

(No Model.)

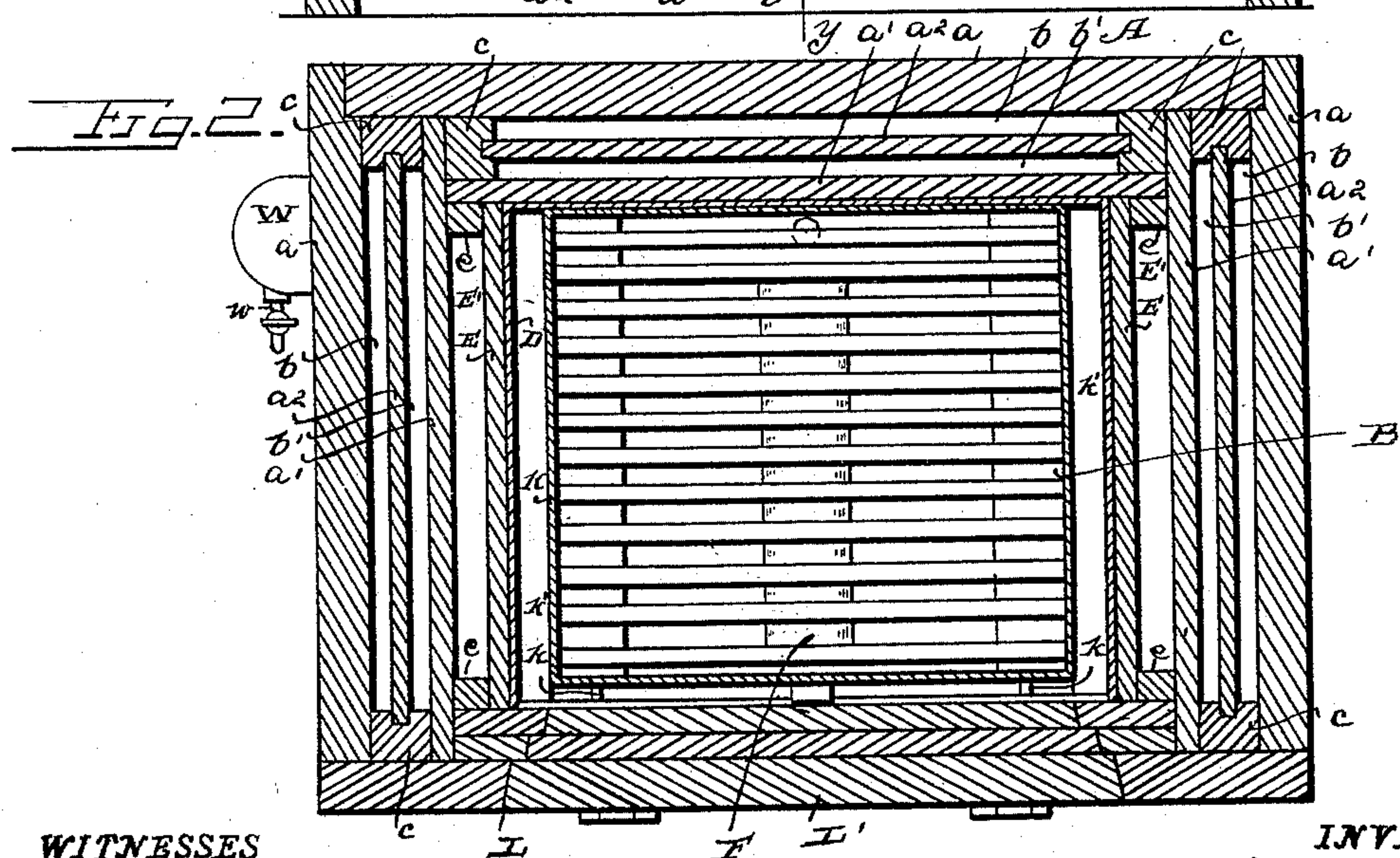
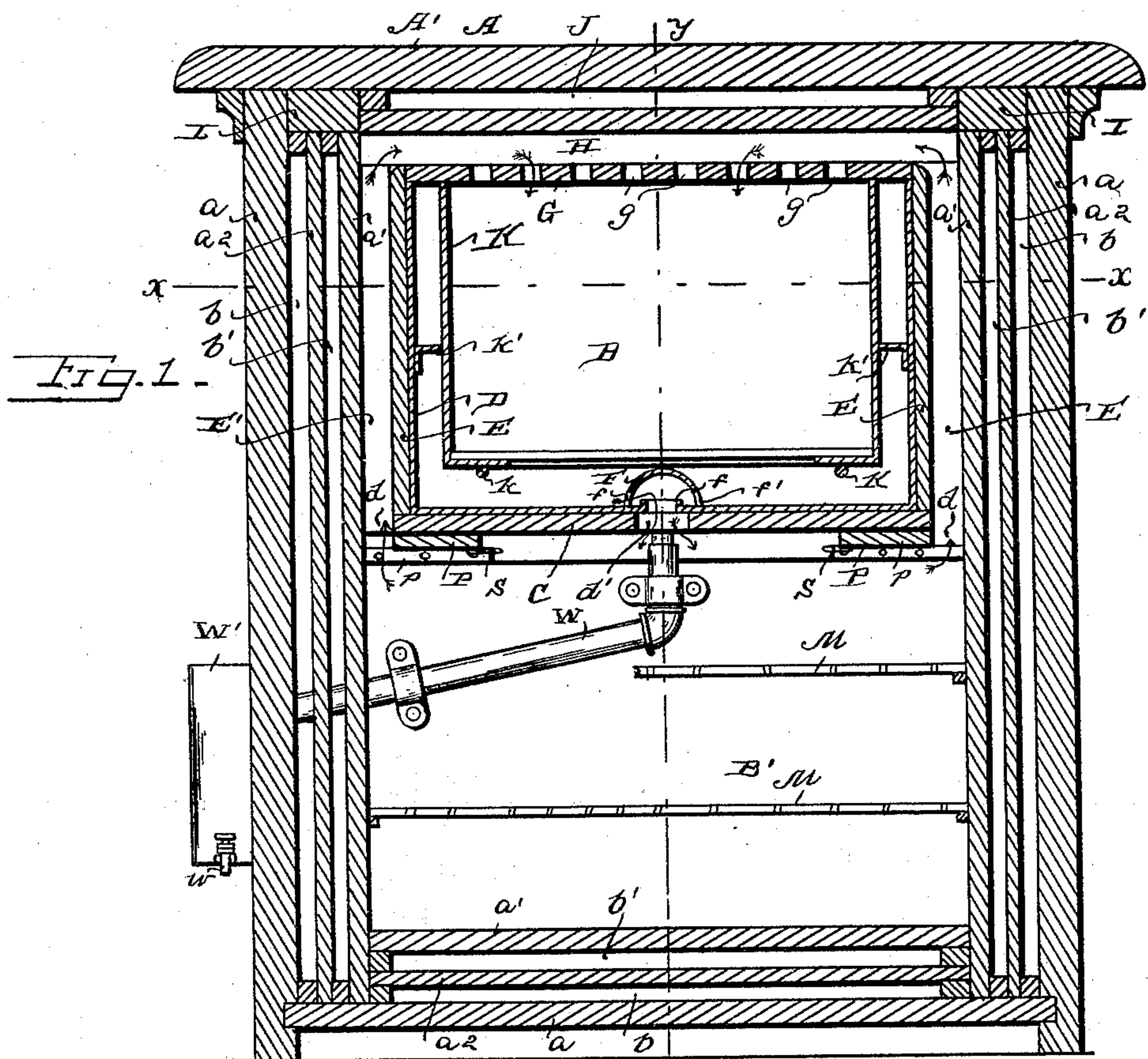
J. A. HENKEL.

2 Sheets—Sheet 1.

REFRIGERATOR.

No. 505,358.

Patented Sept. 19, 1893.



WITNESSES

Jesse Heller.
Phillips.

INVENTOR

Julius A. Henkel,
by E. W. Anderson -
his Attorney

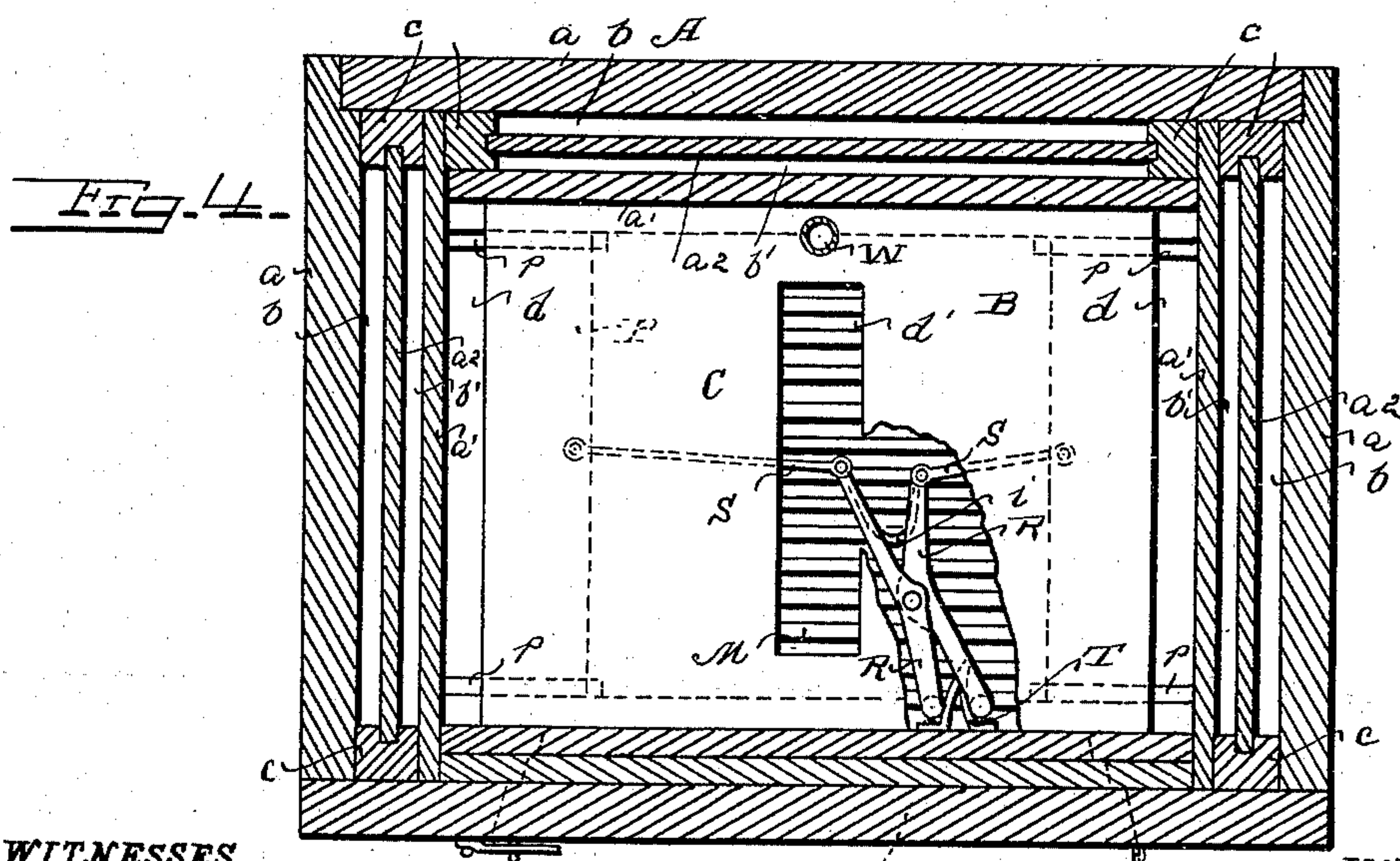
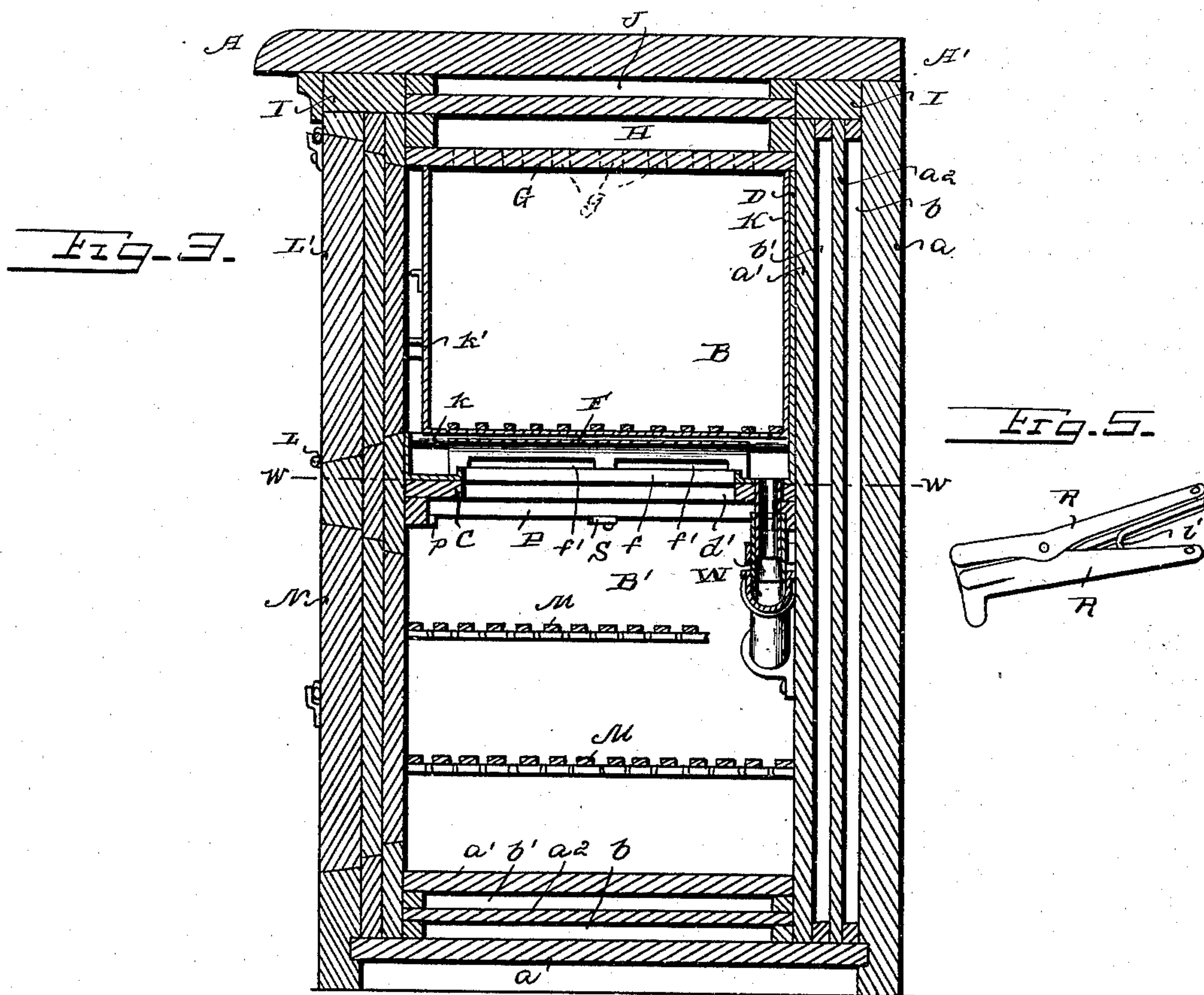
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UNITED STATES PATENT OFFICE.

JULIUS A. HENKEL, OF GREENVILLE, MICHIGAN.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 505,358, dated September 19, 1893.

Application filed April 27, 1893. Serial No. 472,070. (No model.)

To all whom it may concern:

Be it known that I, JULIUS A. HENKEL, a citizen of the United States, and a resident of Greenville, in the county of Montcalm and State of Michigan, 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 letters of reference marked thereon, which form a part of this specification.

Figure 1 is a vertical longitudinal section of the refrigerator. Fig. 2 is a horizontal transverse section of the same on the line $x-x$, Fig. 1. Fig. 3 is a vertical section on the line $y-y$, Fig. 1. Fig. 4 is a transverse section on the line $w-w$, Fig. 3, with a portion broken away, and Fig. 5 is a detail perspective view of the valve-operating mechanism.

This invention has relation to certain new and useful improvements in refrigerators, the object being to improve the general construction and arrangement of the refrigerator box, and to provide means for securing an effective circulation of air therein, and for keeping foul or warm air away from the ice and provision chambers; and the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings illustrating the invention, the letter A designates the refrigerator box, which is constructed with an outlet wall a , an inner wall a' , and with a central wall or partition a^2 , between said outer and inner walls, and forming therewith air spaces or chambers b, b' . This arrangement of walls and air spaces extends entirely around the box, with the exception of the front, where the three walls are placed closely together without the intermediate air chambers, and at the top, where the arrangement is somewhat modified, as will presently be described. The central walls or partitions a^2 are held in place by corner cleats c, c , having grooves therein to receive the edges of the walls, said cleats also serving to hold the inner walls in place, as shown.

The interior of the box is divided into two chambers B, B', one above the other, by a transverse horizontal partition C, which is so arranged as to leave an opening d between it and each inner end wall of the box. Said partition also has a central transverse opening d' .

The upper apartment B forms the ice chamber, and in this chamber is placed an ice chest D, preferably of metal, and open at the top, and which may be removable. This chest, while it fits snugly against the front and back inner walls a', a' , does not extend to the end walls of the chamber, but fits between vertical transverse flue boards E, which are held a short distance away from the said end walls by means of cleats e . The arrangement of these boards E, E, is such that a flue E' is formed at each end of the ice chest, said flues forming continuations of the openings d, d , at the ends of the transverse partition C. In the bottom of said chest is a transverse opening f , which registers with the opening d' in the partition C, said opening f being protected by an arched guard plate F, having openings f' along its lower edges, and open at the ends.

G designates the cover of the chest D, said cover being shown as attached to and removable with the cover A' of the refrigerator. Through this cover G is formed a series of vertical perforations or openings g , which communicate with the interior of the chest G and with an air chamber or flue H above said chest in communication with the flues E', E'. The upper ends of the vertical air spaces or chambers b, b' , at the sides and end of the box are closed by strips I, secured to the upper edges of the walls. Between the upper wall of the flue H and the outer wall of the cover or top A', is an air chamber or space J in said cover.

Supported in the ice chest upon rods k, k , and held away from the end walls thereof a short distance by guards k', k' , is an ice box K, open at the top, and having a grating at the bottom. This box is made removable and is inserted and removed from the chest through an opening L cut through the front walls of the box, and through the wall of the

chest. This opening is closed by a hinged door L', having rabbeted edges, which seat in the edges of the opening in the manner of a safe door.

5 The lower apartment B' forms the provision chamber, and is provided with one or more shelves M, of any suitable material and having means for admitting the circulation of air therethrough. Entrance to the chamber
10 is furnished by means of a door N at the front, said door also having rabbeted edges which have corresponding seats in the walls. The cold air from the ice chamber falls through the central opening d' in the partition
15 C into the provision chamber, the warmer air rising through the openings d, d, and flues E', E', in the chamber or flue H, and through the perforations or openings g into the ice chamber, thus maintaining a continuous cir-
20 culation.

In order that the passage of air up through the flues E', E', may be prevented when the door N of the provision chamber is opened, I provide the openings d, d, with dampers or
25 valves P, P, which are arranged to slide in guides p, p, on the under side of the partition C, mechanism being provided for causing said valves to close when the door N is opened, and to open when said door is closed, as will
30 now be described.

Pivoted to the under side of the partition C by a common pin are two levers R, R, the shorter arms of which project to a point just inside the inner front wall. The longer arms
35 of said levers extend back and to each is connected one end of a link S, the other end of which is connected to the central portion of one of the valves P, a spring i interposed between the levers R, R, back of the pivot act-
40 ing to spread the rear arms of said levers, and keep the valves closed. When however the door N is closed, a pointed or V-shaped lug or projection T thereon, centers between the forward arms of said levers, forcing them
45 apart, and drawing the rear arms together, thereby opening the valves, which are thereby held open as long as the door remains closed. When the door is opened, the lug is withdrawn from engagement with said levers, and the
50 spring immediately acts to close the valves, so that no outside air can get access to the ice chamber.

W is a waste pipe which runs from the lower rear portion of the ice chamber down and along
55 the rear wall of the provision chamber, and out through the wall thereof, where it discharges into a closed tank W', having a draw-off cock or faucet w.

The inner walls of the provision chamber
60 and ice chamber should be of a non-odorous character.

The construction of the box is such, it will be observed, that it is impossible for the outer air to come in contact with the ice, or with the
65 walls of the ice chamber or chest, so that a small piece of ice will last for a considerable

period of time, the provision for circulation being such as to insure the proper lowness of temperature in the provision chamber.

Having described this invention, what I 70 claim as new, and desire to secure by Letters Patent, is—

1. In a refrigerator, the box A divided into two chambers B, B' by a horizontal partition C, having an opening d between it and each 75 inner end wall of the box, and a central opening d', an ice chest D in the upper chamber, said chest fitting snugly against the front and back inner walls of the box, but held away from the end walls thereof to form flues E' 80 situated over the openings d, a perforated cover G for said chest, an air chamber above said cover, and a guarded opening f in the bottom of said chest and registering with the opening d' in the partition, substantially as 85 specified.

2. In a refrigerator, the combination with the chamber B in the upper portion of the box, and separated from the lower chamber 90 thereof by a partition C having end openings d and a central opening d', of an ice-chest D in said chamber B, said chest fitting snugly against the front and back inner walls of said chamber but held away from the end walls thereof, a flue E' at each end of said chest 95 and communicating with the openings d, an opening f in the bottom of the chest registering with the opening d, an arched guard for said opening f, the perforated cover G for said chest, the chamber H above said cover and 100 communicating with the flues E', E', and the ice box K supported in said chest and open at the top, and having a grating at the bottom of said box, substantially as specified.

3. In a refrigerator, the chambers B, B', one 105 above the other, the partition C separating said chambers, the end openings d through said partition, the central opening d', the horizontally sliding dampers P P arranged to close the openings d, d, and working in guides on 110 the under side of said partition, the levers R, R pivoted to the under side of said partition with their forward arms projecting to a point just inside the front wall of the box, a link S connecting the rear arm p of each of said le- 115 vers with one of the dampers P, P, a spring interposed between said levers to the rear of their points and acting to spread their rear arms, and a door closing the chamber B' and having a lug thereon arranged to enter be- 120 tween the forward arms of said levers and force them apart, substantially as specified.

4. A refrigerator comprising a box having double chambered walls, the transverse hori- 125 zontal partition C, forming the upper ice chamber B and the lower provision chamber B', an opening d through said partition at each end thereof, a central opening d' there- 130 through, an ice-chest D in said chamber B, a flue E' at each end of said chest and communicating with the openings d, d, an open- ing f in the bottom of the chest communicat-

ing with the central opening in the partition,
the ice box K in said chest, the air-chamber H
above said chest and communicating there-
with and with the flue E', the valves for clos-
5 ing the openings d, the doors, and mechanism
operated by the lower door to open said valves,
substantially as specified.

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

JULIUS A. HENKEL.

Witnesses:

A. C. PHELPS,
F. A. LAMB.