

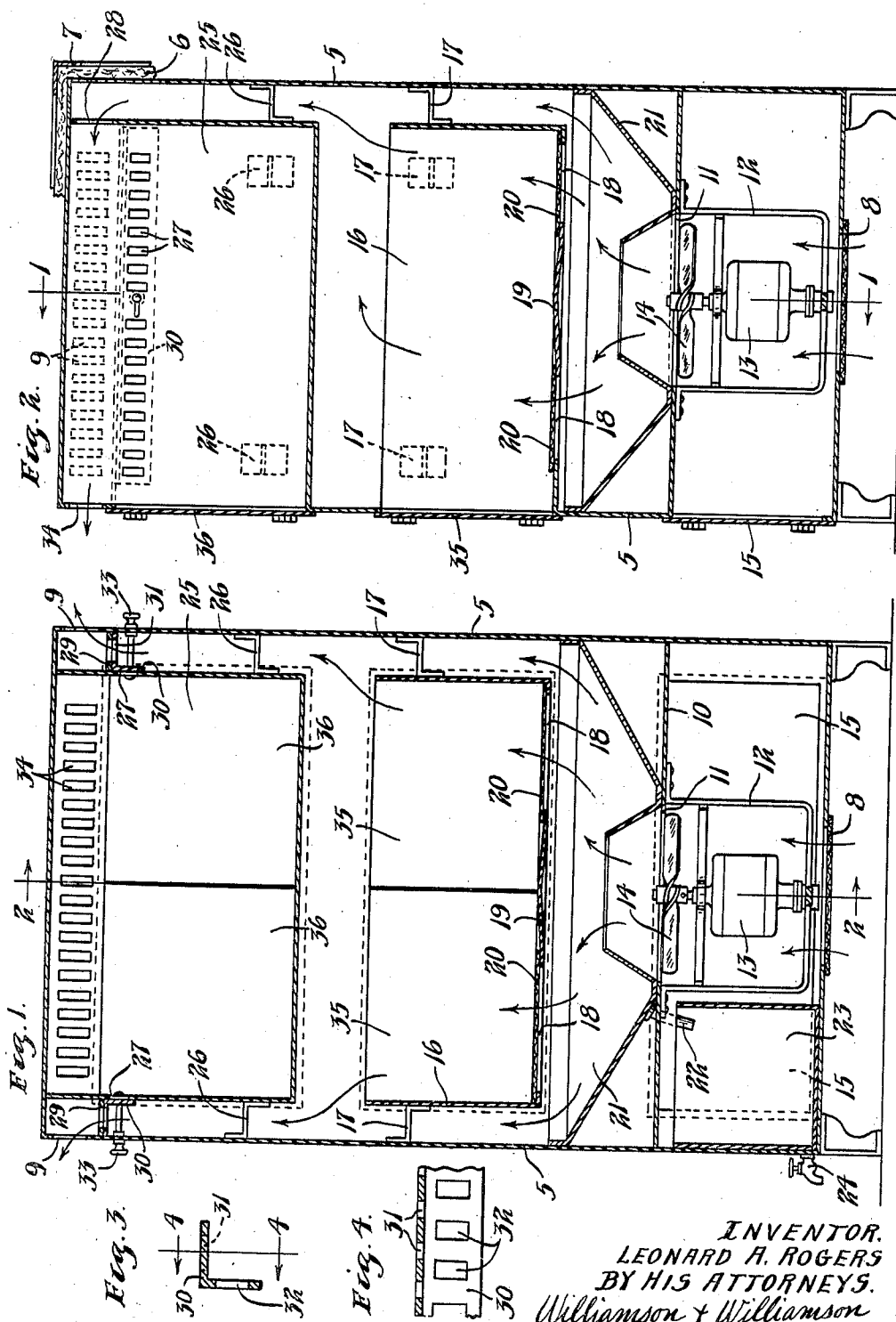
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COMBINATION AIR COOLER AND REFRIGERATOR

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COMBINATION AIR COOLER AND REFRIGERATOR

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This invention relates to air cooling devices, and more particularly to devices which have the combined function of acting as air coolers for reducing the temperature of a room or building and also serving to cool beverages and foodstuffs in the manner of an ordinary refrigerator.

It is a general object of my invention to provide a highly efficient cooler which can be used either as an air cooler or as a refrigerator, or which can be adjusted so that one of the functions can be eliminated while maintaining the full efficiency of the other. The device is manufactured as a unitary structure and in altering the function of the device it is only necessary to make a simple adjustment and the general arrangement of the various parts remains the same. When the device is used both as a refrigerator and an air cooler, I have provided means for introducing air into the refrigerator compartment and then expelling this still cool air out of the casing of the complete device into the room in which it is located so that even after the cooled air has served to keep food or other articles cooled, it is used in the room to keep the room temperature at a lower point.

These and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawing, wherein like reference characters refer to the same or similar parts throughout the various views, and in which:—

Fig. 1 is a transverse vertical section looking toward the front of the machine and is taken on the line 1—1 of Fig. 2;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical section of one of the air flow control shutters, and

Fig. 4 is a section taken on the line 4—4 of Fig. 3.

In the embodiment shown in the drawing there is shown a main casing 5 which is preferably made of sheet metal and is provided with an insulating sheathing 6 covered by a suitable outer shell 7. The method of attaching the insulation and the outer shell is unimportant. The casing has a screened opening 8 in the bottom thereof, and the upper portion of each side of the casing is provided with a row of louvers or outlet openings 9. Suitably secured across the lower part of the casing is a partition plate 10 having a central aperture 11. A U-shaped supporting frame 12 has mounted thereon a suitable electric motor 13, upon whose shaft extension is secured a fan 14. The fan is positioned within or axial

to the opening 11 in the partition plate 10. A suitable door 15 is provided in the front wall of the casing to give access to the motor-driven fan compartment.

The air cooling means shown in the drawing comprises a box-like receptacle 16 supported in spaced relation to the side and back walls of the outer casing by means of brackets 17. The lower part of the receptacle 16 has a substantially open bottom indicated at 18, with the central portion of the bottom of the receptacle closed by a disc-like element 19 which is preferably elevated at its center. The disc-like element 19 may be held in position by a suitable screen 20 which extends substantially throughout the bottom of the receptacle 16. This cooling receptacle is adapted to hold a suitable cooling means such as a block of ice, or refrigerating coils may be substituted for the ice itself. In any event, there is a dripping of moisture either due to the melting of the ice when a block of ice is used, or to dripping from the refrigerating coils if they are employed for cooling. Therefore there is provided a drip-pan 21 which lies below the cooling receptacle 16 and has downwardly and inwardly slanting walls, as shown, which terminate approximately below the edge of the central plate 19 in the cooling receptacle. From that point the drip-pan slopes sharply upwardly and inwardly slightly so that any dripping from the cooling receptacle 16 will be caught in the drip-pan 21 and cannot drop down into the fan pump chamber in the bottom of the casing. A suitable drain pipe 22 permits water to flow from the drip pan 21 into a receptacle 23 which is provided with an exterior drain cock 24 which extends outside of the casing wall.

The upper portion of the casing contains a refrigerating chamber 25 which is spaced inwardly from the rear and side walls of the casing 5 and is secured by brackets 26 which are similar to the brackets 17 supporting the cooling receptacle. The walls of the refrigerating chamber 25 extend upwardly to the top of the chamber 25 and the side walls of said refrigerating chamber are provided with louvers or openings 27 which are positioned preferably a little distance from the top of said side walls. The rear wall of the chamber 25 is also provided with openings 28, but I prefer that this row of openings be placed above the openings 27 in the side walls of the chamber.

Extending from the side walls of the casing 5 into the side walls of the refrigerating chamber 25 above the rows of openings 27 are apertured plates 29, and slidably mounted beneath said plates 29 are air flow control shutters 30. It will

be noted in Fig. 4 that these shutters are provided with openings 31 in their horizontal portions which are in staggered relation to the openings 32 in the vertical portions of said shutters. Operating handles 33 extend outwardly from said shutters through slots provided in the walls of the casing 5 so that the shutters can be conveniently operated. The openings 27 in the side walls of the refrigerating chamber 25 are placed in staggered relationship to the openings in the plates 29 so that movement of the shutters 30 will alternately open and close either the inlet passage to the refrigerating chamber 25 and the passage through the shutters and the plates 29 and thence outwardly through the openings in the upper side walls of the outer casing 5. Thus it follows that when the openings in the plates 29 are closed by the shutters, the openings 27 are unobstructed by the shutters and air will flow through the refrigerating chamber 25, cooling the contents thereof and will then pass out through the casing openings 9 in the front wall of said casing. When the shutters are shifted to their other position, no air flows into the chamber 25, but passes through the openings in the plates 29 and thence directly outwardly through the casing wall into the atmosphere of the room in which the device is located. At all times, however, there is a flow of air upwardly in back of the refrigerating chamber 25 between said chamber and the wall of the outer casing 5, thence through the openings 28 in the upper portion of the rear wall of said refrigerating chamber and through said chamber to the front wall of the casing where it leaves the casing through the front wall casing outlets 34.

In addition to the door 15 which gives access to the motor and fan chamber at the bottom of the casing, there is a door 35 which forms the front wall of the cooling receptacle 16 so that ice may be put into said receptacle or it may be reached for other purposes if a refrigerating coil is used and an upper door 36 opens into the refrigerating chamber 25. It is understood, of course, that the insulating layer 6 and its outer metallic cover 7 are suitably mounted over said doors to prevent the ingress of room air.

From the foregoing description it will be seen that the device which comprises a single compact unit can be used for cooling the air outside of the casing in a room or similar enclosure, and also for cooling articles deposited in the refrigerating chamber 25. Regardless of the position of the shutters 30, there is always a flow of cool air up in back of the refrigerating chamber 25 through the chamber and out of the front casing outlet 34. When the shutters are manipulated to admit additional cold air through the openings 27 into the refrigerating chamber 25, this air passes through the chamber and exhausts into the outer atmosphere through the openings in the side walls of the casing 5 to cool the air in the room. Thirdly, when the shutters are shifted so that no air enters the refrigerating chamber through the openings 27, and the majority of the cooled air is directed out of the casing through the casing side wall outlets 9. Therefore it will be seen that regardless of whether the air is used in the refrigerating compartment 25 it is always directed out of the casing into the room in which the device is placed to lower the room temperature, and the forced flow induced by the motor 13 and fan 14 produces a fairly rapid

recirculation and recooling of the air in the room so that the room temperature can be maintained considerably lower than normal and at the same time the refrigerating compartment can be kept cool due to the influx of the cool air and the insulating qualities of the sheathing 6.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:—

1. In a combined air cooler and refrigerator, an outer casing, air cooling means within said casing, means for directing a stream of air into effective cooling proximity to said cooling means, a refrigerating storage chamber spaced inwardly from the side and rear walls of said casing and having inlets and outlets for cooled air, said casing having air outlets adjacent said refrigerating chamber, shutter means for directing cooled air through said refrigerating chamber and out of the outlets in said casing, said shutter means being movable to close the inlets in said refrigerating chamber and direct air past said chamber to the outlets in said casing.

2. In a combined air cooler and refrigerator, an outer casing having a lower air inlet and upper air outlets, air cooling means within said casing, means for directing a stream of air into effective cooling proximity to said cooling means, a refrigerating storage chamber within said casing and having air inlets and air outlets, said air inlets being positioned slightly below the outlets in said casing, apertured plates extending from the side walls of said casing inwardly to the side walls of said refrigerating chamber, the apertures in said plates being in staggered relation to the air inlets in the walls of said refrigerating chamber, and shutter elements having sets of apertures of substantially the same size as the apertures in said refrigerating chamber and said plates, and the sets of apertures in said shutter elements being in staggered relationship to each other, whereby the air inlet openings in said refrigerating chamber walls can be closed by said shutter element and the apertures in said plates maintained open while said refrigerating chamber apertures are closed, and means extending from said shutters through the side walls of said casing and providing handles for slidably operating said shutters.

3. In a combined air cooler and refrigerator, a casing, air cooling means within said casing comprising a box-like receptacle having a closed central bottom portion and an open portion therearound, said central bottom portion being slightly elevated at its center and slanting downwardly toward its edges, a power operated fan whose axis is vertically disposed and positioned beneath the closed central portion of said receptacle, and a moisture receiving pan beneath said receptacle, said pan having an open central portion beneath the closed central portion of said receptacle, the open portion of said moisture receiving pan being of less width than that of the closed bottom portion of said receptacle, whereby moisture dripping from said receptacle will be received by said moisture receiving pan and retained against falling upon said power driven fan.

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