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W. J. LINSTROMBERG

3,055,184

ICE MAKER

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2 Sheets-Sheet 1

Fig. 1.

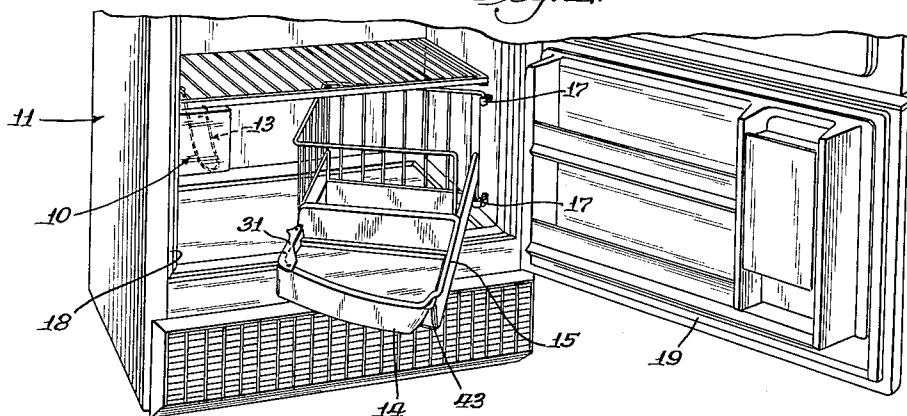
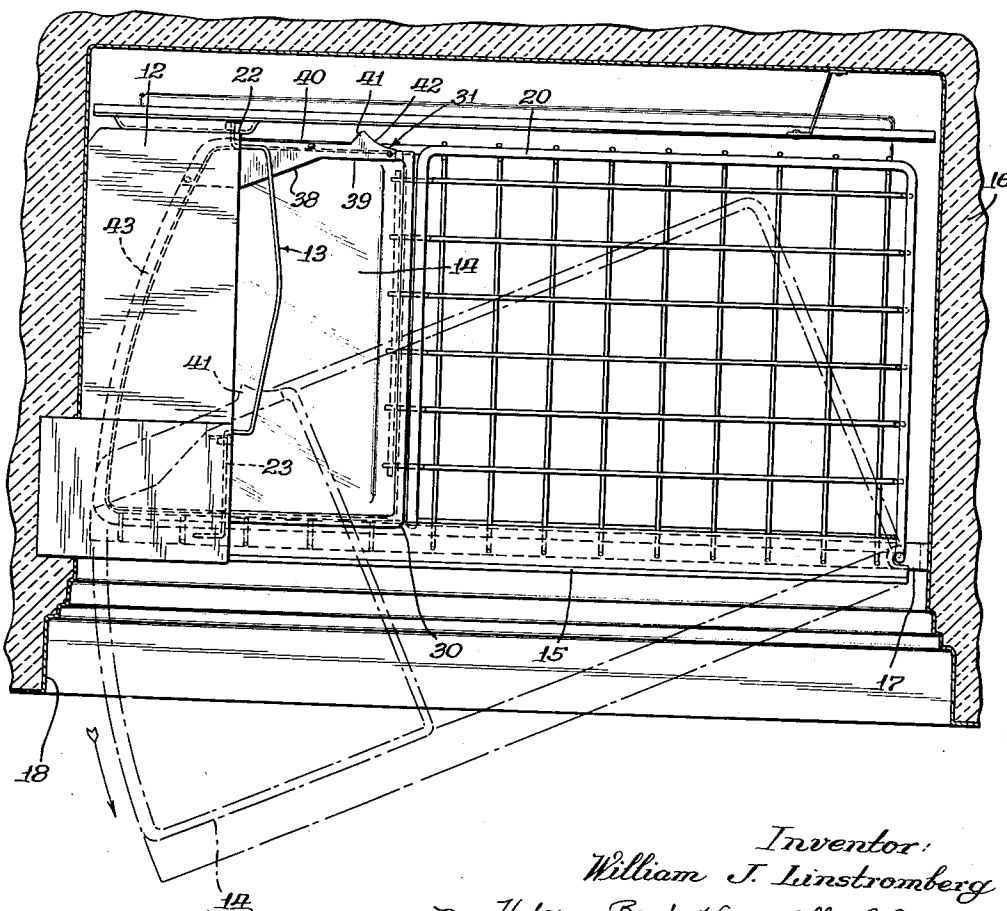


Fig. 2.



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2 Sheets-Sheet 2

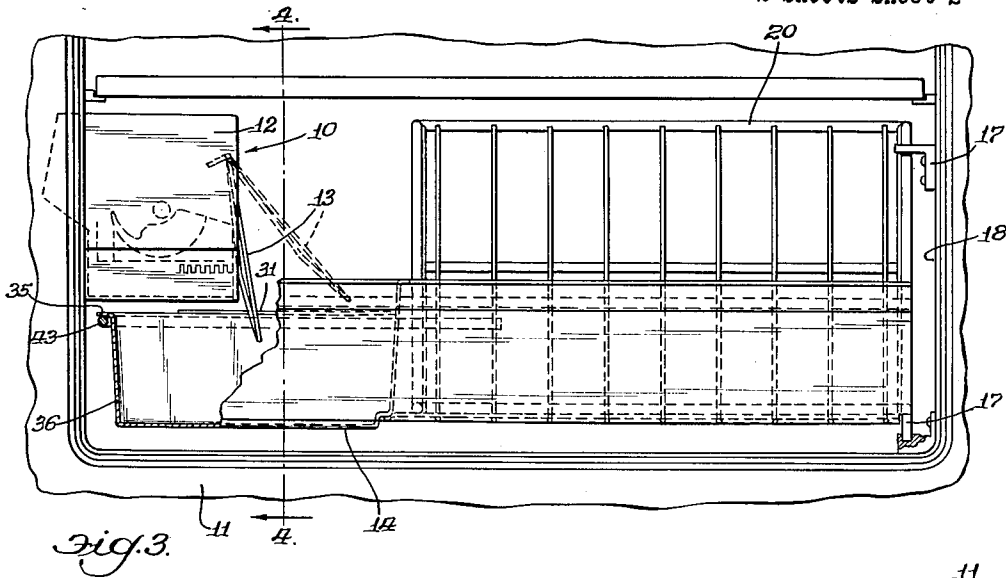
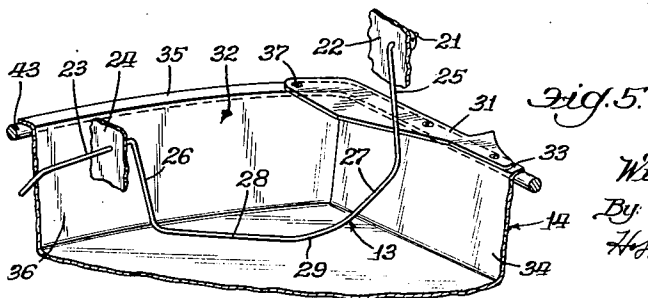
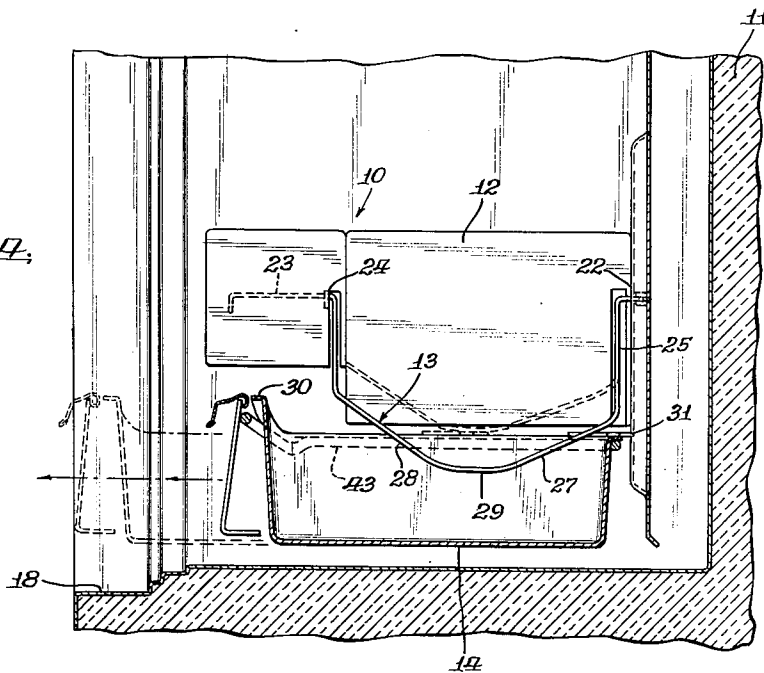


Fig. 4.



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1

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ICE MAKER

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This invention relates to ice body makers and in particular to ice body makers having a receptacle for collecting a plurality of ice bodies as they are formed.

In one form of ice body maker, the ice bodies are frozen serially in a suitable mold and ejected therefrom to a receptacle wherein they are collected. When the level of ice bodies in the receptacle reaches a predetermined level, it is desirable to discontinue further operation of the ice body maker. To this end, control means are associated with the ice body maker for extension downwardly into the receptacle to sense the level of the ice bodies therein. One form of such control means comprises a lever extending downwardly into the receptacle and pivotable about an upper end to have its lower end describe an arcuate path of movement into and through the upper portion of the receptacle space.

The present invention is concerned with the problem of providing, in an ice body maker provided with such control means, facilitated movement of the receptacle between a first position wherein the ice bodies are collected therein and a second position wherein the ice bodies in the receptacle are accessible to the user. The invention comprehends means for automatically guiding the control means of the ice body maker during such movement of the receptacle. Thus, a prime feature of the invention is the provision of new and improved apparatus for providing ice bodies.

Another feature of the invention is the provision of such apparatus having new and improved means for guiding the control means during movement of the receptacle means thereof between preselected positions.

A further feature is the provision of such apparatus wherein the guiding means cooperates with the control means in each of opposite directions of movement of the receptacle.

Still another feature of the invention is the provision of such apparatus having new and improved receptacle support means.

Other features and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings. Of the drawings:

FIGURE 1 is a fragmentary perspective view of a refrigerator having apparatus for providing ice bodies embodying the invention.

FIGURE 2 is a fragmentary enlarged plan view of the ice body apparatus carried in a portion of the refrigerator housing, a partially swung-out position of the receptacle being illustrated in broken lines.

FIGURE 3 is a fragmentary vertical elevation thereof with a portion of the receptacle broken away.

FIGURE 4 is a vertical section taken substantially along the line 4-4 of FIGURE 3.

FIGURE 5 is a fragmentary perspective view illustrating the association of the control means with the receptacle in the ice body collecting position.

In the exemplary embodiment of the invention as disclosed in the drawings, an apparatus generally designated 10 for providing ice bodies is illustrated as mounted in the freezer portion of a suitable refrigerator generally designated 11. Apparatus 10 includes an ice body maker 12 of well known construction such as shown in U.S. Patent 2,717,497 issued to Carl J. Knerr. The ice body maker is provided with a control element 13 extending downwardly into a receptacle 14 arranged to collect ice

2

bodies formed in the ice body maker 12 when the receptacle is in the collecting position subjacent the ice body maker as shown in full lines in FIGURE 2. As the ice bodies are formed by the ice body maker 12 and delivered serially to the receptacle 14, the level of the ice bodies in the receptacle rises. The control element 13 is operated periodically to swing through the upper portion of the receptacle to sense the level of the ice bodies therein and, when the level reaches a predetermined level, the engagement of the control element therewith precludes further operation of the ice body maker 12 until such time as the level is reduced as by the user withdrawing all or a portion of the ice bodies from the receptacle.

To facilitate the removal of the ice bodies from the receptacle, the receptacle is carried on a support generally designated 15 pivotally carried on the wall 16 of the refrigerator 11 by means of pivots 17. The receptacle is carried on the distal end of the support providing a substantial movement thereof as the support is pivoted, for facilitated accessibility to the ice bodies therein. In the accessible position, the receptacle is extended through the plane of the front opening 18 of the refrigerator normally closed by the door 19 thereof. The support further includes a basket 20 adapted to carry food stuffs and the like.

More specifically, control element 13 comprises a U-shaped wire bail having a first turned end 21 pivotally mounted in a support 22 and an opposite turned end 23 pivotally mounted in a support 24 defining a portion of the ice body maker 12. Extending from end 21 perpendicularly thereto is a first leg 25 and extending similarly from turned end 23 is a second leg 26. The bight of the bail is defined by a first transverse portion 27 extending from leg 25 and a second transverse portion 28 extending from leg 26 and joined at a mid-portion 29 defining a rounded angular juncture of the portions 27 and 28. The legs 25 and 26 are relatively long, permitting the transverse and mid-portions of the control element to be disposed suitably below the open top 30 of the receptacle 14 in their lowermost position thereof. As shown in full lines in FIGURE 4, the transverse portions 27 and 28 extend at a substantial angle to the pivotal axis of ends 21 and 23 to provide a facilitated guiding thereof by a cam 31 carried by the receptacle 14.

As best seen in FIGURES 1 and 5, the cam 31 comprises a plate secured to an outwardly turned flange on the side walls 32 of the receptacle defining the open top 30 thereof. More specifically, the cam is secured to the flange portion 33 on the rear wall 34 and the flange portion 35 on the left side wall 36 of the receptacle, by suitable means such as screws 37. As best seen in FIGURE 2, the cam includes a left front, rearwardly angled surface 38, a right front, transverse surface 39, a left rear, transverse surface 40, a middle rear, rearwardly angled surface 41 and a right rear, forwardly angled surface 42.

In the collecting position, illustrated in FIGURE 2 in full lines, the receptacle is disposed to permit the control element to extend freely downwardly to its lowermost position. During the operation of the control element to determine the level of the ice bodies in the receptacle, the element is swung in a counterclockwise direction (see FIGURE 3) to an upper position and then swung reversely back toward the lowermost position. When the level of the ice bodies reaches a preselected level wherein the return of the control element is limited to a preselected position, the operation of the ice body maker is automatically discontinued.

As the lower end of the control element is thusly normally disposed within the receptacle, it is necessary that this portion of the control element be raised sufficiently

to clear the rear wall 34 during movement of the receptacle between the collecting and accessible positions. This operation is automatically effected by the cam 31 as the receptacle is thusly moved. More specifically, as the receptacle is moved from the collecting position, cam surface 38 engages the control element transverse portion 27 to initiate a counterclockwise movement thereof. As the receptacle is swung further forwardly, the cam surface 39 engages transverse portion 27 further raising it. When the receptacle is swung sufficiently to dispose the cam 31 at mid-portion 29, the control element has been guided sufficiently upwardly to position the mid-portion 29 on the top surface of the cam, permitting the cam to move under the mid-portion. Further forward movement permits the transverse portion 28 of the control element to move against the right rear surface 42 of the cam, permitting the control element to pivot in the opposite direction back toward its lowermost position.

The receptacle 14 may now be swung completely free of the control element to the fully accessible position of FIGURE 1, permitting the user to withdraw ice bodies from the receptacle as desired. The flange 30 normally rests on a rod 43 at the outer end of the support 15. Thus if it is desired to remove all of the ice bodies from the receptacle the entire receptacle may be raised from the support and dumped as desired.

Upon completion of the removal of the ice bodies, the receptacle may be restored to the collecting position by swinging the support in the reverse direction. As the right rear surface 42 of the cam engages the control element transverse portion 28, the control element is pivoted upwardly until the cam is disposed subjacent the mid-portion 29 of the control element. Mid-portion 29 then rides over the top of the cam until the right front surface 39 of the cam is disposed below transverse portion 27. Further inward movement of the receptacle permits the transverse portion 27 to slide along cam surface 39 and cam surface 38 until, in the final position, the control element 13 is disposed once again in normal operative position with the transverse and mid-portions thereof disposed within the receptacle.

Basket 20 comprises a wire grid having an open front for insertion and removal of food stuffs, etc. As best seen in FIGURES 2 and 3, the basket extends the major portion of the width of the refrigerator interior. The movement of the receptacle 14 resulting from the pivotal movement of the support is very substantial as the effective pivot arm is relatively long. Resultingly, the recep-

tacle is readily movable to the fully accessible position of FIGURE 1.

Having described my invention as related to the embodiment shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within the spirit and scope as set out in the accompanying claims.

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows:

1. Apparatus for providing ice bodies comprising: means defining a chamber; an ice body maker in the chamber, a receptacle having an upright wall defining a space for collecting ice bodies; means supporting the receptacle in the chamber for movement of the receptacle along a predetermined path between a first position adjacent the ice body maker for collecting ice bodies therefrom and a second position providing access to ice bodies collected in the receptacle, said ice body maker being provided with a control element having a lower end defined by a pair of transverse portions inclined upwardly from a juncture thereof, said lower end being movable between one position within said space and another position without said space; and a cam carried by said receptacle and having a front camming surface engaging one transverse portion to guide said lower end to said another position out of the path of movement of the wall to permit the wall to pass said control element as the receptacle is moved from said first position to said second position thereof, and having a rear camming surface engaging the other transverse portion to guide said lower end to said another position out of the path of movement of the wall to permit the wall to pass said control element as the receptacle is moved from said second position to said first position thereof.

2. The apparatus of claim 1 wherein said control element comprises a wire bail, said lower end thereof comprising the bight of the bail.

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