April 14, 1936. J. N. SALER 2,037,519

LIQUID CONGEALING APPARATUS

Filed July 20, 1935

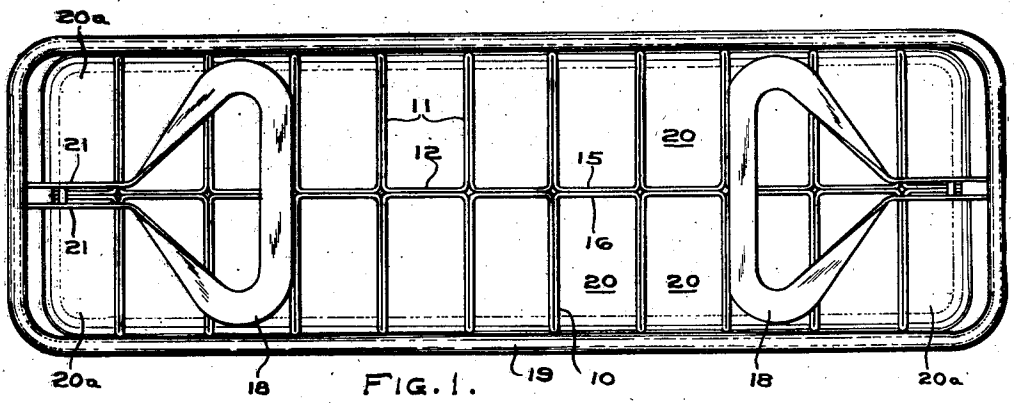


FIG. 1.

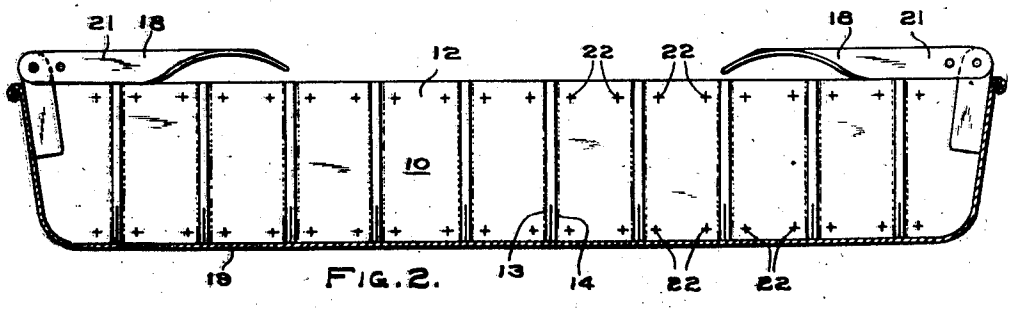


FIG. 2.

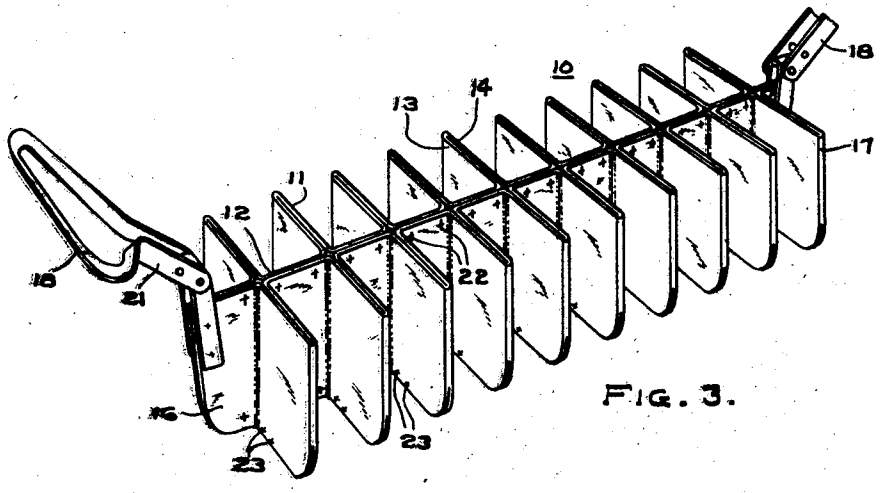


FIG. 3.

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LIQUID CONGEALING APPARATUS

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Application July 20, 1935, Serial No. 32,357

7 Claims. (Cl. 62—108.5)

My invention relates to liquid congealing apparatus, and particularly to liquid congealing apparatus for producing ice cubes for domestic use.

It is an object of my invention to provide an improved flexible grid structure from which ice cubes may be readily removed without the application of heat.

It is another object of my invention to provide an improved grid structure for dividing an ice container into cells for forming ice cubes, which grid structure is readily removable by mechanical ejection from the ice container, after the liquid has been frozen therein.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a top view of my improved liquid congealing apparatus;

Fig. 2 is an elevational sectional view of the container and flexible grid structure shown in Fig. 1; and,

Fig. 3 is a perspective view of the grid structure shown in Figs. 1 and 2.

The general form of the grid structure designated by the numeral 10 is described and claimed in the copending application of G. A. Leyner et al., Serial No. 698,513, filed November 17, 1933 for Ice tray and grid and assigned to the Westinghouse Electric & Manufacturing Company. The grid structure 10 comprises sheet metal material bent and folded to form transversely-extending wall members 11 and a longitudinally-extending wall member 12. The transversely-extending wall members are formed of two sheets of metal 13 and 14, and the longitudinal wall member is likewise formed of two sheets of metal 15 and 16. The sheets 13 and 14 of the transverse wall members are connected at 17 at their outer ends, preferably by folding the sheet metal material, and are turned outwardly from each other at their inner ends and fastened to one or the other of the sheets 15 and 16 of the longitudinal wall member 12. The grid structure 10 is disposed in a container 19 for water to be frozen, and divides the container into a plurality of cells 20 extending in two rows between four corner cells 20*a*.

Mechanical ejecting means is provided for removing the grid structure from the container 19 and for facilitating removal of frozen liquid from the grid structure. The mechanical ejecting means comprises a pair of lever members 18 fastened at each end of the longitudinal wall member 12, and having portions 21 arranged to bear against the edges of the container 19 when the levers 18 are rotated outwardly, thus exerting force to break the bond between the frozen liquid and the container 19. The grid 10 and frozen liquid are, therefore, readily removable from the container 19 without the application of heat. After the frozen liquid and flexible grid 10 are removed from the container 19, the grid is flexed by applying force to the levers 18 to remove the frozen liquid from the grid. Such an ejecting means is described and claimed in my copending application, Serial No. 17,220, filed April 19, 1935, for Liquid congealing apparatus, and assigned to the Westinghouse Electric & Manufacturing Company.

I have found in a grid structure having a longitudinal wall formed of two detached sheets of material disposed contiguously to each other, that when force is applied to the lever members 18 to break the bond between the frozen liquid and the container 19, the longitudinal wall may tend to spread near the middle thereof. If this occurs, some of the ice cubes in the cells 20 may stick to the side walls of the container 19, making it difficult to remove the grid and ice cubes from the container. In order to obviate this difficulty, the two sheets 15 and 16 of the longitudinal wall member 12 are fastened together, preferably by spot-welding at 22 at the corners of each cell, as shown in Figs. 2 and 3. The spot-welds 22 prevent the sheets of the longitudinal wall 12 from spreading, thus ensuring removal of the grid and frozen liquid from the container 19 when the levers 18 are rotated to break the bond between the frozen liquid and the container 19.

The sheets 13 and 14 of the transverse wall members 11 are also preferably fastened together by spot-welds shown at 23 in order to impart stiffness in a vertical direction to the grid member. This construction is fully described and claimed in my copending application, Serial No. 710,611, filed February 10, 1934, for Ice freezing device, and assigned to the Westinghouse Electric & Manufacturing Company and further detailed description is, therefore, deemed unnecessary.

Although the sheets 15 and 16 of the longitudinal wall member 12 are fastened together by spot welding at 22, nevertheless the longitudinal wall member is flexible so that ice cubes may be readily removed therefrom. Likewise, the spot welds 23 on the sheets 13 and 14 of the longitudinal wall member do not impair the flexibility of the grid except in an upward direction.

From the foregoing, it is apparent that I have provided liquid congealing apparatus in which the

dividing wall and ice cubes are readily removable from the congealing container without the application of heat and in which the ice cubes are readily removable from the flexible grid structure after the ice cubes and the grid structure have been separated from the container.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into a plurality of cells, said grid structure comprising transversely and longitudinally-extending flexible wall members, both formed of two thin sheets of metal disposed contiguously to each other, and fastening means between respective sheets of said longitudinally-extending wall member.

2. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into four corner cells and a series of intermediate cells disposed in rows and extending between the corner cells, said grid structure comprising transversely-extending wall members and a longitudinally-extending wall member, both said transversely and longitudinally-extending wall members being formed of two thin sheets of metal disposed contiguously to each other, and fastening means between respective sheets of said longitudinally-extending wall member, said longitudinally-extending wall being flexible to facilitate removal of frozen liquid therefrom.

3. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into four corner cells and a plurality of intermediate cells surrounded on three sides by grid wall members, said grid structure comprising a plurality of transversely-extending wall members and a longitudinally-extending wall member, both said transversely and longitudinally-extending wall members being formed of two sheets of metal disposed in abutting relation with respect to each other, and fastening means between the abutting sheets of both the transversely and longitudinally-extending wall members.

4. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into four corner cells and a series of intermediate cells disposed in rows and extending between the corner cells, said grid structure comprising a plurality of transversely-extending wall members and longitudinally-extending wall member, both said transversely and longitudinally-extending wall members being formed of two sheets of metal disposed contiguously to each other, and fastening means between respective sheets of said longitudinally-extending wall member, said fastening means comprising spot-welds between said respective sheets.

5. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a grid structure for dividing the container into four corner cells and a plurality of intermediate cells surrounded on three sides by grid wall members, said grid structure comprising a plurality of tranversely-extending wall members and a longitudinally-extending wall member, both said transversely and longitudinally-extending wall members being formed of two sheets of material disposed contiguously to each other, and fastening means between respective sheets of said longitudinally-extending wall member, said fastening means comprising spot-welds at the corners of said cells between said respective sheet.

6. In a liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into a plurality of cells, said grid structure comprising transversely and flexible longitudinally-extending wall members both formed of two sheets of metal disposed contiguously to each other, ejecting means for breaking the bond between the frozen liquid and the container, and fastening means between respective sheets of said longitudinally-extending wall member to prevent said sheets from separating upon operation of said ejecting means.

7. In liquid congealing apparatus, the combination of a container for liquid to be frozen, a flexible grid structure for dividing the container into a plurality of cells, said grid structure comprising transversely-extending wall members and a longitudinally-extending wall member, said longitudinally-extending wall member being formed of two sheets of metal disposed in abutting relation, ejecting means for breaking the bond between the frozen liquid and the container, and fastening means between respective sheets of said longitudinally-extending wall member to prevent separation of the sheets upon operation of said ejecting means.

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