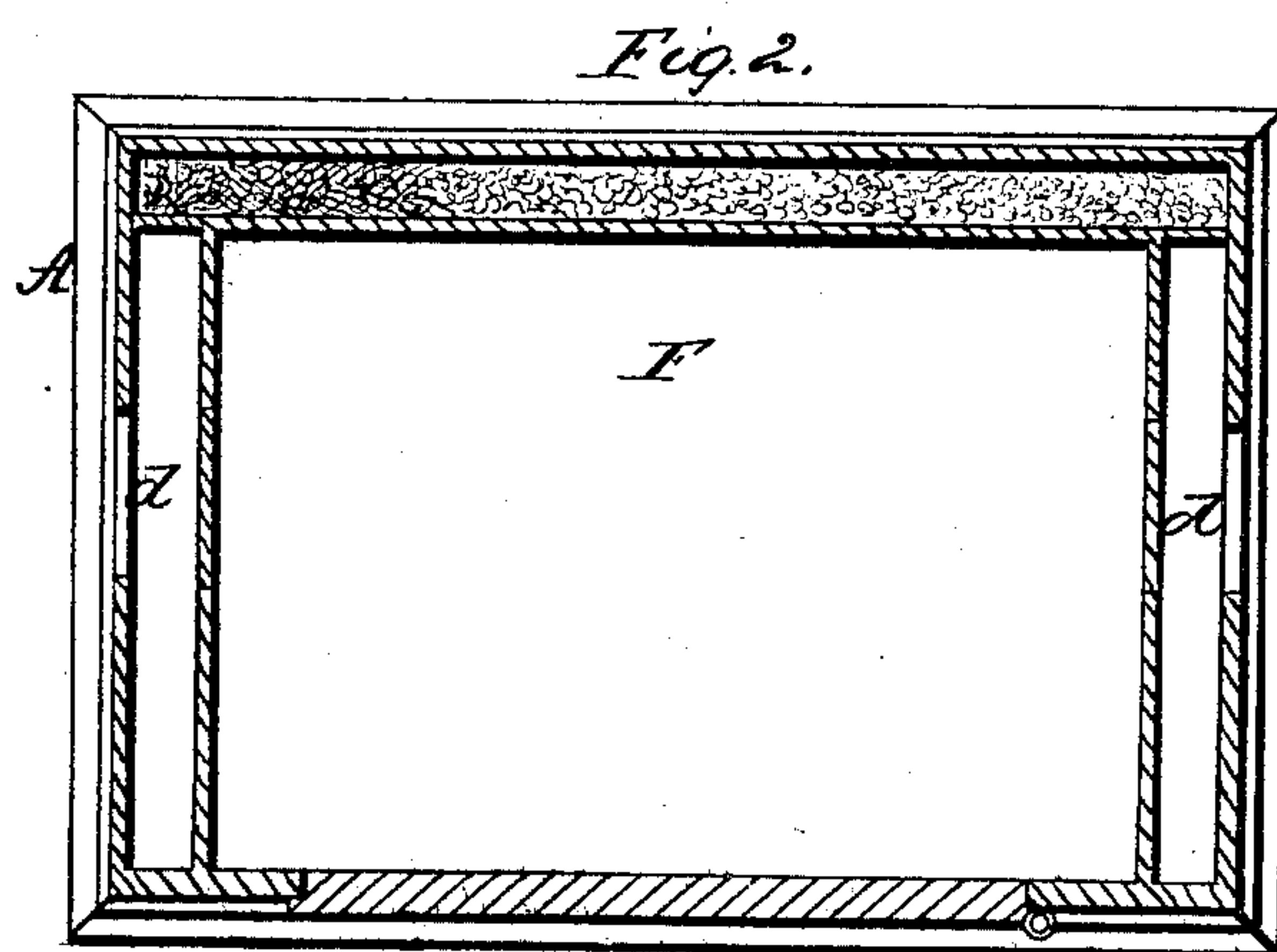
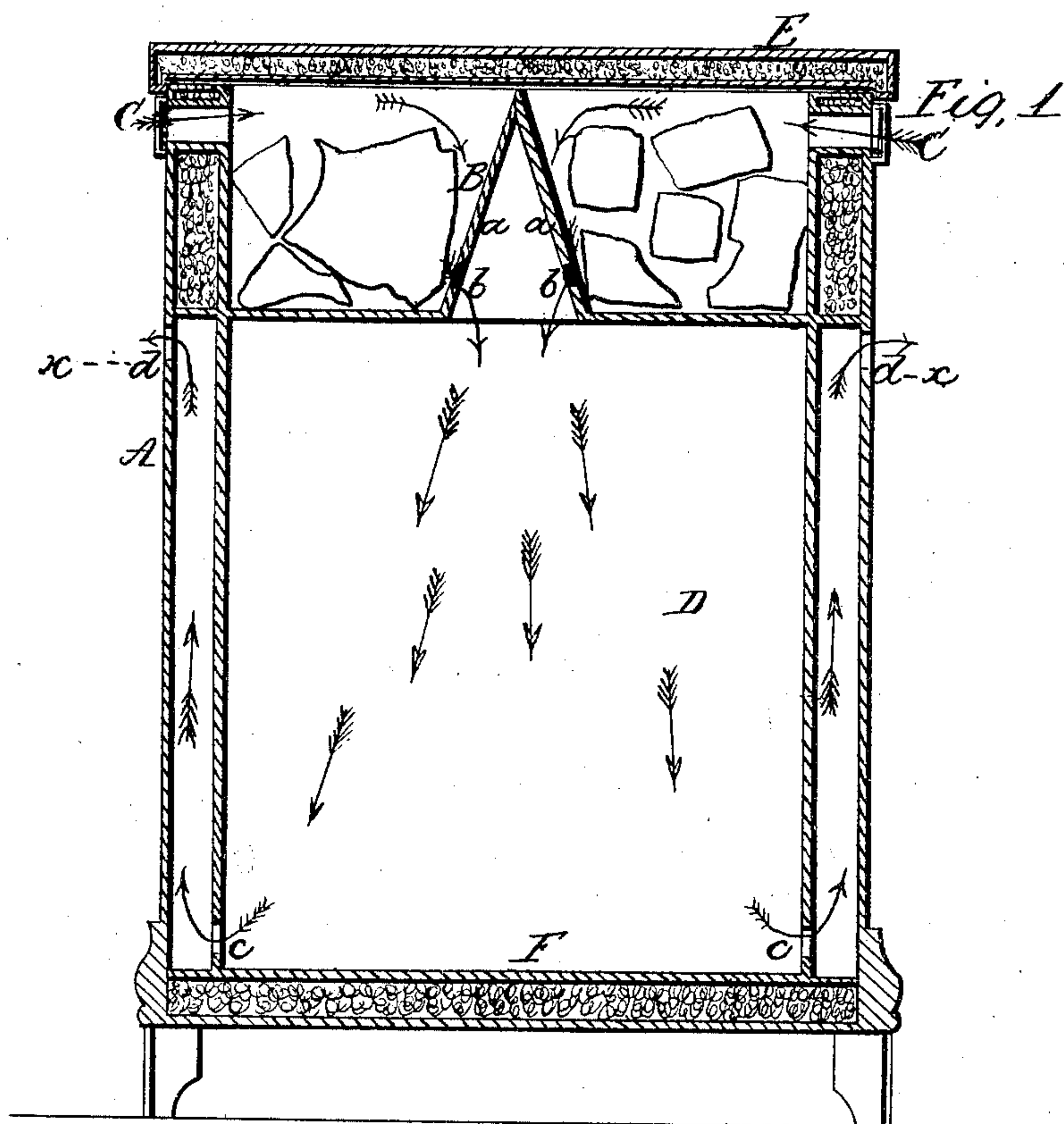


C. WINSHIP.  
REFRIGERATOR.

No. 16,320.

Patented Dec. 23, 1856.





# UNITED STATES PATENT OFFICE.

CHARLES WINSHIP, OF NEW HAVEN, CONNECTICUT.

## REFRIGERATOR.

Specification of Letters Patent No. 16,320, dated December 23, 1856.

*To all whom it may concern:*

Be it known that I, CHARLES WINSHIP, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Refrigerators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical section of my improvement, the plane of section being through the center. Fig. 2, is a horizontal section of ditto, *x, x*, Fig. 1, showing the plane of section.

Similar letters of reference indicate corresponding parts in the two figures.

My invention relates to that kind of refrigerator in which the air is cooled by being brought in direct contact with the ice.

My invention consists in causing a fresh current of cold moist air to permeate and circulate through the provision chamber, and then to pass upward through the double sides of the refrigerator, in the manner and for the purposes hereafter set forth.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the casing of the refrigerator. This casing is double or formed of an outer and inner side with a space of suitable width allowed between them and filled with a non conducting material.

B, represents an ice box, which is placed at the upper part of the casing A, and C, C, are registers which are placed one at each side of the upper part of the casing A, said registers, by being properly adjusted, allowing a greater or less quantity of air to pass into the ice-box. The ice-box is divided by V-shaped partitions *a, a*, which are perforated at *b*, see Fig. 1 and allow the air to pass from the ice box into the provision chamber D. The sides of the casing A are hollow and apertures *c, c*, are made in the lower parts of the inner sides. Apertures *d, d*, are also made in the parts of the outer sides of the casing just below the ice box.

E, is the cover of the casing, which, as well as the bottom F, may be made double and filled with a proper non-conducting material.

The air, when the registers C, C, are

open, passes into the ice-box B and is cooled and moistened by the ice therein. The cold moistened air passes through the apertures *b*, in the partitions *a, a*, and down through the provision chamber D, through the apertures *c, c*, up, between the inner and outer sides of the casing and out through the apertures *d, d*, see arrows, Fig. 1. By having the cold air pass through the provision chamber from its upper to its lower part the provision chamber is kept at a low temperature and also at a uniform temperature from its lower to its upper part, because the cold air is first admitted at the upper part of the provision chamber where the warm air naturally passes from below. By having the current of cold air pass up between the sides of the casing, as shown, a good draft or current is obtained and the provision chamber is also protected from the external warm air.

In the drawings, only the sides of the cases are shown as having air passages; but it is evident that all the sides and also the bottom and top may be arranged to conduct the air, if desirable.

In consequence of the openings, *c, c, d, d*, and the communication between the ice-box, the external air, and the provision chamber, the external air is drawn in through the ice, by which it is cooled and moistened in the most expeditious manner; it then enters the provision chamber at its top and descends, passing out through apertures, *c*, into the space between the refrigerator cases; and as the outer case is warmer than the inner case, a slight warmth is communicated to the air within the space, which causes it to rise and escape through the apertures *d*. A steady current of fresh, cold, moist air is thus made to circulate throughout the provision chamber, permeating every part, and preserving a uniform temperature in every portion, and after having performed its office within the provision chamber, the air is made to pass up through the space between the cases of the refrigerator, and there to serve the further purpose of preventing the warm external air from penetrating through the cases into the provision chamber. The air is thus made to perform a combined double function, first, of refrigerating the interior of the provision chamber, and then, of protecting the exterior of the chamber. But I dis-



claim both of these functions, when separately employed, or when employed in any other way.

A cold moist air is undoubtedly the best  
5 for the refrigeration of meats, fruits, flowers, and other substances containing delicate flavors, odors, or juices, because the articles are preserved without being deteriorated by the evaporation of their juices, or natural  
10 surface moisture.

In the common refrigerators, the air is cold and moist, but it is not fresh, for there is no ventilation; consequently, mold is produced, and the provision chamber and some-  
15 times the refrigerated articles become coated with it; but where there is a circulation of fresh, cold, moist air—as in my refrigerator—no mold can form. It is a well-settled fact that the condition for the  
20 growth or formation of mold are moisture and perfect repose or stagnation of the surrounding element.

In the patent of William Mootry, 1855, the air is cooled by being passed around an  
25 ice-box; thence it passes down through the top of the provision chamber, and escapes, through vertical apertures in the bottom of the chamber, to the external air. In this device a thorough downward circulation of  
30 cold air is maintained in the provision chamber. I therefore distinctly disclaim the ventilation of refrigerators by a moving current of fresh cold air. I also disclaim the placing of the ice in the top of the  
35 refrigerator, and cooling and moistening the air by direct contact with the ice, as these are old and well-known methods. In the patent of said William Mootry, the cold air is allowed to escape directly into the ex-  
40 ternal air, after reaching the bottom of the provision chamber, without any further service. But in the rejected application for a patent by M. V. Binney, 1856, the air,  
45 erator, is conducted around down through

the sides or casings, and caused to enter the provision chamber at the bottom, escaping into the external air through an opening at the top of the chamber. I therefore distinctly disclaim the passing of cold air be-  
50 tween the casings of refrigerators. The device of said Binney is wanting in utility, because in consequence of the exposure of the outer case to the external heat, the air, by passing through the casing, becomes par-  
55 tially heated before it enters the provision chamber, so that the latter can not be properly refrigerated. Besides, the air in the above device is not brought in direct contact with the ice, but is passed around the  
60 exterior of an ice-box; the air is therefore dry, and as a medium for protecting the provision chamber from the penetration of heat, such air is not equal to cold, moist air.

It is a well known philosophical fact that  
65 the capacity of vapor of water for heat is double or almost double that of dry air. In other words, it will require twice as long a time to heat a volume of vapor to a given temperature than an equal volume of air.  
70 I take advantage of this fact, in my improvement, by causing the cold, moist air, after it has performed its office of refrigeration, to pass between the cases of the re-  
75 frigerator, and thus protect the provision chamber from external heat.

What I claim as new in refrigerators, and desire to secure by Letters Patent, is:—

The method herein described of causing the fresh, cold, moist air, to perform the  
80 combined double function, first, of ventilating and refrigerating the interior of the provision chamber, and then of protecting the exterior of said chamber, specifically as set forth.

CHARLES WINSHIP.

Witnesses:

JOHN D. BEECHER,  
WILSON H. CLARK.