Dec. 13, 1932. H. A. LOCKWOOD 1,891,167

AIR COOLER

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Fig. 1.

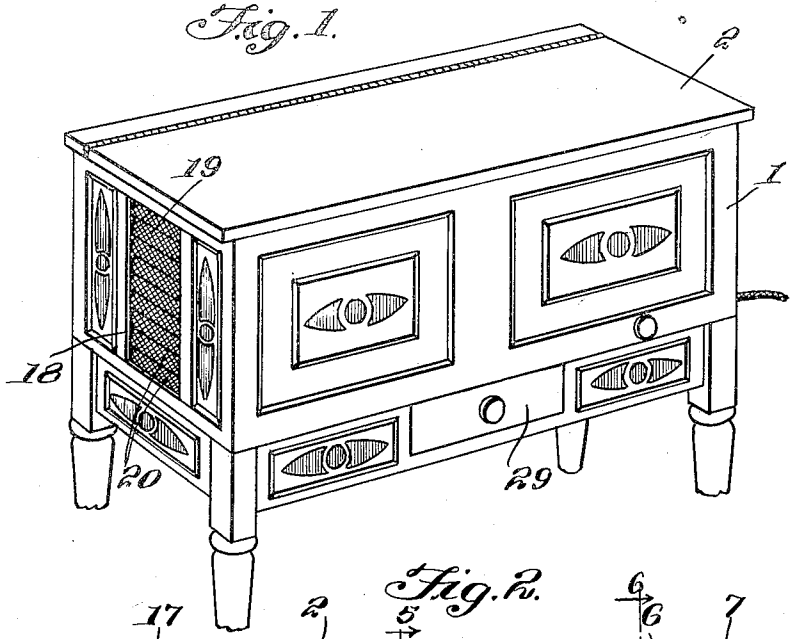


Fig. 2.

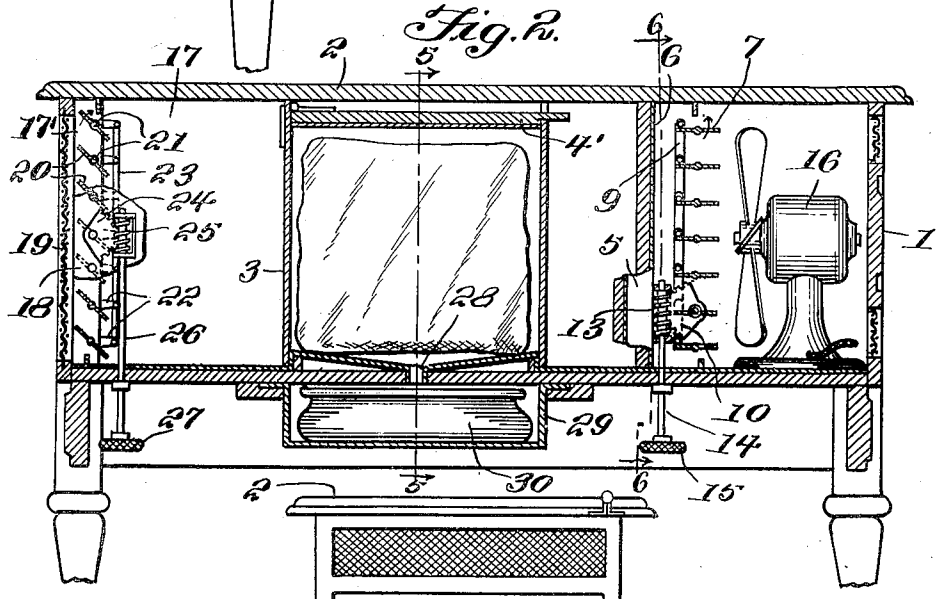
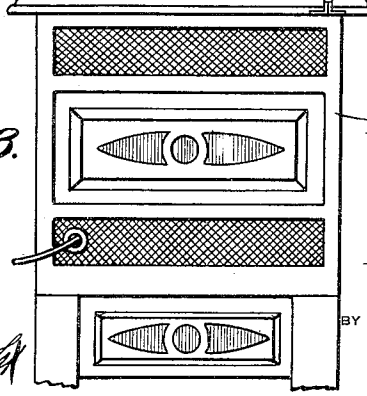


Fig. 3.



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Fig. 4.

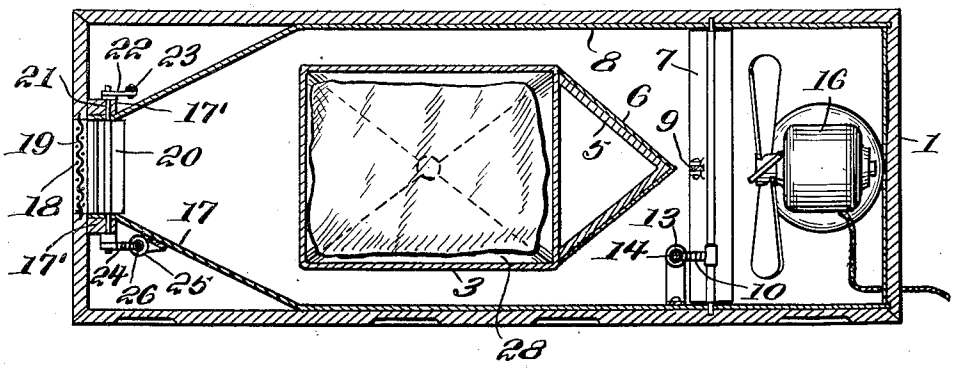


Fig. 5.

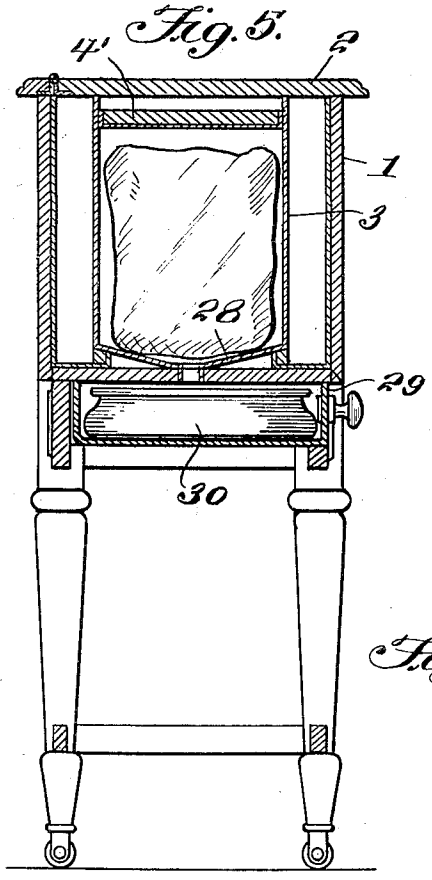


Fig. 6.

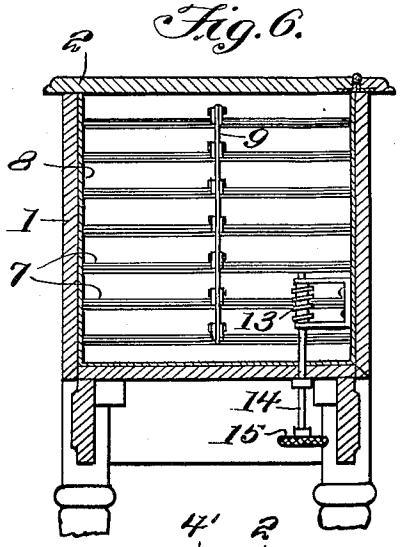
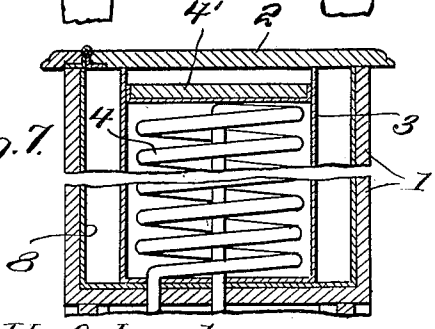


Fig. 7.



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Patented Dec. 13, 1932 1,891,167

UNITED STATES PATENT OFFICE

HIRAM A. LOCKWOOD, OF PHOENIX, ARIZONA

AIR COOLER

Application filed March 11, 1932. Serial No. 598,246.

My present invention has reference to a means for cooling air and circulating such cooled air through the rooms of dwellings and other buildings.

An object of the invention is the provision of means for reducing the temperatures in enclosures, and more particularly in enclosures occupied by human beings, such as houses, dwellings, and other buildings, and simultaneously removing a portion of the moisture contained in said air to thereby render the air in said enclosures cool and comfortable for human habitation.

A further object is the provision of an air cooling device that embodies the desirable features of simplicity in construction, cheapness in manufacture and thorough efficiency in practical use.

To the attainment of the foregoing the invention consists in the improvement hereinafter described and definitely claimed.

In the drawings:

Figure 1 is a perspective view of the improvement.

Figure 2 is an approximately vertical longitudinal sectional view thereof.

Figure 3 is an end view.

Figure 4 is a horizontal sectional view.

Figure 5 is a transverse sectional view approximately on the line 5—5 of Figure 2.

Figure 6 is a sectional view approximately on the line 6—6 of Figure 2.

Figure 7 is a detail sectional view through the cooling chamber in which the cooling agent is in the nature of a water circulating coil.

As disclosed by the drawings the body or cabinet 1 of the improvement may be highly ornamental to add to the appearance of the device when arranged in a room. The cabinet 1 is supported on suitable corner legs, and the top of the cabinet is open but is closed by a hinged top or cover plate 2. There is approximately centrally arranged in the cabinet a receptacle 3 for a cooling agent. In the showing of Figure 2 of the drawings the agent comprises a block of ice and in the showing of Figure 7 the agent comprises cold water which is constantly circulated through a coil 4. Obviously other cooling agents may be employed. The top of the receptacle is closed by a hinged door 4′. Preferably the receptacle is of metal whose outer surface may be frosted by the cold air from the cooling agent penetrating therethrough. On one end of the receptacle there is fixed a deflector 5 which is V-shaped in plan and which has its outer face covered with a metal surface 6.

The substantially V-shaped air deflector has its pointed end arranged in close proximity to a series of shutter valves 7, each having trunnioned ends that are journaled in bearings in the sides of the cabinet 1, as well as through an inner metal lining 8 for the said cabinet. The shutter valves have offset ears to which is connected a rod 9 and the shaft of one of the shutters has attached thereto a rack segment 10 which is in mesh with a worm 13 whose shaft 14 is journaled in suitable bearings, and which shaft passes through the bottom of the cabinet and is provided with an operating handle 15.

In the cabinet, disposed adjacent one end thereof and in close proximity to the shutter valve 7 there is an electrically driven fan 16.

The metal inner lining 8 for the cabinet has its sides inclined, as at 17, toward the center and the end of said cabinet, opposite that in which the blower fan 16 is located, the angle portions terminating in straight ends which are secured to vertical cleats 17′ arranged in a line with an opening 18 in the said end of the cabinet. This opening is covered by a reticulated plate 19 and arranged between the cleats 17′ there is a series of shutter valves 20. The shafts 21 for the shutter valves pass through bearing openings in the cleats 17′. These shafts have offset ears 22 to which is pivoted a connecting bar 23. The second end of one of the shafts has fixed thereon a segmental rack 24 that is in mesh with a worm 25 whose shaft 26 is journaled in suitable bearings and passes through the bottom of the cabinet and has its outer end provided with a knurled head 27.

The blower fan 16 is of the ordinary non-oscillatory type, and in operation the shutter valves 7 are moved to fully open position and the shutter valves 20 are brought to closed position. The air from the fan forces the

air around the cooling receptacle and the cooling agent therein so that the entire cabinet is soon filled with cool air. The handle or wheel 27 is then operated to partly or fully open the shutter valves 20. The valves 20 may be arranged at any desired angle so that cold air can be either upwardly, downwardly or forwardly directed when the same passes out of the cabinet. The shutter valves 7 are operated to control the volume of cold air which is forced out of the cabinet. From practice I have found that a cabinet of a comparatively small size constructed in accordance with this invention and equipped with a cooling agent will, with doors open circulate cool air through all of the rooms on a floor of a dwelling so that the occupants thereof will be rendered comfortable regardless of torrid weather conditions. The V-shaped deflector, as previously inferred, causes the air stirred up by the fan to pass through the somewhat restricted passages between the sides of the cooling agent receptacle 3 and the inner metal side walls of the cabinet, so that the air will be effectively cooled before finding an outlet through the opening 18 in said cabinet.

When ice is employed as a cooling agent the receptacle 3 has its bottom wall tapered to its center and its said center provided with a funnel 28 that passes through the bottom wall of the cabinet and communicates with the open top of a drawer 29 that is slidable through one side of the cabinet, the said drawer containing therein a pan 30 to receive the drippings from the ice. The drawer 29 when closed will prevent the entrance of outside air into the cabinet.

In addition to creating a circulation of cool air the invention also affords a dehydrating device for removing a portion of the moisture from the air in the room or dwelling, which moisture decreases as the temperature decreases and which causes the air to appear to be a lower temperature than it actually is.

It is believed that when the foregoing description has been carefully read in connection with the accompanying drawings the construction and advantages of my invention will be apparent to those skilled in the art to which such invention relates and that further detailed description will not be required. Obviously I do not wish to be restricted to the specific structure herein shown and described and, therefore, hold myself entitled to make such changes therefrom as fairly fall within the scope of what I claim.

Having described the invention, I claim:

1. A cold air circulating device, comprising a cabinet, a receptacle for a refrigerating agent in the cabinet, a blower fan in the cabinet, a series of shutter valves in the cabinet adjacent to the blower fan, means for simultaneously operating said shutter valves, said cabinet having a cold air outlet at one end thereof, a series of shutter valves in the cabinet opposite the outlet, and means for simultaneously operating the shutter valves opposite the outlet, said operating means for each series of shutters comprising shafts journaled in bearings and projecting from the bottom of the cabinet, worms on the shafts, and toothed segments on the trunnions of certain of the shutter valves in mesh with the worms.

2. A cold air circulating device, comprising a cabinet, a receptacle for a refrigerating agent in the cabinet, a blower fan in the cabinet, a series of shutter valves in the cabinet adjacent to the blower fan, means for simultaneously operating said shutter valves, said cabinet having a cold air outlet at one end thereof, a series of shutter valves in the cabinet opposite the outlet, and means for simultaneously operating the shutter valves opposite the outlet, said operating means for each series of shutters comprising shafts journaled in bearings and projecting from the bottom of the cabinet, worms on the shafts, and toothed segments on the trunnions of certain of the shutter valves in mesh with the worms, said receptacle having a bottom which is tapered to the center thereof and said center provided with a funnel which extends through the bottom of the cabinet, a slidable drawer for the cabinet below the funnel designed for the reception of a drip pan.

In testimony whereof I affix my signature.

HIRAM A. LOCKWOOD.