March 15, 1938. L. R. KUBIAS 2,111,070

PORTABLE AIR COOLING DEVICE

Original Filed May 20, 1935

Fig. 1

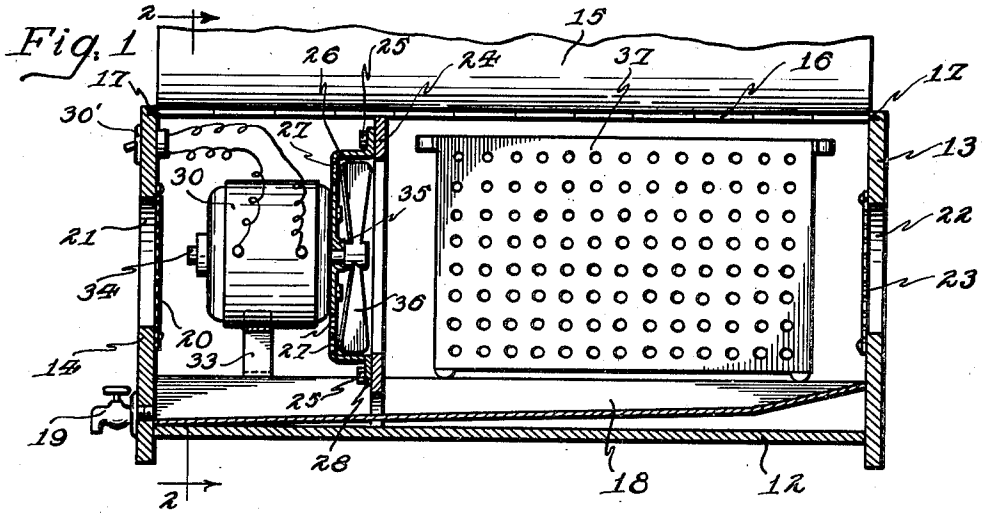


Fig. 2

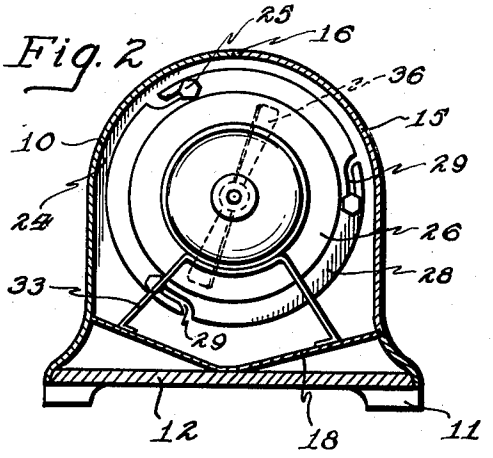
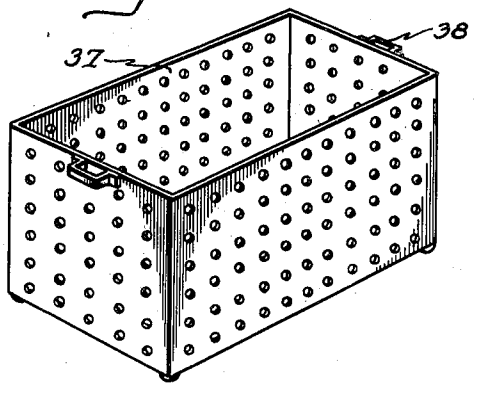


Fig. 3



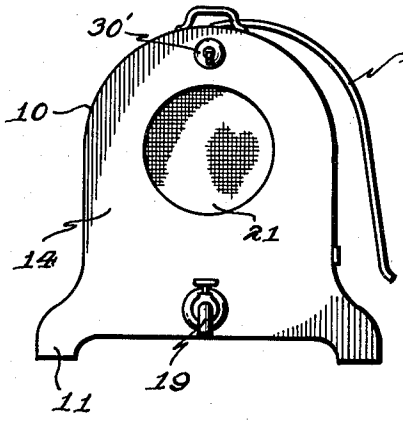


Fig. 4

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UNITED STATES PATENT OFFICE

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PORTABLE AIR COOLING DEVICE

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Original application May 20, 1935, Serial No. 22,316. Divided and this application August 28, 1936, Serial No. 98,800

2 Claims. (Cl. 230—117)

This application is a divisional application of my co-pending application for Letters Patent in the United States for Portable air cooling device, Serial No. 22,316, filed May 20, 1935.

This invention relates to an air-cooling appliance, particularly those of a portable type, adapted to circulate the air in a room into and through the device, passing the air around and through the commonly known refrigerants, cooling and humidifying the air in the room.

An important object of this invention is the provision of an air-cooling and humidifying device of inexpensive construction adaptable for use in the average household and for circulating the air of one or more rooms through an elongated cabinet preferably containing a foraminous container in which broken-up ice may be placed, around and through which the air is repeatedly circulated during its passage through the cabinet and thereafter expelled in a cooled and humidified state at the opposite end of the cabinet.

A further object of this invention is the provision of a portable cabinet or housing adapted to be easily moved from room to room of the average household, the cabinet or housing containing an electrically driven air propulsion means and connected thereto another compartment containing an ice container or other air-cooling medium such as a chemical refrigerant or refrigerant containing coils such as are commonly used in connection with a mechanical refrigeration system.

A further object of this invention is the provision of an air-cooling and humidifying device including a cabinet with air-cooling and humidifying means contained therein and means for removably mounting an electrically driven propeller from within said cabinet so that the propeller and driving motor may be quickly and conveniently removed and remounted upon other mounting means and used as a means of air-propulsion for purposes other than that of cooling and humidifying air, such as for instance, the use of the propeller and driving motor as an exhaust or cooling fan.

Other and further objects of the invention will be apparent from the following specification and claims.

This invention (in the preferred form) is illustrated and described in the following specification and claims.

On the drawing:

Fig. 1 is a longitudinal cross sectional view of the device showing the relative position of all the parts.

Fig. 2 is a cross sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of one form of refrigerant-containing receptacle adapted to be inserted in the compartment of the main cabinet shown in Fig. 1.

Fig. 4 is an end elevational view of the air-cooling device taken from the left of Fig. 1.

Referring to the drawing, reference numeral 10 is used to indicate a substantially cylindrical cabinet, made of wood or metal but preferably made of metal, the lower walls of which are turned outwardly and downwardly, as indicated in Figs. 2 and 4, to form integral corner legs 11. A substantially flat bottom 12 forms the base of said cabinet, said bottom being securely fastened to the side walls of the cabinet as shown in Fig. 2 and serves as an insulating wall. End panel 13 forms the forward wall of the cabinet and end panel 14 forms the rearward wall thereof. A substantial portion of the side wall of the cabinet, which is indicated by the reference numeral 15, forms a door which preferably conforms to the symmetrical design of the cabinet and is hingedly mounted as at 16 by means of a suitable pintle 17. Pintle 17 passes through interfitting backward turned knuckles of the door 15 and similar spaced apart knuckles formed on side wall of cabinet 10, as indicated in Figs. 1 and 2. Fig. 1 shows the door 15 up-raised and with parts broken away.

The inner moisture-collecting trough 18, preferably made of metal, is formed of a substantially V-shaped cross section, the opposite sides and the ends thereof being inclined toward its longitudinal center, forming a longitudinally extending trough, the lowermost point of which is preferably immediately adjacent the rear panel 14 of the cabinet. Said inclined trough 18 forms a water-collecting and drain means for any water or moisture precipitated from the refrigerating and cooling means and which may result from dripping of precipitated moisture. An outlet aperture is formed in end panel 14 preferably at a point immediately adjacent the lower end of inclined trough 18. This aperture is suitably threaded for a threading engagement with a conventional pet cock 19, shown in Figs. 1 and 4. This pet cock 19 permits convenient draining of any accumulations of water from within the cabinet.

A relatively large inlet opening is formed centrally in the rear panel 14 of the cabinet, forming an air inlet port 21. A rotatable shutter or valve 20 is pivotally mounted on panel 14 to selectively close the said air inlet port, the pivot preferably being on the inside surface of the panel 14. Said valve 20 is adapted to be rotated to optionally open, partially close, or entirely close, the opening 21 and thus control the volume of air passing through the cabinet.

A relatively large central aperture is formed in front panel 13 of the cabinet and forms an outlet exhaust port 22 for the outward passage of the cooled and humidified air from within the cabinet. Screening or screen 23 is preferably

mounted across said opening by means of suitable nails or screws, as shown in Fig. 1, to enhance the appearance of the cabinet and to prevent foreign objects from entering the cabinet.

An annular mounting ring **24** is secured in vertical position parallel to the end panels of the cabinet at a point substantially one-third of the way across from the rear panel to the front panel of the cabinet, said ring being securely fastened, by welding or other securing means, to the opposite sides and bottom of the cabinet. At its most downward portion said annular mounting ring **24** has formed therein either slots or apertures to allow the ready passage of water in trough **18**. Mounted upon said mounting ring **24** and securely threaded therein in a position perpendicular to said ring and horizontally mounted as regards the sides of the cabinet, are a plurality of relatively short threaded bolts **25**, preferably three in number, and substantially spaced apart.

An annular cup-like metal frame **26** having a plurality of apertures **27** and having a perpendicularly extending integral peripheral annular flange **28** is removably attached to mounting ring **24** by means of aforesaid bolts **25** which are threadingly engaged to ring **24**. As shown in Fig. 2, the flange **28** of frame **26** has three spaced apart angular L-shaped slots, indicated by numeral **29**, formed therein, said slots opening outwardly and extending angularly parallel to the periphery of flange **28** so that the frame **26** and attached parts may be rotated a short distance in a clock-wise direction to permit quick removal of the motor propeller and its attached mounting and guard frame without the necessity of doing more than loosening one or more of the bolts **25**.

An electric motor **30**, preferably of relatively low horsepower and which is suitably connected in circuit to a source of electric power, by a switch **30'**, is mounted immediately adjacent the frame **27** by means of suitable bolts **31** and also by means of a lower metal supporting base or bracket **33**, the ends of which bracket form legs which rest on the trough **18**, as shown in Fig. 2. The upper part of the bracket **33** is preferably arcuate to conform to the housing of electric motor **30**. Motor **30** has an outer housing **32** which is substantially insulated from the conventional shell and interior parts of said motor, substantially reducing the conductivity of the internal motor-generated heat and preventing such heat from objectionably lowering the refrigerating capacity of the unit. A metal air propeller **36** of usual construction is mounted on the projecting end of shaft **34** forward of the central apertured boss **35** of the frame **26**. Said propeller **36** is contained within the annular frame **26** and adapted to rotate in a manner such as to drive the air through the device, particularly through the compartment containing the refrigerating and humidifying means.

In the form shown in Fig. 1, there is shown a foraminous rectangular metal box **37** which may have suitable handles **38**, as shown. The foraminous box **37** is of a size to substantially fit within the larger compartment of the cabinet so that the air propelled therethrough by the propeller **36** will necessarily contact the ice or other refrigerating means contained within the box **37** and its contents, the air is forced through outlet port **32** and into the room.

The heat absorbing medium, or refrigerating means, which may be inserted and contained in the larger compartment of the cabinet may be one of several well known conventional refrigerating mediums, any one of which may be selectively employed. As it is an established principle that the specification and drawing presented represent one preferred example or preferred form of the invention and that I am entitled to a range of equivalents including other well known means performing like functions, I have merely illustrated one of several equivalent cooling mediums in the form of a foraminous container or box **37** which may assume various shapes or forms, but which in the preferred form illustrated is substantially rectangular.

Obviously, other equivalent refrigerating and heat absorbing units, such as a fin coil, a spiral coil or enclosed box or rectangular pan each forming the circulating conduit or medium for evaporative liquid refrigerant could be efficiently employed and the air being forced through the container would continuously contact such cooling medium and be thereby cooled.

Various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention or any features thereof, and nothing herein shall be construed as limitations upon the invention, its concept or structural embodiment as to the whole or any part thereof except as defined in the appended claims.

I claim as my invention:

1. In a portable air-cooling device, including a cabinet having a rounded upper surface, a side opening, a door for said opening, and having an air inlet port and an outlet port at opposite ends respectively of said cabinet; a plurality of laterally extending anchoring bolts about said inlet opening, a substantially circular ring member in said cabinet, an annular cup-like metal frame forming a housing, the peripheral edges of said metal frame engaging said bolts, said metal frame having a central aperture and a plurality of relatively small apertures therethrough; an electric motor mounted concentrically and in alignment with said metal frame, said motor having an armature shaft, one end of which projects through said central aperture of said mounting metal frame, a propeller on said projecting end of said shaft; electrical connections connecting said motor to an electrical power source; and a control switch on said cabinet for controlling said motor.

2. In a cooling device of the class described comprising an elongated housing having an inlet opening at one end and an air outlet exhaust opening at its opposite end, an annular ring member mounted in vertical position intermediate said inlet and outlet openings; an annular metal frame having a central aperture and a plurality of smaller apertures mounted upon said ring member; a plurality of bolts in said ring member removably engaging the peripheral edges of said metal frame; an electric motor mounted concentrically with respect to said metal frame and said ring member; a metal bracket for supporting said motor and normally engaging the housing thereof; said motor having an armature shaft projecting through said central aperture of said metal frame; fastening means for securing said motor adjacent said metal frame; a propeller on said projecting end of said armature shaft; and switch control means for said motor.

LILLIAN R. KUBIAS.