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[45] Patented **Apr. 27, 1971**
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[50] Field of Search..... 62/262;
98/94

[56] **References Cited**
UNITED STATES PATENTS
2,719,410 10/1955 Deering..... 62/262
3,498,078 3/1970 Sharp 62/262
Primary Examiner—Meyer Perlin
Attorney—Beaman and Beaman

[54] **WINDOW AIR CONDITIONING UNIT**
5 Claims, 14 Drawing Figs.
[52] U.S. Cl..... 62/262,
98/94
[51] Int. Cl..... F25d 23/12

ABSTRACT: A window air conditioning unit and installation kit so designed as to be capable of being installed by unskilled persons in casement, double-hung and sliding windows.

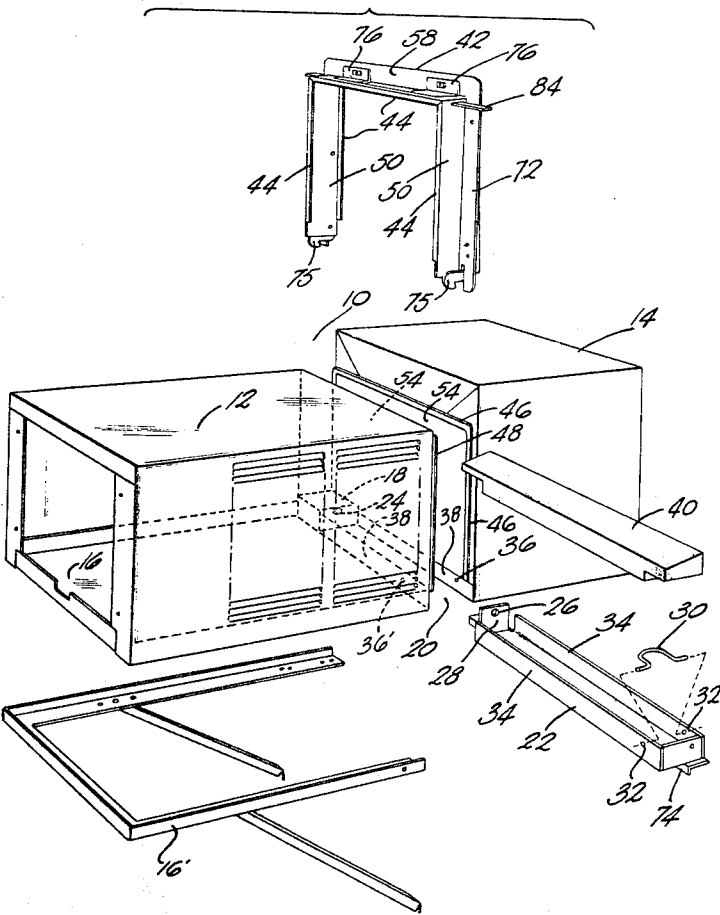
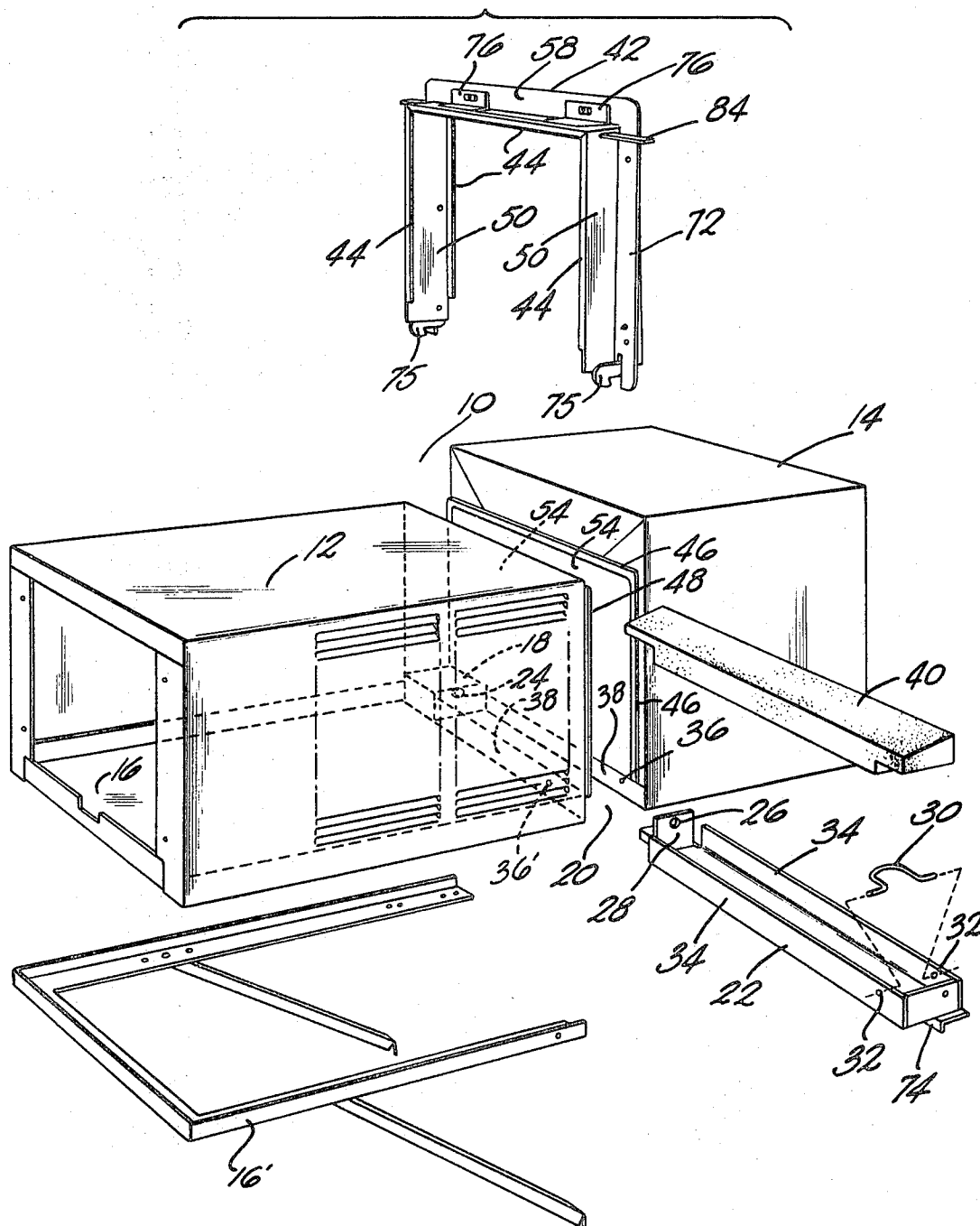


FIG. 1



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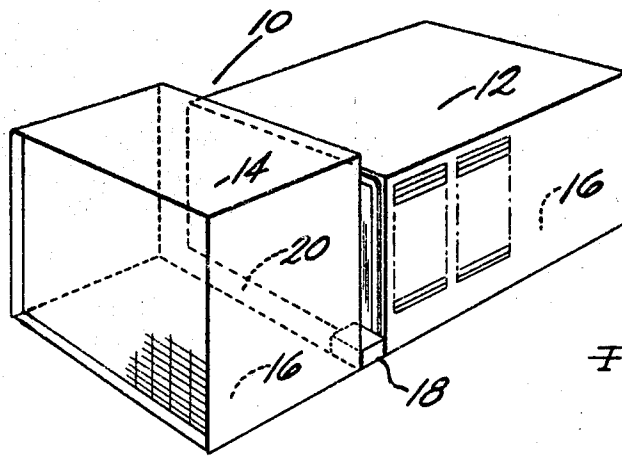


FIG. 2

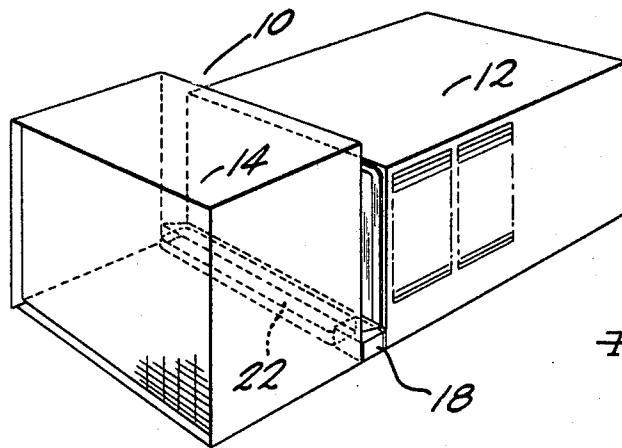


FIG. 3

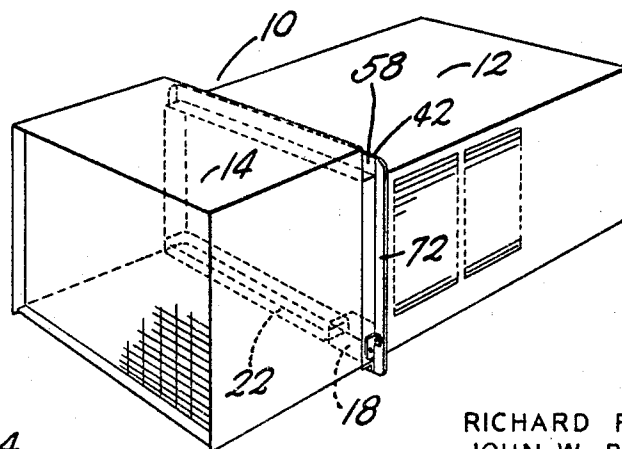


FIG. 4

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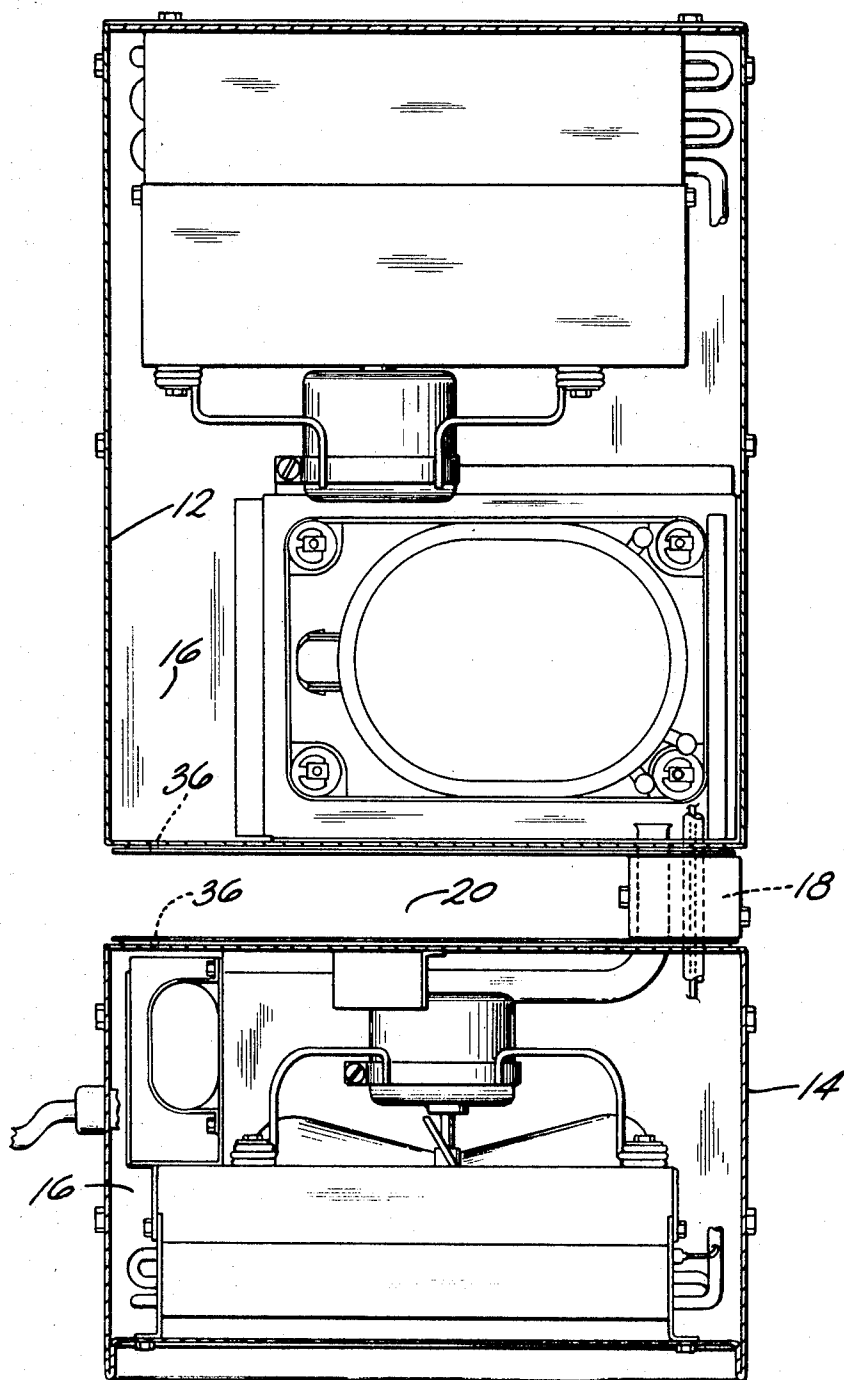


FIG. 5

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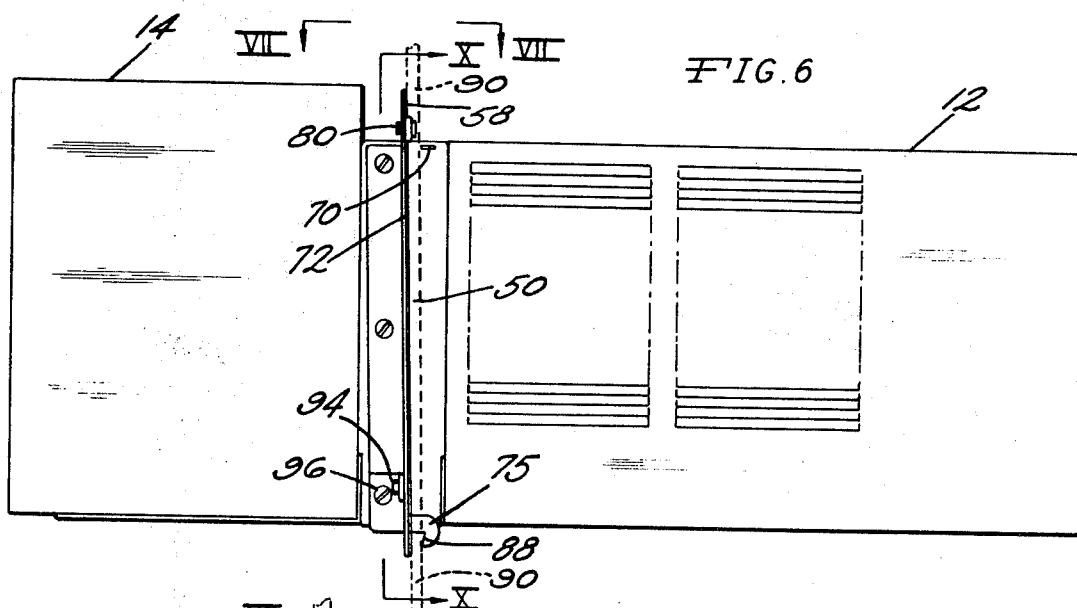


FIG. 6

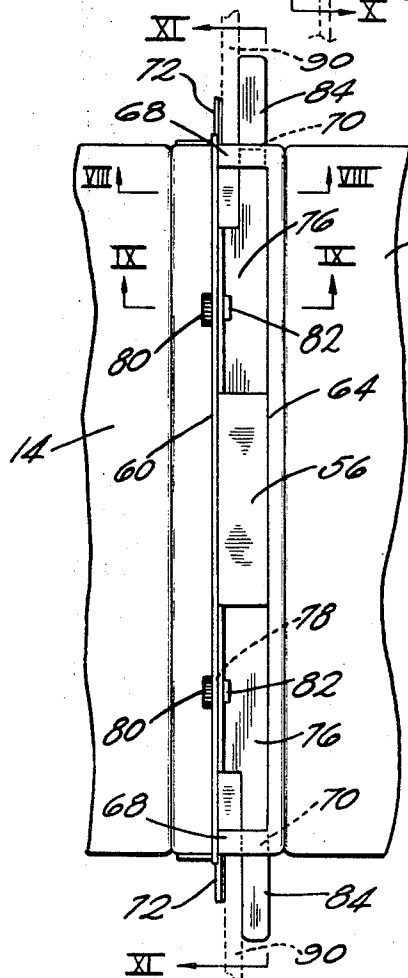


FIG. 7

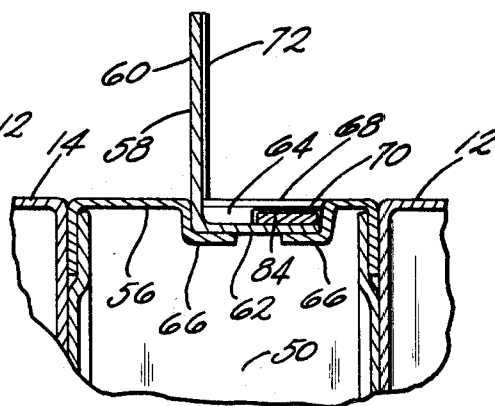


FIG. 8

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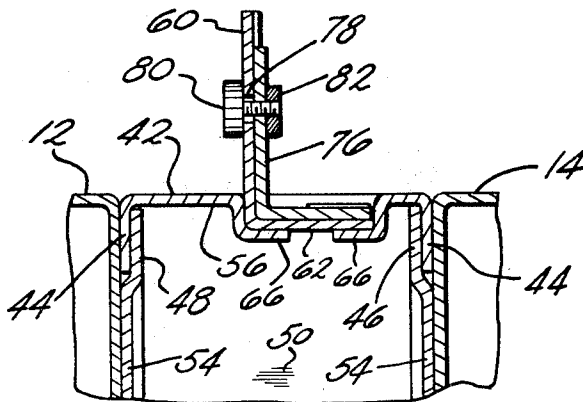
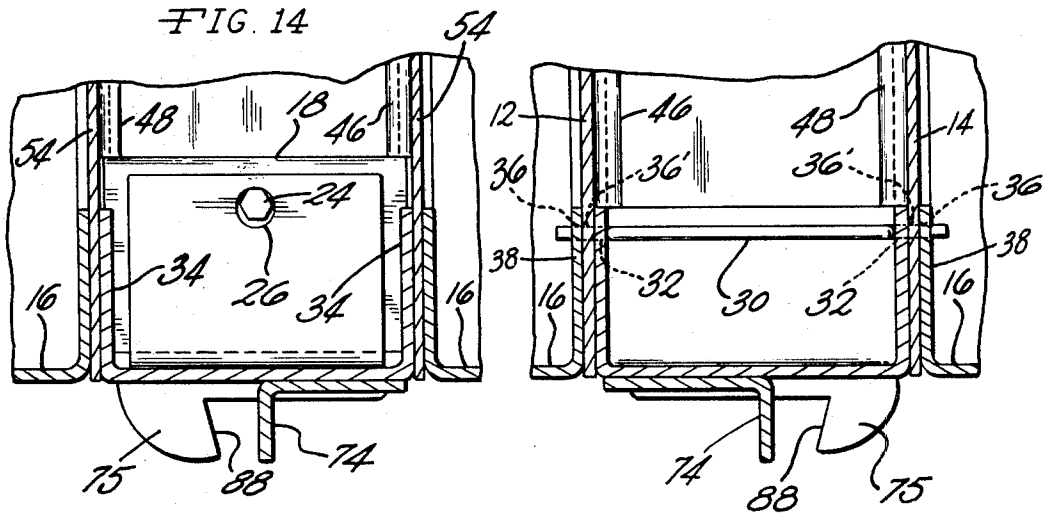
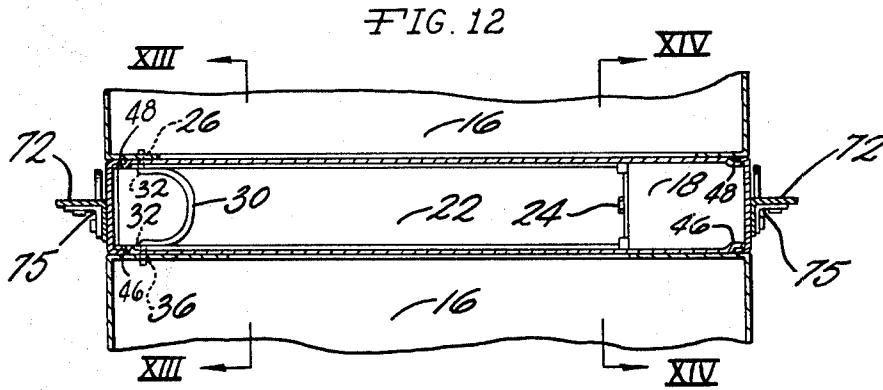
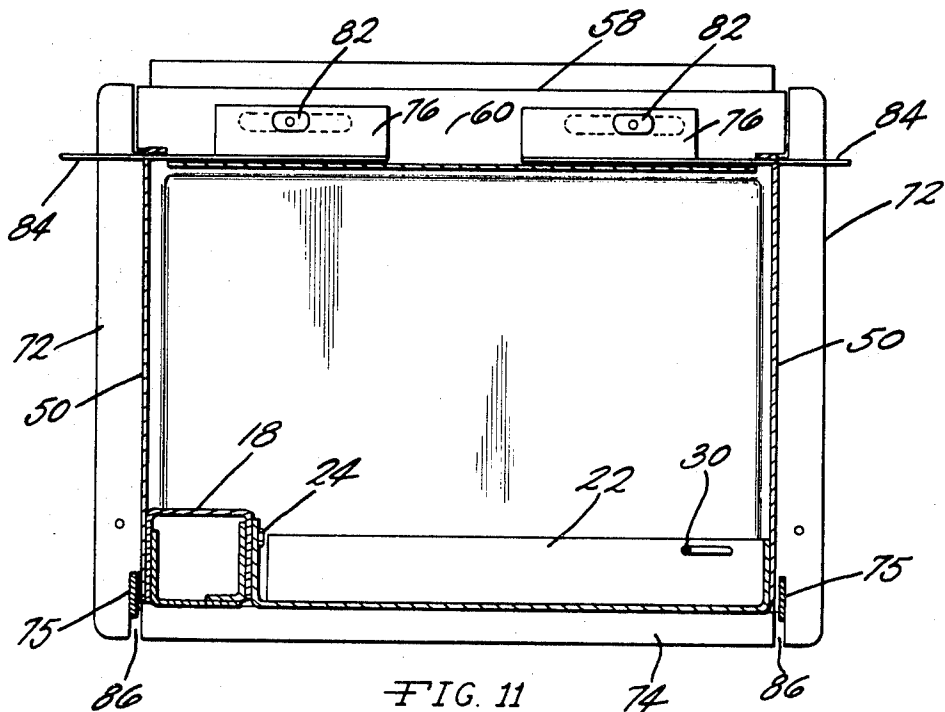
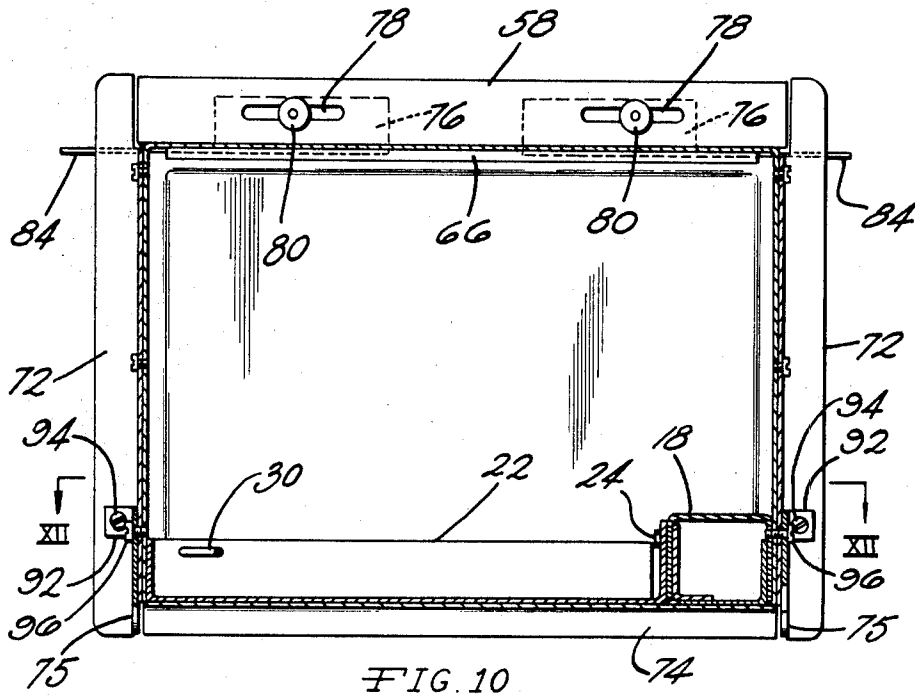


FIG. 9

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WINDOW AIR CONDITIONING UNIT

Cross-Reference to Related Applications

The base of the window unit upon which the compressor and evaporator housings are supported is disclosed in detail in copending U.S. application Ser. No. 753,960, filed Aug. 20, 1968 now Pat. No. 3,498,078.

BACKGROUND OF THE INVENTION

In the Lipman Pat. No. 2,604,763 is shown a window air conditioning unit for double-hung windows of the "split" type wherein the lower sash of the window may be disposed between spaced compressor and evaporator housings to insulate the noise of the compressor from the interior space being cooled.

U.S. Pat. No. 3,372,557 discloses a modified form of split window unit in which the compressor and evaporator housings are supported in spaced relation on a common base having a transverse slot terminating at a common reinforcing connector for the two sections of the base. With the construction shown in this patent, the unit may be selectively installed in either a double-hung or a horizontally sliding window. However, neither of the "split" units of the above-mentioned patents, are adapted for use in a casement window.

SUMMARY OF THE INVENTION

According to the present invention, a window unit of the "split" type is provided with an installation kit which adapts the same unit for use in double-hung, sliding and casement windows. With such an arrangement the inventory a dealer is required to carry may be substantially reduced to satisfy the requirements of the trade. Moreover, upon moving from one dwelling to another, the homeowner may encounter different window construction, yet his window air conditioning unit will be adaptable to any one of the three most common forms of window construction.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective exploded view of the shell of a window air conditioning unit and the components of the installation kit,

FIG. 2 is a perspective view of the unit for use in a horizontal sliding window,

FIG. 3 is a view similar to FIG. 2 with the unit adapted for installation in a double-hung window,

FIG. 4 is a view similar to FIG. 2 with the unit adapted for installation in a casement window,

FIG. 5 is a sectional plan view of the fully assembled unit as used in a double-hung window taken just below the tops of the compressor and evaporator housings,

FIG. 6 is a side elevational view of the unit shown in FIG. 5 adapted to a casement window,

FIG. 7 is an enlarged fragmentary plan view taken on line VII-VII of FIG. 6,

FIG. 8 is an enlarged fragmentary sectional view taken on line VIII-VIII of FIG. 7,

FIG. 9 is an enlarged fragmentary view taken on line IX-IX of FIG. 7,

FIG. 10 is a vertical cross-sectional view taken on line X-X of FIG. 6,

FIG. 11 is a vertical cross-sectional view taken on line XI-XI of FIG. 7,

FIG. 12 is a fragmentary sectional view taken on line XII-XII of FIG. 10,

FIG. 13 is an enlarged sectional detail taken on line XIII-XIII of FIG. 12, and

FIG. 14 is a view similar to FIG. 13 taken on line XIV-XIV of FIG. 12.

DESCRIPTION OF ILLUSTRATED EMBODIMENT

Referring to FIG. 1, the window air conditioning unit, generally designated 10, comprises separate condenser and evaporator housings 12 and 14 supported on a common two-

section base 16 having a common reinforced connector portion 18, preferably of the construction disclosed in the aforesaid copending application. A transverse slot 20 spaces the sections of the base 16 and terminates at the common connector portion 18.

The mechanical and electrical components located within the housings 12 and 14 of the completely assembled window unit have been omitted in the showing of FIGS. 1 through 4 for the sake of clarity.

Double-Hung Windows

For adapting the unit 10 to double-hung windows, the installation kit shipped with each unit 10 includes a subbase 22 which is selectively insertable into the slot 20 and held in place by a cap screw head 24 on the connector 18 entering the hole 26 in the end flange 28 and a spring latch pin 30 having its opposite ends insertable through holes 32 in the side flanges 34 and into aligned holes 36 and 36' in the opposed flanges 38 of the base 16 and the housings 12 and 14, respectively, (see FIG. 13).

A suitable sound and sealing member 40 is adapted to be received within the recess defined by the sides and ends of the subbase 22 and to extend slightly above the same and to overlap the connector 18 to present a surface to be engaged by the lower edge of the double-hung sash when in its lowermost position between the housings 12 and 14.

Casement Windows

For the adaption of the unit 10 to a casement window, the installation kit includes a collar 42 of inverted U-shaped form to be used in conjunction with the subbase 22. Collar 42 has flanges 44 which interlock with flanges 46 and 48 on the opposed portions of the housings 12 and 14 (see FIGS. 1, 9 and 12).

To apply the collar 42 of FIG. 1 to the flanges 46 and 48, with the vertical legs 50 of the collar 42 vertically aligned with the slot 20 (as shown in FIG. 1), the collar 42 is lowered to engage the flanges 44 on the legs 50 behind the vertically extending portions of the flanges 46 and 48 on the housings 12 and 14. The collar 42 is then forced downwardly with relative sliding movement taking place between the flanges 44, 46 and 48 until the flanges 44 on the cross member 52 of the collar 42 are fully engaged behind the horizontally extending portions of the flanges 46 and 48 on the housings 12 and 14.

The flanges 46 and 48 may be provided on the opposed wall structure of the housings 12 and 14 in any suitable manner. As shown, the opposed panels 54 have their vertical and top edges offset slightly from the plane of each panel to provide the offset flanges 46 and 48. The panels 54 may be spot welded, or otherwise attached, to the opposed vertical wall structure of the housings 12 and 14 inwardly of the flanges 46 and 48. As shown in FIG. 9, the flanges 46 and 48 are sufficiently offset from the plane of the panels 54 to receive the flanges 44 with a snug sliding fit.

To the cross member 56, connecting the legs 50 of the collar 42, is firmly attached an L-shaped top member 58 having a vertical flange 60 and a horizontal flange 62. As shown in FIG. 8, flange 62 is disposed in a longitudinally extending depression 64 defined by L-shaped portions 66 formed from the web of the member 56. Depression 64 is terminated short of the opposite ends of the member 56 to leave bridging portions 68. Elongated slots 70 are punches from the legs 50 adjacent each portion 68.

Attached to the vertical legs 50 of the collar 42 are side brackets 72 of L-section having one leg firmly connected to the outer face of each of the legs 50. A longitudinally extending flange 74 on the underside of the subbase 22 combines with the top member 58 and side brackets 72 to provide top, bottom and side transversely projecting flange structure all adapted to be disposed on the inside of the casement window in juxtaposition to the opening-defining structure of the opening in which the air conditioning unit is installed after the pane of glass is removed.

The structure for securing the unit in an opening in the casement window comprises lower hook plates 75 and upper sliding bolt plates 76, the latter being slidably received in the depression 64 and resting on the flange 62 of the top member 58. One face of each plate 76 is adjacent the flange 60 of the member 58. Slots 78 are provided in the flange 60 to receive clamp screws 80 threaded into the nuts 82 welded to the back side of the plates 76. Bolt portions 84 on the plates 76 are slidably received in the slots 70 of the legs 50 and projectable to engage back of the window frame 90 from which the pane was removed to insert the unit 10.

Hook plates 75 are insertable through clearance openings 86 in the brackets 72 to enable the shoulders 88 to be engaged back of the frame 90. Plates 75 are provided with flanges 92 to attach the plates 75 by removable fasteners 94. Similar fasteners 96 are employed to attach the main body of the plates 75 to the other legs of the brackets 72 as well as to the legs 50 of the collar 42. (See FIG. 10).

Horizontally sliding windows

When the unit 10 is to be used in a sliding window the subbase 22 and collar 42, shown in FIG. 1, are discarded or retained for future use in the event the occasion arises for the unit 10 to be installed in a double-hung or casement window. Such an occasion might arise when a home owner moved from one residence to another. With the subbase 22 and collar 42 out of use, the remaining basic structure of the unit 10 is substantially that disclosed in the aforesaid copending application.

With the unit 10 installed in a horizontally sliding window, the association of the unit which the window structure will be as described in U.S. Pat. No. 3,372,557. Also, the bracket, generally designated by reference character 16' in FIG. 1, may be used to provide support for the section of the base 16 carrying the housing 12, the downwardly extending inclined legs of the bracket bearing against the outside of the building in a well known manner, it being understood that the bracket 16' may be used with the unit 10 installed in a double-hung or casement window as well.

We claim:

1. In combination with a window air conditioning unit for selective installation in double-hung, sliding and casement

windows comprising a "split" base structure having two side-by-side sections substantially separated from each other to define a transverse slot terminating at a common reinforcing and connecting portion for the sections for installation in a horizontally sliding window, evaporator and compressor housing structures disposed upon said sections, a reinforcing collar for the installation of the unit in a casement window, means for interlocking said collar with said housing structures and a reinforcing member disposed in said slot for use in double-hung and casement windows and interlocking with said base structure.

2. In the combination set forth in claim 1, said collar being of inverted U-shape.

3. In the combination set forth in claim 1, said housing structures having opposed end portions, said interlocking means including flange means on said end portions and on said collar engageable with one another on relative sliding movement between said collar and said end portions.

4. In the combination set forth in claim 1, means on said collar for engagement with the pane-supporting structure of the opening of a casement window in which the unit is installed.

5. In combination with a window air conditioning unit for selective installation in double-hung, sliding and casement windows comprising a "split" base structure having two side-by-side sections substantially separated from each other to define a transverse slot terminating at a common reinforcing and connecting portion for the sections for installation in a horizontally sliding window, evaporator and compressor housing structures disposed upon said sections, a reinforcing collar for the installation of the unit in a casement window, means for interlocking said collar with said housing structures, a reinforcing member disposed in said slot for use in double-hung and casement windows and interlocking with said base structure, said collar being of inverted U-shape, said housing structures having opposed end portions, said interlocking means including flange means on said end portions and on said collar engageable with one another on relative sliding movement between said collar and said end portions, and means on said collar for engagement with the pane-supporting structure of the opening of a casement window in which the unit is installed.

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