

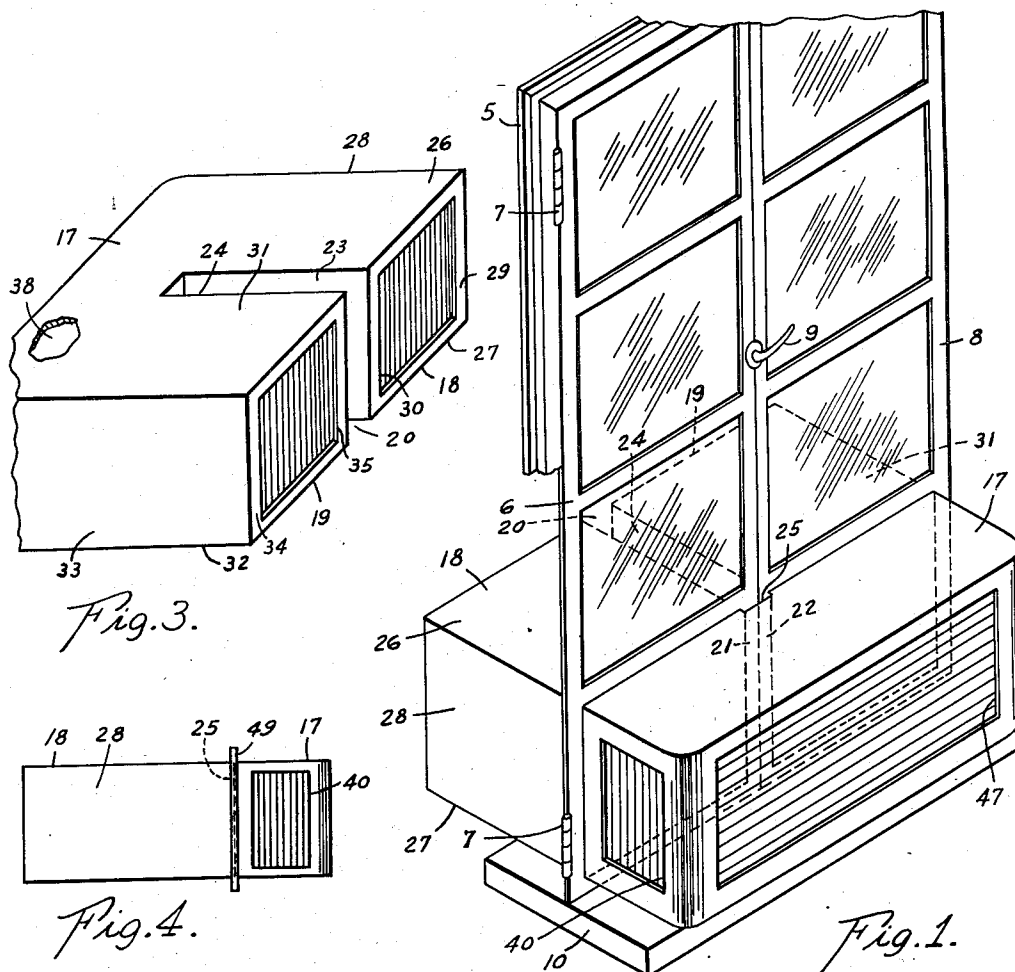
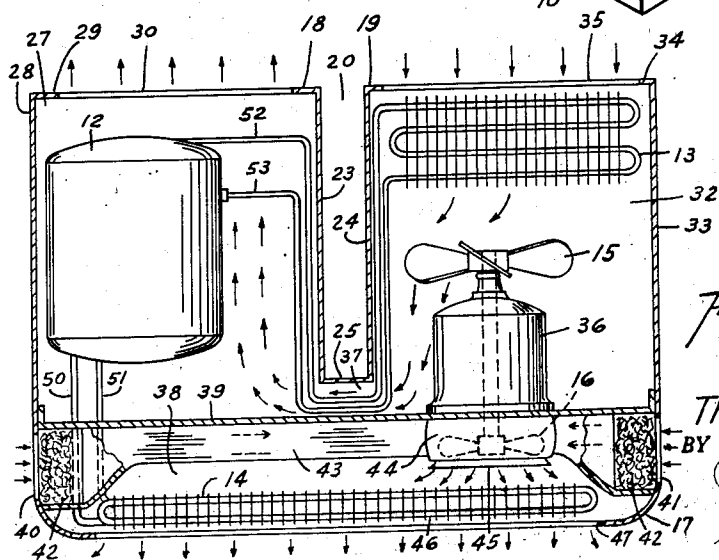
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CASEMENT WINDOW MOUNTED AIR CONDITIONER

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CASEMENT WINDOW MOUNTED AIR
CONDITIONER

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This invention relates to an air conditioner adapted for mounting upon a casement type window. The device commonly is known also as a unit cooler, and is generally used in cooling a single room or compartment of a building.

An object of the invention is to provide a cooler or air conditioner of the character stated, which is particularly adapted for application to casement windows, or windows hung by means of vertical hinge pins, for swinging movement in a horizontal plane.

Another object is to simplify and expedite the installation of an air conditioner in a casement window structure, thereby to effect substantial savings of time and labor expense, while at the same time maintaining a pleasing appearance of the window.

A further object of the invention is to obviate the necessity of removing or substituting window sashes, when applying the air conditioner to windows of the casement type.

Another object is to save time and labor in the event of moving the air conditioner from one casement window to another, when desired, or in removing the device for repairs or replacement.

The foregoing and other objects are attained by the means described herein and illustrated upon the accompanying drawing, in which:

Fig. 1 is a fragmental perspective view of a steel casement window structure, to which has been applied the improved air conditioner of the present window.

Fig. 2 is a cross-sectional view of the air conditioner as seen in plan, or from above, with the top portion of the housing cut away.

Fig. 3 is a perspective view of the device, showing the rear and one side thereof.

Fig. 4 is a side elevational view of the device in slightly modified form.

In the drawing, 5 indicates a window frame to which is hinged at 7—7, a glazed casement window sash 6. The other sash 8 may be similarly hinged to the frame in the usual manner, and the sashes when closed as shown may be latched or locked against swinging movement by means of a latching or locking device 9 of any common type. The sill of the window is indicated at 10, and may be of any material commonly used for window sills. The window itself may be of metal or wood.

The air conditioner or cooling unit in general comprises a sealed compressor unit 12, or one of any other type, a condenser 13, an evaporator 14, and air moving means 15 and 16 in the form of fans or blowers. These elements are enclosed within a compartmented housing which is specially designed and constructed to fit within the casement window opening. The housing comprises a full window width evaporator section 17 for disposition interiorly of the room, a com-

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pressor section 18, and a condenser section 19, the two latter sections being separated by a space 20 of sufficient width to receive between them the overlapping central mullions 21, 22 of the window sashes. The space 20, in effect, is a vertical slot in the housing defined by adjacent spaced parallel walls 23 and 24 of the sections 18 and 19, and having a base or narrow connecting wall 25 to abut, or substantially abut the mullions, as indicated upon Fig. 1. Wall 25 extends from the top to the bottom of the unit housing.

The compressor housing 18 has a top wall 26, a bottom wall 27, side walls 28 and 23, and an end wall 29. The end wall, in preference to any other, is provided with a large opening 30 which serves as an exhaust port for air used in cooling the condenser and the compressor. Likewise, the condenser housing 19 has a top wall 31, a bottom wall 32, side walls 33 and 24, and an end wall 34. The end wall 34, in preference to any other wall of the condenser section, is provided with a large opening 35 which serves as an air intake port for cooling the condenser. The air entering the intake port 35 is moved by the fan 15 actuated by electric motor 36, and flows as indicated by the arrows, through a passageway 37 which connects the condenser compartment with that of the compressor. The cooling air exhausts through the compressor housing port 30, as indicated.

It is to be understood that the air intake and exhaust ports 35 and 30, if desired, may be formed in the bottom walls of the sections 18 and 19, or in any other walls thereof where practicable. The important consideration is that the ports be in communication with the air outside of the room to be cooled.

The room air is to be circulated through the evaporator compartment 38, which is completely isolated from the compressor and condenser compartments by means of a partition wall or member 39. The partition member is spaced from the housing wall 25 to form the passageway 37. The room air, circulated by the fan or blower 16 driven by motor 36, may enter the evaporator compartment or cooling chamber through side openings 40 and 41, which may be equipped with filters or screens 42 if desired, and upon passing through the filters, may enter opposite ends of a duct 43 in which the fan or blower 16 operates. The air passing through the duct and into the blower or fan housing 44, is discharged from the duct at the outlet 45, whence it strikes the evaporator or cooling coil 46 and passes through it to exhaust into the room by way of the front opening 47. The various openings 40, 41 and 47 may be equipped with suitable grilles or gratings, as shown upon Fig. 1. The same applies also to the intake and exhaust ports of the condenser and compressor housings.

The fluid pipes or tubes of the refrigeration system are indicated at 50, 51, 52 and 53, and these are connected to the condenser, the evaporator, the compressor and other usual elements of the system in the customary way. It is deemed unnecessary for the purposes of the present disclosure, to detail the refrigeration system as it involves no departure from common practice in the refrigeration art. It may be pointed out, however, that the tubes 52 and 53 leading from the compressor to the condenser, must necessarily take a circuitous path through the compartments 18 and 19, due to the presence of the slot or space 20 between the housings of the condenser and the compressor. As shown by way of example, the said tubes pass through the opening 37 between the walls 25 and 39.

To effect installation of the improved cooling unit or air conditioner of the present invention, it is necessary only to lock the window sashes 6 and 8 in the closed position, remove the glass from the lowermost lights of the sashes, and slide the unit through the openings previously occupied by the glass panes, with the mullions 21 and 22 occupying the space 20 between the divided or separated housings 18 and 19. The wall 25 at the base of the slot may substantially contact the mullions, and where the unit housing contacts the window sashes a suitable seal may be furnished for the purpose of excluding insects, dirt, and other foreign substances from the room. As suggested by Fig. 4, a seal might be effected by means of a flange 49 applied about the unit and perhaps equipped with a suitable gasket to bear against the sashes. Such a seal, when necessary, can be provided in various ways. It will at once be appreciated that the installation is effected quickly and with little effort and inconvenience, thereby saving time and labor expenses. The unit may receive its support from the window sill, wholly or partially.

It is a matter immaterial to the invention, whether the flow of air is as indicated upon the drawing, or reversed as to the direction of flow. This may depend largely upon the type of fans or blowers employed in the system, or upon the location thereof. The various ports for the intake and delivery of air may be located otherwise than as shown in the example illustrated by the drawing. For example, the ports 40 or 41 may be located in the top wall of the evaporator housing 17, or the ports 30 and 35 of Fig. 3 may be located in the sides or bottom walls of the housings 18 and 19.

Various other modifications and changes in structural details of the device may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim is:

1. An air conditioning device for application to a casement window having a pair of unglazed lights separated by an upright mullion, said device comprising a housing having a pair of spaced exterior housing sections, each adapted to extend through one of said unglazed window lights in straddling relation to the mullion of the window, means within the housing to cool and circulate a body of air at one face of the window, and compressor and condenser means mounted within the exterior housing sections, including means to dissipate heat beyond the other face of the window.

2. An air conditioning device for application to a casement window having a pair of unglazed lights separated by an upright mullion, said device comprising a housing having a pair of spaced

housing sections, each adapted to extend through one of said unglazed window lights in straddling relation to the mullion of the window, a third housing section connecting the pair of sections first mentioned and extending across them a distance approximating the combined width of the spaced sections and the space therebetween, said third section having room air intake and exhaust ports, an evaporator within said third section, and means therein to move room air through the intake and exhaust ports and past the evaporator, and means within the pair of spaced housing sections to maintain a chilled condition of the evaporator.

3. An air conditioning device for application to a casement window having a pair of unglazed lights separated by an upright mullion, said device comprising a housing having a pair of intercommunicating spaced housing sections each including a venting port to be exposed exteriorly of the window, said sections each being dimensioned to extend through one of said unglazed window lights, with the intervening space accommodating the mullion of the window, a third housing section connecting the sections first mentioned, a partition means substantially isolating the third section from the pair of sections, to provide an evaporator compartment, said compartment being vented to the interior side of the window, an evaporator within said compartment, means to move room air through the vents of the evaporator compartment and past the evaporator for cooling said air, means within at least one of the intercommunicating housing sections to maintain a chilled condition of the evaporator, and air moving means for establishing a current of cooling air through the intercommunicating housing sections and their venting ports.

4. An air conditioning device for application to a casement window having a pair of unglazed lights separated by an upright mullion, said device comprising a housing having a pair of intercommunicating spaced housing sections each including a venting port to be exposed exteriorly of the window, said sections each being dimensioned to extend through one of said unglazed window lights, with the intervening space accommodating the mullion of the window, a third housing section connecting the sections first mentioned, a partition means substantially isolating the third section from the pair of sections, to provide an evaporator compartment, said compartment being vented to the interior side of the window, an evaporator within said compartment, means to move room air through the vents of the evaporator compartment and past the evaporator for cooling said air, and means within at least one of the intercommunicating housing sections to maintain a chilled condition of the evaporator.

5. An air conditioning device for application to a casement window having a sill and a pair of unglazed lights separated by an upright mullion immediately above the sill, said device comprising a housing having a pair of adjacent spaced exterior housing sections each adapted to extend through one of said unglazed window lights, with the space between the housing sections accommodating the mullion of the window, means within the housing to cool and circulate a body of air at one face of the window, condenser and compressor means mounted within at least one of the exterior housing sections, including means to circulate a body of air beyond the other face of the window, and partition means substantially pre-

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cluding comingling of the two bodies of circulating air aforesaid.

6. An air conditioning device for application to a casement window having a sill and a pair of unglazed lights separated by an upright mullion immediately above the sill, said device comprising an interior housing having a pair of adjacent spaced exterior housing sections each adapted to extend through one of said unglazed window lights to the outside of the window, with the space between the housing sections accommodating the mullion of the window, means effecting a seal between each of the housing sections and the window light through which it extends, compressor and condenser means within at least one of the exterior housing sections, and an evaporator within the interior housing, including means to circulate room air past the evaporator.

7. An air conditioning device for application to a casement window having a sill and a pair of unglazed lights separated by an upright mullion adjacent to the sill, said device comprising a housing having a pair of housing sections spaced apart a distance slightly in excess of the width of the mullion, and each section including a venting port to be exposed exteriorly of the window, said sections being dimensioned to extend each through one of said unglazed window lights, with the intervening space accommodating the mullion of the window as the housing rests upon the sill thereof, a third housing section spanning the sections first mentioned, partition means substantially isolating the third section from the pair of sections, to provide an evaporator compartment, said compartment being vented to the room side of the window, an evaporator within said compartment, means to move room air through the vents of the evaporator compartment and past the evaporator for cooling said air, means within the pair of housing sections to maintain a chilled condition of the evaporator, and means for moving a current of outside air through the venting ports of the pair of housing sections.

8. An air conditioning device for application to a casement window having a sill and a pair of unglazed lights separated by an upright mullion adjacent to the sill, said device comprising a housing having a pair of housing sections spaced apart a distance slightly in excess of the width of the mullion, and each section including a venting port to be exposed exteriorly of the window, said sections being dimensioned to extend each through one of said unglazed window lights, with the intervening space accommodating the mullion of the window as the housing rests upon the sill thereof, a third housing section spanning the sections first mentioned, partition means substantially isolating the third section from the pair of sections, to provide an evaporator compartment, said compartment being vented to the room side of the window, an evaporator within said compartment, means to move room air through the vents of the evaporator compartment and past the evaporator for cooling said air, and means within at least one of the housing sections of the pair, for producing a chilled condition of the evaporator.

9. An air conditioning device for application to a casement window having a sill and a pair of unglazed lights separated by an upright mullion adjacent to the sill, said device comprising a housing having a pair of housing sections spaced apart a distance slightly in excess of the width

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of the mullion, and each section including a venting port to be exposed exteriorly of the window, said sections being dimensioned to extend each through one of said unglazed window lights, with the intervening space accommodating the mullion of the window as the housing rests upon the sill thereof, a third housing section spanning the sections first mentioned, partition means substantially isolating the third section from the pair of sections, to provide an evaporator compartment, said compartment being vented to the room side of the window, an evaporator within said compartment, means to move room air through the vents of the evaporator compartment and past the evaporator for cooling said air, and means within at least one of the housing sections of the pair, for producing a chilled condition of the evaporator, and means effecting a seal between the window light portions of the window and the housing sections extending there-through.

10. An air conditioning unit for application to a casement window having a pair of unglazed lights separated by an upright mullion, said unit comprising a housing having a pair of spaced exterior housing sections, each adapted to extend through one of said unglazed window lights in straddling relation to the mullion of the window, an evaporator within the housing to cool a body of air to one side of the window, means within at least one of said exterior housing sections to maintain a chilled condition of the evaporator, and flange means on the housing to abut the casement window adjacent to the unglazed lights, providing a mount for the unit.

11. A device in accordance with claim 10, characterized by the fact that the flange means extends substantially circumferentially about the housing in a plane parallel to the window.

12. An air conditioning unit for application to a casement window having a pair of unglazed lights separated by an upright mullion, said unit comprising an interior housing port means for circulation of room air at one face of the window, a pair of exterior housing sections extending substantially horizontally from the interior housing in a common direction exteriorly of the window, said sections being vented exteriorly of the window, and spaced apart to provide an upright slot between them to accommodate the upright mullion of the window, said slot having a base wall located intermediate the ends of the interior housing and against which the window may abut, an exposed mounting flange on the interior housing disposed circumferentially thereof in an upright plane which substantially includes the plane of the slot base, an evaporator within the interior housing to cool a body of room air entering the interior housing port means, and means within at least one of said vented exterior housing sections to maintain a chilled condition of the evaporator.

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