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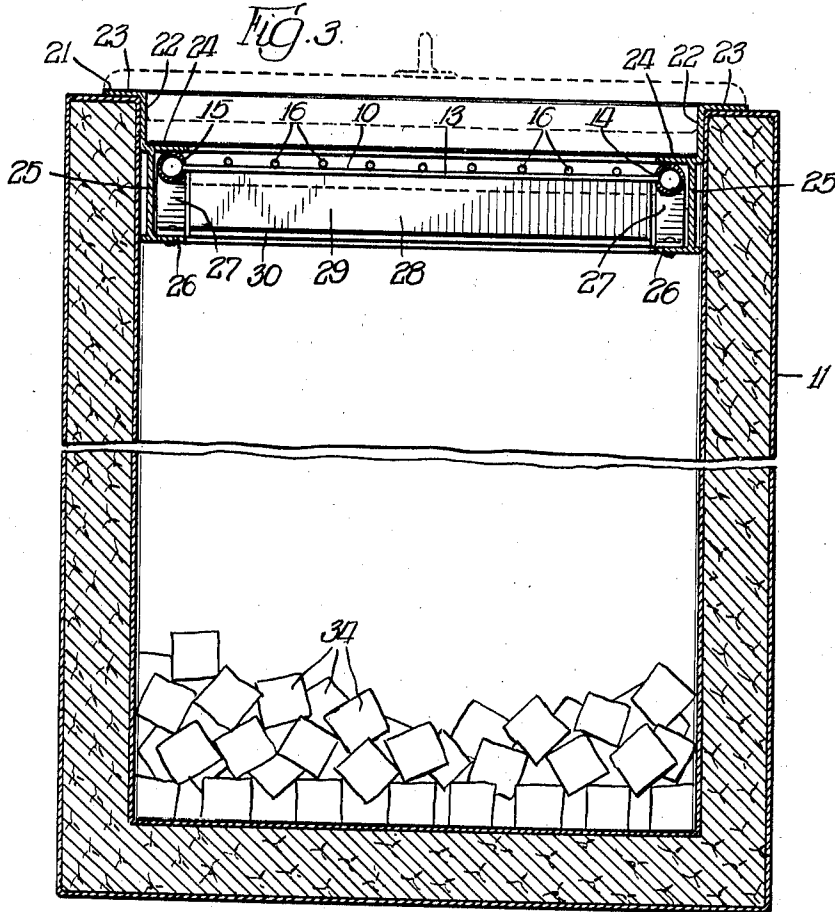
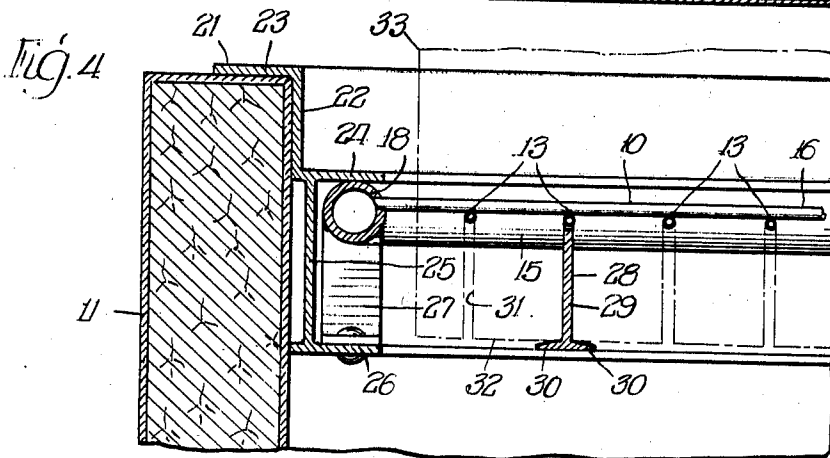
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ICE-CUBING DEVICE

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ICE-CUBING DEVICE

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11 Claims. (Cl. 62-112)

The principal object of this invention is to provide an improved ice-cubing device, which is simple and sturdy in construction, easy to operate, and has a high production capacity.

The improved ice-cubing device is characterized by a horizontal crossed-tube grid on which the cake of ice to be cubed is placed, and a plurality of horizontal guide rails beneath the grid on which the cake is slid sidewise to release the cubes after the cake has melted down through the grid and come to rest upon the rails.

While the foregoing statements are indicative in a general way of the nature of the invention, other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the improved device and its manner of operation.

A preferred embodiment of the invention is presented herein by way of exemplification, but it will of course be appreciated that the invention is capable of being embodied in various other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is a perspective view of the improved ice-cubing device;

Fig. 2 is a plan view of the device shown in Fig. 1, with portions shown in section;

Fig. 3 is a vertical section through the device, taken on the line 3-3 of Fig. 2; and

Fig. 4 is a fragmentary vertical section through the device, taken at right angles to Fig. 3, on the line 4-4 of Fig. 2.

As will be observed in the drawings, the ice-cubing device consists of a horizontal crossed-tube grid 10 of rectangular shape which is positioned across the otherwise open top of a cabinet 11. The cabinet 11 is preferably, though not necessarily, of insulated construction and is provided near its bottom with a door 12 through which the ice cubes can be removed.

The grid 10 consists of a large number of equally spaced parallel tubes 13 which extend from a header pipe 14 at one side of the grid to a header pipe 15 at the other side, and a large number of equally spaced parallel tubes 16 which are arranged at right angles to the tubes 13 in engagement with the latter and extend from a header pipe 17 at one side of the grid to a header pipe 18 at the other side. The pipes 14, 15, 17 and 18 are rigidly joined together, in the form of a rectangle, with the pipe 17 in communication with the pipe 14. The pipe 14 is provided with a short extension 19 which forms the inlet for the circulating system, while the

pipe 15 is provided with a corresponding extension 20 which forms the outlet.

The inlet 19 is adapted to be connected, by a rubber hose (not shown) or other suitable means, to a hot water faucet, while the outlet 20 is adapted to be similarly connected to a drain. The device will operate effectively with water ranging anywhere from 60° to 180° F. The water, after entering at the inlet 19, passes through the pipes 14 and 17, then through the small crossed tubes 13 and 16, and then through the pipes 15 and 18, leaving at the outlet 20.

The pipes 14, 15, 17 and 18 are mounted in a rectangular frame 21 which is positioned in the upper end of the cabinet 11. The frame 21 is provided with vertically extending side portions 22 which fit against the sides of the cabinet, outwardly extending flanges 23 which rest upon the upper edges of the sides, and inwardly extending flanges 24 which overlie the pipes 14, 15, 17 and 18. The frame 21 is also provided, below the flanges 24, with additional vertically extending side portions 25 which terminate about cube height below the grid 10 in inwardly extending flanges 26. The pipes 14, 15, 17 and 18 are rigidly supported against the under surfaces of the flanges 24 by brackets 27 which are secured to the upper surfaces of the flanges 26.

Two horizontal guide rails 28 are positioned beneath the grid 10 near the sides of the latter. The rails 28 are located directly under two of the tubes 13 of the grid, preferably in slightly spaced relation to the same, and are secured at their ends to portions of the frame 21. The rails 28 are characterized by vertically extending flanges 29 and narrow laterally extending flanges 30 at the lower edges of the vertically extending flanges. The vertically extending flanges 29 are of substantially the same thickness as the diameter of the tubes 13 at the upper edges of the same and serve by engagement with the sides of the slits 31 in the bottom 32 of the cake 33 (see Fig. 4) to guide the cake straight downwardly as the cake melts at the slits and descends by gravity. This engagement of the vertical flanges 29 within the slits 31 in the bottom of the cake prevents the cake from tilting toward one side or the other during its downward movement, thereby maintaining the bottom 32 of the cake parallel to the grid 10 at all times. This engagement makes unnecessary any special circuit arrangement for the flow of the heating medium through the tubes of the grid, such as the reverse flow in alternate tubes considered

necessary in certain other forms of ice cubing equipment to effect uniform melting throughout the entire area of one face of the cake of ice. The laterally extending flanges 30 act as stops and serve by engagement with the bottom 32 of the cake at the sides of the slits to bring the cake to rest when the slits 31 have been cut to the requisite depth. The flanges 30 taper downwardly toward their edges, preferably in a generally semi-oval curve, whereby to facilitate release of the cubes from the flanges 30. The flanges 30, in addition to acting as stops, constitute guides along which the cake, after reaching said flanges, is adapted to be slid horizontally a distance corresponding to the space between any two of the tubes. This horizontal movement, which can take place just as rapidly as the tubes 16 can melt horizontally through the cake at the upper edges of the slits, completes the formation and release of a group of cubes 34, corresponding in number to the number of the openings in the grid, allowing such cubes to drop down into the bottom of the cabinet 11, either for temporary storage or immediate removal, as desired.

While the ice shapes produced are referred to herein as "cubes," that designation is intended to cover polygonal, round, oval and other forms as well as ordinary rectangular ones. The term "ice" is intended to include frozen liquids generally. In producing shapes other than rectangular ones the grid would of course be modified to provide openings therein of the same cross section as the cubes. While the grid is preferably of crossed-tube construction it may of course be made in other ways, and also heated in other ways, without departing from the spirit of the invention.

I claim:

1. An ice cubing device comprising a grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed against the same, means for heating the grid, and means beyond the grid in spaced relation to the same for arresting movement of the cake after the grid has penetrated part way through the latter, the portions of the grid surrounding each opening therein acting simultaneously to produce all of the side faces of the cube being formed within such opening, said arresting means permitting the cake to be thereafter moved in the direction of the plane of the grid to disconnect the cubes from the rest of the cake.

2. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is constructed to support the full weight of a cake of ice and is adapted to have a cake of ice placed on top of the same, means for heating the grid, and means below the grid in spaced relation to the same for arresting movement of the cake after the grid has penetrated part way through the latter, said arresting means permitting the cake to be thereafter moved horizontally to disconnect the cubes from the rest of the cake.

3. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is constructed to support the full weight of a cake of ice and is adapted to have a cake of ice placed on top of the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath

the grid for arresting movement of the cake after the grid has penetrated part way through the latter and for supporting and guiding the cake horizontally after its downward movement has been arrested.

4. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed on the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath the grid for arresting movement of the cake after the grid has penetrated part way through the latter and guiding the cake horizontally after its downward movement has been arrested, the side flanges of said rails being inclined downwardly toward their edges.

5. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed on the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath the grid for arresting movement of the cake after the grid has penetrated part way through the latter and guiding the cake horizontally after its downward movement has been arrested, the side flanges of said rails being of semi-oval cross section, whereby to facilitate release of the cubes from such flanges.

6. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed on the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath the grid for arresting movement of the cake after the grid has penetrated part way through the latter and guiding the cake horizontally after its downward movement has been arrested, the side flanges of said rails being of semi-oval cross section, whereby to facilitate release of the cubes from such flanges, and the vertical flanges of the rails extending downwardly from points closely adjacent the grid in non-conducting relation to the same.

7. An ice cubing device comprising a horizontal crossed-tube grid containing a large number of rectangular openings, which grid is adapted to have a cake of ice placed on the same, means for passing a thawing medium through the tubes of the grid, and means below the grid in spaced parallel relation to the same for arresting movement of the cake after the grid has penetrated part way through the latter, said arresting means also serving to guide the cake horizontally after its downward movement has been arrested.

8. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed on the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath the grid for preventing the cake of ice from tilting toward one side or the other as it melts down through the grid and arresting movement of the cake after the grid has penetrated part way through the latter.

9. An ice cubing device comprising a horizontal grid containing a large number of openings having the shape of the cubes to be formed, which grid is adapted to have a cake of ice placed

on the same, means for heating the grid, and a plurality of rails of inverted T-shaped cross section positioned beneath the grid for arresting movement of the cake after the grid has penetrated part way through the latter and guiding the cake horizontally after its downward movement has been arrested, said rails being separated from each other by three or more of the openings in the grid, whereby to permit the cubes to drop freely from between the rails.

10. In a device for cutting up a solid mass of a frozen liquid into a large number of relatively small pieces of predetermined shape, a grid containing a plurality of openings having the shape of the pieces to be formed, which grid is constructed to support the full weight of said mass and is adapted to have said mass placed on top of the same, means for heating the grid, whereby to cause said mass to melt down under its own weight through the grid, and means directly beneath the grid for guiding said mass downwardly through the grid, whereby to pre-

vent it from listing appreciably toward one side or the other in its descent.

11. In a device for cutting up a solid mass of a frozen liquid into a large number of relatively small pieces of predetermined shape, a grid containing a plurality of openings having the shape of the pieces to be formed, which grid is constructed to support the full weight of said mass and is adapted to have said mass placed on top of the same, means for heating the grid, whereby to cause said mass to melt down under its own weight through the grid, and means for guiding said mass downwardly through the grid, whereby to prevent it from listing appreciably toward one side or the other in its descent, said guiding means being located beneath the grid and consisting of one or more vertically extending webs of substantially the same thickness as the overlying portions of the grid for sliding coaction with the sides of the melted-out slots in the mass.

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