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AIR CONDITIONING APPARATUS

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2 Sheets-Sheet 1

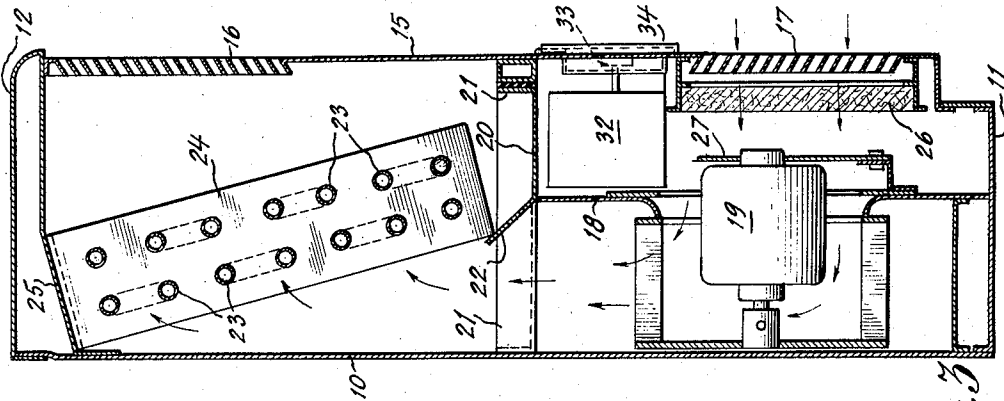


Fig. 3

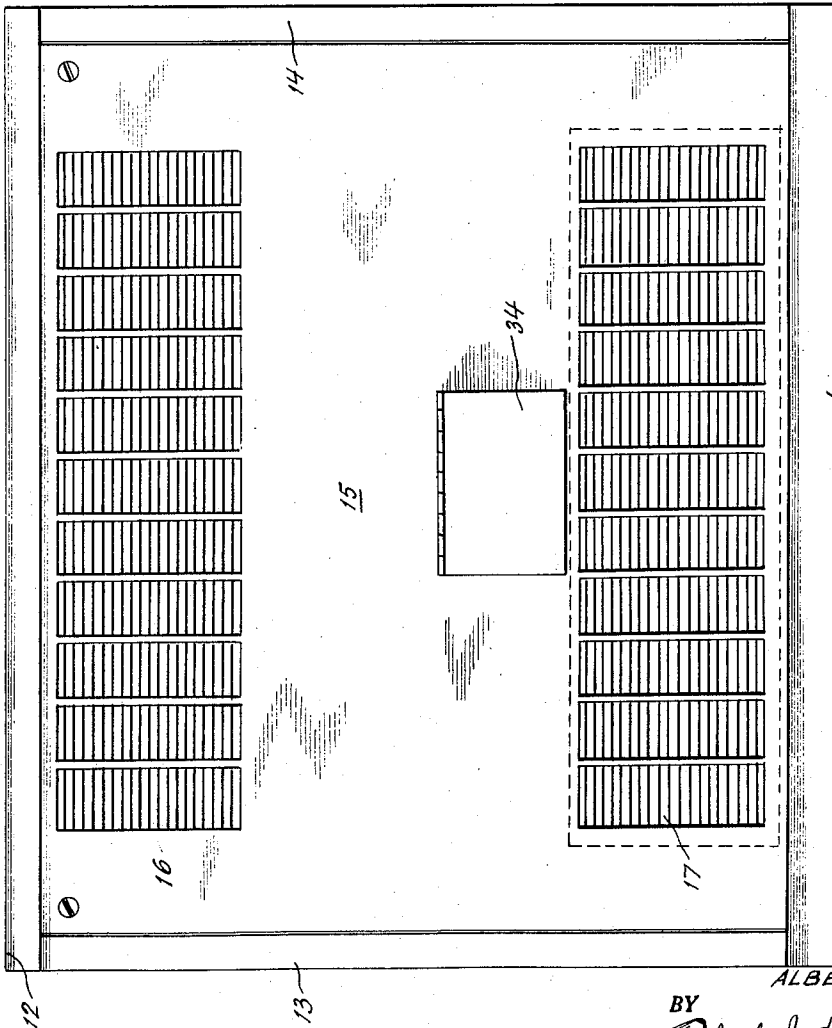


Fig. 1

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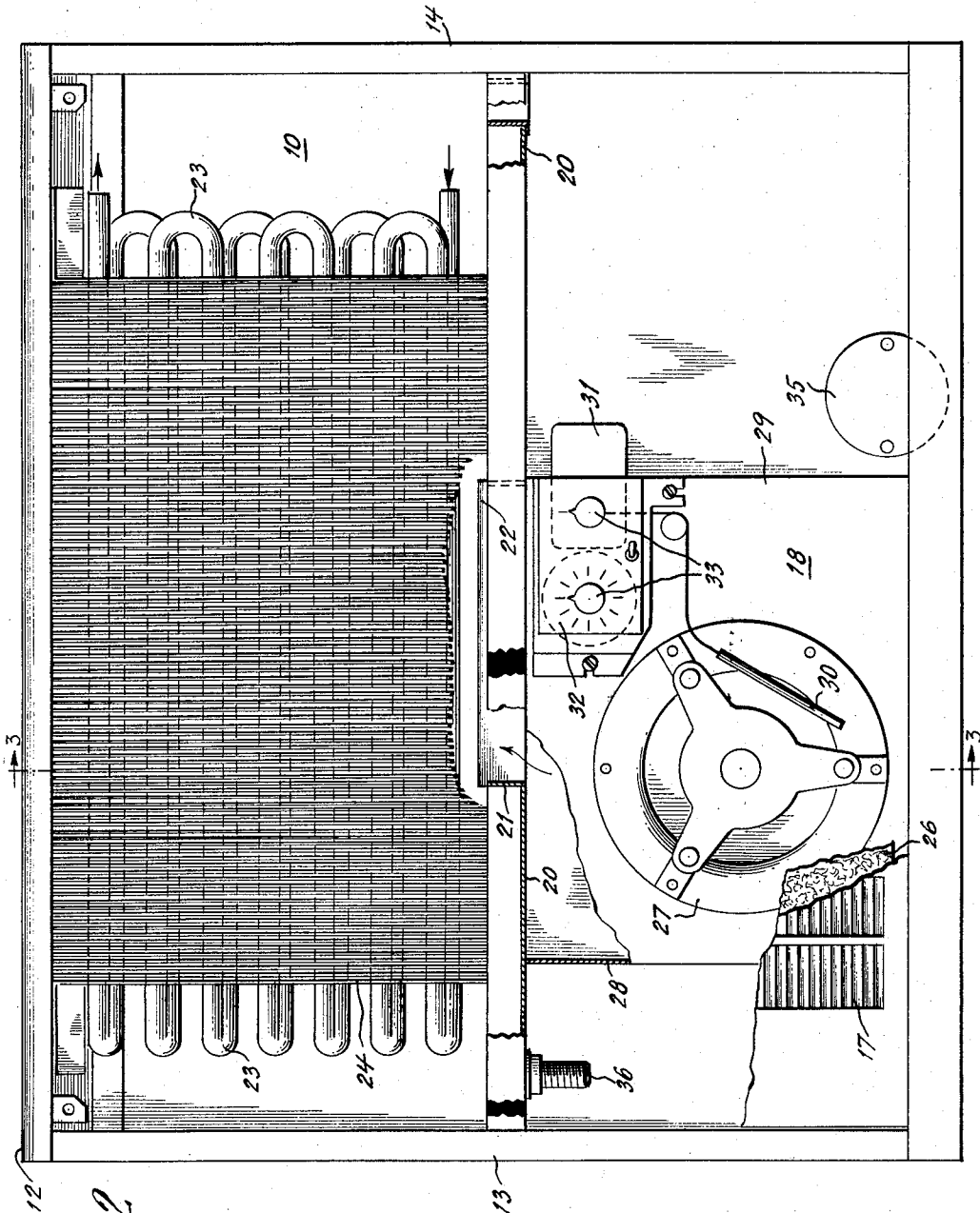


Fig. 2

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AIR CONDITIONING APPARATUS

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2 Claims. (Cl. 62—291)

This invention relates to new and useful improvements in air conditioning devices and a main object is to provide a simple, efficient, and relatively economical device which can be used as a ventilating device, a heating unit, or an air-cooling unit depending upon whether no liquid, hot liquid or cool liquid is run through its conditioning coils.

A further object is to provide a device in which the passage of undesirable amounts of moisture into the room through outlet louvers is substantially reduced.

A still further object is to provide a device in which pressure on the conditioning coil element is equalized over its entire face.

Yet another object is to provide a device in which the pressure on all outlet louvers is equalized.

Another object is to provide a device in which the parts are readily accessible for adjustment and repair and the control knobs can be manipulated with ease without removing the casing covering the same, and in which a filter associated with the inlet louvers may be cleaned efficiently without removing the same from the device.

Further and more specific objects, features, and advantages will more clearly appear from a consideration of the specification hereinafter set forth especially when taken in connection with the accompanying drawings which illustrate the preferred form of the invention and form part of the specification.

The present preferred form which the invention may assume is illustrated in the drawings, of which,

Fig. 1 is a front elevation of the device;

Fig. 2 is an enlarged front view of the device with the front cover plate removed; and,

Fig. 3 is a vertical front to rear cross section taken on the line 3—3 of Fig. 2.

Referring now merely to the specific form of the invention shown in the drawings, there is a casing having a rear wall 10, bottom and top walls 11 and 12, side walls 13 and 14 and a front wall 15 which takes the form of a removable cover plate having upper and lower louvers 16 and 17 therein.

There is an intermediate vertical wall 18 supporting a blower motor 19 in any suitable manner, as by means of the spider 27 indicated in Figure 3. Above the motor and connected to the top of the wall 18 is a horizontal wall 20 having walls 21 to form a sort of trough or pan to receive any condensate. A wall 22 slopes rearwardly back of the lower end of the conditioning coil unit which is composed of zig-zag coils 23 and radiating fins 24. The upper ends of the coil unit are suitably connected as by welding to an inner spaced horizontal wall 25 and the unit, as shown in Fig. 3, slopes downwardly and forwardly with its bottom extending forwardly of the sloping wall 22, which functions to slightly constrict the air discharge orifice and increase the air velocity. Any condensate therefor which is formed on the coils or the fins is caused by gravity to flow down into the pan where it evaporates. The upper

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louvers 16 are disposed well above the trough so that condensate is not carried directly into the air stream out through the louvers. The arrows in Figs. 2 and 3 indicate that the trough has an opening up through which the air is impelled by the blower. It then contacts the back face of the conditioning unit and passes between the coils and the fins and proceeds directly out through the upper louvers 16.

The air is drawn in through the lower louvers 17 back of which is disposed a filter element 26 suitably disposed immediately back of the lower louvers 17. As shown particularly in Fig. 2 the motor is surrounded by an auxiliary casing having walls 27, 28, and 29 constituting a type of blower scroll which functions in a manner that air drawn in through louvers 17 through the filter 26, will pass directly to the opening in the bottom of the pan in the path and direction indicated by the arrows and thus achieve the maximum effect.

The incoming air affects a thermostat 30 which is connected in any suitable manner to a thermostatic control unit 31 of any desired type. Adjacent the control unit 31 is a suitable motor control unit 32. Both these units are disposed and supported on the walls of the casing in any desired manner not specifically shown. Control knobs 33 for these units are covered by a pivoted cover plate 34 hinged to the removable front wall 15 so that the controls can be manipulated without removing the front cover. An electrical junction box is indicated at 35 and a drip pipe 36 from the condensate trough.

In the operation of the device, the motor is started and the motor control unit 31 and the thermostat temperature control unit 32 are adjusted as desired. Liquid is allowed to pass through the pipes 23 if the device is either an air heater or cooler. The blower unit attached to motor shaft will draw air into the lower louvers 17, through the filter 26 and up into the casing back of the coil unit. The coil unit is sloped as shown and this forms a primary plenum chamber A and a secondary plenum chamber B. This disposition of the parts creates equal pressure on the entire face of the coil unit. The slanting design of the secondary plenum chamber B also creates equal pressure on all outlet louvers.

The relative location of the outlet louvers 16 opposite the upper half of the face of the coil unit disposes a blank wall opposite the lower portion of said unit which is the most heavily moisture laden part of it. Thus most of the moisture in the air stream is precipitated on said blank wall thus running off harmlessly into the condensate pan disposed just below the unit. Therefore any undesirable moisture carryover is eliminated while air conditioning.

The filter 26 is removably fastened directly to the cover and is in relatively close proximity to the inlet louvers 17, allowing for expedient cleaning of the filter directly through the louver openings by means of a vacuum cleaner, thereby extending the useable life of a standard filter and at the same time keeping the unit at its maximum efficiency and in good working order.

The removable front cover is equipped with a secondary control door or cover 34 disposed in front of the control knobs 33 so that they may be adjusted without removing the front cover 15. The front cover also may be removed to gain access to both upper and lower interior parts without removing nor disturbing any controls, knobs or settings.

It is obvious that the device has many uses. If hot water is run through the pipes 23 it is a heating unit; if cold water, it is a cooling unit; if no liquid at all is run through the pipes, it may be merely a ventilating device by passing air through the device and blowing it out through the upper louvers.

While the invention has been described in detail and with respect to a present preferred form thereof, shown in the accompanying drawings, it is not to be limited to such details and forms, since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of any one or more of the appended claims.

What I claim is:

1. An air-conditioning device comprising an upright box-like casing having extensive, parallel front and rear walls, said casing being relatively shallow from front to rear and including tall and narrow side walls extending between and joining the said front and rear walls, said front casing wall having an air intake louver extending along its bottom portion and an air outlet louver extending along its top portion, said louvers being vertically spaced from each other by a solid portion of the front wall; a generally flat air-conditioning coil disposed in the upper portion of the casing, said coil tilting backward and having its upper portion disposed rearward of the air outlet louver in the upper portion of the front wall, the lower portion of the air-conditioning coil being disposed at a level below the said outlet louver and rearward of the said solid portion of the front wall; a centrifugal rotary blower disposed in the lower portion of the casing, said blower having its axis extending perpendicular to the said front and rear casing walls and being constituted of solely one centrifugal rotor and solely one blower scroll, said rotor and scroll having corresponding substantially coplanar ends juxtaposed to the said rear wall of the casing, the said centrifugal blower having a driving motor disposed partially in the rotor and the blower scroll, said motor being spaced

from the front casing wall and being disposed rearward of the inlet louver in the bottom portion of said wall, the air entering the casing through the said inlet louver flowing in an axial direction past the motor and to the interior of the rotor, thereby to cool the motor, said centrifugal blower further including a supporting spider attached to the forward end of the motor and mounted on the said blower scroll; and sheet-like filtering means disposed within the lower portion of the casing between the said intake louver and the motor of the blower, to filter the air which is sucked into the casing by the blower, said blower scroll having a discharge orifice in its upper portion located forward of and adjoining the rear casing wall and under the air-conditioning coil, said discharge orifice having a mouth of reduced area and an angularly disposed wall, thereby to increase appreciably the velocity of the air discharged from the blower against the air-conditioning coil.

2. The invention as defined in claim 1, in which there is a condensate pan disposed in the casing below the bottom of the said coil, to receive the condensate which passes by gravity down the coil, said condensate pan having upwardly extending peripheral walls and one of said peripheral walls being constituted by the angular wall of the blower scroll at the discharge orifice thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

2,292,562	Huggins	Aug. 11, 1942
2,307,283	Loneragan	Jan. 5, 1943
2,324,313	Meyerhans	July 13, 1943
2,600,316	Moore	June 10, 1952
2,686,630	Burrowes	Aug. 17, 1954
2,697,921	Brugler	Dec. 28, 1954