June 6, 1939. H. C. HUEGLIN 2,161,471

VENTILATING APPARATUS

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Fig. 1

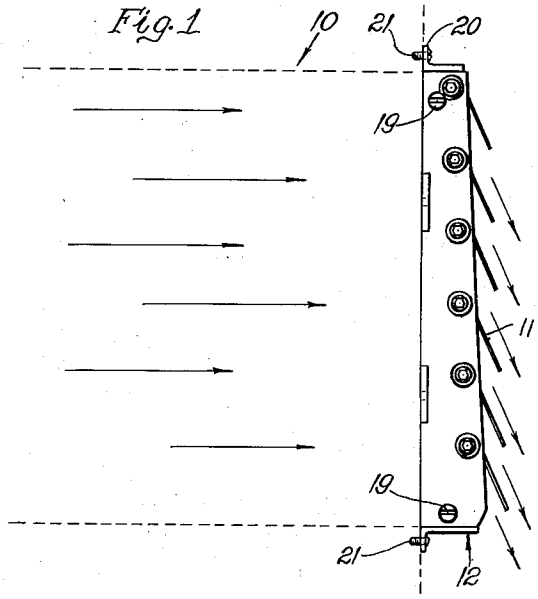


Fig. 3.

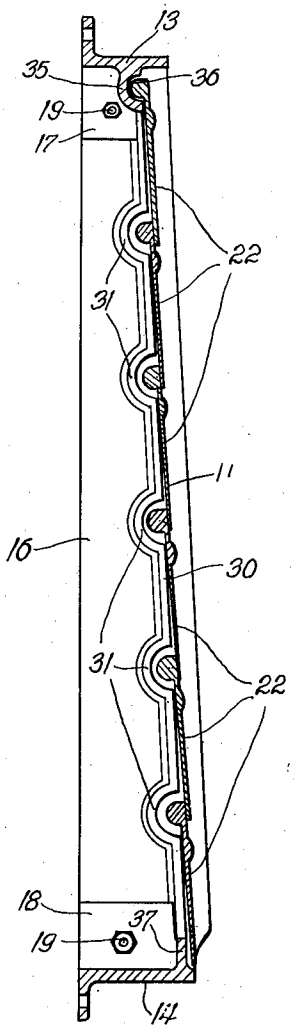
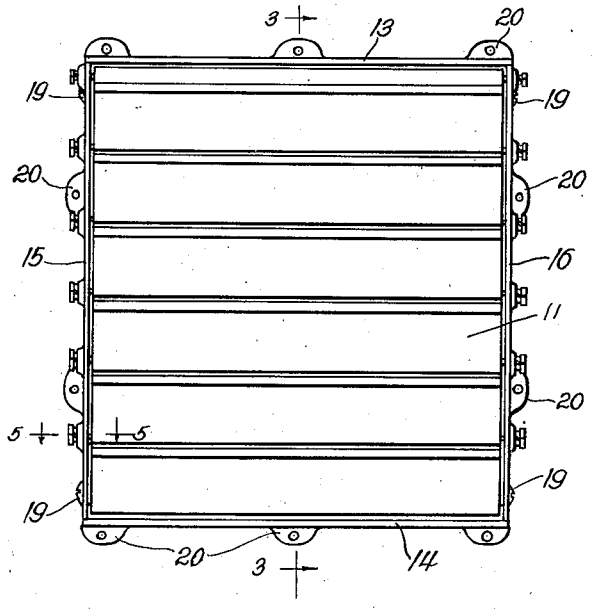


Fig. 2.



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Fig. 4.

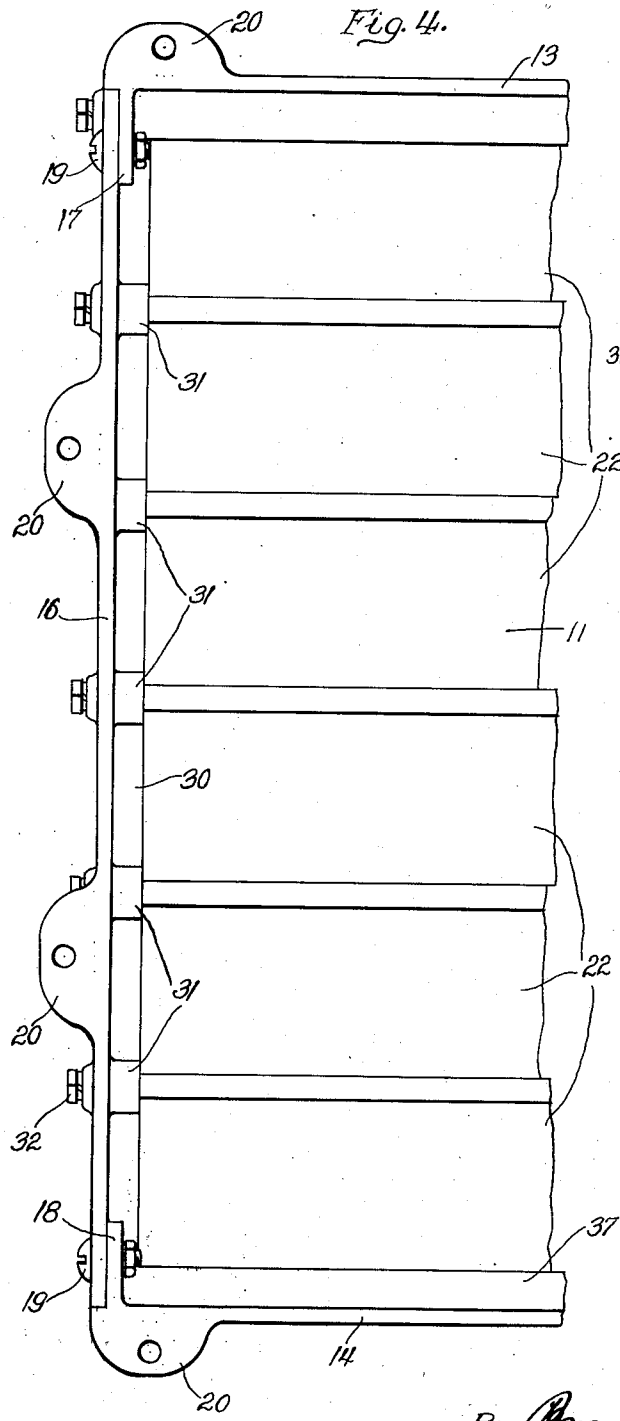


Fig. 5.

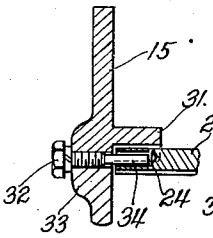


Fig. 8.

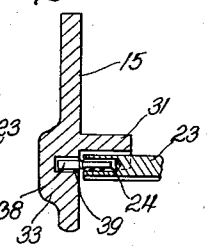


Fig. 6.

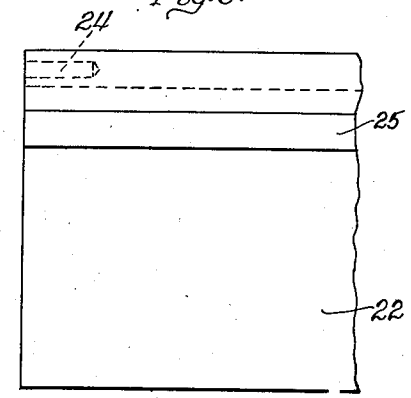
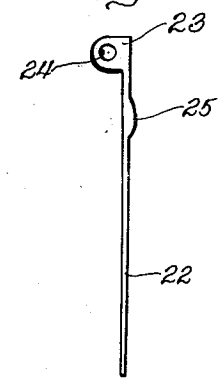


Fig. 7.



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UNITED STATES PATENT OFFICE

2,161,471

VENTILATING APPARATUS

Herman C. Hueglin, Chicago, Ill., assignor to Airmaster Corporation, Chicago, Ill., a corporation of Illinois

Application September 18, 1936, Serial No. 101,423

2 Claims. (Cl. 98—119)

My invention relates, generally, to ventilating apparatus and it has particular relation to the construction and operation of louvres provided with swingable louvre elements or vanes.

The object of my invention, generally stated, is to provide a louvre which shall be simple and efficient in operation, light in weight, and which may be readily and economically manufactured and installed.

An important object of my invention is to provide for automatically opening an air duct when air flows through it in one direction and closing it when air tends to flow in the opposite direction.

Another important object of my invention is to mount the louvre elements or vanes of a louvre for independent rotation.

Still another important object of my invention is to construct a louvre having rotatable louvre elements of noncorrosive material such as aluminum.

A still further object of my invention is to mount the louvre elements or vanes of the louvre in such manner that they will lie in mutual overlapping engagement in the non-operative position.

Another object of my invention is to construct a louvre having a frame for defining an air duct formed of interfitting cast aluminum members and having louvre elements or vanes of extruded aluminum rotatably mounted in the frame.

Still another object of my invention is to extrude an aluminum element having an integrally formed ridge along one edge for stiffening it and providing a bearing support and having an integrally formed bead along the other side.

A further object of my invention is to cast bearing pins integrally with the frame members of a louvre for rotatably mounting louvre elements or vanes therebetween.

Other objects of my invention will, in part, be obvious and in part appear hereinafter.

My invention, accordingly, is disclosed in the embodiment hereof shown in the accompanying drawings and it comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of my invention, reference may be had to the following detailed description, taken in connection with the accompanying drawings, in which:

Figure 1 is a view, in end elevation, illustrating the application of my novel louvre to an air duct;

Figure 2 is a view, in front elevation, of the louvre shown in Figure 1;

Figure 3 is a sectional view, at an enlarged scale, taken along the line 3—3 of Figure 2;

Figure 4 is a fragmentary view, in rear elevation, at an enlarged scale, of the louvre shown in Figure 1;

Figure 5 is a detail sectional view taken along the line 5—5 of Figure 2, illustrating one form of bearing mounting for the louvre elements;

Figure 6 is a fragmentary view, in front elevation, of one end of one of the louvre elements;

Figure 7 is a view, in end elevation, of one of the louvre elements; and

Figure 8 is a sectional view, similar to that shown in Figure 5, illustrating a modified form of bearing mounting which may be employed in practicing my invention.

Referring now particularly to Figures 1, 2, 3 and 4 of the drawings, it will be observed that the reference character 10 designates, diagrammatically, an air duct at the end of which a louvre, shown generally at 11, is provided for permitting the flow of air in the direction indicated by the arrows and for preventing flow of air in the opposite direction. The louvre 11 is provided with a frame, shown generally at 12, which comprises top and bottom frame members 13 and 14 and left and right side frame members 15 and 16. The members forming the frame 12 are formed preferably of cast aluminum, thereby providing a lightweight construction which will be unaffected by the corrosive properties of the atmosphere to which it may be subjected. By making the frame 12 of four individual members, the cost of the frame 12 is reduced as compared to its cost if cast as a single unitary piece, for the reason that less molding space is required. The top frame member 13 is provided with downturned end flanges 17 while the bottom frame member 14 is provided with upturned end flanges 18 through which bolts 19 may be positioned in the upper and lower ends of the side frame members 15 and 16 to provide the unitary construction for the frame 12. The bolts 19 may be provided with a non-corrosive finish, such as is provided by cadmium plating, to also render them unaffected by the possible corrosive effects of the atmosphere.

The top, bottom and side frame members forming the frame 12 are provided with foot-like flanges 20 extending outwardly therefrom and having suitable apertures therein for screws 21 to permit mounting over the air duct 10. It will be observed that the rear edges of the members form-

ing the frame 12 are in the same plane and that this plane is perpendicular to the air duct 10.

With a view to closing the opening defined by the frame 12, louvre elements or vanes 22 are provided. As shown more clearly in Figures 6 and 7 of the drawings, the louvre elements 22 are each provided with an integrally formed ridge 23 extending along the rear side of the top edge and having an aperture 24 in the ends thereof. The front side of each of the louvre elements 22 is provided with an integrally formed bead 25 which not only serves to assist in balancing the louvre elements but also serves to enhance the external appearance of the louvre 11 when all of the louvre elements 22 are in closed position. It will be noted that each of the louvre elements 22 is rectangular in form and that it tapers in thickness from a maximum at the top to a minimum at the bottom edge.

The louvre elements 22 are formed preferably of aluminum, by an extrusion process whereby they are given the shape as indicated in Figure 7 of the drawings, with the ridge 23 and the bead 25 integrally formed therewith and with the thickness tapering from the maximum at the top to the minimum at the bottom edge, as illustrated. If desired, a single aperture may be extruded in the ridge 23 which would extend entirely therethrough, rather than the provision of the apertures 24 of limited depth in the ends thereof, as shown in Figure 6 of the drawings.

Referring particularly to Figures 3 and 4 of the drawings, it will be observed that each of the side frame members 15 and 16 is provided with an inwardly extending flange 30 which is provided with recessed portions 31 at uniformly spaced apart intervals therealong. The recessed portions 31 in each of the flanges 30 are aligned with the corresponding recessed portions of the other flange for mounting therein of the upper edges of the louvre elements 22. It will be observed that the louvre elements 22 are rotatably mounted on suitable threaded pins 32 which extend through internally threaded bosses 33 which are integrally formed with the side frame members 15 and 16. The pins 32 are provided with bearing portions at the ends thereof for interfitting with the apertures 24 in the ridges 23 of the louvre elements 22. The pins 32 may be formed of hardened steel and may be provided with a suitable non-corrosive finish, as by cadmium plating.

As illustrated more clearly in Figure 3 of the drawings, the top frame member 13 is provided with a depending flange 35 having a groove 36 opening outwardly for positioning therein the ridge 23 of the uppermost louvre element 22. The bottom frame member 14 is provided with an upstanding flange 37 which is engaged by the inner surface of the lower edge of the lowermost louvre element 22. It will be observed that the outer surfaces of the flanges 30, 35 and 37 are substantially in the same plane and that the pins 32 are also in this same plane. It will also be observed that the bottom frame member 14 is wider than the top frame member 13 and that the side frame members 15 and 16 decrease in width from the bottom to the top in a corresponding amount. Since the flanges 30 are parallel to the outer edges of the side members 15 and 16 and therefore slightly inclined from the vertical, and further, since the louvre elements 22 are rotatably mounted about axes in this inclined plane, a positive overlapping engagement of adjacent top and bottom edges of the louvre elements 22 is obtained. That is, the inner surface along the bottom edge of each of the louvre elements 22 lies in surface engagement with the outside surface of the next lowermost louvre element along its top edge. Since the lowermost louvre element 22 engages the upstanding flange 37 of the bottom frame member 14, and because of the overlapping engagement of the louvre elements 22, the flanges 30 along the ends thereof and the depending flange 35 of the top frame member 13, a substantially air-tight construction is provided when there is a tendency of air to flow inwardly through the louvre 11 in place of outwardly, as illustrated by the arrows in Figure 1 of the drawings. For this reason, when louvre 11 is placed over an air duct opening into the outside atmosphere, for example, in the wall of a kitchen of a dwelling house, there is little likelihood of cold air entering the kitchen from out-of-doors and at the same time the outward flow of air is unimpeded.

Since the louvre elements 22 are mounted for individual rotation, no unsightly connecting mechanism is required. The omission of the usual interconnecting rods or the like, in combination with the provision of the longitudinal beads 25, provides a neat and pleasing external appearance in the louvre 11.

A modified form of mounting for the louvre elements 22 is illustrated in Figure 8 of the drawings. As there shown, the threaded pins 32 are dispensed with and bearing pins 38 are provided, one for each end of each of the louvre elements 22. The bearing pin 38 may be positioned in a suitable aperture 39 formed in the side frame members and in the bosses 33. Preferably, however, the bearing pins 38 are cast integrally with the side frame members 15 and 16, thereby decreasing the cost of assembly. For such a construction the bearing pins 38 are positioned in the desired locations in the molds for the side frame members 15 and 16 and then the molten aluminum is poured into the molds to form the castings. It will also be understood that the bearing pins 38 may have a driving fit with the apertures 39 or that they may have a driving fit with the apertures 24 in the ends of the ridges 23. In this case they would be free to rotate in the apertures 33 in the side frame members. It will also be understood that the bearing pins 38 may be loosely mounted in both of the aligned apertures if such a construction is desired.

Since further changes may be made in the above constructions and different embodiments of the invention may be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative, and not in a limiting sense.

I claim as my invention:

1. A louvre comprising, in combination, a rectangular frame defining an air duct including an upper and a lower frame member, said upper frame member having a depending flange with a longitudinal groove opening outwardly and said lower frame member having an upstanding flange, and a pair of side members each provided with an inwardly extending flange having oppositely positioned spaced apart recessed portions, the outer surfaces of said flanges being substantially coplanar; a plurality of louvre elements disposed in overlapping relation between said side members; a ridge extending along one edge of each of said louvre elements, the ridge

of the top louvre element interflitting with said groove in said flange depending from said upper frame member; and bearing pins extending inwardly from said side members in said recessed portions into the ends of the ridges on said louvre elements for rotatably mounting them about axes substantially coplanar with the outer surfaces of said flanges.

2. A louvre comprising, in combination, a rectangular frame defining an air duct and including an upper and a lower frame member, said lower frame member being wider than said upper frame member, said upper frame member having a depending flange with a longitudinal groove opening outwardly, said lower frame member having an upstanding flange, and a pair of side members tapering from a width at the bottom corresponding to the width of said lower frame member to a width at the top corresponding to the width of said upper frame member, each of said side members having an inwardly extending flange parallel to the outer edges thereof having oppositely positioned spaced apart recessed portions, the outer surfaces of said flanges being substantially coplanar and the plane containing them being slightly inclined from the plane including the rear edges of said frame members; a plurality of louvre elements disposed in overlapping relation between said side members; a ridge having apertured ends extending along the upper edge and on the side of each of said louvre elements on which the air impinges, thereby permitting surface overlapping engagement between adjacent upper and lower portions thereof, the ridge of the lop louvre element interfitting with said groove in said flange depending from said upper frame member; and bearing pins extending inwardly from said side members in said recessed portions into said apertured ends of the ridges on said louvre elements for rotatably mounting them about axes substantially coplanar with the outer surfaces of said flanges.

HERMAN C. HUEGLIN.