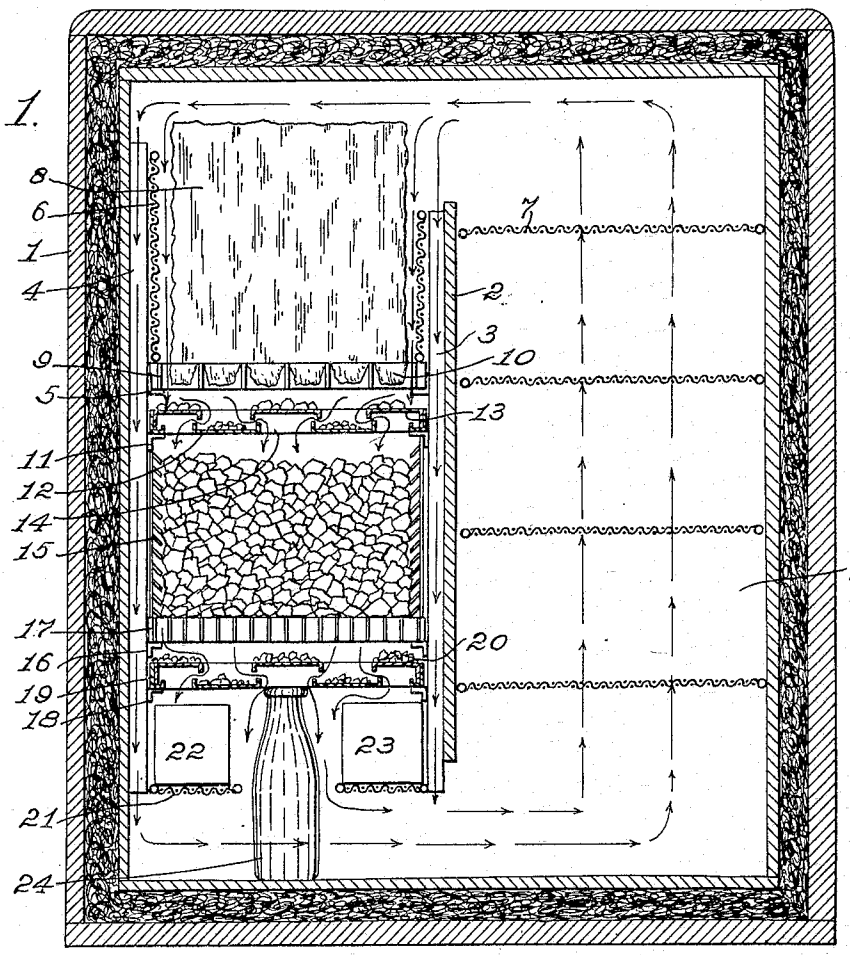
July 26, 1932. H. S. RAYMOND 1,868,763

REFRIGERATING DEVICE

Filed May 17, 1930

Fig. 1.



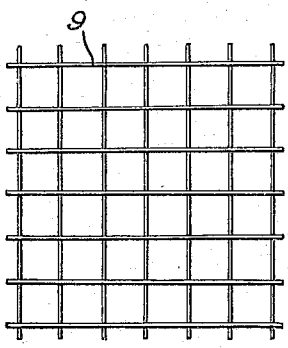


Fig. 2.

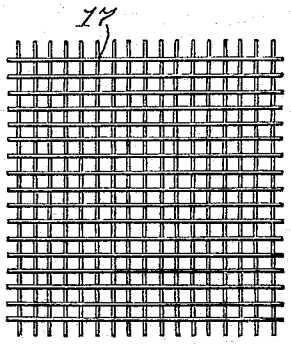


Fig. 3.

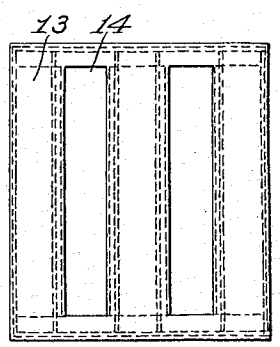


Fig. 4.

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REFRIGERATING DEVICE

Application filed May 17, 1930. Serial No. 453,228.

My invention relates to improvements in refrigerating devices, and particularly to such as employ ice therein as the cooling agent, and the object of my improvements is to supply such a combination of cooperating devices in this type of a refrigerator, as will operate most effectively in the utilization of the ice bodies therein, in the obtaining of a prolonged and even temperature necessary for the proper and sanitary preservation of foods therein.

This object I have achieved in the refrigerating device which is exemplified in the drawing attached hereto, and hereinafter described and claimed.

In said drawing, Fig. 1 is a view, partly in vertical transverse section, and partly in elevation, of a conventional refrigerator according to my invention. Figs. 2 and 3 are respectively top plans of the upper and lower grids or gratings for supporting the ice contents. Fig. 4 is a top plan of one of the sectional drip pans.

While the invention is illustrated diagrammatically, yet it is to be understood that various modifications or changes may be made therein and which will nevertheless come within the scope of the appended claims.

Referring initially to said Fig. 1, the numeral 1 denotes a heat-insulated refrigerator box having therein side by side an ice-containing cooling compartment, and an empty compartment to receive foods or other substances to be cooled and preserved for a time therein.

The compartments are separated by a partition 2 which is at its upper and lower ends spaced from the top and bottom of the box, the partition carrying within the ice compartment vertically disposed ribs 3, the facing side wall of the refrigerator carrying likewise like ribs 4 oppositely, said ribs serving to support pairs of facing brackets or anglebars 5, 11, 16 and 18, leaving vertical draft openings or passages between said partition and said side wall respectively and ice bodies positioned and supported adjacent thereto.

The other compartment 25 contains a plurality of superposed and spaced reticulated shelves 7 for supporting articles or containers of foods, while permitting free passage of upwardly ascending air currents through their interstices, as shown by the arrows in Fig. 1. Hence, when ice is placed in the ice compartment, such ascending currents are generated as air descends therein when cooled by the ice to pass thence into the compartment 25 under the partition 2 in the usual way, where heat is absorbed from food deposited upon the shelves 7, creating the ascending currents in the latter compartment, which are diverted over the top of said partition into the ice compartment to be there recooled and again descend.

The numeral 9 denotes a grid composed of cross-bars relatively widely interstiched and supported removably upon the upper pair of brackets 5 between reticulated side walls 6. A block of ice 8 may be deposited upon this grid, and is by the means mentioned kept spaced all around from the refrigerator top and walls and the partition 2, so that there is free air passage all around the block as also underneath it by way of the interstices of the grid.

A sectional drip pan is supported below the grid 9 upon a pair of brackets 11, and is composed of comating parts at top and bottom at 13 and 12, the top section 13 having a pair of longitudinal apertures 14 of oblong shape with depending rims which deliver liquid drippings into the staggered upwardly rimmed pan section 12 below.

Upon the pair of brackets 16 another grid 17 is supported a sufficient distance below the drip-pan 13 and 12 to receive thereon a quantity of ice fragments, and hence the cross-bars of the grid 17 are more numerous than those of the upper grid 9, having smaller interstices to prevent the ice fragments falling therethrough except in the smallest fragments. To support the ice fragments upon the grid 17 I supply side plates louvered as shown at 15 to permit air to penetrate the ice through the louvers.

A pair of narrow reticulated shelves 21 may be supported on the lower parts of the side ribs 4 and 2 upon which to deposit cooling boxes 22 and 23, but between said shelves 21 comating drip pans 20 and 19 are sup-

ported removably upon brackets 18, these pans being of the same construction as the pans 13 and 12 above, to receive drippings from the ice on the lower grid 17.

Between and below the reticulated shelves 21 are spaces which may receive articles to be cooled where the air is coolest, such as a milk bottle 24. It will be seen, that in the installation described, numerous passages are provided for the descending currents of air moving over all surfaces of the ice and in a maximum degree. The weight of the ice block 8 causes gradually the relatively sharp upper edges of the upper grid 9 to penetrate the ice which subsides in causing the formation of pyramidal ice bosses 10 between the grid bars. In wasting, the drippage of these parts falls into the drip pans 12 and 13, the tabular parts of which receive and retain fragments of ice which separate from the parts 10.

In the initial charging of the refrigerator, after the placing of the ice block 8 upon the upper grid 9, fragments of ice should be placed upon the lower grid 17 as shown in Fig. 1, and these may be derived from the shattering of the residue of an ice block removed unconsumed from the grid 9 before the placing of the new block 8, or by removing the drip pan 12 and 13 by sliding them from beneath said grid 9, and shattering the residue remaining on top of grid 9 into small pieces which will drop through the grid upon the lower grid 17, after which the drip pans 12 and 13 may be returned to place. These ice fragments should be small but large enough to not pass through the grid 17. Wastage of ice in smaller fragments, and drip water will pass upon the lower pans 20 and 19 as shown.

It will be seen, that by this mode of disposition of the cooling agent, the cooling surfaces of the various ice bodies are much increased as compared with one or more blocks 8 not so subdivided.

The air currents play all around the ice bodies, and by way of their interstices, becoming cooled quickly to the desired minimum temperature before entering compartment 25. This temperature is thus maintained constantly until the ice is nearly all melted.

The depending parts 10 of the ice block 8 together with the cooled surfaces of the grid 9, add largely to the heat absorbing surface of the block, and likewise the even greater extension of surfaces of the ice fragments on the lower grid 17 increases the heat absorption from the passing air currents, including the cooling surfaces of the latter grid. Also, small fragments upon the drip pans in both cases add to the cooling effects. The block 8 gradually subsides as it melts, but constantly produces the bosses 10 in doing so, which governs the effect of cooling of the passing currents. The ice fragments upon the lower grid 17 will produce icicles between the bars of the grid, further extending the cooling surfaces.

The invention herein, therefore, utilizes ice in a manner to maintain a constant even temperature, comparable to that obtained by coolers actuated by volatilizable liquid agents operated by relatively expensive mechanisms and installations, with a consequent economy for the user.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a refrigerator, a compartment open at top and bottom, vertically spaced grids of relatively wide cross-bars therein, and pans supported removably below the grids to receive thereon broken fragments of ice dropped through the grids.

2. In a refrigerator, a compartment open at top and bottom, vertically spaced grids therein, the apertures of the lower grid being of smaller size than those of the other, drip pans removably mounted below the grids, and said grids and drip pans being supported spaced from the walls of the compartment.

3. In a refrigerator, a compartment open at top and bottom, vertically spaced grids therein, drip pans supported beneath said grids, and said grids and drip pans being supported spaced from the walls of the compartment.

4. In a refrigerator, a compartment open at top and bottom, vertically spaced grids therein, apertured drip and ice fragment receiving pans supported removably below said grids, and the apertures in the lower grid being smaller and more numerous than those in the upper grid.

5. In a refrigerator, a compartment open at top and bottom, vertically spaced grids therein composed of relatively thin cross-bars, the lower grid having more cross-bars than the upper grid providing smaller apertures therein, and sectional drip pans supported removably beneath the grids, both having staggered apertures with rimmed edges, the upper section delivering drippage through its apertures into rimmed parts of the lower section.

6. In a refrigerator, a compartment open at top and bottom, vertically spaced grids therein composed of relatively thin cross-bars, the lower grid having smaller apertures than the upper grid, drip pans below said grids, and apertured side gratings about said grids and pans to retain ice contents while permitting air circulation therearound and therebetween.

In testimony whereof I affix my signature.

HENRY S. RAYMOND.