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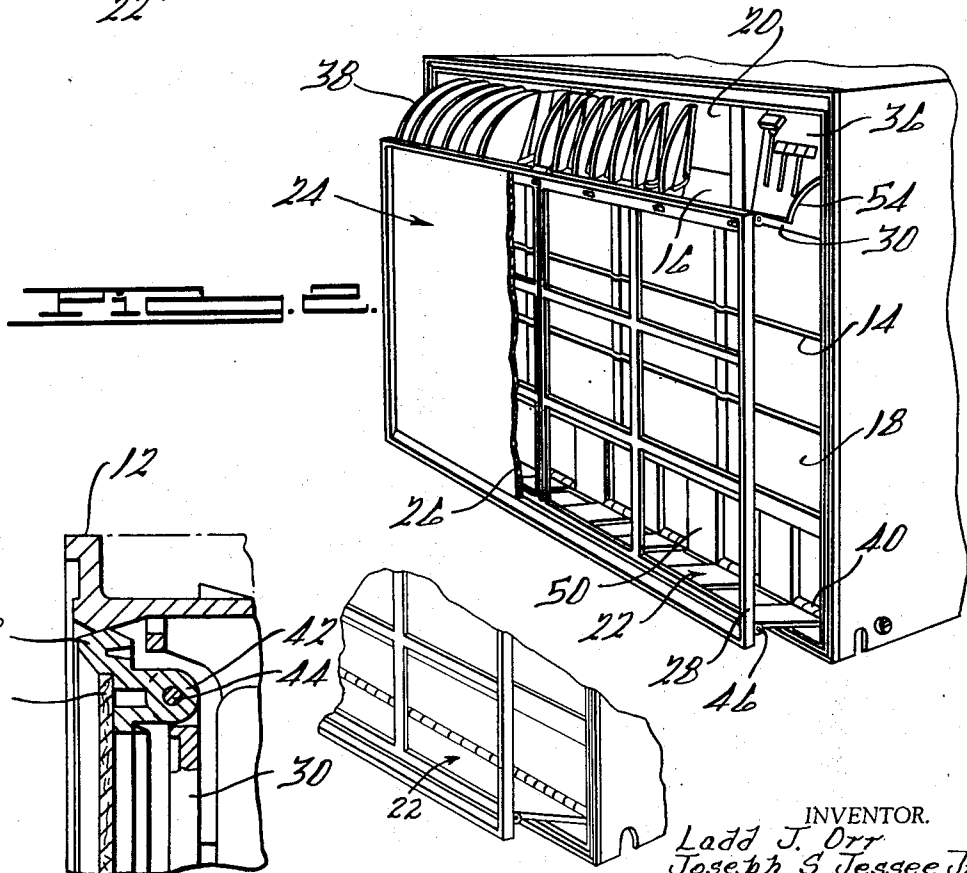
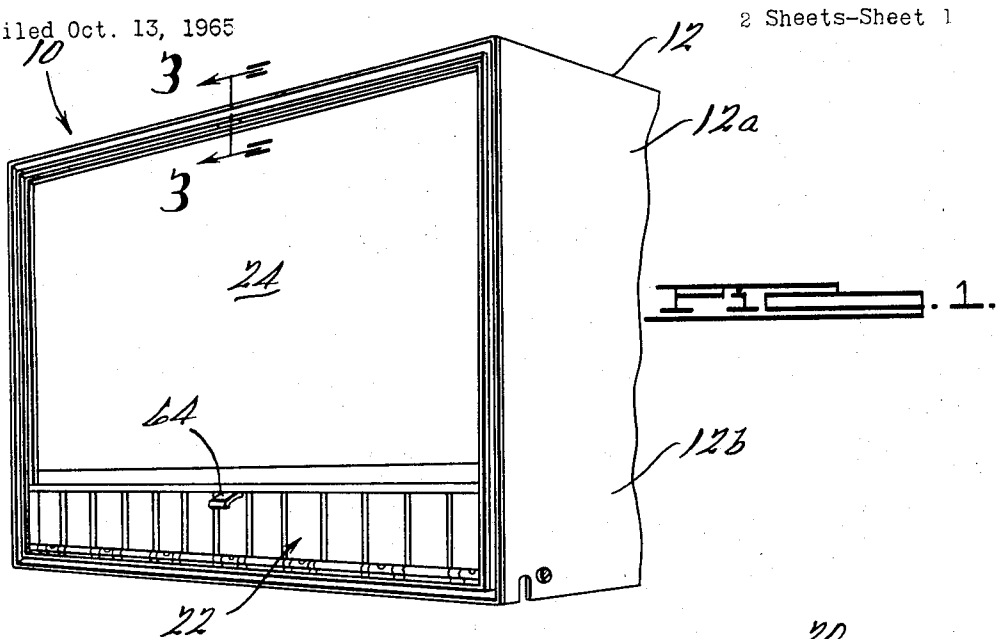
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MOVABLE COVER MEANS FOR ROOM AIR CONDITIONER

Filed Oct. 13, 1965

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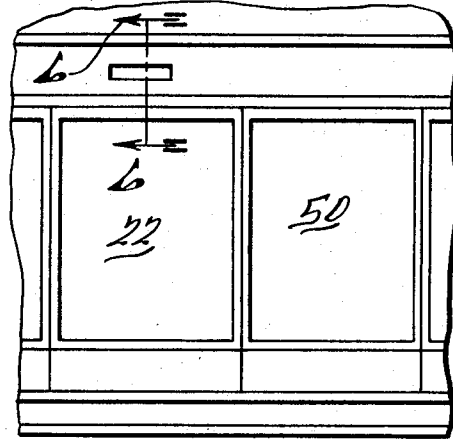
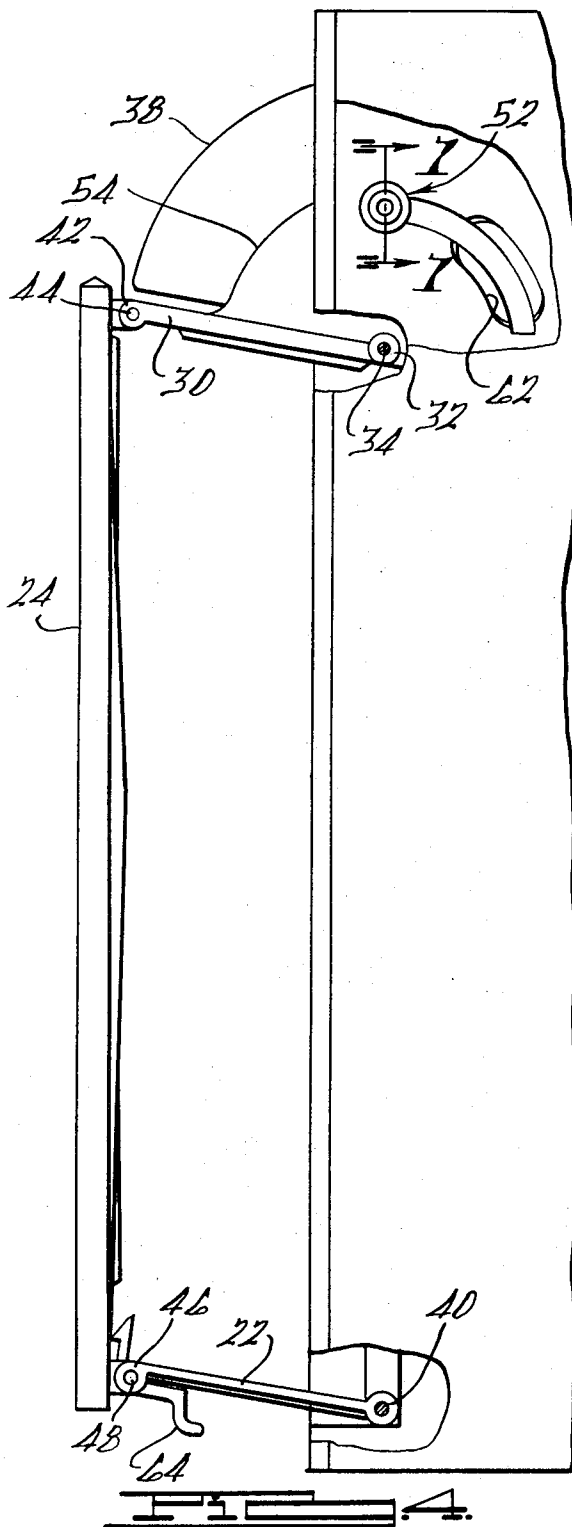
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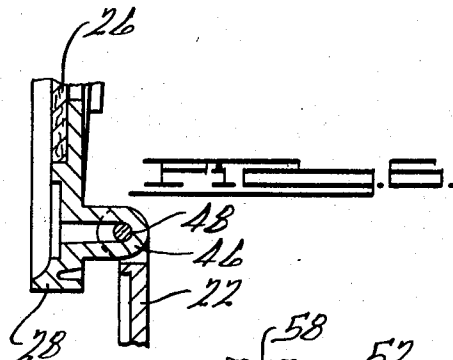
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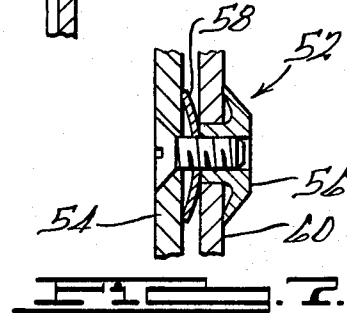
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MOVABLE COVER MEANS FOR ROOM AIR CONDITIONER

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11 Claims. (Cl. 98—94)

The present invention relates to a room air conditioner having an air outlet opening and air inlet opening located on a common wall of the air conditioning unit. More particularly, this invention relates to an improved means for covering the air inlet and outlet openings and for controlling the flow of air into and out of the air conditioner.

Room air conditioning units are generally employed to condition the air within a confined space and, therefore, the units are made as small and unobtrusive as possible. Moreover, since the units are usually mounted in a window or other wall opening, they generally present a front face to the room and it is desirable that both the room air to be conditioned and the air to be discharged from the air conditioner pass through separate openings in the front face. This need for separate and distinct openings in an area as small as the front face of an air conditioner usually results in a crowded and cramped appearance. Moreover, this appearance problem is further compounded due to the compact nature of such units, since most of the space therein is occupied by the several components of the refrigerating system and little space is available for means to control the flow of air. Accordingly, prior efforts to incorporate means for effectively sealing and exposing the air inlet and outlet openings with respect to the room in which the unit is located and for controlling the flow of air have resulted in units that are frequently noisy, inefficient, or aesthetically unpleasing.

Accordingly, it is a principal object of this invention to provide a cover assembly for the front wall of an air conditioning unit which in a single movement of the cover assembly will close and substantially seal the air inlet and air outlet openings and which will simultaneously open the air inlet and outlet openings when moved to a second position.

A further object of this invention is to provide a cover assembly which will serve as an air controlling means and as a sound deflector.

A still further object of the invention is to interconnect the above-mentioned cover assembly and an air control apparatus so that a portion of the apparatus serves as a baffle separating the air inlet opening from the air outlet opening.

Yet another object of this invention is to provide an arrangement whereby the operator of the air conditioner need only move a single portion of the cover arrangement in order to (a) open both the air inlet and air outlet opening, (b) place a baffle into position so as to minimize short circuiting of discharged air directly back to the air inlet, and (c) to position a plurality of air vanes so that they can control the direction of the discharged air.

According to the present invention, an air conditioning unit, comprising a housing having a front wall in which is located an air inlet opening and an air outlet opening, is provided with a cover assembly which is movable from a closed position wherein it is substantially flush with said housing and in overlying relationship with respect to the air inlet and outlet openings, to an open position wherein at least a portion of the cover assembly is spaced from said housing and in generally parallel relationship to the front wall. Preferably, at least a portion of the cover assembly comprises a decorative panel releasably held in a frame work. The frame and decorative panel are interconnected so that the panel may readily be removed and,

either another panel substituted, or different decorative materials, such as wallpaper, applied to it, thereby enabling the appearance of the air conditioner to be modified so as to allow it to conform with other room decorations.

The above cover assembly with its features and advantages will be better understood from the following detailed description of a preferred embodiment of the invention and from the accompanying drawings wherein:

FIGURE 1 is a perspective view of a room air conditioner having a cover assembly in its closed position;

FIGURE 2 is a perspective view of a room air conditioner having the cover assembly in a substantially fully open position with a portion of the panel of the assembly broken away to show internal details;

FIGURE 2A is a fragmentary perspective view, similar to FIGURE 2, illustrating another embodiment of the invention;

FIGURE 3 is a sectional view taken on the line 3—3 of FIGURE 1;

FIGURE 4 is a partial side view of a room air conditioner having the cover assembly in an open position with fragmentary portions thereof broken away;

FIGURE 5 is a front view of a lower portion of the cover assembly in its closed position;

FIGURE 6 is a sectional view taken on the line 6—6 of FIGURE 5; and

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 4.

The room air conditioner is indicated generally by the numeral 10 and it includes a housing 12 having generally top 12a and bottom 12b portions and a rectangular front wall 14 (FIGURE 2) which is separated into upper and lower sections by a generally horizontal divider 16. The front wall 14 of the air conditioner is provided with an air inlet opening 18 in its lower section and an air discharge or outlet opening 20 in its upper section.

Referring particularly to FIGURES 1 and 2 of the drawings, it will be seen that both the air inlet opening 18 and the air outlet opening 20 are in the alternative either completely sealed or exposed to the room atmosphere by a cover assembly arrangement which, in the embodiment shown, comprises a first section 22 and a cooperating second section 24. As seen from FIGURES 2 and 4, the second section 24 of the cover assembly is operatively connected to the front wall 14 and comprises a decorative panel 26 which is releasably held in a frame 28 having grooves (not shown) for reception of the panel 26.

Cooperating with the above described cover assembly is an air outlet opening control apparatus which comprises a plate 30 which is pivotally mounted (see FIGURE 4) at 32 on front wall 14 and transverse to the air outlet opening 20 on an axis 34 which lies generally in the plane of the front wall. The plate 30 also serves to cover a small control panel 36 on the front face of the air conditioner. The air outlet control apparatus also includes a plurality of air vanes 38 which are carried by plate 30 in a direction substantially normal to the plate and which extend across the air outlet opening 20 to afford directional control of the outgoing air.

The lower portion of the front wall 14 is covered by the first section 22 of the cover assembly which, in the illustrated embodiment, comprises a plurality of individual links pivotally mounted near the bottom 12b of the housing on an axis 40 which is substantially in the plane of the front wall and transverse to the air inlet opening 18.

The second section 24 of the cover assembly is mounted so that it will move in a translational motion from a closed position, as illustrated in FIGURE 1, wherein it is substantially flush with the front face of housing 12 and in an overlying relationship with respect to the air inlet

opening 18, to an open position, as illustrated in FIGURES 2 and 4, wherein it is spaced from and parallel to the front wall 14. Accordingly, section 24 in its open position at least partially muffles the sound emanating from the internal components of the unit since a large portion of the sound waves are prevented from passing directly into a room.

The second section 24 of the cover assembly is pivotally connected at 42 to plate 30 of the air outlet control apparatus. Accordingly, when the cover assembly is in its closed position, plate 30, as may be seen with particular reference to FIGURE 3, is substantially in the plane of the front wall 14 and in registry with the air outlet opening. When the cover assembly is moved to its open position, the second section 24 pivots about axis 44 and undergoes, as mentioned above, a translational motion wherein one component of the motion is in a direction parallel to the plane of the front wall 14. That is, in the illustrated embodiment the second section 24 moves downwardly with respect to the front wall as well as outwardly therefrom. This motion results in plate 30 being moved to a position where it projects forwardly from the front wall 14. In its fully opened position, substantially all of plate 30 projects forwardly from the front wall generally along the common edge, formed by divider 16, of the upper and lower portions of the front wall and it thereby forms a shield between the air outlet opening 20 and the air inlet opening 18 which prevents short circuiting of conditioned air to the inlet opening.

In the illustrated embodiment of this invention, the lower portion of the second section 24 is pivotally connected at 46 to the first section 22 by means of rod 48 which forms a pivot axis extending transversely of the air inlet opening. As seen in FIGURES 1 and 6, when the cover assembly is in its closed position, the first section 22 lies substantially in the plane of the front wall and in abutting relationship with the second section 24. Upon the cover assembly being opened, the first section 22 projects forwardly from the front wall until, when in a fully opened position, substantially all of the first section projects forwardly from the front wall and in substantially parallel relationship to the plate 30.

As seen with particular reference to FIGURE 5, the first section 22 comprises a plurality of rectangular shaped links. In a preferred embodiment, each of the individual links is separated from each of the others by a stationary panel member 50 which is part of the front wall 14. This arrangement offers an advantage in that air can flow into the air conditioner from the bottom of the air conditioning housing as well as around the sides thereof. It will be appreciated that the first section 22 may comprise a continuous panel extending laterally across the front wall 14 if desired (see FIG. 2A).

The cover assembly is pivotally mounted for movement from a closed position illustrated in FIGURE 1 to a fully open position as illustrated in FIGURE 2 wherein plate 30 of the air outlet control apparatus and the first section 22 of the assembly are substantially normal to the second section 24. This movement is controlled by a friction element 52 which is carried by one of a pair of end brackets 54. The end brackets 54 are connected to the plate 30 and together therewith form a unitary pivotal assembly. Friction nut 56 of friction element 52 is urged by spring washer 58 into frictional engagement with a side wall 60 of housing 12 which has a recessed portion 62. Friction nut 56 coacts with the recessed portion 62 so as to enable the cover assembly to be positioned tactually. An additional friction element 52 (not illustrated) may be carried on the other end bracket 54, if desired.

The use of the friction element as described above is a convenient method of governing the movement of the cover assembly so as to allow it to assume an infinite number of intermediate positions between a closed position and a fully open position. Such intermediate posi-

tions are advantageous in the event it is desired to deflect the discharged air upwardly.

A latch mechanism 64 may be provided to secure the cover assembly in a closed position and also to furnish a convenient method by which the operator of the air conditioning unit may move the cover to various positions.

We claim:

1. An air conditioning unit comprising a housing having a top and bottom portion, a front wall provided with an air inlet opening and an air outlet opening, and having a control apparatus for said air outlet opening and a cover assembly capable of completely sealing said front wall, said control apparatus and said cover assembly being simultaneously movable between an open and closed position, said control apparatus comprising a plate pivotally mounted on said front wall on an axis substantially in the plane of said front wall and transverse of the air outlet opening for movement between a closed position substantially in the plane of said front wall in registry with the air outlet opening to an open position in which substantially all of said plate projects forwardly from said front wall, said control apparatus further including a plurality of vanes carried by said plate and extending across the air outlet opening, said cover assembly comprising first and second movable interconnected sections which substantially seal said front wall when said cover assembly is in a closed position, said sections having mutually abutting edges with said first section being pivotally mounted at least generally near the bottom of said front wall and transverse of the air inlet opening for movement between a closed position generally in the plane of said front wall to an open position in which substantially all of said first section projects forwardly from said front wall, and said second section of said cover assembly being pivotally connected to said plate and to said first section for movement from a closed position in which said second section is substantially flush with said housing and abutting said first section, to an open position in which said second section is substantially parallel to and spaced from said front wall and normal to said plate and first section.

2. An air conditioning unit comprising a housing having top and bottom portions and a generally flat, rectangular, front wall, said front wall being provided with an air outlet opening in an upper portion of the rectangular area and an air inlet opening in a lower portion of said rectangular area, said upper and lower portions of said rectangular area having a common, generally horizontal edge, said air conditioning unit having a control apparatus for said air outlet opening and a cover assembly capable of completely sealing said front wall, said cover assembly and said control apparatus being capable of simultaneous movement between an open and closed position, said control apparatus comprising a plate pivotally mounted on said front wall on an axis substantially in the plane of said front wall and transverse of the air outlet opening for movement between a closed position in the plane of said front wall in registry with the air outlet opening to an open position in which substantially all of said plate projects forwardly from said front wall, said control apparatus further including a plurality of vanes carried by said plate and extending across the air outlet opening, said cover assembly comprising first and second movable interconnected sections which substantially seal said front wall when said cover assembly is in a closed position, said sections having generally horizontal mutually abutting edges with said first section being pivotally mounted at least generally near the bottom of said housing on an axis substantially in the plane of said front wall and transverse of the air inlet opening for movement between a closed position in the plane of said front wall to an open position in which substantially all of said first section projects forwardly from said front wall, and said second section of said cover assembly being pivotally connected to said

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plate and to said first section for movement from a closed position in which said second section is substantially flush with said housing, in overlying relationship with respect to said plate, and abutting said first section, to an open position in which said second section is substantially parallel to and spaced from said front wall and normal to said plate and first section.

3. An air conditioning unit as set forth in claim 2 wherein the air outlet control apparatus comprises a rectangular shaped plate pivotally mounted on said front wall on an axis substantially in the plane of said front wall and generally along the common edge of the upper and lower portions of the rectangular area, said axis further being located along the lower edge of said plate such that when said plate is in an open position it projects forwardly from said wall in the vicinity of said common edge thereby serving as a baffle to further separate the air outlet opening from the air inlet opening.

4. An air conditioning unit as set forth in claim 2 wherein the first section of the cover assembly is rectangular in shape and pivotally mounted on said front wall on an axis substantially in the plane of said front wall and along the lower horizontal edge of the lower portion of said front wall, said axis further being located along the lower edge of said first section such that when said first section is in an open position it projects forwardly from said wall and substantially parallel to the air outlet control plate when said plate is in the open position.

5. An air conditioning unit as set forth in claim 2 wherein the second section of the cover assembly is rectangular in shape and has its upper horizontal edge pivotally connected to the upper edge of the plate of the air outlet control apparatus and its lower edge pivotally connected to the upper horizontal edge of the first section of the cover assembly.

6. An air conditioning unit comprising a housing having top and bottom portions and a generally flat, rectangular, front wall, said front wall being provided with a substantially rectangular air outlet opening in an upper portion of said front wall and an air inlet opening in a lower portion of said front wall, said upper and lower portions of said front wall having a common, generally horizontal edge, said air conditioning unit having a control apparatus for said air outlet opening and a cover assembly capable of completely sealing said front wall, said cover assembly and said control apparatus being capable of simultaneous movement between an open and closed position, said control apparatus comprising a rectangular plate pivotally mounted on said front wall on an axis substantially in the plane of said front wall and transverse to and generally along the lower horizontal edge of the air outlet opening, said axis further being located along the lower horizontal edge of said plate, and said control apparatus further including a plurality of vanes carried by said plate and extending across the air outlet opening, said cover assembly comprising first and second movable interconnected sections which substantially seal said front wall when said cover assembly is in a closed position, said sections having

generally horizontal mutually abutting edges with said first section being generally rectangular in shape and pivotally mounted on an axis substantially in the plane of said front wall and transverse to and generally along the lower horizontal edge of the air inlet opening, said axis further being located along the lower horizontal edge of said first section, said second section of said cover assembly being generally rectangular in shape and having its upper horizontal edge pivotally connected to the upper horizontal edge of the plate of said air outlet control apparatus and its lower edge pivotally connected to the upper horizontal edge of the first section of the cover assembly, said simultaneous movement of said air outlet control apparatus and cover assembly to said closed position causing said plate of the air outlet control apparatus and said cover assembly to assume a position substantially parallel to said front wall with said plate being in registry with said air outlet opening, said first section of the cover assembly lying generally in the plane of said front wall, and said second section in overlying relationship with respect to said plate, and said simultaneous movement of said air outlet control apparatus and cover assembly to said open position causing said first section of the cover assembly and plate of the outlet control apparatus to project forwardly from said front wall, and said second section of the cover assembly to assume a position substantially parallel to said front wall and normal to said plate and first section of the cover assembly.

7. An air conditioning unit as set forth in claim 6 wherein the second section of the cover assembly comprises a rectangular frame and a decorative panel mounted in said frame with cooperating means on said frame and said panel to accommodate the insertion and removal of said panel from said frame.

8. An air conditioning unit as set forth in claim 6 wherein the first section of the cover assembly comprises a plurality of individual link members.

9. An air conditioning unit as set forth in claim 6 wherein the first section of the cover assembly comprises a single continuous panel member.

10. An air conditioning unit as set forth in claim 6 wherein the first section of the cover assembly comprises a plurality of links each of said links being separated from the other by a stationary panel.

11. An air conditioning unit as set forth in claim 6 wherein the vanes of the air outlet control apparatus are mounted on and in a direction normal to the plate of said apparatus.

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