

(No Model.)

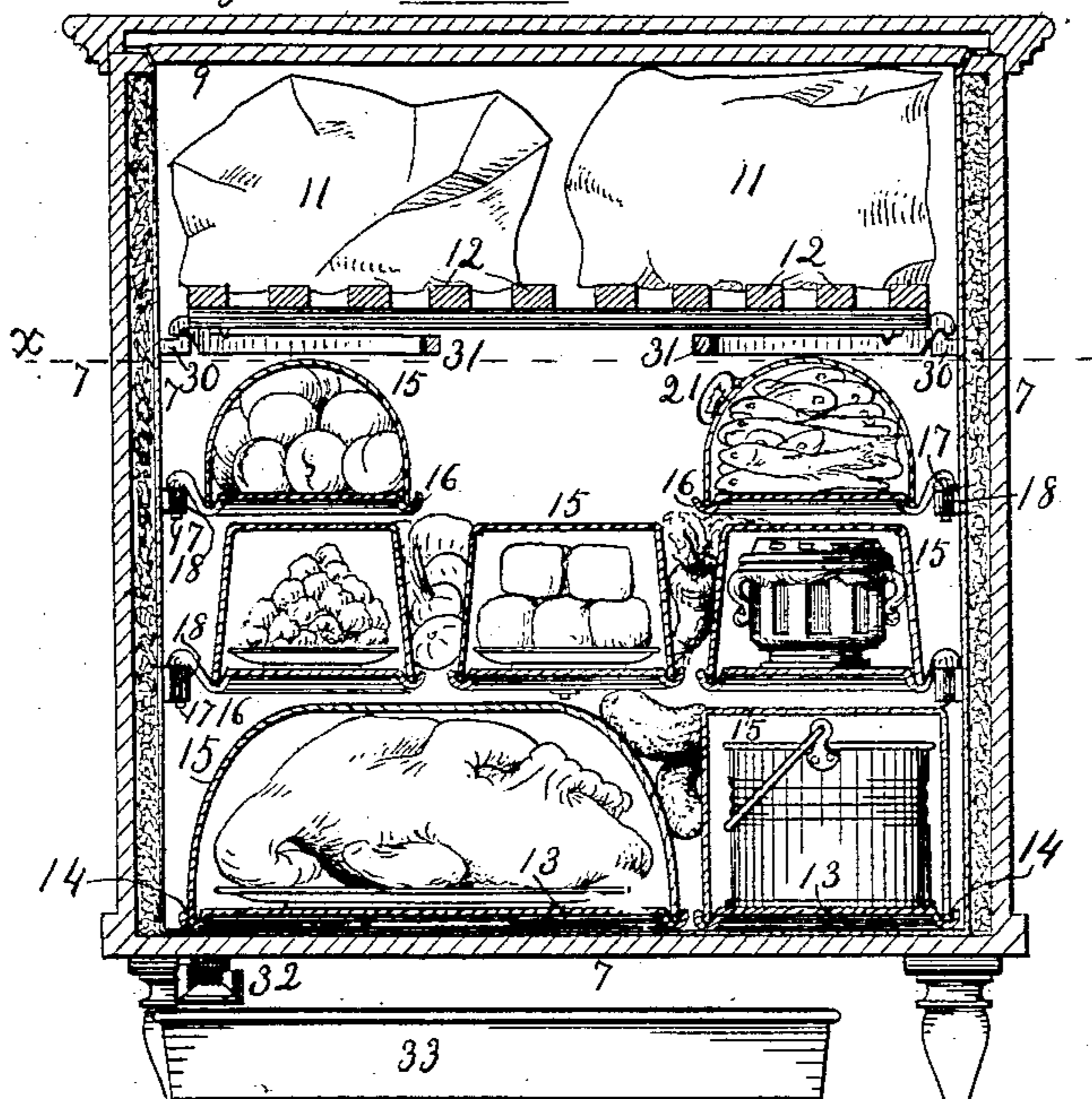
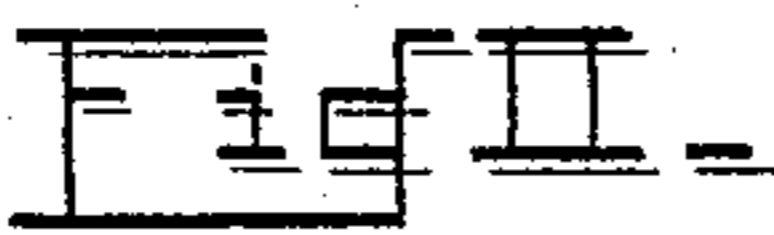
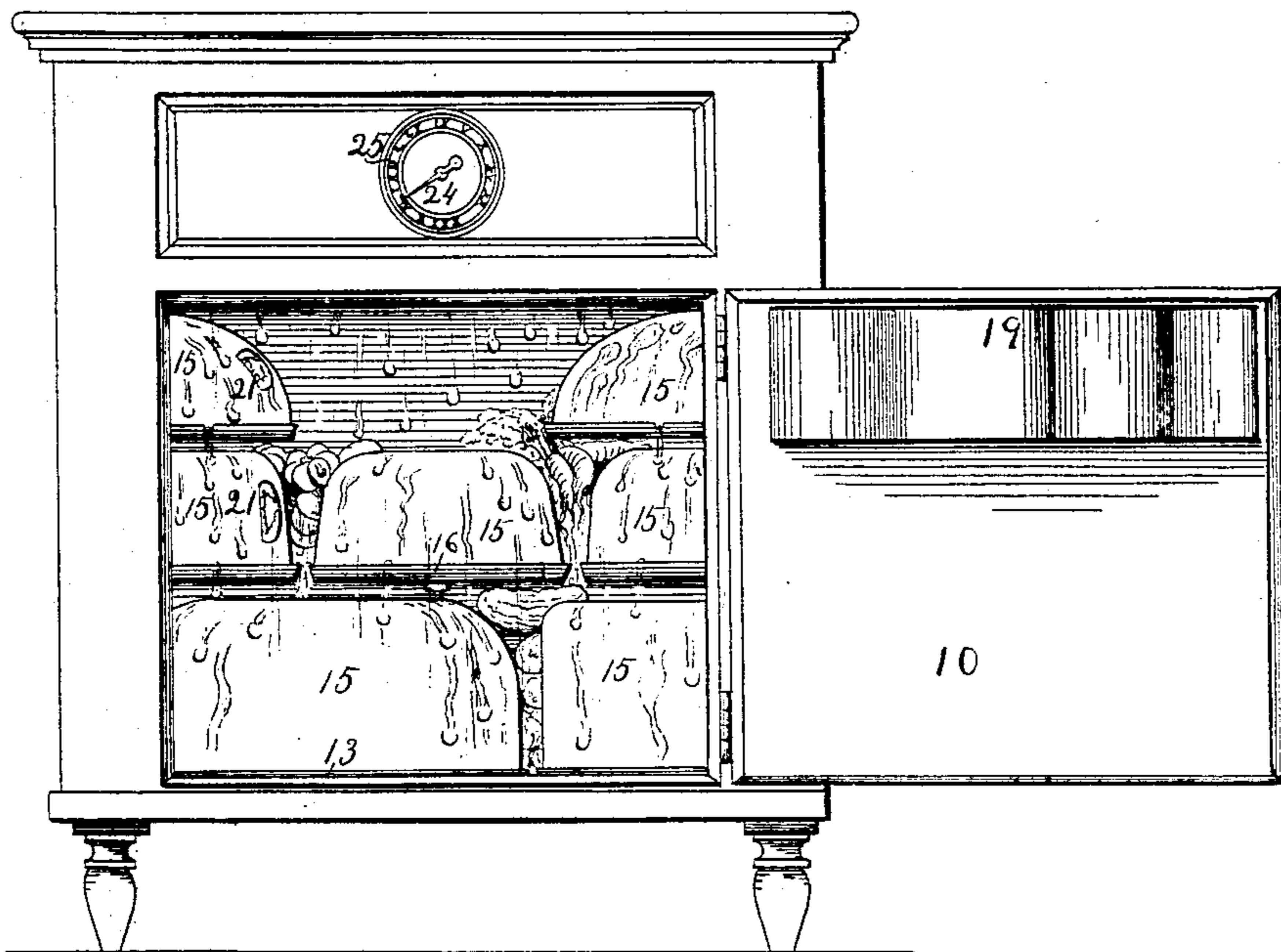
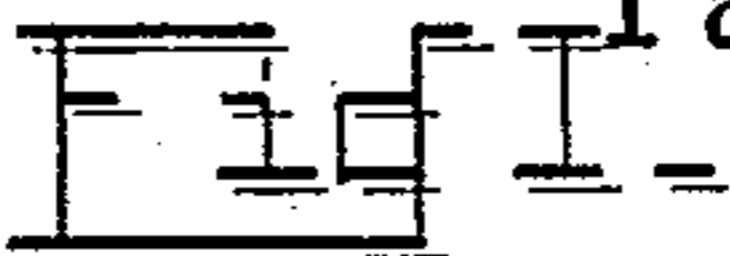
2 Sheets—Sheet 1.

E. B. HESS & W. X. STEVENS.

REFRIGERATOR.

No. 397,984.

Patented Feb. 19, 1889.



Witnesses

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Inventor

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By their Attorney *W. X. Stevens.*

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Fig III -

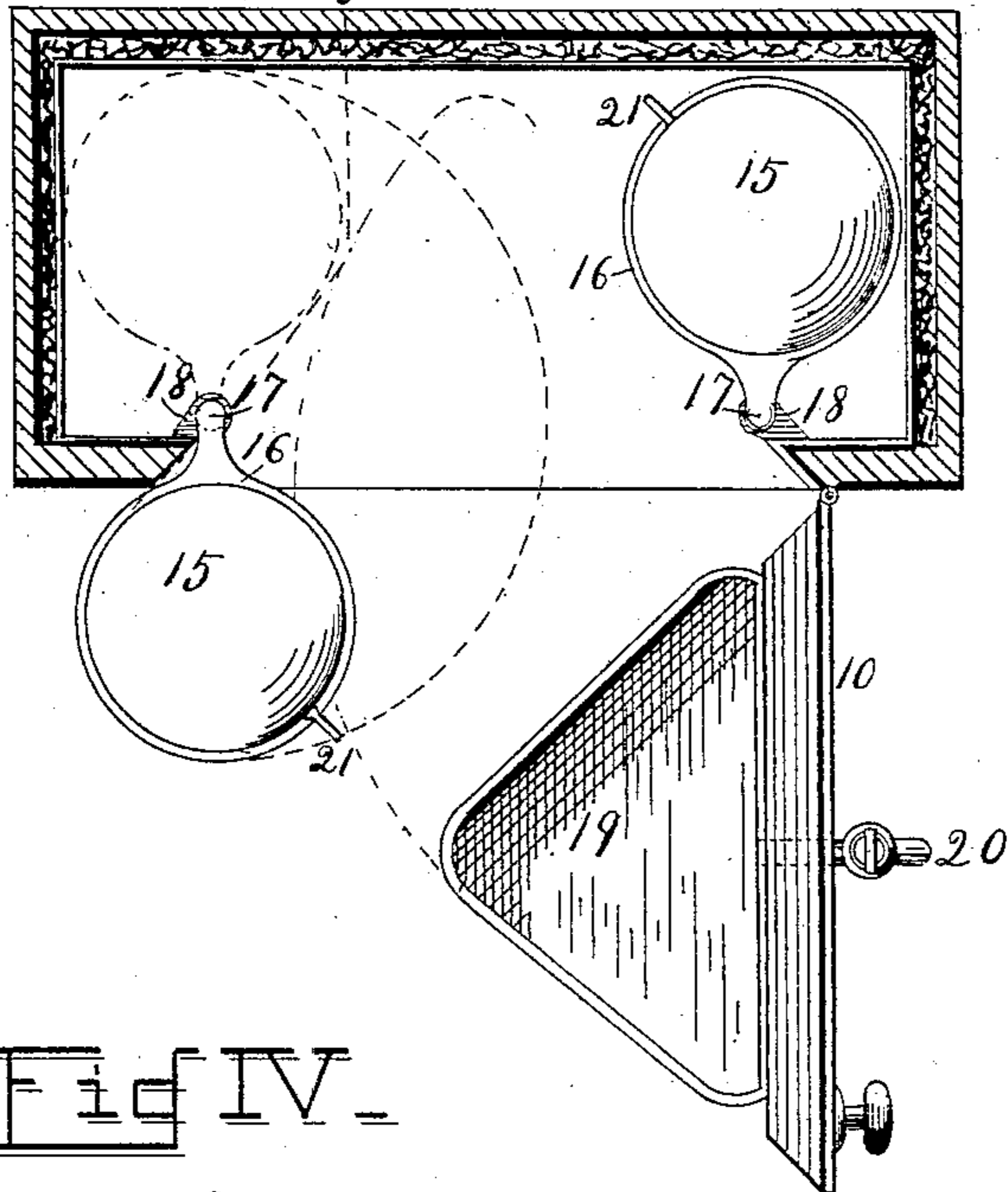


Fig IV -

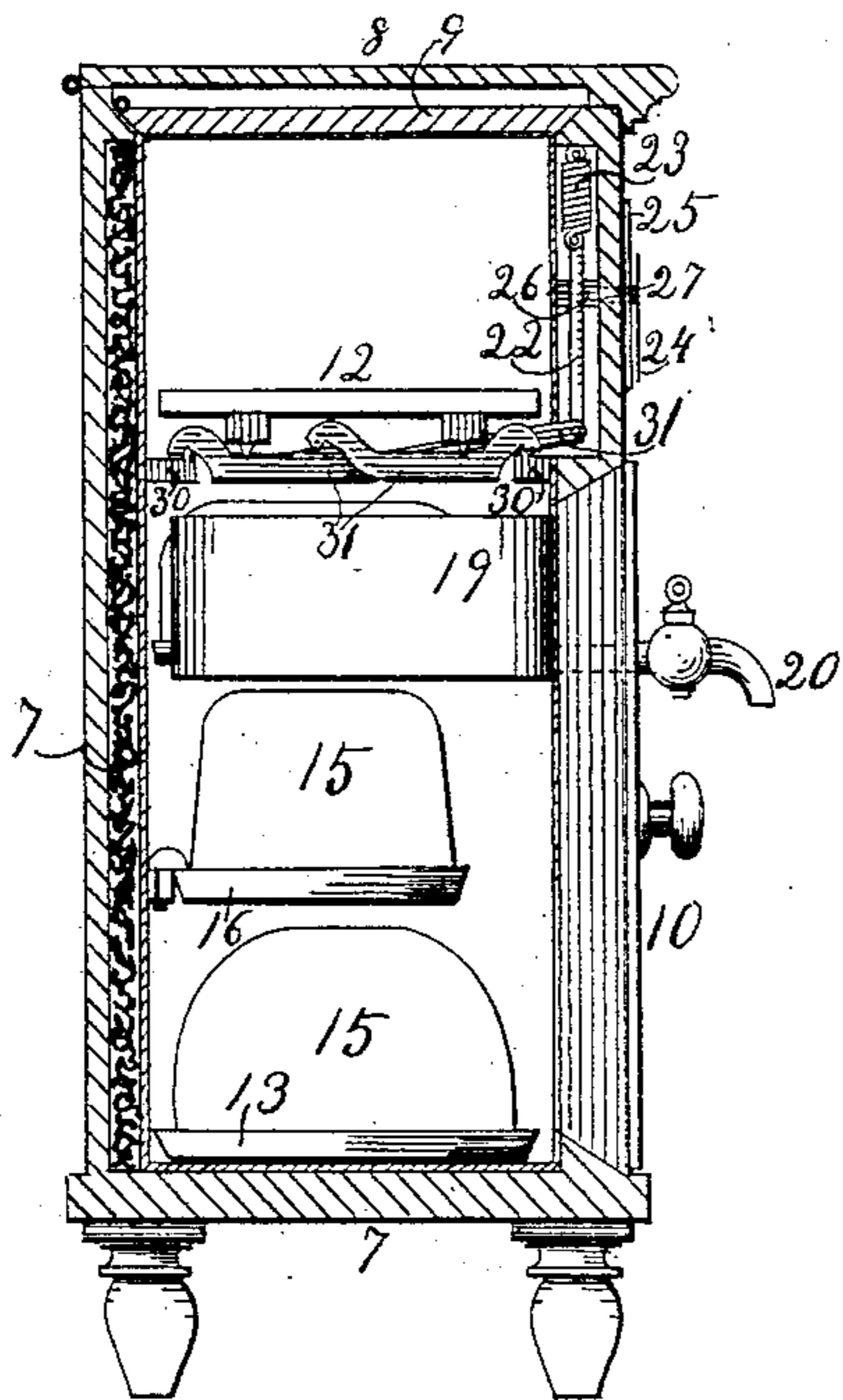
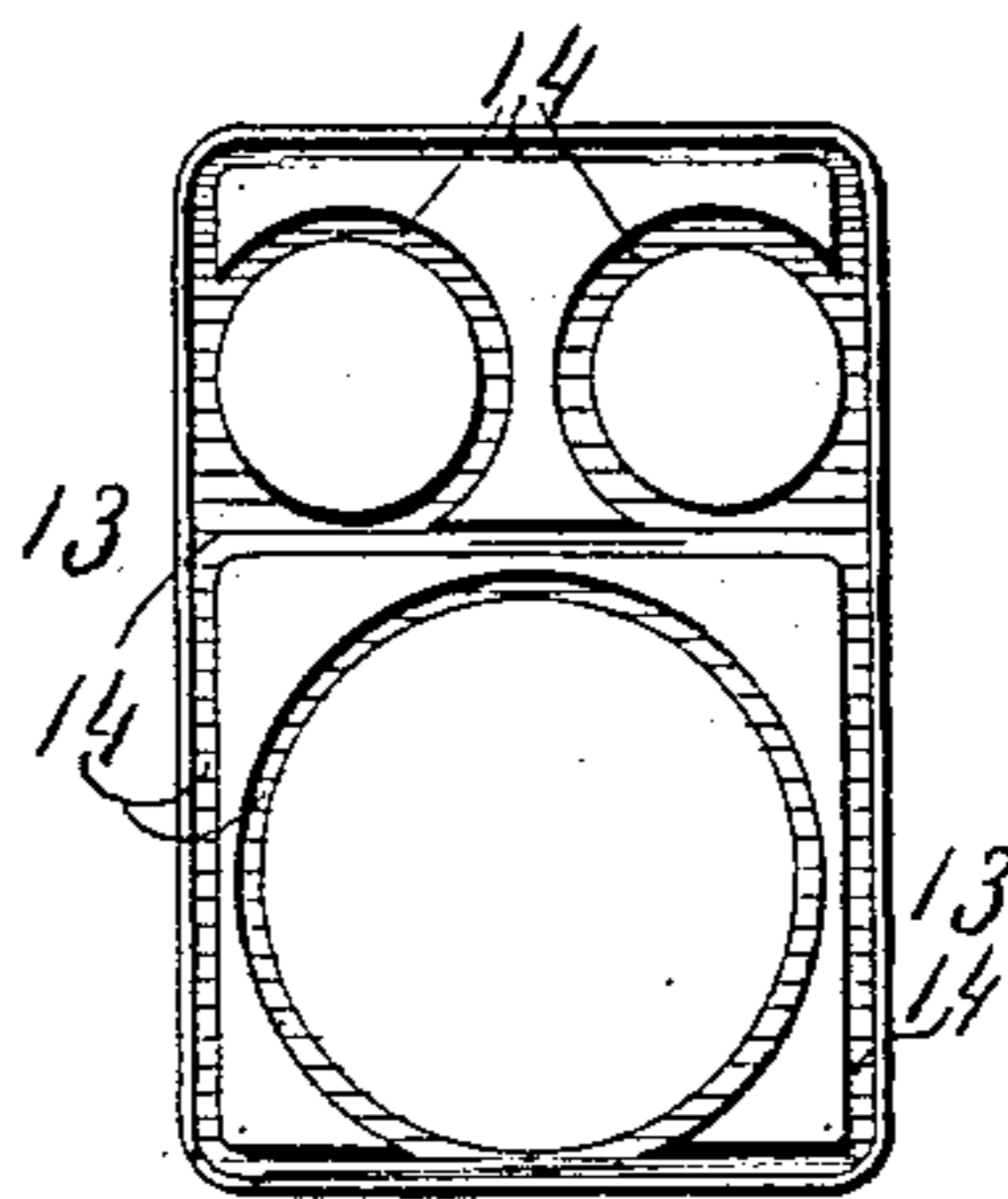


Fig V -



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# UNITED STATES PATENT OFFICE.

EDWARD B. HESS, OF NEW YORK, N. Y., AND WILLIAM X. STEVENS, OF WASHINGTON, DISTRICT OF COLUMBIA; SAID STEVENS ASSIGNOR TO SAID HESS.

## REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 397,984, dated February 19, 1889.

Application filed September 1, 1888. Serial No. 284,355. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD B. HESS and WILLIAM X. STEVENS, citizens of the United States, residing, respectively, in the city of New York, State of New York, and in the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Refrigerators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of refrigerators which are adapted for preserving food for daily use; and its object is, first, to provide means whereby each article of food which is kept in one common chamber of the refrigerator may be entirely separated from the atmosphere which is common to all, to protect absorbent articles—such as milk, butter, custard, &c.—from becoming contaminated by the exhalations from onions, cucumbers, fish, &c., and to preserve each article the longest practicable time by the least practicable consumption of ice.

To this end our invention consists in the construction and combination of parts forming a refrigerator, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I is a front elevation of our refrigerator with the door open. Fig. II is a longitudinal vertical section of the same, showing its interior in service. Fig. III is a horizontal section at the line *x*, Fig. II. Fig. IV is a transverse vertical section at the line *y*, Fig. III, with the door closed. Fig. V is a plan view of a modification of our water-pan.

7 represents the body of the refrigerator provided with two lids, 8 9, and a door, 10. These form a chamber, into the upper portion of which ice, 11, is to be placed upon an open grating, 12, and into the lower and larger portion of which the various articles of food are to be placed for preservation.

13 represents one or more water-pans, grooved at 14 near their edges to receive the lower edges of covers 15, which are close

dishes inverted, forming with the pans isolated cells.

16 represents other pans corresponding to the pans 13, but further provided each with a pivot-pin, 17, to engage any one of the sockets 18, fixed to the walls 7 of the chamber, whereby the pans 16 become bracket-shelves capable of being swung to the right or left in their sockets 18, and some of the sockets may be fixed at the sides of the doorway, as in Fig. III, so that the shelves therein hung may swing out at the doorway. The central portion of each pan 13 16 is raised about three-eighths of an inch above the bottom of its groove to serve as a floor for articles of food, or dishes containing them, to be placed on. In service, after placing the articles of food, either with or without a dish to hold it, upon a pan, the cover to that pan is to be placed over the food and into the groove in the pan, thus inclosing the food in a cell, and contents are to be returned within the chamber of the refrigerator and the door to be closed. Opening the door has let warm air into the chamber, and in cooling thereof a portion of the ice is melted, and water dripping therefrom falls upon the covers below and abstracts warmth from the air within each cover, thus reducing the temperature of the food therein to safety-point for preservation. At the same time the dripping water gathers in the grooves 14 in the pans, thus immersing the edges of the covers 15, and effectually sealing the cells against the passage of air to or from them under normal pressure. This imprisons within its cell the exhalations from any article, such as fish; it prevents the contamination of delicacies by inhalation from any source, each article being shut up in an atmosphere of its own, and it prevents those sudden changes of air around the food common to refrigerators not provided with these covers, inner chambers, or cells. As a large portion of the air within the common chamber is sealed up in the said cells, it is evident that the air between the cells the chamber will be cooled off after each closing of the door at less expenditure of ice than if the warm air had been permitted to blow

upon each article of food while the door was open. Again, the dripping of cold water through the chamber maintains it at a low temperature with less waste of ice than if dry air were maintained in the chamber. Should it occur that the covers be cooled to the dew-point, so as to abstract moisture from the air within them and produce sweating on their inner sides, this moisture will run down to the grooved pan, where only a very narrow ring of water is exposed within the cell, and the imprisoned air will contain less destroying germs than free dry air does. The upper two cells are pivoted at the sides of the doorway in order that they may be swung out at the doorway from beneath the grating 12, so that the covers may be raised off from their contents. This would give space for any covers below to be raised, or they also may be pivoted beside the door. In this way the lower pan may be reached while within the chamber, or it may be made in two or more parts or pans to be removed separately at the doorway. To swing out the two side cells, as shown in Fig. III, a central space would have to be left open, and to economize this we secure to the inner side of the door a receptacle, 19, which may be used for drinking-water and be provided with an external faucet, 20, from which to draw the water. When the door is closed, the receptacle 19 swings in between the cells 15. Each cover may be provided with one or more handles, 21, by which to lift it, and the covers may be made round, oblong, or of any desired shape to fit the grooves 14 in the pans and to receive food-dishes, so as to economize space in the chamber, always keeping in mind that the smallest cover which will properly seal an article is the best, because it furnishes the smallest amount of air, and air promotes decay or spoiling of food. The receptacle 19, fixed upon the door, might be adapted to hold vegetables or fruit or any article of food instead of being a cold-water tank. Some vegetables—such as cucumbers, lettuce, &c.—are best preserved in dripping cold water, and they may be placed upon and between the cells to economize space, and even fresh onions may be so kept without contaminating the neighboring cream secluded within its cell.

A large pan, 13, may be grooved to receive two or more covers at the same time, and if the grooves 14 cross one another in various ways, as shown in Fig. V, it will not prevent the perfect sealing of each cell, because the water will stand at one common level in all the grooves of the same pan, and when the edge of a cover is placed down into the water the cell is closed air-tight.

The grating 12 is the platform of our weighing device. Any style of weighing-scales suited for this purpose may be adapted, as follows, to fit our refrigerator.

30 represents four brackets fixed in the four

vertical corners of the chamber, each bracket having a V-shaped steel edge, upon which edges the levers 31 are fulcrumed. These levers have the usual scale-connections with each other to support the platform 12, and connect, also, with a spring, 23, by means of a rod, 22, which has a rack of gear-teeth along one side engaging a toothed pinion, 26, which is secured upon a journal, 27, that passes through the front wall of the refrigerator. 24 is an index-finger mounted on the shaft 27 and pointing to graduations on the dial 25, representing pounds and fractions thereof. When ice is placed upon the grating 12, its weight is indicated by the index-finger on the dial. This is a matter of importance in settling disputes between dealers and consumers of ice. It also enables the consumer to judge at any time whether he has ice enough to last over until another call of the dealer, and whether there is enough ice left in the chamber to keep it at the desired temperature.

The grating 12 may be substituted by any kind of open or perforated platform which will support ice and permit water to drip therefrom through it. It might be possible to insert ice at a door if it were made high enough, so that a lid to the refrigerator is not a positive necessity. Any openings which would give access to the interior of the chamber would serve for lids and doors.

There may be notches in the edges of the pans where it is desirable to direct the overflow to escape, or the outer edge of the pan may be lower than its central portion or body, so that the water will flow over before it would rise upon the inner platform. The water may escape from the chamber by any usual pipe, 32, and be caught in a drip-pan, 33. The pans may be separate from the bracket-shelves, so as to be removable therefrom. A cover may be inverted and filled with anything, then the pan be inverted and placed thereon, and the two may be turned right side up together and placed in the chamber in order that the cell may be filled full, as in case of the upper cells. (Shown in Fig. II.)

Having thus fully described our invention, what we believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination of a chamber having openings, a perforated support for ice in the upper portion of the chamber, grooved pans located in the chamber below the ice-support and in line of the drippings therefrom, and close covers fitted to the grooves in the pans, substantially as shown and described.

2. The combination of a chamber having openings, a series of vertical sockets secured to the inner face of the walls of the chamber, and a series of bracket-shelves provided with vertical pivots to engage the said sockets independent of the chamber-door, substantially as shown and described.

3. The combination of a refrigerator-cham-

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ber having a series of vertical sockets on the  
inner face of its walls, a series of grooved  
bracket-shelves provided each with a vertical  
pivot to fit the said sockets, and a series of  
5 covers fitted to the said shelf-grooves, sub-  
stantially as shown and described, whereby  
one shelf may be swung to one side from over  
another within the chamber to permit the re-  
moval of covers within the chamber, as set  
10 forth.

In testimony whereof we affix our signatures  
in presence of two witnesses.

EDWARD B. HESS.  
WILLIAM X. STEVENS.

Witnesses:

J. LEVY,  
ALBERT STEINLEIN,  
WM. L. SPEIDEN,  
P. E. STEVENS.