

(No Model.)

3 Sheets—Sheet 1.

C. E. VELIE.
REFRIGERATOR.

No. 501,854.

Patented July 18, 1893.

Fig. 1.

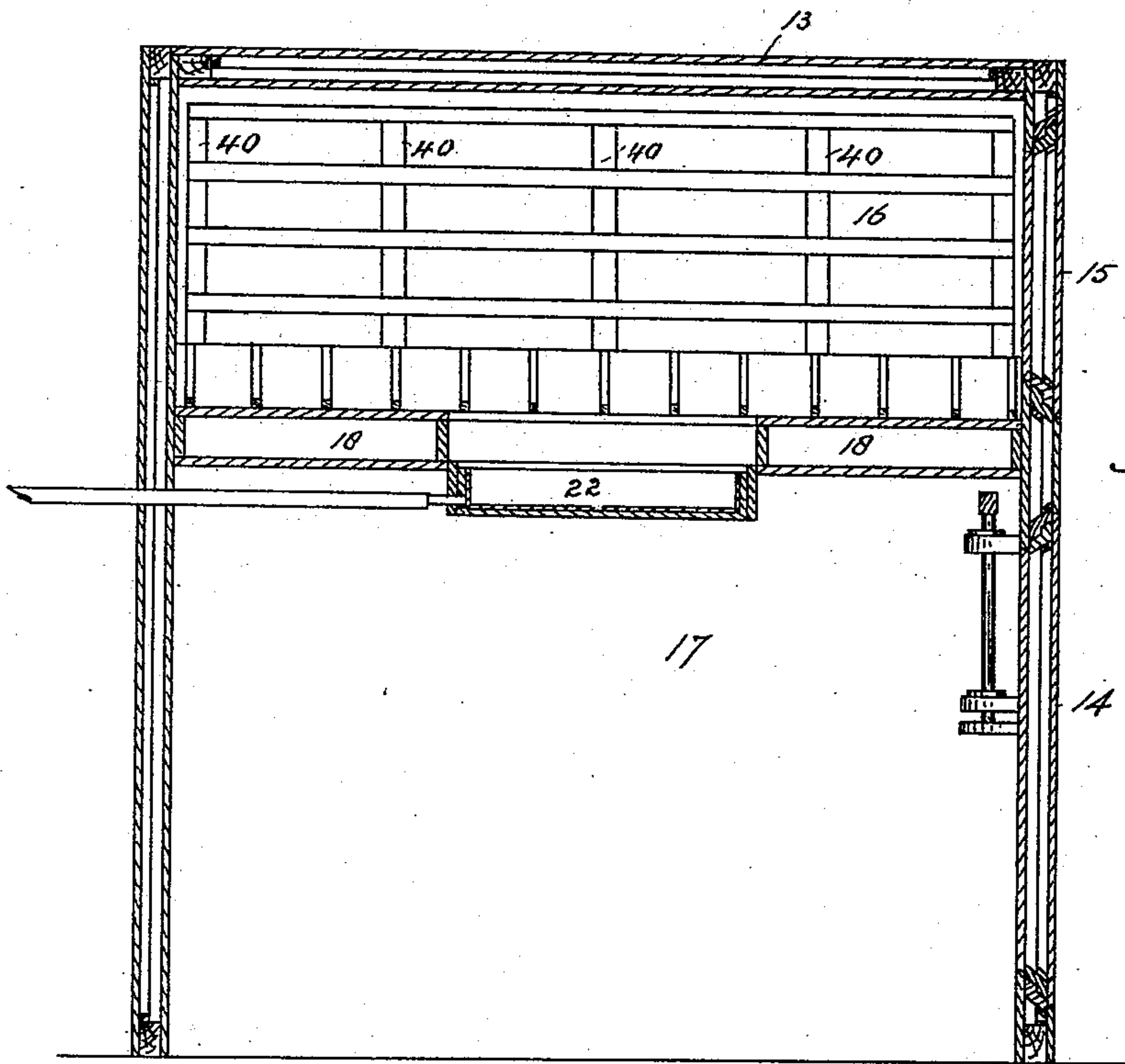
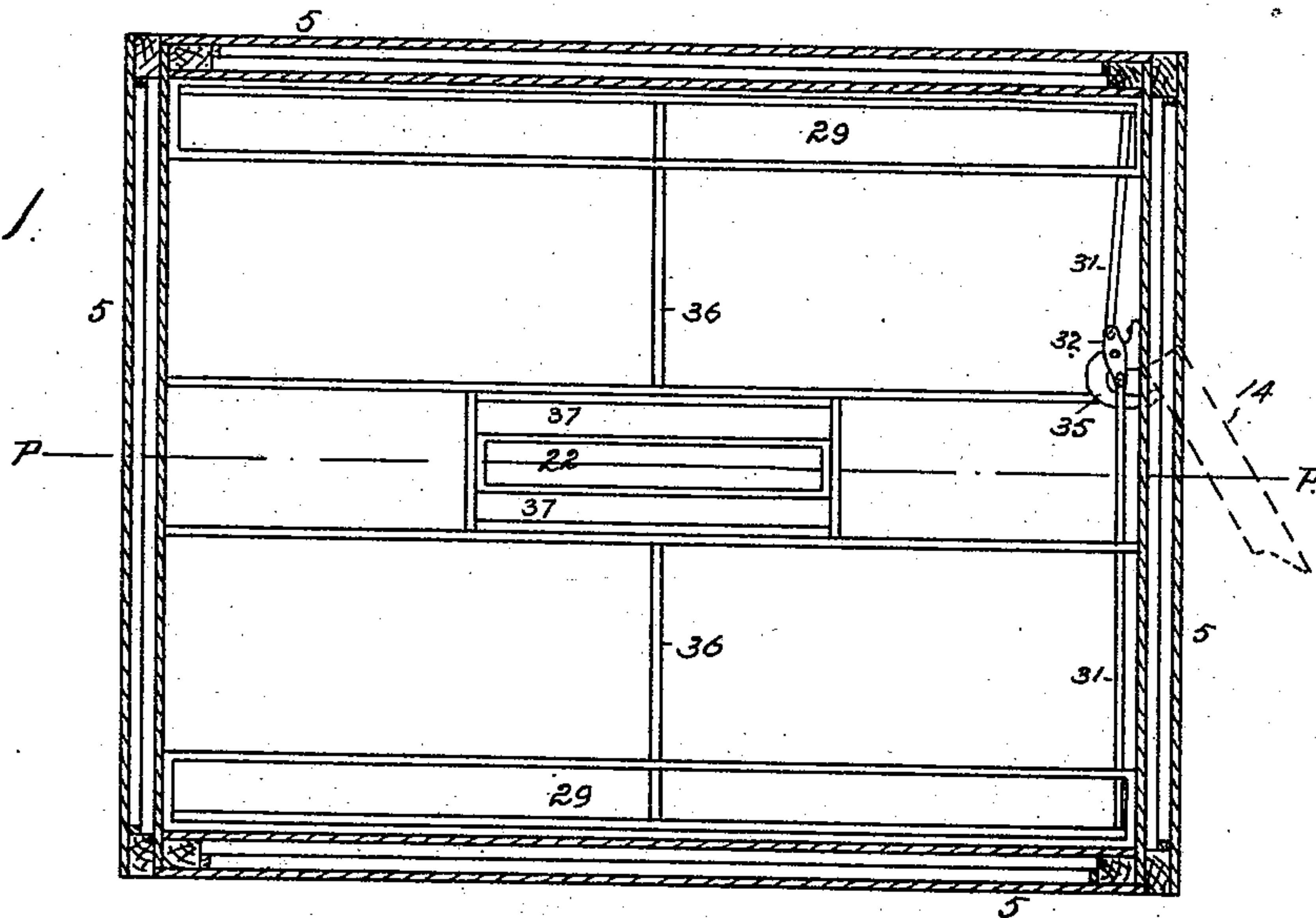


Fig. 2.

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3 Sheets—Sheet 2.

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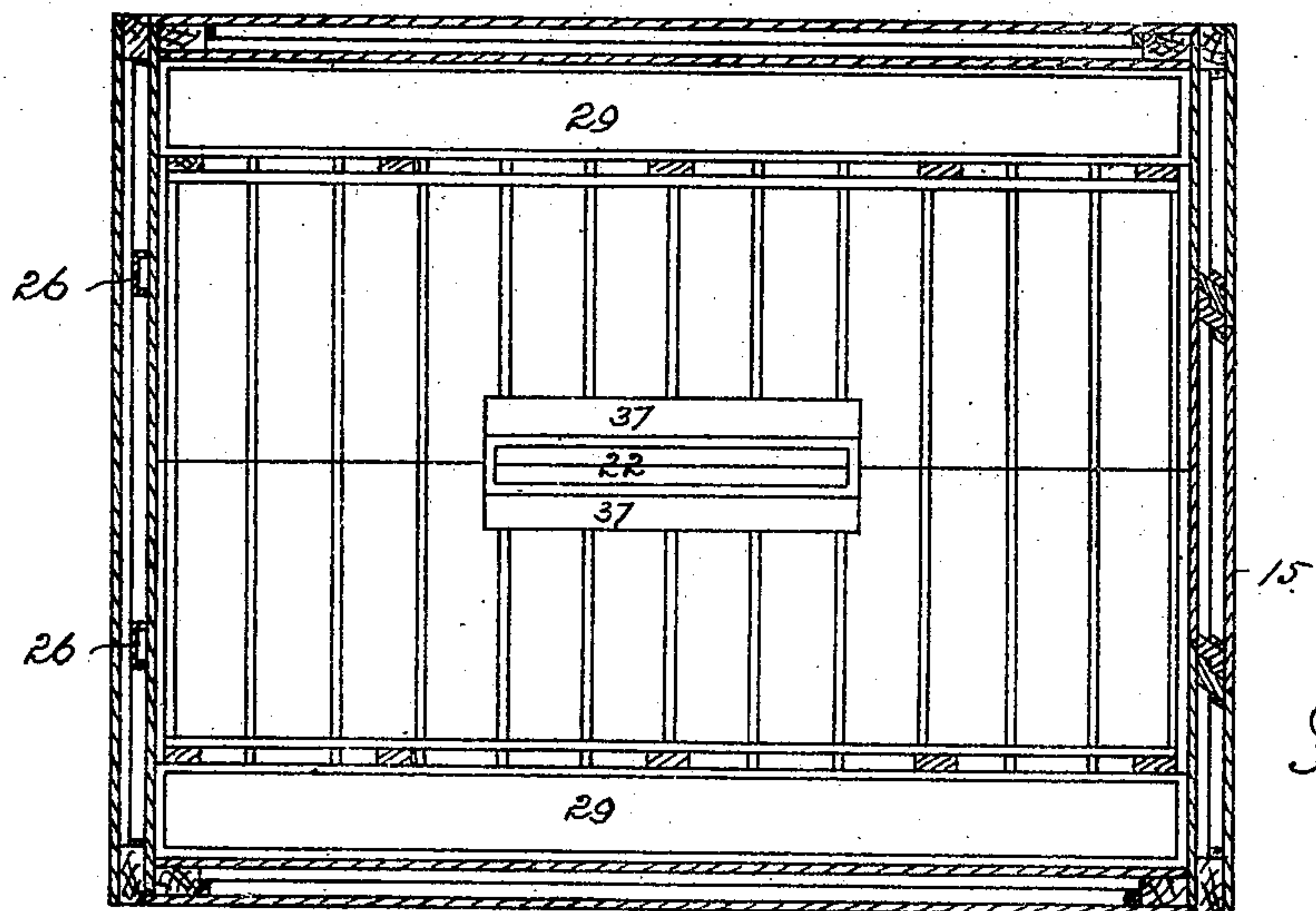


Fig. 3.

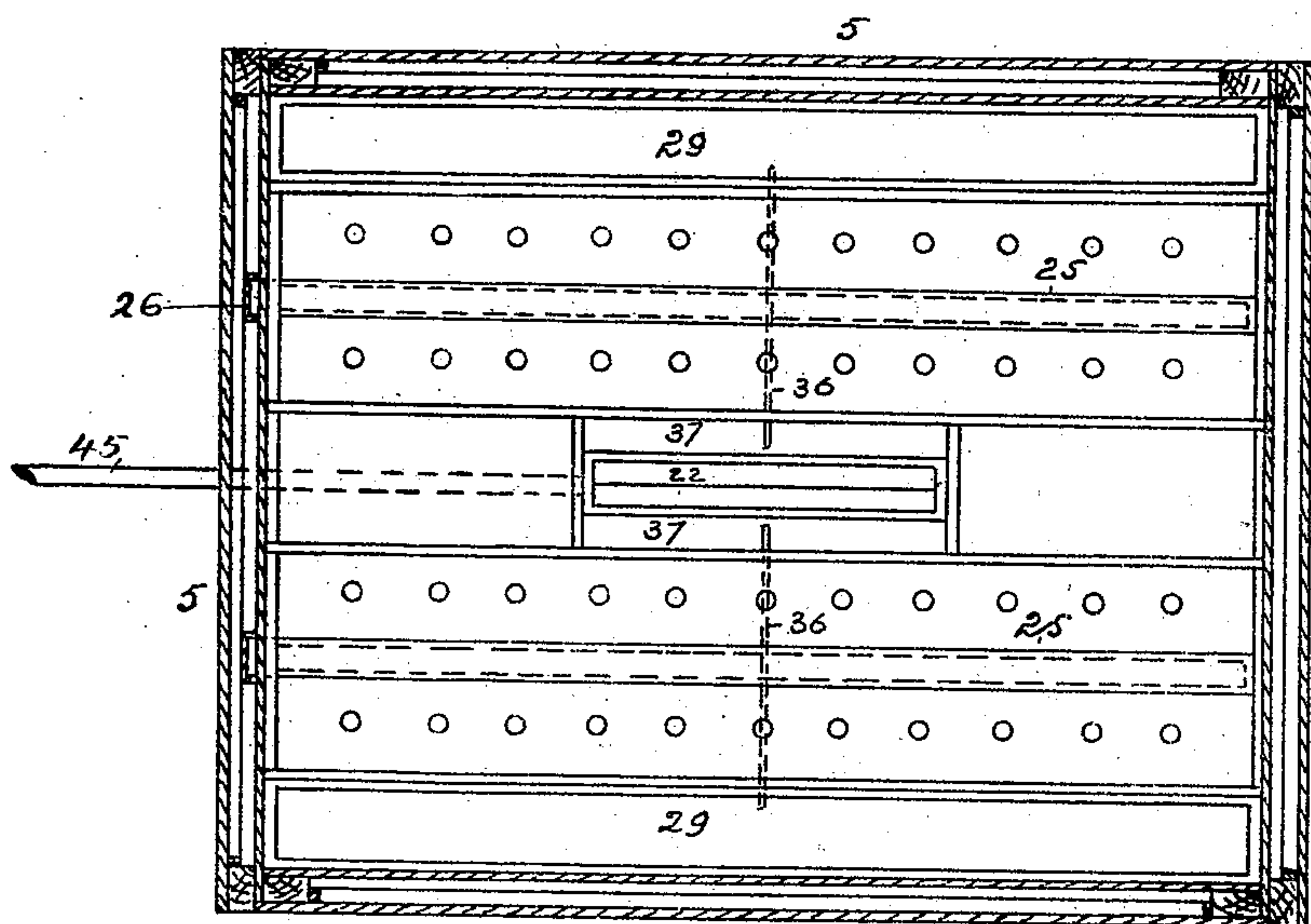
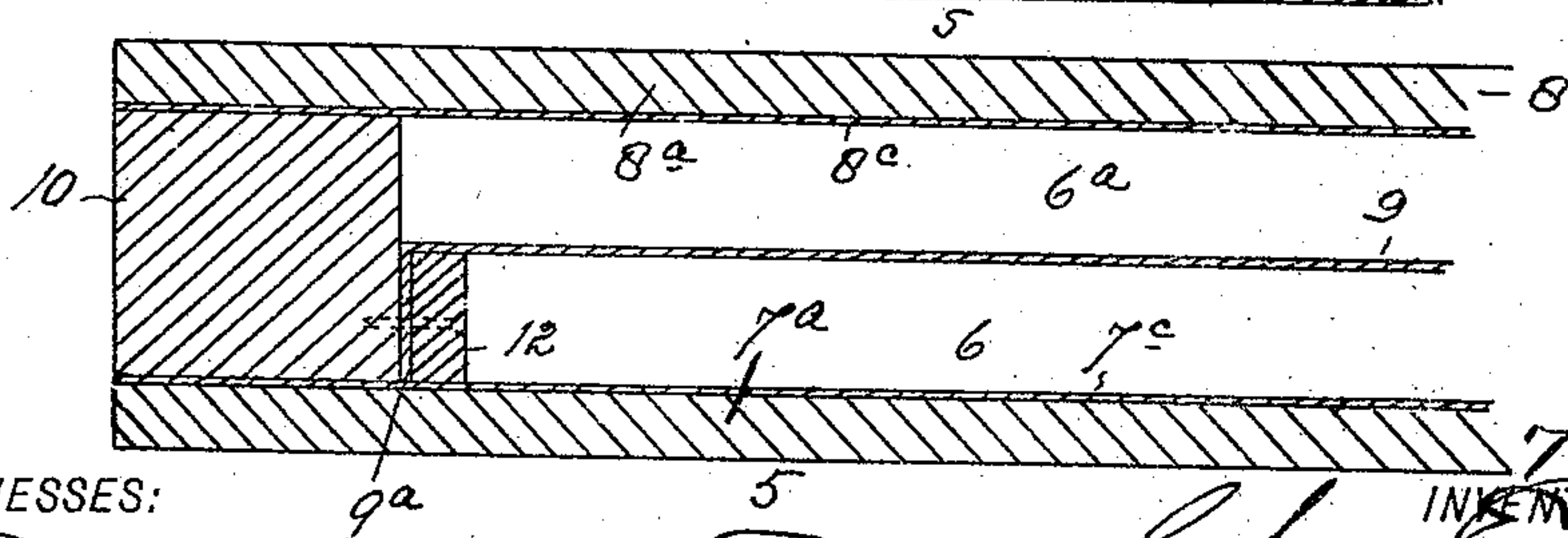


Fig. 4.



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Fig. 7

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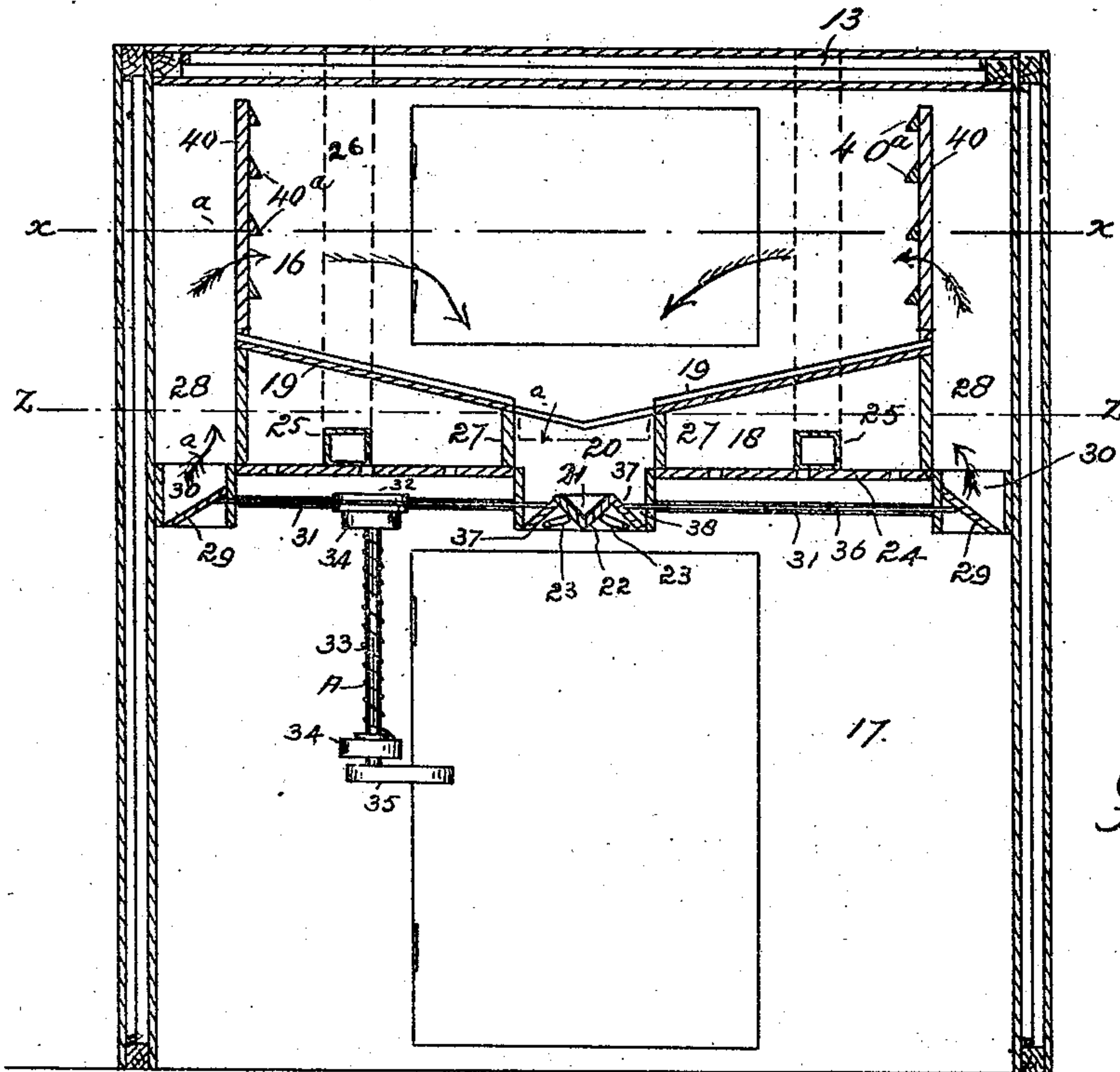


Fig. 5

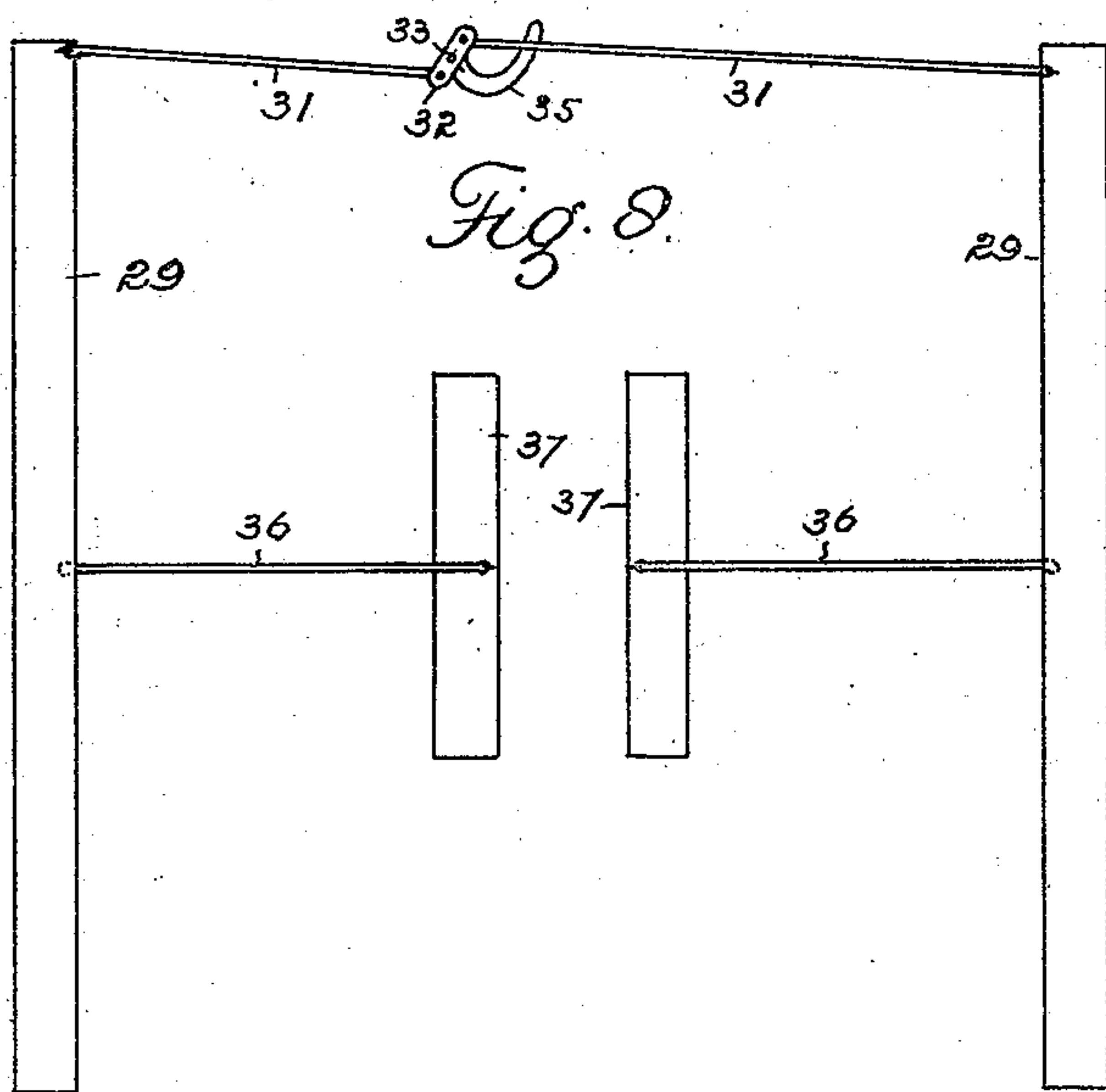


Fig. 8

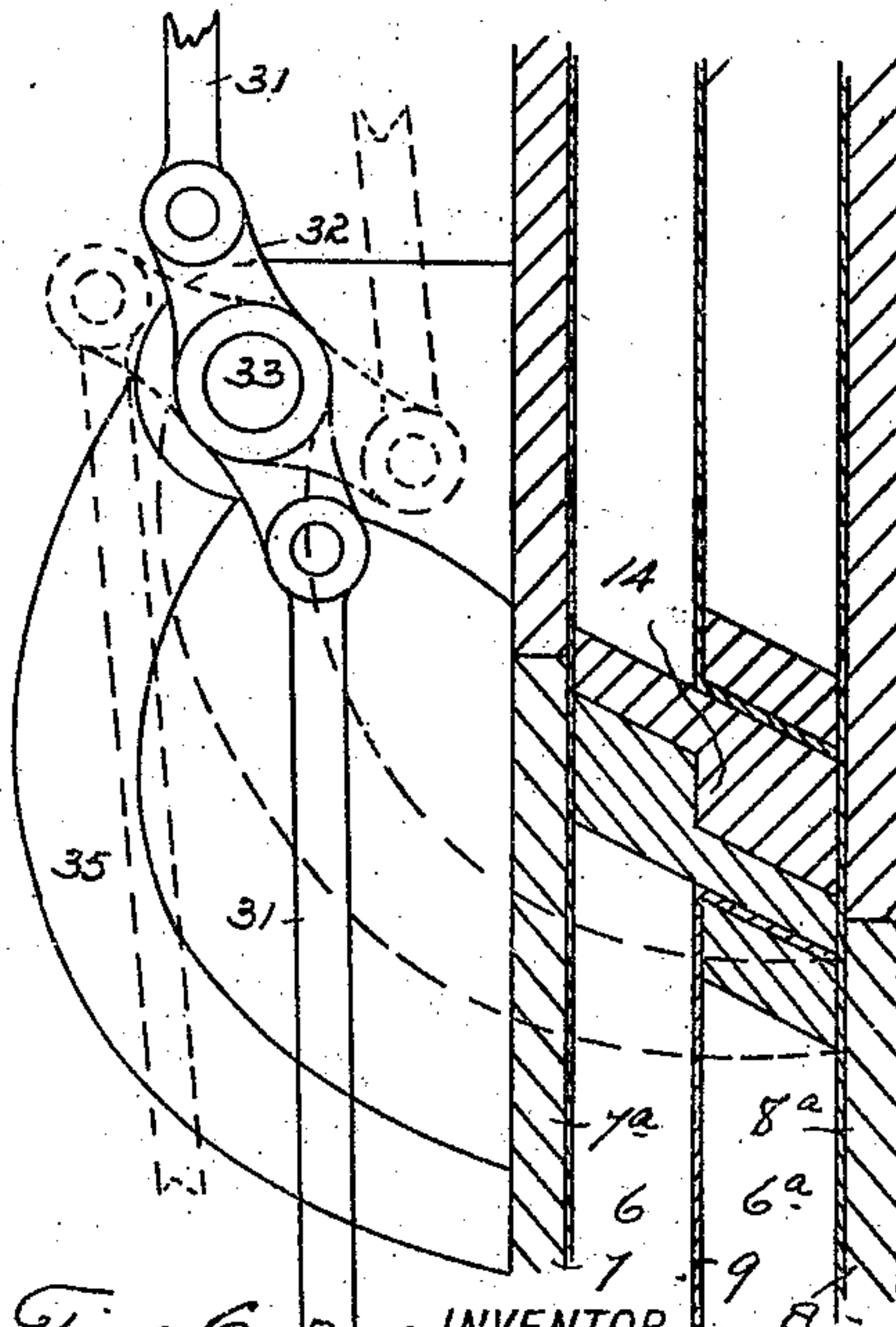


Fig. 6
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UNITED STATES PATENT OFFICE.

CHARLES E. VELIE, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO
JOHN M. KING, OF SAME PLACE.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 501,854, dated July 18, 1893.

Application filed February 21, 1893. Serial No. 463,287. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. VELIE, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Refrigerators; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in refrigerators and the object of the invention is to combine the highest degree of simplicity of construction and economy of cost with a maximum of effectiveness, durability and practicability in use.

To these ends the improvement consists of the features, arrangements and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a horizontal section taken through the box showing the valves and operating mechanism in plan view. Fig. 2, is a section taken on the line P P, Fig. 1. Fig. 3 is a horizontal section taken through the ice receptacle on the line $x-x$, Fig. 5. Fig. 4 is a similar section taken through the chamber below the floor of the ice box on the line $z-z$, Fig. 5. Fig. 5 is a vertical section taken through the refrigerator at right angles to that shown in Fig. 2. Fig. 6 is a fragmentary view illustrating the valve-operating mechanism, the same being shown on an enlarged scale. Fig. 7 is a fragmentary section illustrating the construction of the refrigerator walls. Fig. 8 is a skeleton view showing the valves and operating mechanism in detail.

Similar reference characters indicate corresponding parts or elements of the mechanism in the several views.

Let the numeral 5 designate the vertical walls of the refrigerator having two dead air spaces 6, 6^a formed by the outer, inner and intermediate partitions 7, 8 and 9. The outer and inner partitions are secured to the posts

10 and are preferably composed of wood-flooring lined with heavy paper.

In Fig. 7, 7^a and 8^a indicate the wood part, while 7^c and 8^c indicate the paper lining of the outer and inner partitions respectively. The intermediate partition is preferably composed of paper having its extremities bent to engage the surface of the posts as shown at 9^a and held in place by cleats or slats 12 laid on the bent extremities and secured to the posts. These vertical walls 5 are first formed in separate sections, or in knock-down shape and then assembled to form the sides of the refrigerator. The top 13 and the doors 14 and 15 are preferably of the same construction as the vertical walls and are so illustrated in the drawings.

The space within the walls of the structure is divided into three compartments, namely, the ice chamber 16, the main chamber 17 and the intermediate chamber 18. The bottom 19 of the ice chamber is inclined toward the center opening 20 and is adapted to carry the drippings from the ice to the removable pan 21 resting upon a trough-shaped support 22 held in place by pivoted buttons 23.

The chambers 17 and 18 are separated by a perforated partition 24. Through chamber 18 pass the removable perforated flues 25 which extend the whole length of the chamber and are closed at one end while they communicate at the opposite extremity with the vertical flues 26 which communicate with the open air at the top of the refrigerator. Chamber 18 is separated from the opening 20 by the vertical partitions 27 and is separated on two sides from the outer vertical walls by passage ways 28 communicating with the ice chamber. Between passage ways 28 and chamber 17 are located the movable hinged valves 29 adapted to close openings 30 between chambers 17 and 16. These valves are controlled by pitmen 31, movably attached at their outer extremities to the valves while their opposite extremities are pivoted to the respective ends of an arm 32 made fast on a vertical shaft 33 and forming in effect two cranks on the shaft which is journaled in stationary bars 34.

To the lower extremity of shaft 33 is made fast one extremity of a curved arm 35. The

opposite or free extremity of this arm projects normally into the path of the door 14, as shown by dotted lines in Fig. 6. When arm 35 is in this dotted line position, the door leading to chamber 17 is open and valves 29 are closed. The gravity of the valves causes them to assume this position as soon as the door is opened. A coil spring A may, however, be used in aid of gravity to accomplish this end where found desirable or necessary. This spring is coiled around shaft 33 to which it is attached at one extremity, the other extremity being made fast to one of the stationary boxes 34. The arrangement is such that when the door is closed the spring A is placed under tension. Hence as soon as the door is opened the recoil of the spring supplements gravity in closing the valves. The inward swing of the door brings it to engagement with the free extremity of arm 35 and moves said arms sufficiently to close the valves through the medium of shaft 33 and pitmen 31, a partial rotation being imparted to the shaft by the movement of the curved arm which engages the door, preferably at its vertical center, thus avoiding all tendency of the door to warp as would be the case if the arm engaged the same nearer one end than the other.

At points about midway between the extremities of valves 29 are movably attached the outer extremities of two pitmen 36, 36, the opposite extremities of which are movably connected with two hinged valves 37, 37 located in central openings 38—38 connecting the chambers 16 and 17. The connection between valves 29 and 37 is such that the two sets of valves are simultaneously and correspondingly operated, being closed by gravity either alone or aided by the spring A and opened by the action of the door upon arm 35. When the door 14 is closed, the air from the main chamber 17 passes upward through the flues 28 and down through the central passage way 20, as indicated by arrows *a*, while when the door 14 is open the valves are closed and the warm air which enters the outside passes upward through the perforated floor and thence into the horizontal flues, and out through the vertical flues, while as soon as the door is closed the valves are again opened, allowing a free circulation of the cold air from the ice chamber to the main chamber below.

The ice box is provided with upright posts 40 supported upon two opposite edges of bottom 19. These posts carry projections 40^a adapted to engage the ice as it is thrown into the box through door 15 and prevent any of the drippings from passing outward and down through openings 30 to chamber 17.

The drippan 21 is provided with an outlet conduit 45 leading to the outside of the refrigerator.

Having thus described my invention, what I claim is—

1. In a refrigerator, the combination with the outer walls, of a partition dividing the inclosed space horizontally into two compartments, a movable valve controlling an opening in the horizontal partition, a vertical shaft journaled in a suitable support in proximity to the door of the lower compartment, an arm attached to the top of this shaft, a pitman connected at one extremity with said arm and at the opposite extremity with the valve, and an arm attached to the lower extremity of the shaft and projecting into the path of the door, whereby the closing of the door engages the last named arm, gives the shaft a partial rotation and opens the valve through the medium of the pitman, substantially as described.

2. In a refrigerator the combination of the outer walls, a partition dividing the inclosed space into upper, lower and intermediate compartments, the partition separating the two last named chambers being perforated, flues located in the intermediate chamber and communicating therewith by suitable openings, said flues leading to vertical extensions attached to the outer wall and communicating with the open air, substantially as described.

3. In a refrigerator the combination with the outer walls, a partition dividing the inclosure horizontally into two compartments, and the door leading to the lower compartment, of movable valves so located as to control ports formed in the horizontal partition, a vertical shaft journaled in a suitable support and located in proximity to the door, arms made fast to the upper extremity of the shaft, pitmen connecting these arms with the valves, a coil spring surrounding the shaft and attached thereto at one extremity, its opposite extremity being connected with the stationary support, and an arm attached to the lower extremity of the shaft and projecting into the path of the door, the parts being so arranged and connected that the closing of the door acts upon the arm and opens the valve through the medium of the shaft and the pitmen, while as the door is opened the action of the spring closes the valves, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. VELIE.

Witnesses:

WM. MCCONNELL,
JOHN-M. KING.