Nov. 7, 1933. F. W. MEYSENBURG 1,934,551

AIR COOLING APPARATUS

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Fig. 1.

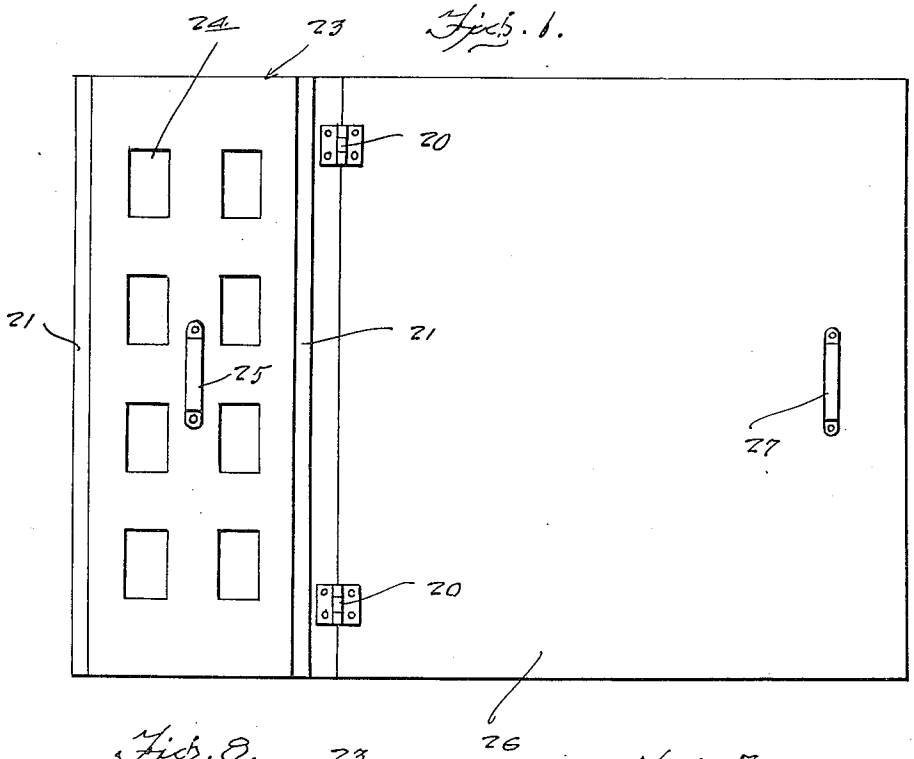


Fig. 8.

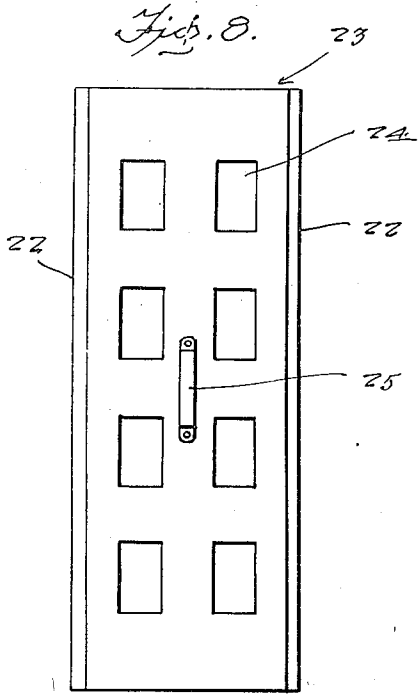
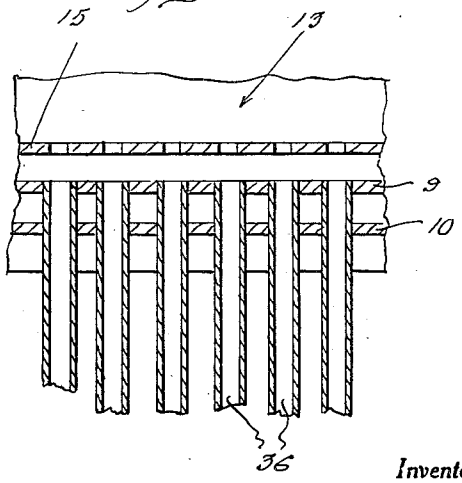


Fig. 7.



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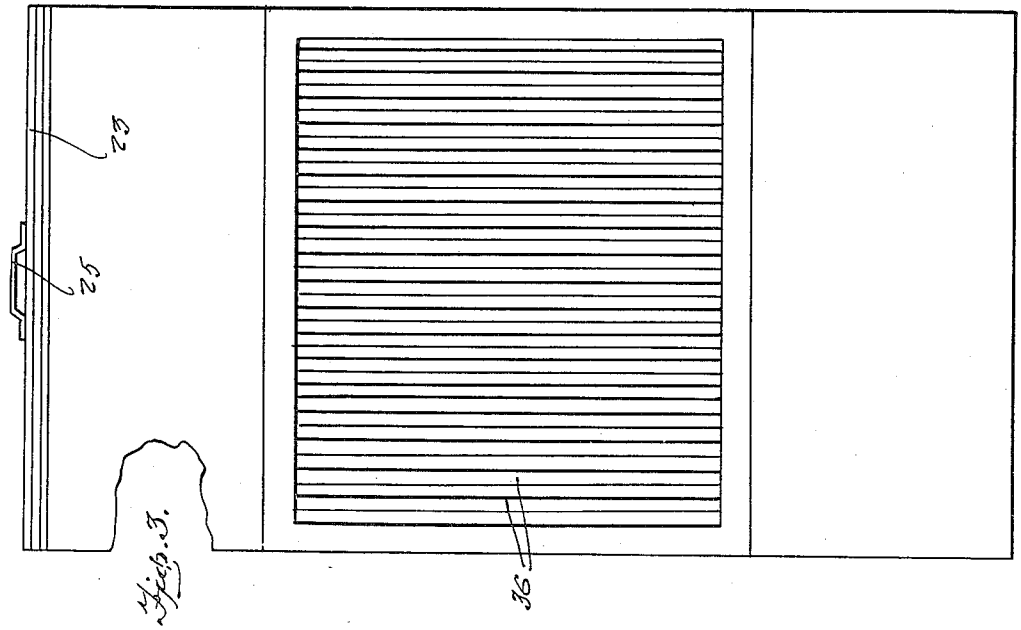


Fig. 3.

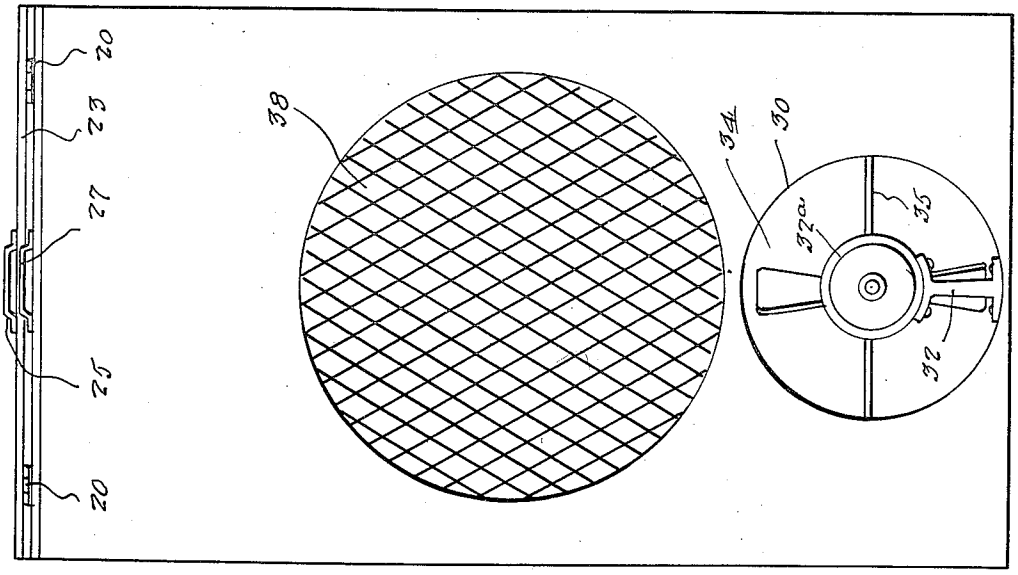


Fig. 2.

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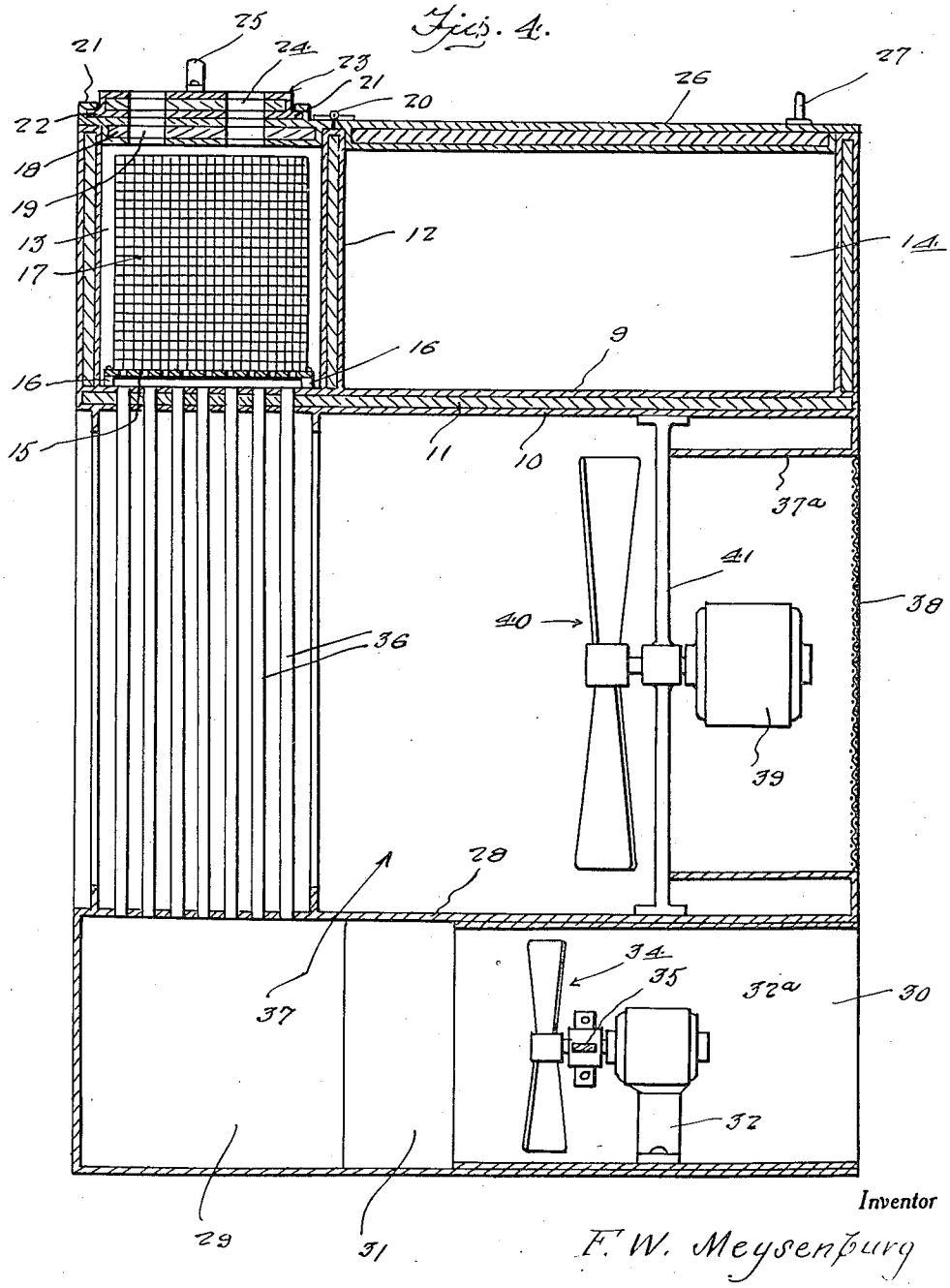
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AIR COOLING APPARATUS

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Fig. 4.



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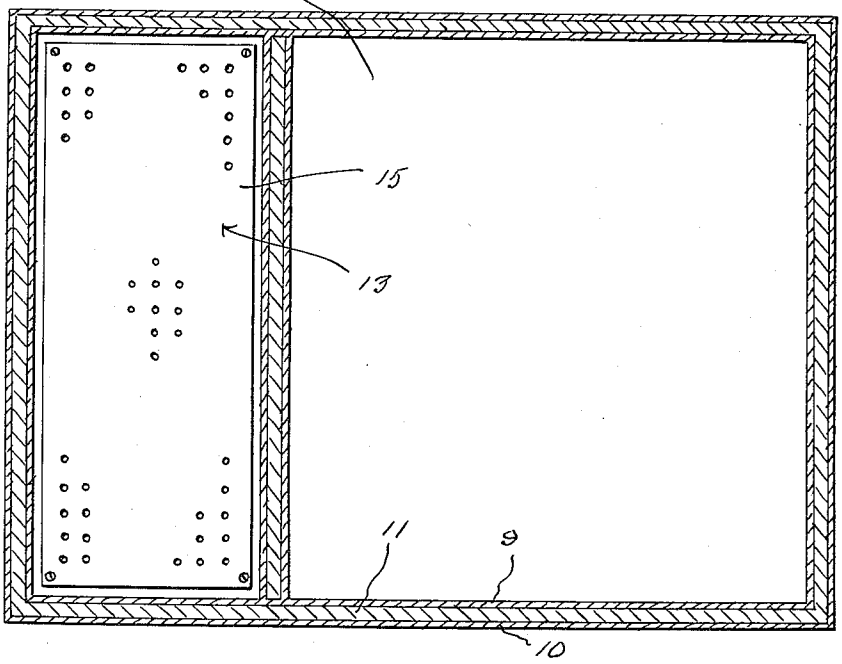
Attorney

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AIR COOLING APPARATUS

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Fig. 5.



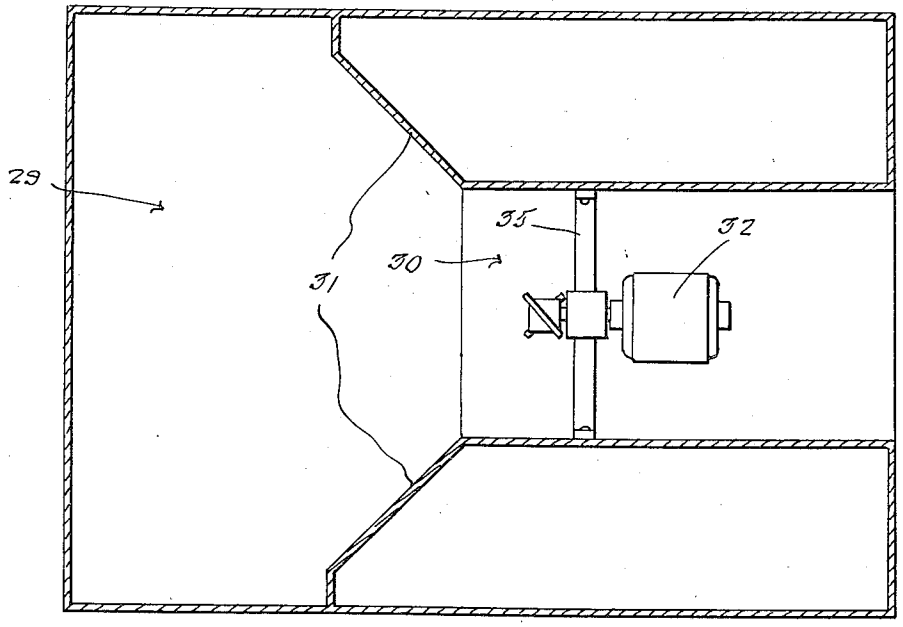


Fig. 6.

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Patented Nov. 7, 1933 1,934,551

UNITED STATES PATENT OFFICE

1,934,551

AIR COOLING APPARATUS

Frederick W. Meysenburg, Oak Park, Ill.

Application November 4, 1932. Serial No. 641,266

4 Claims. (Cl. 62—91.5)

This invention relates to an improved apparatus for circulating air in a room or similar enclosure in order to provide cool air ventilation for said enclosure.

Briefly stated, the invention comprises a miniature air cooler for individual room usage, said cooler embodying an appropriate arrangement of air and gas circulating fans, suitable ducts for said fans, and air cooling media for subjecting the current of circulated air to the action of a simple properly cooled radiator.

A primary feature of the invention is found in the insulated chest arrangement wherein one chest is employed for a reserve supply of the cooling medium, and wherein the other chest is vented and valved to accommodate the limited quantity of the cooling medium constantly in use, when the apparatus is in operation.

An additional advantageous result is obtained from the use of a cooling medium such as dry ice or an equivalent carbon dioxide product, the arrangement being such that the cooled air does not come into direct contact with the carbon dioxide product, but is constrained to obtain the requisite cooling action by coming into contact with radiator tubes through which the carbon dioxide condensate and gases pass while in the process of being discharged at a suitable point of safety.

Other structural features and advantages of the invention will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is a plan view of an apparatus constructed in accordance with the present invention.

Figure 2 is a rear end elevation.

Figure 3 is a front end elevation.

Figure 4 is a view in section and elevation taken approximately through the longitudinal vertical center of the structure.

Figure 5 is a horizontal sectional view through the upper part of the structure.

Figure 6 is a similar horizontal section through the lower part of the structure.

Figure 7 is a detail fragmentary sectional view.

Figure 8 is a top plan view of the slidable section of the main cover.

Referring to Figure 4, it will be seen that the structure may be divided into three distinct portions or sections; namely, the upper duplex chest portion, the lower gas exhaust or discharge portion, and the central or intermediate air circulating and cooling duct or portion.

A suitable casing is provided in order to form these distinct parts. It follows that the upper portion of the casing is provided with inner and outer walls 9 and 10 respectively with intervening packing 11. This provides the requisite insulation, and there is a partitioning wall at 12 which defines the frontal compartment or chest 13 which may be referred to as the primary chest and the rear elongated secondary chest 14 intended to contain a reserve supply of dry ice (carbon dioxide in an appropriate form).

In the chest 13 is a false bottom in the nature of an apertured grid 15 supported on short posts 16. This false bottom is of an area so as to allow the air to circulate in and around the entire area of the compartment 13. Moreover, this apertured grid constitutes a base or support for a wire basket 17 which contains a predetermined quantity of carbon dioxide in use.

The cover or closure for this main chest 13 is made up of companion sections. The inner relatively stationary section is denoted by the numeral 18 and is provided with suitable packing and air entrance vents 19. This section is hingedly attached as at 20 and provided with guide channels 21 receiving the edge flanges 22 of the slidable section 23. This section 23 is also provided with apertures 24 which may be registered or disalined with the apertures 19 as desired. A handle 25 is provided on the section 23 to facilitate adjustment thereof.

The secondary or storage chest also has a suitably constructed hinged door 26 and a handle 27 for operating it. The lower portion of the main casing structure is formed with a horizontal partition or divider 28 which defines a gas trapping chamber 29 in communication with the case exhaust or discharge duct 30 by way of a flared reducing mouth 31.

There is a bracket 32 in this duct supporting an electric motor 33 for driving the exhaust fan 34, said fan being supported in an appropriate hanger or spider 35. Communication is afforded between the chest 13 and the trap 29 through the medium of perpendicular radiation tubes 36. These tubes define the so-called radiator unit and the vaporous gases from the carbon dioxide in the basket pass through the tubes into the duct 30 by way of the trap 29 and are forced out by the suction fan 34, said gases being conveyed by suitable means (not shown) to a point of safe discharge.

When the fan 34 is in operation the vents 24 and 19 are open. When the fan is not in operation the slide 23 is adjusted to close the vents as is obvious.

The bottom wall of the ice chests together with the partition 28 and the side and end walls of the

main casing define the central horizontal air circulating duct or passage 37. At one end of this passage is a motor housing 37a having an intake screen 38. The motor 39 is suitably supported therein and serves to operate the air circulation fan 40, the fan being mounted in an appropriate hanger 41.

Thus at one end of the duct 37 is a screen, in the intermediate portion is the intake and circulating fan, and at the discharge or front end is the radiator formed by the tube assembly 36. In practice both motors are wired together and controlled by a single switch so that the fans are simultaneously operable. Consequently when the chest 13 is filled with carbon dioxide and the valved closure is opened by adjusting the slide 23 properly, the cooled air and gases pass down through the tube 36 of the radiator into the cap 29 and are drawn outwardly by the action of the suction or exhaust fan 34.

Simultaneously air within the vicinity of the screen 38 is drawn in by the action of the fan 40 and circulated forwardly in the direction of the arrow where it comes into contact with the refrigerated or cooled tube 36. Thus the air is cooled and circulated into the room for cooling and ventilating purposes.

It is understood of course that the apparatus may be employed as a single unit for individual room use or it may be installed in a cellar and piped to various registers in the individual rooms of the home or other building in which the invention is installed.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

I claim:

1. An air cooling apparatus of the class described comprising a main air duct open at opposite ends, provided at one end with a screened intake opening, a motor driven suction fan in said duct co-operable with said opening, a cooling radiator at the opposite end of the duct, said radiator embodying a plurality of perpendicular tubes, that part of the casing below said duct providing an air and gas discharge duct, a second motor driven fan in said discharge duct, said radiator tubes being in communication with said discharge duct, a valved ice chest supported above said main air cooling duct, the upper ends of the radiator tubes being in communication with said ice chest.

2. An air cooling apparatus of the class described comprising a main air duct open at opposite ends, provided at one end with a screened intake opening, a motor driven suction fan in said duct co-operable with said opening, a cooling radiator at the opposite end of the duct, said radiator embodying a plurality of perpendicular tubes, that part of the casing below said duct providing an air and gas discharge duct, a second motor driven fan in said discharge duct, said radiator tubes being in communication with said discharge duct, a valved ice chest supported above said main air cooling duct, the upper ends of the radiator tubes being in communication with said ice chest, said ice chest including an apertured elevated plate above the adjacent upper ends of said radiator tube, and a basket seated on said plate, said basket being adapted to contain a predetermined quantity of carbon dioxide.

3. The structure specified in claim 2, together with a secondary storage chest for containing a reserve supply of carbon dioxide.

4. An air cooler of the class described comprising a casing constructed to provide a central air cooling and circulation duct, an intake screen at one end of the duct, an electrically operated fan in said duct for circulating the air through the duct, an air cooling radiator supported at the opposite frontal end portion of said duct, and embodying a plurality of vertical tubes, that portion of the casing below said air duct being constructed to provide an air and gas exhaust duct, a motor driven suction fan in said exhaust duct, the upper portion of said casing above said air duct being constructed to provide insulated wall compartments, the rear compartment being formed with a hinged closure and constituting a storage chest for reserve carbon dioxide, the remaining chest being constructed to contain the carbon dioxide in use, said last-named chest having a hinged door including an inner apertured section and an outer slidable valve section, a grid plate in said last-named chest supported in spaced relation above the bottom of the chest to facilitate air circulation in said chest, a basket supported on said grid, said basket being adapted to contain the carbon dioxide, the aforesaid radiator tube having the upper and lower ends in communication with said last named chest and exhaust duct respectively.

FREDERICK W. MEYSENBURG.