

Jan. 12, 1954

R. H. FAGER
VENTILATOR

2,665,627

Filed Sept. 12, 1949

3 Sheets-Sheet 1

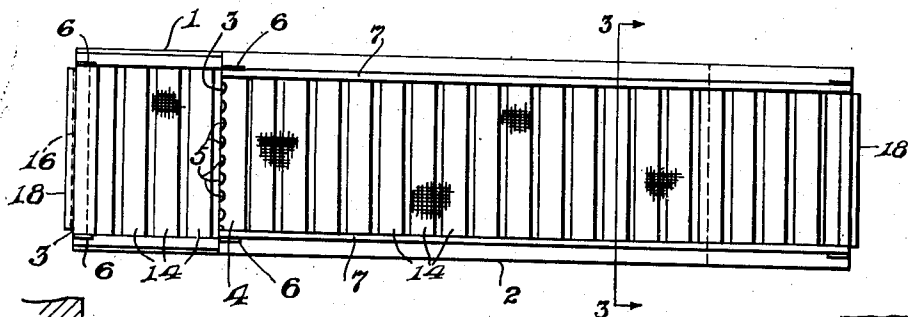


Fig. 1.



Fig. 2.

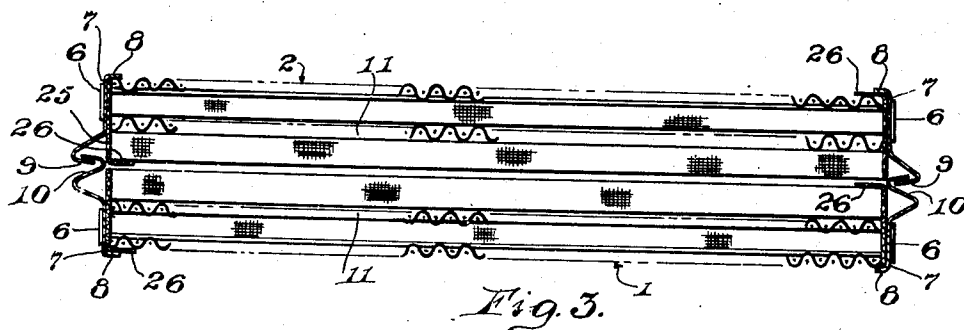


Fig. 3.

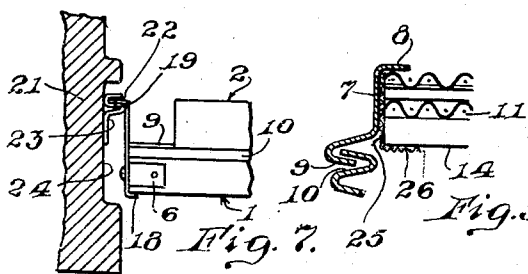


Fig. 7.

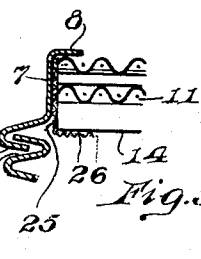


Fig. 9.

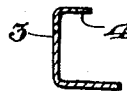


Fig. 8.

INVENTOR,
Raymond H. Fager,
BY
J. Stuart Freeman,
Attorney.

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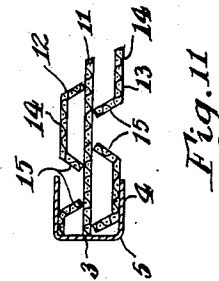
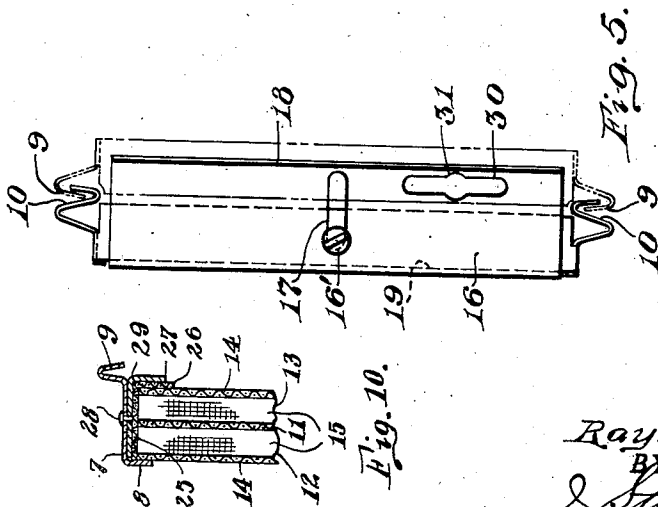
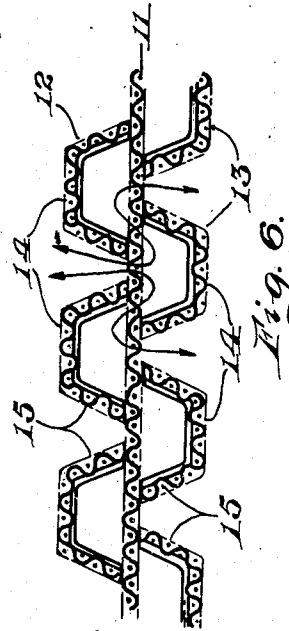
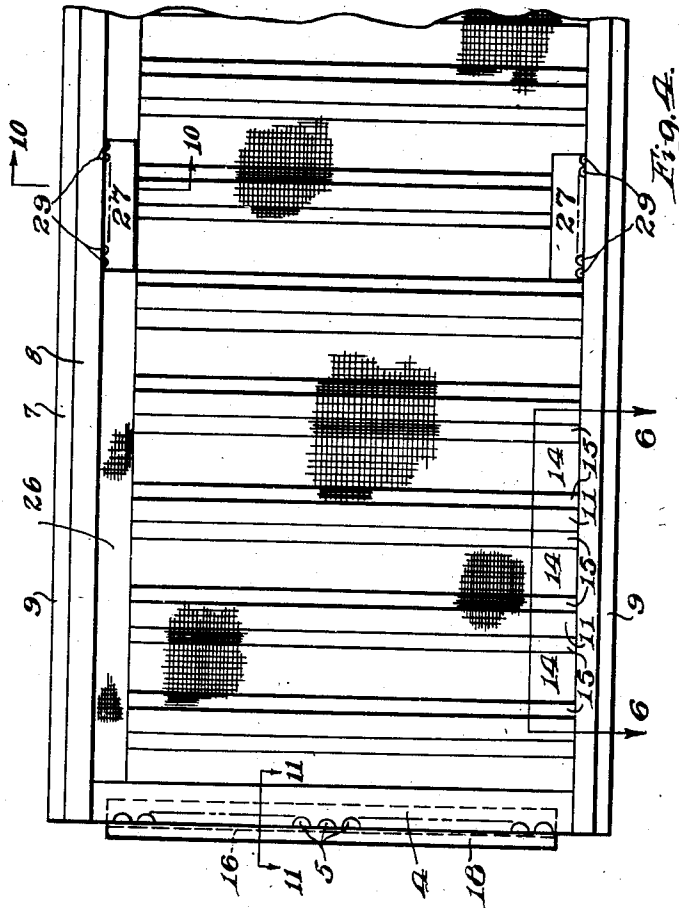
R. H. FAGER

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VENTILATOR

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INVENTOR,
Raymond H. Fager,

BY

BY
J. Stuart Freeman,
Attorney.

Jan. 12, 1954

R. H. FAGER
VENTILATOR

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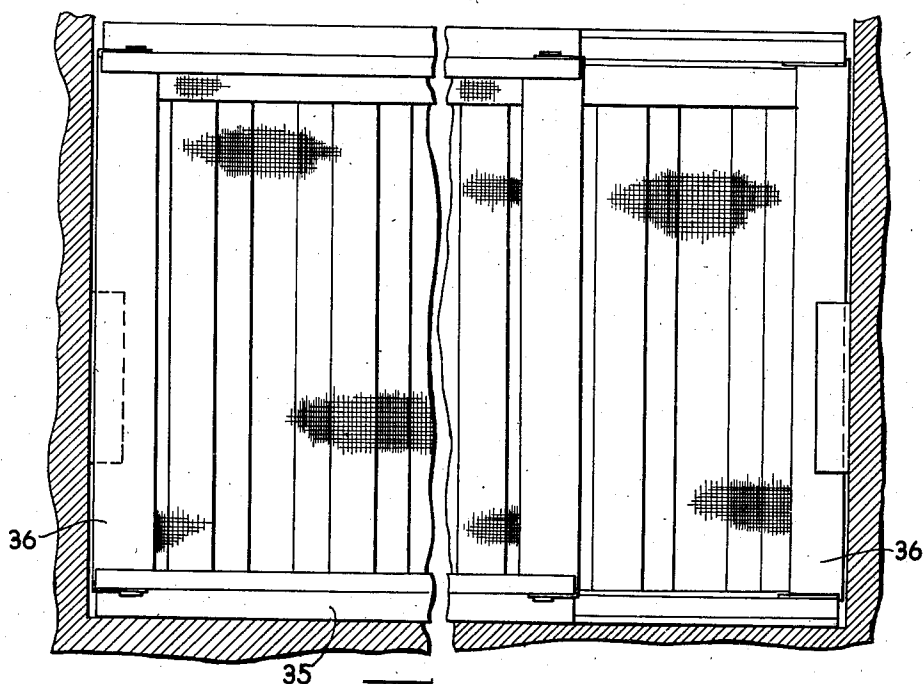


FIG. 12

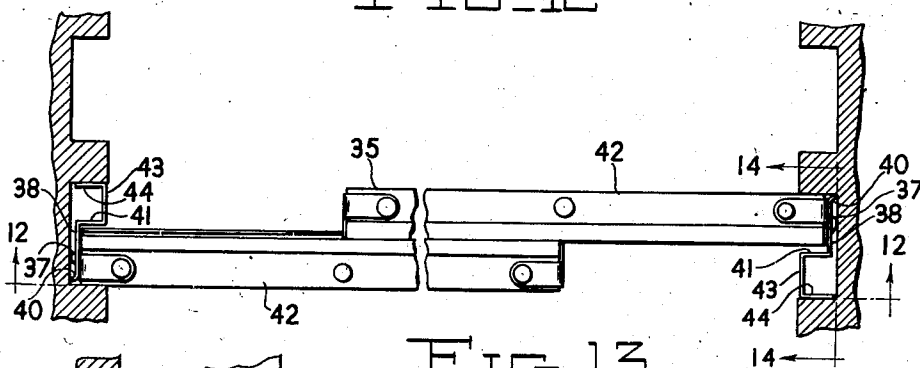


FIG. 13

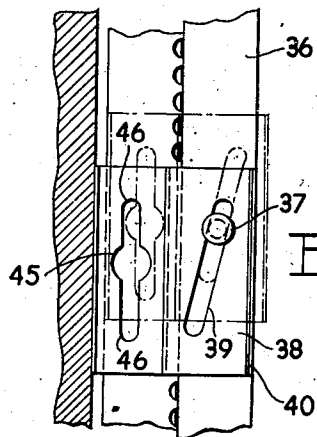


FIG. 14

Inventor
RAYMOND H. FAGER

By *J. Stuart Freeman*

Attorney

UNITED STATES PATENT OFFICE

2,665,627

VENTILATOR

Raymond H. Fager, North Wales, Pa.; Clara V. Fager, administratrix of said Raymond H. Fager, deceased, assignor to Clara V. Fager

Application September 12, 1949, Serial No. 115,174

5 Claims. (Cl. 98—99.8)

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The object of the invention is to provide improvement in ventilators broadly, but more particularly in ventilators that are intended for removable placement above and/or beneath the vertically movable sash in windows, whether of residences, offices, factories, or otherwise, this invention being an improvement upon the construction shown and described in my United States Letters Patent No. 1,673,906, issued June 19, 1928, and this application being a continuation-in-part of Serial No. 615,887, filed September 12, 1945, which has been abandoned.

Another and more specific object is to provide a construction having sheet material that is adapted to pass visible light and ultra violet rays, while at the same time it is light in weight but not fragile.

A further object is to provide in such a construction a transparent medium, which is relatively thin but which at the same time is stiffened so as to maintain its initial shape and position in the finished article; also a metal frame construction that lends itself to spot-welding, or other suitable means of fastening.

Still another object is to provide a ventilator of this type, which is readily adapted for use with weatherstripping, whether of the grooved or rib type, together with adjustably mounted end plates that permit alignment of the ventilator with the engaged portion of a window frame, and which plates by removal and reversal permit its adaptability with weatherstripped or unweatherstripped sash frames without alteration of the frame or structure of the ventilator proper.

And a still further object is to provide a modification of the invention, that comprises in addition to the ventilator per se an auxiliary gravity-actuated element, upon one or both of the opposite ends of the ventilator proper, that is intended to directly engage the inner surface of a window frame, weatherstrip or other structure, so that the ventilator when placed in operative position will not vibrate with respect thereto to any substantial degree, or become accidentally displaced therefrom, said element being connected to the ventilator proper by means of any suitable sliding connection, such for example as a diagonal slot in the element and a headed rivet carried by the ventilator frame and extending through and engaging the sides of said slot, so that said element tends to drop by gravity diagonally away from intimate relationship with said ventilator, while remaining substantially parallel therewith, until it engages the

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inner or adjacent surface of the window frame, weatherstrip, etc.

With the objects of the invention thus briefly set forth, the invention comprises further details of construction and operation, which are hereinafter fully brought out in the following description, when read in conjunction with the accompanying drawings, in which Fig. 1 is an elevational view of a ventilator comprising one embodiment of the invention in partially extended position; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged section on the line 3—3 of Fig. 1; Fig. 4 is an enlarged fragmentary portion of the inner surface of one section of the improved ventilator as shown in Fig. 1; Fig. 5 is an end elevation of the same; Fig. 6 is an enlarged fragmentary section on the line 6—6 of Fig. 4 showing the relationship of the air and light passing sections of said sections per se; Fig. 7 is an enlarged fragmentary section showing use of the end plates in reversed position for slidable engagement with a well known type of weatherstripping; Fig. 8 is a cross sectional detail of one of the frame members; Fig. 9 is a fragmentary detail of a portion of the slidable interlocking means joining the ventilator sections; Fig. 10 is a section on the line 10—10 of Fig. 4; Fig. 11 is a section on the line 11—11 of Fig. 4; Fig. 12 is an elevational view of a ventilator or other form of panel to which is operatively attached an improved form of gravity-actuated position-securing element; Fig. 13 is a top plan view of the same; and Fig. 14 is an enlarged elevational view of a fragmentary position of one end showing the position-securing element in extreme positions.

Referring to the drawings, two ventilator sections 1 and 2 are shown as being slidably interlocked. Each of said sections primarily comprises end frame members 3 of generally U-shaped cross section, one of the laterally opposite flanges 4 of which is preferably folded along an angle line defined by perforations 5, while deflected, oppositely extending end ears 6 are bent parallel to receive between them the opposite end portions of parallel upper and lower frame members 7, to which they are secured by spot-welding, riveting, or otherwise secured at spaced intervals. Said upper and lower frame members have a longitudinally extending relatively shallow flange 8 upon one side, while the laterally opposite portion of said member upon one ventilator section is provided with a single, outwardly and thence angularly reversely turned, or V-shaped tongue portion 9, which

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slides longitudinally and freely in the groove of a complementary Z-shaped portion 10 of the corresponding frame member of the other of said sections, as clearly shown in Figs. 3 and 5.

Secured in any suitable manner within the upper, lower and end members of each of said frame sections is a rectilinear or plane section of suitable wire screening 11 of metallic, plastic, or other type of wire mesh. Upon each of the opposite sides of said screen, and within the confines of the flanges of frame members 7, are staggered plastic-and-wire members 12 and 13 of flattened central V-shaped or other channelled cross section, as represented in Fig. 6. These last-named members comprise flat portions 14 and angularly disposed, laterally positioned flanges 15. The flat portions of each set lie in a common plane, the flanges of adjacent members being spaced apart, and the spaces between the members of one set being opposite the flat portions of the members of the other set. In this way air in passing through the two major sections of the improved ventilator must follow zig-zag or indirect paths, as indicated by arrows in Fig. 6 while light and ultraviolet rays can pass substantially directly through any part of the double sectioned ventilator structure.

The opposite end members 3 of the two sections when assembled are provided with plates 16, that are detachably secured thereto by means of screws or other form of securing means 16' passing through transversely elongated apertures 17, which permit lateral adjustment of said plates. Also, each of said plates is provided upon one lateral edge with a relatively shallow flange 18 and upon its opposite edge with a deeper flange 19.

As indicated in Fig. 2, when said plates are in one position, the shallow flanges 18 being directed outwardly are adapted for direct engagement with the inwardly directed channel surfaces 20 of a window frame 21 or the like, while a reversal of said plates directs the deeper flanges outwardly, so as to adapt them for slideable engagement within the grooves 22 of weather strips 23, which may be carried by a channel surface 24 of the window frame 21, as indicated in Fig. 7.

While it has been stated hereinbefore that the plastic-and-wire members 12 and 13 may be secured in position in their respective frames by any suitable means, one means for accomplishing the desired results is shown in Fig. 9 wherein an angular strip 25 of preferably the same material extends along the inner surfaces of the frame members 3 and 7, and has a flange 25 inwardly turned upon the outer surfaces of the flat portions 14 of the inner set of plastic-and-wire V-shaped members 12 and 13 (Fig. 6), and secured in position at spaced intervals by one leg each of angle members 27 (Fig. 4), the other leg of which is secured to the inner surface of the adjacent frame member 7 as at 28 (Fig. 10), the line of bend of each of said angle members being defined by perforations 29 (Fig. 4).

Referring to Fig. 5, the end plate 16 (as representative of both of said end plates), is shown as being provided with a vertically elongated slot 30, having a central transverse enlargement 31. By means of an ordinary screw (not shown), extending through said slot, said end plates may be detachably secured to the inner surfaces of a window frame or opening. Detachment of each plate from such screw is

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effected by shifting the plate vertically until the screw head can pass through said slot enlargement, said screw normally being positioned in either the upper or lower portion of the slot above or below said enlargement. In such manner various alterations may be made in the arrangement and use of the ventilator, which it is considered unnecessary to describe here in detail, but which fall within the scope of the appended claims.

Referring to Figs. 12, 13 and 14, a ventilator, or other form of demountable panel 35 is shown as comprising a vertical end frame element 36, that upon its end face is provided with a headed rivet 37. Slidably mounted upon and secured to said frame element is a sheet metal member, comprising a plane portion 38 having a diagonally extending slot 39, through which said rivet extends. The forward vertical edge of said plane portion (upon the left hand end of the ventilator) is directed outwardly to form an abbreviated flange 40 of slightly greater depth than the head of said rivet extends beyond its supporting surface. The opposite edge of said plane portion is bent in the reverse direction into parallelism 41 with the rear surface of its supporting ventilator section 42, thence rearwardly away from said ventilator section at 43 finally outwardly at 44 again in parallelism with said ventilator section. This last-mentioned portion 44 is, therefore, adapted to directly engage either the forward or rearward of the spaced parallel surfaces of one the sash-positioning guide channels of a window frame or other frame in which the ventilator or other form of panel may be positioned.

A ventilator equipped with one or more of these gravity-actuated positioning elements is placed in a window frame or the like, while said one or more elements are manually held in an upper position, retracted towards a position adjacent to the ventilator frame. Said element or elements are then released, and by virtue of the general diagonal direction of the guide slot 39, they descend diagonally away from the ventilator frame into engagement with the opposed surfaces of the sash guides of the window frame, and thereafter tend to hold the ventilator against transverse vibration and/or loss from such window frame, etc.

Finally, that portion 43 of each of said positioning elements that is angularly related to the plane of the respective adjacent ventilator sections 42 may be provided with a suitably shaped aperture for the reception of a screw or other means for securing the ventilator, or other type of panel, in a window frame or other desired location. The aperture here shown in 43 is characterized by a central portion 45 of greatest width, from which extend vertically in opposite directions transversely narrower slots 46, while in lieu of two narrowed slots only a single such slot may be used if preferred. In any case, assuming that a screw is already secured in the surface of a window frame with its head spaced from the surface of such frame, the ventilator positioning element can be operatively positioned by permitting the screw head to pass through the enlarged central portion 45 of said aperture, after which the element is depressed (or elevated, if two narrow slot extensions are present) and the shank of the screw permitted to enter a narrower slot of said aperture, while the head remaining upon the outer surface of

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said element operates to secure the element, and thereby the panel, in the desired position.

Alternately, the sheet metal member 38 may be used either as a gravity-actuated jamming device to prevent rattling, in which case no screw is present and extending through the keyhole slot, or it may be used as a means for securing the ventilator in operative position, whether removably or fixedly, in which case the said member is still secured to the ventilator frame by the rivet 37, but does not serve as a transverse jamming device, as it is not entirely free to drop diagonally.

As a securing device only, said member permits the ventilator to be positively and fixedly secured in a window frame, usually beneath the lower sash, to prevent children from removing it, in which case the screw is made to extend through the lower portion of the keyhole slot with said member in its lowermost position, so that the ventilator can then be removed from the window frame only by removing the screw. In some localities the laws prohibit a removable ventilator being placed in a window, especially at an upper floor level, unless secured by more than a sash lowered upon it plus the jamming action referred to, in which case a screw is placed in the window frame with its head properly spaced from the frame's surface, and the sheet metal member placed over it so that the screw head passes first through the enlarged central portion of the keyhole slot, after which said member is dropped so that the screw shank shifts into the upper portion of the slot. In this way said member can be lifted and detached from the screw, when desiring to remove the ventilator from the window frame, but cannot be dislodged accidentally.

For some who wish to place the ventilator in the upper portion of a window frame, as for an entire summer season, usually above the upper sash, where there is a danger of its dropping out as the sash is lowered to release it, a screw is made to enter the upper portion of keyhole slot, and the ventilator can then be removed only by first removing the screw. Thus, the provision of both diagonal and keyhole slots in each sheet metal plate member provides for alternative uses of said member, depending upon the wishes of the owner, the position of the ventilator in the window frame, and the geographical locality in which they are used.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:

1. The combination of a window frame having a vertical groove between laterally spaced side walls, with a ventilator comprising a frame, a gravity-actuated plate having a diagonally arranged slot, and fastening means extending through said slot and slidably connecting said plate to said frame and cooperating with the opposite sides of said slot, to cause said plate when gravitating towards a lower position to jam said ventilator frame between the side walls of said groove.

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2. The combination of a window frame having a groove defined transversely by two opposed surfaces, with a panel comprising a frame, a gravity-actuated plate having a diagonally arranged slot, and fastening means extending through said slot and slidably connecting said plate to said frame and cooperating with the opposite sides of said slot, to cause said plate when gravitating towards a lower position and in contact with one of said surfaces to jam said panel frame against the other of said surfaces within said groove.

3. A ventilator, comprising a peripherally extending angular frame composed of oppositely positioned parallel webs and inwardly directed lateral flanges in a common plane upon one side of said webs, in combination with two series of spaced, imperforate, channelled louvers, the channels of the louvers of one series facing the spaces between and overlapping the louvers of the other series in staggered relation, and a sheet of wire mesh between said series, the end portions of said louvers and the periphery of said sheet being positioned in said frame and prevented from shifting in one direction by said lateral flanges, and angular retaining members one leg of each of which is secured to one of the webs of said frame, and the other leg being angularly directed inwardly of said frame in spaced relation with said frame's lateral flanges and upon the opposite side of said louvers and intervening sheet, to secure and prevent transverse movement of said louver series and said sheet in said frame.

4. A ventilator according to claim 3, characterized by the fact that said louvers comprise strips of stiffening wire mesh having their openings covered with plastic material.

5. A ventilator, comprising a frame having therein a transversely central sheet of wire mesh, and sets of spaced louvers composed of channelled stiffening wire mesh having their openings covered with plastic material, said louvers being positioned upon the opposite sides of said central sheet, and the spaces between the members upon one side being opposite the central portions of the members upon the opposite side, to provide an indirect path for the passage of air.

RAYMOND H. FAGER.

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