

United States Patent

Dennis

[15] 3,682,085

[45] Aug. 8, 1972

[54] REGISTER

[72] Inventor: Donald I. Dennis, Jacksonville, Tex.

[73] Assignee: American Plasti-Plate Corporation,
Jacksonville, Tex.

[22] Filed: April 8, 1970

[21] Appl. No.: 26,726

[52] U.S. Cl. 98/110, 98/112

[51] Int. Cl. F24f 13/14

[58] Field of Search. 98/107, 108, 110, 112, 113;
137/601

[56] References Cited

UNITED STATES PATENTS

2,926,400 3/1960 Mandel 137/601 UX

2,394,059	2/1946	Hite	98/110 X
3,202,082	8/1965	Viehmann	98/110 X
R12,299	1/1905	Dils	98/112

Primary Examiner—Edward J. Michael

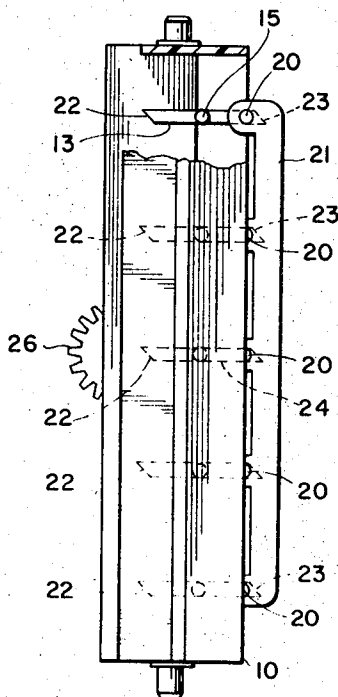
Attorney—Jack A. Kanz

[57]

ABSTRACT

Disclosed is a register having pivotally mounted louvers with beveled edges. The louvers are mounted within the register frame in parallel relationship, the beveled edges adapted to mate with adjacent louvers to provide a continuous coplanar surface for blocking the register. The louvers are mutually interconnected with a control device for rotating the louvers in unison.

5 Claims, 8 Drawing Figures



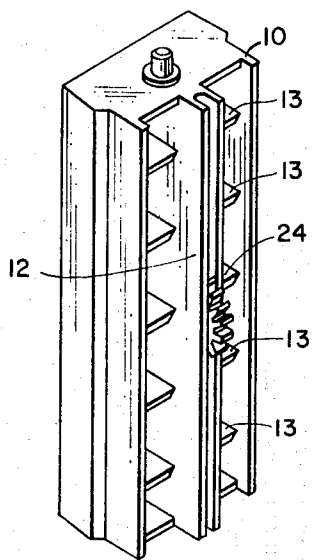


FIG. 1

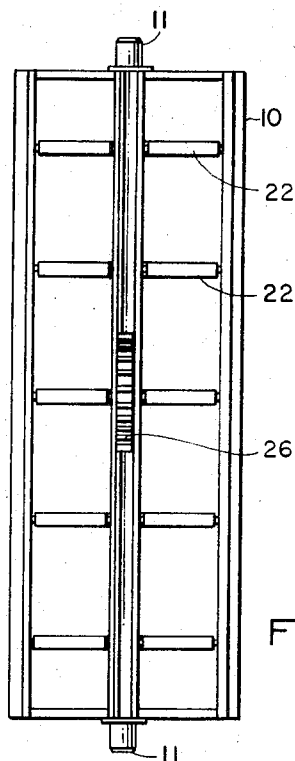


FIG. 2

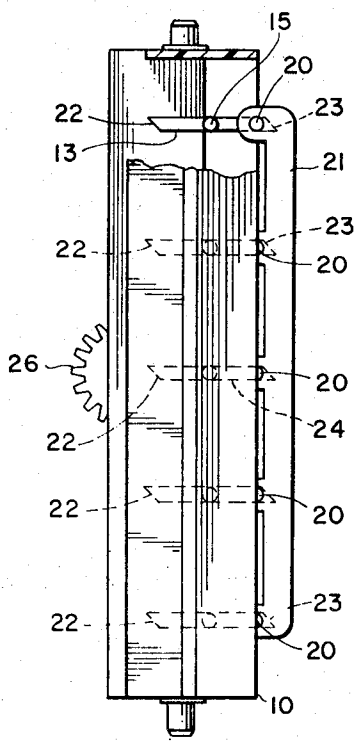


FIG. 4

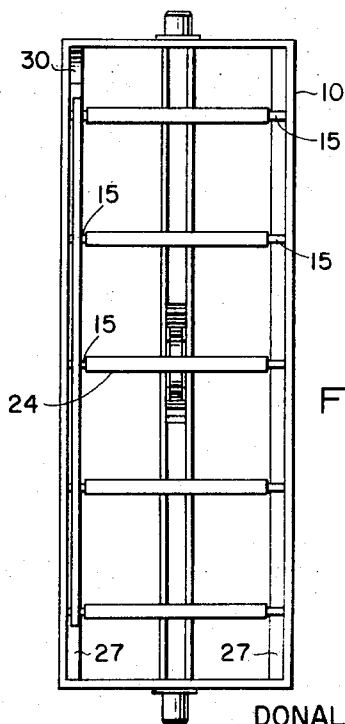


FIG. 3

INVENTOR
DONALD I. DENNIS

Jack A. Katz
ATTORNEY

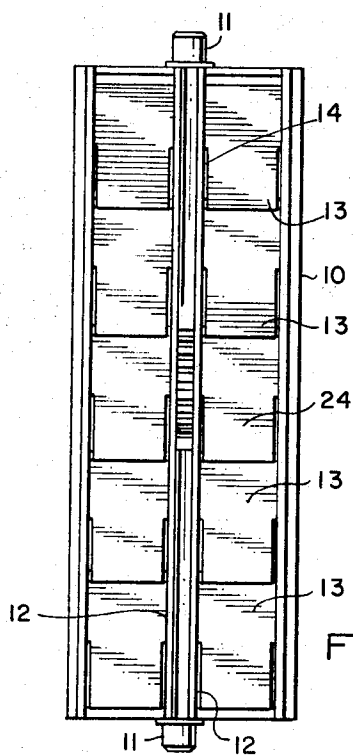


FIG. 5

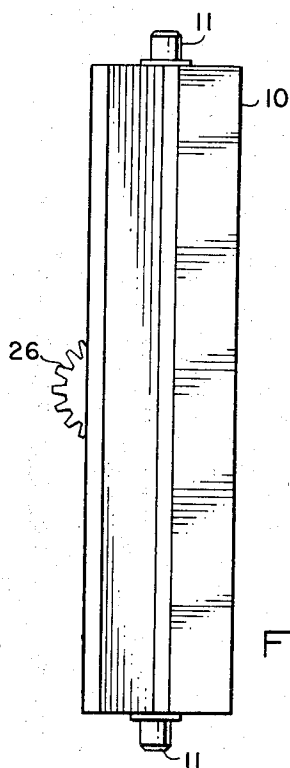


FIG. 6

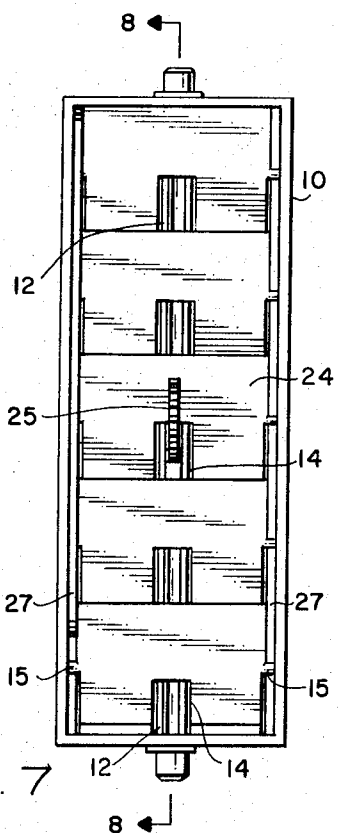


FIG. 7

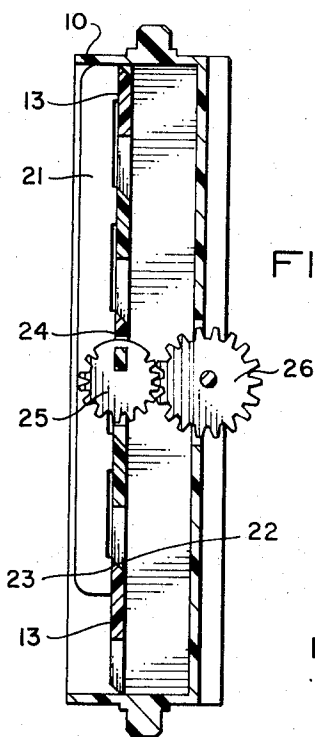


FIG. 8

INVENTOR
DONALD I. DENNIS

Jack A. Long
ATTORNEY

REGISTER

This invention relates to a louvered register for controlling and directing the flow of air from an air conditioning duct or the like. More particularly it relates to an adjustable grille or register having louvers which move in unison and have beveled edges which mate to completely close the register. The position of the louvers may also be adjustably varied to direct the flow of air from the register.

Registers having adjustably variable louvers have long been used to direct flow of air from air conditioning and heating ducts and the like. Such registers generally employ parallel louvers, sometimes interconnected, which may be adjusted to direct flow in desired directions as it exits from the register. Such registers, however, generally fail to provide means for effectively stopping flow of air through the register.

Conventional registers used for this purpose usually employ a plurality of parallel disposed vanes or louvers which may be moved in overlapping relationship to partially close the register. Such registers, however, have been found to be ineffective in completely closing the register since overlapping vanes do not form a continuous uniform sealing surface with each other. Therefore such registers are extremely noisy when closed and fail to completely stop the flow of air therethrough. Furthermore air pressure built up within the duct behind the register usually tends to force the louvers open.

In accordance with the present invention a register is provided which is particularly adapted for use with mobile air conditioning units and the like and which may be easily constructed from inexpensive materials. The register comprises a rectangular frame in which are mounted a plurality of parallel positioned vanes or louvers. The louvers are pivotally mounted on a line intersecting their geometric centers and have beveled edges on the sides thereof parallel to the pivoting line. The louvers are mounted such that upon their rotation to the closed position, the beveled edge of one louver mates with the beveled edge of the adjacent louver to form a continuous surface which closes the register and prevents the flow of air therethrough. All louvers in the register are interconnected and are activated by a single control means. In this manner all louvers may be uniformly adjusted to direct air passing through the register in the desired manner and may likewise be simultaneously closed to completely stop the flow of air through the register.

Due to the unique construction of the louvers in the register of this invention a large portion of the edges of the louvers mate when the louvers are in the closed position. Since the beveled edges of adjacent louvers lie in the same plane when the register is closed, the full face of one beveled edge is placed in contact with the full face of the beveled edge of the adjacent louver, thereby presenting a uniform flat surface for effecting a seal therebetween. Accordingly, air does not leak between the louvers and the noise associated with high velocity air escaping between louvers is eliminated. Furthermore, since the louvers are pivoted about their geometric centers, air pressure is approximately equal on both sides of the pivot point when the louvers are closed. Accordingly, increased air pressure within the duct does not tend to open the register since air pressure is distributed equally on both sides of the pivot point.

Other features and advantages of the invention will become more readily understood from the following detailed description taken in connection with the appended claims and attached drawings in which:

FIG. 1 is a perspective view of the preferred embodiment of the invention;

FIG. 2 is a front face view thereof with the louvers in the fully open position;

FIG. 3 is a rear face view thereof with the louvers in the fully open position; y

FIG. 4 is a side view thereof, partially in section, illustrating the interconnection and mounting of the louvers within the register;

FIG. 5 is a front face view thereof with the louvers in the closed position;

FIG. 6 is a side view thereof with the louvers in the closed position;

FIG. 7 is a rear face view thereof with the louvers in the closed position; and

FIG. 8 is a sectional view of the register illustrated in FIG. 7 taken through the section lines 8—8.

Referring now to the drawings, in which like parts are identified by like numerals, a register constructed in accordance with the principles of the invention is shown. The register comprises a rectangular frame 10 having dowels or pins 11 extending outwardly from two opposed ends thereof. Pins 11 extend from about the geometric center of the ends of the rectangular frame and are provided to permit pivotal mounting of the register within an opening in an air conditioning or heating duct or the like. A channel member 12 is mounted across the front face of the register parallel to the long sides thereof.

Mounted within the rectangular frame 10 are a plurality of vanes or louvers 13. Louvers 13 are preferably positioned in spaced parallel relationship and parallel to the ends of frame 10.

Louvers 13 are essentially rectangular in shape with a notch 14 formed therein extending from approximately the center of the louver 13 to the front edge thereof. The notch 14 is preferably parallel to the shorter side of the vane and is provided to allow louvers 13 to rotate within the frame with the forward edges thereof extending between the centrally disposed channel member 12 and the sides of the frame 10 as illustrated in FIGS. 2, 5, and 7.

A pair of pivot pins 15 extend from opposite sides of each of the louvers 13. As illustrated throughout the drawings, pivot pins 15 extend on opposite sides of the louver along a line parallel to the longer side thereof and bisecting the geometric center of the louver. Pivot pins 15 are inserted in recessions or sockets in the inner walls of frame 10. Louvers 13 are thus uniformly spaced in parallel relationship within the frame 10 as illustrated.

Each louver 13 also carries a third pin 20 extending from one end thereof parallel to pivot pins 15. Pin 20 is spaced from pin 15, preferably near the rearward edge of louver 13, and is adapted to fit within and mate with a socket in interconnecting arm 21.

As shown in FIG. 4 the front edge 22 and rear edge 23 of louver 13 are beveled such that the outer edges 22 and 23 are inclined at an angle of approximately 45° from the major faces of the louvers. Accordingly, it will be observed that as louvers 13 are pivoted on the pivot pins 15, end face 22 of one louver mates with end face

23 of an adjacent louver and the interfaced louvers 13 form a substantially flat surface closing the register.

In the preferred embodiment all of the louvers 13 are substantially identical except for the control louver 24, which is preferably centrally located in the register. Control louver 24 is identical to the other louvers 13 in all major configurations and dimensions. Control louver 24, however, carries a spur gear 25 mounted centrally therein with the axis of spur gear 25 coincidental with a line interconnecting pivot pins 15. Accordingly, spur gear 25 extends into the notch 14 and louver 24.

A second spur gear 26 mounted in channel member 12 is adapted to mesh with spur gear 25. Spur gear 26 extends forwardly from channel member 12 to provide a single means for rotation of all interconnected louvers 13 and 24.

From the foregoing it will be observed that the relative position of each of the parallel louvers 13 and 24 may be controlled by the spur gear 26. Rotation of spur gear 26 rotates intermeshing spur gear 25 thereby rotating centrally located louver 24. Since all the louvers in the register are interconnected by means of interconnecting arm 21 and pins 20, rotation of spur gear 26 causes rotation of all interconnected louvers in the register to a like degree. It will readily be observed that when spur gear 26 is rotated in one direction the louvers are opened and when spur gear 26 is rotated in the opposite direction all louvers are simultaneously closed as illustrated in FIG. 8.

In the preferred embodiment of the invention the back face of rectangular frame 10 is wider than the front face thereof; each of the longer parallel sides carrying a shoulder 27 extending into the cavity within the frame as shown in FIG. 3. Shoulders 27 are preferably positioned parallel to the sockets into which pivot pins 15 are inserted. Accordingly, when louvers 13 and 24 are rotated to the closed position, the edges of the louvers rest on shoulders 27. The forward portion of louvers 13 and 24 are narrower than the rearward portions thereof so that the forward portions extending between the sides of the frame 10 and the channel member 12 completely fill the space therebetween yet move freely between the sides of the frame and the channel member 14.

If desired, shoulder 27 may have depressions 30 formed therein to accomodate interconnecting member 21 when the louvers are closed. Depressions 30 are provided to allow the portion of interconnecting pin 21, which carries the socket supporting pin 20, to extend forward of the plane of the closed louvers and still allow the sides of the rear portions to seat on shoulders 27. In this manner louvers 13 and 24 are permitted to align in a coplanar relationship and form a continuous surface blocking the passage of air through the register.

From the foregoing it will be observed that the principles of the invention may be used to produce a register having pivoting louvers for both directing the flow of air through the register and for closing the register. By positioning the louvers in parallel relationship within the register frame and providing the louvers with mating beveled edges, the louvers may be aligned

in a fully coplanar relationship with the beveled edges seated against each other to close the register.

It will be apparent to those skilled in the art that the register described may be readily fabricated from commercially available materials by conventional methods. In the preferred embodiment, the entire assembly is made from components formed from injection molded ABS plastic. Other suitable materials may also be used.

While the invention has been described with particular reference to specific embodiments thereof, it is to be understood that the form of the invention shown and described in detail is to be taken as the preferred embodiment of same, and that various changes and modifications may be resorted to without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A register comprising:

a. a rectangular frame having side walls and end walls,

b. a plurality of substantially flat planar louvers pivotally mounted within said frame, said louvers being mounted in spaced parallel relationship, the edges on opposite sides of said louvers being beveled with respect to the major faces thereof, whereby upon rotation of said louvers within said frame said beveled edges on said louvers mate with beveled edges on adjacent louvers forming one substantially flat planar surface, and

c. a frame member substantially parallel to and positioned between the side walls, each of said louvers having a notch in the forward portion thereof, whereby the forward portions of said louvers may be moved between said side walls and said frame member.

2. A register comprising:

a. a rectangular frame having side walls and end walls,

b. a plurality of substantially flat planar louvers pivotally mounted within said frame, said louvers being mounted in spaced parallel relationship, the edges on opposite sides of said louvers being beveled with respect to the major faces thereof, whereby upon rotation of said louvers within said frame said beveled edges on said louvers mate with the beveled edges forming one substantially flat planar surface, and

c. shoulders extending from said side walls into said frame, said shoulders being adapted to mate with the side edged of said louvers when said louvers are rotated to the closed position.

3. The register defined in claim 2 and further including means interconnecting said louvers whereby rotation of one of said louvers causes rotation of the other louvers.

4. The register defined in claim 3 and further including a first gear substantially centrally mounted on one of said louvers and adapted to mate with a second gear secured to said frame.

5. The register defined in claim 1 wherein one of said shoulders has depressions in the face thereof adapted to accomodate said means interconnecting said louvers.

* * * * *