Nov. 30, 1926. 1,608,874

G. YUMURA

ICE BOX

Original Filed June 18, 1923 3 Sheets-Sheet 1

Fig. 2.

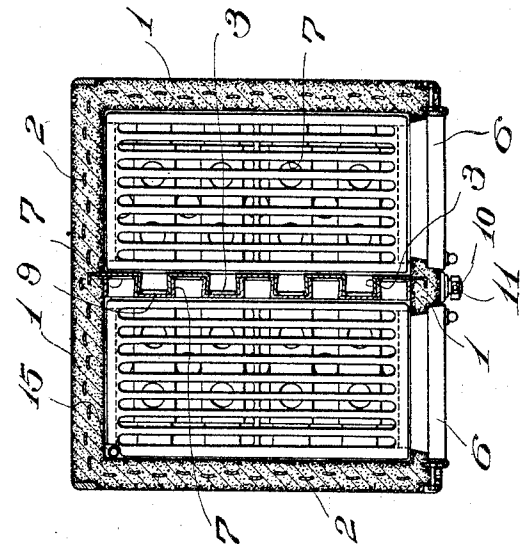
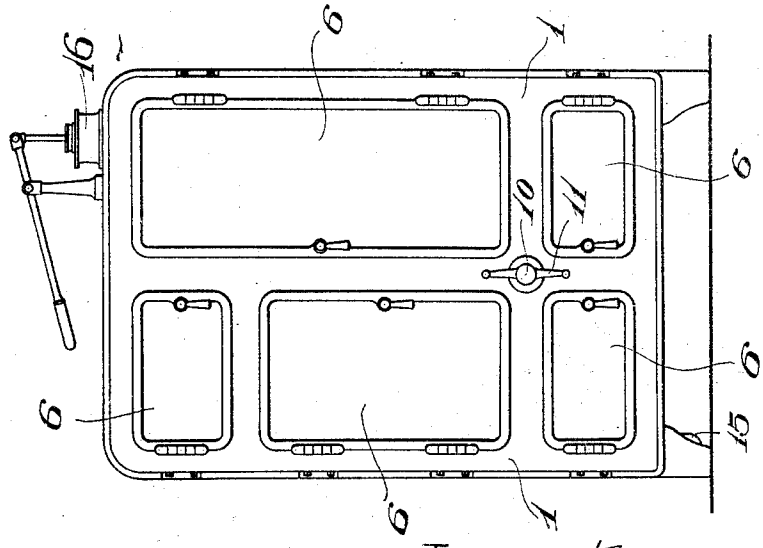



Fig. 1.




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Fig. 4.

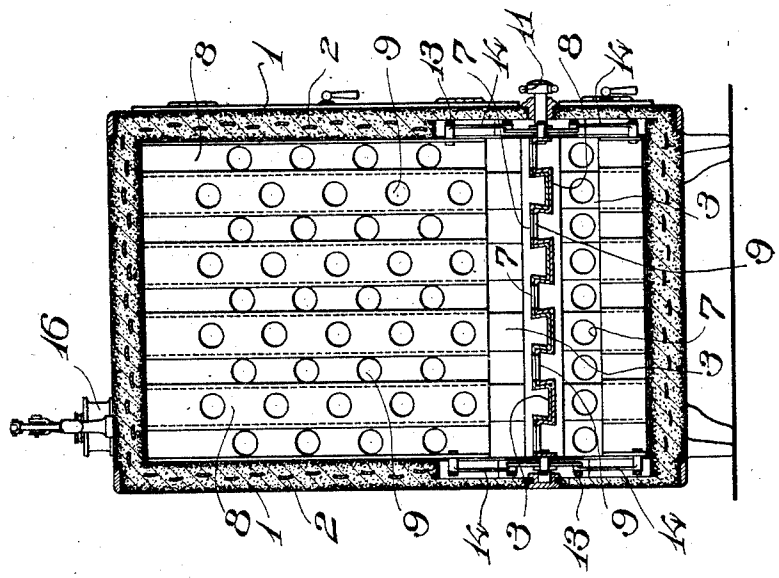
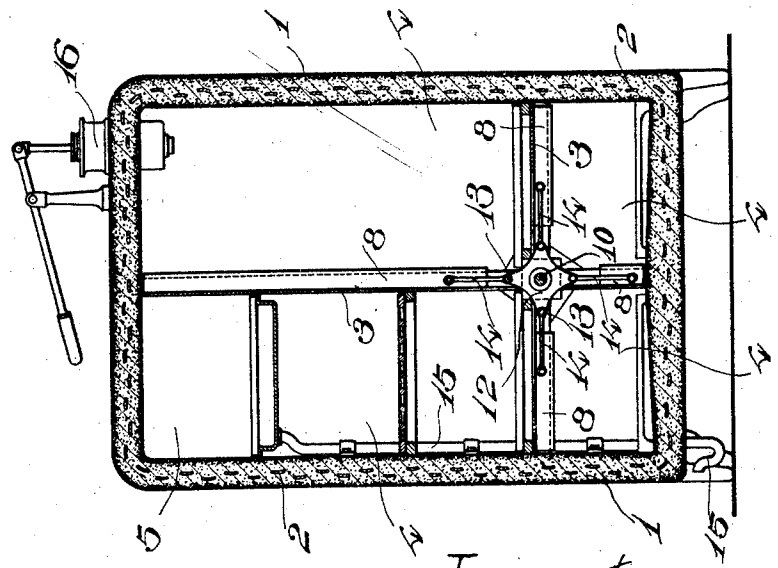


Fig. 3.



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Fig. 7.

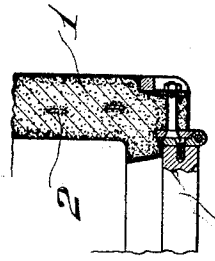
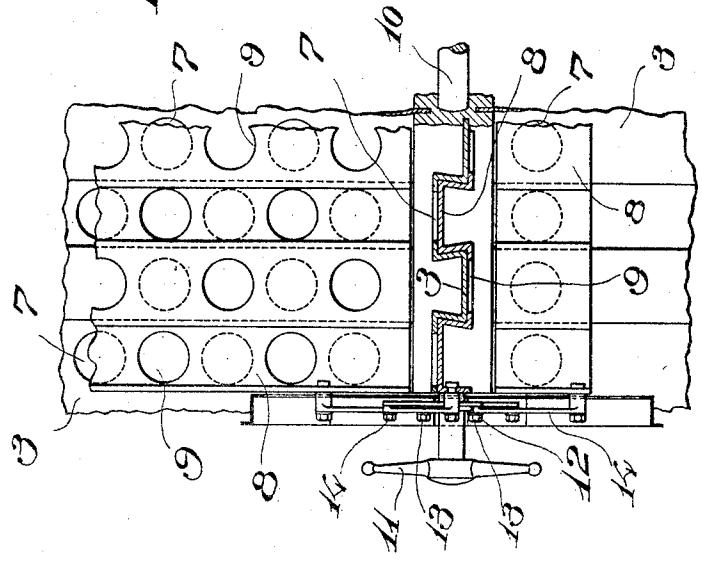



Fig. 6.




Fig. 5.




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# UNITED STATES PATENT OFFICE.

GENTARO YUMURA, OF EBARA-GUN, TOKYO-FU, JAPAN.

## ICE BOX.

Application filed June 18, 1923, Serial No. 646,225. Renewed October 22, 1926.

This invention relates to improvements in ice boxes and more particularly has reference to a partition wall structure therefor.

The invention as its primary object contemplates the provision of an arrangement for opening or closing the circulation openings formed on the partition walls which divide the ice box into several compartments embodying sliding perforated plates suitably connected with a crank mechanism which when operated slides the plate to effect partial closing, fully opened or fully closed positions of the plate, the several compartments being provided with separate doors by which access may be had thereto.

Other objects, as well as the nature, characteristic features and scope of the invention will be more readily apparent from the following description taken in connection with the drawings and pointed out in the claim forming a part of this application.

The accompanying drawings clearly illustrates the invention, in which:

Fig. 1 is an ice box,

Fig. 2 is a sectional plan view thereof,

Fig. 3 is a sectional front elevation of the ice box,

Fig. 4 is a sectional side elevation,

Fig. 5 is a fragmentary side elevation of the partition wall showing the circulation openings in closed position,

Fig. 6 is a front elevational view of the crank mechanism, and

Fig. 7 is a sectional plan view of a corner part of the ice box.

Referring now, more particularly, to the accompanying drawings there is provided an ice box the walls of which are preferably of a special concrete formation including finely crushed liparite in place of sand and gravel used in the usual concrete structure. This special concrete if desired has added thereto a small quantity of kieselguhr and in addition is reinforced at 2 preferably by strips of bamboo the latter being placed in a suitable mold and the concrete molded thereabout. This special form of concrete is desirable for its insulating qualities.

Within the body of the ice box or casing formed by the walls 1, partition walls 3 are arranged horizontally and vertically to divide the box into several compartments 4 the ice chamber 5 being situated at the uppermost part of the box. The front wall of the ice box is provided with openings which communicate with each of the compartments and these openings are closed by doors 6 hinged at the front side so that access may be had to any one of the compartments independently of the other. The partition walls 3 are preferably formed of metal and are of an alternating inverted channeled U-shape in cross section, the medial portion being provided with openings 7 for the circulation of cold air through the compartments of the box while the side portions are inclined. Slidably engaged with each of the partition walls are correspondingly shaped plates 8 the medial portions of which are provided with openings 9 for registration with the openings 7. A shaft 10 is rotatably mounted through the medial portion of the box preferably adjacent the intersection of the main vertical and horizontal walls and the front end thereof being projected exteriorly of the box and fitted with a handle 11 to facilitate the rotation thereof. At the respective ends of the axle and within recesses in the front and rear walls are respectively secured and arranged crank wheels 12. These wheels are fitted with opposed pairs of crank pins 13 and are connected with the sliding plates 8 by means of connecting rods 14 as clearly shown in Fig. 6. By turning the handle 11 in either direction the plates 8 are slid along the partition walls 3 so that the openings 9 are brought in alignment with the openings 7 or the openings 7 are left entirely or partially closed depending upon the adjustment of the plates 8. The inclination of the side portions of the walls 3 and plate 8 when in inner engagement maintain the plates in close contact with each other.

It will thus be apparent that when the doors 6 are shut as shown in Fig. 1 and the openings 7 on the partition walls 3 are kept open as shown in Fig. 4 the cold air produced in the ice chamber 5 passes through said openings and circulates through all the compartments in the ice box. When it is desired to open any one of the doors 6, the handle 11 is partially rotated and owing to the arrangement of the crank mechanism each sliding plate 8 is slid along the partition wall so as to close the circulation opening in each wall. It will thus be seen that each compartment may be kept closed so that when the door of one compartment is opened the other compartments are kept

closed preventing the inflow of external air into the opened compartment and then throughout the other compartments as would be the case in the usual construction of ice box. After the door has been closed the handle may be operated so as to rearrange all of the compartments in circulation with each other.

A drain pipe 15 has the upper end connected with the ice chamber while the lower portion projects through the bottom of the box. An air pump 16 may be desirably arranged in the top for extracting warm air.

In view of the foregoing it is believed that a further detailed description of the invention is entirely unnecessary. Likewise it is believed that the advantages of the invention will be readily apparent.

Having thus fully described and ascertained the nature of my invention, what I claim as new and desire to secure by Letters Patent is:

An ice box comprising a body, partition walls arranged in crossed formation in the body for dividing the body into compartments, the walls being of an alternating inverted U channel shaped formation in crossed section and having medial portions provided with openings and the side portions inclined, correspondingly shaped plates slidably associated with each of the wall sections for varying the size of or closing or opening the openings, thereby controlling circulation between the compartments, crank wheels rotatably mounted in the front and rear parts of the body, each provided with crank pins, connecting rods operably mounted between the crank pins and the sliding plates and a handle for facilitating the partial rotation of the crank wheels so as to adjust the sliding plates on the partition wall sections, substantially as and for the purposes set forth.

In testimony whereof I have affixed my signature.

GENTARO YUMURA.