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GRILLE

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Fig. 1.

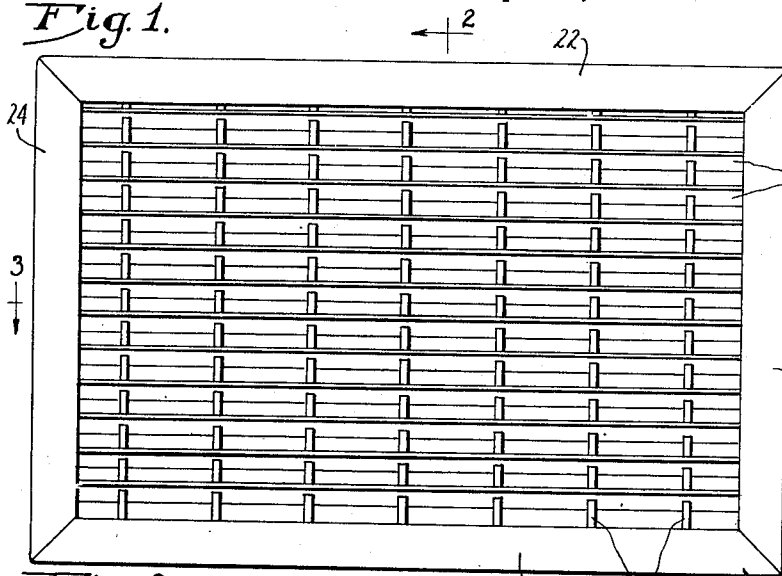
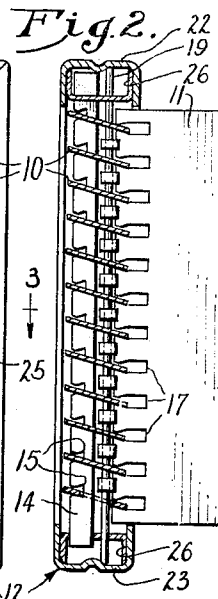


Fig. 3.

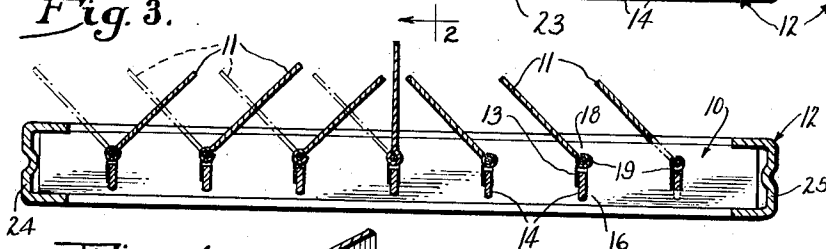


Fig. 4.

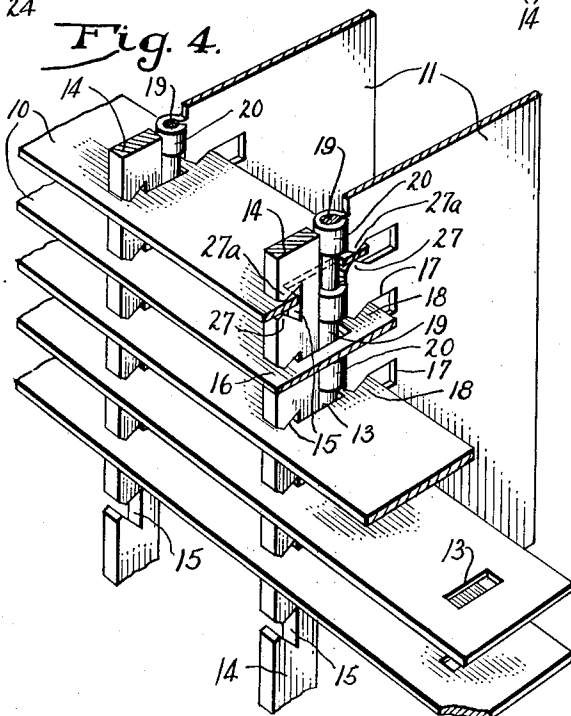
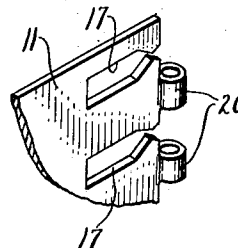


Fig. 5.



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GRILLE

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This invention relates to adjustable grilles of the type used in air conditioning and heating systems and has particular reference to grilles comprising two sets of relatively perpendicular adjustable vanes for controlling the direction of flow of air discharged into a room or other space.

One object of the invention is to provide in a grille having a set of parallel vanes mounted for rotative adjustment simple and effectual means for adjusting the vanes simultaneously.

A further object of the invention is to provide a grille of this type wherein the vanes of one set are made of substantial width and project beyond the vanes of the other set without interfering with the adjustment of either set, thereby providing for effectual control of the direction of flow of air through the grille.

Another object is to provide a grille of the character indicated comprising a frame having a large number of closely spaced narrow vanes pivotally mounted therein and disposed within the general plane of the frame and a small number of relatively wide pivotal vanes projecting to one side of the frame and so interrelated to the narrow vanes as not to interfere with the pivotal movement of either set of vanes.

A further object of the invention is to provide a grille of the character set forth which has a neat and attractive appearance, which is simple and sturdy in construction, and which is inexpensive to manufacture.

The invention also resides in the novel construction and location of hinge means for interlocking the two relatively perpendicular sets of vanes, whereby each set of vanes is adjustable independently of the other set.

The objects of the invention thus generally set forth, together with other and ancillary advantages, are attained by the construction and arrangement shown by way of illustration in the accompanying drawings, in which:

Figure 1 is a front elevational view of a grille embodying the present invention.

Fig. 2 is a transverse sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken approximately in the plane of line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view showing details of construction and the manner in which the vanes are interrelated.

Fig. 5 is a fragmentary perspective view showing details of construction of one of the vanes.

Referring now to the drawings, the invention is shown embodied in a grille having two relatively perpendicular sets of vanes 10 and 11, the

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vanes 10 being relatively narrow and herein shown disposed horizontally in the general plane of a frame 12, and the vanes 11 being of substantially greater width, herein disposed vertically and to the rear of the vanes 10 so as to project outwardly from the frame.

The vanes are so interrelated that the horizontal vanes 10 are maintained in spaced parallel relationship. This is accomplished through the provision of a series of alined holes or slots 13 in the horizontal vanes 10 through which narrow actuating bars 14 are inserted having a series of spaced notches 15 on the forward edges thereof adapted to receive lands 16 formed by the slots 13 and disposed adjacent the forward edges of the vanes.

The vertical vanes 11 are hinged so as to be swingable in a lateral direction at the rear of the horizontal vanes. These vertical vanes are formed with notches 17 to receive lands 18 formed at the rear edge of the horizontal vanes 10 by the slots 13, and the vanes 11 are pivotally mounted on vertical rods 19 rearwardly of the bars 14. As shown, the pivotal mounting of the vanes 11 is effected through the provision of spaced ears 20 formed on the vanes and curled to form alined bearings intermediate the notches for the reception of the pivot rods 19 extending through the slots 13 in the horizontal vanes.

The frame 12 as shown herein is rectangular in form comprising channel shaped upper and lower members 22 and 23 supported and joined at their outer ends by channel shaped side members 24 and 25. As shown in Fig. 3, the latter members are shaped to receive the ends of the horizontal vanes 10. The upper and lower members 22 and 23 are constructed to receive in opposed relation U-shaped bearing members 26 (Fig. 2) slotted to receive the opposite ends of the bars 14 for sliding movement and also apertured to receive the ends of the pivot rods 19. The rods are firmly held against endwise movement in the frame by abutment with the frame members 22 and 23, but the bars 14 are shortened to permit of endwise movement.

As best shown in Fig. 4, the notches 15 in the bars 14 and the notches 17 in the vanes 11 are made of reduced width at their outer ends to form opposed short bearing points 27 and 27a for engagement with the lands 16 and 18 of the vanes 10. In particular, each notch is shaped so that the outer end of the notch is relatively wide, then converges to a narrow central portion and then diverges again. Such shaping of the notches is advantageous in that it permits rocking of the

horizontal vanes while holding the vanes relatively snugly. At the same time, the point bearing contacts 27 and 27a minimize the areas on the horizontal vanes subjected to wear, thereby preventing any undue removal of paint or other finishing coating applied to the vanes.

It is believed that it will be clear from the foregoing that both sets of vanes are capable of being adjusted for the purpose of directing the flow of air both horizontally and vertically. As shown in Fig. 1, the discharge of air in a vertical direction is controlled by a relatively large number of narrow vanes 10 while the discharge of air in a horizontal or lateral direction is controlled by a smaller number of relatively wider vanes 11 constituting fins. The latter vanes or fins are preferably individually adjustable, thus making it possible to attain any desired pattern of lateral discharge of air.

The horizontal vanes 10 are adjustable in unison in either direction by the bars 14 engaging the forward edge portions of the vanes while the rear edges thereof pivot about the fulcrums formed by the opposed bearing points 27 and 27a in the notches 17 of the vertical vanes 11, the latter being held against endwise movement. The various interengaging parts are made to fit snugly so that the two sets of vanes will be frictionally held in various adjusted positions.

This construction lends itself to ready assembly. The horizontal vanes 10 are held in a jig, and the bars 14 are inserted through the aligned slots 13. The bar is then brought bodily forward so that the notches 15 receive the lands 16. Vertical vanes 11 are then placed in position at the rear of the bars 14 so that the bearings 20 overlie the openings of the slots 13, and the rods 19 are inserted through the bearings and slots.

The bearing members 26 are then placed on the top and bottom of the vane assembly, the slots therein being aligned to receive the ends of the bars 14 and rods 19 projecting slightly above and below the assembly. The frame 12 is then positioned about the assembly. For this purpose, the frame is made from an elongated channel bar suitably notched to permit bending thereof into rectangular form, the ends being mitered for welding together after bending the frame about the assembly with the ends of the vanes 10 and bearing members 26 received in the inwardly opening channel formed by the channel bar.

I claim as my invention:

1. A grille comprising a frame having an inwardly opening channel, a set of relatively narrow parallel vanes mounted in said frame for rotative adjustment and having aligned holes forming lands at opposite edges of the vanes, the ends of said vanes being received in the inwardly opening channel, a set of relatively wide fins substantially perpendicular to said set of vanes projecting outwardly from said frame, said fins having a series of notches adapted to receive the lands at one edge of the vanes, said notches being shaped to permit adjustment of the vanes, an elongated bar extending through said holes having a series of notches adapted to receive the lands at the opposite edges of said vanes, the notches on said bar being shaped to permit adjustment of the vanes as said bar is moved bodily back and forth through the holes to adjust the vanes, a rod extending through said holes, and a series of bearings on the fins intermediate the notches adapted to encircle said rod thereby permitting the fins to be swung laterally about said rod.

2. A grille, a frame, a set of relatively narrow parallel vanes mounted in said frame for rotative adjustment and having slots forming lands at opposite edges of the vanes, a second set of relatively wide vanes mounted in said frame in a perpendicular relation to said first set of vanes and having notches thereon to receive the lands at one edge of said first set of vanes, an elongated bar extending through said slots and having notches for receiving the lands at the opposite edge of said first set of vanes, said bar being adapted for endwise movement through said slots to adjust the position of said first set of vanes, and means for hinging said second set of vanes whereby the latter are individually swingable in a lateral direction.

3. In a grille having a frame, the combination of a set of parallel vanes disposed in said frame for rotative adjustment and having a plurality of sets of aligned holes forming lands at opposite edges of the vanes, a plurality of fins substantially perpendicular to said set of vanes and each having a series of notches adapted to receive the lands at one edge of the vanes and forming fulcrums upon which the vanes may turn, said notches being shaped to permit adjustment of the vanes, means engaging the lands at the opposite edge of said vanes to effect adjustment of the vanes on said fulcrums, rods extending through said sets of holes, and means on said fins adapted to encircle said rods whereby the fins are swingable laterally about said rod.

4. In a grille having a frame, the combination of a set of vanes having aligned holes forming lands at opposite edges of the vanes, a set of parallel fins substantially perpendicular to said set of vanes having a series of notches adapted to receive the lands at one edge of the vanes and shaped to provide fulcrums upon which the vanes may turn for purposes of adjustment, means extending through said holes engaging the lands at the other edge of said vanes, said means permitting adjustment of said vanes on said fulcrums, and means for hinging said fins whereby the latter project outwardly from said frame and are swingable laterally with respect thereto.

5. In a grille, a frame, a set of parallel vanes mounted in said frame for rotative adjustment and having aligned slots forming lands at opposite edges of the vanes, a set of fins supporting the lands at one edge of said vanes, an elongated bar extending through said slots and having notches for receiving the lands at the other edge of said vanes, and means extending through said slots behind said bar holding the latter in said slots, said means providing a hinge support for said fins whereby the latter are swingable to control the pattern of air discharged through said grille.

6. In a grille, a set of parallel vanes having aligned holes forming lands at opposite edges of the vanes, a plurality of fins perpendicular to said set of vanes having notches to receive the lands at one edge of the vanes, said notches being shaped to provide fulcrums upon which the vanes may turn for purposes of adjustment, means coacting with the lands at the opposite edges of the vanes for adjusting the position of the vanes on said fulcrums, and means for hinging said fins whereby the latter are swingable laterally.

7. A grille having, in combination, a set of relatively narrow vanes mounted for rotative adjustment having aligned holes forming lands at opposite edges of said vanes, a set of relatively wide fins having notches for receiving the lands on one edge of said vanes and providing fulcrums

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upon which the vanes may turn, means extending through said holes engaging the lands on the other edge of said vanes for adjusting the position of said vanes on said fulcrums, and means for hinging said fins whereby the latter are swingable in a lateral direction.

8. In a grille, the combination of a set of vanes mounted in said grille for rotative adjustment and having a plurality of sets of alined holes forming lands at opposite edges of the vanes, a plurality of pivotally mounted fins substantially perpendicular to said set of vanes having a series of notches at one edge adapted to receive the lands at one edge of the vanes, said fins projecting outwardly from said one edge of the vanes, means including a bar notched to receive the lands at the opposite edge of the vanes, said bar and said fins being mounted for relative longitudinal movement to effect a rotative adjustment of the vanes.

9. In a grille, the combination of a set of vanes mounted in said grille for rotative adjustment and having a plurality of alined holes forming lands at opposite edges of the vanes, a plurality of elongated elements at one side of the vanes and notched to receive an edge of said vanes at that side, said notches being shaped to permit rotative adjustment of the vanes, and elongated bars extending through said holes having notches adapted to receive the lands on the edge of the vanes at the opposite side of said vanes, said elements and said bars mounted for relative longitudinal movement to effect a rotative adjustment of the vanes.

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10. A grille having, in combination, a plurality of parallel vanes mounted for rotative adjustment and having a set of alined holes forming two sets of lands at opposite sides of the holes and a pair of members mounted for relative longitudinal movement in a direction perpendicular to said vanes each having a set of notches therein, one of said members extending through said holes and having its notches engaging one set of lands, and the other member being disposed at one side of the vanes and having its notches engaging the other set of lands whereby said vanes may be rotatively adjusted by relatively moving said two members.

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