

**Aug. 13, 1935.**

D. L. BRAINE

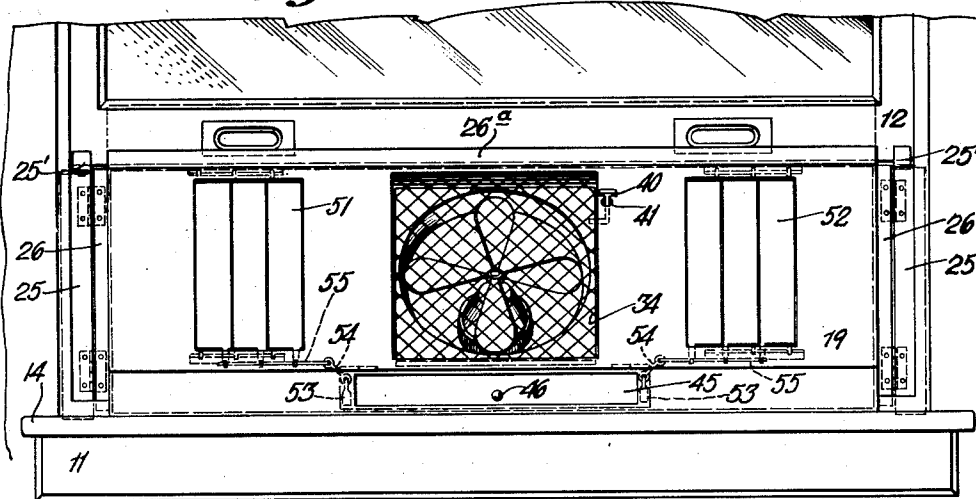
**2,010,808**

AIR CONDITIONER

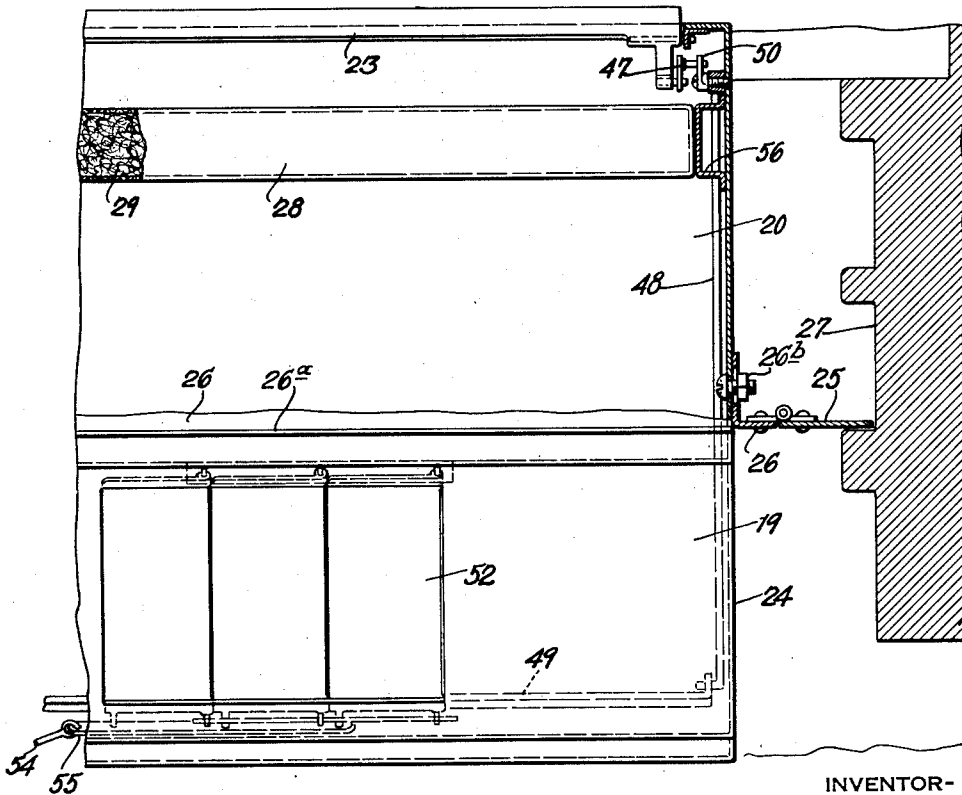
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2 Sheets-Sheet 1

***Fig. 1.***



*Ffej. 2.*



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## UNITED STATES PATENT OFFICE

2,010,808

## AIR CONDITIONER

Daniel L. Braine, Brooklyn, N. Y.

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2 Claims. (Cl. 98—94)

My invention relates to an air conditioner, more particularly to apparatus for filtering, tempering and circulating air in dwellings, offices, etc.

Objects of the invention are to provide an air conditioner that may readily be fitted to a window opening, that may be easily and quickly mounted in and removed from the window opening, and one in which the various parts are exact and are easily removed and replaced; to provide an air conditioner in which the direction of flow of the conditioned air may be adjusted and controlled, and in which the conditioning of the air may be controlled or adjusted in a unitary manner from a single control.

Other objects of the invention will more fully appear from the following description.

The various features of the invention are illustrated in the accompanying drawings, in which—

Fig. 1 is a front elevation of an air conditioner embodying a preferred form of my invention mounted in a window opening.

Fig. 2 is a plan view of a part of the air conditioner, parts being broken away to show details of construction.

Fig. 3 is a vertical section through the air conditioner and through parts of a window and window sill between which the air conditioner is mounted.

In my invention the air conditioning means is mounted in a chamber or box, the bottom of which rests on the window sill and the top of which has a recess or depression to receive the lower part of the window sash so that the box is anchored securely in position. It fills substantially all of the space or opening between the bottom of the sash and the window sill, adjustable means being provided to ensure complete closure for different widths of windows. Preferably the chamber or box is of about the thickness of the window sill so that it does not project outside of the building nor within the room.

Fresh air may be admitted from the outer or back part of the box through suitable control levers and filtering means, and room air may be admitted through control levers in the front or inner side of the box. Either room air or outside air may be admitted exclusively, or both in desired proportion. Air from either or both of these sources thus admitted to the chamber is propelled outwardly through an opening or grille by suitable means, such as a fan. The direction of this air may be adjusted or changed according to the dimensions of the room which is to be supplied with conditioned air or to give such an angle as will

obtain the proper circulation with a minimum of draft.

Referring more particularly to the accompanying drawings, the conditioner is shown as comprising a chamber or box, indicated generally as 10, resting on a window sill 11 and engaged by the lower part of a window sash 12. Preferably the bottom of the chamber or box 10 has a flat portion 13 near the front margin which rests on the inner flap lip 14 of the sill 11 and then has a raised or arched part as a portion 15 that rests on or spans the sash receiving stop or curved member 16. Farther back from the raised part 15 there is a lowered area 17 which may be sloped downwardly and backwardly and which contacts with or rests on the outer part 18 of the window sill.

The conditioner box or chamber thus rests on the sill 11 and is preferably of approximately the same width so that it has a firm, stable mounting and does not form any troublesome projections.

The front wall 19 of the box extends upwardly and preferably with a backward slope from the front edge of the bottom portion 13 to the level of the bottom edge of the sash 12. It is then continued backwardly beneath the sash 12 and thence upwardly back of the sash to form an upward extension 20 bearing against the outer face of the sash upwardly to approximately the lower edge of the glass 21. From this point the top 22 of the box or chamber extends outwardly to overlie the bottom portion 17. The outer face of the box is open and is provided with air control louvers 23. The box or chamber is completed by side walls or plates 24.

To enable the box or chamber 10 to fit window openings of somewhat different width, the width of the box may be made somewhat smaller than the width of the window and the space between the sides of the box and the side edges of the window may be closed by means of hinged plates 25 extending from the level of the bottom of the sash 12 to below the base of the box and supported from the sides of the box by means of angle irons 26. The angle irons are extended horizontally over the box so that a vertical flange 26a of this horizontal extension forms with the wall extension 20 a sash receiving recess. The angle irons 26 are secured to the sides of the box by bolts 26b passing through slots in the angle irons so as to permit adjustment of the angle irons and thereby permit adjustment of the width of the sash receiving recess.

It will be understood that in mounting the box it is merely necessary to swing back the plates 25, set the bottom of the box on the window sill

with the recess between the angle iron flange 26a and the wall 20 below the sash 12 and then push the sash 12 down into the recess. The box will then be tightly locked in place in the window opening and cannot be displaced therefrom until the sash 12 is again lifted. Upon release, the plates 25 will then swing outwardly until they contact with the sides 27 of the window opening and thereby close the space at each side of the box. Projecting flaps 25' may be provided on the plates 25 to hold them in position.

Inasmuch as the uppermost part of the box 10 reaches only to the lower edge of the pane of glass 21, and as it does not project beyond the width of the sill, it forms no obstruction either of light or space about the window.

The louvers 23 extend from the very bottom of the box to the top, thereby providing the greatest possible area for the entrance of fresh outside air. This air upon being admitted to the box, passes through a filter pack 28 of any suitable construction such as a frame filled with metal or mineral wool or other fibrous material 29. The filter 28 rests in a retaining socket or recess 30 on the bottom portion 17 and extends upwardly the full height of the box with its upper end within and held in place in the frame 31 of an opening in the top of the box.

The filter pack may be placed and removed in the box through the opening 31 which is closed by a removable or hinged cap 32. In the form shown, the louvers 23 are shown as being placed back of or outside of the filter pack 28. This is the preferred arrangement, but it will be understood that the relative position of these two elements may be reversed and that other changes in form may be made.

The air passing through the louvers and filter pack, as indicated by the arrows, is collected by a motor driven fan 33 and propelled outwardly through an opening 34 in the front of the box. The opening 34 may be provided with a grille 35. The fan 33 is positioned to propel air at an upward forward angle and is so mounted that this angle may be adjusted or varied to control the direction and flow of the air. For this purpose the fan is mounted by means of arms 36 on a frame 37 that is supported at its lower end in a hinge socket 38 of the opening 34 and the part above the hinge 38 swings adjacent to a curved opening frame 39 so as to direct and control the current of air.

The fan frame 37 is moved to and secured at a desired angle by means of a manually movable rod 40 that extends through an opening 41, Fig. 1, of the front plate 19 and is provided with a sidewise extension projecting through a slot 42 in the frame 39 and is secured to the fan frame 37.

The rod 40 is provided with suitable notches 43 which may engage the edge of the opening 41 to hold the frame 37 at different angles.

Through the above arrangement the fan 33 may be tilted to send the air more sharply toward the ceiling for a room of small dimensions, or may be tilted forwardly to project the current of air in a more forward direction for distribution over a room of larger area.

Air taken directly from the room may be admitted to the interior of the box 10 either for recirculation alone or to be admixed with a quan-

tity of fresh air and then circulated. This room air may be admitted through an opening 44 below the fan opening 34 and controlled by a door 45 having a knob 46 for manual movement. When the door 46 is swung backwardly to open position, it serves proportionately to close the louvers 23. For this purpose a cam louver actuating rod 47 is moved from the door 45 through a link 48 connected at its forward end to a bracket 49 on the door 45 and at its rear end connected through a bell crank lever 50 to the louver actuating rod 47. By opening the door 45 partly or to a maximum opening, the louvers 23 will be closed partly or completely.

Additional room inlet openings controlled by louvers 51 and 52 on opposite sides of the fan opening 34 are provided. The louvers 51 and 52 are operated by the door 45 to open simultaneously therewith and proportionately thereto. For this purpose brackets 53 are provided on the door 45, one at each side of the door, and are connected through links 54 to louver controlling rods 55 to actuate the louvers 51 and 52. By this combination of the door or louver 45 with the louvers 51 and 52, the room air inlet area may be made more closely to approximate or equal the effective area for fresh air inlet through the louvers 23 and filter pack 28.

To provide space for the rod 48 without interfering with the filter pack 28, a vertical spacing channel 56 is provided in the side walls of the chamber at each end of the filter, as shown in Fig. 2, the rod 48 passing through and being positioned by this channel.

A vertically adjustable plate 57 is provided on the back of the box to enable it to fit windows having different slopes outwardly from the sash receiving grooves.

The adjustable mounting of the angle irons 26 and of the plate 26a carried thereby enables the sash receiving recess to be adjusted to fit sashes of different thicknesses.

What I claim is—

1. An air conditioner comprising a chamber having a bottom to fit a window sill and be mounted thereon, a front wall extending upwardly and backwardly from the front edge of said bottom, a top wall, a recess between said front wall and said top wall to receive the lower end of a window sash and having an air inlet with louvers in the back of said chamber, the front wall having an air outlet opening and air inlet openings at the sides and below said outlet opening, said inlet openings being provided with louvers, a single control means to open and close said louvers in said front wall and proportionately and simultaneously to close and open the back louvers, a fan to propel air through said outlet opening from said chamber, means to tilt said fan about a horizontal axis, and a filter pack back of said fan.

2. An air conditioner comprising a chamber having a bottom to rest on and be supported by a window sill and having a vertically adjustable supporting means on the bottom of said box to fit window sills of different conformations, said box having a recess at its top to receive and fit the lower end of a window sash, a fan in said box, and means to admit regulated quantities of air through the back and front of said box and to permit its expulsion by said fan.

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