Jan. 31, 1967 W. L. SCHWARTZ 3,301,166

AIR CONDITIONER WITH VENT ASSEMBLY THEREFOR

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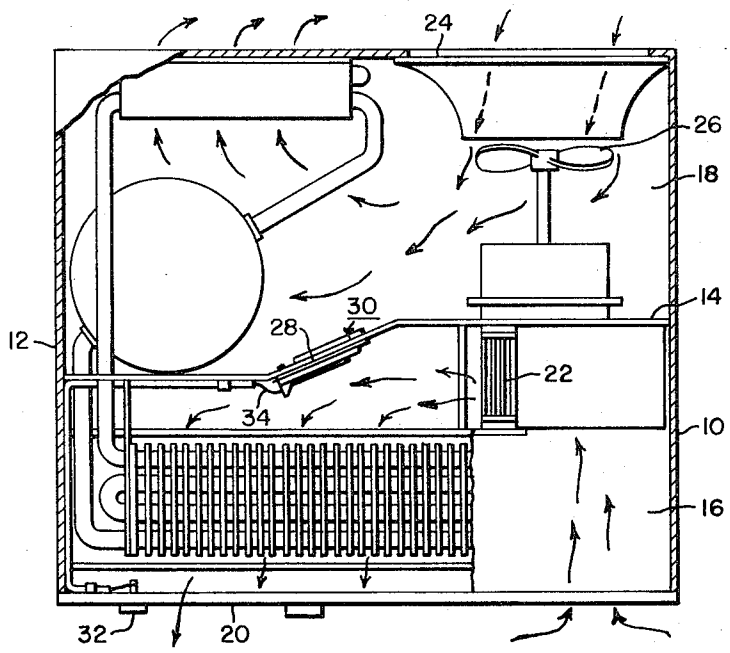


FIG. 1.

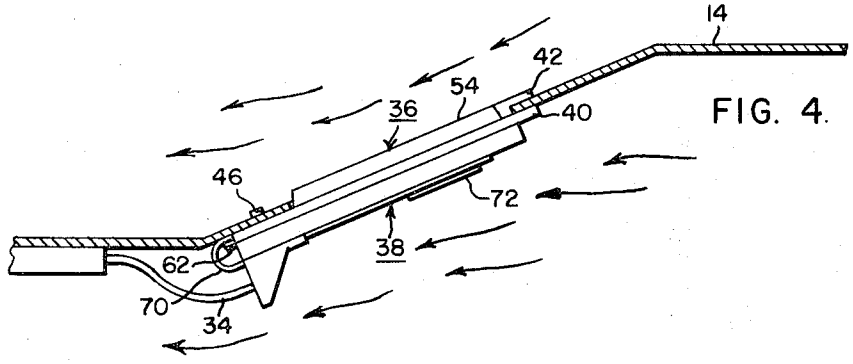


FIG. 4.

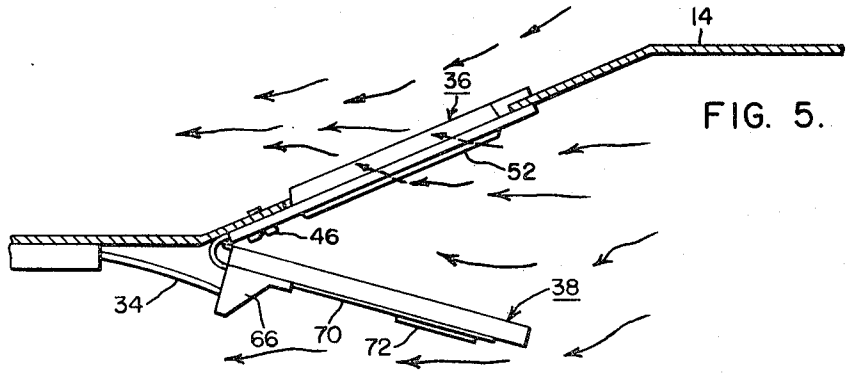


FIG. 5.

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FIG. 2.

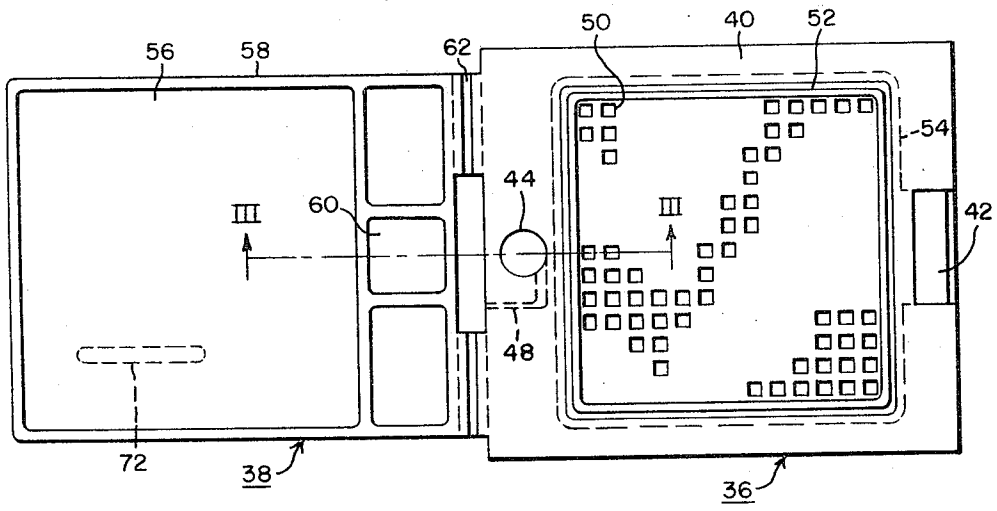
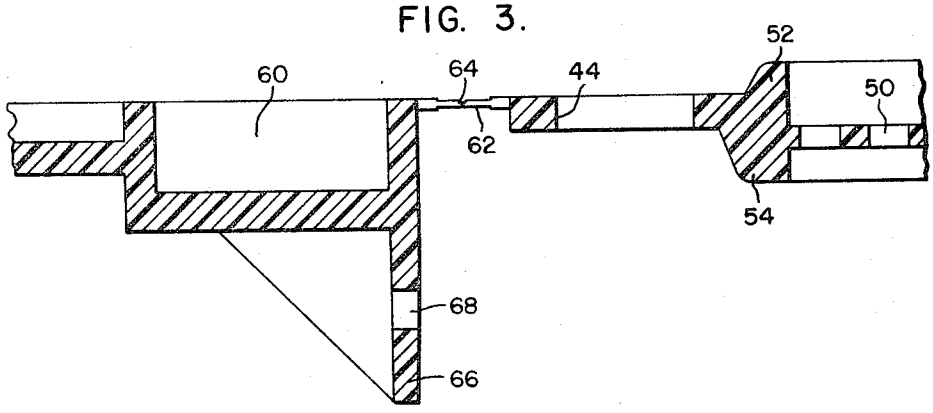


FIG. 3.



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AIR CONDITIONER WITH VENT ASSEMBLY THEREFOR

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This invention relates to a vent assembly particularly adapted for use in a room air conditioner.

An object of the invention is the provision of a vent arrangement providing manufacturing cost advantages in certain respects, as well as reliability in operation for extended periods.

A further object of the invention is the provision of a vent assembly which is less susceptible to failure after extended periods than the typical vent assembly.

Broadly stated, the assembly according to the invention comprises a one-piece, molded, polypropylene plastic member including a frame and screen portion with integrally molded anchoring means on the border of the frame, and a hinged cover adapted to be moved about a pivotal axis into and out of covering relation with said screen. The molded fabrication lends itself to providing certain integral portions for purposes of providing an anchoring arrangement for the assembly, and for providing a connection through which the cover is operated.

The invention will be described in connection with the accompanying drawing illustrating one embodiment of the invention by way of example, and wherein:

FIGURE 1 is a partly broken plan view of the interior of the room air conditioner provided with an arrangement according to the invention;

FIG. 2 is a plan view of the one-piece frame and screen portion, and cover portion unfolded from an operative or installed position to illustrate the inner face construction;

FIG. 3 is a fragmentary, enlarged sectional view corresponding to one taken along the line III—III of FIG. 2;

FIG. 4 is an edge view, enlarged relative to FIG. 1, illustrating the vent assembly in installed relation in the partition of the room air conditioner, and with the cover in a closed position; and

FIG. 5 is a view similar to FIG. 4 but illustrating the cover in an open position to permit the exhaust of air from the room.

Except for the assembly of the invention, the interior parts of the room air conditioner shown in FIG. 1 are for the most part conventional and will be simply enumerated for the most part. They are enclosed within an outer casing of generally rectangular box-shaped form including opposite sidewalls **10** and **12**, between which a vertical partition **14** extends to divide the interior of the casing into an evaporator compartment **16** and a condenser compartment **18**. The evaporator compartment presents its front face **20** to the room being conditioned and receives and discharges air by means of the evaporator air fan **22** which directs air generally along the path indicated by the arrows. The condenser compartment has its outer face **24** in communication with outside air, and the condenser fan **26** induces a flow of air through the condenser compartment as indicated by the directional arrows generally defining that flow path.

An opening **28** is provided in the central part of the partition wall to permit the flow of air from the evaporator compartment to the condenser compartment, and the exhaust vent assembly generally designated **30** is mounted in this opening to control selectively the exhaust of air from the evaporator compartment to the condenser compartment. An exhaust control knob **32** is provided on the room face of the air conditioner to permit control

of the exhaust vent assembly through means of a sheathed cable **34** which extends back to the exhaust vent assembly.

The exhaust vent assembly includes, as principal parts, a frame and screen portion generally designated **36** which is stationarily mounted in the exhaust opening **28**, and a hingedly-connected cover portion generally designated **38** which is pivotally movable toward and away from the frame and screen portion to selectively open and close, respectively, the opening **28**. Preferably these elements are fabricated in the form of a one-piece molded plastic material, and which preferably is molded of polypropylene plastic. The properties of polypropylene plastic lend themselves admirably to the device of this invention in that they permit the use of an integrally molded hinge between the frame and screen portion and the cover portion which has a flexing strength of a character such that the cover may be opened and closed far more times, without failure, than would normally be expected in the life of a normally used air conditioner. Further, by virtue of the use of a plastic material for the device of the invention, the device is highly resistant to deterioration due to weathering, age, temperature changes, and the combination of these and other factors which normally have resulted in the failure of exhaust vents in more instances than is desirable from both the manufacturer's and user's standpoint.

In FIG. 2 the one-piece frame and screen portion generally designated **36** is shown on the right, and the integrally connected cover portion generally designated **38** is shown on the left, with these elements folded outwardly so as to present their inner faces. The frame peripheral border **40** includes an anchor tab **42** which is offset from the plane of the remainder of the border a distance sufficient to accommodate the thickness of the partition wall upon which the frame and screen portion is to be mounted. In the opposite border edge of the frame an opening **44** is provided to receive additional fastening means. Such fastening means may take the form of a sheet metal screw **46** (FIGS. 4 and 5). The verso face of the border adjacent the hole **44** is also provided with a groove **48** which forms the bed for one end of a closure spring to be described later.

The integrally molded screen part **50** of the frame and screen portion is provided with a multitude of small openings and serves, of course, to permit the passage of air, but to prevent the entry of certain objects into the evaporator compartment from the condenser compartment.

The obverse face of the frame and screen portion is provided with a peripheral flange **52** inset from the extreme outer edge of the border. The verso face of the frame also is provided with a peripheral flange encompassing the screen area, this peripheral flange being designated **54** and fitting within the rim of the opening **28** provided in the partion wall **14**.

The cover portion **38** includes a flat extended surface area **56** which is bordered by the peripheral flange **58**. When the cover portion **38** is folded against frame and screen portion **36**, the flange **58** fits around the flange **52** of the screen and provides a labyrinth seal in this manner. The cover portion also includes, adjacent the hinged edge of the cover, a recessed portion **60** which accommodates the head of the screw **46** which projects through the opening **44**.

The integrally molded hinge is designated **62** and as may be seen in FIG. 3, is relatively thin in section as compared to the remainder of the molded parts, and is provided with an even further reduced thickness line **64** which functions as the pivotal axis about which the cover moves.

The outer face of the cover portion (the verso face of

FIG. 2) is provided with an integrally molded lug **66** adjacent the hinge edge, and provided with an opening **68** in the outwardly projecting portion thereof to receive a cover operating connection.

Referring now to FIGS. 4 and 5, the frame and screen portion **36** may be seen in its installed position in the exhaust opening **28**. The anchor tab **42** and border **40** provide a slot at the right edge into which is received an edge of the partition wall, and the screw **46** secures the opposte edge of the frame and screen portion in a stationary position. The cover **38** is thus held in a position to be pivotally moved against the frame, or outwardly therefrom about the hinge **62** axis.

One means for urging the cover toward a closed position may take the form of the wire spring arrangement **70**. The wire spring has one end bent into the form of a right angle and an end loop which are received by the bed **48** (FIG. 2), and the spring then makes a 180° turn and extends along the outer face of the cover. It is retained in position against the cover outer face by passing along the edge of lug **66** and past the spring retainer projection **72** on the outer face of the cover. As noted, the spring is arranged to exert a force to maintain the cover in a closed position. Thus, as shown in FIG. 4 the cover is closed by the force of the spring upon release of tension in the cable **34**. When it is desired to open the cover the cable **34** is tightened and exerts a force opposing the force of the spring **70** to move the cover to the open position of FIG. 5.

It will be observed and appreciated from FIGS. 1, 4 and 5, that the air flow path along the opposite faces of the partition wall **14** is such that when the cover is opened to its FIG. 5 position at least a portion of the air flowing through the evaporator compartment is directed by the cover outwardly through the screen and frame into the condenser compartment. When the cover is in a closed position, the flanges heretofore described provide a labyrinth seal preventing the interchange of air between the two compartments.

I claim as my invention:

1. A one-piece, molded plastic exhaust vent assembly located in the bulkhead of a room air conditioner, comprising:

a frame and screen portion, said frame providing a peripheral border around said screen, and including an anchor tab on one edge offset out of the plane of the remainder of said border, said frame further including an aperture in another edge of said border to receive additional fastening means to secure said border to said bulkhead;

a cover portion for said frame and screen including a peripheral flange on its inner face encompassing said screen portion when said cover is folded against said frame, said cover further including an outwardly-directed lug on its outer face adapted to receive a cover operating connection;

said frame and said cover being connected by an integrally molded hinge of said same plastic material and having a reduced thickness portion along the line corresponding to the pivotal axis between said frame and cover.

2. The assembly of claim **1** wherein:

said plastic material is a polypropylene plastic.

3. An assembly according to claim **1** in which:

said cover portion includes a recessed portion on said inner face disposed to overlie said aperture when said cover is in a closed position.

4. An assembly according to claim **1** including:

a peripheral flange formed in said frame portion around said screen and on the face of said frame against which said cover closes, said peripheral flange cooperating with said cover peripheral flange, when said cover is closed, to provide a labyrinth seal.

5. A room air conditioner exhaust vent arrangement comprising:

a room air conditioner casing including partition means dividing the interior of said casing into an evaporator compartment and a condenser compartment, sad partition means including an exhaust opening therein;

fan means creating a unidirectional, generally parallel flow of air along opposite faces of said partition during operation of said air conditioner;

a one-piece, molded, plastic exhaust vent assembly secured in said exhaust opening, said assembly including a frame and screen portion, and a cover portion, and integral hinge means having a reduced thickness portion along the line corresponding to the pivotal axis between said frame and said cover and pivotally connecting said cover portion to said frame and screen along their downstream edges, relative to the direction of air flow along said assembly;

said frame and screen portion including a peripheral border extending around a screen, said border including an anchor tab portion offset from the plane of said border on one edge, and an opening in an opposite edge of said border to receive fastener means;

said cover portion including an inner face covering said screen portion when said cover is folded against said frame; and

means on the outer face of said cover adjacent said hinge means to receive a cover operating connection.

6. A room air conditioner vent arrangement comprising:

a room air conditioner casing including partition means dividing the interior of said casing into an evaporator compartment and a condenser compartment, said partition means including an opening therein;

fan means creating a flow of air along said partition during operation of said air conditioner;

a one-piece, molded, plastic vent assembly secured in said opening, said assembly including a frame and screen portion including means for stationarily mounting it in said opening, a cover portion, and integral hinge means, including a greatly reduced thickness line portion serving as a distinct pivotal axis, pivotally connecting said cover portion to said frame and screen portion along their downstream edges relative to the direction of said air flow, said cover being disposed to be opened into said air flow; and

means for moving said cover between open and closed positions.

References Cited by the Examiner

UNITED STATES PATENTS

2,332,730	10/1943	Kucher	98—94
3,152,456	10/1964	Prendegast	98—94
3,159,090	12/1964	Schutt	98—37

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