

April 9, 1940.

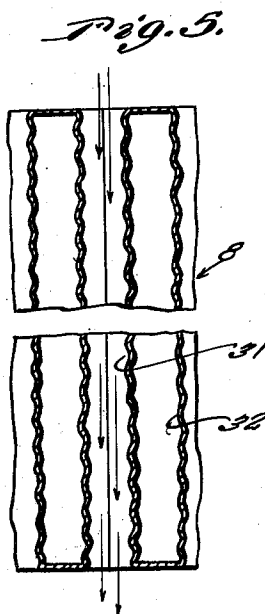
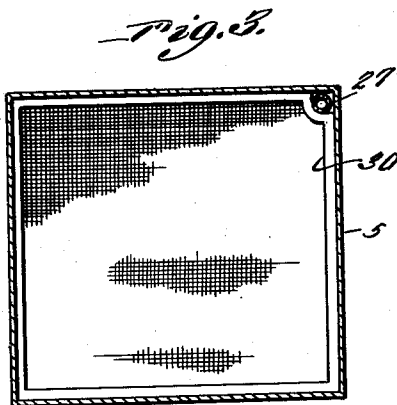
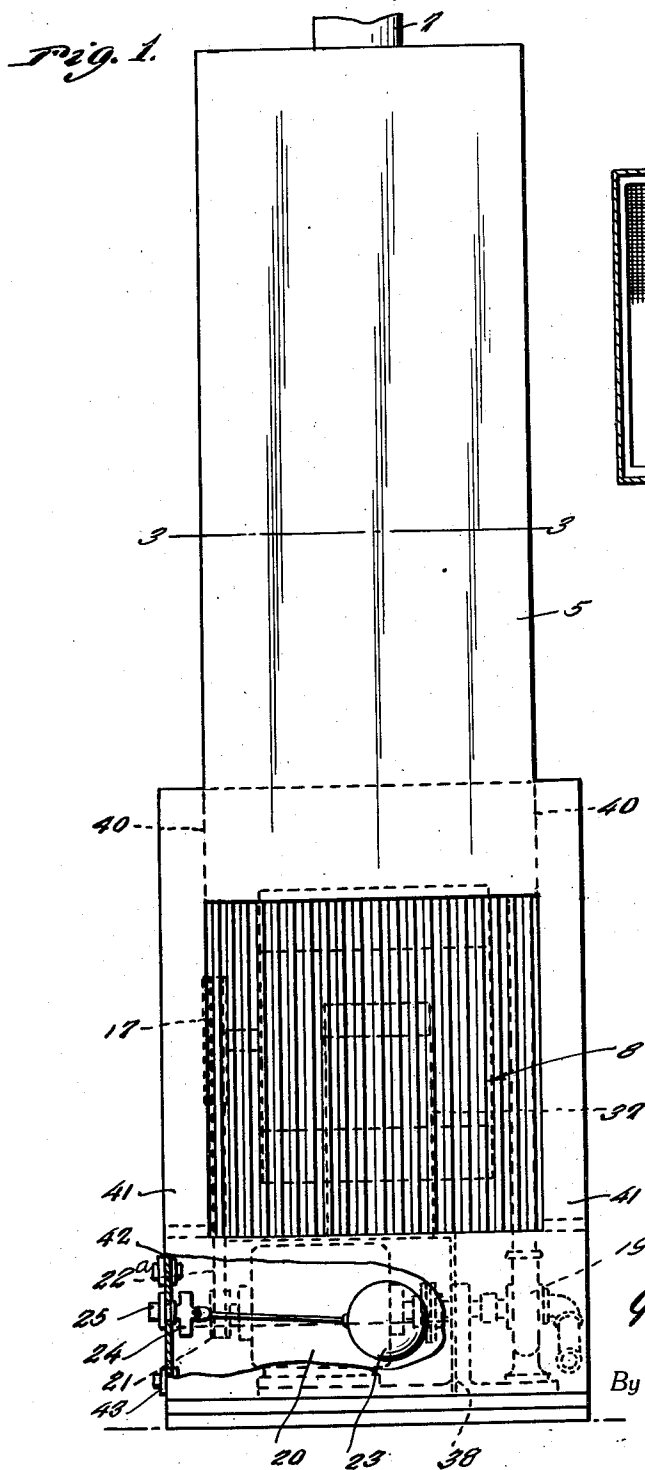
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2,196,644

AIR CONDITIONING APPARATUS

Filed Aug. 3, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

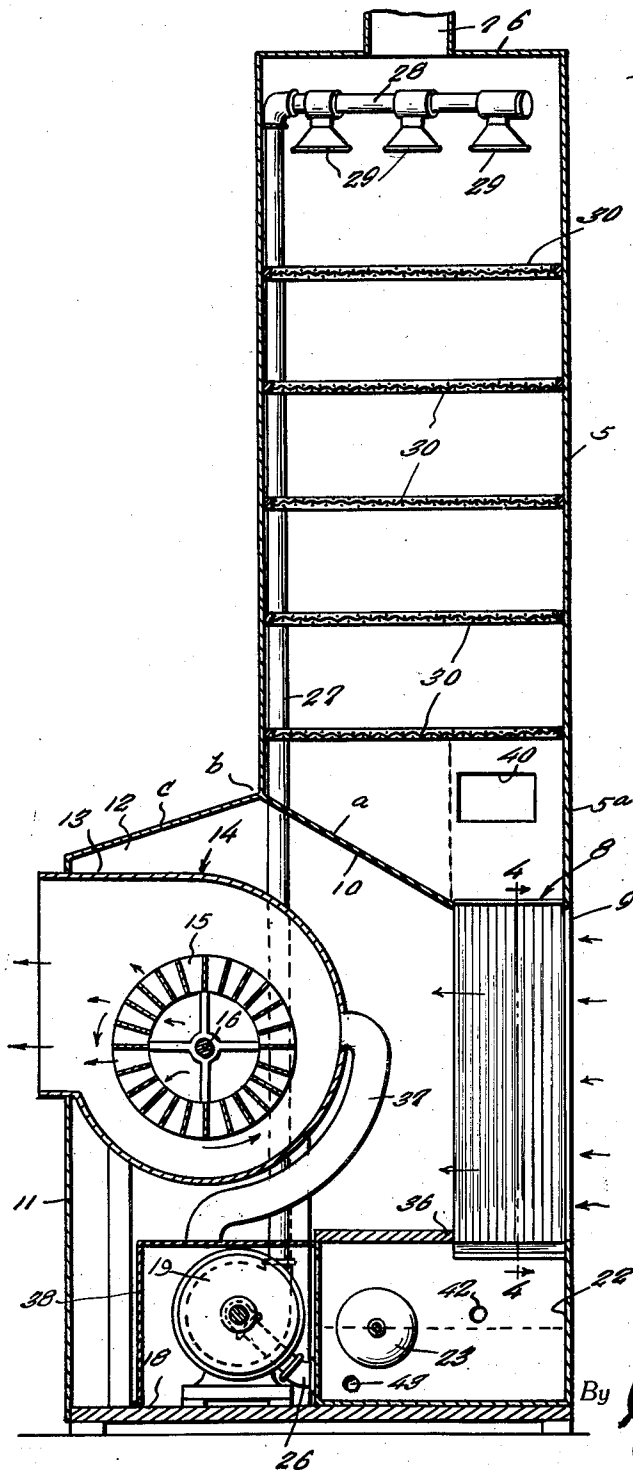


Fig. 2.

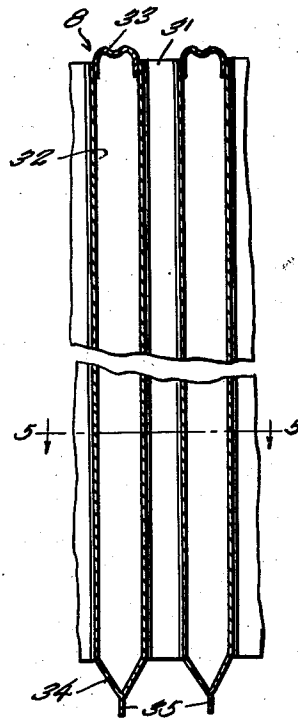


Fig. 4.

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UNITED STATES PATENT OFFICE

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AIR CONDITIONING APPARATUS

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Application August 3, 1937, Serial No. 157,184

4 Claims. (Cl. 62-139)

This invention appertains to new and useful improvements in air conditioning apparatus for conditioning the air of dwellings, office buildings, shops, etc.

The principal object of the present invention is to provide a conditioning apparatus which will be inexpensive to purchase, and inexpensive and simple to install.

Another important object of the invention is to provide an air conditioning apparatus of the character stated which will be durable, not susceptible to the ready development of defects and which may be easily cleaned.

This air conditioner may be installed in any room in the same manner that a heating stove may be installed, the vent connecting with the chimney through which the moisture laden air is exhausted. This makes possible installation of this conditioner in any room without using a duct system of distribution. Thus it has the advantage of an installation in an apartment or office where the cost of electric refrigeration is too high and where it is not desirable nor practical to install remote type cooling towers on the roof of the building. The facility of installation is very definite and important.

These and various other important objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings:

Figure 1 represents a rear elevational view of the apparatus.

Fig. 2 is a vertical sectional view through the apparatus.

Fig. 3 is a section on line 3-3 of Fig. 1.

Fig. 4 is a sectional view on line 4-4 of Fig. 2.

Fig. 5 is a section on line 5-5 of Fig. 4.

Referring to the drawings wherein like numbers designate like parts, it can be seen that the apparatus consists of two main parts, (1) the evaporating chamber 5 consisting of a vertical case closed at its top as at 6 and having the duct 7 extending therefrom, and (2) the heat transfer unit and blower housing 5a. The two sections may be taken apart to facilitate shipping or for inspection or repair.

The heat exchange unit is generally referred to by numeral 8 and is interposed between the air inlet 9 and the inner end of the shell 10, which shell extends upwardly as at a to meet the front wall of the case 5a as at b and then downwardly as at c. This case also includes the front and side walls 11-12, the front wall being provided with an opening therein for receiving the outlet neck 13 of the blower, generally referred to by

numeral 14, which blower has the fan 15 mounted therein and carried by the shaft 15 which extends through one end of the blower housing, where it is equipped with a pulley 17. Numeral 18 denotes the bottom wall for the case 5a and upon this is mounted the pump 19 and the electric motor 20, the motor 20 being in driving relation with the pump 19 and also being equipped with the small pulley 21. A belt 22a is trained over the pulleys 17-21.

A portion of the cooled air entering the blower 15 is bled therefrom through the duct 37 thence into the motor housing 38 where it removes heat generated by the motor 20, thence it passes into the tank 22, thence up the ducts 41 on each side of the heat transfer unit 8, thence into the evaporating unit encased in 5, through the openings 40, where upon contact with the fine droplets of water being expressed from the sprays 29 it causes evaporation thereof which reduces the temperature of said water, thence the said now moisture laden air passes up and is exhausted through the duct 7 either into the chimney or into the attic for additional cooling thereof. As explained, warm air from the electric motor does not enter the blower but is passed up into the evaporating chamber. Also the temperature of the air passing into the areas to be cooled is lower by virtue of the fact that the blower does not draw the heat from the motor up into the cooled air stream.

Numeral 22 denotes a water tank in the lower portion of the case 5a and in this operates the float 23 which is connected with the valve 24 of the inlet connection 25 so that a constant level of water is maintained in the said tank 22. Numeral 42 indicates an overflow opening in case of failure of valve 23. Numeral 43 is a drain plug.

A pipe 26 extends from the tank 22 to the pump 19 and from the outlet side of the pump 19 extends the pipe 27 and this pipe 27 extends upwardly to the top of the case 5 where it is provided with a lateral extension 28 equipped with depending sprayers 29.

Vertically spaced in the upper portion of the case 5 are the screens 30 for breaking up the water as it comes down from the sprayers 29. A sloping portion a of the shell 10 directs the sprayed water into the unit 8 where it passes through the spacers 31 between the closely spaced drums 32, of the heat exchange unit 8.

Each of these drums 32 is provided with corrugations in its side walls while its top wall is provided with longitudinally extending grooves 33. Furthermore, the lower ends of these drums

32 are pointed downwardly as at 34 and each terminates in a longitudinally extending flange 35. This lower end portion of the unit 8 depends into the tank 22 through the opening 36 in the top thereof.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Standard types of ionizers, air-washers, de-humidifying units, and heating surfaces may be attached to this apparatus as the owner may desire and may be added without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. An air conditioning apparatus comprising a case having an air inlet in a side thereof, a suction-blower unit including a housing having an inlet at the inside of the case and an air outlet to the outside of the case, a motor in driving relation with the suction-blower unit, a housing for the motor, a duct extending from the suction-blower unit to the motor housing, a stack extending upwardly in the case and opening within the case, said motor housing being in communication with the stack, a water shower in the case above the upper end of the stack for removing heat from the air forced from the motor housing by the blower, and an outlet at the upper end of the case.
2. An air conditioning apparatus comprising a case having an air inlet in a side thereof, a suction-blower unit including a housing having an inlet at the inside of the case and an air outlet to the outside of the case, a motor in driving relation with the suction-blower unit, a housing for the motor, a duct extending from the suction-blower unit to the motor housing, a stack extending upwardly in the case and opening within the case, said motor housing being in communication with the stack, a water shower in the case above the upper end of the stack for removing heat from the air forced from the motor housing by the blower, and an outlet at the upper end of the case, a pump in the case in driven relation with the motor, a duct from the

pump to the shower, and a water tank in communication with the input side of the pump.

3. An air conditioning apparatus comprising a case having an air inlet in a side thereof, a suction-blower unit including a housing having an inlet at the inside of the case and an air outlet to the outside of the case, a motor in driving relation with the suction-blower unit, a housing for the motor, a duct extending from the suction-blower unit to the motor housing, a stack extending upwardly in the case and opening within the case, said motor housing being in communication with the stack, a water shower in the case above the upper end of the stack for removing heat from the air forced from the motor housing by the blower, and an outlet at the upper end of the case, and a plurality of vertically spaced mesh baffles in the upper portion of the case above the outlet of the stack through which water from the shower can percolate and collecting means for water at the lower portion of the case.

4. An air conditioning apparatus comprising a case having an air inlet in a side thereof, a suction-blower unit including a housing having an inlet at the inside of the case and an air outlet to the outside of the case, a motor in driving relation with the suction-blower unit, a housing for the motor, a duct extending from the suction-blower unit to the motor housing, a stack extending upwardly in the case and opening within the case, said motor housing being in communication with the stack, a water shower in the case above the upper end of the stack for removing heat from the air forced from the motor housing by the blower, and an outlet at the upper end of the case, and a plurality of vertically spaced mesh baffles in the upper portion of the case above the outlet of the stack through which water from the shower can percolate and collecting means for water at the lower portion of the case, said collecting means comprising a tank, a pump having a duct from the tank to the input side thereof, a conduit extending from the pump to the shower, and a plurality of passageways extending downwardly across the air inlet of the case from a point under the lowermost mesh baffle to a point in the top of the tank, for returning water to the tank.

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