

D. S. HEFFRON.

Refrigerator.

No. 29,487.

Patented Aug. 7, 1860.

Fig. 1,

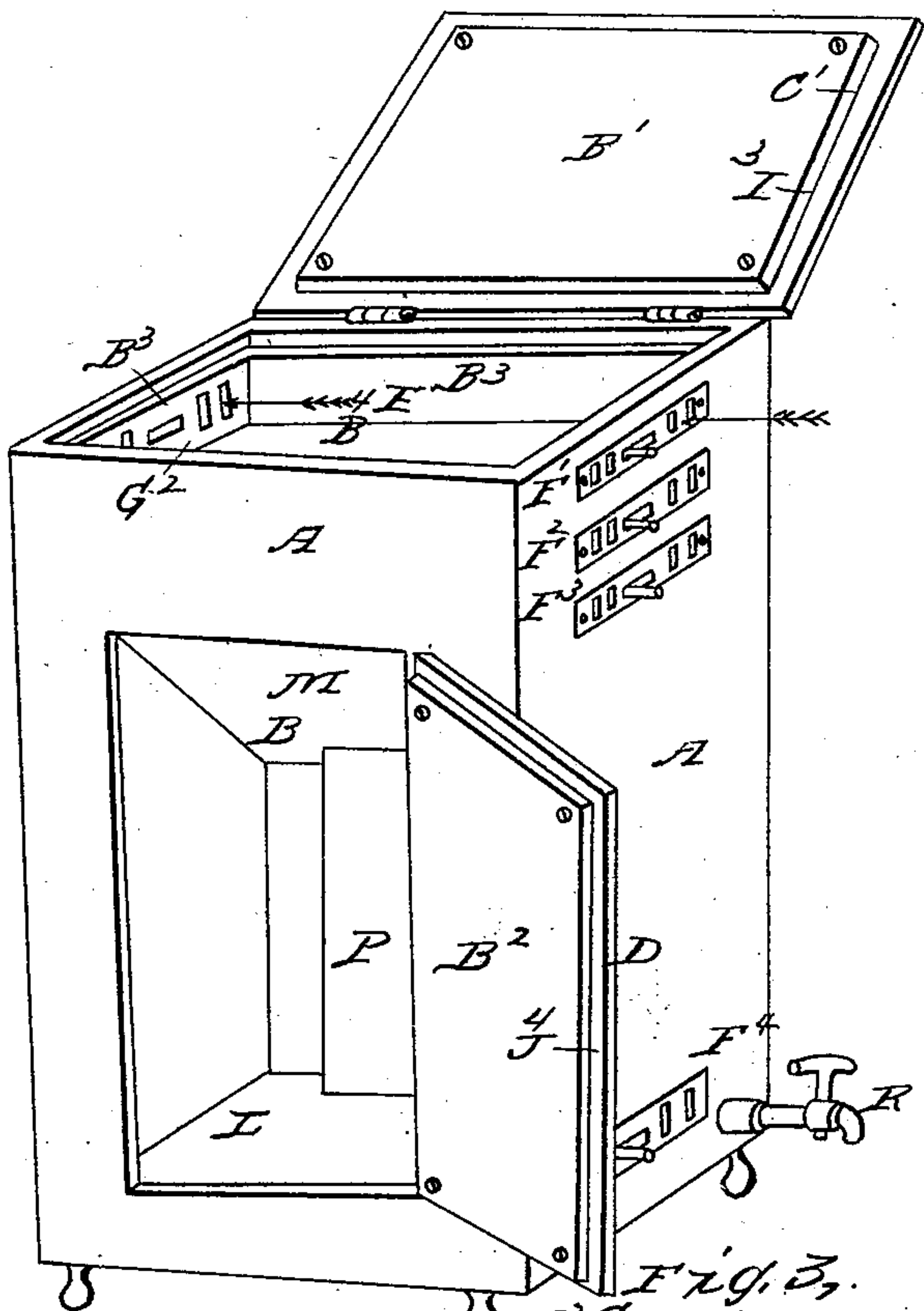


Fig. 2,

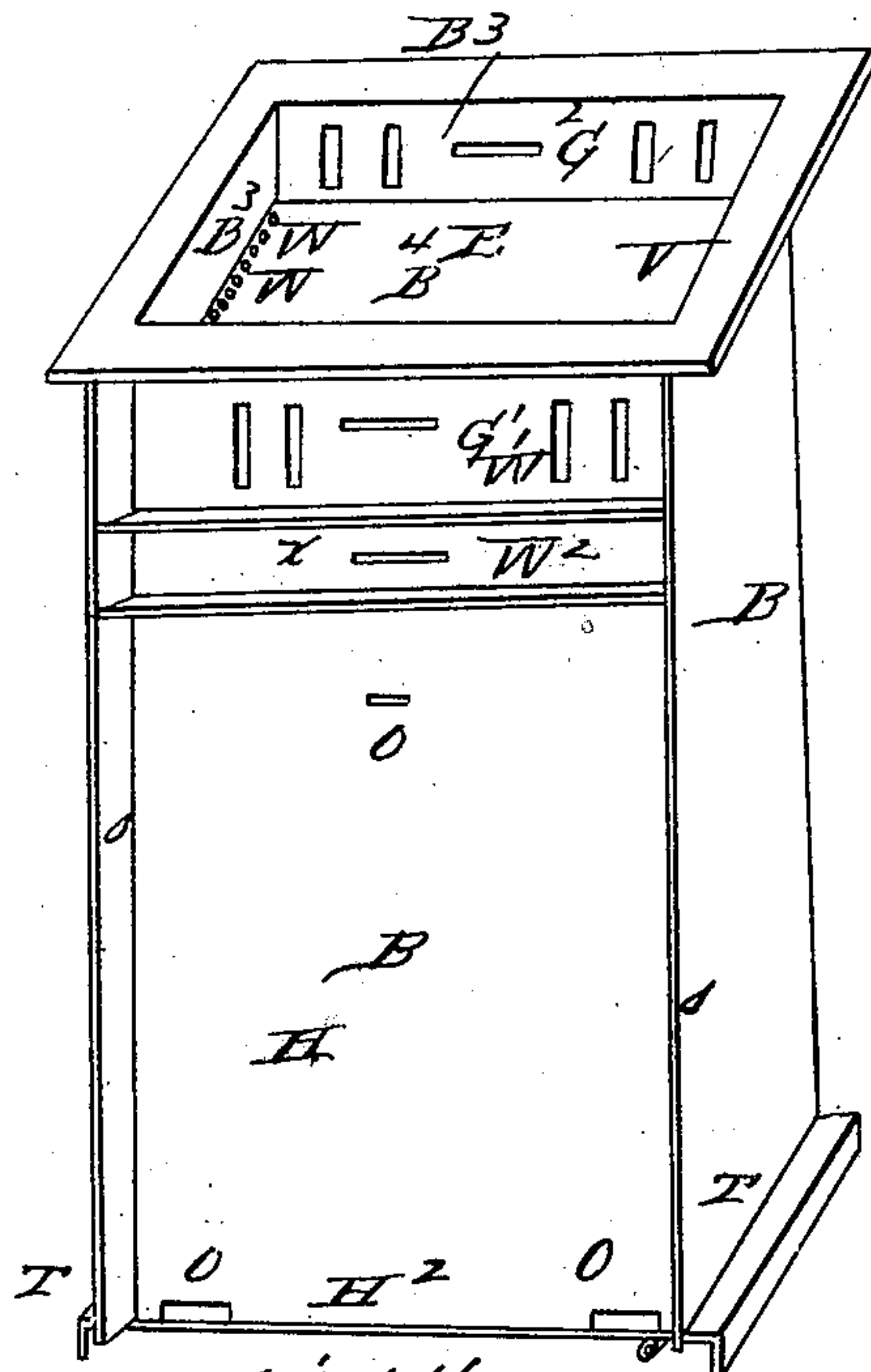
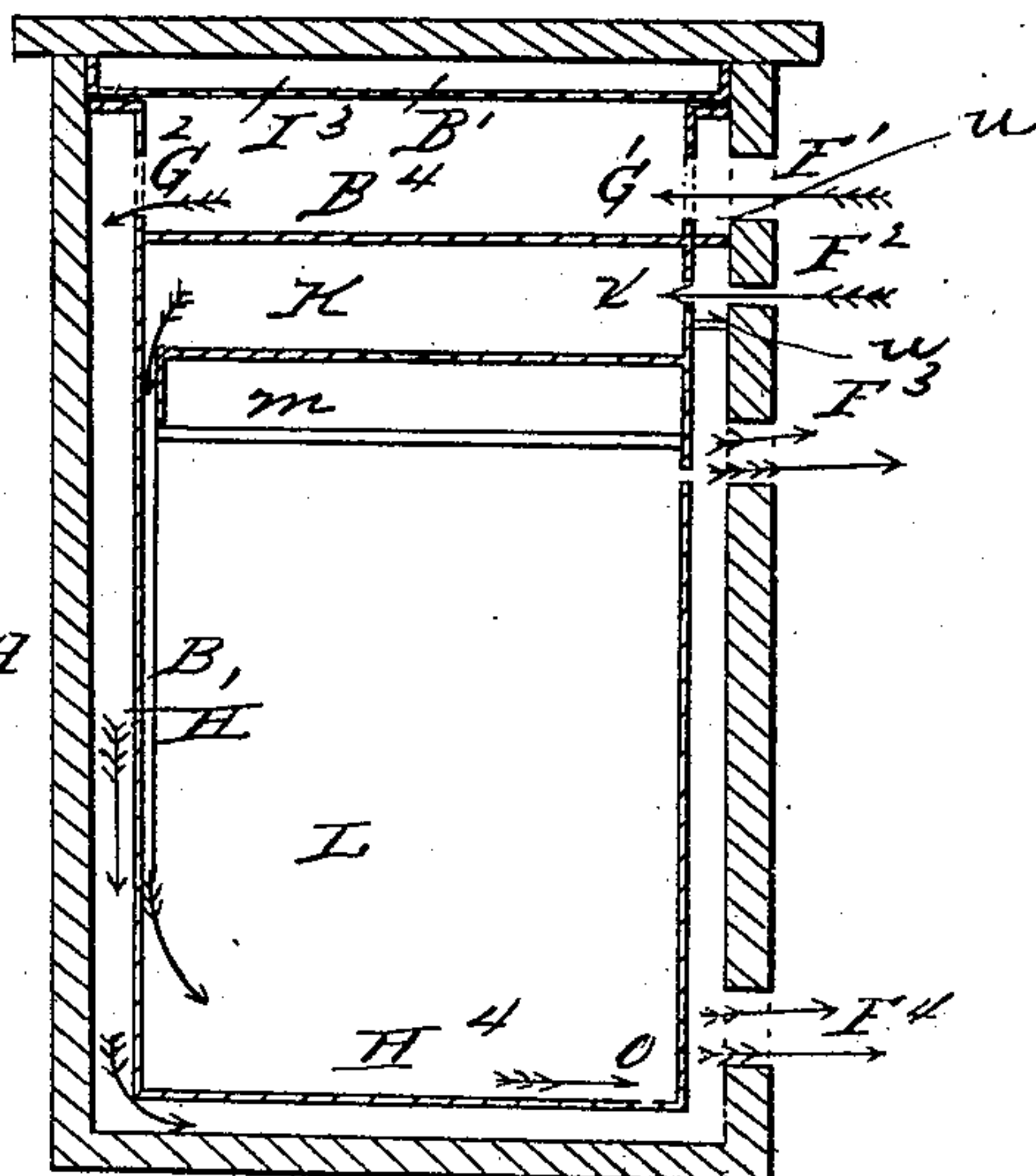


Fig. 4, c

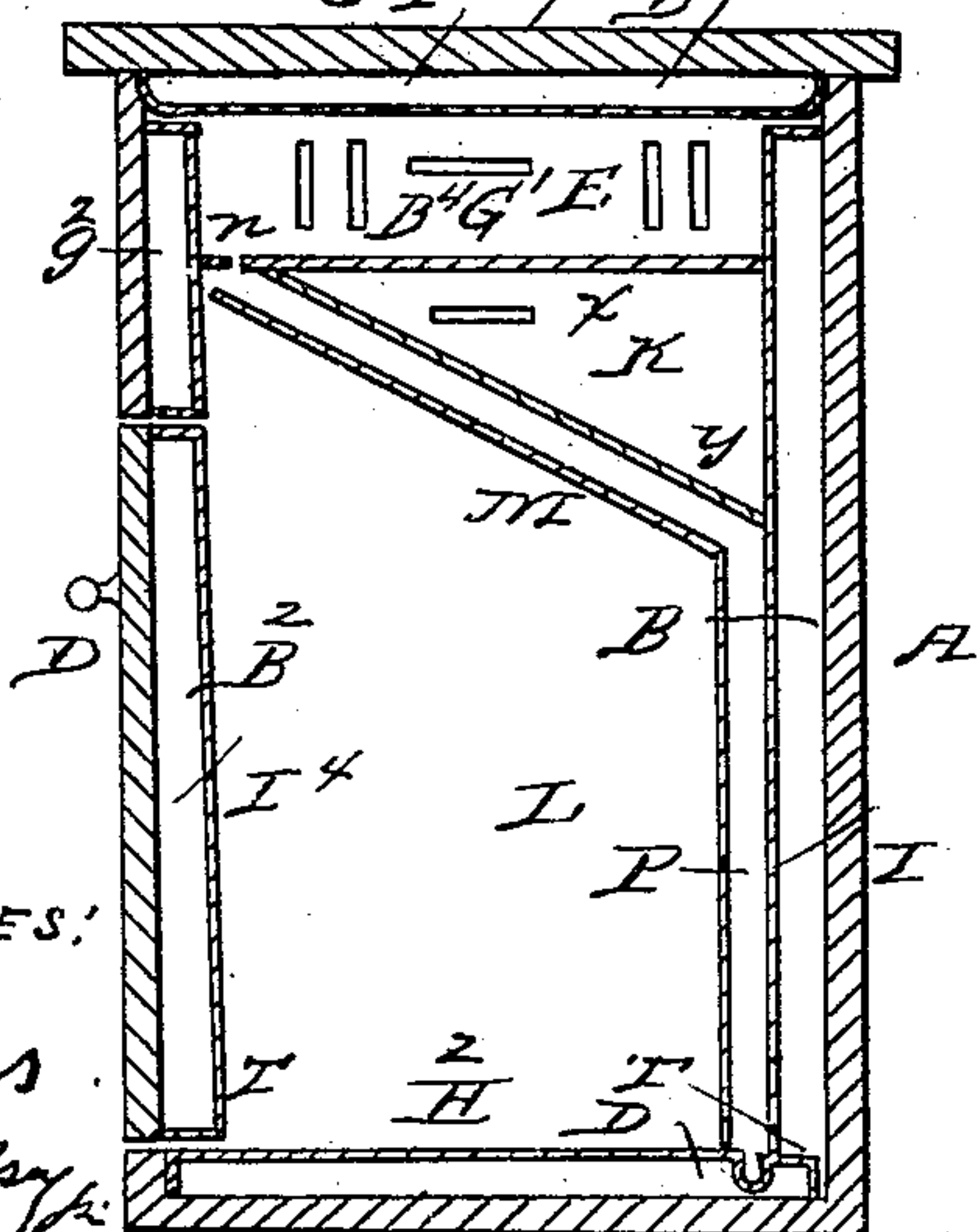


INVENTOR

Samuel S. Heffron

WITNESSES:

Chas. Mc. Jones  
E. M. Zinsley





# UNITED STATES PATENT OFFICE.

DANIEL S. HEFFRON, OF UTICA, NEW YORK.

## REFRIGERATOR.

Specification of Letters Patent No. 29,487, dated August 7, 1860.

*To all whom it may concern:*

Be it known that I, DANIEL S. HEFFRON, of Utica, New York, have invented a new and Improved Refrigerator.

5 The general nature of the improvement consists, first, in the peculiar manner in which the air cooled in the ice box is carried around the provision chamber, and not permitted to enter such chamber, to deposit the  
10 moisture it carries mechanically from the ice, in the chamber; second, the construction and use of an air drying and cooling chamber, for drying and cooling another current of air to ventilate said provision chamber; third, the  
15 construction and use of a sloping top for the provision chamber to carry down to one side, any moisture which may condense on such top.

I do hereby declare that the following is  
20 a full and exact description of said improved refrigerator, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of said refrigerator; Fig. 2, a like perspective view of the inside case or lining; Fig. 3 is a sectional view from the front to the rear and  
25 Fig. 4 a longitudinal sectional view.

A, A, is the outer case; B B B, the inner  
30 case or lining; C, the lid; B<sup>1</sup> its lining; D, the door and B<sup>2</sup> its lining; E, the ice box; B<sup>3</sup> the sides and B<sup>4</sup> the bottom thereof.

F<sup>1</sup> and F<sup>2</sup> are registers for the ingress  
35 of air, and F<sup>3</sup> and F<sup>4</sup> like registers for the egress of air.

G<sup>1</sup> and G<sup>2</sup> are openings through the ends of the ice box, for the passage of air into and out of the ice box.

H<sup>1</sup>, H<sup>2</sup> and H<sup>3</sup> are the vacant spaces between the outer and inner cases at the ends  
40 and the bottom.

I<sup>1</sup>, I<sup>2</sup>, I<sup>3</sup> and I<sup>4</sup> are the spaces between the outer and inner case at the front and back and between the door and its lining and the  
45 lid and its lining.

K is the air drying chamber; L the provision chamber; M, the sloping cover of such chamber.

N is a tube for conducting the air from  
50 K to L.

O, O, are openings at the bottom and top of L for the passage of the air out of the provision chamber.

P is a water tank; Q, a tube connected  
55 therewith for drawing off the water from the tank and R a faucet.

S, S, are the projecting ends of the front and rear plates of the inner case, and T, T, are the like projections and curves of the bottom plate. 60

U, U, are two flanges for preventing the air which passes through registers F<sup>1</sup> or F<sup>2</sup> from descending in the space H<sup>3</sup>.

V is a flange or shoulder on the top of the inner case to close the spaces between the  
65 outer and inner cases in that direction.

W, W, are holes in the bottom of the ice box for draining the ice box.

X is an opening through the inner case into the air drying chamber K, corresponding with the register F<sup>2</sup>, and Y is an opening at the bottom of the air drying chamber for draining it. 70

The refrigerator is made in two parts: the outer one A, A, of wood, and the inner  
75 one B B B, of zinc, vulcanized iron, or other suitable material; and the lid C and the door D should be lined with the same material.

The inside case should be so much less in size than the outer case as to allow a space  
80 all around between them of about one inch; and such inner case is made so as to separate the spaces in front and rear from the sides and bottom spaces. This may be done by extending the front and rear plates and the  
85 bottom plate to the outside case, or by placing strips of wood or other material, at the front and back and upright at the four corners.

The top of the spaces in the ice box must  
90 be closed and also that at the door. This may be done by bending out the inner case or otherwise. The entire space in the rear I<sup>1</sup>, also the like space in front I<sup>2</sup>, as well as the space between the lid and lining I<sup>3</sup> and the  
95 door and lining I<sup>4</sup>, are filled with charcoal dust or other suitable nonconducting material. The spaces between the ends and bottom H<sup>1</sup>, H<sup>2</sup> and H<sup>3</sup>, are left vacant for the passage of the cooled air. 100

The ice box is at the top. Its sides are the sides of the inner case and has a series of holes W, W, for draining the ice as it melts into the tank P. At each end of E are openings G<sup>1</sup> and G<sup>2</sup> through the inner case, G<sup>1</sup>  
105 corresponding with the register F<sup>1</sup>, and G<sup>2</sup>, at the opposite end permits the air which has been cooled by the ice to pass into the spaces H<sup>1</sup>, H<sup>2</sup> and H<sup>3</sup>.

Directly under the ice box is the air drying chamber K. It is formed by extending  
110 a plate of metal in a sloping direction from



the bottom plate of the ice box. Into K is an opening X, which corresponds with register F<sup>2</sup>, and at the opposite side of K is the tube N, which passes into the provision chamber and through which the air, after being cooled and dried in said air chamber K, by the condensation of its moisture upon the bottom of the ice box E, passes.

Directly under the air-drying chamber K and parallel with its under side, is the sloping cover of the provision chamber, formed of sheet zinc or sheet metal. It extends from the front of the inner case to the rear, and receives on its upper side the water which drains from the ice box, or all is condensed in the air drying chamber through the opening Y.

The operation of the refrigerator is as follows: Air passes through the register F<sup>1</sup> and opening G<sup>1</sup> into the ice box, and when its temperature has been reduced by the ice, and consequently its density increased, it will pass through G<sup>2</sup> into H<sup>1</sup> and then into H<sup>2</sup>, and as it has by this time received a part of the higher temperature of the provision chamber and imparted thereto a portion of its cold, it then rises in H<sup>3</sup> and may be allowed to pass out at the registers F<sup>4</sup> or F<sup>3</sup>. If a rapid motion of the air is desired, F<sup>4</sup> should be opened, and if a slower motion F<sup>3</sup>, and it may be wholly stopped by closing both F<sup>3</sup> and F<sup>4</sup>. None of this air is suffered

to enter the provision chamber to deposit any of its moisture therein; but air passes into the air drying chamber K through F<sup>2</sup> and the opening X, when its temperature is reduced and its moisture condensed by the cold bottom of the ice box, and when its density is thus increased, it will descend through the tube N into the provision chamber, when after its temperature has been partially restored by the heat of the provisions therein it will pass through the openings O, O, into the space H<sup>3</sup> and through the register F<sup>3</sup> or F<sup>4</sup> and this current of air may be regulated or stopped in the same manner as the current of air through the ice box.

The moisture of the provision chamber will condense in the top. If it is flat, it will fall wet on the provisions; but by making it with a backward slope, it carries off all such moisture to the side, where it may be collected in any proper manner and conveyed out of the provision chamber.

What I claim is—

The combination and arrangement of the ice box E, the registers F<sup>1</sup>, F<sup>2</sup>, F<sup>3</sup>, F<sup>4</sup>, the openings G<sup>1</sup>, G<sup>2</sup>, the spaces H<sup>1</sup>, H<sup>2</sup>, H<sup>3</sup> and the drying chamber K, substantially and for the purpose specified.

DANIEL S. HEFFRON.

Witnesses:

EZRA M. BRIDSEY,  
M. M. JONES.