Aug. 18, 1931. G. S. FLEECE 1,819,324

DEFROSTING DEVICE FOR REFRIGERATORS

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Fig. 2.

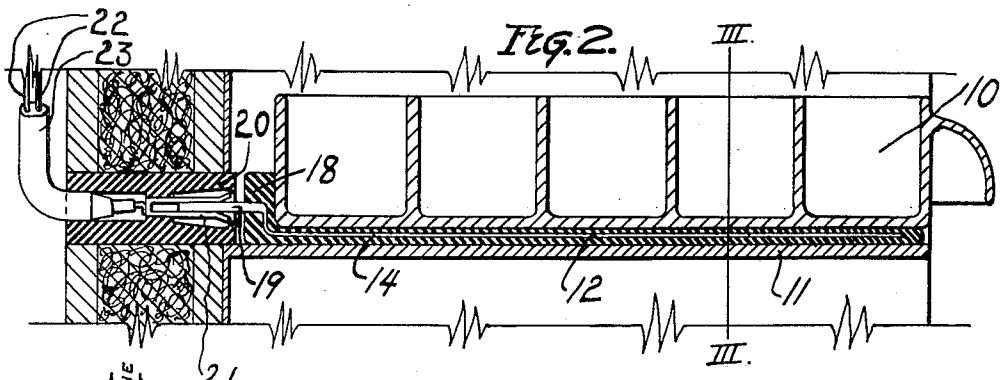
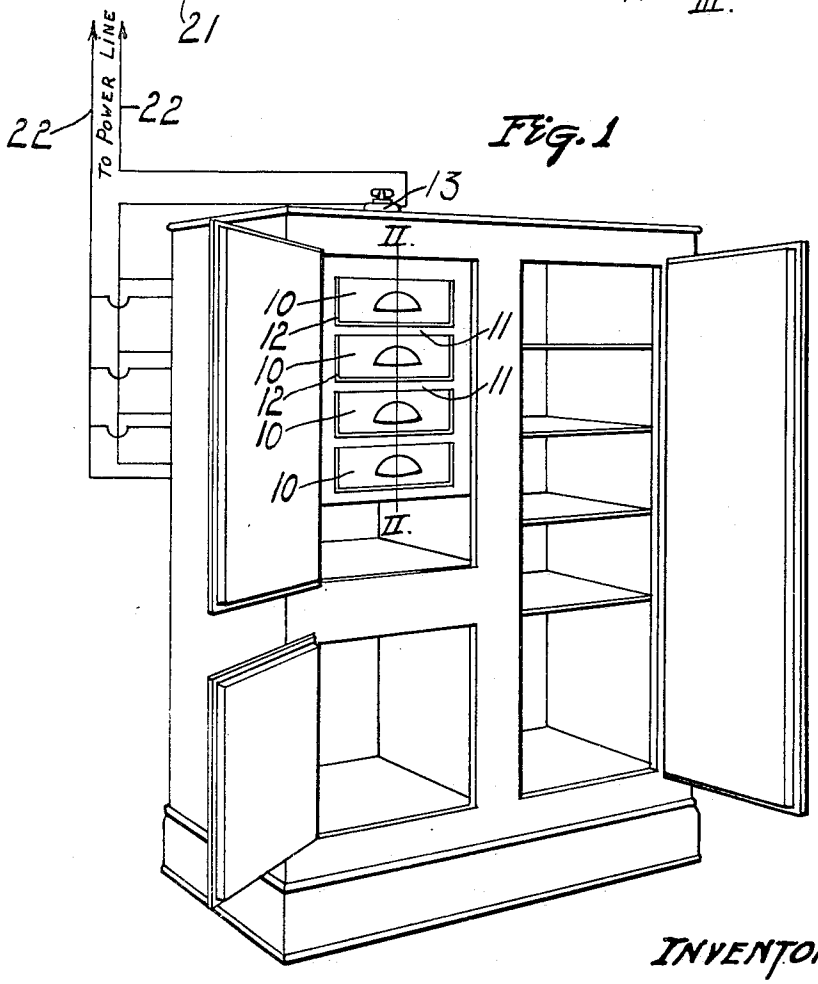


Fig. 1



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Fig. 3

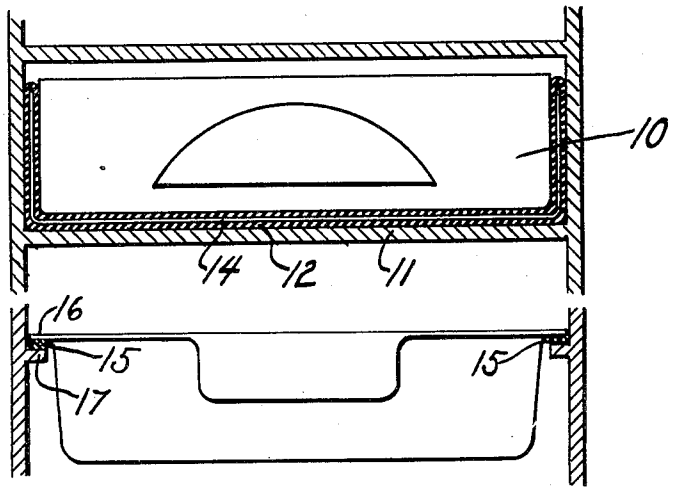


Fig. 6

Fig. 4.

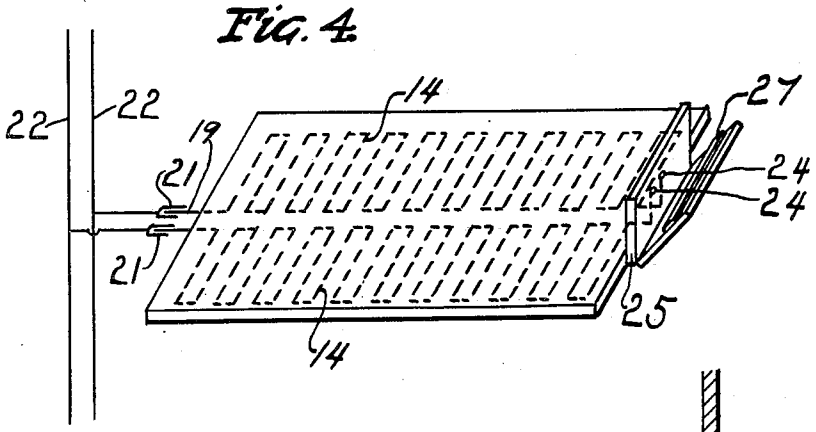
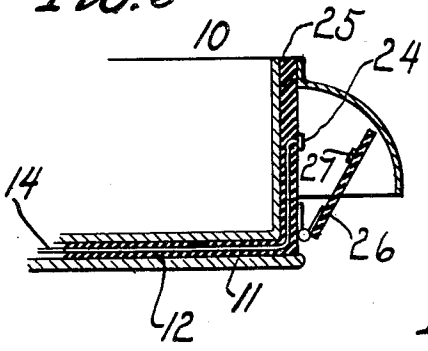


Fig. 5



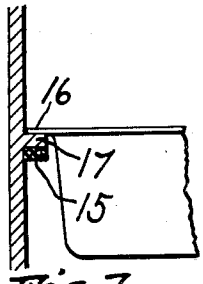


Fig. 7.

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UNITED STATES PATENT OFFICE

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DEFROSTING DEVICE FOR REFRIGERATORS

Application filed December 13, 1929. Serial No. 413,740.

This invention relates to defrosting devices for refrigerators and has especial relation to a heating device for disengaging ice trays from the shelves or supports by which they are carried, and to which they have frozen, in order that they may be readily removed from the refrigerator.

In modern types of refrigerators, which utilize their own refrigerating devices, it is customary to place in the refrigerator, pans or trays containing water which is frozen to provide ice for any desired purpose. These trays often freeze to the supports and the entire refrigerator must be warmed up to release them, or they must be mechanically broken loose, often with resulting damage.

In addition to this, it is often desirable to defrost the refrigerator to free the cooling coils of ice.

The objects of this invention are primarily to provide means for thawing ice trays from their supports and secondarily to provide means for defrosting the refrigerator as a whole.

The means by which the foregoing and other objects are accomplished, and the manner of their accomplishment, will readily be understood from the following specification on reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a refrigerator, showing a plurality of ice trays in place;

Fig. 2 is a vertical section from front to back showing a single tray and heating device therefor;

Fig. 3 is a transverse section taken as on the line III—III of Fig. 2, but showing the tray in elevation;

Fig. 4 is a diagrammatic view showing an electric heating coil, with an automatically releasing switch for closing the circuit;

Fig. 5 is a fragmentary vertical section through the front end of a tray and shelf and the automatic switch;

Fig. 6 is a section similar to Fig. 3, showing an alternate form of support for the tray and the heating elements therefor; and

Fig. 7 is a fragmentary sectional elevation, similarly taken, showing a modified position of the heating element.

Referring now to the drawings in which the various parts are indicated by numerals, 10 are ice trays, 11 supporting shelves therefor and 12 heating elements disposed between the trays and shelves. 13 is a switch for turning the current on and off. The heating element preferably is one similar to those used in electric irons, which comprises a resistance wire 14 surrounded by layers of insulation which ordinarily is sheet mica. This heating element, as shown in Fig. 4, is a flat insulated coil disposed between the shelf and the tray, or as shown in Fig. 3, it may additionally extend up along side the tray. In Figs. 6 and 7 two elongated heating elements 15 are shown; either disposed between the tray flanges 16 and their support 17 (Fig. 6) or disposed in contact with the underside of the supports 17 as shown in Fig. 7. Obviously also such an element might be carried by the tray, and rest on and be in contact with the flange thereof if it be so desired.

Obviously the heating element may be permanently built into the refrigerator and the tray simply rest thereon; or it may be a part of the tray and be removable therewith. In the latter case I prefer to secure to the tray one part 18 of a separable plug having a pair of fingers 19 projecting rearwardly therefrom, and to secure in the rear wall of the refrigerator the other part 20 of such a separable plug which part has a complementary pair of sockets 21, with which the fingers 19 make contact when the tray is inserted in the refrigerator. 22 are current wires leading through the usual insulation 23 to these sockets. Only one finger and one socket of the pair are shown as no special detail is claimed for such members and their construction is well known. In Fig. 1, the wiring for the four trays shown and the controlling switch 13 therefor is diagrammatically indicated. The source of current is the ordinary light circuit by which the refrigerator if electric, is also operated, and is not shown.

In Fig. 4 two resistance wires are shown, each leading forward to the front of the heating element and terminating in a contact point 24. These contact points, as will be more clearly seen in Fig. 5, are mounted on an

insulating member 25. Hinged to this member is a second member of dielectric material 26, which carries a metal bar 27. When the member 26 is pushed rearwardly the bar 27 will complete the circuit through the contact points 24 and cause the heating element to function. Such action is automatically had if attempt is made to pull the tray forward by the handle, and necessarily continues so long as the tray and support are stuck together. In this case the heating element is carried by the tray and when the tray is withdrawn the separable plugs are disconnected as before described.

The use of the device is obvious. With the type of switch shown in Fig. 1, should any tray resist removal the switch is turned on and left on until such tray or trays are released, after which it is cut off and the trays are removed. In the automatic type the switch is closed automatically whenever attempt is made to remove a tray but the current is only on until the tray loosens and is removed.

In many cases in fact almost universally, ice made in such trays, sticks so tightly that it is necessary to pour hot water over the trays or otherwise heat them to release the blocks of ice. Obviously this may be accomplished by turning on the current for a brief period before removing the ice even if removal of the trays should not require it.

In defrosting a refrigerator, the refrigeration unit is shut down and, preferably with the refrigerator closed, the heating coils are turned on until ice surrounding the cooling surfaces is loosened and drops off or it is at least easily dislodged.

It will be understood that the heating coils here shown are intended to be typical only; and that the detail of the detachable plug is also typical and that the automatic switch shown is typical only. It will further be understood that I do not wish or intend to limit myself to such detail except where it may hereinafter be set out in the claims.

Having described my invention, what I claim is:

1. In a refrigerator, a support, a removable tray supported thereby and subject to freezing thereto, an electric heating element disposed in contact with one of said parts, current wires leading to said element, the heating element circuit being carried to, and interrupted at, the front of said tray and provided with contact members spaced apart, a contact bar hingedly secured to said tray and insulated therefrom, said bar being manually movable to bridge between said contact members and establish a heating circuit therethrough.

2. In a refrigerator, a support, a removable tray supported thereby and subject to freezing thereto, an electric heating element carried by said tray, a separable plug member for said element carried by said tray, a complementary plug member within and carried by a wall of said refrigerator, current wires leading thereto, said heating element circuit being interrupted at the front of said tray and an automatically releasable switch for completing said heating element circuit.

3. In a refrigerator, a support, a removable tray supported thereby, an electric heating element, disposed between said parts and carrying a separable plug member, current wires adapted to be connected with a source of current carried by said refrigerator, and carrying a plug member complementary to said first plug member, said heating element circuit extending to the front of said tray and being there interrupted, a contact member for closing said circuit, supported on the front of said tray, said member being normally out of contact with said element circuit and manually movable to complete said circuit.

In testimony whereof I hereunto affix my signature.

GRANVILLE S. FLEECE.