Oct. 22, 1957 E. BILGREI ET AL 2,810,273

AIR CONDITIONING UNIT

Filed Nov. 4, 1953

Fig. 1.

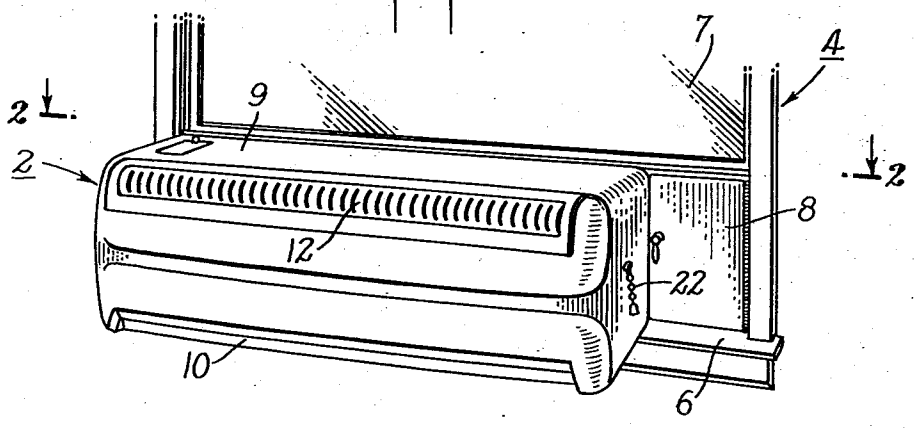


Fig. 2.

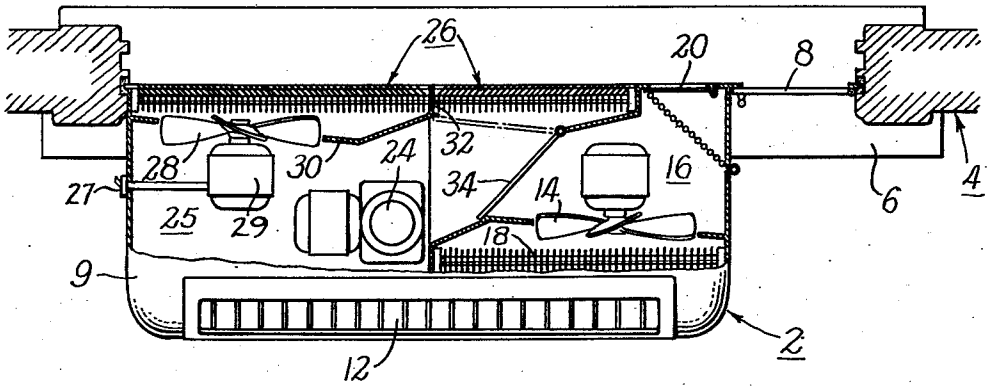
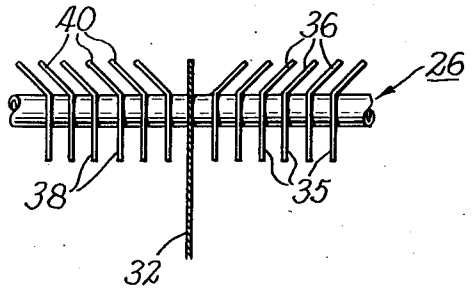


Fig. 3.



INVENTORS
Emanuel Bilgrei
Anthony V. Zimmermann
BY
Curtis Morris & Safford
ATTORNEYS

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AIR CONDITIONING UNIT

Emanuel Bilgrei and Anthony Urban Zimmermann, Brooklyn, N. Y.

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1 Claim. (Cl. 62—129)

This invention relates to air conditioning apparatus of the type generally referred to as window units, and more in particular to improved unitary constructions for such apparatus.

With unit air conditioners which are adapted to be mounted in a window, it has been the practice where permissible to project the unit beyond the window line and, in most instances, beyond the line of the outer wall of the building. This is objectionable for many reasons. Some people consider it unsightly, others are concerned primarily with the difficulty of servicing, and others point out that the mechanism is subjected to the detrimental effects of the elements. Furthermore, some building owners do not permit air conditioning units or other equipment to be extended beyond the building line, and some limit the unit to the line of the window.

It is an object of the present invention to provide air conditioning units which are adapted to fit within the line of the window and yet which do not project objectionably into the room. It is a further object to provide such units which are easily serviced, and wherein the equipment is protected from the adverse effects of the elements. These and other objects will be in part obvious and in part pointed out below.

In the drawings:

Figure 1 is a perspective view of an air conditioning unit, constituting one embodiment of the invention;

Figure 2 is a horizontal section showing the arrangement of parts of the unit in Figure 1; and,

Figure 3 is an enlarged view showing a unique fin construction which is incorporated into the illustrative embodiment.

Referring in particular to Figure 1 of the drawing, a unit 2 is mounted in a window 4 upon a window sill 6 beneath a window 7. At the right-hand side of the unit there is a small door 8 which is in alignment with the window and may be opened to provide a passageway along the window sill, for example, during washing of the window. Unit 2 has a casing 9 which extends to the line of the window (see Figure 2). During operation, air is drawn into the unit at 10 (Figure 1) and cool, dehumidified air is delivered into the room at 12.

Referring to Figure 2, the air circulation as just referred to is produced by a fan 14, which draws the air through the opening 10 and a passageway not shown, into the bottom of a chamber 16. Fan 14 directs the air through a finned evaporator coil 18 to the air discharge 12. The fan cowl and baffles shown provide for the proper distribution of the air so that it passes evenly through the evaporator coil and out through the discharge opening. When it is desirable to introduce fresh air into the room, a small door 20 may be opened by pulling a chain 22 in a keyhole slot in the casing. When the chain is released, a spring closes the door automatically.

Unit 2 has at the left a condensing unit including a compressor 24 in a chamber 25, a finned coil condenser 26, and a fan 28 driven by a motor 29. Fan 28 has a

cowl 30 which extends to a partition 32 which extends out through condenser 26. During operation, fan 28 draws air in through the condenser at the right of partition 32 and directs air out through the condenser at the left of the partition. This air passes around and cools the compressor and other elements of the condensing unit, and it cools the refrigerant in the condenser. Thus, during normal operation, the two fans and the compressor are operated with heat and moisture being extracted from the air being directed into the room by fan 14. The heat is dissipated to the stream of outside air which is circulated by fan 28.

Under some circumstances, it is desirable to withdraw air from the room without operating the compressor. Accordingly, at the left of fan 14 there is a swinging baffle or door 34 which may be moved to the broken line position so as to open chamber 16 into chamber 25. Fan 28 only is then operated, and air with withdrawn from the room through opening 10 in the casing and is discharged to the outside by the normal operation of fan 28. This unit includes automatic controls for the refrigeration system, and air dampers and controls as desired. The controls include a separate switch 27 to energize motor 29 and operate fan 28 without operating the compressor or fan 14. This permits the "pumping out" of air by opening door 34 as explained above.

With the unit of the present invention, the structure does not extend objectionably into the room, and it does not extend beyond the line of the window. The casing may be removed readily for servicing and cleaning of the mechanisms and, if desirable, the unit may be moved. In general, the present invention contemplates the positioning of the condensing unit of window air conditioners in alignment with the air cooling and circulating section. Hence, it is understood that the drawing and the above descriptive matter is illustrative and is not limiting of the invention.

Illustrative embodiment of the invention incorporates a fin arrangement on the condenser, which is the invention of one of the joint inventors, Emanuel Bilgrei. Referring to Figure 3 of the drawing, the central portion of the condenser 26 is shown with the partition 32. At the right of this partition, the fins 35 have their edges which are exposed to the outside bent to form deflector fins 36 which slant to the right away from partition 32. At the left of the partition 32, the fins 38 have similar portions 40 which are bent to the left. Thus, referring to Figure 2, the air discharged by fan 28 is directed to the left, and there is a tendency for the air being drawn in at the right of partition 32 to come from the right. This counteracts the usual tendency for warm air being discharged to re-enter, thus to produce a recirculation of the air with the resultant inadequate cooling and low efficiency. Referring again to Figure 3, the fin arrangement tends to produce a longer flow path and a somewhat restricted flow path, and there might be a baffling effect.

As various embodiments may be made of the above invention and as changes might be made in the embodiments above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

We claim:

In a self-contained air conditioning unit, the combination of, a casing construction which is adapted to be positioned upon a window sill with one face thereof in substantial alignment with the window, a first chamber through which air passes to be cooled, a second chamber through which air passes for dissipation of heat to the outside, said chambers positioned in substantial alignment along said one face whereby they are positioned side by side in the window, a refrigeration system having a com-

pressor positioned substantially centrally within said second chamber; and an evaporator positioned parallel to said one face along the opposite face of the unit, a first fan and motor positioned to direct air through said evaporator from said first chamber and thence into the room, said refrigeration system also including a condenser positioned along said one face substantially throughout the extent of said second chamber and having baffle means dividing the portion of said condenser at one end of the unit from the remainder of the condenser, a second motor and fan mounted in an opening in said baffle means and adapted to direct air axially thereof from said second chamber through said portion of the condenser thereby to draw air in through the remainder of the condenser, a swinging baffle means which is adapted to move from one position wherein it separates said first chamber from said

second chamber to a position wherein it blocks the entry of air through said remainder of the condenser, an air inlet baffle means positioned to close a portion of said first chamber along said one face and to be opened to permit the entry of outside air into said first chamber, and means to operate said second fan and motor independently of the refrigeration system.

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