United States Patent

MacLeod

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[54] **SELF-CONTAINED AIR CONDITIONING UNIT**

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[52] **U.S. Cl.** **62/262,** 98/94

[51] **Int. Cl.** **F25d 23/12**

[58] **Field of Search** ..... 62/262; 98/94 AC

[56] **References Cited**

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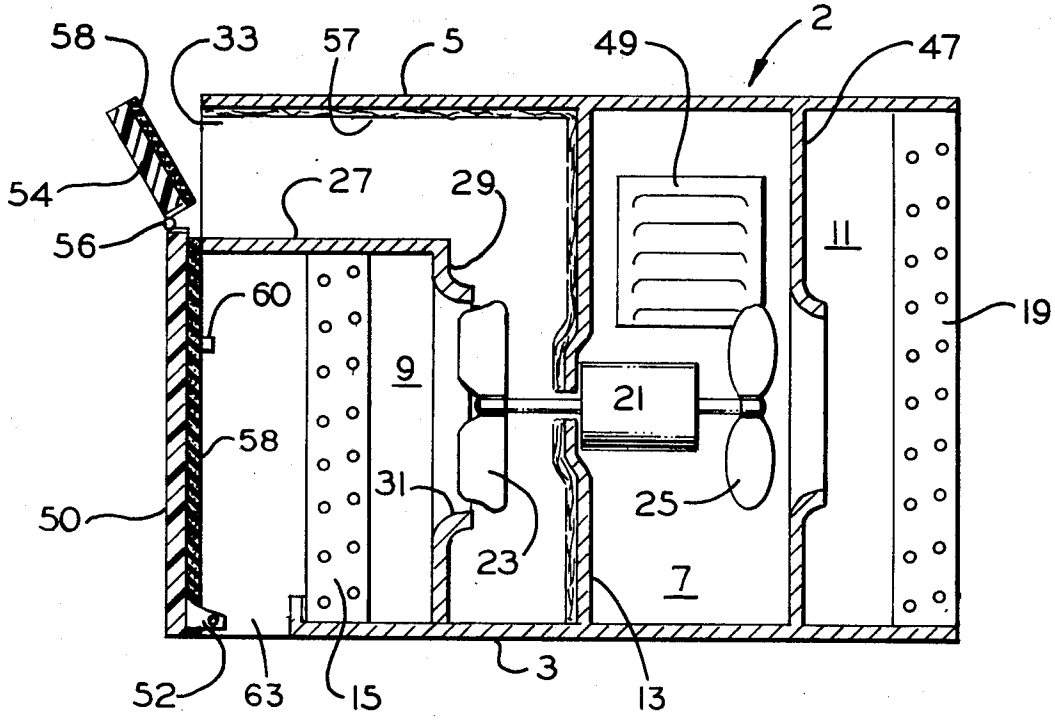
Attorney—Harry G. Martin, Jr. et al.

[57] **ABSTRACT**

A self-contained air conditioning unit having a first panel pivotally mounted on the unit casing opposite the evaporator and a second panel pivotally mounted on the first panel opposite the conditioned air discharge opening; the second panel is adapted for movement relative to the first panel to control the direction of air discharged from the unit, the first and second panels being adapted for pivotal movement relative to the casing for access to the interior of the casing for servicing the air conditioning unit.

3 Claims, 3 Drawing Figures



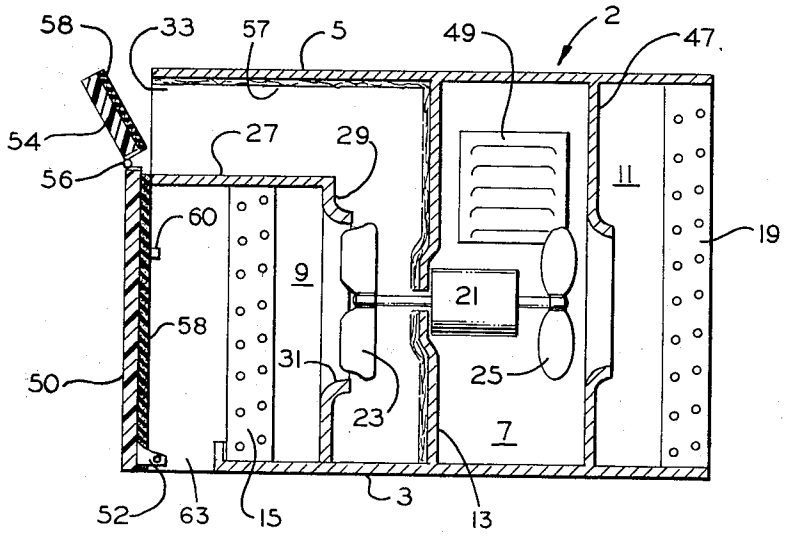


FIG. 1

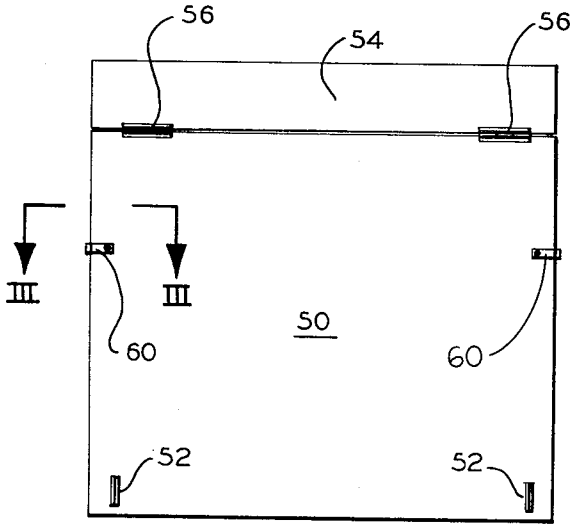


FIG. 2

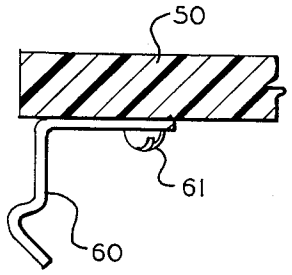


FIG. 3

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SELF-CONTAINED AIR CONDITIONING UNIT

BACKGROUND OF THE INVENTION

A self-contained air conditioning unit is ordinarily provided with an evaporator coil adjacent the front face thereof, room air being drawn into the unit through the evaporator, conditioned air being discharged through an outlet opening formed in the front face of the unit. A suitable filter may be disposed adjacent the face of the evaporator for filtering the room air. A front panel may be provided having an air inlet grille opposite the evaporator and a discharge grille over the air outlet opening to cover the internal components of the air conditioner and deflect the discharge air in the desired direction.

The air inlet and outlet grilles in the front panel, while providing openings for passage of air into and out of the unit, also allow noise generated by the internal components of the unit to be passed into the area being conditioned.

SUMMARY OF THE INVENTION

This invention relates to an air conditioning unit including a casing having an interior compartment and an exterior compartment formed therein. A refrigeration system including a compressor, a condenser, expansion means, and an evaporator forming a closed circuit is disposed within the casing, the compressor and condenser being located in the exterior compartment. A horizontal partition is provided within the interior compartment, the evaporator being substantially vertically disposed between the bottom of the casing and the horizontal partition and spaced from the forward edges of the casing and the partition. An air outlet is formed above the partition for discharging air into the area served by the unit, fan means being provided for drawing air from the area being conditioned through the evaporator into the casing and discharging the air from the outlet. Hinge means are provided adjacent the lower front portion of the casing for pivotally mounting a first panel opposite the evaporator and spaced therefrom to provide a front closure for the lower portion of the casing and prevent transmission of sound into the area being conditioned. A second panel disposed adjacent the top of the first panel is pivotally mounted on the first panel adjacent the air outlet to cover the outlet when the air conditioning unit is inoperative, the first and second panels being adapted to pivot about the lower front portion of the casing to expose the entire front of the casing for servicing the air conditioning unit.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view of a self-contained air conditioning unit;

FIG. 2 is a view in elevation of the air conditioning unit of FIG. 1; and

FIG. 3 is a sectional view taken along line III—III of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, there is illustrated a self-contained air conditioning unit including a casing **2** comprised of a base pan **3**, a top panel **5** and side panels **7**. The casing is divided into an interior compartment **9** and an exterior compartment **11** by a vertical partition member **13**. A refrigeration system including a compressor (not shown) a condenser **19**, expansion means (not shown) and an evaporator **15** are located within the casing and connected to form a closed circuit, the condenser **19** being located within the exterior compartment **11**, evaporator **15** being located within interior compartment **9**. A double ended fan motor **21** mounted on partition **13** is provided with an evaporator fan **23** and a condenser fan **25** for passage of air through evaporator **15** and condenser **19**.

The interior compartment **9** is provided with a horizontal partition **27** and a vertical partition **29**, partition **29** having a fan orifice **31** formed therein. Partition **29** cooperates with partition **13** and partition **27** cooperates with top panel **5** to form a L-shaped plenum within compartment **9** for discharge of conditioned air into the area being conditioned through opening **33** formed in the front of the casing.

An orifice partition **47** is provided in exterior chamber **11** for cooperation with fan **25** to draw ambient air from suitable openings **49** formed in side panels **7** for passage through condenser **19** for cooling the refrigerant therein.

The front face of the casing is provided with a first imperforate panel **50** spaced from and substantially parallel to the evaporator **15**. The panel **50** is provided with suitable hinges **52** for attachment to the side panels of the casing to allow pivotal movement of panel **50** relative to the front of the casing. A second imperforate panel **54** is pivotally secured to the top of panel **50** by suitable means such as hinges **56**. The door **54** is adapted to close the air discharge opening **33** when the unit is inoperative and to deflect the discharged air in the desired direction when the unit is in operation. Suitable sound absorbent material such as fiberglass mats **57** on the inner surfaces of the L-shaped plenum, and foam rubber mats **58** on the inner surfaces of panels **50** and **54** is provided to absorb a portion of the sound energy generated by the unit.

By reference to FIG. 1, it can be seen that the forward edge of the base pan **3** is spaced from the front face of the casing to provide an opening **63** in the bottom of the casing for passage of air from the room through the evaporator for cooling the air subsequent to its discharge through opening **33**. Imperforate panel **50** having sound absorbent material thereon, which is disposed opposite evaporator **15** serves to absorb a proportion of the sound energy produced by the unit and deflect a substantial portion of the sound energy not absorbed back toward the evaporator to minimize transmission of noise from the unit into the area being conditioned. The absorbent material on panel **54** serves to dissipate a portion of the sound energy passing through opening **33**. Since door **54** is also imperforate, a portion of the sound energy which is not dissipated by the sound absorbent material will be deflected through opening **33** back into the unit.

Spring clips **60** are suitably affixed to panel **50** by screws **61** for engagement with the side panels **7** to secure panel **50** adjacent the front face of the unit.

Ordinarily the side walls and top of self-contained air conditioning units are formed of sheet metal, which is secured to the base pan. In many instances, this sheet

metal may be displaced slightly toward one side or the other of the unit due to mishandling or careless installation of the unit. Clips **60**, therefore, secure panel **50** adjacent the front face of the unit and also serve to align the side panels of the unit with the vertical edges of panels **50** and **54**.

By providing imperforate front panels on the unit, transmission of sound from the unit is substantially reduced. Further, by pivotally mounting the upper panel **54** on panel **50** and pivotally mounting panel **50** at the lower front corners of the casing, the entire assembly may be pivoted away from the front of the unit for access to the interior of the casing for repair or servicing such as evaporator filter replacement or evaporator cleaning.

While I have described a preferred embodiment of my invention, it should be understood that the invention is not limited thereto, but may be otherwise embodied within the scope of the following claims.

I claim:

1. In an air conditioning unit, the combination of

a. a casing;

b. a first partition within said casing dividing said casing into an interior compartment and an exterior compartment;

c. a refrigeration system including a compressor, a condenser, expansion means, and an evaporator connected to form a closed circuit disposed within said casing, said compressor and condenser being disposed in said exterior compartment;

d. a horizontal partition in said casing disposed within said interior compartment, said evaporator being substantially vertically disposed between the bottom of said casing and said horizontal partition and spaced from the forward edges of said casing and said partition;

e. means forming an air outlet above said partition for discharging air into the area served by the air conditioning unit;

f. fan means for drawing air from the area being conditioned through said evaporator for conditioning the air and for discharging the conditioned air from said air outlet;

g. first panel means pivotally mounted on said casing opposite said evaporator and spaced therefrom to provide a front closure for the lower portion of said casing to prevent transmission of sound into the area being conditioned;

h. first hinge means adjacent the lower front portion of said casing for pivotally securing said first panel means in position in said casing;

i. second panel means disposed adjacent the top surface of said first panel means; and,

j. second hinge means for pivotally mounting said second panel means on said first panel means adjacent said air outlet to close said outlet when the air conditioning unit is inoperative, said first and second panel means being adapted to pivot as a unit about the lower front portion of said casing to expose a substantial portion of the front of said casing for servicing.

2. An air conditioning unit according to claim **1** further including sound absorbent material mounted on the inner surfaces of said first and second panel means to attenuate noise generated by the air conditioning unit.

3. An air conditioning unit according to claim **2** further including clip means mounted on said first panel means for engagement with the inner surfaces of the sides of said casing to resiliently secure said first panel member against the front of said casing and align the vertical walls of said casing with the vertical edges of said first panel means.

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