

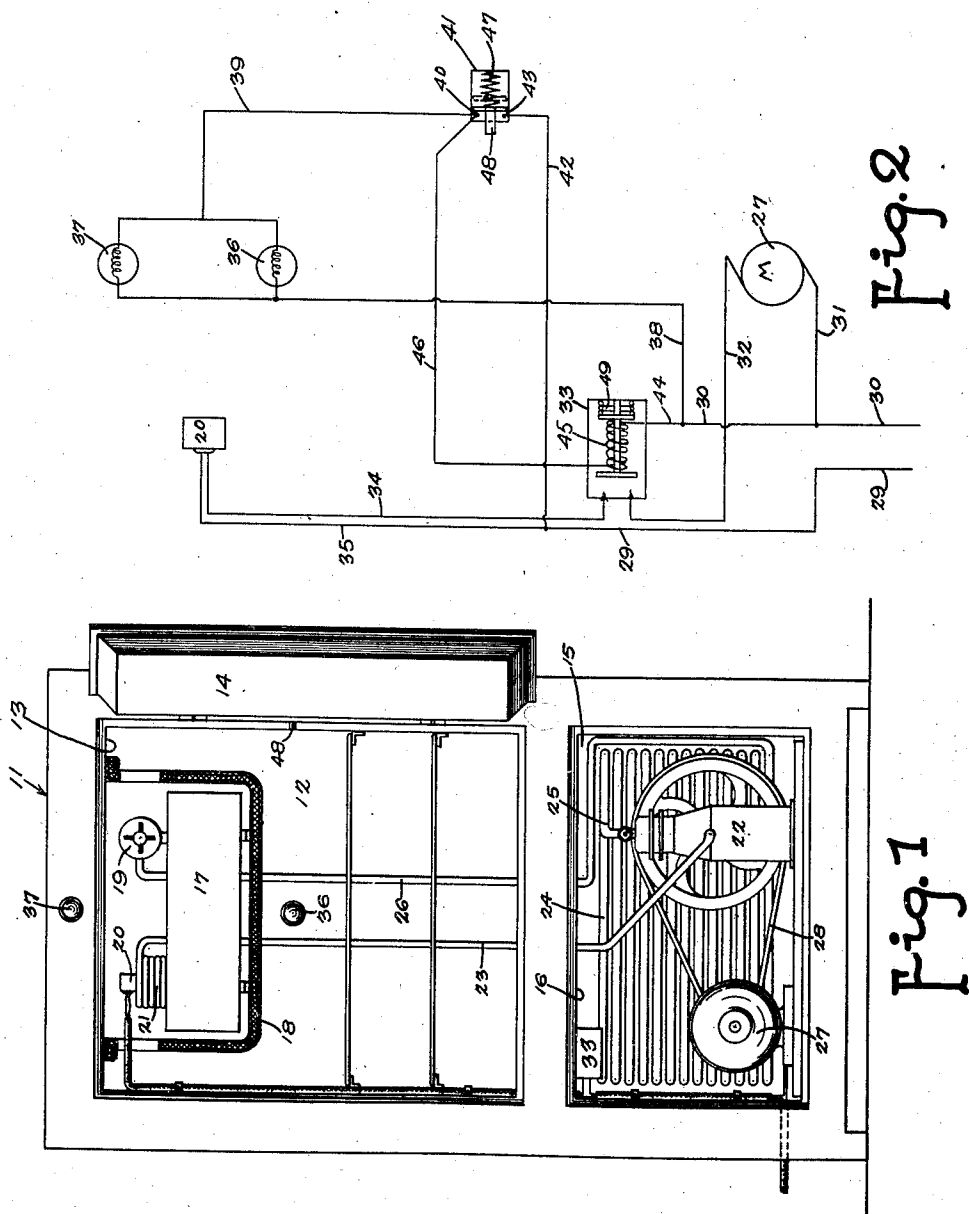
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MECHANICAL REFRIGERATION

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UNITED STATES PATENT OFFICE

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MECHANICAL REFRIGERATION

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My invention relates to mechanical refrigeration, and particularly to means operable automatically by the door affording access to a refrigerated chamber arranged particularly to prevent operation of the refrigerating apparatus while the door remains open, and arranged also to automatically illuminate the interior of the refrigerated compartment, to illuminate the space in front of the refrigerator cabinet, and to signal that the door is open, and the principal object of my invention is to provide means of this type.

In the drawings accompanying this specification and forming a part of this application I have shown, for purposes of illustration, one form which my invention may assume. In these drawings:

Figure 1 is a front elevation of this illustrative embodiment of my invention, while

Figure 2 is a diagram showing the circuit connections of the parts shown in Figure 1.

The embodiment of my invention herein shown comprises a refrigerator cabinet 11 provided with a refrigerated compartment 12 accessible through an opening 13 in the front wall of the cabinet 11 arranged to be closed by means of a door 14, and a compressor compartment 15 accessible through an opening 16 in the front wall of the cabinet 11 arranged to be closed by means of a suitable door, not shown.

Mounted within the upper portion of the refrigerated compartment 12 is a brine tank 17, supported from the refrigerator cabinet 11 by means of a cradle 18 secured to the top wall of the refrigerator cabinet 11 and passing beneath the brine tank 17, containing within itself a suitable expansion coil, not shown, and in turn supporting an expansion valve 19 connected to the inlet of the expansion coil, and a thermostat 20 responsive to the temperature within the refrigerated compartment 12, and to the temperature of the refrigerant within expansion coil end turns 21 surrounding the thermostat 20 and connected to the outlet of the expansion coil.

Mounted within the compressor compartment 15 is a compressor 22 having its inlet connected by means of a duct 23 to the end turns 21, a condenser 24 having its inlet con-

nected by means of a duct 25 to the outlet of the compressor 22 and its outlet connected by means of a duct 26 to the expansion valve 19, and an electric motor 27 operating the compressor 22 by means of a suitable belt 28 and connected to line wires 29 and 30 by means of a conductor 31 connecting one side of the motor 27 directly to the line wire 30, a conductor 32 connecting the other side of the motor 27 to one pole of an electromagnetically operated switch 33, the conductor 34 connecting the other pole of the switch 33 to one pole of the thermostat 20, and a conductor 35 connecting the other pole of the thermostat 20 directly to the line wire 29.

From the above description those skilled in the art will understand that neglecting the electromagnetically operated switch 33 the compressor 22 will be operated to maintain the refrigerated compartment 12 cold under control of the thermostat 20.

The refrigerator cabinet 11 herein shown also includes means for illuminating the refrigerated compartment 12, comprising an electric lamp 36 mounted within the refrigerated compartment 12 just below the brine tank 17; means for simultaneously illuminating the space in front of the cabinet 11 and indicating the position of the door 14, comprising an electric lamp 37 mounted on the front wall of the cabinet 11 above the opening 13; means for supplying energy to the lamps 36 and 37, comprising a conductor 38 leading to one terminal of each of the lamps 36 and 37, and a conductor 39 leading from the other terminal of each of the lamps 36 and 37 to the terminal 40 of a switch 41, and a conductor 42 leading from the other terminal 43 of the switch 41 back to the line wire 29; means to actuate the electromagnetically operated switch 33, comprising a conductor 44 leading from the line wire 30 to one terminal of the coil 45 of the switch 33, and a conductor 46 leading from the other terminal of the coil 45 to the terminal 40 of the door switch 41, and the conductor 42 leading from the other terminal 43 of the door switch 41 back to the line wire 29; and means to control the energization of the lamps 36 and 37, and energization of the coil 45 to thus control ener-

gization of the motor 27, comprising the door switch 41 mounted in the front wall of the cabinet 11 along the hinged side of the door 14 in position to be operated by the door 14 automatically upon opening and closing thereof, the switch 41 being biased to closed position by means of a suitable spring 47, and in this position completing the circuit through the lamps 36 and 37, and through the coil 45 of the electromagnetically operated switch 33, the switch 41 being moved to open position by engagement of the door 14 with the switch plunger 48, and in this position opening the circuits through the lamps 36 and 37, and through the coil 45 of the electromagnetically operated switch 33, the electromagnetically operated switch 33 being biased to closed position by means of a suitable spring 49, and in this position completing the circuit through the motor 27 under control of the thermostat 20, and the electromagnetically operated switch 33 being movable to open position under the action of the coil 45, and in this position opening the circuit through the motor 27.

From the above disclosure it will be understood by those skilled in the art that when the door is closed the circuit is interrupted through the lamps 36 and 37, and through the coil 45 of the electromagnetic switch 33, the lamps are idle, and the motor 27 is operated in the normal manner under control of the thermostat 20, and that when the door 14 is opened the circuit is closed through the lamps 36 and 37, and through the coil 45 of the electromagnetic switch 33, and that the lamps 36 and 37 then become active, and that the electromagnetic switch 33 then acts to open the circuit through the motor 27 to prevent operation of the motor 27 and compressor 22.

From the above disclosure it will therefore be obvious to those skilled in the art that I have provided means accomplishing at least the enumerated purposes of my invention.

At the same time, it will also be obvious to those skilled in the art that the particular embodiment of my invention herein shown and described may be variously changed and modified without departing from the spirit of my invention or sacrificing the advantages thereof, and it will therefore be understood that the disclosure herein is illustrative only, and that my invention is not limited thereto.

I claim:

1. In combination a refrigerator cabinet having an opening therein affording access to a refrigerated portion of said cabinet, and a door arranged to close said opening; electrically operated mechanical refrigerating means operable to automatically refrigerate a portion of said cabinet, comprising an electric motor, and a circuit for connecting said motor to a source of power; signal means comprising electric means disposed exteriorly of said cabinet, and a circuit for connecting

said electric means to a source of power; and single switch means in said circuits actuated automatically by said door to prevent operation of said mechanical refrigerating means, and to permit energization of said signal means, when said door is open, and to permit operation of said mechanical refrigerating means, and prevent energization of said signal means, when said door is closed.

2. In combination a refrigerator cabinet having an opening therein affording access to a refrigerated portion of said cabinet, and a door arranged to close said opening; electrically operated mechanical refrigerating means operable to automatically maintain said refrigerated portion refrigerated, comprising an electric motor, and a circuit for connecting said motor to a source of power; interior illuminating means, comprising interior electric lamp means disposed within said refrigerated portion in position to illuminate said refrigerated portion, said interior electric lamp being connected to said motor circuit; signal and exterior illuminating means, comprising exterior electric lamp means disposed exteriorly of said cabinet in position to be visible as a signal and to illuminate the space in front of said cabinet, said exterior electric lamp being connected to said motor circuit; and single switch means interposed in said circuits actuated automatically by said door arranged to prevent operation of said mechanical refrigerating means, and permit energization of said interior illuminating means, and of said signal and exterior illuminating means, when said door is open, and to permit operation of said mechanical refrigerating means, and prevent energization of said interior illuminating means, and of said signal and exterior illuminating means, when said door is closed.

In testimony whereof I hereunto affix my signature.

HADLEY F. FREEMAN.