United States Patent

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[54] **POWER-OPERATED MEANS FOR PRODUCING FROZEN DESERTS IN A REFRIGERATED COMPARTMENT**
3 Claims, 8 Drawing Figs.

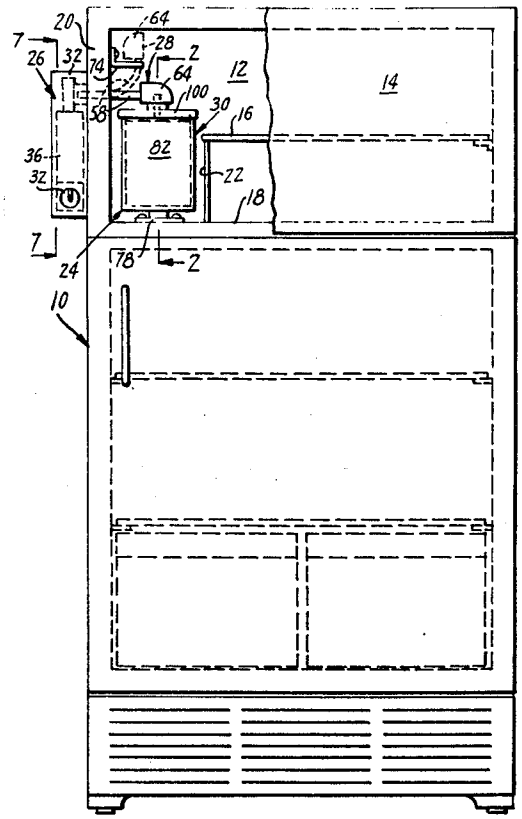
[52] **U.S. Cl.** **62/342,** 259/108
[51] **Int. Cl.** **F25c 7/08**
[50] **Field of Search** 62/233, 342, 300; 259/108, 114

[56] **References Cited**
UNITED STATES PATENTS

2,054,724	9/1936	Fulton	259/113
2,555,624	6/1951	Anderson	259/108

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ABSTRACT: In combination with the freezing compartment of a refrigerator, a power driven mixer assembly for producing frozen desserts and the like including an electrically operated motor and timing means, and having a flexible, bendable power takeoff shaft and including a detachable coupling, and in which a mixer assembly is oriented in a freezer compartment an includes a blade having a configuration producing a homogeneous mix while being power driven.



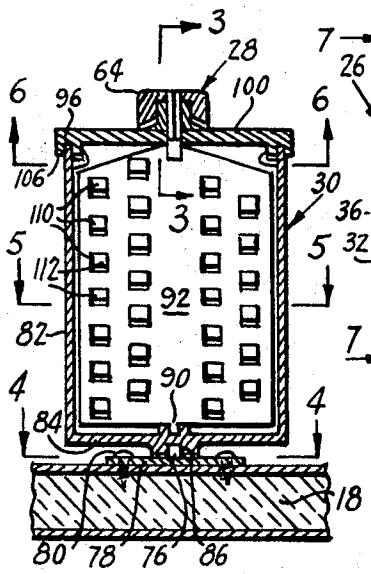


FIG. 2

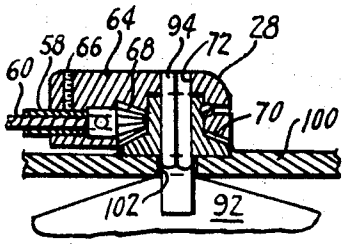


FIG. 3

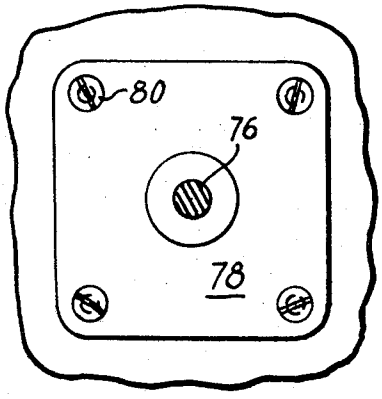


FIG. 4

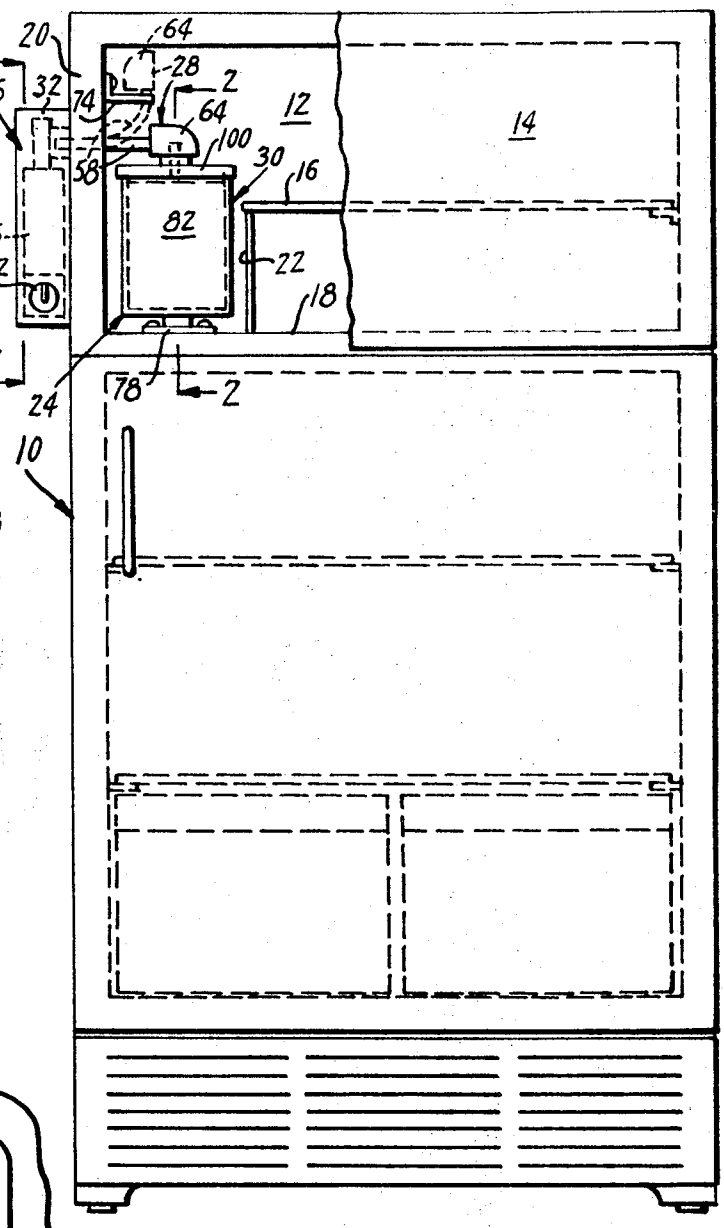


FIG. 1

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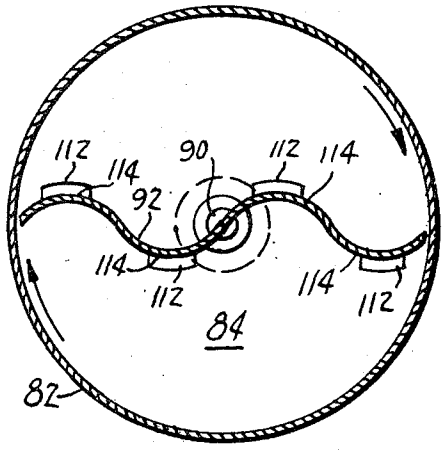


FIG. 5

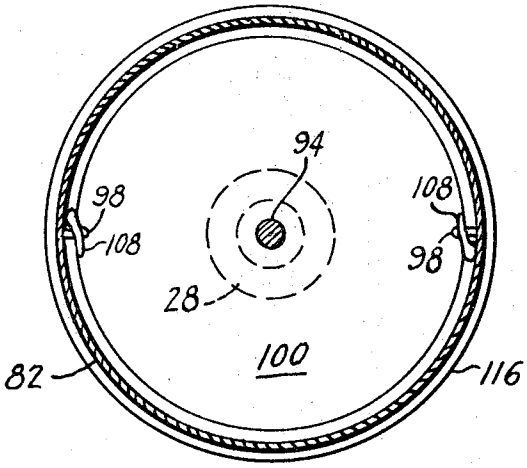


FIG. 6

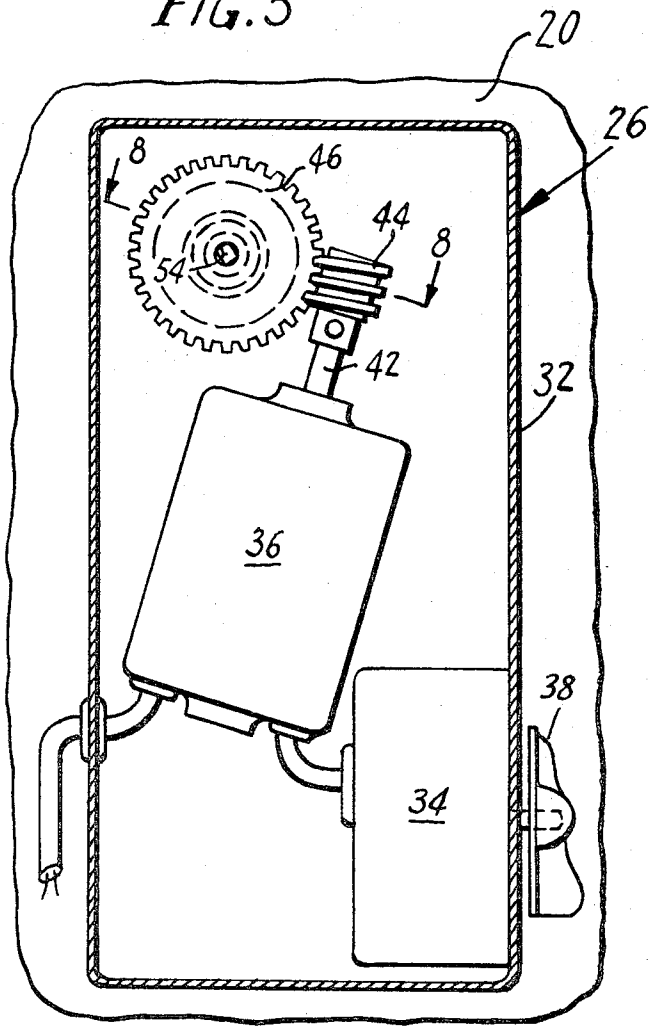


FIG. 7

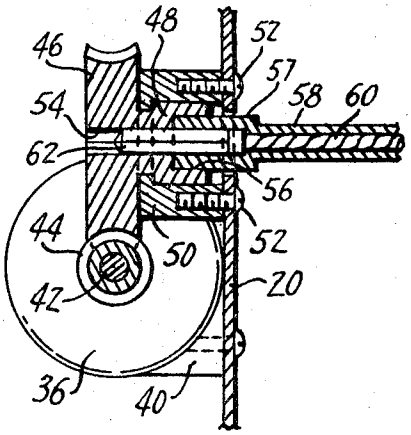


FIG. 8

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POWER-OPERATED MEANS FOR PRODUCING FROZEN DESERTS IN A REFRIGERATED COMPARTMENT

GENERALLY

This invention is directed to an improved attachment used in conjunction with the freezing compartment of a refrigerator or the like.

PRIOR ART

Various types of power-operated mixing chambers have been proposed in the prior art, however, they have generally proved complicated and expensive to install, use and maintain, and have not been generally adopted for use in one's home.

OBJECTS OF THE INVENTION

Primary objects of the invention are: to provide a novel mixing assembly used in combination with a refrigerator freezing compartment in which a flexible drive is conveniently accessible for use, and conventionally stored when not in use; to provide a novel driven assembly of the character involved and which incorporates a timer in the electrical circuit; to provide a novel mixer used in a readily oriented mixer chamber positioned in a freezing chamber.

These together with other and more specific objects and advantages will become apparent from a consideration of the following description when taken in conjunction with the drawing forming a part thereof, in which:

IN THE DRAWING

FIG. 1 is a front elevational view of a refrigerator incorporating a freezing compartment and showing portions broken away for illustrating the general relationship of the attachment of the invention;

FIG. 2 is an enlarged vertical section taken on the plane of line 2–2 of FIG. 1;

FIG. 3 is a further enlarged section taken on the plane of line 3–3 of FIG. 2;

FIGS. 4, 5 and 6 are horizontal sections taken on the plane of lines 4–4, 5–5, and 6–6, respectively;

FIG. 7 is an enlarged vertical section taken on the plane of line 7–7 of FIG. 1; and

FIG. 8 is a section taken on the plane of line 8–8 of FIG. 7.

DESCRIPTION OF THE PREFERRED, EXEMPLARY EMBODIMENT

Referring first to FIG. 1, a refrigerator 10 includes the usual components which will now be described in detail, i.e. compressor, cooling coil, cooling compartment, etc. Conveniently, the refrigerator includes a freezing compartment 12 which is maintained at a temperature below 32° F. as is also conventional; access will be had through the usual front, latched door 14, and a support rack 16 is provided and beneath which ice-cube trays are generally stored. As is readily apparent, the refrigerator per se does not form a constituent part of the invention, but is merely illustrative; the invention is used in combination with any suitable freezing compartment.

The freezing compartment is formed in part by a bottom wall 18 and a sidewall 20; the latter being spaced from the adjacent portion 22 of the support rack 16 and defining therewith a space 24 accessible from the front of the freezing compartment.

Incorporated on the outer surface of wall 20 as either initial installation equipment, or modification equipment, is a power assembly indicated generally at 26 (see FIGS. 1, 7 and 8, for example) and which includes a power takeoff portion 28 which is readily and conveniently accessible in compartment 12 and more particularly at the upper portion of space 24.

Removably received in the freezing compartment at space 24 is a power-operated mixing chamber 30 which can be removed when not used to produce a "frozen" dessert or to store the dessert in the freezing compartment. In the latter instance, the power takeoff portion 28 will be conveniently stored in the dotted line position of FIG. 1, as will be described.

The power assembly 26 comprises a suitable housing 32 in which is contained a timer assembly 34 which is interposed in a circuit to an electrically operated motor 36 connected in a suitable operating circuit (not shown). Although not shown in detail, the timer assembly will include contacts normally "closed" over a predetermined interval (to close the operating circuit to the motor), and which are "opened" after the predetermined interval elapses. It will be appreciated that when producing frozen custard, ice cream, etc., a predetermined mixing interval is recommended whereafter the mixture from which the dessert is produced will harden and have attained a palatable consistency; excessive mixing can result in actual solid freezing of the dessert mixture; impaction of the mixing paddle or vane, and a generally unsatisfactory situation. The timer assembly has a manually adjustable indicator switch 38 in alignment with an indicator dial at the exterior and facing forwardly from case or housing 32.

As seen in FIG. 8, the motor 36 is mounted by a bracket 40 on the wall 20 and includes an axial drive shaft 42 having a terminal worm gear 44. Meshed with the worm 44 is a driven gear 46 which includes an axial sleeve 48 journaled within and captured by a sleeve 50 retained in laterally extending relation from wall 20 by means of screws 52 or other suitable fasteners. The sleeve 48 includes an axial bore 54 (preferably having a polygonal cross section) and communicating with an enlarged bore 56 having a cylindrical cross section.

Removably received in the bore 56 is the terminal portion 57 of a flexible sheath or housing. The sheath has journaled therein a flexible torque-transmitting shaft or wire 60 which has a terminal, polygonal cross sectioned portion 62 telescopically received in the bore portion 54 and drivingly engaged thereby.

The housing 58 and flexible shaft 60 project through a sealed hole in wall 20, and are connected to the power takeoff portion 28. The power takeoff portion 28 includes a cap 64 and the shaft 60 and its housing 58 are retained in the cap 64 by a screw 66; the shaft 60 is terminally secured to and rotates a bevel gear 68 journaled in the cap 64. Meshed with the bevel gear 68 is a driven bevel gear 70, also journaled in the cap and having an axial, polygonally cross sectioned bore 72. Without describing the power-operated mixer assembly 30, it will be noted that the housing 64 (see FIG. 1) can be stored on a retention bracket 74 projecting laterally from an upper, inner surface portion of wall 20. The housing 64 when stored in the dotted line position will occupy very little space, and the removal of the mixer assembly permits substantially maximum usage of the freezing compartment which can be later used to produce a frozen dessert.

The power operated mixer assembly is oriented by means of a vertically extending stub shaft 76 which is integral with a mounting plate 78 secured at the upper surface of bottom wall 18, centrally of the space 24, by screw fastener 80 or the like.

The power operated mixer includes a container or receptacle 82 preferably circular in cross section and which can be a metal, plastic, etc. The container 82 includes on the bottom wall 84, a downwardly opening, axial recess or bearing 86 rotatably received on the stub shaft 76. Projecting inwardly and axially from the bottom wall 84 is a bearing or recess 90 which provides the lower bearing for a mixing vane or paddle 92 which projects diametrically of the container 82 to the inner surface of the container, and also extending substantially the height of the container; see FIG. 3.

The vane or paddle 92 includes an axial, polygonally cross sectioned shaft 94 which is removably received in the complimentary, polygonal bore 72 of the cap 64. The container 82 includes on the inner wall surface, adjacent the upper edge 96 orienting lugs 98 which are circumferentially spaced and permit ready removal of the paddle 92 from the container.

Removably received on the container edge 96 and sealingly secured thereat is a cap or lid 100 having a central opening

102 through which shaft 94 projects and rotates, and the lid includes in its upper surface a recess 104 complimentary to the lower edge of cap 64 of the power takeoff portion. The lid also includes at its periphery a downwardly opening recess formed by a multiwalled flange 106 which sealingly engages the container edge 86, and includes hook portions 108 removably engaging lugs 98.

The paddle or vane 92 is transversely apertured at 110 and the apertures are generally rectangular and are bordered at one edge by an angular baffle or plate 112 which serves to direct fluent material either upwardly or downwardly as the vane or paddle is rotated. Additionally, as is clearly seen in FIG. 5, the paddle 92 is transversely undulated at 114 and the apertures 110 are preferably disposed on the crests of the undulations where the fluent material is generally concentrated at its greatest pressure during rotation of the paddle.

OPERATION

The container 82 is filled with a mixture (according to recipes) and the lid 100 is secured. The container is oriented on stub shaft 76 and the power takeoff 28 is engaged with shaft 94 of the vane or paddle 92. According to the recipe used, the timer 34 is set for a particular period, i.e. 20 minutes to 40 minutes, for example, and the mixture is constantly circulated as it is subjected to a freezing temperature; the constant circulation accompanied by freezing produces a homogeneous mixture which will have a "creamy" consistency. After the prescribed stirring, the timer cuts off operation of motor 36; preferably, but not necessarily, the cap 100 can be removed, and the vane 92 removed and cleaned. The cap is replaced and the dessert is frozen and maintained in such condition until used.

I claim:

1. Refrigerator mixer apparatus comprising a refrigerator compartment normally maintained at least at a freezing temperature or therebelow, a motor secured to the exterior of said refrigerator compartment, first mounting means within said compartment, a mixing chamber detachably connected to said first mounting means, second mounting means connected to a wall of said compartment near a corner therein, and driven means connected for rotation at one end to the drive shaft of said motor and selectively detachably connected at the other end to said second mounting means and said mixing chamber for activating said mixing chamber allowing said mixing chamber of any desired size to mix the food in said compartment, said mixing chamber to be completely removed from said compartment at the expiration of the mixing operation, and said driven means to be disengaged from said mixing chamber and secured to said second mounting means at the expiration of the mixing operation.

2. The apparatus of claim 1 wherein said first mounting means includes a projection extending upward from the bottom wall of said compartment, said mixing chamber having a hole in the center of a bottom surface thereof removably mating with said projection for stabilization of said mixing chamber.

3. The apparatus of claim 1, wherein said mixing chamber includes a chamber, a rotatably mounted blade vertically positioned within said chamber and having dimensions slightly less than those of the vertical cross section of said mixing chamber taken along the longitudinal axis thereof, a shaft extending from the top of said blade and protruding from the top of said chamber and detachably connected to said driven means for rotation, the cross section of said blade having an undulated shape with wavelike crests and valleys, said blade having a vertical column of holes along each crest and a baffle angularly extending over each of said holes causing the food being mixed to be concentrated and present the greatest pressure at specific areas along said rotating blade and to be directed in a stream from one side of a midportion of said blade to the other for integrated agitation and mixing of food on both sides of said rotating blade.