July 11, 1950 P. W. RENNELS 2,514,720

AIR CONDITIONING

Filed July 23, 1946 2 Sheets-Sheet 1

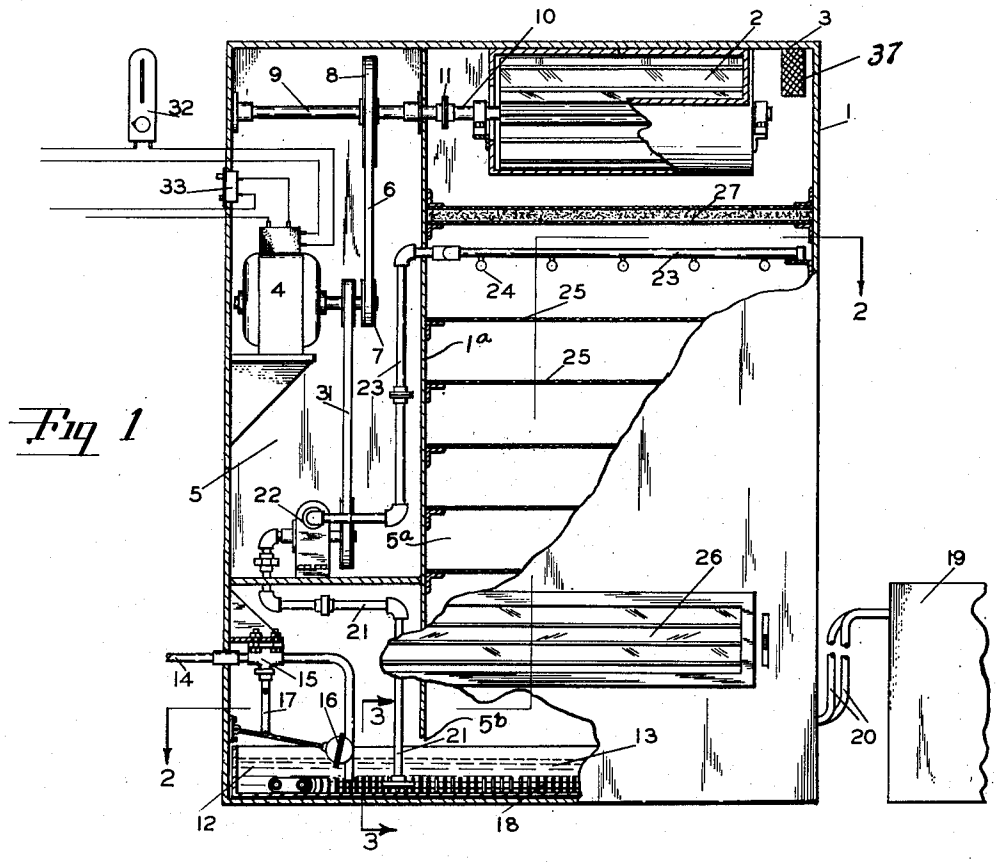


Fig 1

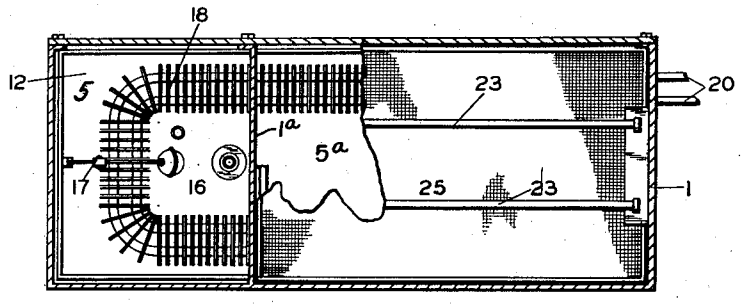


Fig 2

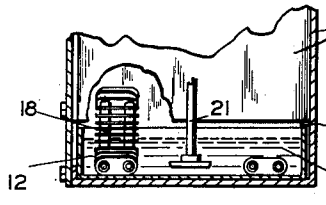


Fig 3

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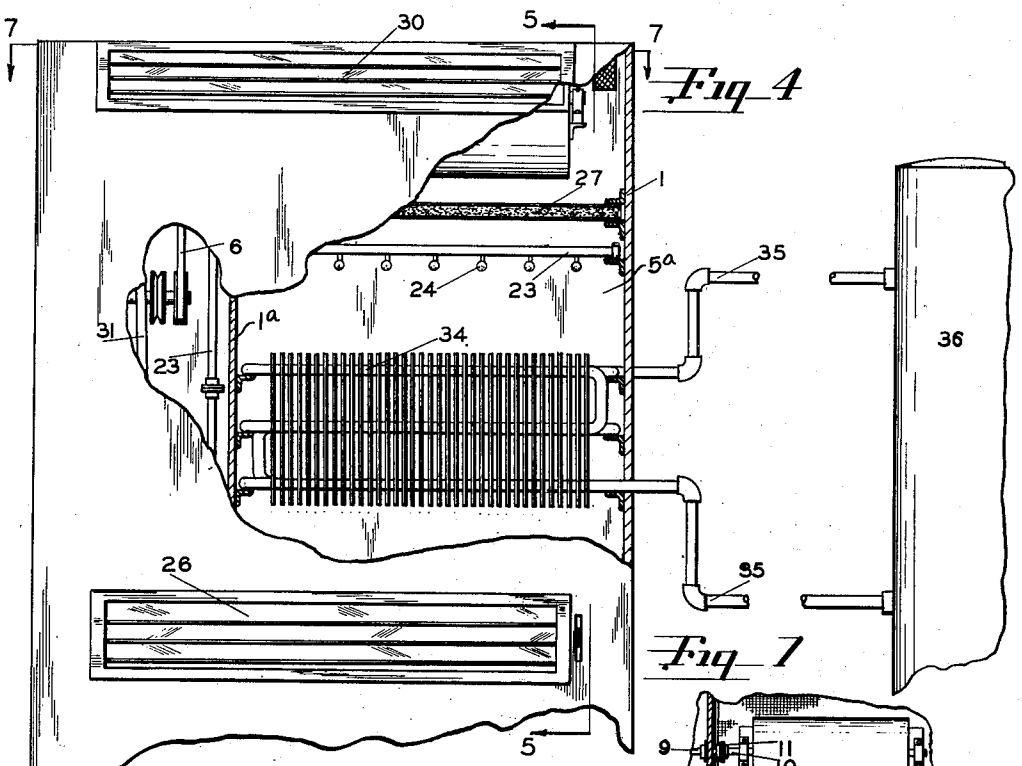
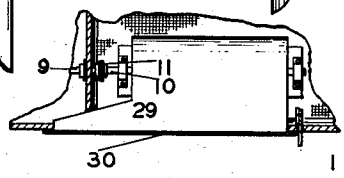


Fig 4

Fig 1



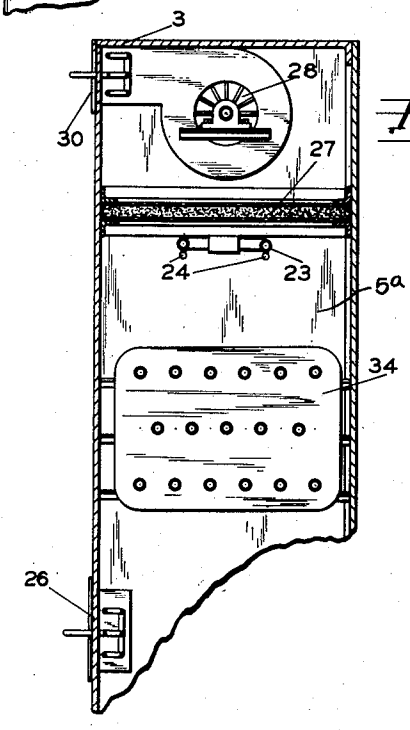
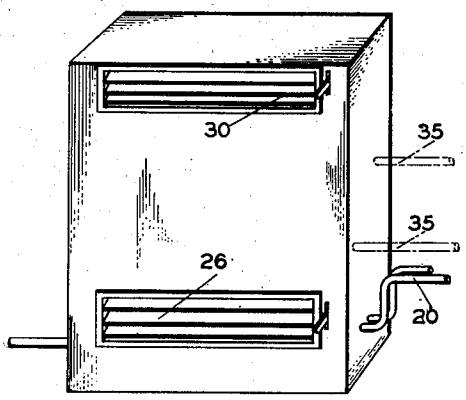


Fig 5

Fig 6



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UNITED STATES PATENT OFFICE

2,514,720

AIR CONDITIONING

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3 Claims. (Cl. 183—12)

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This invention relates to improvements in air conditioning units.

The primary object of the invention is to provide an air conditioning unit that will either cool or heat the surrounding area.

A further object of the invention is to wash, cleanse and sterilize the air taken into the unit and deliver fresh air therefrom either heated or cooled, or at its existing temperature.

A still further object of the invention is the provision of means for humidifying the air being delivered through the machine.

And a further object of the invention is to provide automatic controls for controlling the operation of the unit.

These and other incidental objects will be apparent in the drawings, specifications and claims.

Referring to the drawings:

Figure 1 is a front view of the air conditioner, parts broken away for convenience of illustration. In this particular view the refrigeration feature is being used in connection with the air cleansing, humidifying and sterilizing features.

Figure 2 is a plan sectional view, taken on line 2—2 of Figure 1, looking down into the refrigeration coils submerged within the liquid containing tank.

Figure 3 is a fragmentary sectional view, taken on line 3—3 of Figure 1 illustrating the refrigeration coils and the suction foot of the pump.

Figure 4 is a fragmentary front view of the air conditioning unit wherein heating coils are installed for the heating of the air.

Figure 5 is a fragmentary sectional view, taken on line 5—5 of Figure 4, looking in the direction indicated.

Figure 6 is a perspective front view of the air conditioning unit illustrating the same as connected up to a refrigeration unit. The broken lines indicating the connections for the heating unit when installed.

Figure 7 is a fragmentary plan sectional view, taken on line 7—7 of Figure 4, illustrating the discharge nozzle of the fan.

In the drawings:

My new and improved air conditioning unit consists of a cabinet 1 divided by a vertical partition 1*a* to form two compartments 5 and 5*a*. The lower end of the partition terminates above and spaced from the bottom of the cabinet to provide a passage 5*b* between the two compartments 5 and 5*a*. A conventional type blower fan 2 is mounted in compartment 5*a* underneath the top 3 of the cabinet. A suitable driving motor 4 is mounted within the compartment 5 of the cabinet

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and drives the fan 2 through the belt 6 from the pulley 7 to the driven pulley 8 keyed to the countershaft 9. The shaft 9 drives the fan shaft 10 through the coupling 11.

Located in the bottom of the cabinet is a liquid tank 12 for holding a liquid 13, such as water supplied from the piping 14, having an automatic float valve 15 for controlling the inlet of the liquid to the tank 12. The usual float 16 located within the tank 12 controls the valve 15 by the link connections 17. Refrigeration coils 18 are also located within the tank 12 and receive refrigerant from the unit 19 located remotely from the air conditioning unit. The mechanism for which I do not attempt to show.

The cooling coils 18 are connected to the refrigeration unit 19 through suitable pipe 20. The water 13 is maintained at a low temperature by the refrigeration coils and is delivered from the tank 12 through the piping 21, pump 22, piping 23 out through the spray nozzles 24 and directed downwardly through the screens 25 and back down into the pan 12 for recirculation. The screens are for the purpose of breaking up the water assisting in the cooling, washing and cleansing effect.

The operation of the blower or fan 2 draws air through the adjustable grill 26 and up through the screens 25 and through the filter unit 27 into the fan at 28 and discharging the same through the fan nozzle 29, thence through the grill 30 into the surrounding area, as for instance a room to be cooled. The pump 22 is driven from the motor 4 through the belt 31. The operation of the motor 4 is controlled by a suitable thermostatic control 32, which I show diagrammatically in connection with Figure 1 for clearance of operation, although this is not the way the wiring would appear. A control switch 33 may be operated by hand or automatically by the thermostatic control 32 stopping or starting the motor.

I have just described the air conditioning operation as having been used for cooling, cleansing and sterilizing and humidifying. When it is desired to use the same as a heating unit together with air cleansing and humidity control, the screens 25 are removed and the radiator unit 34 is installed in their place. The radiator 34 receives circulating water or steam through the piping 35 from the hot water or steam tank 36, the detail of which I have not attempted to go into mechanically, as any suitable source of supply may be used in connection with my air conditioning unit. When the heating radiator 34 is used the pump 22 may continue to supply water over

the surface of the heating unit as required to add humidity to the air, but excellent results are obtained where the belt 31 is removed from the motor and the pump and the air coming in through the air intake grill 26 passes over the surface of the water 13 within the tank 12 causing the same to evaporate up through the heating radiator 31, which heats the air which then is delivered through the filter 27 and the fan unit 2 as above described.

One of the outstanding features of my invention is the including of a sterilizing unit 37 in the path of the air. This sterilizer unit may have a medicinal material contained therein, and it may be located at any desired location within the air conditioning cabinet but in the path of the air that is being conditioned and discharged.

Many combinations may be added by the interchanging of the various parts within my air conditioner, but the combination I have just described provides the necessary features to fulfill the objects of my invention.

I do not wish to be limited to the exact mechanical structure shown and described, as other mechanical equivalents may be substituted still coming within the scope of my claims.

What I claim as new is:

1. An air conditioning unit, including a cabinet, a partition extending from the top of the cabinet and terminating short of the bottom of the cabinet, an air-cooling tank extending across the full width of the cabinet, an air inlet grill in the wall of the cabinet immediately above the air-cooling tank, means for varying the temperature conditions and supported in the partition and one side wall of the cabinet, a spray means between the partition and cabinet wall, a filter supported between the partition and cabinet side wall, an air outlet grill at the upper end of the cabinet for delivering air to the exterior of the cabinet, a fan at the upper end of the cabinet between the partition and cabinet wall for delivering air through the air outlet grill, a motor for the fan between the partition and cabinet side wall on the side of the partition opposite the fan, a pump on the side of the partition with the motor, a pump inlet leading from the air cooling tank, a pump outlet leading to the spray means, and an independent pump drive from the motor.

2. An air conditioning unit, including a cabinet, a partition extending from the top of the cabinet and terminating short of the bottom of the cabinet, an air-cooling tank extending across the full width of the cabinet, an air inlet grill in the front wall of the cabinet immediately above the air-cooling tank, a series of removable screens in superimposed relation supported between the partition and one side wall of the cabinet and above the air inlet grill, a spray means between the partition and cabinet side wall, a filter supported between the partition and cabinet side wall, an air outlet grill at the upper end of the cabinet for delivering air to the exterior of the cabinet, a fan at the upper end of the cabinet between the partition and cabinet side wall for delivering air through the air outlet grill and including a shaft journaled in the partition, a motor for the fan between the partition and cabinet side wall on the side of the partition opposite the fan, a pump on the side of the partition with the motor, a pump inlet leading from the air cooling tank, a pump outlet leading to the spray means, and an independent pump drive from the motor.

3. A construction as defined in claim 2, the screens on removal providing for the support of selective air treating means of a character to cooperate with all parts of the unit other than the screens.

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