July 10, 1951 P. B. MOORE 2,560,467

MOUNTING ASSEMBLY FOR REFRIGERATIVE AIR CONDITIONERS

Filed June 23, 1949 4 Sheets-Sheet 1

Fig. 1

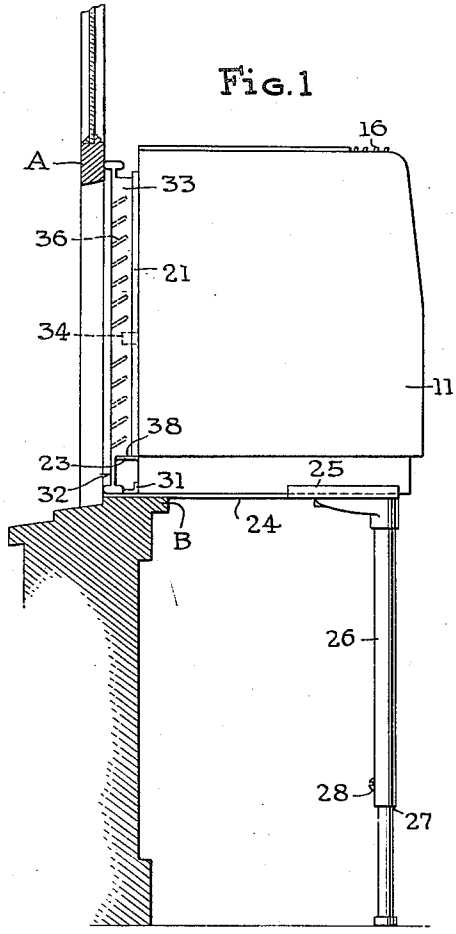
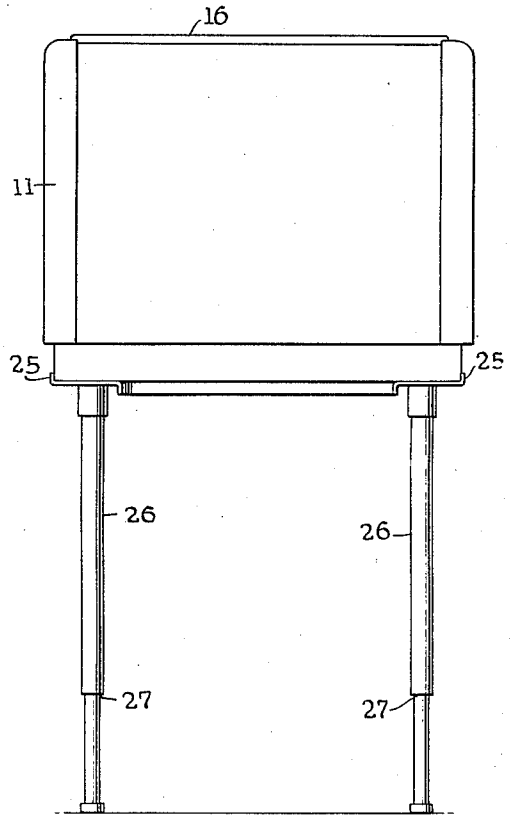


Fig. 2



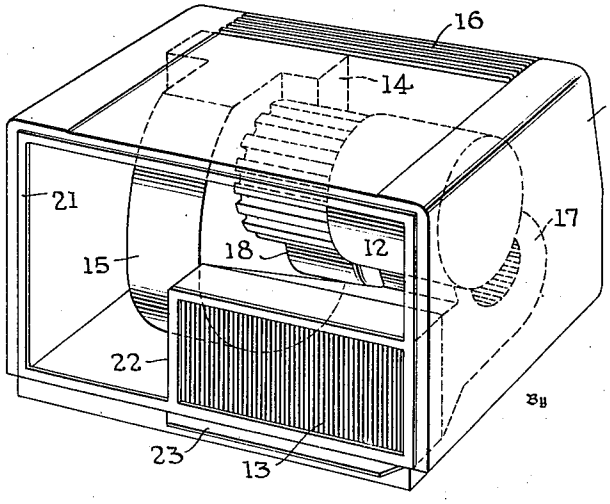


Fig. 3

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July 10, 1951 P. B. MOORE 2,560,467

MOUNTING ASSEMBLY FOR REFRIGERATIVE AIR CONDITIONERS

Filed June 23, 1949 4 Sheets-Sheet 2

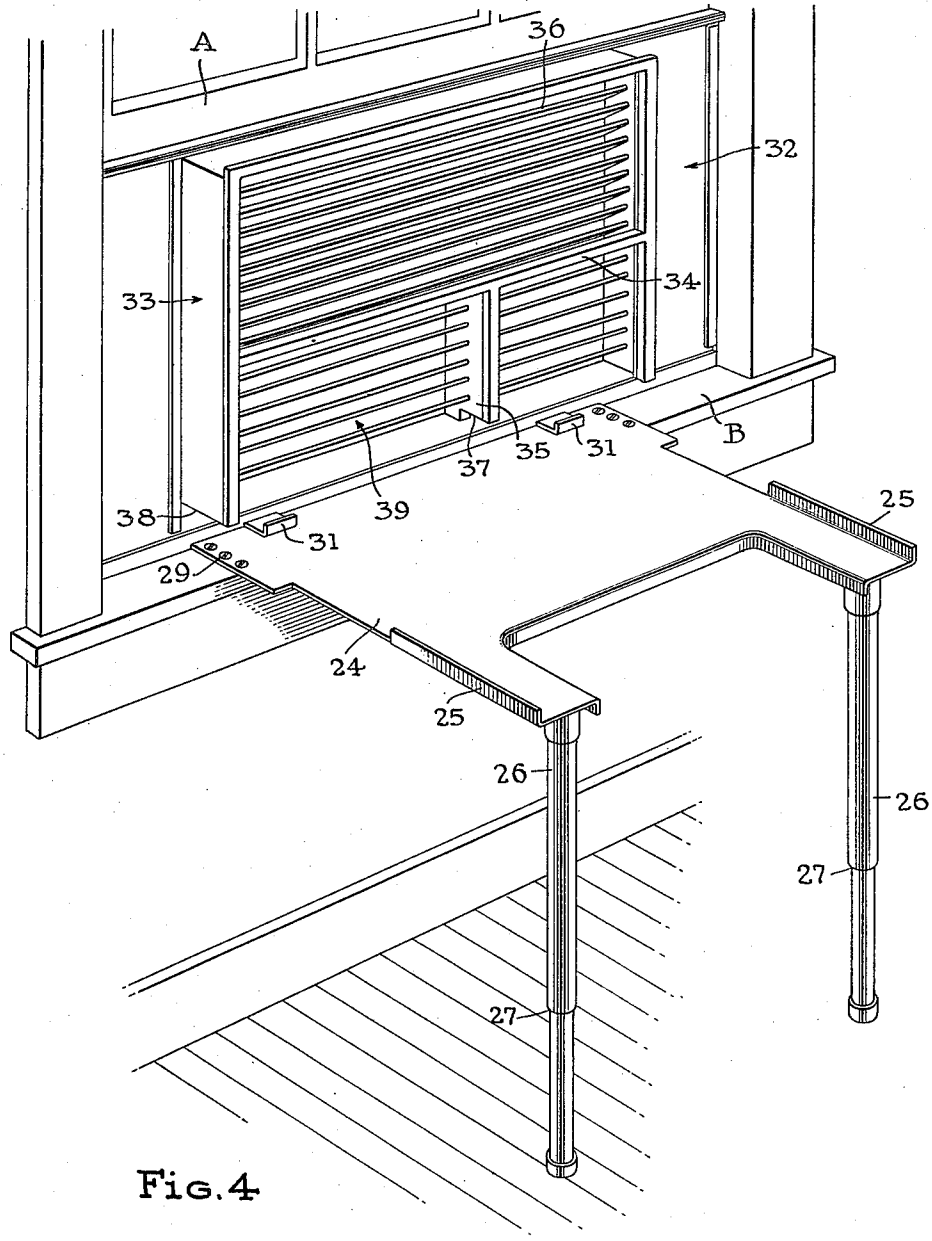


Fig. 4

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July 10, 1951 P. B. MOORE 2,560,467

MOUNTING ASSEMBLY FOR REFRIGERATIVE AIR CONDITIONERS

Filed June 23, 1949 4 Sheets-Sheet 3

Fig.5

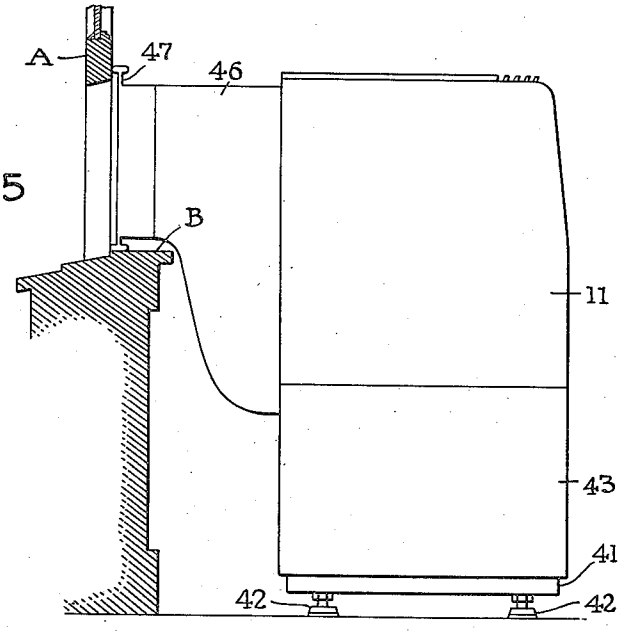
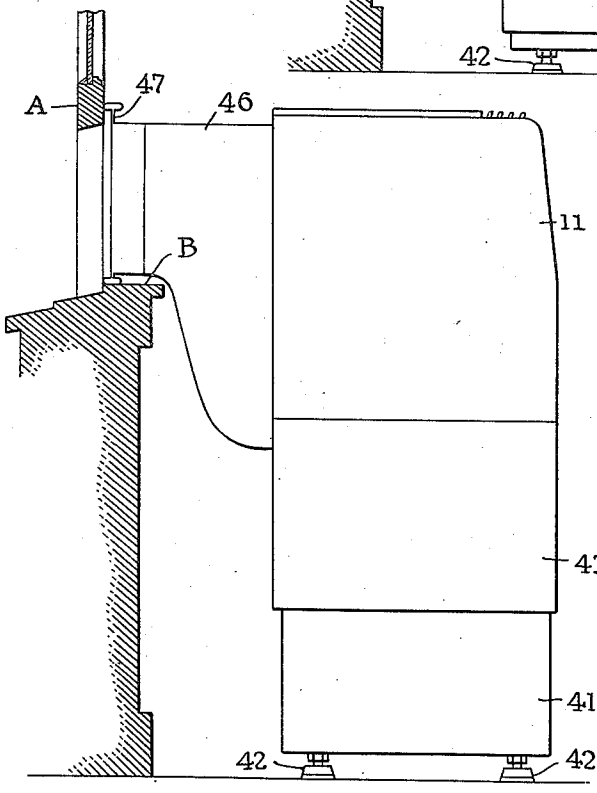


Fig.6



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July 10, 1951 P. B. MOORE 2,560,467

MOUNTING ASSEMBLY FOR REFRIGERATIVE AIR CONDITIONERS

Filed June 23, 1949 4 Sheets-Sheet 4

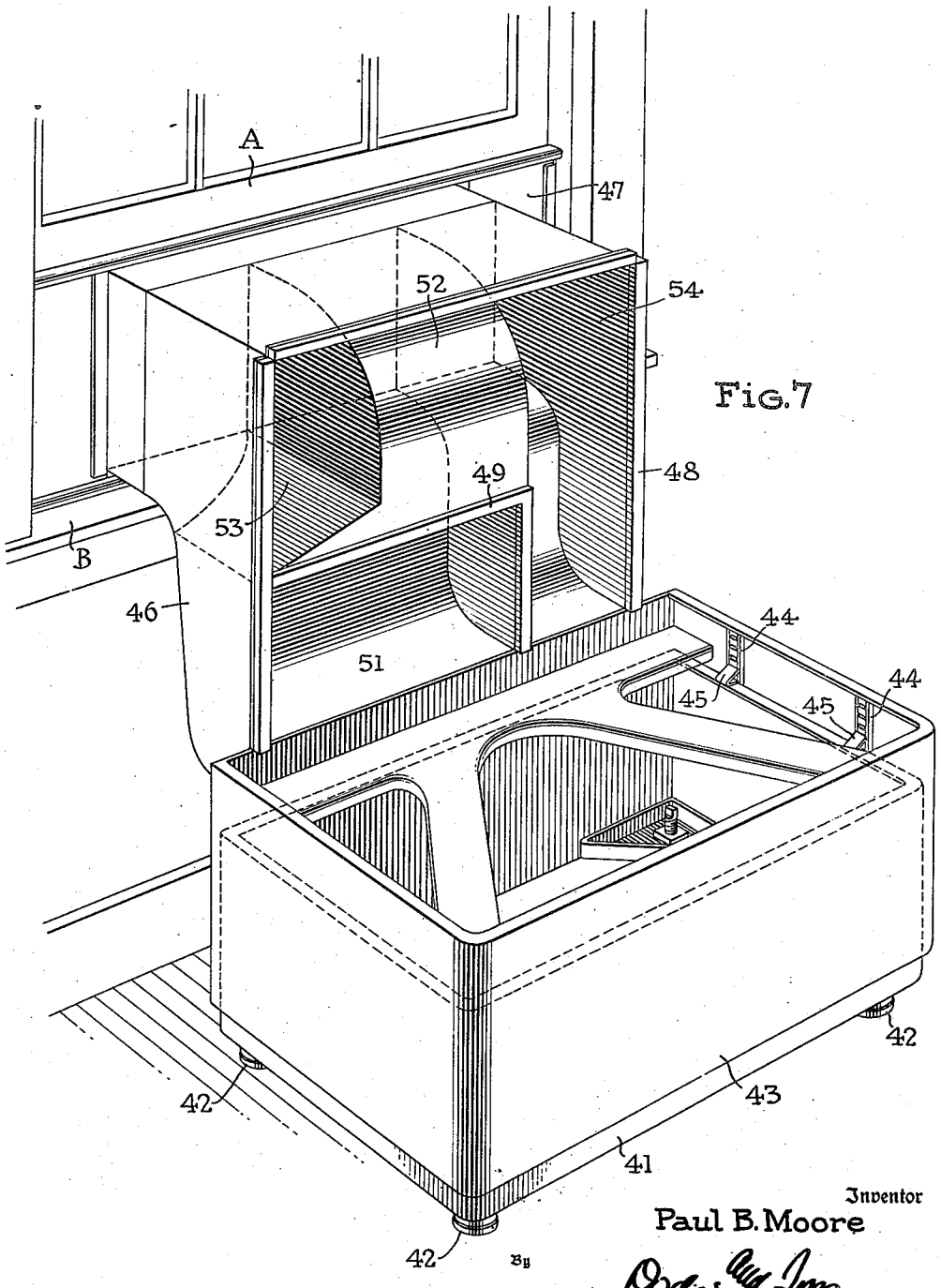


Fig. 7

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UNITED STATES PATENT OFFICE

2,560,467

MOUNTING ASSEMBLY FOR REFRIGERATIVE AIR CONDITIONERS

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3 Claims. (Cl. 62—129)

1

This invention relates to air-cooled air-conditioners of the type in which the condenser cooling air is drawn in and discharged through the interval beneath a partly raised sash. Such conditioners commonly include means for evaporating in the condenser air stream drip water condensed from the evaporator air stream.

There are two commonly accepted types: consoles which are wholly in the room, rest on the floor and connect with a window board; and window sill units which are approximately half in the room and half out of doors, and rest on the sill beneath the raised sash.

In the absence of a heating radiator the console takes little if any more floor space than does the sill-mounted unit. If a radiator is present space can be saved by using a sill-mounted unit. There is, however, growing resistance to the use of sill-mounted units because they project through the window. Not only are they unsightly, but they are said to create a hazard for window cleaners and other service employees.

It is possible, by the use of superlative heat transfer surfaces in the condenser and evaporator to reduce the size of a conditioner in the ½ to 1 horsepower range decidedly below present standards. The cost of doing so is high but the scheme is economically possible if standardization can be availed of to reduce costs to a competitive level.

The present invention permits a high degree of standardization because a single conditioner unit can be used with different supporting units to form either a console or a sill-mounted unit, the latter having the advantage of being wholly inside the window. This conditioner unit can be lifted off its base at any time, and so can be removed whenever its presence is objectionable for any reason.

As a consequence the adverse factors which have characterized the sill-mounted type are minimized, and standardization can be expected to reduce costs to such an extent that the more expensive compact unit can be marketed at a competitive price.

Except as just explained, size of the unit is not controlling, for the mechanics of the concept are practicable regardless of size, provided the sill-mounted unit does not obstruct the window opening to an intolerable degree.

The invention contemplates a complete conditioner unit, and at least two supporting bases each of which will receive the unit and complete the condenser air circuit connections. One base produces an installation of the console type, the base being adjustable to conform to window sill

2

height and having an upward duct extension leading to a window board. The other base is supported at sill level partly by the sill and partly by adjustable floor-engaging legs. It may thus overlie a heating radiator. The platform has at its rear the window-board, and the conditioner unit seats against the window-board.

Typical embodiments, one of the window sill mounted type of unit and the other of the console type of unit, contemplated by the invention, will now be described by reference to the accompanying drawings in which:

Fig. 1 is a left side elevation of the unit and mount as they appear when arranged for sill mounting.

Fig. 2 is a front elevation of the device shown in Fig. 1.

Fig. 3 is a perspective view of the conditioner unit as it appears when viewed from the rear. In this view the basic components (for which no novelty is here claimed) are indicated.

Fig. 4 is a perspective view of the window sill mount in position but with the conditioner unit removed.

Figs. 5 and 6 are similar views of the left side of the console arrangement, Fig. 5 showing the arrangement with a low sill and Fig. 6 the arrangement with a high sill.

Fig. 7 is a perspective view of the mount as shown in Fig. 5 but with the conditioning unit removed.

A standardized conditioning unit is shown in Fig. 3 and comprises a casing 11 which is open at its back so that the back of the unit may connect with the window-board or its equivalent and establish the desired entrance and exit air flow connections with out of doors.

The refrigerating unit used in the conditioner is of the compressor-condenser-evaporator circuit type. In Fig. 3 the part indicated at 12 is an hermetically enclosed compressor together with an electric motor which drives the compressor. This compressor discharges into a condenser generally indicated by the numeral 13. The condenser discharges through an appropriate expansion device such as an expansion valve or a capillary connection into an evaporator which is located at 14.

The evaporator is connected through a suction line (not visible in the drawings) with the intake of the compressor in the unit 12. Air is drawn from the room by a fan whose housing appears at 15, and discharged from the fan through the evaporator 14 and louvers 16, which

extend along the front edge of the casing, and so back into the room.

Air drawn from out of doors by the fan 17 is forced through the condenser 13 and returns to out of doors. The motor which drives both of the fans 15 and 17 appears at 18.

A gasket 21 completely surrounds the open rear face of the cabinet 11 and an L-shaped gasket extension 22 formed integrally with the main gasket 21 affords a continuous seal around the periphery of the condenser 13. Beneath the gasket to the rear of the condenser 13 is an extension flange 23 which is used to improve the seal with the window-board or its equivalent, along the lower margin of the condenser.

The sill-mounted base for the conditioner unit shown in Fig. 3 is most clearly illustrated in Fig. 4. It comprises a pressed metal platform 24 with lateral guide flanges 25 and legs 26 which have telescopic joints at 27 so that they may be adjusted to agree with various window sill heights. Set screws which appear at 28 in Fig. 1 fix the adjustment when it has been made. The platform is attached to the sill in any convenient way, for example, by screws shown at 29 in Fig. 4.

Near the rear of the platform 24 are upstanding lugs 31 which engage a portion of the conditioner housing and limit its motion toward the window-board when it is slid into position rearward across the platform 24. The window-board generally indicated at 32 is constructed in any suitable manner so that it extends from one side of the window opening to the other and fills the interval between the raised sash A and the sill B. It is mounted fixedly at the rear edge of the platform 24 and, as best shown in Fig. 1, rests on top of the sill B and engages the inner face of the sash A. This permits the sash to be closed while the window-board and unit are in place.

Mounted in the window-board 32 is a rectangular frame 33. It has a horizontal dividing member 34. Beneath the member 34 there is a vertical dividing member 35. The entire area within the frame 33 is open except for the louvers 36 clearly shown in Figs. 1 and 4.

The member 35 and the left-hand side member of the frame 33 are undercut as indicated at 37 and 38 in Fig. 4. The resulting slot receives the flange 23 of the unit 11 (see Fig. 3). As will be apparent by comparison of Figs. 3 and 4 the gasket 21 seals around the periphery of the frame 33 and the gasket extension portion 22 seals around the remaining margin of the larger of the two openings defined by the members 34 and 35. This larger opening is generally indicated in Fig. 4 by the numeral 39.

When the conditioning unit 11 is in place on the platform 24 and the fan motor 18 is running, the fan 17 draws air through all portions of the louvered frame 33 except the portion 39. The air so drawn in by the fan 17 is discharged through the condenser 13 and from the condenser 13 through the louvered opening 39.

In the above description nothing has been said about disposal of drip water condensed in the evaporator. This can be arranged by means well known in the art and not material to the present invention. The arrangement of the evaporator air circuit is obvious from the drawings and involves practices standard in the air conditioning art.

It will be apparent that between the room wall and the legs 26 there is plenty of room for a heating radiator such as is commonly mounted beneath windows.

When no radiator is present, it is preferred to use the console arrangement shown in Figs. 5 to 7 inclusive. In the illustrated embodiment, use is made of a base 41 provided with adjustable feet 42. Telescopically mounted above the unit 41 is a skirt member 43. The member 43 has on the inner face of each of its two side walls two transversely slotted vertical strips 44. These receive clips 45 whose ends snap into the transverse slots in strips 44. This is simply an adaptation of an adjustable shelf support used in book cases.

The construction permits skirt 43 to be supported on base 41 at a series of selected heights. The adjustable feet 42 afford the final close adjustment and also are useful for leveling purposes.

Extending upward and to the rear from the member 43 in an air duct housing 46. This leads to a window-board member 47 which is designed to span the interval between the raised sash A and the sill B in Fig. 7. The forward face of the duct structure is surrounded by a marginal frame 48 which is the direct analogue of the marginal frame 33 of Fig. 4. It is the frame against which the gasket 21 of the Fig. 2 seats.

Within the frame 48 is a secondary frame 49 which defines the margin of the condenser air outlet 51 which is the analogue of the outlet 39 in Fig. 4. The condenser outlet 51 leads through a curved duct 52 to a middle port formed in the window-board 47. The window-board as indicated in Fig. 6 rests on top of the sill B and engages the inner face of the raised sash A.

It follows that the outlet connection 51 leads air from the condenser fan out of doors. The two flanking passages 53 and 54 serve as air inlet passages.

The unit 11 shown in Fig. 3 is set upon the skirt member 43 with its gaskets 21 and 22 forming a seal with the marginal frame members 48 and 49. In this relationship the condenser air circuit is completed in essentially the same way as it is completed in the structure shown in Figs. 1 to 3 inclusive.

As best indicated in Figs. 5 and 6 the console assembly projects into the room a little further than does the window sill mount of Figs. 1 and 2 but has the advantage that the obstruction to the window is considerably less. Indeed the obstruction is only about half when measured vertically.

The purpose of the detailed description just given is to develop the possibility of producing a standardized unit 11 such as that shown in Fig. 3 of the drawings and assembling that unit selectively with different types of mounts which are adapted to satisfy the varying requirements commonly encountered in domestic installations. Obviously, forms other than those shown in the drawings are possible and one advantage of the invention is that it permits standardization of the mechanism without imposing too rigid standards on the decorative aspects of the casing.

Devices embodying the invention have been constructed and tested, and as constructed were remarkably compact because the heat exchange surfaces were small but capable of high heat transfer rates. The embodiments so constructed demonstrate conclusively the technical feasibility of the compact unit and the possibility which it affords of availing of diversified designs according to principles above disclosed.

I claim:

1. The combination of a mount comprising as

a structural entity a ported unit for connecting with out of doors through the interval between a window sill and a raised sash, and a machine base including adjustable floor-engaging supporting means for said base; and a conditioner of the refrigerative type engaging said mount and having a room air circuit and related fan, and a condenser air circuit and related fan, with both ends of the latter circuit terminating in portions of the conditioner structure which engage the mount, the parts being so arranged that the act of positioning the conditioner on the mount connects the ends of the condenser air circuit with out of doors through said ported unit.

2. The combination defined in claim 1 in which the machine base comprises a platform having adjustable legs, the base being adapted at its rear edge for support on a window sill and having, substantially at said edge, said ported unit arranged for direct engagement by the conditioner.

3. The combination defined in claim 1 in which the machine base comprises a platform, a floor-

engaging member and adjustable connections by which the former is supported by the latter with provision for vertical adjustment; and said machine base has an upward and rearward-extending member having passages connected with ports in said ported member and so positioned relatively to said mount as to register with the ends of the condenser air circuit of the conditioner, when the latter is in position upon the mount.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,062,042	Sargent	Nov. 24, 1936
2,198,500	Jewell	Apr. 23, 1940
2,269,205	Hubbard	Jan. 6, 1942
2,335,627	Wolfert	Nov. 30, 1943
2,436,713	Cody	Feb. 24, 1948