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VENTILATING LOUVER ASSEMBLY
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2,803,185

FIG. 1.

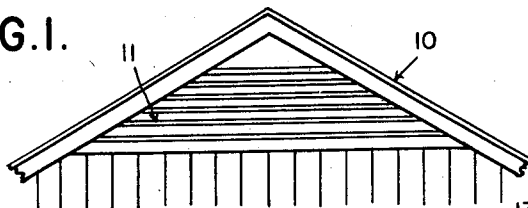


FIG. 2.

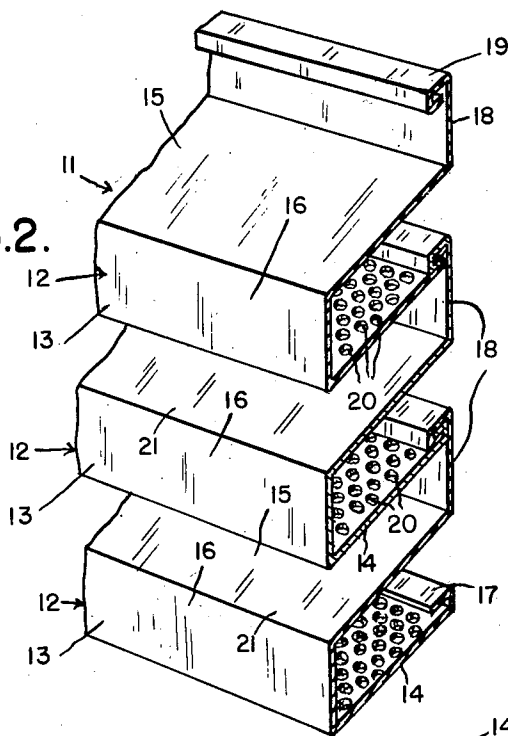


FIG. 5.

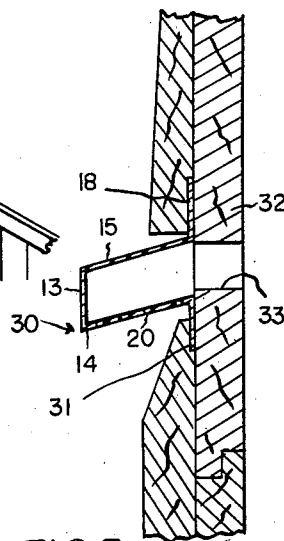


FIG. 4.

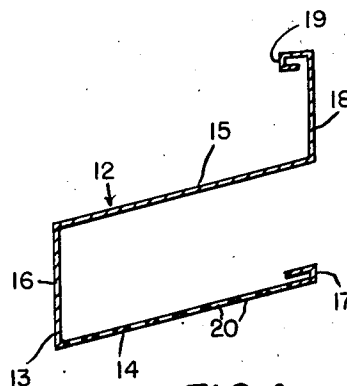
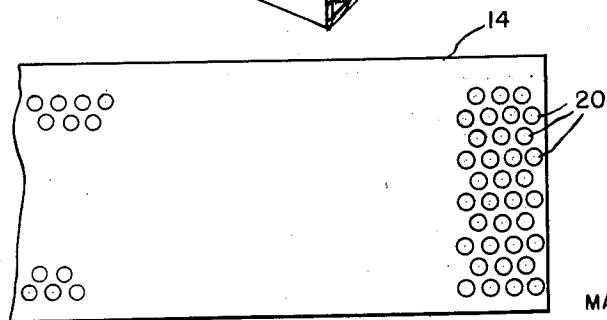


FIG. 3.



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VENTILATING LOUVER ASSEMBLY

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2 Claims. (Cl. 98—121)

This invention relates to improvements in ventilators of the type suitable for installation in the openings formed in walls of enclosures or buildings to permit circulation of air, and at the same time to exclude the entrance of rain, snow, insects, foreign matter or the like.

This application is a continuation-in-part of my co-pending application for "Ventilator Assembly," Serial No. 428,769, filed May 10, 1954, now abandoned.

One object of this invention is to greatly simplify installation of ventilators within openings of practically any size and shape by providing a ventilator structure which may be manufactured in standard sizes and which may be readily fashioned on the job to the desired size and shape.

Another object of this invention is to provide a ventilator structure made up of individual slats or sections of predetermined length capable of being cut in the field to the specified size and then readily assembled to provide the desired ventilator assembly.

Still another object of this invention is to provide a ventilator made up of individual slats or sections to form channel-shaped portions or pockets opening inwardly relative to the wall on which it is installed and having mesh-like openings or perforations in the bottom flanges of the channel-shaped portions for admitting ventilating air. In this connection it is a further object to form each lower flange with a flat surface or webbing between and defining the perforations and to limit the size of the openings to approximately $\frac{1}{8}$ " or smaller. The purpose of this is to not only effectively exclude insects, etc., but also to provide an arrangement which will prevent the entrance of water, sleet or snow, even when a current or blast is directed more or less directly against the lower flange. This is accomplished by reason of the fact that the openings are relatively small or mesh-like and also the flat lower surface operates to spread the water laterally in a film or curtain under the mesh-like openings.

A still further object of the invention is to provide a ventilator having slats or sections shaped to form inwardly open channel-shaped portions or pockets which are spaced apart vertically to provide air inlet openings therebetween, the lower flanges of the channel-shaped portions being in the form of webbing to admit air to the inner side of the ventilator. The open area of the lower flange of each channel-shaped portion is approximately equal to or slightly greater than the area of the adjacent air inlet opening in order not to restrict the flow of air to the inner side of the ventilator entering the air inlet opening.

Other objects of the invention will become apparent as the following description proceeds, especially when taken in conjunction with the accompanying drawing wherein:

Figure 1 is a semi-diagrammatic elevational view of a part of a building structure having a ventilating louver assembly constructed in accordance with the present invention installed therein;

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Figure 2 is a fragmentary perspective view of the ventilating louver assembly shown in Figure 1;

Figure 3 is a view showing in plan the bottom side of the lower flange of the channel shaped portion of a slat to illustrate the formation of the mesh-like perforations or openings therein;

Figure 4 is a sectional view of one of the slats; and Figure 5 shows a modified construction.

Referring now more particularly to the drawing, the numeral 10 indicates a building structure equipped with a ventilator assembly 11 embodying the features of this invention.

The ventilator assembly 11 comprises a plurality of individual elongated slats or sections 12 removably secured together in vertically spaced relationship and capable of being formed of various materials such, for example, as metal or plastic. In the present instance, the individual sections 12 are shown as being formed from sheet metal capable of being rolled or otherwise fashioned to the required cross-sectional contour. However, it will be apparent that the slats may also be fashioned by extruding certain materials such as aluminum or aluminum alloys and may also be formed from plastic materials. In the event that the sections 12 are formed of a plastic material, it is preferred to use one of the various transparent or translucent plastics to admit light rays through the assembly 11.

Regardless of the material and the method selected to produce the individual sections 12, the latter are identical in cross-sectional contour and may be cut to the proper length in the field before assembly to fit openings of various different shapes and sizes. In detail, each slat or section 12 is fashioned with a relatively deep channel-shaped portion or pocket 13 opening inwardly with respect to the building structure 10, and has a lower flange 14, an upper flange 15 and a web 16 connecting the upper and lower flanges at the outer edges thereof. The flanges 14 and 15 of each section are parallel and slope downwardly in a direction outwardly of the wall for a purpose explained below. The lower flange 14 is turned upwardly at the free edge and then turned laterally toward the base or web of the channel-shaped portion 13 to provide an open return bent portion 17. The upper flange 15 of each section 12 is turned upwardly at the free edge to form a flange 18. The upper edge of the flange 18 is turned laterally toward the base or web of the channel-shaped portion 13, then turned in a downward direction parallel to flange 18 and then turned in a direction toward the flange 18 to provide a return bent portion 19.

It follows from the foregoing that the return bent portions 17 of the respective sections 12 open in one direction and the return bent portions 19 on the same section open in the opposite direction. These return bent portions are, of course, open at the opposite ends of the sections so that the slats 12 may be assembled with one another by moving one of the slats endwise relative to the other in a manner to telescopically engage the return bent portions and provide a sliding interlocking connection between adjacent slats.

A plurality of sections or slats 12 are shown in assembled relation one above the other in Figure 2. It will be seen that the flanges 18 extend in a common plane and the assembly will ordinarily be installed upon the wall of a building with the flanges 18 disposed vertically and with the flanges sloping downwardly and outwardly. The flanges 14 of one section are spaced vertically from the flanges 15 of the adjacent section a distance depending on the height of the vertical flange 18.

The lower flange 14 of each section is substantially in the form of a webbing being formed with a multiplicity of closely spaced mesh-like openings 20 therethrough

which may be arranged in rows as illustrated with the openings in one row staggered with respect to the openings in adjacent rows. The openings are preferably on the order of $\frac{1}{8}$ " or less across for admitting air while excluding insects and the like. These openings are provided from one end to the other of the flanges and from points adjacent the inner and outer edges, as illustrated. The openings are shown round but may be of other shape. In any event, the maximum cross dimension should not exceed about $\frac{1}{8}$ ".

It will also be apparent that the parallel flanges 14 and 15 of each section slope downwardly slightly in an outward direction, that is, toward the base of the channel. Since the upper flange 15 and the web 16 are imperforate, it will be apparent that the openings 20 defined by the webbing of the lower flange are protected or shielded against the entrance of rain, sleet, snow, insects or other foreign elements. Moreover, since the flanges 14 and 15 are inclined downwardly in an outward direction, they will readily shed water.

It will be appreciated that since the slats or sections are formed of sheet metal, the undersurfaces of the lower flanges 14 are flat. Hence a current of water, sleet, or snow which might for any reason be directed more or less directly against the undersurface of the lower flange will be caused to spread out laterally in a film to provide a curtain across the openings and thereby prevent water from entering the channel-shaped portions or pockets. In order for such a curtain or film of water to be obtained, the undersurface of the flanges 14 must be substantially flat. Ordinary screening material made up of filaments or wires of circular cross-section is not suitable for this purpose since the circular cross-section of the wires is incapable of causing the water directed thereagainst to spread out laterally to form a film or curtain. Moreover, it has been found in numerous tests that to be most effective to exclude even more or less direct currents of water, the openings must be of relatively small maximum cross dimension, preferably $\frac{1}{8}$ " or less. Openings of such cross dimension are also suitable to exclude insects.

In louvers of this type, it is desirable that the lower flanges of the slats do not restrict the flow of the volume of air entering the space between the outer edges of the flanges of adjacent slats. Accordingly, there is provided a definite relationship between the size of the air inlet openings 21 defined between the outer edges of the upper and lower flanges of adjacent slats and the open or perforated area of the lower flanges. Preferably the open area of the perforated flanges approximates or is slightly greater than the area of the air inlet opening associated with the perforated flange.

In the present instance, the height of the air inlet opening is one-half the depth of the channel, that is, one-half of the depth of the flanges measured between the inner and outer edges thereof, and the open area of the lower flanges is approximately 65% of the total area thereof. In other words, approximately 65% of the lower flanges is removed by perforating to form the openings 20. While 50% open area would theoretically be sufficient to admit all of the air entering through the air inlet openings 21 to the inner side of the channels, an additional 15% is desirable to compensate for the turbulence caused by the baffle-like interference created by the portions of the lower flange between the openings 20.

Figure 5 shows a lower slat 30 which is similar to the slats 12 and accordingly like parts are identified by the same reference characters. However, the return bent portion 19 is omitted from the upper end of the flange 18. Also, the return bent portion 17 is omitted and instead a flange 31 extends downwardly from the inner edge of the lower flange 14. Otherwise the slat 30 is exactly like the slat 12.

The slat 30 is shown applied to the outer side of a wall 32 overlying an opening 33 in the wall. Any suitable means may be employed to attach the slat 30 in place.

What I claim as my invention is:

1. A ventilator structure comprising a plurality of elongated sections of flat sheet material positioned one above the other, each section having an inwardly open channel-shaped portion composed of upper and lower flanges and a web connecting the outer edges of said flanges, said flanges sloping downwardly in an outward direction, said lower flanges having a multiplicity of openings therethrough for admitting air, said channel-shaped portions being spaced apart a predetermined distance to define an air inlet opening between the outer edges of the upper and lower flanges of adjacent portions, the area of each air inlet opening approximating the open area of the lower flange of the channel-shaped portion immediately thereabove, the bottom surfaces of said lower flanges between the openings therein being substantially flat, the diameter of the openings in said lower flanges being approximately one-eighth of an inch ($\frac{1}{8}$ "), the distance between the outer edges of the upper and lower flanges of adjacent sections being approximately one-half the depth of the channel, the lower flanges being approximately sixty-five percent (65%) open area, one flange of each channel-shaped portion being turned laterally at the inner edge to provide a vertical flange extending toward the next adjacent section and having an interlocking connection with the inner edge portion of the other flange of the channel-shaped portion of said adjacent section, said interlocking connections comprising oppositely opening return-bent portions on the vertical flanges and adjacent flanges of the channel-shaped portions arranged in inter-fitting relationship and detachable upon sliding adjacent sections relative to each other in the direction of their length.

2. A ventilator structure comprising a plurality of elongated sections of flat sheet material positioned one above the other, each section having an inwardly open channel-shaped portion composed of upper and lower flanges and a web connecting the outer edges of said flanges, said flanges sloping downwardly in an outward direction, said lower flanges having a multiplicity of openings therethrough for admitting air, said channel-shaped portions being spaced apart a predetermined distance to define an air inlet opening between the outer edges of the upper and lower flanges of adjacent portions, the area of each air inlet opening approximating the open area of the lower flange of the channel-shaped portion immediately thereabove, one flange of each channel-shaped portion being turned laterally at the inner edge to provide a vertical flange extending toward the next adjacent section and having an interlocking connection with the inner edge portion of the other flange of the channel-shaped portion of said adjacent section, said interlocking connections comprising oppositely opening return-bent portions on the vertical flanges and adjacent flanges of the channel-shaped portions arranged in interfitting relationship and detachable upon sliding adjacent sections relative to each other in the direction of their length.

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