

Dec. 10, 1935.

C. G. HARBORDT

2,023,923

FREEZING TRAY

Filed Aug. 26, 1933

2 Sheets-Sheet 1

Fig. 1.

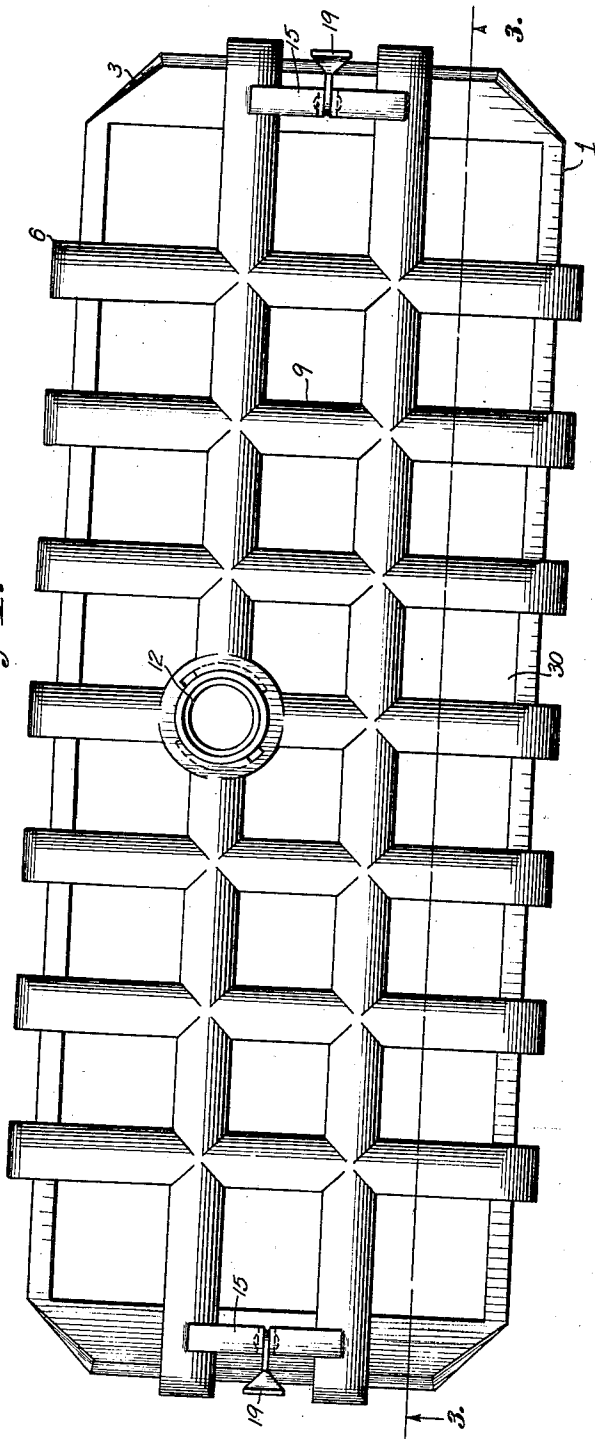


Fig. 4.

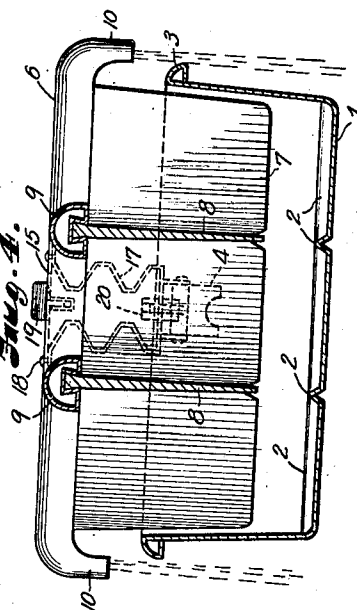
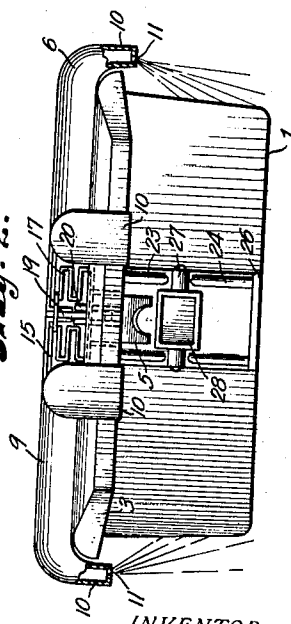


Fig. 2.



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2 Sheets-Sheet 2

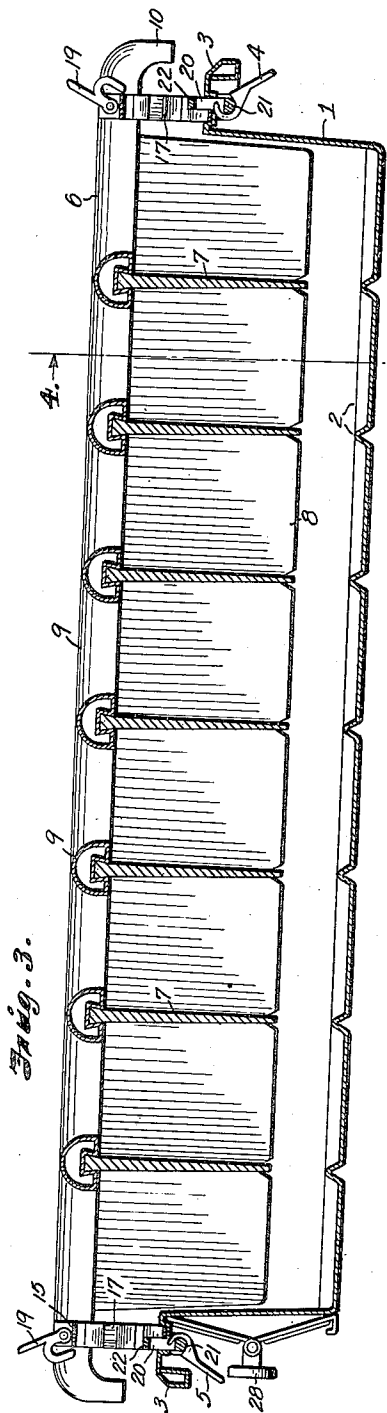


Fig. 6.

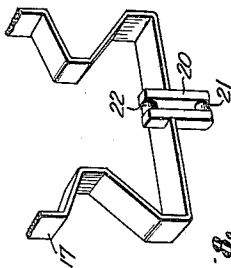


Fig. 8.

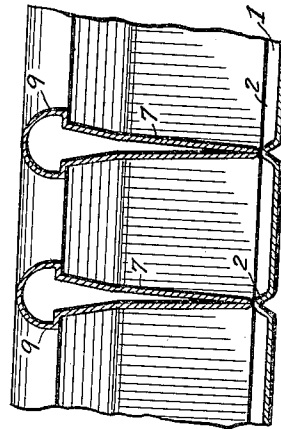


Fig. 7.

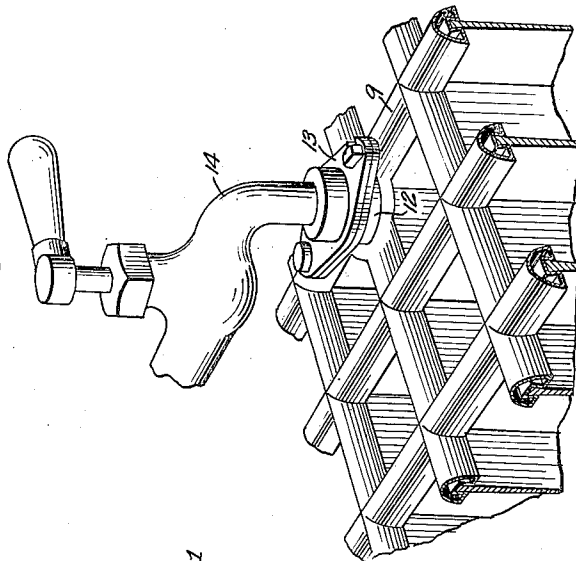
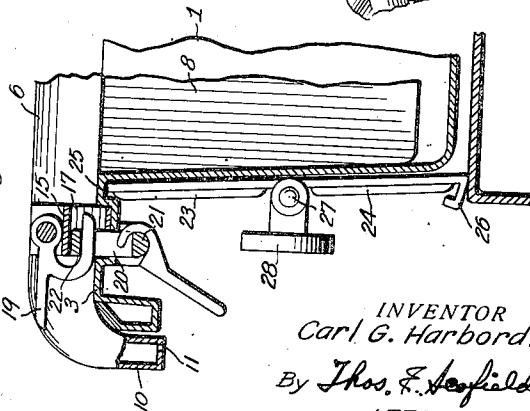


Fig. 5.



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FREEZING TRAY

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Application August 26, 1933, Serial No. 686,969

6 Claims. (Cl. 62-108.5)

My invention relates to a freezing tray, and more particularly to a freezing tray, in which ice cubes are adapted to be made in those mechanical refrigerators in common domestic use, so constructed as to enable a ready removal of the cubes of ice formed, in an expeditious manner.

Freezing trays for forming cubes of ice in mechanical refrigerators used in the home are well known. In order to obtain the ice cubes formed in these trays in usable form, it is necessary to remove the tray from the freezing compartment. Frequently frost formed by the freezing of precipitated moisture renders the removal difficult. After the tray has been removed it is necessary to melt the ice within the tray to a sufficient extent to enable the divider which forms the cubes to be removed and to separate the cubes from the divider itself. This operation is usually tedious, resulting in a considerable loss of ice due to melting. The operation is usually conducted in a sink and frequently the ice cubes will drop therein necessitating their being washed off before use. This entails a further loss of ice.

One object of my invention is to provide an ice tray from which the ice cubes may be removed in an efficient and expeditious manner.

Another object of my invention is to provide a freezing tray from which the ice cubes may be removed with a minimum loss of ice due to melting.

A further object of my invention is to provide an ice tray which may be readily removed from the freezing compartment.

Further and other objects of my invention will appear from the following description.

In the accompanying drawings, which form part of the instant specification, and which are to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views.

Fig. 1 shows a plan view of an ice tray embodying one mode of carrying out my invention.

Fig. 2 is an end view of the freezing tray shown in Fig. 1.

Fig. 3 is a sectional view of the freezing tray taken along the line 3-3, Fig. 1.

Fig. 4 is a sectional view of the freezing tray taken along the line 4-4, Fig. 3.

Fig. 5 is a detail sectional view on an enlarged scale.

Fig. 6 is a fragmentary perspective view of the spring used in my device.

Fig. 7 is a detail perspective view showing one manner of securing the thawing manifold to a water supply.

Fig. 8 is a detail sectional view showing a modified form of construction.

In general, my invention contemplates the provision of a divider made of heat conducting

metal provided with a thawing manifold connected in heat exchange relation with the divider. Means are provided for connecting the thawing manifold to a water supply. The manifold extends over the top of the tray and terminates in downwardly extending conduits provided with nozzles adapted to jet the thawing water against the sides of the tray. Springs are positioned between the divider and the tray normally urging them apart. The springs are assembled in compressed position and so held by suitable latches. A toggle joint is fitted at one end of the tray adapted to break the tray loose from the freezing compartment of a domestic refrigerator.

More particularly, referring now to the drawings, a freezing tray of pan 1 may be of any suitable construction, and is fitted with corrugations 2 in the bottom thereof, defining or corresponding to the cubes of ice to be formed within the tray. The tray is fitted with a lip 3 which extends therearound. The end portions of the lip are provided with pivoted latches 4 and 5. A divider 6 is comprised of partition members 7 extending transversely, and partition members 8 extending longitudinally of the tray. A manifold 9 formed by intercommunicating hollow members is secured to the tops of the dividing members, as can readily be seen by reference to Fig. 3.

The partition members 7 and 8 are made of any suitable heat conducting metal. The joints between the partition members and the manifold are of a heat exchanging nature. It is to be understood, of course, that any suitable type of joint may be employed.

In the modification shown in Fig. 8, the partition members are hollow and communicate with the manifold, as can be readily seen by reference to Fig. 8. The manifold members extend beyond the sides of the pan 1 as can readily be seen by reference to Fig. 1, and are provided with downwardly extending members 10 terminating in nozzles 11. At a suitable portion in the manifold I provide a quick connection 12 adapted to be connected to an inter-fitting member 13 which may be secured to a faucet 14, as may be seen by reference to Fig. 7. When the manifold is connected to the faucet and considerable pressure is used, the water will flow through the manifold and out of the nozzles 11 and be jetted against the sides and ends of the tray 1, as can be seen by reference to Fig. 2. When the divider is spaced from the tray in the position shown in Fig. 4, the supply of water is decreased so that it will be allowed to fall vertically downward as shown in Fig. 4.

At each end of the manifold, I secure bridge members 15 to which are secured springs 17 by rivets 18, or in any other suitable manner. Latches 19 are carried by bridge members 15.

The lower end of the spring is provided with a catch member 20, as can readily be seen by reference to Fig. 6. Latch members 4 and 5 are pivoted to the tray as pointed out above. Latch members 4 and 5 are adapted to coact with the lower portions 21 of the catches 20, in order to secure the tray to the spring. When the spring is compressed by pushing down upon the dividing member, it may be secured in this position by means of latches 19. The assembly will then be in the position shown in Fig. 2. It will be observed that the divider is secured to the spring through bridge members 15 which are secured to the manifold. The tray may be secured to the lower portion of the spring by means of latches 4 and 5. The spring is held in compressed position by means of latches 19 coacting with the upper portions 22 of the catches 20.

At one end of the tray I provide a toggle joint comprising members 23 and 24 having feet 25 and 26, and a hinged knee 27 provided with a push member 28. Normally the toggle joint occupies the position shown in Fig. 3. It will be observed by pushing member 28 that the toggle joint will be made to assume the position shown in Fig. 5.

In operation, the tray being empty, the divider is placed in the tray where it will assume the position shown in Fig. 3. The lower portion 21 of the catch members 20 will extend through suitable openings in the lip 3. Catches 4 and 5 are then moved to the positions shown in Fig. 3 to secure the lower portions of the spring 17 to the tray. The divider is then pushed downwardly to the position shown in Fig. 2 and catches 19 operated to hold it in this position. The tray is then filled with water through any one of the interstices 30 between the manifold. It is then put in the freezing compartment of a refrigerator. When it is desired to obtain ice cubes, ice having been formed in the tray, push member 28 is operated. This obviously will break the tray loose from the freezing compartment. The tray is then removed and secured to a faucet as shown in Fig. 7. The latches are operated to disengage the upper portions 22 of the catch member 20. The water is then turned on with considerable force causing jets to strike the sides and ends of the tray, thus thawing the periphery of the ice assembly from the tray. Meanwhile springs 17 tend to push the tray away from the divider. When sufficient thawing has been accomplished, the springs will exert their force and the assembly will assume the position shown in Figs. 3 and 4, suspended in the meantime from the faucet to the manifold, to the springs 17, the tray being secured to the springs through catches 20. The ice cubes will be held in the dividers due to the fact that they will not thaw as quickly as the peripheral edges of the cubes. The water supply is then lessened so that jets will no longer be formed, but the water will trickle downwardly as shown in Fig. 4. The water supplies heat to the dividers which enables the ice cubes to be melted therefrom. As they melt they drop into the corrugated sectors formed by corrugations 2 in the bottom of the tray, each ice cube being held out of contact with the other. After all the ice cubes have been freed from the divider, catches 4 and 5 are operated and a tray-full of individual ice cubes held in separated position, will be available for any use desired.

It will be seen that I have accomplished the

objects of my invention. I have provided a handy tray assembly enabling the ready removal of ice cubes, with the minimum amount of ice melting, in an expeditious manner. I am enabled to remove an ice tray from a freezing compartment very simply, inasmuch as a toggle joint is adapted to exert a tremendous mechanical advantage. Due to the large heat exchange surface, I am enabled to remove ice from trays very rapidly. It will be further noted that the rapidity of removal is aided by the fact that the thawing medium is directed to the critical points.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

1. A freezing tray, comprising in combination a pan adapted to receive water to be frozen, a divider adapted to be positioned within said pan for forming cubes of ice, a spring interposed between said pan and said divider normally urging them apart, a latch for securing said spring to said pan and a latch for securing said divider to said pan when said spring is compressed.

2. A freezing tray comprising in combination a pan adapted to receive water to be frozen, a divider positioned in said pan, a spring interposed between said divider and said pan normally urging them apart and a latch for removably securing said divider to said pan against the action of said spring.

3. A freezing pan comprising in combination a tray adapted to receive water to be frozen, a divider positioned in said tray for forming cubes of ice, intercommunicating hollow members secured to the top of the divider in heat exchange relation therewith, said hollow members extending downwardly over the sides of the tray and terminating in nozzles, means for connecting said hollow members to a water supply whereby water may be passed therethrough to furnish heat to said dividers and be jetted against the sides of the tray from said nozzles.

4. A freezing pan as in claim 3 having springs positioned between said tray and said divider and latches for removably securing said divider to said tray.

5. A freezing pan as in claim 3 having a spring secured to said divider, a catch member carried by said spring, a latch for securing said tray to said catch member, and a latch carried by said divider for holding the spring in compressed position.

6. A freezing pan comprising in combination a tray adapted to receive water to be frozen, a divider positioned in said tray for forming cubes of ice, intercommunicating hollow members secured to the top of said divider in heat exchange relation therewith, means for connecting said hollow members to a water supply whereby water may be passed therethrough to furnish heat to said dividers by heat exchange.

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