot air registers or the like, it will be readily understood that it is also adaptable for use in connection with cold air registers, as used in air conditioning systems. Moreover, although it has been described in connection with a register, it may also be used without a register, which is to say, it may be used in connection with a frame disposed about a wall opening, which frame frames or outlines a hot or cold outlet opening in the wall. In such case, the diffuser also serves as the register.

In some cases, where the diffuser is larger than the register, the unit **3** may be screwed or otherwise fastened to the wall directly above the register.

In Fig. 4, a modification is shown in which the flanges **13** and **14** are provided with spaced openings **19** which permit some of the air entering the diffuser to issue from these openings to provide air distribution from all four sides of the diffuser.

In Figs. 5 and 6, another modification is shown, in which the filter **20** is removably secured to the diffuser in a plane immediately forwardly of the plane defined by the flanges **15** and **16**. In this case, all of the air issuing from the register will pass through the filter before entering the diffuser, since the filter will lie in contiguity with the register openings.

As will be apparent to those skilled in the art, a diffuser of the type shown may be used in conjunction with a ceiling or floor register to deflect air issuing therefrom. In the case of a ceiling register, any suitable means may be used to attach the diffuser to the ceiling.

It is to be understood that the forms of my invention, herewith shown and described, are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. An air diffuser unit for use with a wall register having a frame attached to and overlying the wall in which the register is positioned, an element positioned on top of the register frame and having a flat portion insertable between the wall and the register frame and a second portion defining a channel extending parallel to but spaced from the flat portion, and a diffuser having a part thereof receivable in said channel and a second part engageable with the frame of the register at a point below the channel, said parts cooperating to support and position the diffuser on the register frame.

2. An air diffuser unit for use with an air register in a room wall which register has a frame attached to and overlying the wall, an element of sheet metal having spaced parallel walls forming an inverted U-shaped channel with one of the walls being deeper than the other and

insertable between the register frame and the room wall and said other wall being reversibly bent to form a channel on the outer side of said other wall, the last-said channel extending along an outer edge of the register frame and facing in the opposite direction to the first mentioned channel, and a diffuser device having a part thereof receivable in the second-mentioned channel and a second part engageable with the register frame at a point below the second-mentioned channel, said parts cooperating to support and position the diffuser on the register frame.

3. An air diffuser unit for use with an air register frame having an opening therein from which air issues into a room, said unit comprising a first substantially imperforate wall portion for deflecting air issuing from the register frame and having opposed parallel marginal edges, second wall portions extending outwardly from said marginal edges and generally perpendicular to said first wall portion to form an open-ended channel with said first wall portion, one of said second wall portions having a flange extending generally perpendicularly from its outer edge and inwardly of said first wall portion, and a channel member carried by the frame of the register and having a channel extending along an edge of said register frame for receiving said flange to support said first wall portion in operative relationship to the opening in the register frame.

4. An air diffuser unit as defined in claim 3 in which said channel member comprises a sheet metal member having spaced parallel walls defining an inverted U-shaped channel member, one of said walls being insertable between the room wall and the register frame and the other of said walls being reversedly bent to form said channel for receiving said flange with the flange receiving channel facing in the opposite direction to the inverted U-shaped channel.

5. An air diffuser device as defined in claim 4 wherein at least one of said second wall portions has an opening therein permitting the passage of air therethrough.

6. An air diffuser device comprising a substantially solid wall member for deflecting air issuing from a register opening, means for supporting said wall member transversely of the path of air issuing from the register opening with one side of the wall member facing the register and in spaced relationship thereto, and a filter pad supported against said one side in the path of said air.

7. An air diffuser device for use with an air register frame having an opening from which air issues, said device comprising a first substantially imperforate wall portion having opposed marginal edges, second wall portions extending outwardly from said marginal edges and generally perpendicular to said first wall portion to form an open ended channel with said first wall portion, a filter pad, means for removably attaching said filter pad against the side of said first wall portion forming the bottom of said channel, and means carried by said second wall portions for supporting said diffuser device with said filter pad positioned transversely of the path of air issuing from the register frame.

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