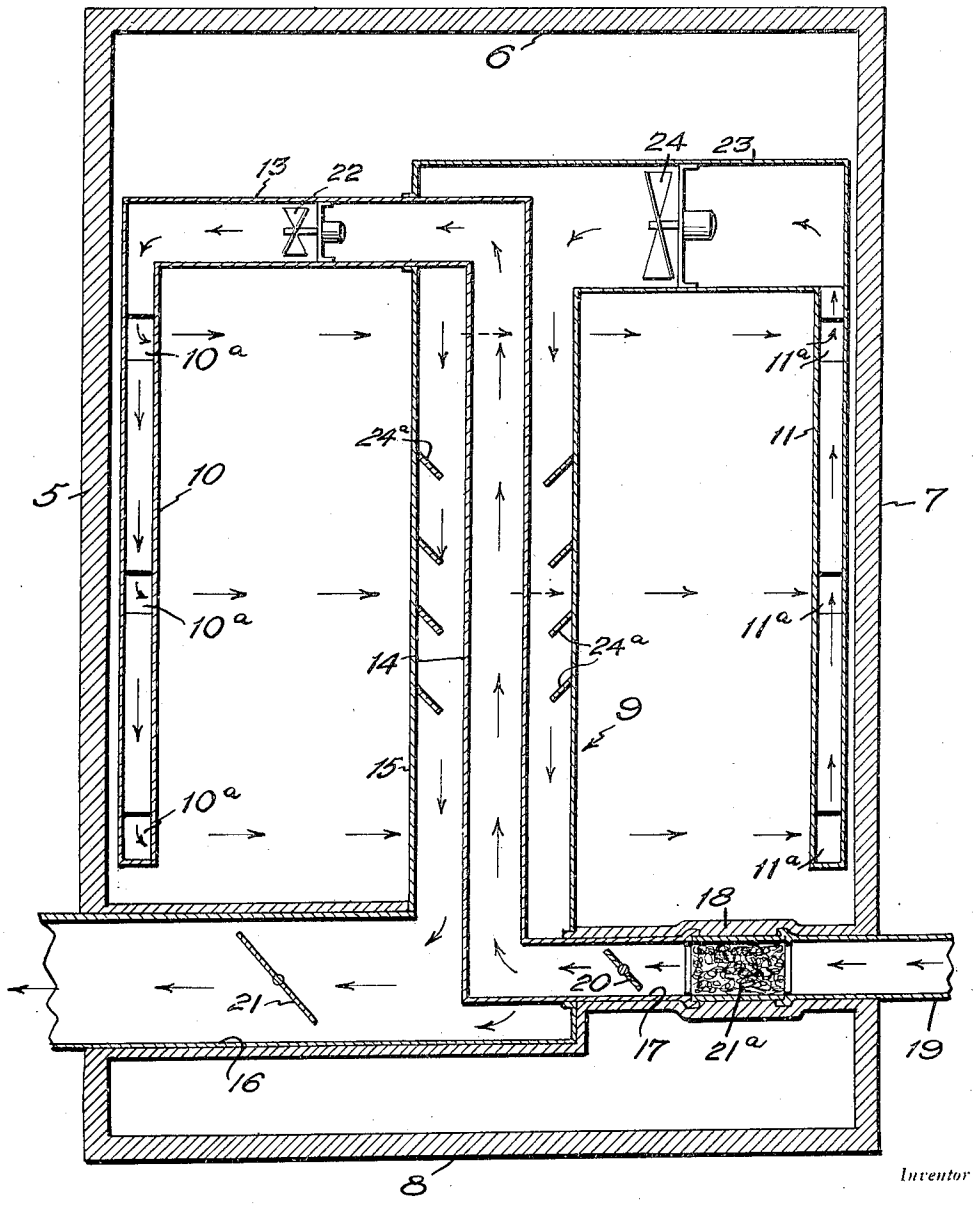
Nov. 15, 1949 F. W. SCHLACHTER 2,488,333

AIR CONDITIONING APPARATUS AND SYSTEM

Filed Oct. 4, 1946



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Patented Nov. 15, 1949 2,488,333

UNITED STATES PATENT OFFICE

2,488,333

AIR-CONDITIONING APPARATUS AND SYSTEM

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Application October 4, 1946, Serial No. 701,258

1 Claim. (Cl. 257—246)

1

This invention appertains to improvements in air conditioning apparatus and systems, the principal object being to provide a means and system whereby incoming air for reconditioning the atmosphere of a room or other confinement is preheated or warmed by the exhaust passage of air from said space, this being desirable and a matter of economy in low temperature weather.

Another important object of the invention is to provide an air conditioning system for buildings wherein the usual cold intake air is passed through a duct around which the exhaust air flows, with the result that there is a transference of heat from the exhaust air to the inflowing air, thereby warming or heating the fresh air, before it enters into the atmosphere of the building.

Still another object of the invention is to provide air conditioning means for buildings wherein the fresh air flows, in a duct, through the exhaust air conduit of the system and wherein deflectors are provided in said exhaust conduit for deflecting the exhaust air directly against the fresh air intake duct, thus to transfer heat from the exhaust air to the fresh air, preparatory to admission of said fresh air to the atmosphere of the building.

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

In the drawing, the single figure is a diagrammatic view of the improved air conditioning apparatus and system.

Referring to the drawing, numerals 5, 6, 7 and 8 represent the side walls of a room, hall or other building enclosure, representing a space to be air conditioned by the apparatus generally referred to by numeral 9. This apparatus may be arranged at any convenient place, either within the wall construction or outside of the wall construction, and includes a pair of parallel inlet and outlet ducts 10, 11, preferably located in parallel relation on opposite walls, such as the walls 5, 7, these ducts having a suitable number of vents 10*a*, 11*a*, respectively.

One end of the duct 10 has a lateral communicating duct 13 which attaches to an elongated intake duct 14.

Spatially located around the intake duct 14 is an exhaust conduit 15 which has a laterally disposed outlet pipe 16 extending therefrom and preferably in parallel relation to the lateral duct 13 and in an opposite direction from a lateral extension 17 of the intake duct 14. A coupling and encasement of insulating material denoted by numeral 18 receives the end of the lateral extension 17 of the duct 14 and also the inner end of a cold or fresh air inlet pipe 19, passing through the wall 7. In the lateral extension 17 of the duct 14 is a damper 20 and a damper 21 is also located in the lateral outlet pipe 16, the former controls the amount of fresh air intake, while the damper 21 controls the used air exhaust. Located within the coupling 18 is a filtering unit 21*a* for filtering the fresh air received from the pipe 19.

2

Situated in the lateral portion 13 of the duct 10 is a motor driven fan 22 for sucking air through the elongated intake duct 14 and forcing the same into the duct 10 and out through the vents 10*a*, into the room.

Between the inner end of the exhaust conduit 15 and adjacent end of the duct 11 is a connecting duct 23 in which is a blower 24, preferably motor operated, the duct 23 and blower 24 being substantially larger than the duct 13 and fan 22. It is preferable that fins 24 be provided on the inside of the exhaust conduit 15, but spaced from the elongated intake duct 14, so as to direct the exhaust (room temperature) air against the outer side of the elongated intake duct 14 so that heat transference from the heated air to the inflowing fresh air, will take place, to the end that the fresh air will acquire a substantial amount of the exhaust air heat, thereby being preheated before deliverance to the room area and incidentally conserving that heat, that would ordinarily be lost through the outlet pipe 16.

In the operation of the apparatus and system, it can be seen that the large blower fan 24, forces air through the exhaust conduit 15 and out through the outlet pipe 16, with the damper 21 opened. As this air strikes the baffles 24 and is deflected against the elongated intake duct 14, heat by induction through the wall of the duct 14, preheats the flow of air through the duct 14, as the exhaust air passes out through the outlet pipe 16, thus delivering to the fresh air supply heat, that preheats it as it is driven out through the vents 10*a* of the duct 10 by the blower fan 22. This fan sucks the fresh air through the duct 14 and filter element 21 and forces the same into the room by way of the vents 10*a*.

The amount of fresh air is controlled by the adjustment of the damper 20 and by properly controlling the dampers 20, 21, the correct ingress and egress of fresh and used air is obtained.

While the foregoing description 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.

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

An air conditioning apparatus comprising an inlet pipe, a duct extending from the pipe having outlet vents therein, an exhaust pipe having a conduit spatially surrounding the duct, said conduit provided with a duct extension having intake vents for receiving used air, said used air in passing through the conduit and contacting the first mentioned duct, serving to heat fresh air moving through the fresh air duct, and deflectors in the conduit for deflecting used air against the fresh air duct to transfer heat from said used air to the fresh air.

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