

May 12, 1942.

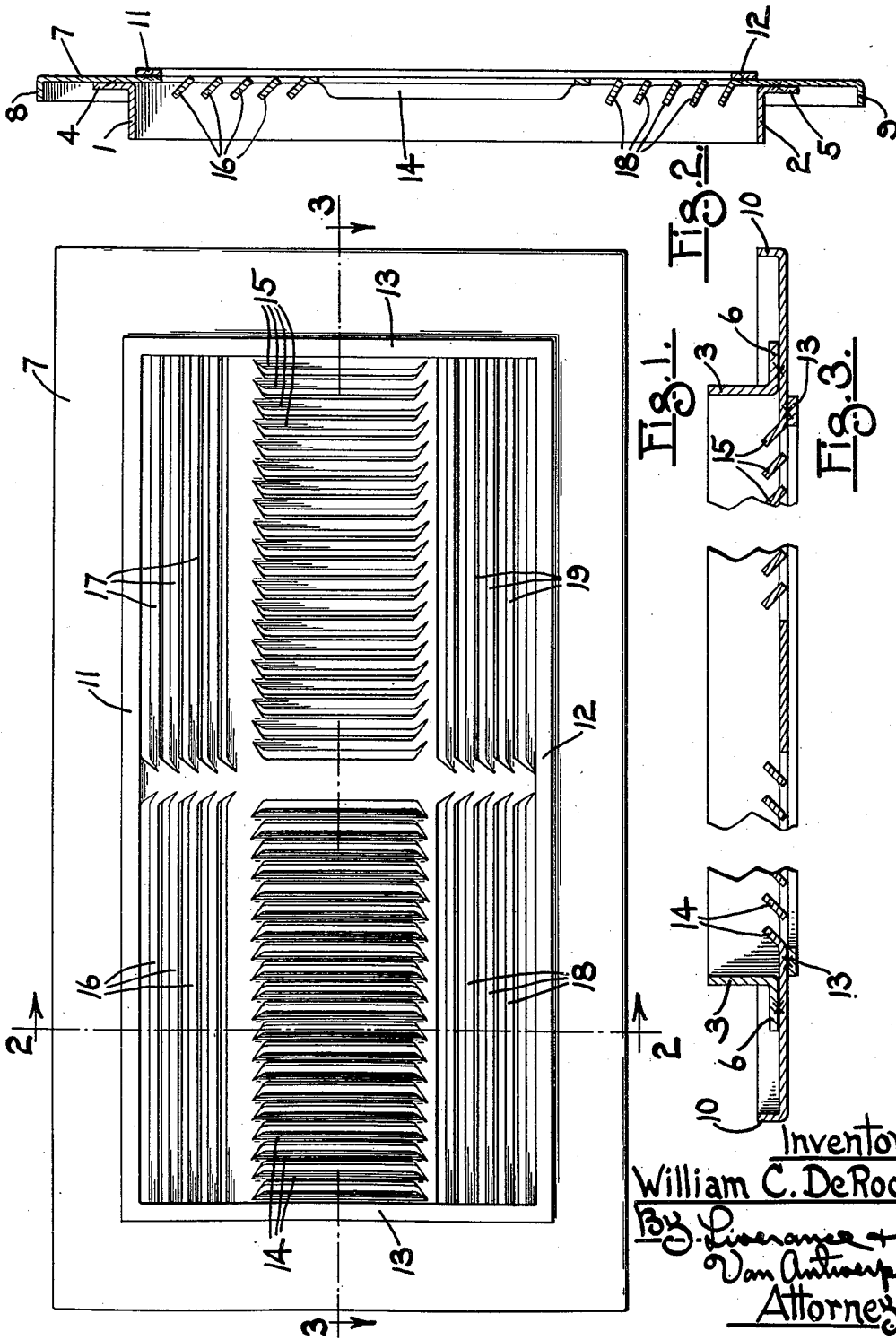
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2,282,946

REGISTER

Filed Feb. 12, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

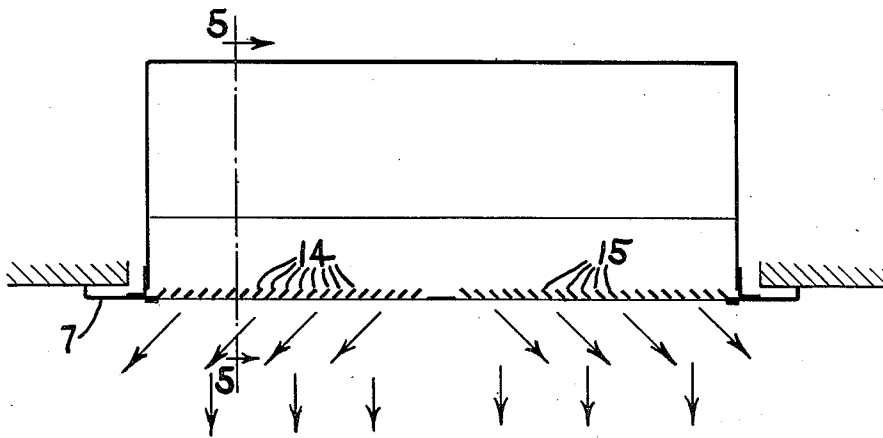


Fig. 4.

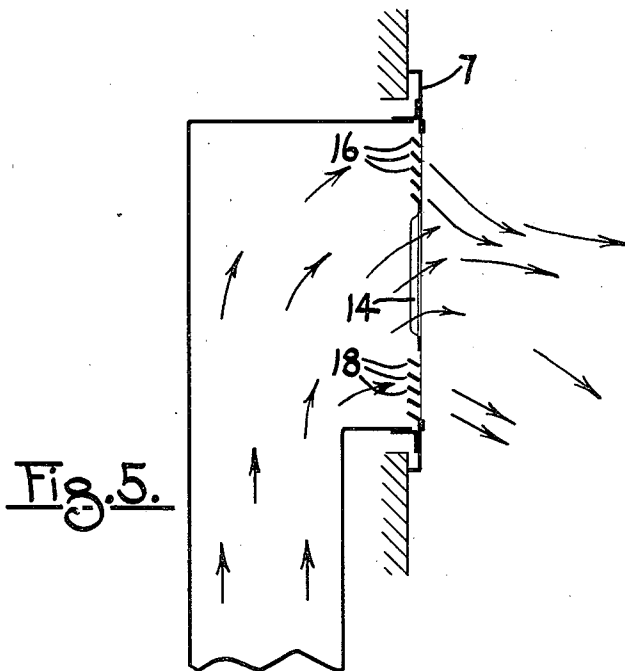


Fig. 5.

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UNITED STATES PATENT OFFICE

2,282,946

REGISTER

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Application February 12, 1940, Serial No. 318,598

5 Claims. (Cl. 98—40)

This invention relates to registers or grilles adapted to pass and direct a flow of air into a room or other enclosure. The air is carried to the register by means of a conduit which may either pass the air due to its natural flow or the air may be forced therethrough by means of a blower. In any case the registers are usually placed in the wall of a room either near the ceiling or near the floor and when heated air is used it is necessary to direct at least a part of the air downwardly into the room because of the natural tendency it has to rise.

It has been one of the major problems of register manufacturers to design a grille which will efficiently control the flow and distribution of air into a room and it is the principal object of my invention to overcome prior difficulties of this nature by providing a grille in general which will not only direct the air downwardly into a room but which will also spread the air outwardly and angularly with respect to the face of the grille in a horizontal plane.

Broadly my invention consists of a grille which has centrally thereof a plurality of vertically disposed grille bars to direct the air diagonally away from the face of the grille in a horizontal plane and a plurality of other grille bars both above and below the first named bars disposed horizontally for the purpose of directing some of the air downwardly. As the air which passes through the central grille bars enters the room it is diverged outwardly in either direction away from the center of the registers and has a tendency to flow upwardly, but the air which enters the room through the horizontal grille bars above those which are centrally disposed, being directed downwardly, will tend to force the air passing through the central grille bars in a downward direction. Further, the air which passes through the horizontal grille bars located below the central bars, also being directed downwardly, will have a tendency to draw the air currents downwardly which pass through the central bars. The result of this combination is to effectively distribute the air which enters a room not only downwardly but also outwardly in all directions in a horizontal plane.

To the accomplishment of the foregoing and related ends my invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and following description set forth in detail certain means for carrying out a preferred embodiment of my invention, said means constituting however, but one of vari-

ous ways in which the principle of the invention may be employed.

In said annexed drawings, wherein like reference numerals refer to like parts throughout the various views:

Fig. 1 is a front elevation of a register embodying my invention.

Fig. 2 is a vertical section taken substantially on the plane of line 2—2 of Fig. 1.

Fig. 3 is a horizontal section taken substantially on the plane of line 3—3 of Fig. 1.

Fig. 4 is a diagrammatic horizontal section showing more clearly the direction of the flow of air passing through the centrally disposed vertically positioned grille bars, and

Fig. 5 is a diagrammatic vertical section showing a portion of the air conduit, the upper and lower downwardly directed grille bars and the manner in which the air currents passing through the various grille bars blend together.

Referring now more particularly to the drawings, the register itself comprises a rear frame which includes upper and lower angle members 1 and 2 and end members 3. The upper bar 1 of the rear frame is provided with an upwardly extending flange 4, the lower bar 2 thereof has a downwardly extending flange 5, and each end member 3 has integral therewith the outwardly extending flanges 6. The face of the grille includes the face plate 7 which is provided with rearwardly extending flanges 8 and 9 at its upper and lower edges and rearwardly extending flanges 12 at the ends thereof.

The face plate 7 is provided with a plurality of openings therein which have grille bars extending thereacross as more specifically described hereinafter and is welded or otherwise securely attached to the vertically disposed flanges on the rear frame. At the forward side of the face plate 7 the openings therein are surrounded by a framework consisting of upper and lower sides 11 and 12 and the end members 13, all as shown clearly in Figs. 1, 2 and 3.

At each side of the center of the face plate 7 opening are provided within which the vertically disposed grille bars are located. The grille bars indicated by the numeral 14 which are located at the left hand side of the center are adapted to direct the air currents toward the left as they emerge from the conduit, while the other vertical grille bars 15 at the right side of the center are adapted to direct the air currents toward the right as they leave the conduit.

Above the vertically disposed grille bars 14 and 15 are other bars 16 and 17 which are disposed

in a horizontal plane and have their vanes disposed so as to direct the air downwardly. Below the vertical bars 14 and 15 and also at each side of the center of the face plate are the horizontally disposed grille bars 18 and 19 similar to the bars 16 and 17 also adapted to direct air downwardly as it comes into the room.

Referring now more particularly to Figs. 4 and 5 it will be noted that the heated air which passes through the vertical bars 14 and 15 will be directed diagonally relative to the face plate and away from the center thereof. These grille bars being disposed vertically, the air currents passing therethrough will also have a natural tendency to move upwardly. The air currents passing through the upper horizontal grille bars 16 and 17, being directed downwardly, will blend with those air currents entering the room through the vertical grille bars tending to force them downwardly and will result in a substantially horizontal current of air, although the direction of the diagonal currents will not have been disturbed except as just described. The currents of air passing through the lower horizontal grille bars 18 and 19 will also have their effect upon the air currents passing through the vertical grille bars by tending to draw them downwardly. It will be obvious, then, that the resulting distribution of air, due to the various sets of grille bars above described, as it comes into the room will be a movement of the air in all directions either in a substantially horizontal plane or in a downward direction therefrom which is the most effective distribution of air which could possibly be had for efficient operation of the register.

While I have described my invention particularly with respect to heated air which should be directed downwardly, it is obvious that the disclosed register can be reversed for the purpose of distributing cold air which should be directed upwardly into a room. The resulting distribution of cold air will be the same as just described because of the fact that the air passing through the vertical grille bars will still be deflected diagonally with respect to the face plate and the air currents passing through the upper and lower grille bars, being directed upwardly, will have a similar effect upon the air currents to result in the air being distributed in all directions in a substantially horizontal plane.

Other modes of applying the principle of my invention may be employed instead of the one here explained, change being made as regards the structure herein disclosed, provided however that the means stated by any of the following

claims or the equivalent of such stated means be employed.

I claim:

1. A register mounted vertically in a wall having a face and openings therein, grille bars adjacent one of said openings inclined to direct an air current relative to said face in an inclined horizontal plane toward one side of the register, grille bars adjacent another of said openings inclined to direct an air current relative to said face in an inclined vertical plane away from said first named air current, and grille bars adjacent another of said openings to direct an air current inclined relative to said face in a direction toward said first named air current.

2. A register mounted vertically in a wall having a face with openings therein, grille bars adjacent openings near the horizontal center of said face inclined to direct air currents outwardly and toward the sides of the register, grille bars adjacent another opening to direct an air current inclined relative to said face toward said first named currents and grille bars adjacent another of said openings to direct an air current inclined relative to said face in a direction away from said first named currents.

3. A register adapted to cover an air discharge opening including, a plurality of horizontally spaced apart vertically disposed grille bars in two groups, one of said groups being inclined to direct air currents in a horizontal plane outwardly toward a side of the register and the other of said groups inclined to direct air currents in a horizontal plane toward the other side of the register, a plurality of vertically spaced apart horizontally disposed grille bars above and below said vertical bars, some of said horizontal bars inclined to direct air currents to converge with the first named air currents, and others of said horizontal bars inclined to direct air currents away from said first named air currents.

4. The combination of elements defined in claim 3, wherein all of the bars in each of said groups are parallel.

5. A register adapted to cover a vertical air discharge opening including, means centrally disposed of the register to direct air currents in a horizontal plane therefrom and diverging outwardly and toward the sides of the register, means above said first means to direct other air currents to converge with said first named currents, and means below said first named means to direct still other air currents away from said first named currents.

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