March 28, 1939. C. S. WHEELER 2,152,447

ADJUSTABLE GRILLE

Filed June 18, 1938

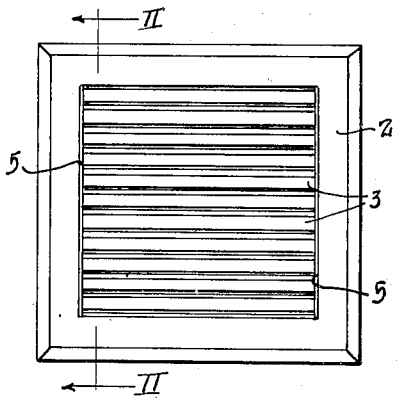


Fig. 1

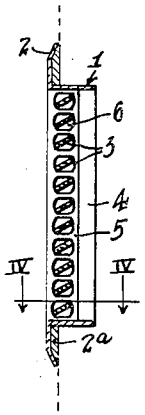


Fig. 2

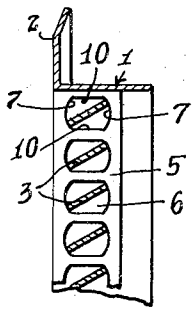


Fig. 3

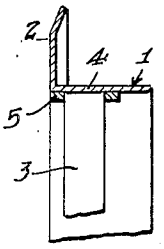


Fig. 4

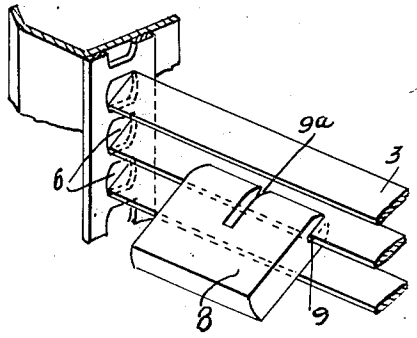


Fig. 5

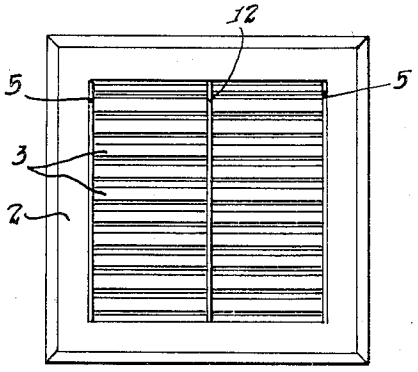


Fig. 6

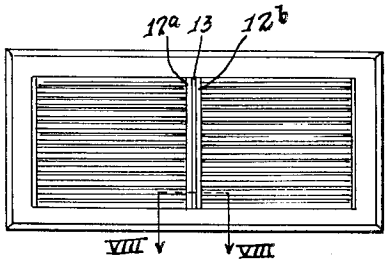


Fig. 7

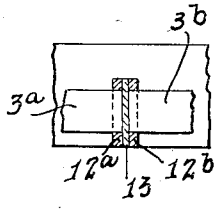


Fig. 8

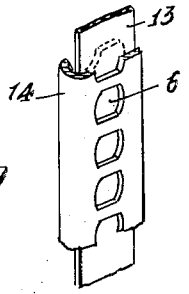


Fig. 9

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ADJUSTABLE GRILLE

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5 Claims. (Cl. 98—110)

This invention relates to grilles, such as are employed in front of air outlets in heating and ventilating systems, and relates more specifically to grilles having a plurality of vanes individually adjustable into a plurality of positions to deflect the air issuing therefrom in any desired direction.

An object of the invention is to provide a grille having individually adjustable vanes that is simple and rugged, and will positively retain its vanes in any position to which they may be adjusted.

Other more specific objects and features of the invention will become apparent from the following detailed description of certain specific embodiments thereof, with reference to the drawing.

In the drawing:

Fig. 1 is a front elevational view of one form of grille in accordance with the invention;

Fig. 2 is a vertical section, taken in the plane II—II of Fig. 1;

Fig. 3 is an enlarged detail section, similar to the section of Fig. 2;

Fig. 4 is a detail horizontal section, taken approximately in the plane IV—IV of Fig. 2;

Fig. 5 is a perspective view of a portion of the grille shown in Fig. 1, illustrating the method of adjusting the vanes;

Fig. 6 is a front elevational view showing a modification of the grille illustrated in Fig. 1;

Fig. 7 is a front elevational view showing still a third modification of the structure illustrated in Fig. 1;

Fig. 8 is a detail cross section, taken approximately in the plane VIII—VIII of Fig. 7; and

Fig. 9 is a detail perspective view illustrating a modified construction of the partition member that may be substituted for that illustrated in Fig. 8.

Referring, first, to Figs. 1, 2, 3, 4 and 5, the grille therein depicted comprises a rectangular frame 1, having an outwardly extending face flange 2 secured to its front edge. The frame 1 is adapted to fit into an opening, such as the end of an air duct, and the face flange 2 is adapted to fit against the wall surrounding the duct and seal the edge of the duct. A gasket 2a may be provided to effect a good seal between the flange 2 and the wall surrounding the air duct.

The opening in the frame 1 is traversed by a plurality of flat vanes 3 which, as shown in Fig. 1, extend from side to side horizontally although they might equally well be disposed vertically, if it is so desired.

The side wall members 4 of the frame 1 are approached closely by the ends of the vanes 3 to prevent any material longitudinal motion thereof. However, it is not intended that the ends of the vanes 3 fit tightly against the wall members 4 because the vanes are supported in the main by apertured strips 5, one on each side of the frame 1, which strips lie flat against the inner surfaces of the two wall members 4 and are secured thereto in any desired manner, as, for instance, by spot welding, brazing, soldering, or riveting. The ends of the vanes 3 project into and fit snugly in apertures 6 in the strips 5, the apertures in the strips on opposite sides of the frame being juxtaposed to each other.

To permit angular adjustment of the vanes 3 and at the same time frictionally retain the vanes in any position to which they may be adjusted, the apertures 6 are formed with front and rear edges 7 which are arcuate in shape, concentric with respect to the center point of the aperture and have a radius of curvature which is one-half the width of a vane 3 so that, as shown to best advantage in Figs. 3 and 5, the edges of the vane tips which project into the apertures, are frictionally engaged by the arcuate edge portion 7 of the apertures. The vanes are preferably fitted so snugly within the aperture 7 as to prevent their movement by the fingers but permit adjustment movement with a suitable tool, as shown in Fig. 5. This tool comprises a block 8, one end of which is provided with a slot 9 of width to receive one of the vanes 3. By virtue of the width of the tool, each vane is gripped by the tool over a substantial portion of its length, which reduces the possibility of twisting a vane should it, due to the unavoidable discrepancies in quantity manufacture, fit more snugly in the aperture 6 at one end than at the other end. A slot 9a extending transversely to the slot 9 may be provided to receive a partition member 12 to be described later in connection with Fig. 6, and permit engaging a vane on both sides of the partition. The block 8 may be made of some relatively soft, non-metallic material such as wood, whereby it is not apt to mar the vanes 3 during adjustment thereof.

It is usually preferable to provide the apertures 6 with flat parallel upper and lower edges 10, as this permits close spacing of the apertures in each strip while leaving a reinforcing bar of material between adjacent apertures. Furthermore this construction is usually permissible because it is ordinarily not necessary or desirable to adjust the vanes through an angle of more than approximately 90°.

Obviously, however, if it is desired to provide

for greater angular adjustment of the vanes, the apertures 6 may be made with longer arcuate edges 7. In fact the flat edges 10 may be eliminated and the apertures made complete circles, if it is so desired.

In the modification described with reference to Fig. 1, the vanes are supported only at their opposite ends. This construction is satisfactory in most grilles, but in the case of very large grilles the vanes may become so long that they have insufficient rigidity when supported only at the ends. Under such conditions a central partition strip 12, as shown in Fig. 6, may be provided, this partition strip being apertured to receive the vanes exactly the same as the strips 5 at the sides of the frame. The strip 12 may be anchored to the frame 1 at its upper and lower ends by welding.

It is also sometimes desirable, in the case of relatively wide grilles employing a partition, to employ separate vanes on the two sides of the partition, thereby permitting an independent adjustment of the vanes on each side of the partition. Such construction is shown in Figs. 7 and 8, in which short vanes 3*a* and 3*b* are employed in each half of the grille, the vanes on each side of the partition being supported at their outer ends in apertured strips exactly as described with reference to Fig. 3 and being supported at their inner ends by apertured strips 12*a* and 12*b*, which strips may be identical with the partition strip 12, shown in Fig. 6. In addition, however, it is desirable to provide an unperforated, relatively thin partition strip 13 between the partition strips 12*a* and 12*b* to prevent contact between the adjacent inner ends of vanes in the two sides of the grille.

A modification of the partition structure shown in Fig. 8 is illustrated in the perspective view of Fig. 9, in which the two separate partition strips 12*a* and 12*b* are constituted by folding a single wide strip of metal along its longitudinal center line, the apertures 6 being stamped in the strip before it is folded. The construction shown in Fig. 9 provides a smooth ornamental front edge along the fold line 14.

Although for purposes of explaining the invention certain specific embodiments thereof have been described in detail, it is to be understood that many other minor variations and changes in the structure shown may be made without departing from the invention, which is to be limited only to the extent set forth in the appended claims.

I claim:

1. In a grille, a frame member defining an opening and including a pair of spaced apart wall members on opposite sides of said opening, said wall members having juxtaposed recesses for receiving and supporting the ends of vanes, and a plurality of vanes extending across said opening, each having its ends extending into a pair of said juxtaposed recesses in which at least one of the recesses associated with each vane has juxtaposed arcuate edge walls of radius equal to half the width of the end portion of the vane extending therein and concentric with respect to a common center, whereby the edge of the vane fits snugly against said arcuate edge walls in any one of a plurality of positions of angular adjustment, and are frictionally restrained in any position of adjustment by said arcuate edge wall.

2. In a grille as described in claim 1, a partition member extending across said opening substantially normal to said vanes, said partition member having apertures therein through which the vanes pass and each aperture having juxtaposed arcuate edge walls of radius equal to half the width of the vane extending therethrough and concentric with respect to a common center.

3. In a grille, means defining an opening, a flat vane extending across said opening, and means for supporting said vane for angular adjustment about its longitudinal axis, comprising a strip member having an aperture therein for receiving said vane, said aperture having juxtaposed arcuate side walls of radius equal to half the width of the said vane and concentric with respect to a common center, whereby the edges of the vane fit snugly against said arcuate side walls of said aperture in any one of a plurality of positions of angular adjustment of the vane and are frictionally restrained in any position of adjustment by said arcuate side walls.

4. In a grille, a frame member defining an opening and including a pair of spaced apart side wall members on opposite sides of said opening and a partition wall extending parallel to and positioned between said side walls, a plurality of vanes extending substantially from each side wall to said partition wall, and means for supporting said vanes and retaining them in any one of a plurality of positions of angular adjustment comprising apertured strip members positioned against the inner faces of said side walls and the two faces of said partition walls, each of said strip members having vane-receiving apertures and each aperture having juxtaposed arcuate edge walls of radius equal to half the width of the end portions of the vane extending therein and concentric with respect to a common center.

5. A grille as described in claim 4, in which the apertured strip members on opposite sides of said partition member are constituted by a single wide strip of material folded along its longitudinal center line, the folded edge being positioned in front of and concealing the front edge of said partition wall.

CHARLES S. WHEELER.