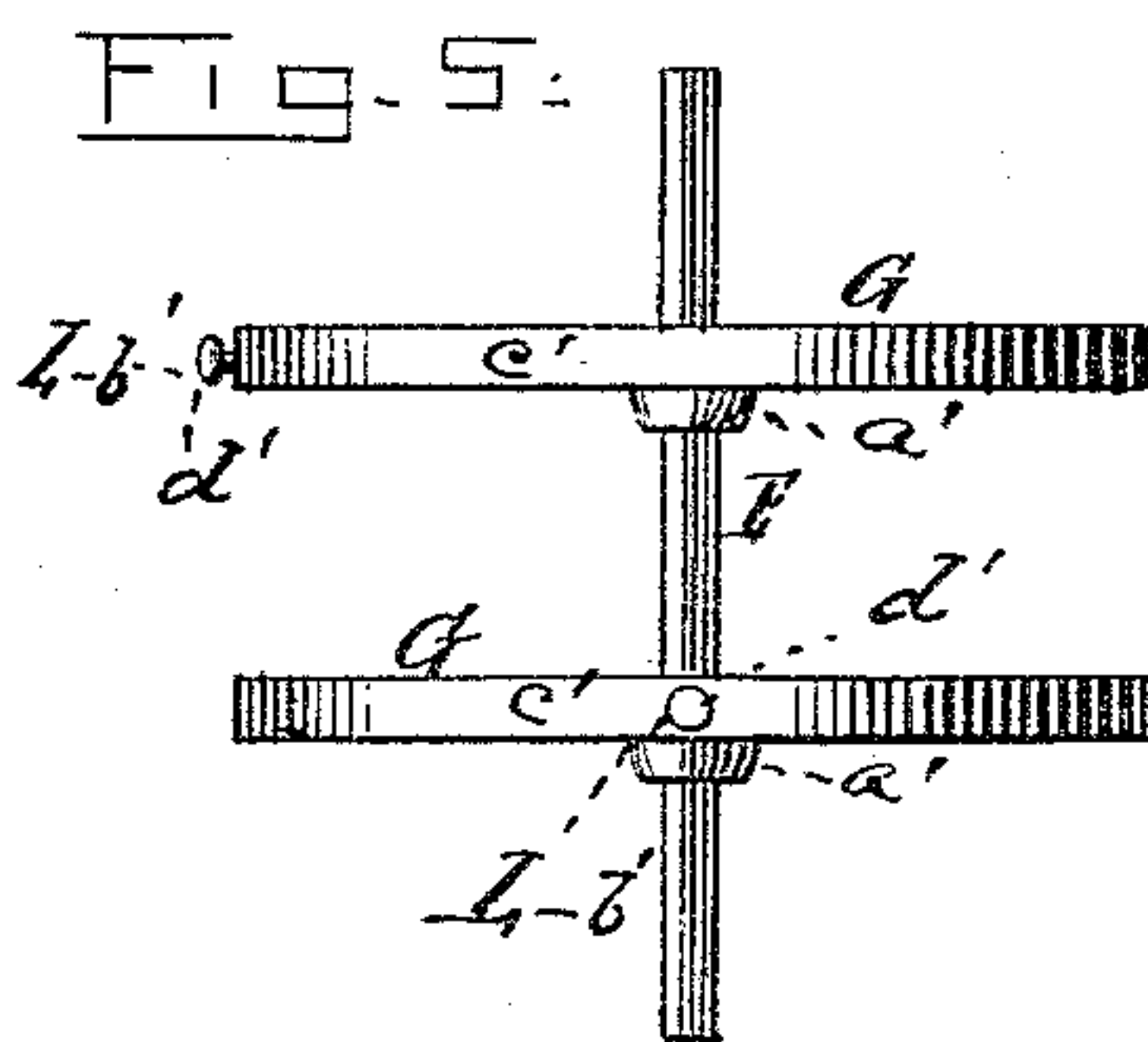
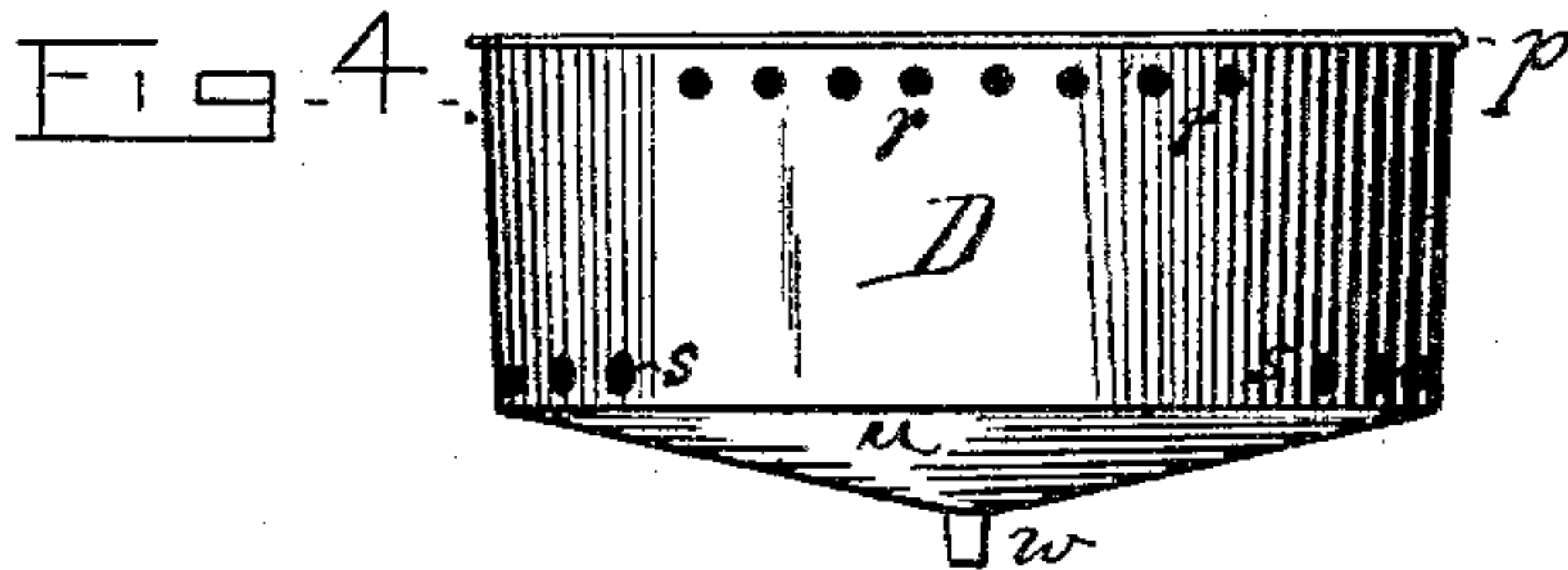
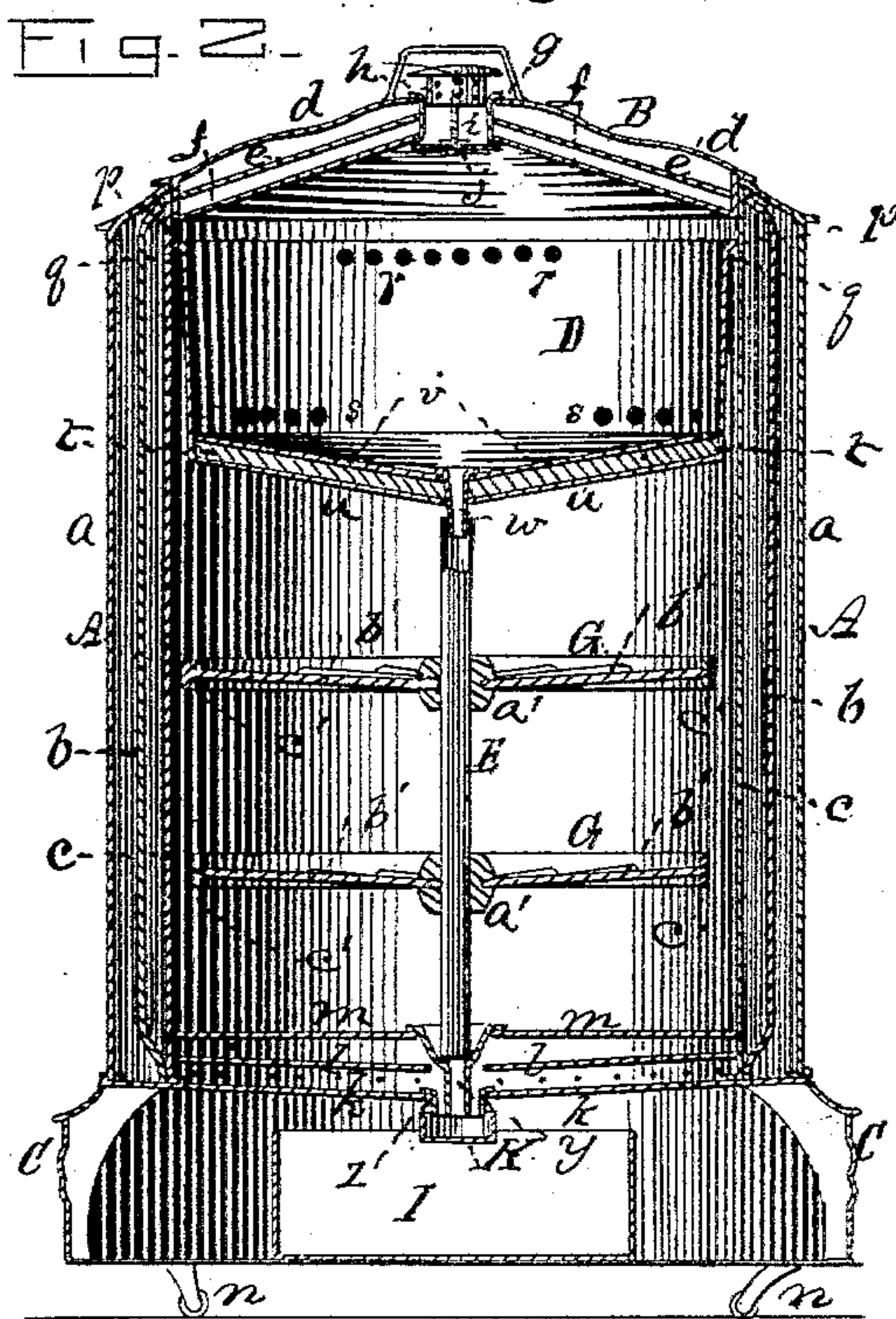


J. A. STOCKEN.
REFRIGERATOR.

Patented Aug. 4, 1885.



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UNITED STATES PATENT OFFICE.

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REFRIGERATOR.

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Application filed March 24, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. STOCKEN, of Goshen, in the county of Orange and State of New York, have invented certain Improvements in Refrigerators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a front view of my improved refrigerator; Fig. 2, a central vertical section of the same; Fig. 3, a horizontal section of the same in a plane indicated by the line *xx*, Fig. 1; Fig. 4, a side view of the ice chamber or tray; Fig. 5, a side view of the drip-pipe leading from the ice-chamber, with shelves mounted thereon.

Like letters designate corresponding parts in all the figures.

In the drawings, A represents the body of the refrigerator; B, the cover of the same; C, the base; D, the ice tray or receptacle; E, the waste-pipe for drawing water from the ice tray or receptacle, and G G shelves on which the provisions are placed.

In the construction of the body A of the refrigerator, the walls are composed of three separate walls or thicknesses, *a b c*, with two air-spaces between them, thereby obviating the use of a filling of a non-conducting material between the walls, which would add much to the weight of the refrigerator, and would gather moisture, tending to cause decay of the same.

In order to form the middle thickness or partition, *b*, of the wall and keep it at the proper distance from the inner and outer walls, I gradually contract the width or diameter of the said middle partition at the upper and lower ends or edges sufficient to have the said upper and lower edges just fit around the inner wall, *c*, and thus be held in the proper position, as shown in Fig. 2, thus keeping all the intermediate parts of the partition at the desired and uniform distance, both from the inner wall and the outer wall, which is secured to the inner wall at the upper and lower ends by connecting heads or flanges in any ordinary manner. The cover B is also made of triple walls or thicknesses, *d e f*, at suitable and regular distances apart, for a similar

purpose. It is preferably made highest at the center and gradually inclined therefrom to the outer edges. I provide it with an adjustable ventilator, formed of a tubular aperture, *g*, through the entire thickness, and a tube, *h*, fitting in the aperture and having perforations in its sides, while it is closed at the top, so that by raising or lowering it in the aperture more or fewer of its side perforations will be above the cover, thereby increasing or diminishing the ventilating capacity thereof.

To adjust the tube accurately and with exactness up and down, a screw, *i*, is secured to the top of the tube or a cross-bar thereon, and screwing into a nut, *j*, fitting as a bar across the lower end or mouth of the ventilating-aperture *g*, the tube *h* being for this purpose made round or cylindrical.

The bottom of the body or main part of the refrigerator is also composed of three thicknesses, *k l m*, with air-spaces between them, the lower and middle thicknesses being preferably somewhat inclined from the outer edges to the center, while the upper thickness is flat or plane, for holding level whatever may be placed thereon.

The inclined middle and lower walls serve to drain to the center whatever moisture may ever collect between both the body and bottom walls of the refrigerator.

The base C of the refrigerator is, for greater convenience in making, transporting, and cleaning the refrigerator, made separate from the body, and is provided, or may properly be provided, with casters *n n*, for moving the refrigerator about with facility. It has a sufficient interior space to hold a drip pan or vessel, I, which may be made in the form of a drawer, to be readily inserted and withdrawn through one side of the base, as shown in Figs. 1 and 2.

The door J of the refrigerator is likewise made with three thicknesses, with air-spaces between, for similar purposes to the same construction of the other parts of the refrigerator above described. It should have a removable lock, *o*, inserted in a recess of the door, and bolted to one of the plates thereof.

The refrigerator is best made of cylindrical form, and I have adopted that form as one most compact, most simple of construction,

most easily kept clean, and especially that the shelves within may be made to revolve, for more readily getting access to the articles placed thereon. The ice tray or receptacle 5 D is also of circular and nearly-cylindrical form, but somewhat narrowed or conical from top to bottom, as shown. The upper edge is made to fit closely the interior of the body of the refrigerator, and a slightly-projecting rim, 10 p, thereon fits over and rests upon a bead or equivalent projection, q, on the interior surface of the refrigerator-body, the tray-support being thus provided in a very simple, effectual, and cheap manner. Below this supporting- 15 edge of the ice-tray an annular space is left between the tray and refrigerator-body for the circulation of air into and out of the ice tray or receptacle. There are perforations r r through the sides of the receptacle, near its 20 upper edge, for allowing the warmed air to enter the tray from the refrigerator below, and other perforations, s s, through the sides of the tray, near the lower edge or end thereof, for the cooled air in the tray to pass out and de- 25 scend into the refrigerator below, thus keeping up a cooling circulation in the provision-chamber. The upper and lower perforations should alternate in position, as shown—that is, neither set of perforations extend the whole 30 circumference of the ice-tray, but only about half-way, and the lower set or sets are under the spaces between the upper set or sets, so that the downward flow of the cold-air currents into the provision-chamber is not interrupted or interfered with by the upward flow 35 of warmed air.

All the parts of the refrigerator above described may properly be made of sheet metal—say sheet-zinc or galvanized sheet-iron, or any 40 other suitable material; but I add to the bottom of the ice-tray a thickness, t, of wood or other slow heat-conducting material, in order to protect the ice in the tray from the melting action of the comparatively-warmed 45 air of the provision-chamber below. This wooden bottom may be simply attached to the single metallic bottom of the tray; but it is best to make a double sheet-metal bottom and interpose the wooden or equivalent slow 50 heat-conducting bottom or thickness t between the two sheet-metal thicknesses u v, as shown in Fig. 2.

The water produced in the ice-tray by the melting of the ice is discharged through a 55 tube or passage, w, in the center of the bottom of the tray, the bottom being somewhat inclined from the outer edge to the center, to facilitate the flow of the water to the discharge-passage. This discharge-tube w projects downward a little below the bottom of 60 the ice-tray to furnish a pivot or journal around which the upper end of the waste-pipe E fits and turns, the tube w discharging the water into the pipe. The lower end of the 65 waste-pipe E rests in an annular or grooved and cross-grooved cup-bearing of a discharge-tube, y, extending down through the bottom

of the refrigerator-body. The cup shape of the tube y at the top serves also to drain off 70 any water of condensation which may gather on the interior surface of the refrigerator body and shaft. The tube does not fit close in the openings through the middle and lower 75 thicknesses, l k, of the bottom, so that space will there be afforded for discharging any water of condensation which may gather in the wall-spaces of the refrigerator body and bottom, and the lower thickness, k, has a short downwardly-projecting tube, z, continued 80 from its drainage-opening, somewhat larger in diameter than the drain-pipe tube y, in order to afford room for the water-discharge in the tube z around the tube y. Both of the 85 said tubes are surrounded at their lower ends by a sealing-trap, K, located in the base of the refrigerator. The waste-pipe E is also 90 used for mounting the provision-shelves G G upon, and the pipe is made capable of revolving, and the shelves are made circular, or substantially so, as well as the interior of 95 the refrigerator-body, so that the shelves may be allowed to revolve and yet have the full capacity afforded by the size of the refrigerator.

I have a novel and improved construction 95 of the shelves G G, as follows: Each shelf is, in a general way, made like a carriage-wheel—that is, it is made with a hub, a', spokes b' b', and rim c', put together like an ordinary car- 100 riage-wheel. The eye or aperture of the hub fits snugly around the waste-pipe E, for a spindle or shaft, and the hub being as long as required gives an extended bearing or support, so that the shelf is very strong, and will support 105 any desired weight on either side alone. The spokes b' b' are sufficient in number to form a grate as close as desired for supporting articles upon it. The analogy of the construction to 110 that of a carriage-wheel is preferably carried out still further by making the shelf somewhat dishing, as shown in Figs. 2 and 5, it being 115 concave on the upper side, to give additional strength to its supporting-power, the purpose fulfilled, therefore, being different from that sought in the construction of a carriage-wheel. I also utilize this construction of the shelves 120 to furnish a novel and improved means of fastening the shelves at different heights on the pipe E, as shown in Figs. 2 and 5. One of the spokes (marked L b') extends outward 125 through the rim c' and projects somewhat beyond it, terminating with a knob or handle, d'. The inner end of this spoke is screw-threaded and turns in a screw-threaded aperture in the hub, as shown by the vertical section in Fig. 2; and since the inner end bears 130 against the pipe, the spoke serves to clamp the shelf to the pipe, and by loosening the screw the shelf may be raised or lowered and then secured in position by tightening the screw.

The various parts of the refrigerator are or may be provided with suitable handles, as shown, or otherwise.

I claim as my invention—

1. A refrigerator constructed with three walls or thicknesses, with separate air-spaces between them, the middle thickness being
5 narrowed at its upper and lower ends or edges to fit the inner wall, and thereby keep the main part of the said walls at the required distance apart, substantially as herein specified.

10 2. An ice-tray, D, made of metal and provided with an additional bottom thickness, of wood or equivalent slow heat-conducting material, substantially as herein set forth.

15 3. The separate waste-pipe E, on which the provision-shelves are supported, mounted between the ice-tray and bottom of the refrigerator, and adapted to be turned around

the short central waste-tube of the ice-tray as a journal at the top, and in an annular or grooved step at the bottom around the bottom 20 waste-tube, substantially as set forth.

4. A provision-shelf, G, formed of a hub, spokes, and rim, the eye of the hub fitting around the waste-pipe shaft E, substantially as herein specified.

25 5. A provision-shelf formed of a hub, spokes, and rim, and having a spoke or rod screw-threaded in the hub, whereby the shelf is clamped to the shaft and adapted to be adjusted in height, as herein set forth.

JOSEPH A. STOCKEN.

Witnesses:

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C. S. NEWELL.