

March 4, 1941.

C. E. EPPERSON

2,233,975

ELECTRIC REFRIGERATOR

Filed Dec. 29, 1939

2 Sheets-Sheet 1

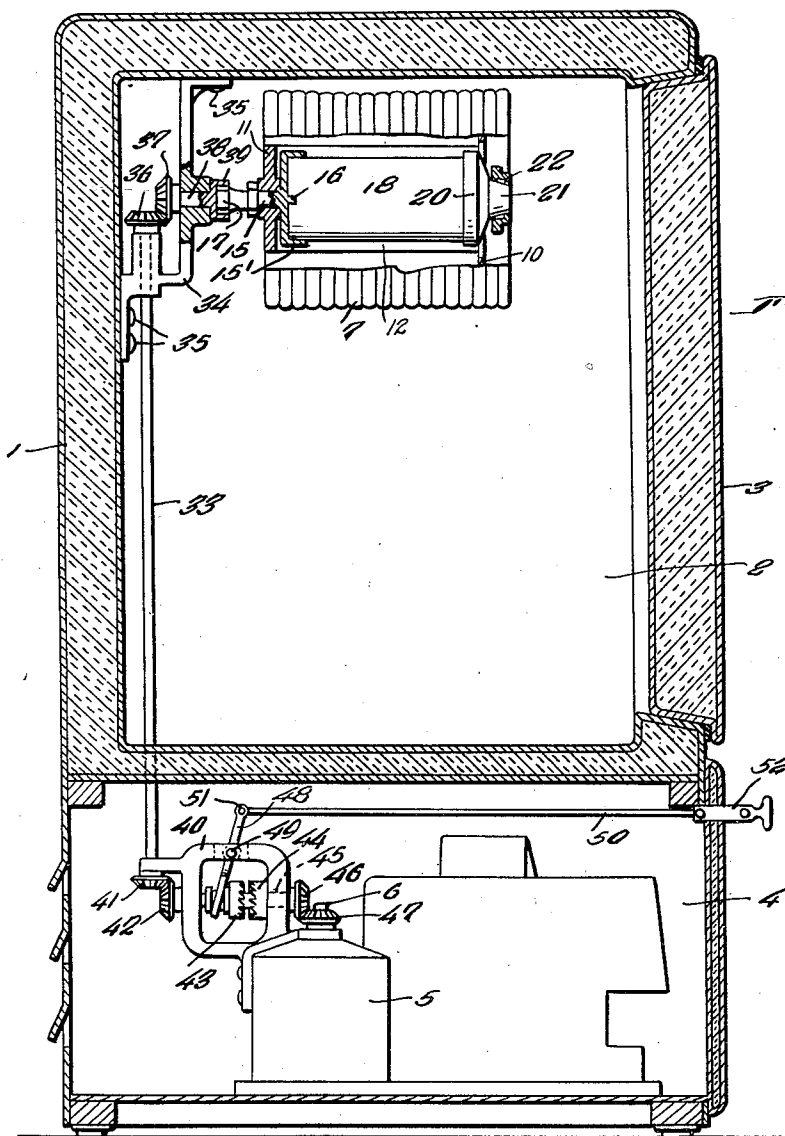
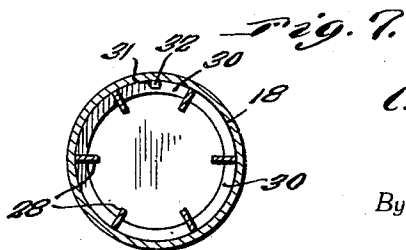


Fig. 1.



Inventor

C. E. Epperson

By

Clarence A. O'Brien
and Hyman Berman
Attorneys

March 4, 1941.

C. E. EPPERSON
ELECTRIC REFRIGERATOR

2,233,975

Filed Dec. 29, 1939

2 Sheets-Sheet 2

Fig. 3.

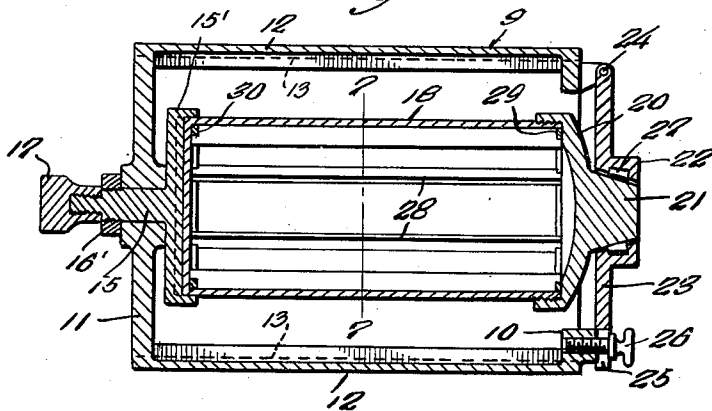


Fig. 2.

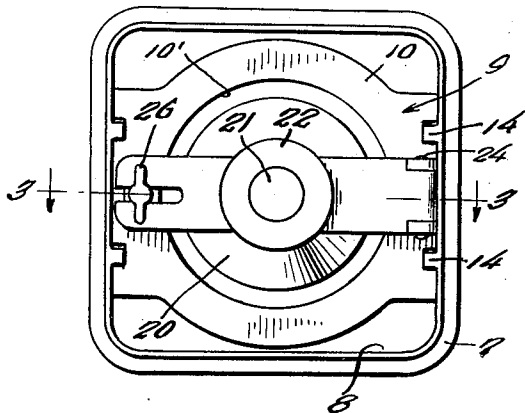


Fig. 4.

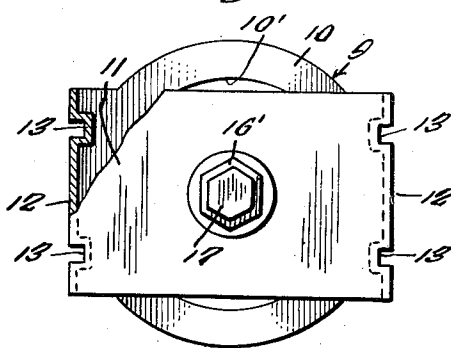


Fig. 5.

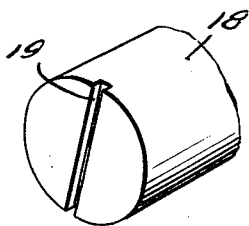
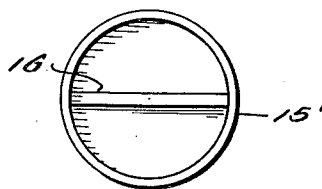


Fig. 6.



Inventor

C. E. Epperson

By *Clarence A. O'Brien*
and *Hyman Berman*
Attorneys

UNITED STATES PATENT OFFICE

2,233,975

ELECTRIC REFRIGERATOR

Carl E. Epperson, Knoxville, Tenn.

Application December 9, 1939, Serial No. 311,688

2 Claims. (Cl. 62—114)

My invention relates to improvements in electric refrigerators, and more particularly to power-driven ice-cream freezers therefor.

The invention is designed with the particular object in view of equipping present day types of electric refrigerators inexpensively with practical and efficient means for freezing ice-cream while agitating the same under operation of the usual motor of the refrigerator.

Another object is to provide for such refrigerator a simply constructed ice-cream freezing assembly which may be readily incorporated in and detached from the usual upper coil unit, together with a drive between the motor of the refrigerator and said assembly readily controlled from the exterior of the refrigerator.

To the accomplishment of the above and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawings:

Figure 1 is a view in vertical central section of a refrigerator equipped with the preferred embodiment of my invention,

Figure 2 is a view in front elevation of the freezing unit having my improved ice-cream freezing assembly therein,

Figure 3 is a view in horizontal section taken on the line 3—3 of Figure 2 looking in the direction indicated by the arrows and with the freezing assembly detached from the coil frame,

Figure 4 is a view in rear end elevation of the bearing frame, partly broken away and shown in section,

Figure 5 is a fragmentary view in perspective of the rear end of the cylindrical container,

Figure 6 is a view in front elevation of the driving chuck, and

Figure 7 is a view in transverse section taken on the line 7—7 of Figure 3.

Referring to the drawings by numerals, I have illustrated therein the preferred embodiment of my invention as forming part of the equipment of a well-known type of electrical refrigerator including the cabinet 1, storage compartment 2 adapted to be closed by the door 3, a bottom compartment 4 for the operating mechanism which, in this instance, includes a motor 5 having a vertically disposed armature shaft 6, and the usual coil unit 7 in the upper part of the compartment 2 forming a rectangular freezing chamber therein open at its front and rear ends and usually utilized for freezing trays of ice cubes and the

like, the unit 7 in this instance, having an inner lining 8.

The freezing unit comprises a bearing frame 9 of rectangular open form and of substantially the same length and width as the interior of the coil unit 7, said frame including a front end 10, a rear end 11, and sides 12 having longitudinally extending guide-ways 13 therein for receiving guide ribs 14 provided on the inner face of the lining 8 and whereby said frame may be slid into said unit 7 for suspension therein by the guides 14. The front end 10 of the frame 9 is provided with a circular opening 10' centrally thereof for the insertion into said frame of a cylindrical container for ice-cream and presently described in detail. In the rear end of the frame 9 is a driving chuck for the container comprising a spindle 15 journaled in said rear end centrally thereof, and a dished disk-like head 15' on the front end of the spindle provided with a diametrical key 16 on the front face thereof. A lock nut 16' threaded onto the spindle 15 in the rear of the end 11 provides for retaining the chuck in position against endwise movement. A hexagonal nut 17 threaded onto the rear extremity of said spindle 15 provides the driven element of a clutch for driving the chuck and presently further described.

The container 18 is of cylindrical form and of proper diameter to fit endwise into the frame 9 by way of the opening 10'. The front end of the container 18 is open and the rear end closed and provided with a diametrical groove 19 therein, said rear end fitting in the head 15' and the groove 19 receiving the key 16 whereby the chuck and container are connected in driving and driven relation. The front end of the container 18 is closed by a cap 20 having a central outwardly tapering, external trunnion 21 thereon, said cap being detachably threaded onto said container. The trunnion 21 is adapted to fit in a bearing socket 22 provided in a bar 23 hinged at one end, as at 24, to the front end 10 adjacent one side of the frame 9 and having its other end longitudinally slotted, as at 25, to receive a thumb screw 26 threaded into said end 10 adjacent the other side of the container 9. The socket 22 is provided internally with suitable bearings 27 for rotatably supporting the trunnion 21.

The container 18 is provided therein with a removable agitator assembly comprising longitudinally extending radial blades 28 having their ends suitably secured to a pair of front and rear rings 29, 30, of the proper diameter to fit within

the container 18, said blades extending in parallel relation and being equi-distantly spaced around the inner wall of said container 18. The ring 30 is provided with an edge slot 31 therein for engaging a suitable key lug 32 on the inner wall of the container 18 whereby said agitator assembly is anchored to the container for rotation therewith.

Coming now to the drive, in the rear of the unit 7, and motor 5, is a vertically disposed driven shaft 33 having its upper end journaled in the lower portion of a suitable bearing bracket 34 secured, as at 35, to the inner wall of the freezing compartment 3. Fast on the upper end of the shaft 33 is a bevel gear 36 meshing with a bevel gear 37 fast on the rear end of a clutch spindle 38 journaled in said bracket 34 in axial alignment with the spindle 15 and having a front end hexagonal socket 39 for fitting over the beforementioned nut 17 and forming the driving member of a clutch of which the nut 17 forms the driven element.

The lower end of the shaft 33 is journaled in a bearing frame 40 suitably secured to and upstanding from the motor 5, said end of the shaft having fast thereon a bevel gear 41 meshing with a bevel gear 42 journaled in one side of the frame 40 and adapted to be driven by a clutch element 43 of any suitable form endwise slidable to engage and disengage a driving clutch element 44 fast on a shaft 45 journaled in the other side of the frame 40 and adapted to be driven by a pair of bevel gears 46, 47, fast thereon and on the armature shaft 6, respectively. A suitable clutch shifter arm 48 is pivoted, as at 49 in the frame 40 and operatively connected to the clutch element 43 to move the same endwise. A clutch shifting rod 50 is operatively connected to the arm 48, as at 51, said rod extending to the front wall of the compartment 4 and being connected to a hand-grip 52 slidably mounted in said wall for manipulation from outside the refrigerator.

The operation of my invention will be readily understood. With the motor 5 energized, and the described clutch elements 43, 44, engaged under manipulation of the hand-grip 52 and clutch rod 50, the motor is operatively connected to the chuck shank 15 through the described driving connection to rotate the container 18 in the coil unit 7 and thereby effect freezing of the contents of the container while such contents are being agitated by the blades 28. By removing the thumb screw 26 and swinging the bar 23 on its hinge 24 outwardly, the socket 22 may be removed from the trunnion 21 of the container 18 and said container removed from the bearing frame 9 for access to the contents thereof. By merely pulling outwardly on the bearing frame 9, the entire freezing assembly may be removed from the coil unit 7 so that the latter may be utilized for other purposes. In this connection, when the freezing assembly is removed, as described, the described drive may

be disconnected from the motor by disengaging the clutch elements 43, 44, so that the motor may be used for operating the refrigerator without any extra load thereon.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly the invention, as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. The combination with an ice-tray receiving chamber of a refrigerator having an open front end and longitudinal guides along the side walls thereof, of a frame slidably mounted on said guides for movement into and out of said chamber and having an open top, bottom and front ends, a rotatable chuck in the rear end of said frame including a driven spindle extending outwardly of said rear end for coupling to a drive and a dished head on said spindle provided with a diametrical key therein, a cylindrical container in said frame having open and closed front and rear ends, respectively, the latter fitting in said head and having a diametrical keyway therein for receiving said key, a closure cap for the open end of the container having an axial trunnion, and a keeper bar on the front end of the frame to be swung into and from crosswise position relative to said front end of the frame and having a bearing therein for accommodating the trunnion when swung into crosswise position.

2. The combination with an ice-tray receiving chamber of a refrigerator having an open front end and longitudinal guides along the side walls thereof, of a frame slidably mounted on said guides for movement into and out of said chamber and having an open top, bottom and front ends, a rotatable chuck in the rear end of said frame including a driven spindle extending outwardly of said rear end for coupling to a drive and a dished head on said spindle provided with a diametrical key therein, a cylindrical container in said frame having open and closed front and rear ends, respectively, the latter fitting in said head and having a diametrical keyway therein for receiving said key, a closure cap for the open end of the container having an axial trunnion, and a keeper bar on the front end of the frame to be swung into and from crosswise position relative to said front end of the frame and having a bearing therein for accommodating the trunnion when swung into crosswise position, and an agitating unit in said container comprising a pair of rings and blades fixed to said rings, one of said rings being slidably keyed to said container for rotation of said unit thereby and removal of the unit from the container.

CARL E. EPPERSON.