PARTITION ELEMENT FOR FREEZING TRAYS

Filed Dec. 18, 1936

Inventor:
Leonard W. Atchison,

by
Harry E. Jursavy
His Attorney.
My Invention relates to freezing trays for refrigerating machines and more particularly to partition elements for such trays.

It is an object of my invention to provide an improved removable partition element of rugged construction embodying an arrangement for applying heat to the ice cubes and freezing tray to thaw the frozen bond therebetween in a simple and efficient manner. I accomplish this by utilizing a partition element remotely carried by a freezing tray in good thermal contact therewith. The partition element comprises spaced apart walls having a substantially annular configuration and formed of a folded sheet of metal, the edges of the sheet being rigidly secured together to define a tubular passage in the partition element, which tubular passage is employed for applying heat to the walls of the partition element.

Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention reference may be had to the accompanying drawings in which Fig. 1 is a perspective view of a freezing tray containing a partition element embodying my invention; Fig. 2 is a perspective view of the partition element shown in Fig. 1; Fig. 3 is an enlarged sectional view of a portion of the end of the partition element shown in Fig. 2; Fig. 4 is an enlarged fragmentary end elevation of the partition element shown in Fig. 2; and Fig. 5 is a fragmentary side elevation, partly in section, of a modified form of the partition element shown in Figs. 1 and 2.

Referring to the drawing, in Fig. 1 I have shown a shallow rectangular metal freezing tray containing a removable partition element. The partition element includes spaced apart walls and 13 formed of a single sheet of metal of high thermal conductivity such as aluminum or copper folded at 14. The marginal ends of the sheet are rigidly secured together preferably by the fusion of metal, that is, by line welding, soldering or the like as best shown in Figs. 2 and 3. The spaced apart walls 12 and 13 of the partition element are of substantially sinusine configuration and include a plurality of longitudinal and transverse extending portions 16 and 17, respectively. The dimensions of the partition element 11 are such that the same snugly fits into the freezing tray 10 and the longitudinal and transverse portion of the partition element cooperate with the freezing tray to form a plurality of ice block molds.

The marginal edges 15 of the sheet extending along the transverse portions of the walls at each end of the partition element are extended somewhat and curved inwardly to provide supporting feet 18 at each end of the partition element. The marginal edges 15 of the sheet extending along the transverse portions of the walls lying intermediate the ends of the partition element are extended somewhat beyond where they are secured together and flared outwardly in opposite directions to provide supporting feet 19 intermediate the ends of the partition element. These feet 18 and 19 have flattened lower surfaces which directly engage the bottom of the freezing tray in good thermal contact therewith and support the partition element. A tubular passage 20 is formed between the spaced apart walls 12 and 13 and extends throughout the length of the sinuous partition element. Positioned in the opening of the tubing passage 20 is an electrical heating element 21 insulated from the metal walls 12 and 13 by a suitable layer of electrical insulating material 22. At one end of the partition element an opening 24 is provided in the bend 14 lying between the walls 12 and 13, and one end of a tubular metallic elbow 23 is secured to the partition element about this opening. The other end of the elbow 23 carries an insulated bushing 25 in which spaced apart electrical terminals 26 are embedded, as best shown in Figs. 3 and 4. The terminals 26 are connected to the heating element 21 by insulated leads 27 extending through the elbow 23 and the opening 24 in the bend 14 lying between the walls 12 and 13. The partition element 11 together with the heating element 21 carried in the tubular passage 20 therein comprises a rugged unitary structure and is removable as a unit from the freezing tray 10.

In removing ice cubes or the like from the freezing tray 10 the same is first removed from the surface of an evaporator of a refrigerating machine and placed upon a suitable support. The terminals 26 supported in the end of the tubular elbow 23 secured to the partition element are then plugged into a socket connected to a source of supply. After a short interval of time a sufficient amount of heat will have passed from the heating element 21, positioned in the tubular passage 20, through the walls 12 and 13 to thaw the frozen bonds between the sides of the ice cubes and the walls of the partition ele-

- **UNITED STATES PATENT OFFICE**
- **2,112,060**
- **PARTITION ELEMENT FOR FREEZING TRAYS**
- **Leonard W. Atchison, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York**
- **Application December 18, 1936, Serial No. 116,659**
- **5 Claims. (Cl. 62—108.5)**

- **My Invention relates to freezing trays for refrigerating machines and more particularly to partition elements for such trays.**
- **It is an object of my invention to provide an improved removable partition element of rugged construction embodying an arrangement for applying heat to the ice cubes and freezing tray to thaw the frozen bond therebetween in a simple and efficient manner. I accomplish this by utilizing a partition element remotely carried by a freezing tray in good thermal contact therewith.**
- **The partition element comprises spaced apart walls having a substantially annular configuration and formed of a folded sheet of metal, the edges of the sheet being rigidly secured together to define a tubular passage in the partition element, which tubular passage is employed for applying heat to the walls of the partition element.**
- **Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.**
- **For a better understanding of my invention reference may be had to the accompanying drawings in which Fig. 1 is a perspective view of a freezing tray containing a partition element embodying my invention; Fig. 2 is a perspective view of the partition element shown in Fig. 1; Fig. 3 is an enlarged sectional view of a portion of the end of the partition element shown in Fig. 2; Fig. 4 is an enlarged fragmentary end elevation of the partition element shown in Fig. 2; and Fig. 5 is a fragmentary side elevation, partly in section, of a modified form of the partition element shown in Figs. 1 and 2.**
- **Referring to the drawing, in Fig. 1 I have shown a shallow rectangular metal freezing tray containing a removable partition element. The partition element includes spaced apart walls 12 and 13 formed of a single sheet of metal of high thermal conductivity such as aluminum or copper folded at 14. The marginal ends 15 of the sheet are rigidly secured together preferably by the fusion of metal, that is, by line welding, soldering or the like as best shown in Figs. 2 and 3. The spaced apart walls 12 and 13 of the partition element are of substantially sinusine configuration and include a plurality of longitudinal and transverse extending portions 16 and 17, respectively. The dimensions of the partition element 11 are such that the same snugly fits into the freezing tray 10 and the longitudinal and transverse portion of the partition element cooperate with the freezing tray to form a plurality of ice block molds.**
- **The marginal edges 15 of the sheet extending along the transverse portions of the walls at each end of the partition element are extended somewhat and curved inwardly to provide supporting feet 18 at each end of the partition element. The marginal edges 15 of the sheet extending along the transverse portions of the walls lying intermediate the ends of the partition element are extended somewhat beyond where they are secured together and flared outwardly in opposite directions to provide supporting feet 19 intermediate the ends of the partition element.**
- **These feet 18 and 19 have flattened lower surfaces which directly engage the bottom of the freezing tray 10 in good thermal contact therewith and support the partition element. A tubular passage 20 is formed between the spaced apart walls 12 and 13 and extends throughout the length of the sinuous partition element. Positioned in the opening of the tubing passage 20 is an electrical heating element 21 insulated from the metal walls 12 and 13 by a suitable layer of electrical insulating material 22. At one end of the partition element an opening 24 is provided in the bend 14 lying between the walls 12 and 13, and one end of a tubular metallic elbow 23 is secured to the partition element about this opening. The other end of the elbow 23 carries an insulated bushing 25 in which spaced apart electrical terminals 26 are embedded, as best shown in Figs. 3 and 4. The terminals 26 are connected to the heating element 21 by insulated leads 27 extending through the elbow 23 and the opening 24 in the bend 14 lying between the walls 12 and 13. The partition element 11 together with the heating element 21 carried in the tubular passage 20 therein comprises a rugged unitary structure and is removable as a unit from the freezing tray 10.**
- **In removing ice cubes or the like from the freezing tray 10 the same is first removed from the surface of an evaporator of a refrigerating machine and placed upon a suitable support. The terminals 26 supported in the end of the tubular elbow 23 secured to the partition element are then plugged into a socket connected to a source of supply. After a short interval of time a sufficient amount of heat will have passed from the heating element 21, positioned in the tubular passage 20, through the walls 12 and 13 to thaw the frozen bonds between the sides of the ice cubes and the walls of the partition ele-**
ment, and a sufficient amount of heat will have passed through the feet 10 and 11 on the partition element into the freezing tray 10 to thaw the frozen bonds between the sides of the ice cubes 6 and the freezing tray allowing the partition element to be removed from the freezing tray, carrying the ice cubes with it. The partition element is then turned upon one of its sides to allow the ice cubes positioned between the folds thereof to fall therefrom. The partition element is then turned upon the other of its sides allowing the remainder of the ice cubes therein to fall free therefrom. The partition element and the terminals 26 is then broken, and the ice cubes are used as desired.

The modified form of the partition element 11 shown in Fig. 5 is constructed in a manner similar to that shown in Figs. 1 to 4, inclusive, except that the electrical heating element positioned in the tubular passage 20 formed between the spaced apart walls 12 and 13 is eliminated, and in the opposite ends of the partition element openings are provided in the bend 14 lying between the walls 12 and 13. About these openings the inlet and outlet connections 30 and 31, respectively, are secured to provide fluid tight joints between the connections and the tubular passage 20 formed between the spaced apart walls 12 and 13 of the partition element. The outer end of the inlet connection 30 is flared and provided with a retaining bead 32 that is about which receives and secures a rubber receptacle 33 in place. In this form of the partition element the frozen bonds between the sides of the ice cubes and the partition element and the freezing tray are thawed by conducting a heating medium such as hot water, for example, through the tubular passage 20. The open end of the rubber receptacle 33 is connected to a faucet or other source of supply of hot water. The hot water is passed into the inlet connection 30, flows through the tubular passage 20 extending throughout the length of the partition element, and is discharged from the outlet connection 31 into a drain. After the frozen bonds between the sides of the ice cubes and the partition elements and the freezing tray have been thawed the ice cubes are removed as described in connection with the form of the partition element shown in Figs. 1 to 4 inclusive.

It will thus be seen that I have provided a partition element embodying an improved arrangement for applying heat to the ice cubes, thereby allowing the ice cubes to be removed from the partition element and freezing tray in a simple and efficient manner. Also, the construction of the partition element renders the same rugged and cheap to manufacture.

While I have shown a particular embodiment of my invention in connection with a rigid metallic freezing tray, I do not desire my invention to be limited to the particular construction shown and described and I intend in the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letter Patent of the United States is:

1. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinusous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, means utilizing said tubular passage for applying heat to said walls, and means including outwardly extending projections carried by the lower portion of said partition element for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

2. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinusous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, means utilizing said tubular passage for applying heat to said walls, and means including outwardly extending projections carried by the lower portion of said partition element for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

3. A removable partition element for freezing trays comprising spaced apart walls formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element and being arranged adjacent the lower portion thereof, said walls being of substantially sinusous configuration having transverse and longitudinal portions adapted to form ice molds, means including said tubular passage for applying heat to said walls, and means including outwardly extending portions of the marginal edges of said sheet extending along the transverse portions of said walls for supporting said partition element upon the bottom of a freezing tray and for conducting heat from said partition element to the freezing tray.

4. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinusous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, means for passing a heating medium through said tubular passage to apply heat to said walls, and means including outwardly extending projections carried by the lower portion of said partition element for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

5. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinusous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, means including inlet and outlet connections secured to said partition element for passing a heat-
ing medium through said tubular passage to apply heat to said walls, and means including outwardly extending projections carried by the lower portion of said partition element for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

6. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinuous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, means including inlet and outlet connections secured to opposite ends of said partition element for passing a heating medium through said tubular passage to apply heat to said walls, and means including outwardly extending portions of the marginal edges of said sheet for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

7. A removable partition element for freezing trays comprising spaced apart walls having a substantially sinuous configuration and formed of a single folded sheet of metal, the marginal edges of said sheet being rigidly secured together to define a continuous tubular passage through said partition element, the marginal edges of said sheet being arranged adjacent the lower portion of said partition element and the exterior surfaces of said walls being adapted to form ice molds, an electric heating element positioned in said tubular passage, means for connecting said heating element to a source of supply, and means including outwardly extending projections carried by the lower portion of said partition element for supporting said partition element upon the bottom wall of a freezing tray and for conducting heat from said partition element to the freezing tray.

LEONARD W. ATCHISON.