

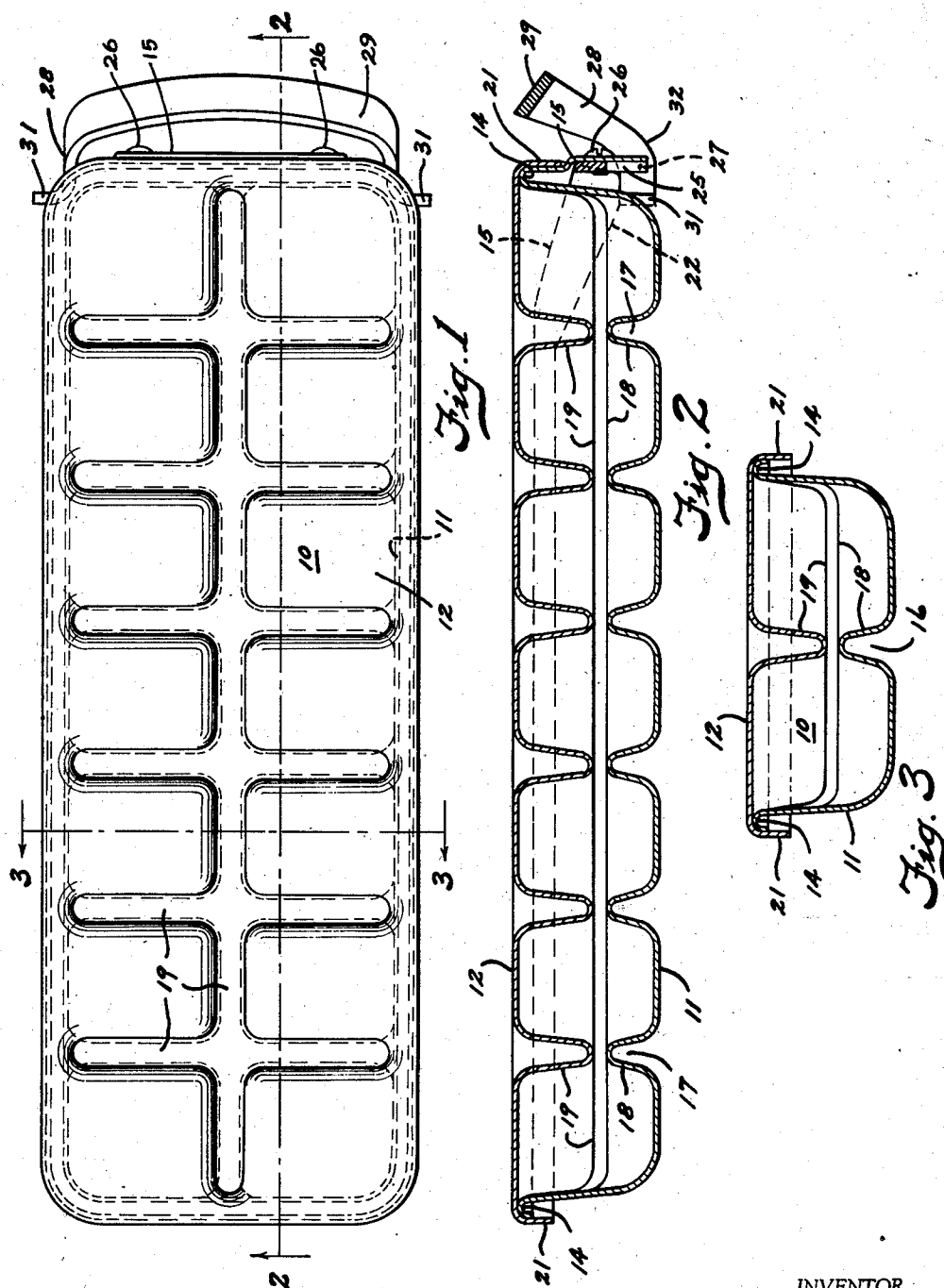
Feb. 13, 1940.

D. H. REEVES
REFRIGERATING APPARATUS

2,190,610

Filed July 24, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

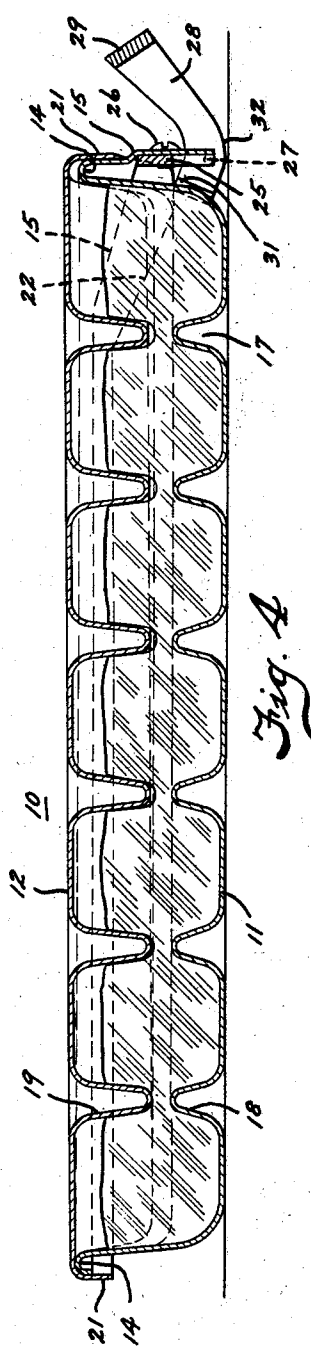


Fig. 4

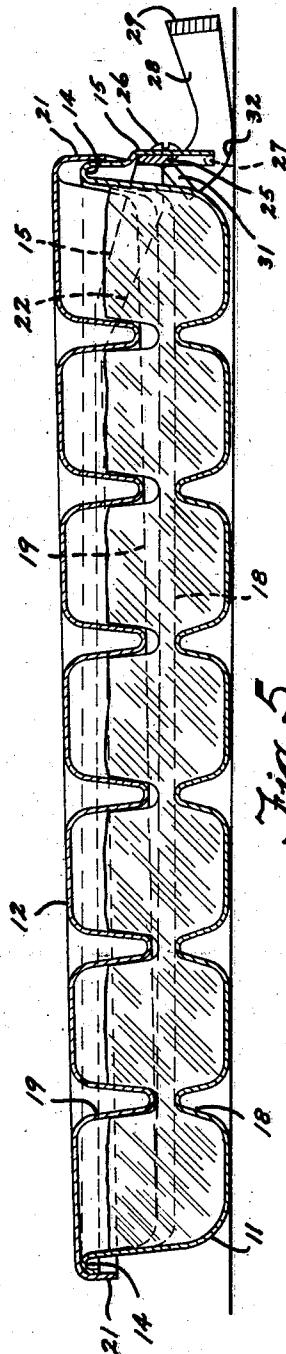


Fig. 5

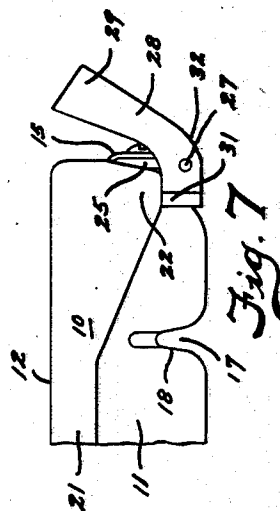


Fig. 6

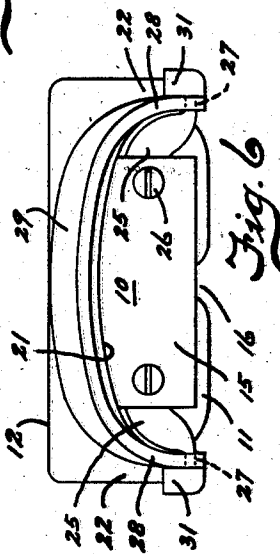


Fig. 7

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UNITED STATES PATENT OFFICE

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REFRIGERATING APPARATUS

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Application July 24, 1937, Serial No. 155,503

3 Claims. (Cl. 62—108.5)

This invention relates to refrigeration and particularly to ice trays for use in domestic refrigerators.

5 An object of my invention is to provide an improved metallic ice tray unit for refrigerators.

Another object of my invention is to provide an ice tray having a cover thereover with manually operable means which when actuated will separate the cover from the tray and will also elevate 10 the tray relative to its freezing support.

Another object of my invention is to provide a single means movable in one direction of motion for moving a cover from an ice tray and for lifting the tray from its support on a cooling element to thereby facilitate harvesting of ice blocks 15 from the tray unit.

A further and more specific object of my invention is to provide a freezing unit comprising a tray member and a cover member therefor both 20 of which have means cooperating to form walls of a plurality of ice molds therein with a handle movably secured to the tray member and manually operable to engage the unit support to separate the unit from its support and to move the 25 cover together with its ice mold-forming walls relative to the tray for permitting flexing of the tray to release ice blocks therefrom.

Further objects and advantages of the present invention will be apparent from the following 30 description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a top plan view of a freezing unit having my invention embodied therein; 35

Fig. 2 is a longitudinal vertical sectional view of the unit shown in Fig. 1 and is taken on the line 2—2 thereof;

Fig. 3 is a transverse vertical sectional view of the freezing unit taken on the line 3—3 of Fig. 1; 40

Fig. 4 is a view similar to Fig. 2 showing the unit in position on a freezing support and disclosing the unit cover moved by a handle relative to the unit tray and ice therein;

Fig. 5 is a view similar to Fig. 4 showing the unit cover separated from the unit tray and illustrating the tray elevated relative to its support by the handle; 45

Fig. 6 is an end view of the freezing unit; and 50 Fig. 7 is a side view of the handle end of the unit.

Referring to the drawings, for illustrating the present invention, I have shown in Fig. 1 thereof a freezing unit generally represented by the reference character 10 and adapted to be placed in 55

or on a freezing support such as a shelf of a cooling element in a household refrigerating apparatus. The unit 10 comprises a metal tray member 11 and a metal cover member 12 therefor. The tray 11 has a rim 14 (see Figs. 2 and 3) 5 formed around its upper edge portion and the metal of the tray is extended downwardly from the rim 14 at the front end of tray 11 as at 15 for a purpose to be presently described. The bottom wall of tray 11 is indented lengthwise 10 as at 16 (see Fig. 3) and crosswise as at 17 (see Fig. 2) to form upstanding partitions or walls 18 within the tray. The upstanding tray walls 18 form part of a plurality of walls that divide the interior of the tray into a plurality of compartments or molds for freezing water into ice 15 cubes or blocks for table use. The cover 12 is stamped from sheet metal and has depending ribs 19 struck therefrom in positions corresponding to the positions of the indentations 16 and 17 20 which form the walls 18 in tray 11. Cover 12 is provided with a depending edge flange 21 and this flange fits over the rim 14 provided on tray 11. The flange 21 on cover 12 has a depending portion 22 formed at the front of the unit (see 25 Figs. 6 and 7) which fits over a part of the depending portion 15 of rim 14 on tray 11 and straddles the outwardly projecting part of this rim portion 15. It will be noted that when cover member 12 is in normal position on tray member 11 the ribs or walls 19 formed in cover 12 are in 30 vertical alignment with and are spaced a short distance from the ribs or walls 18 formed in tray 11. The spacing of ribs 19 from ribs 18 provides open communication between all the molds 35 formed thereby within the unit 10. This permits water placed in the plurality of molds of unit 10 to attain a common level within the tray 11. The indented walls 18 and rim 14 of tray 11 adds rigidity to the metal tray but does not 40 render it too rigid to be manually flexed in the manner and for a purpose to be hereinafter described. Likewise walls 19 and flange 21 formed in cover 12 adds rigidity to this closure or cover member. 45

It is desired to provide a handle for the freezing unit 10 to facilitate handling thereof. Therefore I secure a heavy metal piece 25, by screws 26, to the portion 15 extending downwardly and outwardly from rim 14 at the front end of tray 11. Metal piece 25 has outwardly extending and preferably short rounded leg or end portions 27. Each end portion 27 on metal piece 25 fits into a hole provided in each leg 28 of a handle 29 and 50 serve to pivotally mount the handle to the tray 55

11. The end of each leg 28 adjacent their mounting point 27 is bent outwardly as at 31 to provide a bearing surface for engaging the bottom edge of the downwardly extending portion 22 formed from flange 21 on cover 12 at the sides of the unit 10. Each leg 28 of handle member 29 is also provided with a camming surface 32 located on the opposite side of pivotal mounting 27 from the bent-out bearing surface portion 31 thereof.

10 The purpose of the cam surface 32 will be hereinafter explained. When the cover 12 is normally resting upon tray 11 the bottom edge of flanged portion 22 engages the bent-out bearing surface portion 31 of handle member 29 to retain the handle in the position shown in Figs. 1, 2, 6 and 7 of the drawings.

In order to freeze water in the freezing unit 10 the tray 11 is partially filled with water and the cover 12 is placed upon the tray to close same.

20 The ribs 19 formed on cover 12 cooperate with the ribs 18 formed on tray 11 to provide a plurality of molds within the tray. The spacing of ribs 19 vertically from ribs 18 together with a relatively loose fit of cover 12 upon tray 11 permits the body of water within the plurality of molds to attain a common level within the tray. The unit 10 is then placed upon a freezing support of an evaporator or cooling element of a refrigerating system for causing the contents of the unit to be frozen. In order to harvest ice blocks from the unit 10 handle 29 thereof is moved downwardly about its pivotal mountings 27 and the bearing surface portions 31 thereof are thereby moved upwardly. The engagement of the bearing surface portions 31 of handle 29 with the bottom edge of the extended flanged portion 22 formed on cover 12 causes the cover to be elevated relative to the tray 11. This movement of handle 29 is illustrated in Fig. 4 of the drawings and it will be noted that the cover 12 together with its integral ribs or walls 19 is raised out of its normal position relative to tray 11. As before stated the tray 11 is not entirely filled with water and for this reason the top of the ice is spaced from the under side of the flat top portion of cover 12 and bonds only to the lower portions of ribs 19. Since the ice bonds to the ribs 18 of tray 11 and also to the bottom wall thereof, there is a greater bondage of ice to the tray than to the cover inherent in the unit disclosed. Therefore, it is obvious that force imparted between tray 11 and its cover 12 such as by movement of handle 29 as described and as illustrated in Fig. 4 moves the cover relative to the tray.

55 Further downward movement of handle 29 causes the cam surfaces 32 formed thereon to engage the support for unit 10 and to elevate the tray 11 relative to this support. Thus the cover 12 is elevated relative to tray 11 and the tray is then elevated relative to its support to thereby break the bond between the ice in tray 11 and the cover 12 and to also break the bond between the tray and its freezing support. Unit 10 is then removed from its support and the cover 12 elevated away from the tray 11. Thereafter the ends of tray 11 are grasped and the tray is twisted to cause flexing thereof which flexing breaks the plurality of ice blocks apart at the apex of walls 18 and also breaks the blocks loose from the walls 18 of tray 11 to permit same to be harvested by the fingers of the operator or by ice tongs. The manually actuated handle 29 is designed to be operated with a minimum of force and it will be seen that this handle performs a double function to thereby eliminate the difficulty ordinarily encountered in

harvesting ice from a freezing unit of the type illustrated.

A unit of the type illustrated and comprising a cover for the tray is preferred by some users of mechanically refrigerated refrigerator cabinets for several reasons. The provision of a cover for the tray is preferred partly because it shields the contents of the tray and prevents somewhat contaminated water from entering the tray during defrosting of the cooling element of the refrigerating system. Thus the necessity of removing the trays during the act of defrosting the cooling element is eliminated and this is a feature particularly desirable in present-day refrigerators wherein defrosting of the cooling element is caused to occur automatically at certain intervals of time. The cover also prevents circulation of relatively warm air in contact with the contents of the tray to thereby cause faster freezing thereof.

In view of the foregoing it will be seen that I have provided an improved freezing unit which is strong and durable, of simple inexpensive construction and efficient. The entire unit is constructed of metal to thereby retain the fast freezing characteristics of metal tray and grid combinations. By utilizing the tray handle to both break an ice bond between the tray and its support and to separate the cover and its integral grid-forming portions from the tray and ice therein I have provided an improved device which greatly facilitates harvesting of ice blocks therefrom.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A freezing unit adapted to be placed in or on a freezing support of a cooling element of a refrigerating system comprising in combination, a tray, a cover for said tray, a handle having a leg pivotally mounted upon the tray on an axis transverse thereof to permit movement of the handle outwardly and downwardly of said tray, said cover having a portion thereof extending over the rim of said tray in the vicinity of said handle leg, and the leg of said handle having a cam portion formed integral therewith on one side of its pivotal mounting and another cam portion formed integral therewith on the opposite side of its pivotal mounting, one of said cam portions being constructed and arranged to engage the support of said tray and the other of said cam portions being constructed and arranged to engage said extending portion of said cover whereby the handle upon movement thereof serves to provide a single lever for breaking an ice bond between the tray and its freezing support and for moving said cover upwardly relative to said tray.

2. A freezing unit adapted to be placed in or on a freezing support of a cooling element of a refrigerating system comprising in combination, a tray, means cooperating with the tray and having portions thereof dividing the interior of said tray into a plurality of molds, a handle having a leg pivotally mounted upon the tray on an axis transverse thereof to permit movement of the handle outwardly and downwardly of said tray, said means having a portion extending over the rim of said tray in the vicinity of said handle leg, and the leg of said handle having a cam portion formed integral therewith on one side of its pivotal mounting and another cam portion

formed integral therewith on the opposite side of its pivotal mounting, one of said cam portions being constructed and arranged to engage the support of said tray and the other of said cam portions being constructed and arranged to engage said extending portion of said means whereby the handle upon movement thereof serves to provide a single lever for breaking an ice bond between the tray and its freezing support and for moving said means upwardly relative to said tray.

3. A freezing unit adapted to be placed in or on a freezing support of a cooling element of a refrigerating system comprising in combination, a tray, a cover for said tray, means on said cover dividing the interior of said tray into a plurality of molds, a handle having a leg pivotally mounted upon the tray on an axis transverse thereof to

permit movement of the handle outwardly and downwardly of said tray, said cover having a portion extending over the rim of said tray in the vicinity of said handle leg, and the leg of said handle having a cam portion formed integral therewith on one side of its pivotal mounting and another cam portion formed integral therewith on the opposite side of its pivotal mounting, one of said cam portions being constructed and arranged to engage the support of said tray and the other of said cam portions being constructed and arranged to engage said extending portion of said cover whereby the handle upon movement thereof serves to provide a single lever for breaking an ice bond between the tray and its freezing support and for moving said cover upwardly relative to said tray.

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