M. GONZALEZ.

COLLAPSIBLE REFRIGERATOR.

APPLICATION FILED SEPT. 6, 1918.

1,321,097. Patented Nov. 11, 1919.

Fig. 1.

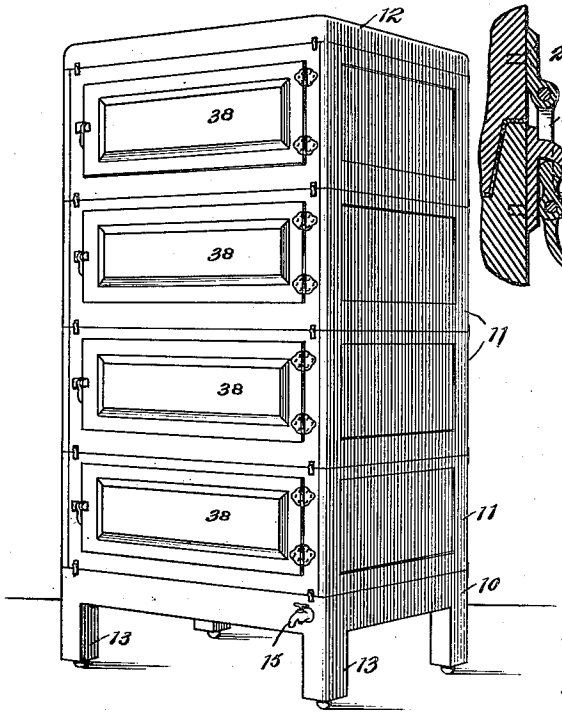
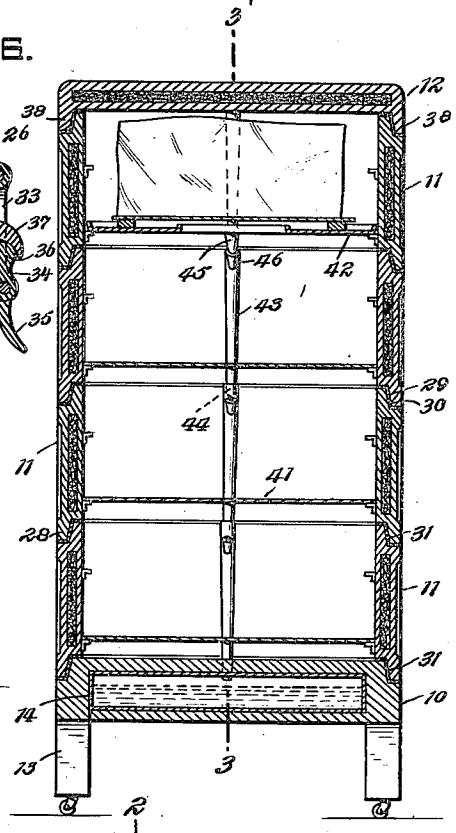


Fig. 6.

Fig. 2.



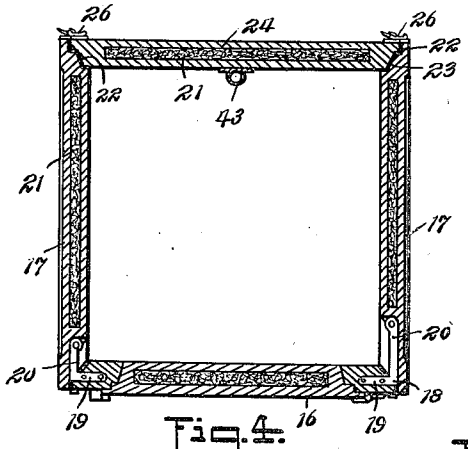


Fig. 4.

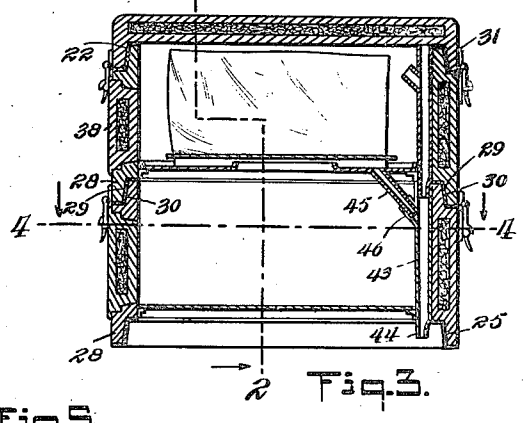
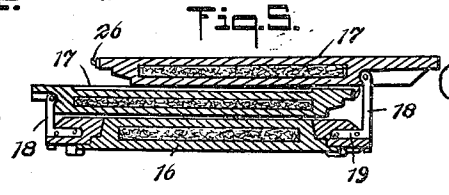


Fig. 3.

Fig. 5.



WITNESSES

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COLLAPSIBLE REFRIGERATOR.

1,321,097. Specification of Letters Patent. Patented Nov. 11, 1919.

Application filed September 6, 1918. Serial No. 252,829.

To all whom it may concern:

Be it known that I, MIGUEL GONZALEZ, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Collapsible Refrigerators, of which the following is a specification.

The invention relates to an ice box formed of separable sections which when assembled as a completed article of furniture is of conventional form and which is characterized by the fact that it can be made up to any desired height by adding superimposed sections.

Ice boxes as designed at present must necessarily be of heavy construction in order to provide the necessary heat insulation to the sides and top and obviously these heavy constructions are difficult to handle, not only due to their heavy construction, but due also to their bulk which render then unwieldly. These conventional forms of ice boxes when not in use take up a material amount of space which is valuable in storage space, especially on freight cars and ships and unless properly packed are liable to become damaged.

The primary object of the invention is to provide a collapsible form of ice box, the parts of which may be condensed into a relatively small space when packed for storage or shipment and which when opened up will form an ice box of approved heat insulating properties and of pleasing appearance.

It is desirable in this connection to provide a construction in which the number of loose parts are reduced to a minimum and to so construct the parts that they may be easily and readily assembled to form the completed ice box.

It is a further object of the invention to provide a collapsible construction of ice box section so designed that when moved into its opened position any necessary joints between the parts will be securely sealed and thus maintain at the joints at least the same extent of heat insulation as is provided by the sides if not entirely to defeat any tendency to heat leakage at the joints.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

Referring to the accompanying drawings:—

Figure 1 is a view in perspective of a built up ice box illustrating a preferred embodiment of the invention;

Fig. 2 is a vertical sectional view taken parallel to the front of the ice box shown in Fig. 1 and in part taken on the line 2—2 of Fig. 3;

Fig. 3 is a vertical sectional view of the upper portion of the ice box, taken at right angles to the view shown in Fig. 2 and on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal sectional view taken through one of the sections and on the line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view through the front and end sides of one of the sections when they are collapsed into folded position; and

Fig. 6 is an enlarged, detailed view of one of the connections between adjacent sections, shown in several figures.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

The ice box is of a built up sectional type and comprises a bottom section 10, a plurality of intermediate sections 11 and a top section 12, disposed in order one upon the other to form the structure similar to known forms of book cases. The bottom section 10 is of the sanitary base type provided with legs 13 and containing a drip water pan 14. This pan is drained through a faucet 15 projecting from the front of the base section as shown in Fig. 1. In general all projections are confined to the front and rear sides so as to leave the sides free of projections. In this way it is possible to arrange a plurality of such ice boxes side-by-side in a mutually reinforcing arrangement, as is usual in arranging stacks of book cases. The intermediate sections are similar in construction and interchangeable, so that the detailed description of any one will be sufficient for all. These sections are each formed of a front side 16 and two end sides 17 having their forward edges pivotally

connected to opposite edges of the front side 16, as shown in Fig. 4. This pivotal connection is provided by L-shaped hinges 18, one arm 19 of which is inset and secured to the front side 16 adjacent the upper and lower edges thereof. The other arm 20 of each hinge extends rearwardly and is pivoted at its free end to the side section at such a distance from the front side so as to permit the end sections to be folded one on top of the other and both superimposed on the front side as shown in Fig. 5. The sides of the sections are designed to possess heat insulating properties following the approved construction of well insulated ice box sides and in order to form a basis for this feature in the present disclosure, the sides are shown to contain a filler 21 of heat insulating substance. The joint between the front and end sides is beveled and contains a compressible packing 22 arranged so that when the sides are moved into their open position, shown in Fig. 4, the packing is compressed thus tending to defeat any possibility of heat leakage from the ice box through the sides at the joints. The rear edges of both end sides is stepped inwardly to provide an inwardly beveled seat 23. A rear side 24 of approximately the size of the front side 16 is designed to fit on said seat and to extend between the end sections in such a manner as to force the same apart into their open position and at the same time strain the sides on their hinges so as to place the packing 22 under compression. Packing 25 is carried by the seated parts of the rear side 24, which packing is designed to be placed under compression when the rear side is forced into its fitted position on the seat 23. It has been proposed to connect all four sides of the sections together but it has been found that the parts of the completed box warp under the climatic conditions in certain countries to such an extent that the parts could not be demounted and reassembled. Where the insert type of back section is used, a fit is provided even though the parts have warped and the rear side can be hammered loose without damage to the same.

The rear side is locked in position by a suitable wedging clamp 26 one preferred form of which is illustrated in Fig. 6 and hereinafter described in connection with the locking of the sections to each other. Each upper section has an interfitting seating connection with the next adjacent lower section and is provided with a depending rim 28, the inner side of which is beveled to form an outwardly inclined surface 29 so arranged that the weight of the superimposed sections will tend to press the rim 28 into wedging engagement with a coacting seat 30 formed at the upper edge of the next adjacent lowermost sections. Packing 31 is interposed in these joints so that the weight of the superimposed sections will additionally tend to compress the packing and thus minimize heat leakage from the ice box through these horizontal joints. In the device illustrated the joint is formed Z-shaped thus tending further to defeat the possibility of heat leakage directly through the joints between adjacent sections. In order to assist in this compressing movement the adjacent sections are clamped together by means of a clamping device, such as is shown in Fig. 6. The clamp includes an arm 33 hinged to one of the sides and lapping the joint which it is desired to close. The arm is provided with a lever 34 pivoted thereto adjacent its free end. The lever is pivoted intermediate its ends, one end of which lever constitutes an actuating handle 35 and the other end of which lever constitutes a heavy wedging finger 36, designed to engage under a flange 37 fixed to the other section side. The parts are so arranged that the finger is positioned under the flange and then by forcing the handle into position against the surface of the side as shown in Fig. 6, one of the sides is forced toward the other compressing the insulating packing therebetween.

In order to carry out the idea of interchangeability of the intermediate sections they are each shown to be provided with a door 38 of conventional form but it is to be understood that some of the front sides may be made solid as illustrated for the end or rear sides and that one door may be sufficient for more than one section space in the complete ice-box.

The top section 12 is of conventional form including a depending rim 38 having an interfitting engagement with the uppermost of the intermediate sections as has previously been described for the rims 28.

Each of the intermediate sections is provided with a plurality of angle brackets 39 designed to support bridge members in position within the interior of the completed ice box. These bridge members may be in the form of shelves 41 preferably positioned on a line with the lower edges of the doors of the sections. The upper bridge member may be designed to constitute an ice pan 42 for the ice thereby causing the uppermost section to constitute an ice compartment. Each of the bridge members is provided with a depending Y-tube 43, the lower end of which is reduced to form a nozzle 44 extending below the uppermost edge of the next adjacent lower section. Instead of the tube 43 being carried by the bridging members, it is obviously within the scope of this invention to make these tubular members separable from the cabinet forming parts or, in some constructions, to fasten them directly to the intermediate sections, as is

suggested in Fig. 3. The ice pan is provided with a depending drain tube 45 (see Fig. 3) designed to extend into the branch 46 of the Y-tube so as to conduct the ice drip water from the ice pan into the tube in the next adjacent lower section. These tubes are designed to telescope one into the other and with the lowermost one extending into the pan 14 so as to form a drain tube from the ice compartment into the drip pan. This tube is lengthened or shortened with the addition to or subtraction from the completed box of intermediate sections.

In operation and assuming that the box is in the completed form shown in Fig. 1, the parts are loosened by throwing off the clutch levers and the sections are demounted in order by lifting the sections upwardly one off the other. The shelf, tube and other bridging members are lifted out and the top section taking the place of the lowermost intermediate section when it is desired to stack the demounted parts. Each of the intermediate sections is then folded, first by removing the rear side and then folding the end sides, one upon the other, as shown in Fig. 5. The arrangement of the hinge members is such that the sides can lie flat one on the other without breaking their pivotal connections. The intermediate sections are then piled one upon the other and suitably crated so as to form a neat compact assemblage suitable for storage and shipment.

By means of a device of this character all of the advantages inherent in approved constructions of ice boxes are retained, and at the same time there is provided a construction which can be packed within small space thus facilitating the ease of handling. Where the ice box is of large construction it is possible to so pack the separable parts that these parts can be readily mounted on the backs of animals and carried over mountainous and other rough trails.

The ice box is sanitary, ready access is provided to the interior thereof to clean the same, and occasionally it can be opened out flat on the ground so as to have the interior subjected to the action of direct sunlight. ready access is provided to all of the small parts and particularly it is easy to clean the drain tube sections due to their relatively short lengths. In case the packing should deteriorate with use, a simple and convenient piece of rubber or other packing material may be quickly cut to shape and utilized in place of the preformed packing constructed at the factory.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:—

1. In an ice box, the combination including a pair of hollow sections, each having an upstanding outlining heat insulating wall with the walls disposed one upon the other to form when assembled a part of the completed ice box, compressible packing carried by the edge of one of the walls and coacting with the adjacent edge of the next contiguous wall to form an air tight joint between the sections, said joint designed to cooperate with the heat insulated walls to minimize leakage of heat into the interior of the ice box and means extending across the joint for drawing the contiguous walls toward each other and thus compress the packing.

2. In an ice box, the combination of a pair of hollow superimposed sections, each formed of an upstanding outlining wall having poor heat conducting properties and inclosing a heat insulated space in the completed ice box, said sections contacting along adjacent edges of their walls to form an air tight joint, said joint being tortuous and having a portion inclined downwardly whereby the weight of the upper section will tend to cause the upper section to settle into a wedging engagement with the lower section and thus tend to seal the joint against heat leakage between the sections.

3. In an ice box, the combination of a pair of hollow superimposed sections, each formed of an upstanding outlining wall having poor heat conducting properties and inclosing a heat insulated space in the completed ice box, said sections contacting along adjacent edges of their walls to form an air tight joint, said joint being inclined downwardly whereby the weight of the upper section will tend to cause the upper section to settle into a wedging engagement with the lower section and thus tend to seal the joint against heat leakage between the sections and compressible heat insulating packing material disposed between the adjacent sections at the joint.

4. In an ice box, the combination of a pair of hollow superimposed sections, each formed of an upstanding outlining wall having poor heat conducting properties and inclosing a heat insulated space in the completed ice box, said sections contacting along adjacent edges of their walls to form an air tight joint, said joint being inclined downwardly whereby the weight of the upper section will tend to cause the upper section to settle into a wedging engagement with the lower section and thus tend to seal the joint against heat leakage between the sections, compressible packing material disposed between the adjacent sections at the

joint and drawing means engaging the sections across the joint thereby to draw the sections toward each other and thus compress the packing material to further defeat the possibility of leakage through the joint.

5. A foldable section of a knock down ice box, said section comprising three wall sides, each side designed to minimize the conductivity of heat therethrough, means for pivotally connecting the sides whereby the connected sides in one position may be folded into parallel relation with one side upon the other and in another position may be opened up to form three sides of a four-sided wall of the ice box section, a fourth side and means for locking the four sides relative to each other in said last named position.

6. A foldable section of a knock down ice box, said section comprising more than two wall sides, each side designed to minimize the conductivity of heat therethrough, means for pivotally connecting the sides whereby the connected sides in one position may be folded into parallel relation with one side upon the other and in another position may be opened up to form part of a wall of the ice box section and means for locking the sides relative to each other in said last named position.

7. A foldable section of a knock down ice box, said section comprising more than two wall sides, each side designed to minimize the conductivity of heat therethrough, means for pivotally connecting the sides whereby the connected sides in one position may be folded into parallel relation with one side upon the other and in another position may be opened up to form part of a wall of the ice box section, compressible packing in the joints between adjacent edges of contiguous sides and means for locking the sides in position to place said packing under compression thereby to minimize the possibility of heat leakage through the joints, and means engaging said pair of side walls and coacting with said pivotal connection for insuring a tight joint along said bevel edges.

8. A foldable ice box section including a pair of wall sides, each designed to minimize the conductivity of heat therethrough and a pivotal connection between said sides for permitting the sides to be folded one upon the other in position convenient for packing, said sides provided with bevel edges coacting with said pivotal connection to form a tight joint between the sides when moved into their open, operative position thereby minimizing leakage of heat through the joint.

9. A foldable ice box section open at top and bottom and including a pair of wall sides, each designed to minimize the conductivity of heat therethrough and a pivotal connection between said sides, the rear edges of both of the end sides being inwardly beveled for permitting the sides at the inwardly beveled edges to be folded one upon the other in position convenient for packing, a compressible packing in the joint between said sides and means for securing the sides in position with the packing tightly compressed in the joint.

10. An ice box section open at top and bottom and comprising a front side and two end sides, pivotal means permanently connecting said front side with each of said end sides, a separable rear side fitted between said end sides to hold the same in open position and means for securing said rear side in position thereby to hold the sides of the section in operative position relative to each other between the front side and the adjacent end sides.

11. An ice box section open at top and bottom and including a plurality of sides comprising a front side and two end sides, pivotal means permanently connecting said front side with each of said end sides, a packing positioned in the joints formed between the front and the two end sides and a separable rear side adapted to be disposed between the end sides to force the same apart and thus compress the packing in the joints.

12. A section of an ice box including a plurality of wall sides pivotally connected and adapted to be folded flat one on the other, means for securing said sides in position to form the section and said section provided with means for supporting a bridge piece within the completed ice box.

Signed at New York city, in the county of New York and State of New York this 24th day of August, A. D. 1918.

MIGUEL GONZALEZ.