Dec. 9, 1941. H. H. HANFT 2,265,807

MECHANISM FOR FREEING ICE TRAYS AND CUBES

Filed June 6, 1939 2 Sheets-Sheet 1

Fig. 1.

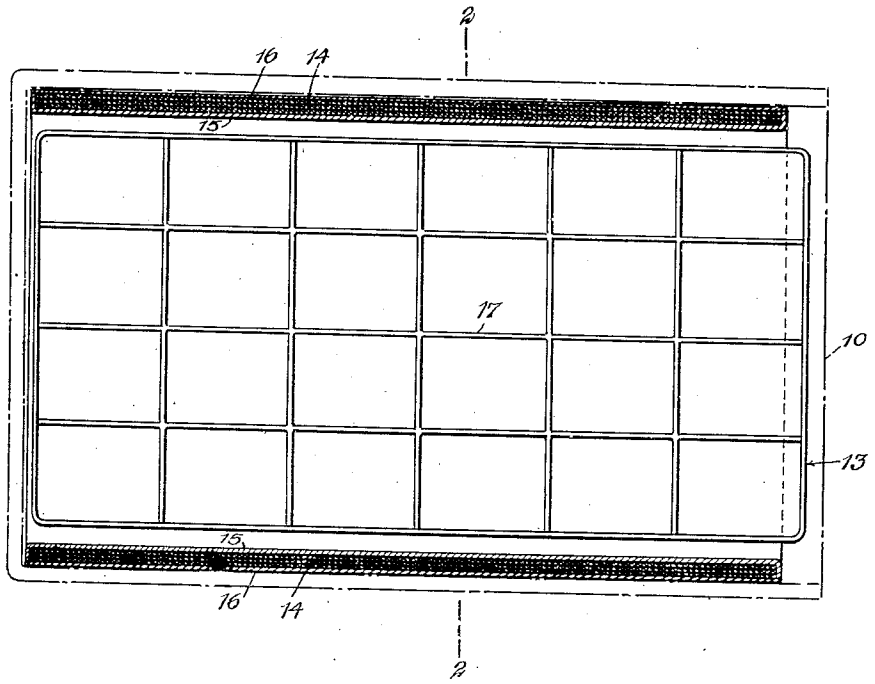
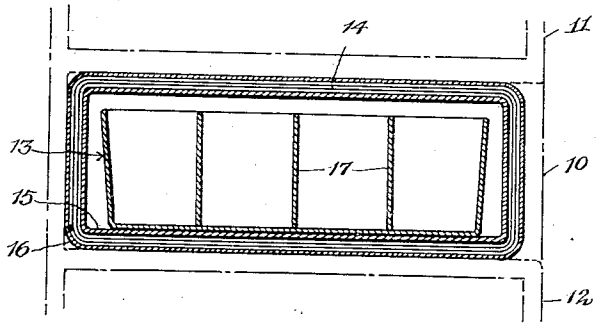


Fig. 2.



WITNESSES

George Taylor

John V. Glaccum

INVENTOR

Hugo H. Hanft

BY

Munn, Anderson & Liddy

ATTORNEYS

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Fig. 3.

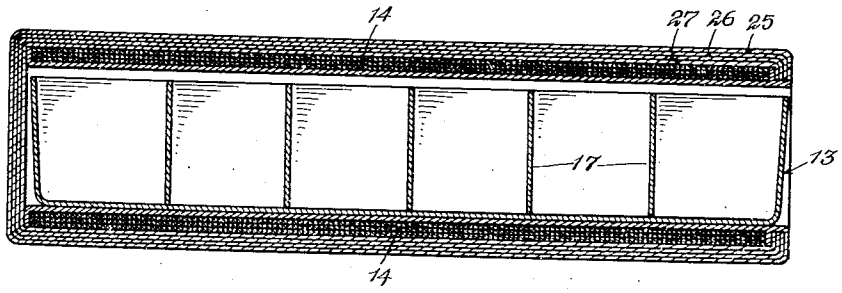
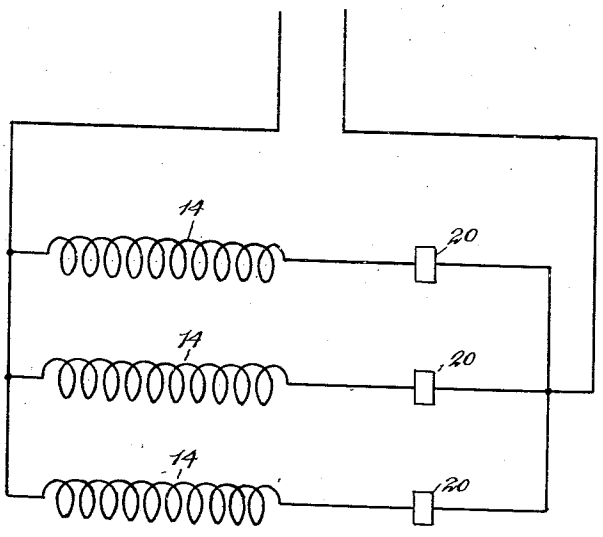


Fig. 4.



WITNESSES

George Taylor

John V. Glaccum

INVENTOR

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BY

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ATTORNEYS

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UNITED STATES PATENT OFFICE

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MECHANISM FOR FREEING ICE TRAYS AND CUBES

Hugo H. Hanft, Long Beach, N. Y.

Application June 6, 1939, Serial No. 277,596

3 Claims. (Cl. 219—47)

This invention relates to temperature change equipment, and more particularly to a device for raising the temperature of ice trays and grids in order to free the tray from the freezer structure and to free the ice cubes in the tray.

A number of constructions have been provided for freeing trays and ice cubes in the trays used in the ordinary electric refrigerators and various methods to produce the result have been devised. Most of these methods involve the heating of the whole freezer unit, or the raising of the temperature to a considerable degree in the freezer unit. In some instances a complicated arrangement of contacts has been provided to raise the temperature in the tray.

An object of this invention is to provide a method of raising the temperature of the tray and grid without raising appreciably the temperature in the freezer unit, nor in the surrounding structure of the cabinet.

A further object of the invention is to provide a mechanism to perform the function described, which will be simple in its operation and which will not have exposed electrical contacts or complicated mechanism to be operated by the owner of the refrigerator.

A further object is to provide a unit which is economical in construction and which in operation will not consume an undue amount of current.

In the accompanying drawings—

Fig. 1 is a plan view of a unit embodying my construction;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view of a modified form;

Fig. 4 is a diagrammatic view of the circuit set up for freeing the units.

This invention is applicable to all refrigerators or similar devices using alternating current or to refrigerators employing direct current, if a mechanical or other type of interrupter is provided, or to gas-operated refrigerators.

The usual mechanical refrigerator has a series of compartments 10, 11 and 12, in which a tray 13 is placed for freezing. My invention involves the use of an inductively-wound coil 14 entirely surrounding one axis of the tray and protected on the inside thereof by a covering 15. It is preferably built as a complete unit with an outer casing 16 so that it may be inserted into the compartment 10 as a unit and removed as a unit should repairs become necessary. Any suitable means for locking the unit into place may be employed. It will be appreciated that as many of these units will be used as there are compartments or ice trays, and in the diagrammatic view of the circuit shown in Fig. 4, three coils are shown.

The coil 14 is controlled by a time switch 20 of a conventional type and set to allow the current to pass through the coil 14 for a period of approximately seven seconds. The tray 13 may be made of stainless steel, ferrous metal, or some metal having similar properties. In operation when the time switch 20 is closed the current passes through the coil 14 creating an alternating magnetic field within the coil. This alternating field sets up hysterisis losses and eddy currents in the tray 13 and in the grid 17 thereof. Both eventuate as heat, thus raising the temperature of the tray and the grid above the freezing point of water, and loosen the ice cubes from tray and grid. While the temperature in the tray and the grid will be increased as many as 40 degrees in a very few seconds, the temperature of the coil 14 is not raised to any appreciable degree and the temperature of the surrounding structure of the refrigerator is not affected appreciably. The switch 20, being a time switch, controlled by a thermostat, clockwork mechanism, dashpot, or some similar conventional means, supplies the current for the predetermined length of time, and then immediately shuts off the current, thus allowing the compartment to retain its freezing function.

In the modified form shown in Fig. 3, I have provided an outer casing of laminated sheets of transformer iron 25, 26 and 27. The laminated transformer iron acts as an external return circuit for the magnetic flux, and tends to increase the efficiency of the unit, although it is not essential to the operation thereof.

While I have shown a specific structure for sending an alternate magnetic flux through an ice tray and grid, the same result may be secured by the use of coils in the tray unit on either side of the tray with a connecting circuit.

I claim:

1. An ice tray unit comprising a tray, a unit surrounding said tray and an inductively wound coil mounted in said unit around one axis thereof, means for supplying alternating current to said coil for a predetermined time, and a plurality of layers of laminated iron surrounding said unit.

2. In a device of the character described, the combination with an ice tray made of materials susceptible to magnetization, of an inductively wound coil surrounding said tray on one axis thereof, and means for supplying alternating current to said coil for a predetermined period of time.

3. In a device for freeing ice trays and ice in said trays, the combination of a tray made of material susceptible to magnetization, with an inductively wound coil surrounding said tray on one axis thereof, and means for supplying alternating current to said coil for a predetermined period, said means comprising a time switch.

HUGO H. HANFT.