May 14, 1940. R. H. MONEY 2,200,801

EVAPORATOR CONTROL MEANS

Original Filed June 8, 1937

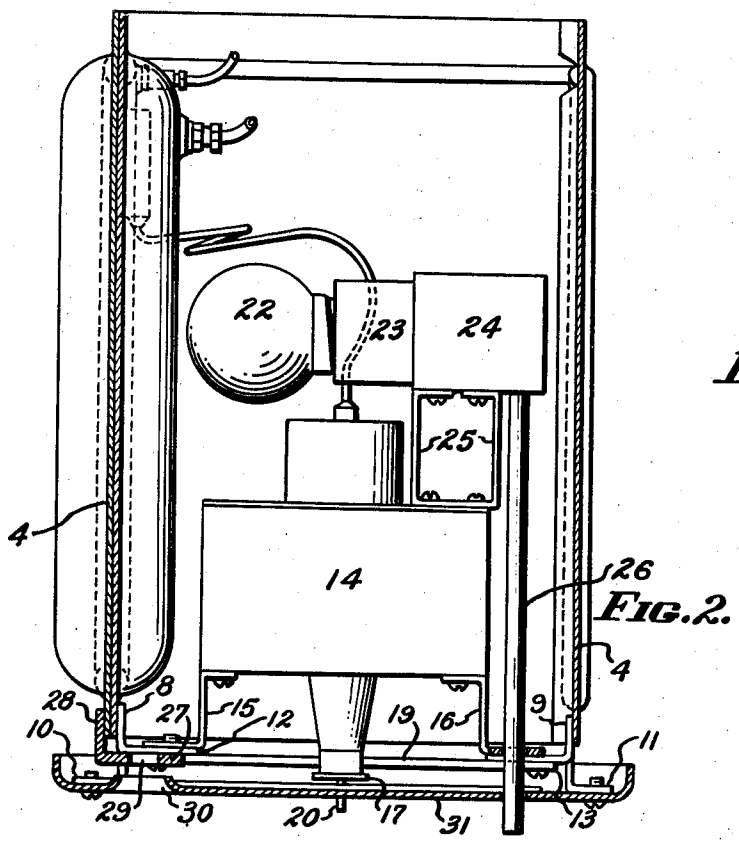


FIG. 2.

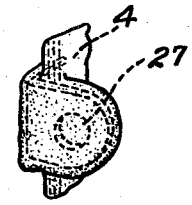


FIG. 4.

FIG. 1.

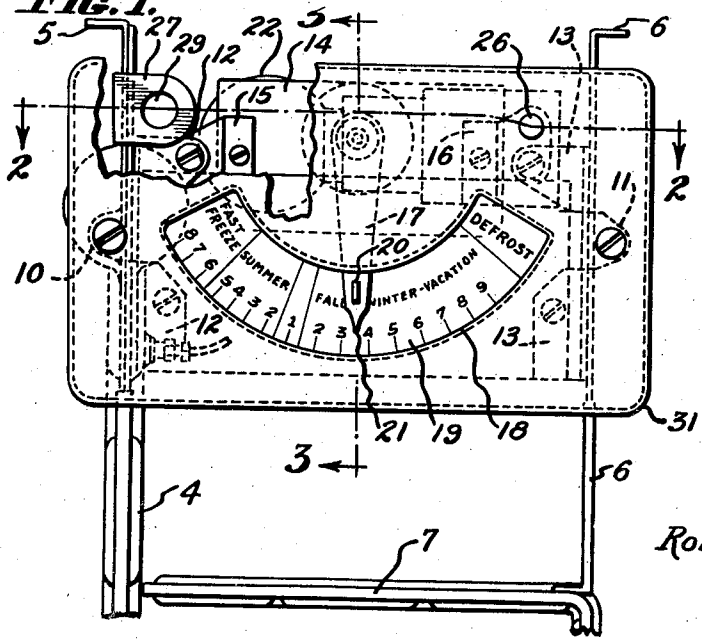
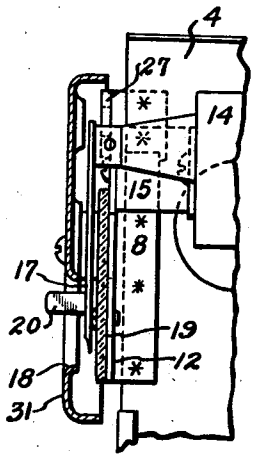


FIG. 3.



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EVAPORATOR CONTROL MEANS

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Original application June 8, 1937, Serial No. 147,152. Divided and this application January 11, 1939, Serial No. 250,400

5 Claims. (Cl. 62—1)

This application is a division of my application Serial No. 147,152, filed June 8, 1937, which has matured into Patent No. 2,163,698, issued June 27, 1939, for Evaporator control means.

The general objects of my invention are the provision of a new and useful as well as ornamental combination of evaporator and controlling means; the provision of a new organization of controlling means and operating means therefor; the provision of a novel defrosting indicator, and the provision of a novel panel, illuminating means and mounting means for the several instrumentalities. These and ancillary objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe an exemplary embodiment. Reference is made to the drawing wherein:

Figure 1 is an elevational view with parts in section of the upper portion of an evaporator and the other parts of my assembly.

Figure 2 is a horizontal and partially sectional view taken along the lines 2—2 of Figure 1.

Figure 3 is a vertical sectional view taken along the lines 3—3 of Figure 1.

Figure 4 is a partial perspective view of a defrost indicator element.

In the drawing, 4 indicates an evaporator. The evaporator may be of any known kind. I have shown an evaporator such as that set forth in the co-pending application of Crosley and Money, Serial No. 92,172 filed July 23, 1936, which has matured into Patent No. 2,143,976, issued January 17, 1939, and entitled Evaporators for use in refrigerator devices, but it will be understood that this does not constitute a limitation upon my invention. The evaporator is usually provided with upwardly extending mounting brackets 5 and 6, so that the evaporator may be suspended from the upper part of the food compartment in a refrigerator, or from a base serving also as mounting means for a motor and compressor or assembly located above the food compartment. In the illustrated example shown, the bracket 6 extends downwardly and is attached to the upper refrigerated shelf 7 of the evaporator.

To the front edges of the evaporator near the top thereof (or to a front edge of the evaporator and the front edge of the bracket 6) I attach bracket members 8 and 9 as by welding. These members are bifurcated, and have outwardly extending portions 10 and 11 and inwardly extending portions 12 and 13. To these inwardly extending portions the usual "temperature control" switch box 14 is mounted by means of brackets 15 and 16.

A front finishing panel member 31 is mounted, by means of suitable screws or the like to the bracket member portions 10 and 11. It has hitherto been proposed to bring the adjusting shaft of the temperature control mechanism out through a panel and provide it with a knob for hand operation, together with a pointer or indicating device. This construction is, however, not particularly attractive in appearance, and further requires that the panel and temperature control apparatus be mounted sufficiently low in the food compartment to permit ready hand adjustment. In my construction, I provide the adjusting shaft of the temperature control mechanism with a lever arm 17 extending downwardly behind the panel 31. The panel is cut away as at 18 to provide a scale opening. Behind this opening I provide scale means 19, which may be mounted upon the bracket means 12 and 13 or in any other suitable way, and which preferably is translucent so as to be illuminated from the rear by light means hereinafter to be described. The lever arm 17 passes in front of the scale means. Near its outer end it is provided with an operating handle 20 which extends far enough through the opening 18 to permit ready operation. At its outer end the lever 17 is preferably shaped to provide a pointer 21. The scale 19 may be provided with suitable indicia and/or colored areas as desired.

Illuminating means comprising in the instance shown, a lamp bulb 22, a socket 23 and a switch 24 are mounted upon the temperature control switch box 14 by means of bracket members 25. The light is designed to be turned on and off automatically by the opening and closing of the refrigerator door. To this end, I provide an insulating operating rod 26 for the switch 24 which extends forwardly and through an appropriate perforation in the panel 31; and is long enough to be engaged by the door, or by a member actuated by the door, as will be readily understood. The location of the lamp bulb 22 will be such as to provide illumination for the scale 19 and also for a defrosting indicator next herein to be described. The bracket member 6 may be perforated or cut away in part so that light from the bulb 22 will serve to illuminate the interior of the food compartment of the refrigerator.

I provide a novel means for indicating the necessity of defrosting the refrigerator evaporator. As is well understood, frost and ice accumulate

upon an evaporator when in use and cut down its efficiency. The amount of ice which accumulates is variable, and depends upon such factors as the temperature of the evaporator in relationship to the amount of moisture in the surrounding air. Thus the times at which defrosting is advisable vary considerably with conditions and seasons; and this indicates the necessity for a reliable means for indicating how much frost has accumulated. In the practice of my invention, I provide a perforated metallic member which is highly heat conductive and is in intimate heat exchanging relationship with the evaporator. Thus this member is adapted also to accumulate frost. The size of the perforation in the member is so chosen that when frost has accumulated to a sufficient extent to close it, defrosting is advisable. This may be ascertained either by direct examination or by reflected light, or by passing light through the perforation.

In the embodiment shown the perforated member is indicated at **27**. The size, shape and position of the member do not constitute limitations upon my invention. As shown, the member is an angularly shaped piece of metal, one leg **28** of which is soldered, brazed or welded directly to the evaporator. The other leg is perforated as at **29**. The member may be made of any highly heat conductive metal. I prefer copper. It should be heavy enough to insure the accumulation of frost thereon as frost accumulates on the evaporator. The panel **31** may be perforated as at **30** opposite the member or opposite the hole therein. When the parts are arranged substantially as shown in Figure 1, direct light from the bulb **22** will normally pass through the perforation **29** in the member **27**, and will be visible to the eye through the perforation **30** in the panel **31**. When, however, sufficient frost has accumulated to cover the perforation **29**, since this frost is granular or crystalline in formation, it will cut off the direct illumination or so greatly cut it down as to give a clear visual indication of the necessity for defrosting.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination with a refrigerator evaporator a defrosting indicator comprising a metallic mass in intimate heat exchange relationship with said evaporator, and adapted to be covered with frost in the normal operation thereof, said metallic mass having a perforation whereby to give a visual index of the extent of the accumulation of frost upon said evaporator and said mass, said index being the amount of frost required to close said perforation.

2. In combination with a refrigerator evaporator a defrosting indicator comprising a metallic mass in intimate heat exchange relationship with said evaporator, and adapted to be covered with frost in the normal operation thereof, said metallic mass having a perforation whereby to give a visual index of the extent of the accumulation of frost upon said evaporator and said mass, said index being the amount of frost required to close said perforation and a light source located essentially behind said mass from an observer so that the accumulation of frost in said perforation serves to affect the amount of light passing therethrough.

3. In combination with a refrigerator evaporator a defrosting indicator comprising a metallic mass in intimate heat exchange relationship with said evaporator, and adapted to be covered with frost in the normal operation thereof, said metallic mass having a perforation whereby to give a visual index of the extent of the accumulation of frost upon said evaporator and said mass, said index being the amount of frost required to close said perforation, and face plate means mounted on said evaporator and covering said metallic mass, said face plate means having a perforation disclosing the perforation in said mass.

4. In combination with a refrigerator evaporator a defrosting indicator comprising a metallic mass in intimate heat exchange relationship with said evaporator, and adapted to be covered with frost in the normal operation thereof, said metallic mass having a perforation whereby to give a visual index of the extent of the accumulation of frost upon said evaporator and said mass, said index being the amount of frost required to close said perforation and a light source located essentially behind said mass from an observer so that the accumulation of frost in said perforation serves to affect the amount of light passing therethrough, and face plate means mounted on said evaporator and covering said metallic mass, said face plate means having a perforation disclosing the perforation in said mass.

5. In combination with the evaporator of a refrigerating mechanism, a defrosting indicator comprising a metal body in intimate heat exchange relationship with said evaporator, said metal body having a perforation adapted to be closed by an accumulation of frost on said body, the size of said perforation being so chosen with reference to the heat conductivity of said body and the heat transfer between said body and said evaporator as to indicate, when closed by frost, an accumulation of frost on said evaporator sufficient to make defrosting advisable.

ROLAND H. MONEY.