Dec. 24, 1963 M. SANOFF 3,115,082

AIR CONDITIONER COVER

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Fig. 1.

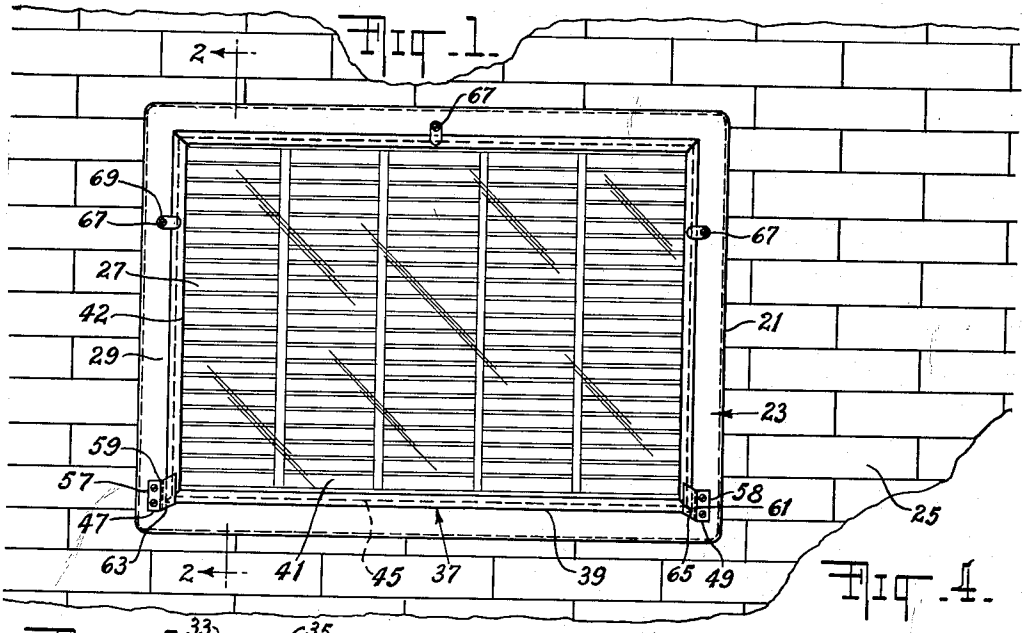


Fig. 2.

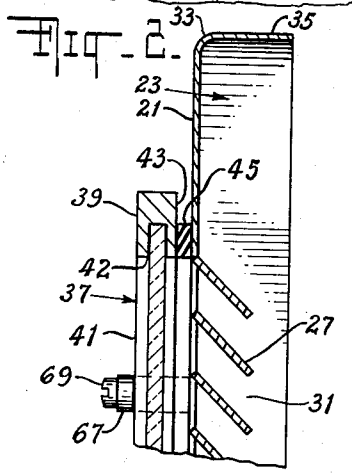


Fig. 3.

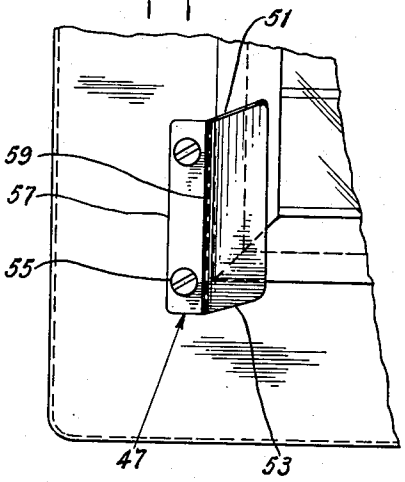
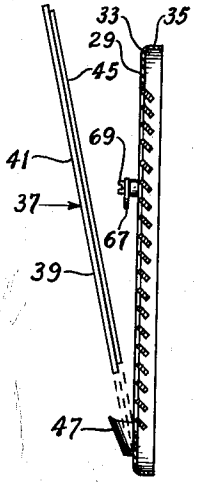


Fig. 4.



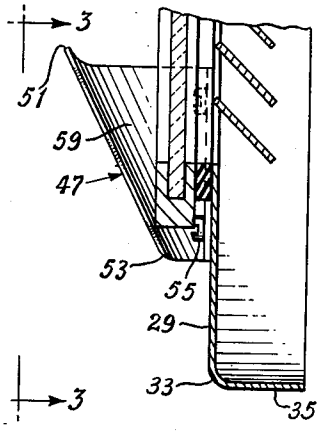
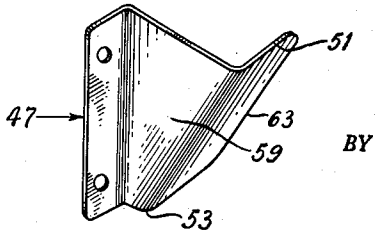


Fig. 5.



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Fig. 6.

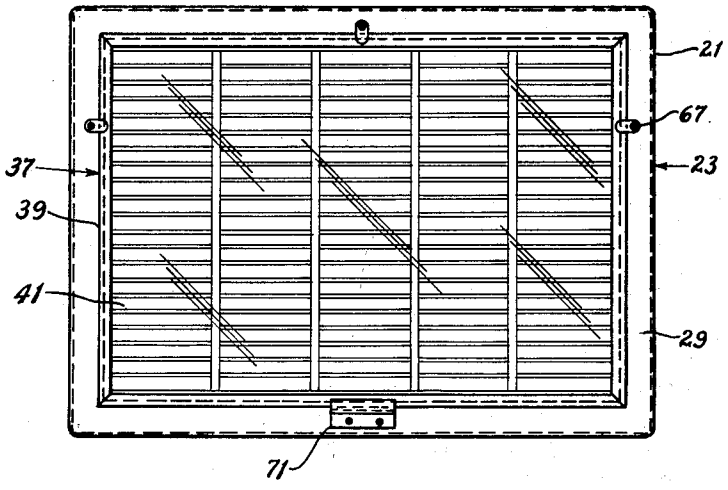


Fig. 7.

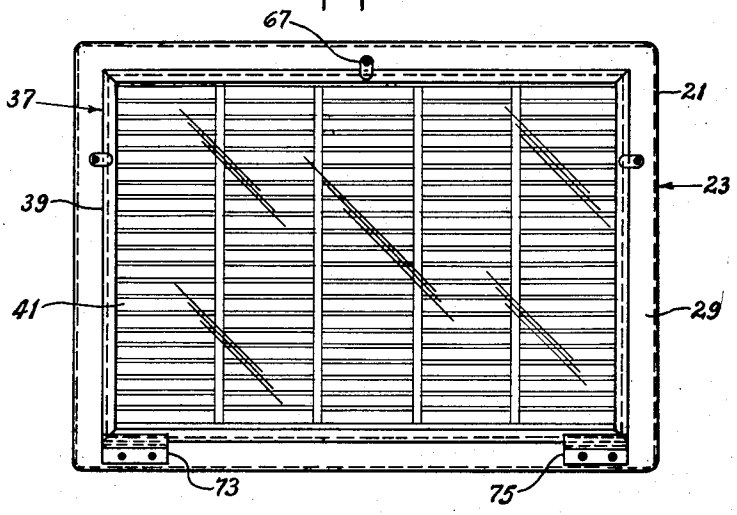
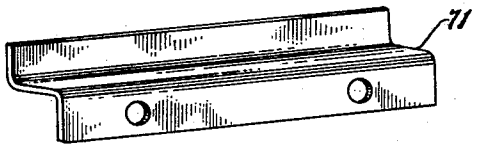


Fig. 8.



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Fig. 9.

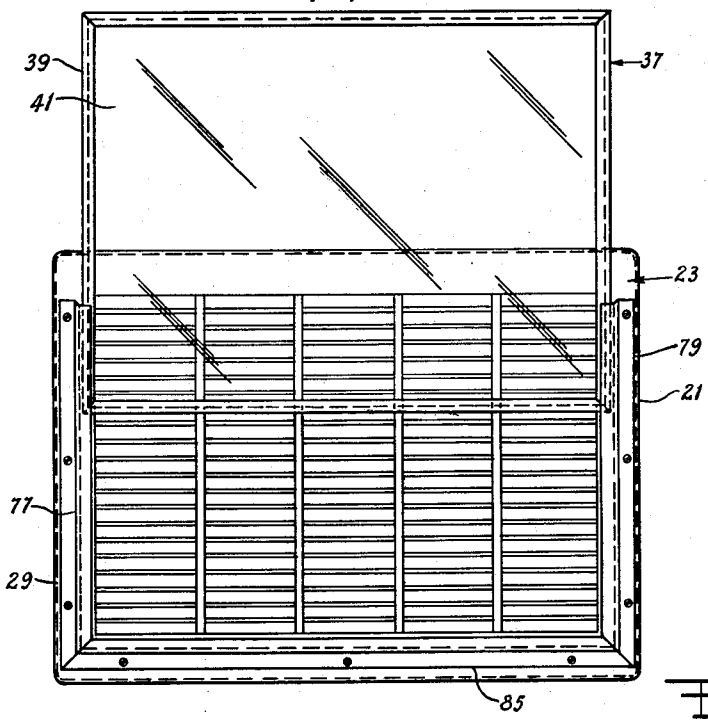
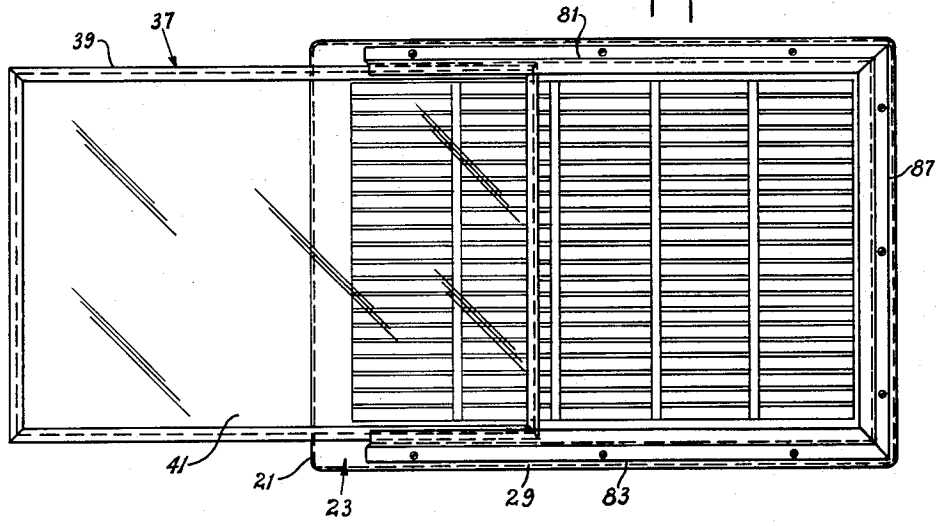


Fig. 10.



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3,115,082

AIR CONDITIONER COVER

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3 Claims. (Cl. 98—37)

This invention relates to a cover for air conditioning machines and, more particularly, to a cover unit for a slim line, window or wall room conditioner, the outer side of which conditioner is substantially flush with the surface of the window or wall in which it is located.

Recently, the air conditioning of working and living spaces has become a routine procedure in the construction of office buildings and apartment houses, even factories and private homes. Central refrigerating plants are often employed to cool air which is then conveyed via extensive insulated ductwork to the various spaces to be air conditioned. Central air conditioning apparatus is difficult and expensive to install in existing buildings and oftentimes it is considered to be more desirable for each room, apartment, office or working area to have its own air conditioner over which the occupants have sole control. For these reasons, window air conditioners have been extensively adopted; they are now a familiar sight in many American cities, their unseemly forms protruding conspicuously and unattractively from hundreds of windows.

With the invention and development of newer air conditioning machinery, it has been feasible to reduce the size of the air conditioner cabinet so that it may be mounted flush with the outside wall or window and still not extend too obtrusively into the room to be cooled. Such flush mounted units preserve the integrity of the architectural lines of the building exterior and are also functionally superior, requiring fewer cleanings, since they do not have any large horizontal areas on which to collect grime and refuse.

Although air conditioners are sometimes constructed to additionally function as heating and ventilating devices, in most of the United States their primary function is to cool and dehumidify the air on hot summer days and nights. Consequently, they stand idle in winter, as well as most of autumn and spring, more than half of the year. During this period exterior openings in the air conditioner should be securely covered to avoid undue exposure to the elements, which can lead to rusting of some moving parts and impairment of delicate controls. Dirt and dust, which find their way inside the air conditioner when it is idle and uncovered, also tend to interfere with its efficient operation and, when the conditioning action is inaugurated after a period of inactivity, might result in blowing of dust into the room to be cooled.

To protect room air conditioners during the period of colder weather, when they are not used, it has been customary to wrap them in waterproof cloth or plastic covers. Usually, such covers have encased the entire projecting window or wall mounted conditioner, tightening being effected by a drawstring or other similar means. Due to their design and the apparently accepted requirement that they enclose the entire conditioner, these covers had to be flexible, yet capable of being tightly drawn into intimate contact with the conditioner cabinet, even over sharp edges. Consequently, the plastics, or waterproofed cloths used, tended to wear through or weaken at strain points, necessitating periodic replacement. After a few years use, if they lasted that long, the covers appeared dingy and unattractive. Then, too, such enveloping covers are not easy to install properly in place, must usually be built to fit only one size or style of machine, and cannot be adapted for use with air conditioners whose exterior cabinet faces are flush or substantially flush with a window or wall surface.

The present invention provides an attractive closure which positively protects an idle room conditioner of the flush mounted type against the effects of the elements, dirt and dust, during non-use. It is easy to install and remove, can be cleaned with a minimum of effort, is adaptable for use with a wide variety of designs of air conditioner cabinets and in a variety of types of installations, all of these advantages being obtainable at very reasonable cost. The present closure is not subject to drying out, cracking or wear; it will remain attractive and new looking for years. As may be desired, it can be transparent or may be opaque and designed to conceal the presence of an air conditioning cabinet or air passages. Other advantages and attributes of the invention will be apparent from the following statement of objects, and with the subsequent detailed description in this specification, considered together with the drawings and claims.

It is an object of this invention to provide a cover for flush mounted room air conditioners that can be readily installed, from either inside or outside the building, requiring only a minimum of effort for installation or removal.

It is an object to provide a cover for such air conditioners which will positively prevent entrance of outside dirt, dust, and natural precipitation into the air conditioner during periods of extended idleness.

It is also an object to provide such a cover which will seal off the openings in the face of an air conditioner cabinet to prevent passage of air, dirt, dust and precipitation through the cabinet, thereby preventing heat loss and keeping the conditioned room clean.

Another object of the invention is to make a cover which can easily be applied to any of a variety of styles and sizes of flush air conditioners, with a minimum of modifications thereof or attachments applied thereto.

Another object is to make a cover from readily available parts or parts easily and economically made from standard stocks. It is also desirable that the cover should be one with insulating properties to minimize conductive heat losses.

Still another object is to make a cover that will tend to prevent communication of outdoor noises into the room; such a cover should not iself make flexing or rattling noises in reaction to drafts, winds and ambient pressure changes.

It will be appreciated that all these objects and more have been attained by the present invention, as exemplified by the specification and drawing in which:

FIG. 1 is a vertical front elevation of the cover of this invention in place on a flush mounted air conditioner cabinet;

FIG. 2 is a partial, enlarged vertical section along plane 2—2;

FIG. 3 is an enlarged partial front elevation of the cover, illustrating the guiding supporting brackets into which the cover is placed and which hold the cover bottom against the air conditioner;

FIG. 4 is a transverse sectional elevation of the outer part of an air conditioner cabinet, illustrating the positioning of a cover;

FIG. 5 is a prespective view of one of the brackets shown in FIGS. 1–4;

FIG. 6 is a front elevation of the installed cover, utilizing a single Z-bracket as a bottom support;

FIG. 7 is a front elevation of a similar installed cover, this time containing a pair of Z-brackets supporting cover ends;

FIG. 8 is a perspective view of a Z-bracket;

FIG. 9 is an elevation of a cover which is to be installed by sliding into position along vertical tracks or channels; and

FIG. 10 is an elevation of a cover being slid into position along horizontal tracks.

Numeral 21 designates the external cabinet portion of an air conditioning machine 23. As illustrated, the machine is set in place in the brick wall 25 of a building and is capable of conditioning the room of whch the brickwork constitutes a part of the exterior wall. Louvers 27 are cut and pressed through parts of substantially flat cabinet wall 29, hereafter referred to as the front of the conditioner. Other types of louvers may also be used but the type illustrated is preferred for reasons of economy and ease of manufacture. Openings or passages 31 between the louvers permit the passage of air to and from the air conditioner when it is in use. If desired, louvers 27 may be positioned so that outward air flow direction is downward instead of upward. Cabinet wall 29 is rounded at edges 33 and joins short sides 35. As shown, the front 29 of the conditioner projects slightly from building wall 25 but is still substantially flush with that wall. If desired, the front may be made exactly even with the wall so that there is not even a slight interruption of its continuity.

Within the walls and the room being conditioned are the mechanical and electrical mechanisms which bring a mixture of inside and outside air across cooling coils, cooling the air and condensing out some of its moisture, and then direct that air into the room, simultaneously exhausting heat created by compression of the refrigerant in the refrigeration cycle. Also in the machine, within the walls or room, are most of the various interconnected controls, switches, relays and other parts which maintain the machine in safe and accurately regulated operation. Such elements are of conventional construction, are not required parts of this invention and are not illustrated in the drawing.

The cover 37 comprises a rectangular frame 39 of rigid material, preferably a metal, such as aluminum. Set in the frame is a cover plate 41, preferably of a form-retaining insulating material, such as glass or plastic, having a smooth surface to facilitate cleaning and to keep clean longer. Around the inner edge 42, of the frame 39, which is channeled about the cover plate 41, is a gasket (not illustrated), usually a vinyl plastic, which prevents passage of air or dust through the cover-frame joints. Around the inner flat surface 43 of frame 39 is another gasket 45. This gasket is a continuous strip or fitted strips of sponge material, held to the frame and of sufficient thickness, between 1/16 inch and 1/2 inch, usually about 1/4 inch, to effectively seal the joinder of frame 39 and cabinet wall 29, the resilience of the sponge allowing the cover to conform perfectly with the conditioner front, despite the possible presence of surface irregularities on the air conditioner. Polyurethane foam gasketing has been found to be ideal for this application, being of excellent resilience and also being less susceptible to hardening and cracking with age than is rubber.

At the bottom of the cover is a pair of specially constructed brackets 47 and 49. The shape of these brackets is best shown in FIG. 5. They may be characterized as slanted Z-brackets or tilt brackets, the upper edge 51 extending farther outward from the conditioner front than the lower edge 53. The brackets are Z-shaped in cross section and the upper edge 51 strongly resembles that characterizing Z. Brackets 47 and 49 are fastened to air conditioner front 29 by screw 55, such as sheet metal screws or other self-tapping screws, which pierce inner sides 57 and 58 of the bracket and cabinet wall 29. When fastened in place on the conditioner, brackets 47 and 49 guide the frame to position, connecting sides 59 and 61 restricting lateral movement, and outer sides 63 and 65 preventing outward movement of the cover and guiding it against the conditioner as it is lowered into place.

After lowering to position, the cover is also held tightly against the conditioner at top and sides by the action of appropriately distributed swivel clips 67 which are fastened in movable relationship to the cover by sheet metal screws 69. After lowering the cover into place, with brackets 47 guiding the bottom part of the frame into contact with the air conditioner front and holding it there, swivel clips 67 are turned so as to press the frame of the cover tightly against the air conditioner. The entire operations of installing and removing the cover can be completed in less than thirty seconds and the seal obtained between cover and conditioner is air tight.

Although the above description was of a preferred embodiment of the invention, as shown in FIGS. 1–5, in which the means for holding the cover comprised two special lower corner brackets and swivel clips, other brackets and channels may also be used for this function, some of which are illustrated in FIGS. 6–10. Thus, a Z-bracket 71, shown in FIG. 8, may be the sole central support for a cover, as in FIG. 6 or a pair of such brackets 73 and 75 may be located at the ends of the cover, as in FIG. 7. Channels 77 and 79 may act as vertical tracks, as in FIG. 9 or channels 81 and 83 may be horizontal tracks, as in FIG. 10, allowing the installer merely to slide the cover into place. At the bottom, in FIG. 9 or the right side, in FIG. 10, are other channels 85 and 87, respectively, to hold those ends in place.

Means may also be provided to exert a force against the top and left sides of the covers illustrated, but are not necessary; in some embodiments, channels 85 and 87, or equivalent holders may also be omitted, reliance being placed on the tracks to maintain sufficient force against the cover frame. To obtain such action it is evident that the distance between channel wall and air conditioner front must be less than the thickness of the cover plus foam gasket. Instead of channels, extending Z-shaped brackets or extrusions may be substituted, or other suitably shaped guides may be employed. Alternatively, in place of channels 85 and 87, the vertical tracks 77 and 79 or the horizontal tracks 81 and 83 may have their ends turned inwardly to provide extending lips so as to act as supports for the frame. In this way only two tracks instead of three are necessary. The polyurethane foam preferably used as gasketing is resistant to tearing and slides fairly easily, thus, can be slid through the length of the channel without loss of resilience or objectionable change of shape.

The advantages of the cover assembly of this invention over the covers previously used is evident from the previous description and discussion. The neat, attractive, functional construction, simplicity and ease of installation and removal, foolproof operation and economy attendant its use are all apparent. Added to these is the superiority of the present invention for use with flush air conditioner installations, where cloth or plastic wrap-around covers are almost impossible to install satisfactorily.

Flush air conditioners are usually located either in a window or near to one. Thus, access may be had for easy installation of the present covers. The brackets and tracks will be so situated to allow most convenient installation of the cover from the nearest point of access.

Brackets, channels, swivel clips and other holding means may be welded or otherwise sealed to the air conditioner when it is manufactured or they may be fastened in place on an installed machine. The latter course is the most usual. If sheet metal screws are employed and are judiciously placed, the guide and holding means may be removed from the air conditioner, if desired, with only a few inconspicuous holes to testify to its having been present. To effect placement of the brackets and clips it is necessary only to drill 5–10 holes for sheet metal screws, depending upon the particular brackets chosen. The use of a template facilitates neat and accurate placement of the screws in position where they cannot contact working

parts of the air conditioner. By such a technique an air conditioner can be fitted with a cover in less than five minutes.

A significant advantage of this invention is the fact that it can be made largely from economical, readily available, standard parts. Those parts, such as the special bracket mentioned above, which cannot be purchased on the market, can easily be made by bending sheet stock. Aluminum or other frames are on the market, with channels for the cover plate of glass, plastic, fiberboard, wood or other thin, flat, form-retaining material; with some material it is possible to dispense with the use of the frame, the cover, itself, being held directly to the air conditioner.

While conventional gasketing or a weather stripping material may be used on the frames, it has been found to be highly preferable to employ a resilient, open celled polyurethane foam which has previously been coated on one side with a pressure sensitive adhesive. Of course, conventional cements may also be used, as may rubber foams and other accepted gasketing, but without the advantages of the preferred gaskets. Polyurethane does not take a permanent set, even when subjected for long periods to a distorting force. It is resistant to tearing and will not adhere to the air conditioner front, unlike many plasticized plastics. If it should be wanted to remove the gasketing for replacement, it is a simple matter to strip it from the frame, the adhesive remaining on the plastic, not partially holding to the frame, requiring scraping thereof before attachment of another gasket.

The invention has been described in conjunction with several illustrations of preferred embodiments. It will be evident to one of skill in the art that equivalents may be substituted for the various elements described, which modified forms of the invention will be within the scope of the appended claims.

What is claimed is:

1. An air-conditioning machine cover assembly for a substantially flush mounted air-conditioning machine positioned on the outside of a building, said assembly comprising a substantially flat exterior front end of said air-conditioning machine mounted substantially flush with the adjacent exterior surface of said building and having an opening for communication with the interior of said machine to permit the passage of air to be conditioned in said machine, a form-retaining cover plate of sufficient size to overlie the opening in the front end of the air-conditioning machine, said cover plate being held over the opening in the front end of the air-conditioning machine and against the front end of said machine in air-tight engagement thereagainst, guide means positioned on said front end for removably positioning the cover plate over the opening and exerting a force on the cover plate with a component of the force being normal to the surface of the front end of the air-conditioning machine, said guide means having a surface which, on positioning of the cover plate, applies a force pressing the cover plate against the air-conditioning machine front end, and force-exerting means at a point spaced from said guide means, pressing the cover plate tightly against the front end and holding said cover firmly in place, thereby preventing passage of air through the cover and also preventing rattling of the cover against the front end of the air-conditioning machine.

2. An air-conditioning machine cover assembly for a substantially flush mounted air-conditioning machine positioned on the outside of a building, said assembly comprising a substantially flat exterior front end of said air-conditioning machine mounted substantially flush with the adjacent exterior surface of said building and having an opening for communication with the interior of said machine to permit the passage of air to be conditioned in said machine, a form-retaining cover plate of sufficient size to overlie the opening in the front end of the air-conditioning machine, said cover plate being held over the opening in the front end of the air-conditioning machine and against the front end of said machine in air-tight engagement thereagainst, guide means positioned on said front end for removably positioning the cover plate over the opening and exerting a wedging force on the cover plate with a component of the force being normal to the surface of the front end of the air-conditioning machine, said guide means having a surface which, on positioning of the cover plate, applies a wedging force pressing the cover plate against the air-conditioning machine front end, and force-exerting means at a point spaced from said guide means, pressing the cover plate tightly against the front end and holding said cover firmly in place, thereby preventing passage of air through the cover and also preventing rattling of the cover against the front end of the air-conditioning machine.

3. An air-conditioning machine cover assembly for a substantially flush mounted air-conditioning machine positioned on the outside of a building, said assembly comprising a substantially flat exterior front end of said air-conditioning machine mounted substantially flush with the adjacent exterior surface of said building and having an opening for communication with the interior of said machine to permit the passage of air to be conditioned in said machine, a form-retaining cover plate of sufficient size to overlie the opening in the front end of the air-conditioning machine, said cover plate having a resilient strip attached about the periphery of the inner side of said cover plate which is held over the opening in the front end of the air-conditioning machine and against the front end of said machine in air-tight engagement thereagainst, guide means positioned on said front end for removably positioning the cover plate over the opening and exerting a wedging force on the cover plate with a component of the force being normal to the surface of the front end of the air-conditioning machine, said guide means having a surface which, on positioning of the cover plate, applies a wedging force pressing the cover plate against the air-conditioning machine front end, and force-exerting means at a point spaced from said guide means, pressing the cover plate tightly against the front end and holding said cover firmly in place, thereby preventing passage of air through the cover and also preventing rattling of the cover against the front end of the air-conditioning machine.

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