W. P. WHITSON.

REFRIGERATOR.

No. 186,649. Patented Jan. 23, 1877.

Fig. 1.

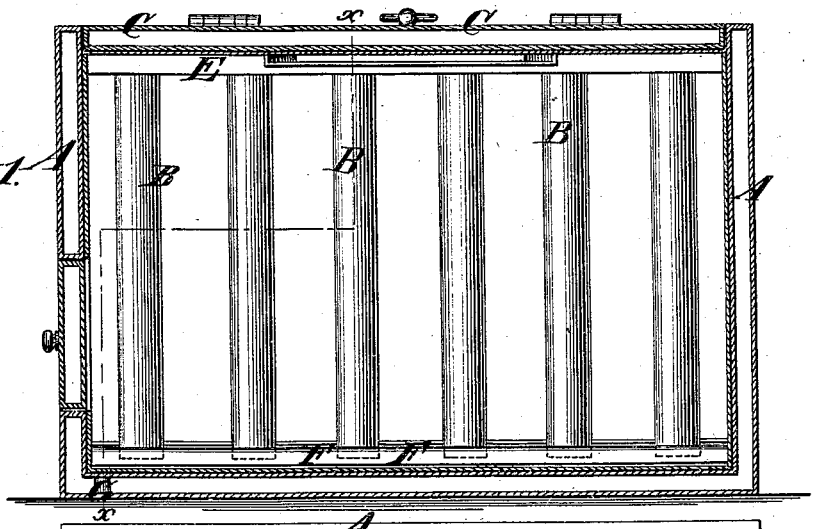


Fig. 2.

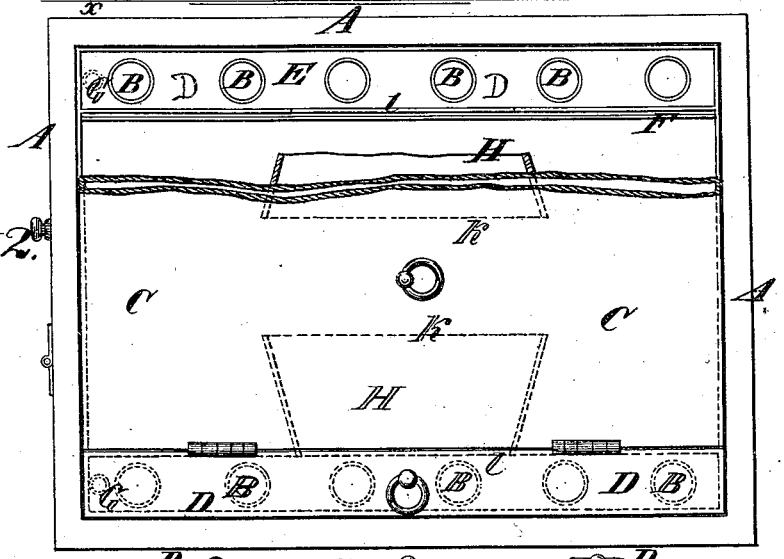
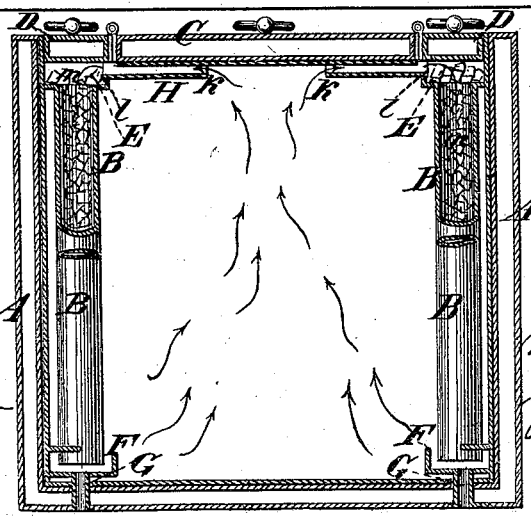


Fig. 3.



Witnesses
John Becker.
Fred. Haynes

W. P. Whitson.
by his Attorneys
Brown & Allen.

UNITED STATES PATENT OFFICE.

WILLET P. WHITSON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **186,649**, dated January 23, 1877; application filed December 16, 1876.

To all whom it may concern:

Be it known that I, WILLET P. WHITSON, of Brooklyn, in the county of Kings and State of New York, have invented an 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 accompanying drawing, which forms part of this specification.

My invention is more particularly designed for large-sized refrigerators for storing meats for provision-dealers and for meat-packing establishments; but it is applicable to small sizes of refrigerators for domestic use.

The invention consists of a series of upright ice-holding, water-conducting, and air-circulating tubes arranged opposite to each other near the side walls of a refrigerator-casing, and opening at their upper ends into longitudinal chambers, from which project lateral passages opening at their inner widened ends into the chamber of the refrigerator, as will be more fully hereinafter described.

Figure 1 in the drawing is a vertical longitudinal and central section of a refrigerator constructed according to my improvement. Fig. 2 is a top view of the same, with a portion of the cover removed. Fig. 3 is a section on the line *x x* in Fig. 1.

The body A of the refrigerator is either made of non-conducting material or its walls are made hollow and filled with non-conducting material in any of the ordinary ways of constructing the bodies of refrigerators, and it is preferably lined with sheet-zinc in the ordinary way.

On the inside, near the walls of the body A, are placed the vertical ice-holding, water-conducting, and air-circulating upright tubes B. The upper ends of these tubes are attached to and open into chambers E, which are covered by hinged lids D at opposite sides of the cover C of the refrigerator, which lids may be opened to fill the tubes B with ice without opening the body of the refrigerator. The lower ends of the tubes B extend into, but are not attached to, troughs F at the bottom of the inside of the refrigerator. Said troughs F are provided with outlet or discharging orifices G.

Communicating with the chambers E, and attached to the under side of the cover C, are passages H, through which, when the cover is placed in position, as shown in Figs. 1 and 2, the warmer air in the refrigerator enters the chambers E and the tubes B. Said passages H are made wider at their inner parts *k* than at the parts *l*, which enter into and connect with the chambers E, in order to permit the free entrance of the warmer air which rises in the center of the refrigerator.

When the cover C is in position, as shown in Fig. 2, the passages H, chambers E, and tubes B act as a series of continuous flues, through which circulation of air is maintained when ice is placed in the tubes B, as hereinafter described.

The ice *m*, Fig. 3, is broken into fragments, which are loosely placed in the upright tubes B and chambers E, and which may be mixed with salt when a lower temperature is required than that which can be obtained by using ice alone.

By this construction and arrangement the air circulates in the same direction as the water from the melting ice flows, downward through the tubes B, and through the interstices of the ice-fragments, the water aiding the passage of the air, and the air is brought rapidly and very thoroughly into immediate contact with the cooling material, the circulation increasing or diminishing in rapidity precisely as needed for the effective cooling of the substances inclosed in the refrigerator.

I claim—

1. The combination, with a refrigerator-body, A, of the cover C, horizontal passage H, opening at the inner end into the chamber of the refrigerator, the chamber E at right angles to the said passage, and the series of upright tubes B, having their upper ends opening into the chamber E, substantially as and for the purpose described.

2. The combination of the series of upright tubes B, secured near the opposite walls of the refrigerator-casing, the longitudinal chambers E E above the same, and into which the upper ends of the tubes open, and the lateral passages H H, extending from the passages E and opening at their inner widened ends *k* into the chamber of the refrigerator, substantially as described.

WILLET P. WHITSON.

Witnesses:

BENJAMIN W. HOFFMAN,

FRED. HAYNES.