Nov. 30, 1943. E. R. WOLFERT 2,335,627

AIR CONDITIONING APPARATUS

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Fig. 1.

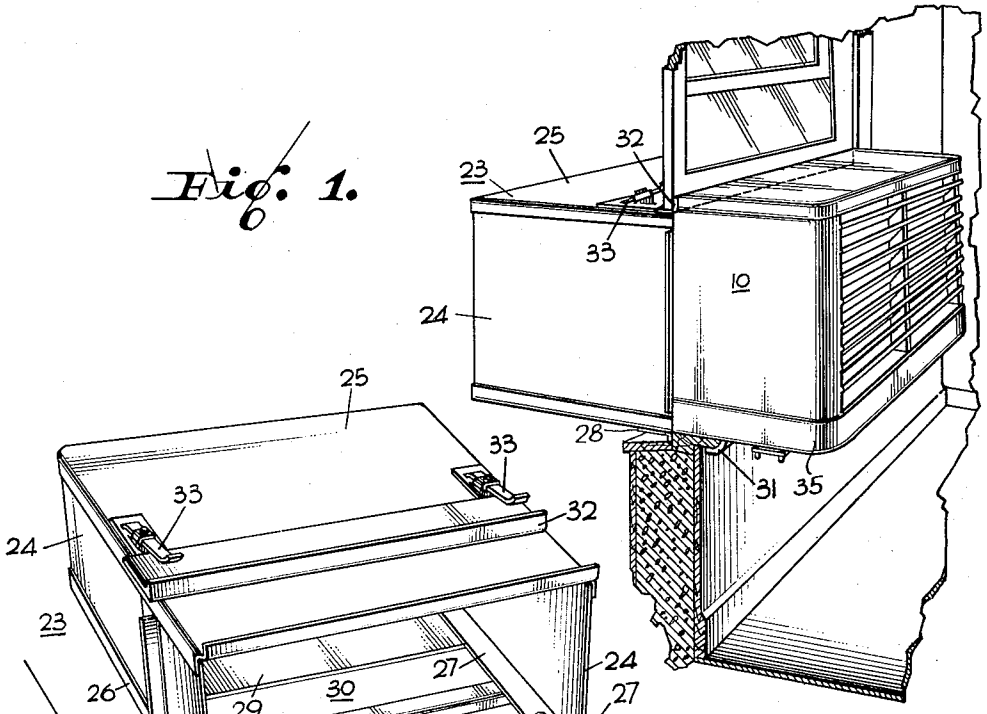
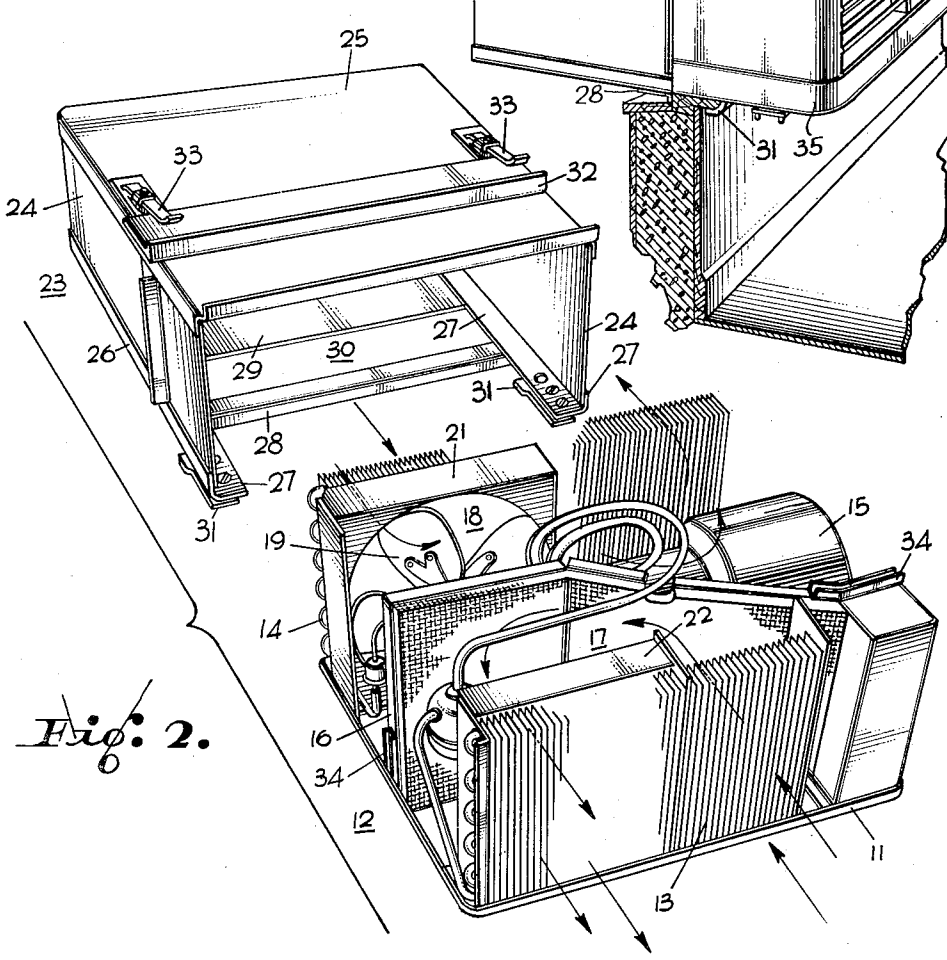


Fig. 2.



WITNESSES:
R. J. Eisinger
Andrew J. Cook

INVENTOR
EDWARD R. WOLFERT

BY W. A. Steuge
ATTORNEY

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AIR CONDITIONING APPARATUS

Edward R. Wolfert, Springfield, Mass., assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., a corporation of Pennsylvania

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5 Claims. (Cl. 62—129)

My invention relates to air conditioning apparatus, more particularly to a unit air conditioner adapted to be mounted in the window of a room, and it has for an object to provide improved apparatus of the character set forth.

A more particular object is to provide an improved structure for housing and mounting an air conditioning unit, more particularly a simpler structure involving less material and therefore less expensive to manufacture.

A further object is to provide a housing and mounting structure affording convenient access to the air conditioning apparatus contained therein.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a perspective view showing the unit air conditioner mounted in a window; and,

Fig. 2 is a perspective view showing the mounting structure and the refrigerating unit removed from the mounting structure.

Referring to the drawing in detail, I show a unit air conditioner indicated generally by the numeral 10 and adapted to be mounted in the window of a room for the purpose of cooling and dehumidifying or otherwise conditioning the air of a room. In accordance with the present invention the elements of a refrigerating system which serves to cool and dehumidify the air are mounted as a unit on a base member 11 to form a refrigerating or air cooling unit 12. Such elements include an evaporator 13 extending across the front of the unit, a condenser 14 extending across the back of the unit, and a motor-compressor unit 15 disposed just forwardly of the condenser. The refrigerating system further includes suitable conduits and all other parts necessary to form a complete and operative refrigerating system. An upstanding partition 16, of the form shown in Fig. 2, is mounted on the base member 11 to form a division between an evaporator compartment 17 at the front and a condenser or machine compartment 18 in the back. A fan 19 disposed in a fan shroud 21 serves to introduce flow of air from outdoors through the left-hand half of the condenser into the machine compartment and to discharge the same to outdoors through the right-hand portion of the condenser. A fan (not shown) disposed in a fan shroud 22 is adapted to induce flow of air from the room inwardly through the right-hand portion of the evaporator into the evaporator compartment 17 and to discharge the same into the room through the left-hand portion of the evaporator. As will be noted from Fig. 2, the unit 12 is open on the two opposite sides and on the top.

To mount the refrigerating unit 12 in the window, I provide a mounting structure indicated generally by the reference numeral 23. In accordance with my invention, I further utilize the mounting structure 23 as a casing or housing for the unit 12, thereby dispensing with the need of providing a casing on the unit 12 itself. The mounting structure 23 comprises side walls 24 and a top wall 25. These walls are substantially imperforate and extend from the front to the back of the apparatus. Angle irons 26 are secured to the lower edges of the side walls 24, as by spot-welding, and provide horizontal flanges 27 on which the unit 12 is supported.

Inasmuch as the base member 11 forms a closure for the bottom of the unit air conditioner, it is not necessary that the mounting structure 23 comprise a complete bottom wall. However, a suitable connection between the lower edges of the side walls 24 is preferably provided to make the mounting structure more rigid. Such connection may comprise an angle iron 28 and a wall portion 29, which are preferably spaced to provide an opening 30 for admission of fresh air to the cabinet.

The mounting structure 23 is fastened in the window in any suitable manner. In the illustrated embodiment, the downwardly-extending flange of the angle iron 28 engages the outer edge of the window sill, and suitable clamps 31, removably secured to the bottom of the mounting structure, engage the inner edge of the window sill. An angle iron 32 is secured to the top wall 25, as by spot-welding, and disposed to provide an upwardly-extending flange which is adapted to engage the inner side of the window sash. Removable and adjustable clamps 33 are secured to the top wall 25, as shown on the drawing, and are adapted to engage the outer side of the window sash.

To mount the unit air conditioner in the window, the mounting structure is first secured in place. To do this, the mounting structure is first placed on the window sill in the position shown and the clamps 31 are tightened. The window sash is then brought down and the clamps 33 tightened, so that the mounting structure is securely held in the window as shown on the drawing. Any open spaces left between the sides of the mounting structure and the window may be closed in any suitable manner as well known in the art. After the mounting structure has been securely fastened and placed in the window, the refrigerating unit 11 is positioned therein by merely inserting it horizontally through the front of the mounting structure and sliding it rearwardly therein. When the unit is so inserted, the upstanding partition 16 cooperates with the side walls 24 and the top wall 25 and the base member 11 to form the evapo-

rator and condenser compartments 17 and 18 already referred to, the side and top walls of the mounting structure thus forming the sides and the top of the compartments 17 and 18. The fans referred to above are then effective to induce flow of air from the room and from outdoors into the respective compartments.

A rubber or other suitable gasket, partially shown at 34, extends along the top and side edges of the partition 16, being preferably attached to flanges extending along said edges. This gasket contacts the inner surfaces of the walls 24 and 25, thereby providing an air seal between the compartments 17 and 18.

A wood cabinet member 35 may be placed over that portion of the air conditioner which is on the interior of the room. This cabinet member includes a series of louvers in the front to provide for admission and discharge of the air flowing through the evaporator, as indicated by the arrows in Fig. 2.

From the above description it will be seen that the construction of the unit air conditioner has been simplified and its cost reduced in that the mounting structure serves two purposes; namely, to mount the unit in the window and also to form a casing or enclosure therefor. A further advantage is that the unit can be very easily withdrawn from the mounting structure and when so withdrawn the several elements of the apparatus are readily accessible for inspection, repair and servicing.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a unit air conditioner, the combination of a unit comprising a base member and air conditioning elements mounted on the base member, said unit being open on two opposite sides and on the top, a housing and mounting structure comprising opposed side walls and a top wall, and means for fastening the housing and mounting structure in a window, said unit being mounted in the housing and mounting structure in such manner that the side and top walls of the latter close the sides and top of the unit, and said unit and said housing and mounting structure being so constructed and arranged that said unit may be withdrawn from and inserted into said housing and mounting structure horizontally while the latter is fastened in a window.

2. In a window-mounted unit air cooler, the combination of a window mounting structure comprising a top wall and opposed side walls extending through the window opening, means for supporting a cooling unit therein and means for fastening the mounting structure to the window; and an air cooling unit mounted in said mounting structure and comprising a base member and a vertical partition mounted on said base, said base member and said partition cooperating with said top and side walls to form an evaporator compartment and a machine compartment, an evaporator mounted on said base and disposed in said evaporator compartment, a compressor and a condenser mounted on said base and disposed in said machine compartment, said evaporator and machine compartments being formed with air flow openings communicating with said enclosure and the exterior of said enclosure, respectively, said unit and said mounting structure being so constructed and arranged that said unit may be withdrawn from and inserted into said mounting structure horizontally while the latter is fastened in a window.

3. In a window-mounted unit air cooler, the combination of a cooling unit comprising a substantially flat base member, an evaporator and a condenser mounted on said base member adjacent the front and the back thereof, respectively, an upstanding partition mounted on said base member between said evaporator and said condenser, substantial portions of the sides and the top of said cooling unit being open; a mounting structure for mounting said unit in a window and including side walls, a top wall and flanges extending along the side walls adjacent the lower edges thereof, and means for fastening the mounting structure in the window, said unit being disposed within said mounting structure and supported on said flanges in such manner that the side and top walls of the mounting structure close the sides and top of the unit and said partition cooperates with said base member and said side and top walls to form evaporator and machine compartments in which said evaporator and condenser are respectively disposed and through which separate streams of air are circulated over said evaporator and condenser, respectively, said unit and said mounting structure being so constructed and arranged that said unit may be withdrawn from and inserted into said mounting structure horizontally while the latter is fastened in a window.

4. A window-mounted unit air cooler as set forth in claim 3, and further including means providing an air seal between said partition and said side and top walls to separate the air streams in said compartments.

5. In a window-mounted unit air cooler, the combination of a cooling unit comprising a substantially flat base member, an evaporator and a condenser mounted on said base member adjacent the front and the back thereof, respectively, an upstanding partition mounted on said base member between said evaporator and said condenser; a mounting structure for mounting said unit in a window and including side wall portions, a top wall portion, flanges extending along the side wall portions adjacent the lower edges thereof, and means for fastening the mounting structure in a window; substantial portions of the sides and the top of said cooling unit being open when said unit is removed from said mounting structure, said unit being so disposed in said mounting structure and supported on said flanges that said side and top wall portions of the mounting structure cooperate with said partition and said base member to form a machine compartment in which said condenser is disposed; and said air cooler including side and top wall portions cooperating with said partition and said base member to form an evaporator compartment in which said evaporator is disposed, said unit and said mounting structure being so constructed and arranged that said unit may be withdrawn from and inserted into said mounting structure horizontally while the latter is fastened in a window.

EDWARD R. WOLFERT.