May 10, 1938. L. M. KEIGHLEY 2,116,974

REFRIGERATING APPARATUS

Filed May 24, 1937 2 Sheets-Sheet 1

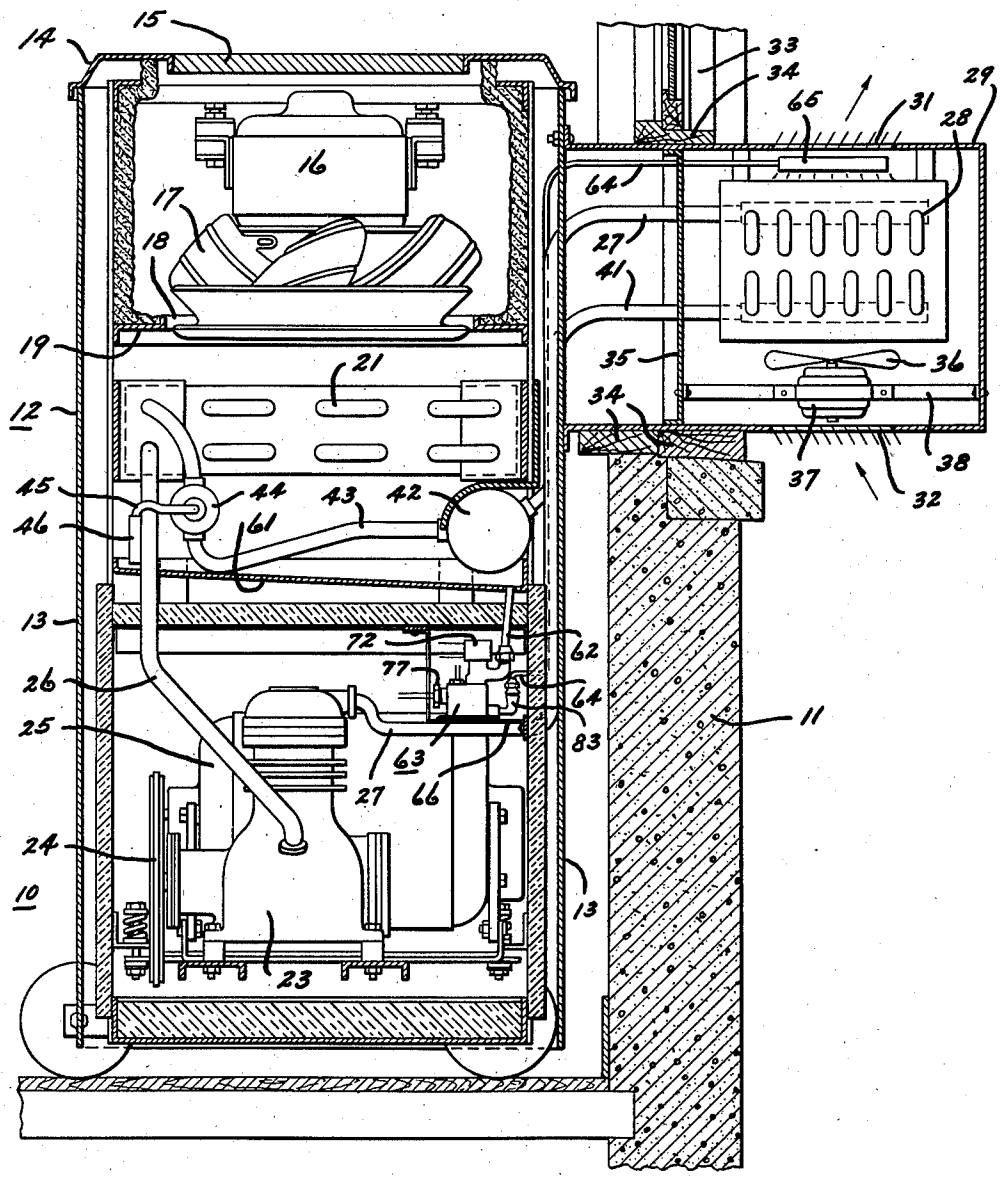


Fig. 1

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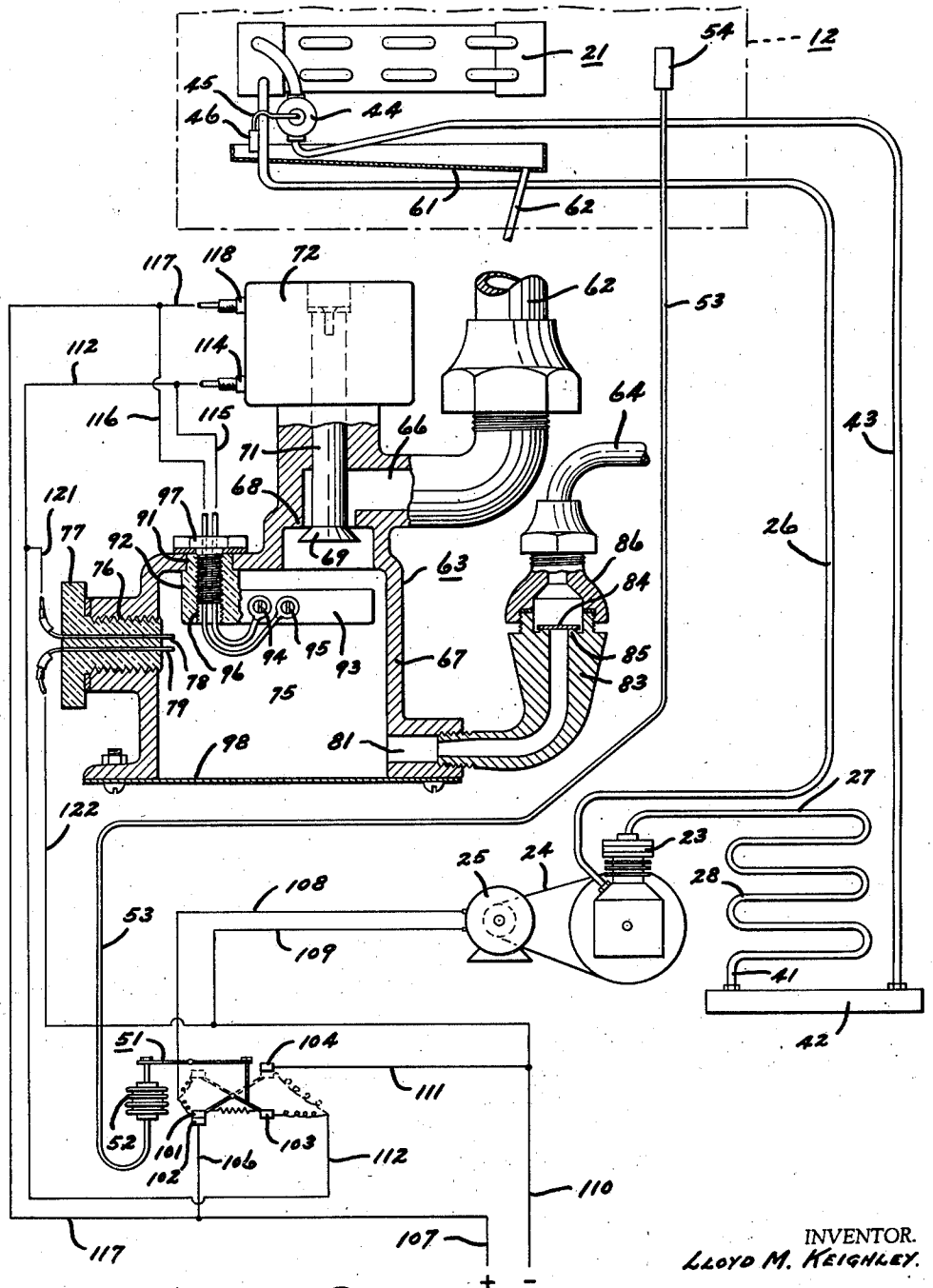


Fig. 2

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2,116,974

REFRIGERATING APPARATUS

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Application May 24, 1937, Serial No. 144,431

15 Claims. (Cl. 62—129)

This invention relates to refrigerating apparatus and particularly to means for removing moisture, dripping from a cooling element or evaporator of a refrigerating system, from the refrigerating apparatus.

Various devices have been provided for collecting and removing moisture dripping from an evaporator in a refrigerator in which the machinery compartment is located below the food storage compartment. In such devices moisture has been conducted by gravity to the machine compartment where it may be dissipated or removed therefrom in several different ways.

It has now become common in the construction of mechanical refrigerators or refrigerating systems and particularly refrigerators of the room cooling type to locate the condenser of the system above other elements thereof and to extend the condenser through a window or opening in a wall of the room of the building in which the room cooling apparatus is located. This arrangement is provided so that the condenser will be exposed to atmosphere exteriorly of the building and cooled by the outside atmosphere.

An object of the present invention is to remove moisture dripping from a cooling element of a refrigerating system by means rendered effective by operations of the refrigerating system.

Another object of the present invention is to provide an improved means or device for causing moisture dripping from a cooling element of a refrigerating system to be elevated and conducted away from the refrigerating apparatus under conditions where gravity drainage is not available.

A further object of the invention is to provide an improved means or device for causing drip water flowing from a cooling element of a refrigerating apparatus to be trapped and elevated or conducted upwardly of the various elements constituting the apparatus and particularly upwardly of the drip water receiving and collecting means intermittently in response to periodic or cyclical operations of the refrigerant circulating unit of the apparatus.

In carrying out the foregoing objects it is a still further object of the invention to provide an improved device, which is normally rendered effective by operations of a refrigerant circulating unit of a refrigerating system, for intermittently causing drip water flowing from a cooling element of the refrigerating system to be elevated and conducted upwardly of the drip water receiving and collecting means and which device has auxiliary means rendered effective by a predetermined amount of drip water accumulating in the water receiving and collecting means for elevating the drip water from the collecting means during the ineffective periods of the device.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a vertical sectional view through a building and a refrigerating apparatus within a room in the building adapted to cool and cause circulation of air within the room; and

Fig. 2 is a vertical sectional view through an element of the refrigerating apparatus disclosed in Fig. 1 employed to elevate and dispose of drip water flowing from the cooling element of the apparatus and shows diagrammatically its connection and association with the refrigerating apparatus.

Referring to the drawings, and particularly to Fig. 1 thereof, there is shown a refrigerating apparatus of the type usually referred to as a room cooling or conditioning apparatus. The refrigerator or room cooling apparatus is disposed in a room 10 provided in a building 11. The refrigerator or room cooling apparatus includes a cabinet generally represented by the reference character 12. Cabinet 12 comprises a framework which is covered by a shell or by vertically disposed metal panels 13. The top of cabinet 12 is covered by a closure member 14 having a plurality of louvered passages 15 provided therein. An electric motor 16 is mounted within cabinet 12 adjacent the top 14 thereof and is operatively connected to a fan or blower 17. The one face of blower or fan 17 is located within an opening 18 provided in a housing or shroud 19. An evaporator 21 of a refrigerating system, to be presently described, is mounted within cabinet 12 below housing or shroud 19 and fan 17. The sides of the shell or the side panels 15 of cabinet 12 are provided with a plurality of openings (not shown) to permit fan or blower 17 to draw air into the cabinet. Operation of the fan or blower 19 by motor 16, in response to any suitable or desirable control means, causes air to be drawn into the cabinet 12 through the openings in the side walls thereof. This air is caused to flow over and/or through the cooling element or evaporator 21 by fan or blower 17 and is drawn into the housing or shroud 19. The refrigerating effect produced by the evaporator 21 cools the air and the cooled air is expelled from the cabinet 12 through the louvered openings 15 into the room 10. This action of that portion of the apparatus thus far described creates a circulation of air within room 10 and causes the warmer air therein to enter the cabinet 12 through the openings (not shown) and to be cooled and dried by the room cooling apparatus for increasing the comfort of occupants of the room.

The refrigerating system associated with the room cooling apparatus includes, in addition to

the cooling element or evaporator 21, a compressor 23 operatively connected, through suitable belt and pulley connections 24, to an electric motor 25. Operation of compressor 23 by motor 25 causes gaseous refrigerant or refrigerant evaporated within the cooling element 21 to be withdrawn therefrom through the refrigerant conveying conduit 26. The compressor 23 compresses the gaseous refrigerant and forwards same under pressure, through conduit 27, to a condenser 28. The condenser 28 may be of any suitable or conventional construction and is preferably mounted within a housing or shroud 29 having an opening 31 in the top wall thereof and an opening 32 provided in the bottom wall thereof. The housing or shroud 29 is preferably secured to the back wall 13 of cabinet 12 and extends through a window or opening 33 provided in the wall of room 10 or building 11. Suitable blocks or the like 34 surround the housing 29 to seal the opening 33 through which the housing extends. Any suitable partition or closure member 35 may be provided within the housing 29 to prevent the ingress of atmospheric air, from the outside of building 11, into the room 10 through the housing or shroud 29. A fan 36 operated by an electric motor 37 and mounted on brackets 38 within housing or shroud 29 may be employed for circulating atmospheric air externally of building 11 through the shroud 29 and over the condenser 28 for cooling the compressed refrigerant circulated thereto by the condenser 23. The refrigerant cooled and liquefied in condenser 28 flows through the pipe 41 into a receiver-reservoir 42 where it is stored prior to being conducted, through pipe 43, to the evaporator 21 to cause the evaporator to produce a refrigerating effect. An expansion device or valve 44, of any suitable or conventional design, is interposed in the conduit 43 for controlling the flow of liquid refrigerant to the cooling element 21. The expansion device or valve 44 is operated by movement of a diaphragm or bellows contained therein and having a conduit connection 45 with a thermostat bulb 46 in response to expansion and/or contraction of a volatile fluid sealed within the thermostatic system. To effect expansion and/or contraction of the fluid within the thermostatic system and opening or closing of the expansion valve 44, the bulb 46 is secured in intimate thermal contact to the conduit 26 leading from the evaporator 21. Operations of motor 16 connected to fan or blower 17 and motor 37 connected to fan 36 may be controlled in any suitable manner well known to those skilled in the art.

The motor 25 of the refrigerant liquefying and circulating unit of the apparatus is operated in response to a switch 51 (see Fig. 2) to preferably cause cyclical operations of the compressor 23. Control switch 51 is of a conventional double contact type to be hereinafter more fully described and includes a bellows 52 connected, by pipe 53, with a bulb 54 (see Fig. 2). The bellows 52, pipe 53 and bulb 54 constitutes a thermostatic system having a volatile fluid sealed therein. The thermo bulb 54 may be located within the cabinet 12 or within room 10 so as to be subject to temperature conditions therein and expansion or contraction of the fluid in this thermo system causes movement of bellows 52 to actuate switch 51 for controlling operations of the refrigerant liquefying and circulating unit of the refrigerating apparatus.

In cooling and causing circulation of the air within room 10 in the manner described, it is obvious that the air upon being cooled will cause withdrawal of moisture therefrom and will cause the moisture to be deposited upon the coils or refrigerant conduits of the evaporator 21. After a predetermined amount of moisture accumulates on the evaporator, it flows therefrom and must be conveyed to a point exteriorly of room 10 in order to prevent rehumidifying of the air in the room. I provide a pan or the like 61 and position this pan below the cooling element 21 so that the moisture will flow in the form of drip water thereinto. The bottom of pan 61 slopes downwardly to a conduit connection 62, which conduit conveys the drip water from the pan into a device, generally represented by the reference character 63 and, having a pipe 64 leading upwardly therefrom to a water distributing header 65 mounted above the condenser 28 for a purpose to be hereinafter more fully described. The device 63 is mounted beneath the top wall of the machine compartment of the room cooling apparatus 12 by suitable brackets 66.

The device 63 is means for removing drip water, flowing from the cooling element or evaporator 21, upwardly of the drip pan 61, device 63 and other elements of the refrigerant liquefying and circulating unit of the apparatus to a point above the condenser 28 and therefore this device conveys the drip water upwardly from the refrigerating apparatus to the exterior of room 10 and building 11 and is caused to flow over condenser 28 to augment cooling thereof by the atmospheric air. Device 63 includes a passage 66 formed in a casing 67 and connected with the conduit 62 which communicates with the lowermost portion of drain pan 61. The casing 67 of device 63 may be constructed of any suitable or desirable material to carry out my invention and is formed to provide a valve seat 68 at the lower end of the passage 66 at the inlet to the casing. A valve 69 cooperates with the seat 68 and has a stem 71 extending to the exterior of casing 67. The valve 69 is normally open and a magnet 72, of any suitable or conventional design, is associated with the valve stem 71 and is adapted to draw the stem 71 upwardly thereinto, when energized, to cause valve 69 to close against seat 68 to thereby close the normally open inlet to casing 67. The casing 67 of device 63 forms a chamber, receptacle or trap 75 for the reception of drip water flowing from the cooling element 21 by way of pan 61 and conduit 62. A threaded opening 76 in a side wall of casing 67 is closed by a plug 77 preferably constructed of insulating material such for example, as bakelite or porcelain and has two electrodes 78 and 79 extending entirely through the plug 77 so as to protrude into the receptacle or trap 75 and so as to permit attachment of an electric wire to their outer ends. An outlet opening 81 leading from a lower portion of trap 75 is connected by an elbow conduit 83 housing a check valve 84, of any suitable construction, adapted to rest upon seat 85 formed in elbow 83. The elbow conduit 83 is connected, by a coupling 86, to the drip water discharge conduit 64. Valve 84 is normally closed upon its seat 85 thus preventing communication between the trap chamber 75 and pipe or conduit 64. The device 63 also includes an opening 91 in the top wall of casing 67 which is closed by a plug member 92, preferably formed of insulating material. Plug member 92 has a laterally extending electrical heating element 93, provided with terminals 94 and 95, formed on its lower portion and

which element may be of any suitable and well known construction. The plug member 92 is provided with a threaded opening 96 which receives a hollowed-out screw 97. The hollowed-out opening in screw 97 is for the purpose of permitting wires, extending to terminals 94 and 95 on element 93, to pass therethrough. The hollowed-out opening in the screw 97 is plugged after the wires are extended therethrough. Screw 97 is provided with a large head which engages the casing 67 to firmly hold the plug member 92 upon the casing. The open bottom of casing 67 and which facilitates the assembly of parts of device 63 may be closed in any suitable manner such for example, as by a plate 98.

The control switch 51 in the present invention may be of any suitable and well-known construction and includes a set of contacts 101 and 102. The contact 101 is movable upon actuation of switch 51 into or out of engagement with contact 102 to control the flow of electric current to motor 25 of the refrigerant liquefying and circulating unit of the refrigerating system. Switch 51 also includes a set of contacts 103 and 104 mounted on the outside of the trip or snap acting mechanism of the switch 51 for a purpose to be presently described. It is to be noted that switch 51 is of the type which upon being operated moves contact 101 out of engagement with its corresponding contact 102 and simultaneously moves contact 103 into engagement with contact 104.

The electrical circuit connected with the switch 51 and with other elements of the apparatus disclosed will now be described. Referring to Fig. 2 of the drawings, where this electrical circuit is diagrammatically illustrated there is a wire 106 connected to contact 102 of switch 51 and to the one power supply conductor 107. A wire 108 leads from contact 101 of switch 51 to motor 25. A wire 109 leads from motor 25 to the other power supply conductor 110. This much of the electrical system constitutes the circuit through the power lines and control switch 51 to the motor 25 to control operations thereof. A wire 111 runs from power supply conductor 110 to the contact 104 of switch 51 and a wire 112 runs from contact 103 of switch 51 to a terminal 114 provided on the solenoid magnet 72 and has a branch wire 115 connected to the terminal 94 of electric heater 93. The other terminal 95 of heater 93 is connected by a wire 116 with a wire 117, connected to terminal 118 on magnet 72, and this wire 117 leads to the power supply conductor 107. A branch wire 121 extends from wire 112 and is connected to the outer exposed end of electrode 78 of the device 63. The other electrode 79 of device 63 is connected by a branch wire 122 with a power supply conductor 110. From the illustration of the electrical circuit disclosed it will be noted that the electrical circuit through electrodes 78 and 79 may be completed at any time by water submerging both electrodes due to electrode 78 being connected with the positive power supply conductor 107 through wire 112, terminal 114, magnet 72, terminal 118 and wire 117 and also due to electrode 79 being connected with the negative power supply conductor 110 through wire 122. Thus electrodes 78 and 79 form a safety device which is ineffective for removing drip water from casing 67 of device 63 and which is rendered effective at any time by water bridging these electrodes irrespective of the position of switch 51 and its contacts.

When moisture or water drips from the evaporator or cooling element 21, located in the cabinet 12 of the apparatus disclosed, for any reason whatsoever, this moisture or drip water is caught in pan 61 and is directed to pipe 62. Pipe 62 conveys the drip water into the chamber or trap 75 through passage 66 provided in casing 67 of the device 63. The drip water is trapped or collected in the lowermost portion of chamber 75 during operating periods of the refrigerant liquefying and circulating unit of the circulating system. When switch 51 is actuated to move contact 101 away from contact 102, to thereby stop operation of the motor 25 of the refrigerant liquefying and circulating unit, switch contact 103 is also moved from its position shown in full lines in the drawings into a position of engagement with contact 104. The engagement of contact 103 with contact 104 completes an electric circuit from power supply conductor 110 through wires 111, 112, 114, and 115 from the negative side of the electrical system and through wires 116 and 117 to the positive side of the system or to power supply conductor 107. This completed circuit causes solenoid magnet 72 and heater 93 to be energized. Magnet 72 thus attracts and moves the stem 71 of valve 69 upwardly to seat the valve 69 against its seat 68 and to thereby close off chamber or trap 75 from the passage 66 and conduit 62. Heat generated by the heater 93 warms and causes expansion of air in the chamber 75 above the body of drip water contained therein. The expansion of the air above the body of drip water causes pressure, due to valve 69 now being closed, to be built up in chamber 75 and this pressure forces the drip water out of the trap 75 through passage 81. The drip water flows through elbow conduit 83 past check valve 84 and into conduit 64. Water trapped in conduit 64 above valve 84 accumulates and rises in this conduit to a heighth sufficient to then permit the water to flow by gravity through the distributor head 65. As stated before this drip water flows upon condenser 28 of the refrigerating system and augments cooling thereof by air outside the building 11. The electric circuit and the elements 72 and 93 are arranged to remain energized as long as the control switch 51 is in the "off" position with respect to causing operation of motor 25. When switch 51 is actuated to close its contacts 101 and 102 to start operation of motor 25 it also moves contact 103 away from 104 to thus open the circuit to the magnet 72 and heater 93 to thereby de-energize the same. Valve 69 being opened by de-energizing magnet 72 thus permits drip water to again flow from pan 61 and conduit 62 into the trap or chamber 75 to the pump device 63. These cycles or periods of effectiveness and ineffectiveness of the pump device 63 continue in response to the cyclical operations of the refrigerant liquefying and circulating unit of the refrigerating system to elevate the drip water above the device 63, pan 61, and cooling element 21.

While the size and effectiveness of the pump device 63 may be varied to meet various installations it is preferable to also provide a safety device such as I have disclosed to insure that drip water will be removed from the pump device at any time it attains a predetermined height in the chamber 75 thereof. Therefore when drip water accumulates in chamber 75 of device 63 to a heighth sufficient to bridge or submerge both electrodes 78 and 79 this water will complete a circuit through magnet 72 to close valve 69 and through the heater 93 to cause same to become effective. For example, the drip water upon

bridging electrodes 78 and 79 of the safety device completes a circuit from power supply conductor 107 through wire 117, magnet 72, wire 116, heater 93, wires 115, 112, and 121, through the water bridging electrodes 78 and 79, and through wire 122 and power supply conductor 110. Electric current passing through the water bridging electrodes 78 and 79 is afforded sufficient resistance by the water to cause heating and expansion of the drip water. The heating and expansion of the drip water by electric current passing therethrough therefore augments heating thereof by the electric heater 93 and rapidly forces drip water upwardly of the device 63 through the check valve 84. Therefore as long as the refrigerating apparatus is operatively connected with the power mains my safety device may be rendered effective automatically to prevent the pump device 63, conduit 62 and pan 61 from becoming filled with water to thereby eliminate overflowing of the pan.

Since my pump device is rendered effective automatically in response to the periodic or cyclical operations of the refrigerating system and heats air above the water in the water trap it is more efficient and practical for use in systems of the type disclosed because it removes drip water quickly and without heating the body of drip water itself to thus reduce the amount of electrical energy necessary to remove drip water. Therefore it will be seen that I have provided an improved means for elevating drip water, flowing from an evaporator of a room cooling apparatus, to a point above the apparatus where the water may flow by gravity without the user's attention. I have thus eliminated the necessity of manually emptying a drain pan of a room cooling apparatus and this is particularly advantageous in apartments or office buildings where at times there is no attendant in the building.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims.

What is claimed is as follows:

1. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for periodically circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, and said drip water removing means being rendered effective by the periodic operations of said medium circulating means.

2. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for periodically circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, said drip water removing means being rendered effective by the periodic operations of said medium circulating means, and a safety device for causing removal of drip water upwardly of said collecting means, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said air dehumidifying means to said collecting means.

3. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for periodically circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means rendered effective by the periodic operations of said medium circulating means for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet.

4. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for periodically circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, means rendered effective by the periodic operations of said medium circulating means for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet, and a safety device for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said air dehumidifying means to said collecting means.

5. A refrigerating apparatus comprising in combination, a closed system including an evaporator for dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through said evaporator to cause said dehumidifying of the air, means for cyclically operating said unit, means for collecting drip water from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means rendered effective by the cyclical operations of said refrigerating fluid circulating unit for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet.

6. A refrigerating apparatus comprising in combination, a closed system including an evaporator for dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through said evaporator to cause said dehumidifying of the air, means for cyclically operating said unit, means for collecting drip water from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, means rendered effective by the cyclical operations of said refrigerating fluid circulating unit for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet, and a safety device for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said air dehumidifying evaporator to said collecting means.

7. A refrigerating apparatus comprising in combination, a closed system including an evaporator for cooling and dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through the evaporator to

cause said dehumidifying of the air, a switch controlling the operation of said unit to cyclically circulate the refrigerating fluid through said evaporator, means for collecting drip water flowing from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means associated with said switch and rendered effective by the cyclical operations of said refrigerating fluid circulating unit for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet.

8. A refrigerating apparatus comprising in combination, a closed system including an evaporator for cooling and dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through the evaporator to cause said dehumidifying of the air, a switch controlling the operation of said unit to cyclically circulate the refrigerating fluid through said evaporator, means for collecting drip water flowing from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means associated with said switch and rendered effective by the cyclical operations of said refrigerating fluid circulating unit for closing the inlet of said collecting means and for causing removal of drip water upwardly thereof through said outlet, a safety device associated with said collecting means for closing the inlet thereof and for causing removal of drip water upwardly therefrom through said outlet, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said evaporator to said collecting means irrespective of the position of said control switch.

9. A refrigerating apparatus comprising in combination, a closed system including an evaporator for dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through said evaporator to cause said dehumidifying of the air, means for cyclically operating said unit, means for collecting drip water from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means including an element for closing said inlet and an electric heater disposed within said collecting means above the body of drip water therein for causing removal of drip water upwardly of the collecting means through the outlet thereof, said last named means being rendered effective by the cyclical operations of said refrigerating fluid circulating unit.

10. A refrigerating apparatus comprising in combination, a closed system including an evaporator for dehumidifying air adapted to flow thereover and a unit for circulating a refrigerating fluid through said evaporator to cause said dehumidifying of the air, means for cyclically operating said unit, means for collecting drip water from said evaporator, said collecting means having a normally open inlet for conducting the drip water thereinto and an outlet, and means for closing the inlet to said collecting means and for increasing the pressure therein to cause removal of drip water upwardly therefrom through the outlet thereof, said last named means being rendered effective by the cyclical operations of said refrigerating fluid circulating unit.

11. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidfying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, and said drip water removing means being responsive to operation of said medium circulating means.

12. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, and said drip water removing means being responsive to operation of said medium circulating means, and effective continuously during the operation thereof.

13. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, said drip water removing means being responsive to operation of said medium circulating means, and a safety device for causing removal of drip water upwardly of said collecting means, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said air dehumidifying means to said collecting means.

14. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, means for creating a pressure in said drip water collecting means to cause removal of drip water upwardly therefrom, said drip water removing means being responsive to operation of said medium circulating means and effective continuously during the operation thereof, and a safety device for causing removal of drip water upwardly of said collecting means, said safety device being normally ineffective and rendered effective in response to the flow of a predetermined amount of drip water from said air dehumidifying means to said collecting means.

15. An apparatus comprising in combination, means for dehumidifying air adapted to flow thereover, means for circulating a medium through said first named means to cause said dehumidification of the air, means for collecting drip water from said dehumidifying means, a primary means for removing drip water upwardly from said drip water collecting means, and a secondary means in the form of a safety device for causing removal of drip water upwardly of said collecting means, said safety device being normally ineffective and rendered effective in response to the collection of a predetermined amount of drip water from said air dehumidifying means to said collecting means.

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