

Dec. 26, 1950

J. L. FLETCHER
REFRIGERATOR CABINET

2,535,278

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FIG. 2

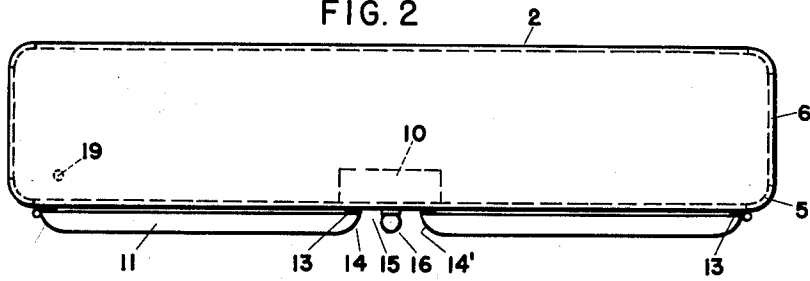
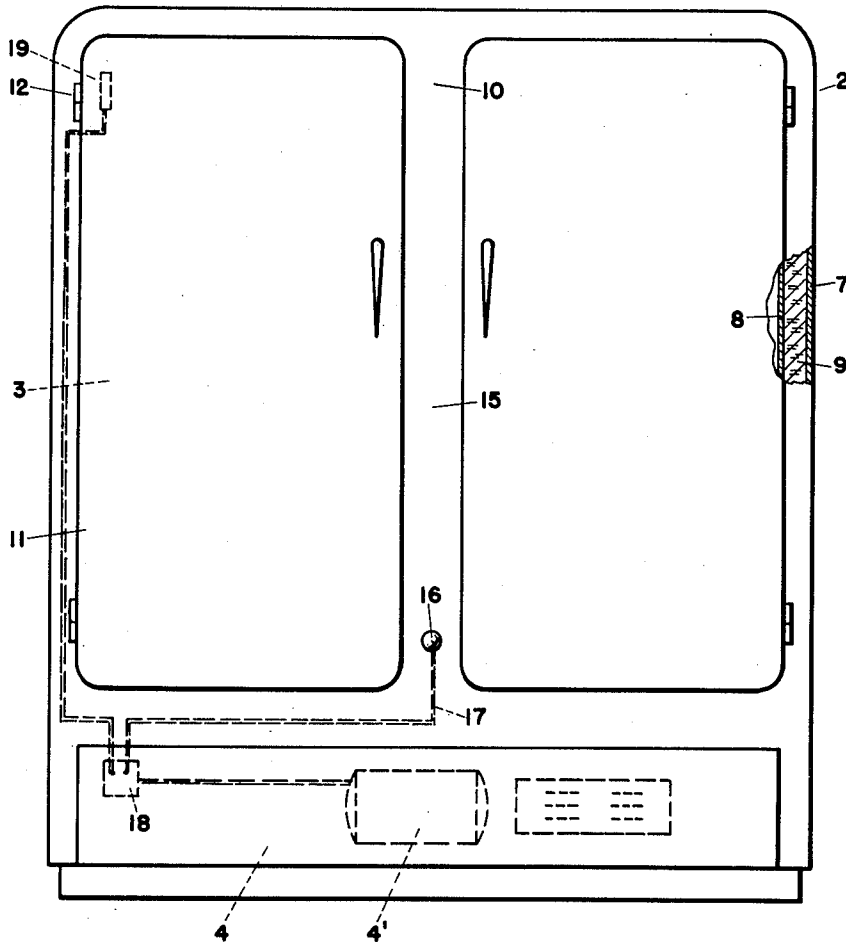


FIG. 1



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UNITED STATES PATENT OFFICE

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REFRIGERATOR CABINET

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3 Claims. (Cl. 62—89)

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This invention relates to refrigeration cabinets and more particularly to refrigeration cabinets such as home or farm freezers including a center stile against which doors of the cabinet seal and which include means for preventing condensation at the exposed surface of the center stile.

A serious problem in the manufacture of refrigeration cabinets resides in the fact that the center stile against which the doors seal collects condensate or shows signs of "sweating" when the structure is in use. The problem becomes greater if the structure is employed as a farm or home freezer, due to the low interior temperature maintained in the cabinet. Many solutions have been presented for the problem of eliminating collection of condensate upon the exposed surface of the center stile. The structures proposed heretofore have been expensive, inefficient and unsatisfactory.

The chief object of this invention is to provide a refrigeration cabinet which includes means for raising the temperature of the exposed exterior surface of the center stile to a point effective for substantially preventing the collection of condensate or "sweating" at such surface.

An object of the invention is to provide a refrigeration cabinet which includes means for warning an observer of the failure of the refrigeration equipment, such means also serving to prevent the collection of condensate at the exposed surface of the center stile.

A further object is to provide a refrigeration cabinet including a warning device adapted to generate heat, the generated heat warming surrounding surfaces, and to a lesser extent ambient air, the heat so generated being directed along the exposed surface of the center stile to prevent condensate collecting thereon.

A still further object is to provide a refrigeration cabinet embodying means for maintaining the exterior exposed surface of the center stile in a dry, warm condition without impairing to any extent the temperature of the cabinet interior, said means also serving to warn an observer of failure of the refrigeration equipment or other conditions which might interfere with proper operation of the cabinet.

A still further object is to provide a refrigeration cabinet including means for generating heat to warm the center stile by conduction through the metal surface and to a lesser extent by directing warmed air along the exposed surface of the stile, the heat generating means serving to maintain the exterior exposed surface of the center stile in a dry, warm condition without affecting to any substantial extent the temperature of the storage compartment and also serving as a warning device to signal to an observer improper operation of the refrigeration equipment and/or a rise in temperature in the storage

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compartment above a predetermined point. Other objects of my invention will be readily perceived from the following description.

This invention relates to a refrigeration cabinet which comprises in combination a frame including a stile, a portion of the surface of the stile being exposed to ambient air, said frame forming a storage compartment, means for maintaining said storage cabinet at a desired temperature, a warning device for signalling to an observer failure of said means, said device being disposed adjacent the stile and being adapted to generate heat to warm the stile.

The attached drawing illustrates a preferred embodiment of my invention, in which:

Figure 1 is a view in elevation of the refrigeration cabinet of my invention; and

Figure 2 is a plan view of the cabinet shown in Figure 1.

Referring to the drawing there is shown a refrigeration cabinet 2 including a storage compartment 3 and a machine compartment 4. Preferably, storage compartment 3 is disposed above machine compartment 4. As is customary in cabinets of this type, the refrigeration equipment 4', for example, the compressor, condenser, driving mechanism, etc., is placed in the machine compartment, and a suitable heat exchanger or evaporator is placed in the storage compartment and connected to the condenser by a suitable liquid line. These elements per se form no part of my invention and consequently are not shown in detail.

The cabinet 2 may include metal or wood longitudinal frame members 5 at its corners and connecting elements 6 between the various corner members 5 to form the whole into a unitary frame for the cabinet. An exterior wall 7 having any suitable decorative surface conceals the frame. Interiorly of the frame there is provided an inner liner or wall 8 which forms storage compartment 3. Insulation material 9 of any suitable type such as corkboard, mineral or glass wool, fiberboard and the like, is disposed between inner wall 8 and exterior wall 7 and insulates storage compartment 3 on all sides. A stile or mullion 10, preferably, forms a portion of the unitary frame and extends perpendicularly of the storage compartment; if desired, of course, stile 10 may be removable. Stile 10 divides the entrance to storage compartment 3 into a plurality of openings to permit access to the compartment for placement and removal of stored foodstuffs, for example. The openings in compartment 3 are closed by doors 11 which are suspended from corner members 5 of the frame by hinges 12. Such doors extend outwardly beyond the vertical plane of wall 7 as shown in Figure 2. Gaskets 13 are interposed between the doors 11 and the walls of cabinet 2 thus securely sealing storage compartment 3 and preventing penetra-

tion of ambient air into the storage compartment.

The opposed edges 14 and 14' of doors 11 form in combination with the exposed surface of stile 10 a channel 15 which extends upward along the exposed surface of the stile.

Warning device 16 is disposed in channel 15. For the purposes of my invention it is essential that warning device 16 be in the form of a light or other suitable means adapted to generate heat which serves to warm the exposed surface of stile 10 primarily by conduction through the metal surface; to a lesser extent, heat generated by light 16 warms ambient air, the warmed air rising in channel 15 to assist in warming the exposed surface of the stile 10.

Warning device 16 may be disposed in a suitable socket mounted on or protruding through the wall of stile 10 and is connected by means of suitable wiring 17 to a control member such as a switch box 18 disposed in machine compartment 4. Preferably, wiring 17 extends under the breaker strips (not shown) surrounding the compartment openings to facilitate ready placement and removal. The purpose of the warning light 16 is to indicate improper operation of the refrigeration equipment. When the cabinet is functioning satisfactorily, the light is illuminated and indicates to an observer proper operation of the cabinet. Upon failure of current to the refrigeration equipment, for example, light 16 is extinguished thereby warning an observer that desired refrigeration temperature is not being maintained within the storage compartment 3.

Preferably, a suitable thermostatic control 19 is disposed in storage compartment 3 and is also connected to control member 18. Control 19 serves to indicate a rise in temperature in the storage compartment above a predetermined point; rise of temperature in the storage compartment 3 above a predetermined point actuates control member 18 to extinguish light 16 thereby warning an observer of failure of refrigeration.

In my invention, light 16 serves to prevent the collection of condensate on the exposed interior surface of stile 10. Since the light is illuminated under conditions of normal operation, heat is generated, thus warming the exposed surface of stile 10 primarily by conduction although ambient air is also warmed to some extent, the warmed air rising in channel 15 and passing along the exposed surface of stile 10 to warm such surface.

The phrase "failure of the refrigeration equipment" is used herein to denote break-down or failure of operation of elements of the refrigeration system, failure in current supply, or other conditions permitting the temperature of the storage compartment to rise above a predetermined point.

It will be noted that I have provided a simple means for preventing collection of condensate on the exposed surface of the stile of a refrigeration cabinet, such means also serving to warn an observer of failure of refrigeration within the storage compartment of the cabinet. The means so provided are inexpensive in operation, requiring only a slight amount of power, two to six watts per hour, for example, to prevent substantial condensation on the exposed surface of the stile as well as to serve as a satisfactory signalling device. Such means may also warm ambient air and the warmed air may be directed upward along the exposed surface of the stile thereby

aiding in warming the same and preventing the collection of condensate thereon. The means so provided are inexpensive, efficient and readily disposed in position in the refrigeration cabinet.

While I have described and illustrated a preferred embodiment of my invention, it will be understood my invention is not limited thereto since it may be otherwise embodied within the scope of the following claims.

I claim:

1. In a refrigerator including a storage compartment, the combination of a metal stile having an exposed surface, a plurality of doors adjacent said stile closing openings in the storage compartment, exposed edges of said doors and the exposed surface of said stile forming a vertically extending channel, refrigerating means for refrigerating the storage compartment to a desired temperature, a warning device placed on the lower portion of said stile for signalling to an observer failure of said refrigerating means, said device serving to generate heat during the operation of the refrigerating means to warm the exposed surface of said stile by conduction and to warm ambient air in the channel, at least some portion of the warmed air passing upward along the channel, thereby warming the exposed surface of the stile to an extent sufficient to prevent substantial collection of moisture thereon.

2. In a refrigerator, the combination of a stile, a portion of the surface of the stile being exposed to ambient air, a storage compartment, said storage compartment having a plurality of openings disposed on opposite sides of said stile, a machine compartment, refrigeration equipment disposed in said machine compartment to refrigerate the storage compartment to a desired temperature, a plurality of doors closing the openings in said storage compartment, the opposed edges of said doors in combination with the exposed surface of the stile forming a vertically extending channel, a warning light disposed in said channel adjacent the lower portion of the stile to signal to an observer failure of the refrigeration equipment, said light generating heat to warm the exposed surface of the stile by conduction and to warm ambient air in the channel, the warmed air passing upward along the channel to aid in warming the exposed surface of the stile thereby warming the exposed surface of the stile to an extent sufficient to prevent substantial collection of moisture thereon.

3. A refrigerator according to claim 2 in which a thermostatic control is disposed in the storage compartment, said control serving to extinguish the light when the temperature in the storage compartment rises above a predetermined point thereby warning an observer of the failure of the refrigeration equipment.

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Certificate of Correction

Patent No. 2,535,278

December 26, 1950

JAMES LOREN FLETCHER

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 3, line 46, for the word "interior" read *exterior*;
and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of February, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.