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LOUVER STRUCTURE
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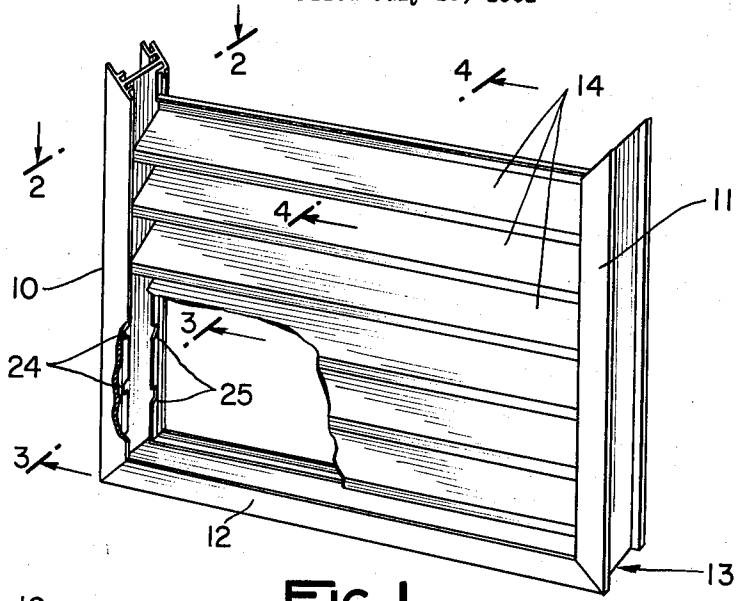


FIG. 1.

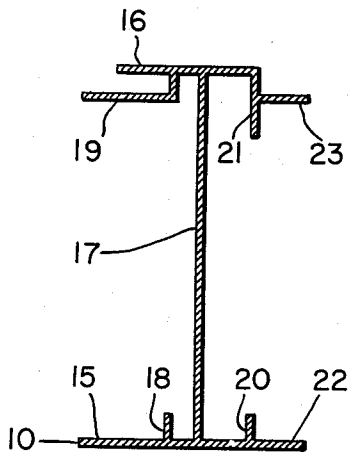


FIG. 2.

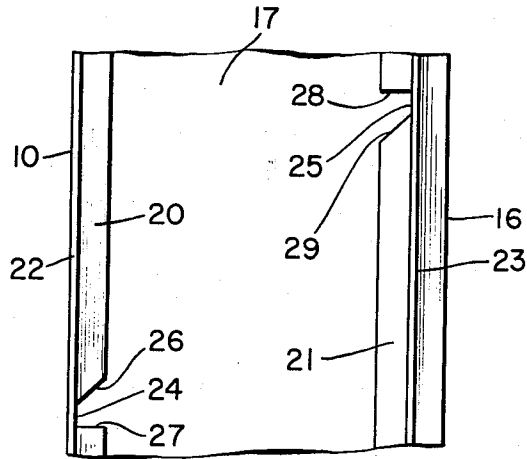


FIG. 3.

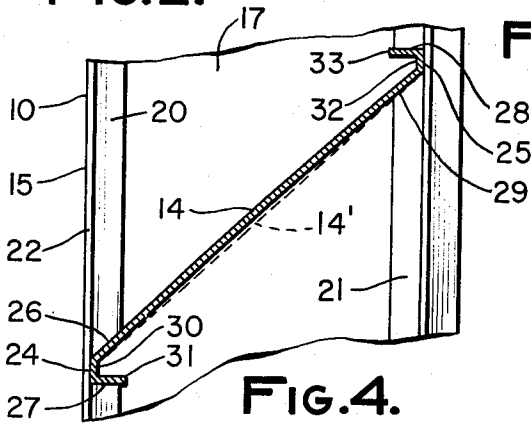


FIG. 4.

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LOUVER STRUCTURE

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This invention relates generally to louvers and more particularly to an improved louver structure primarily for use in commercial buildings.

Louvers of the type under consideration are used to block direct wind and rain from air ventilating exhaust and intake openings in a building or similar structure. Generally, the louver structure comprises a series of horizontal parallel panels suitably angulated to prevent rain and the like from entering the opening within which the louver structure is positioned.

In many conventional louver structures, the louvers themselves are threadedly connected to the jambs and towards this end are provided with screw raceways to receive screws coupled to the jambs. The use of screws or equivalent fastening means for holding the louver panels in place adds to both the manufacturing expense of the entire louver structure and the labor cost in assembling the structure. Also under certain adverse conditions, the screws may work loose and permit vibration of the louver panels.

With the above in mind, it is a primary object of this invention to provide an improved louver structure in which the foregoing difficulties are overcome.

More particularly, it is an object to provide an improved louver structure which does not require screws or bolts or equivalent fastening means to the end that the structure may be more economically manufactured and more quickly assembled than possible heretofore.

Another important object is to provide an improved louver structure in which the louver panels themselves are retained under a given compression at all times so that vibration or displacement is prevented even after prolonged use.

A still further object is to provide an improved louver structure in which conventional louver panels may be used with portions thereof performing a dual function by improvement of the jambs to which the louvers are connected.

Briefly, these and many other objects and advantages of this invention are attained by providing first and second vertical jambs for supporting a plurality of horizontally extending louver panels therebetween. Each of the jambs includes a plurality of front and rear opposed notch means spaced apart by a distance less than the width of the panels so that the end portions of the panels are receivable between the notches only if the panels are bowed about a longitudinal axis adjacent their end portions. By such an arrangement, the panels are biased into tight engagement with the notches and retained under compression forces of sufficient magnitude that friction alone is sufficient to hold the panels in place. Because each of the panels is maintained in a state of compression, they are tightly held and vibration, rattling, or the like is prevented. Any particular wearing at the notch portions is taken up by gradual expansion of the panel ends.

In accordance with an important feature of the invention, each of the panels is provided with a lower forward and upper rear edge defining seating surfaces for reception within the front and rear notches. These same seating surfaces are formed from conventional vertical lip structures which serve the additional function of preventing driving rain and the like from passing through the louver structure.

With the foregoing arrangement, it is evident that no

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screws or other similar fastening means are necessary with the attendant advantages of less fabrication and manufacturing expense and greater ease and speed of actual assembly of the overall louver structure.

A better understanding of the invention will be had by referring to a preferred embodiment thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view partly broken away showing an example of the improved louver structure of this invention;

FIGURE 2 is a plan cross sectional view taken in the direction of the arrows 2-2 of FIGURE 1;

FIGURE 3 is a fragmentary front elevational view taken in the direction of the arrows 3-3 of FIGURE 1; and,

FIGURE 4 is a view similar to FIGURE 3 showing in cross section one of the louver panels in place.

Referring first to FIGURE 1, the louver structure comprises first and second vertical jambs 10 and 11 having their lower ends connected together by horizontally extending attaching sill 12. The sill 12 has a channel structure 13 on its under side for facilitating attachment thereof to a foundation or similar structure. As shown in FIGURE 1, there are provided a plurality of louvers or panels 14 extending horizontally between the jambs 10 and 11.

The manner in which the panels are secured to each of the jambs will be evident by now referring to FIGURES 2, 3, and 4. Since the jambs 10 and 11 and the fastening means for the panels are substantially identical, description of one will suffice for both.

Thus, in FIGURE 2, there is shown in cross section the jamb 10. This jamb includes front and rear vertically extending sidewalls 15 and 16 held in spaced parallel relationship by a transverse end partition 17 extending therebetween. Suitable securing flanges 18 and 19 are provided for facilitating securing of the left side of the jamb (as viewed in FIGURE 1) to a suitable vent opening frame structure as required. The sidewalls also include opposing front and rear panel securing flanges 20 and 21 and guide flanges 22 and 23 running vertically between the lower and upper ends of the jamb. The entire jamb may constitute an extrusion, preferably formed of aluminum, so that the various flanges and sidewalls are integral.

With reference to the front elevational view of FIGURE 3, it will be noted that the opposing front and rear panel securing flanges 20 and 21 each include a plurality of notches 24 and 25, respectively. Only one notch for each of the flanges is illustrated in the fragmentary view of FIGURE 3, but with reference to FIGURE 1, it will be evident that the notches 24 on the front securing flange are staggered vertically lower than the notches 25 on the rear securing flange.

Each notch 24 on the front flange 20 as shown in FIGURE 3 includes an upwardly sloping top edge 26 and a generally horizontally extending bottom seating edge 27. Each notch 25 on the rear securing flange 21 includes a generally horizontally extending top seating edge 28 and a downwardly sloping bottom edge 29. The shape for the front and rear notches as described is important for cooperation with the panels 14 as will become clearer by now referring to FIGURE 4.

In FIGURE 4, it will be noted that the panel 14, typical of the several panels shown in FIGURE 1, has its end portions received between the notches, the front notches, as stated, being vertically staggered lower than the rear notches so that the panel 14 is angulated or inclined. The lower forward edge of the panel defines a seating surface including a vertically downwardly extending lip portion 24 turning into a horizontally extending seating portion 31 extending under the underside

of the main portion of the panel 14. The upper rearward seating surface edge of the panel defines a vertically upwardly extending lip portion 32 turning into a horizontally extending seating portion 33 passing over the upper side of the main portion of the panel 14.

The width of the panel between the seating surface portions 31 and 33 is slightly greater than the distance between the notches 24 and 25 so that it is necessary to bow the panel about a longitudinal axis, which axis is normal to the plane of the drawing shown in FIGURE 4 in order to insert the end portion between the notches. The bowing is indicated in solid lines in FIGURE 4, the normal straight line or unbowed position of the panel being indicated by the dashed line 14'. The extreme ends of the panel 14 are adjacent the transverse end partitions of the jambs such as the partition 17 so that with the foregoing arrangement each panel is restricted against longitudinal motion except for normal expansion and contraction under temperature changes.

The opposite ends of the panels are secured in the second jamb 11 in the same manner by suitable bowing of the end portion of the panel.

With particular reference to the upper seating edge portion of the panel 14 as shown in FIGURE 4, it will be noted that the upwardly extending lip 32 and horizontally extending upper seating portion 33 cooperatively define a trough structure which will prevent rain or wind drafts and the like from passing through the louver structure or vent housing. In other words, the structure defines a "catching" channel along the upper edge of the louver for preventing water and the like from passing over the upper edge. Thus, the desired geometrical structure for defining a seating surface to be received in the notch also serves the additional function of providing more effective weather proofing.

The sloping upper portion of the lower notch as shown at 26 and the lower sloping portion of the upper notch as indicated at 29 engage opposite surfaces of the panel 14 and are angulated in accordance with the inclination of the panel itself so that fairly full surface contact of the edges of the notch with the front lower and upper rear edges of the panel takes place. The tendency for the panel 14 to assume a straight line position rather than a bowed position will result in large compression force within the panel to urge the lower forward and upper rear edges apart, thereby tightly holding the panel within the notches by friction. Preferably, the louvers or panels 14 are also formed of aluminum although other materials having the noted characteristics may also be employed.

In the actual assembly of the structure, the jambs 10 and 11 are first inserted within the lower mounting sill 12. The panels may then be successively inserted starting from the bottom upwardly. In inserting each of the panels, it is preferable to place the lower seating surface portion such as 31 shown in FIGURE 4 against the seating edge 27 of the lower front notch first. By then pressing or hammering against the upper seating surface portion 33, the necessary bowing to cause the panel to assume a slightly convex shape can be effected and the upper seating surface portion thus snapped into the upper notch 25.

The angulation of the panels and the staggering of the front with respect to the rear notches is such, of course, to provide for a slight overlapping of the lower front longitudinal edge of one panel with respect to the upper rear longitudinal edge of the next lower panel so that the undesired direct straight through passage of wind or rain is blocked.

The head of the vent housing or louver structure has not been shown or described, but its structure would be similar to the sill 12 in reversed position.

From the foregoing description, it will be evident that the present invention has provided a more economical louver arrangement with less fabrication and assembly expense. Further, by the use of compression forces within

the louver panels themselves for retaining them in position, the need for screws and raceways is eliminated.

Finally, it will be evident that each of the panels at both ends is secured tightly in place with respect to three directions so that rattling or the like cannot develop even after prolonged use. Thus, should the notches weather slightly or even should the sidewalls of the jambs become biased apart slightly, any slack that should occur will be immediately taken up by the bowed end portions of the panels themselves tending to straighten out.

While only one particular embodiment of the invention has been shown and described, various modifications and changes that fall clearly within the scope and spirit of the invention will occur to those skilled in the art. The improved louver structure is therefore not to be thought of as limited to the example set forth.

What is claimed is:

1. A louver structure including: first and second spaced jambs, a pair of flange means secured to each of said jambs with the edge of each flange means of the same pair facing each other, said pairs of flange means extending from said jambs towards each other, each of the flange means in each pair thereof including a respective notch means opening toward the opposite flange means of the same pair, said notch means in the opposite flange means of each pair being disposed therein at different lengthwise positions, and a panel extending between said jambs and having at each of its ends a width which is greater than the greatest distance between the closed bottoms of said notch means so that each end of the panel must be bowed about its longitudinal axis to be received between the facing notch means of each flange means pair to retain said panel in place under compression.

2. A louver structure including: first and second spaced jambs, a pair of flange means secured to each of said jambs with the edge of each flange means of the same pair facing each other, said pairs of flange means being spaced from the jambs toward each other, each of the flange means in each pair thereof including a respective notch means opening toward the opposite flange means of the same pair, said notch means in the opposite flange means of each pair being disposed therein at different lengthwise positions, and a panel extending between said jambs and having at each of its ends a width which is greater than the greatest distance between the closed bottoms of said notch means so that each end of the panel must be bowed about its longitudinal axis to be received between the facing notch means of each flange means pair to retain said panel in place under compression.

3. A louver structure comprising, in combination: first and second vertical jambs; a horizontal mounting attachment connecting the lower ends of said jambs together, each of said jambs including parallel front and rear sidewalls having inwardly extending front and rear panel securing flanges running vertically between the lower and upper ends of said jambs, said flanges including a plurality of spaced notches having respective seating surfaces, the notches on said front flanges being vertically staggered with respect to the notches on said rear flanges, and a plurality of bowed inclined panels extending between said jambs, each of said panels including lower forward and upper rear edges terminating in lower and upper panel seating surfaces, the end portions of said panel seating surfaces at the opposite ends of said panels being receivable within the notches of said flanges to seat on said notch seating surfaces, the width distance between said panel seating surfaces being greater than the corresponding distance between the seating surfaces of said front and rear notches so that each panel must be bowed about a central longitudinal axis to enable insertion of said seating surfaces within said notches whereby said panels are frictionally held in place.

4. A louver structure according to claim 3, in which

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said front notches are defined by a top edge sloping upwardly and a bottom seating edge extending generally horizontally, said rear notches are defined by a top seating edge extending generally horizontally and a bottom edge sloping downwardly, each of said forward edges of said panels including a vertically downwardly extending lip portion turning into a horizontal portion passing under the underside of the associated panel to define a part of one of said lower seating surfaces engaging with said bottom seating edge of the associated notch, each of said upper rear edges of said panels including a vertically upwardly extending lip portion turning into a horizontal portion passing over the top side of the associated panel to define a part of one of said upper seating surfaces engaging with said top seating edge of the associated notch, said vertically upwardly extending lip portion and horizontal portion passing over the top side of said associated panel also functioning to block rain through said louver structure.

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5. A louver structure according to claim 4, in which each of said jambs includes a transverse end partition extending between said front and rear sidewalls against which the ends of said panels abut so that said panels are held against longitudinal movement, said angulated panels having an inclination such that the lower edge of one is vertically lower than the upper rear edge of the next lower panel.

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