

Patented Feb. 21. 1871.

The drawing shows a cross-section of a rectangular vessel with a double bottom. The upper part is labeled A-A' and the lower part is labeled B-B. The vessel has a central rectangular cavity. The bottom of the vessel is divided into two sections: a lower section labeled A and an upper section labeled B. The vessel is supported by a base labeled E. The drawing is a technical illustration of a mechanical component, likely a part of a ship's hull or a large container.

Inventor,
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By his attorney C. D. Watson

UNITED STATES PATENT OFFICE.

JOHN H. LESTER, OF NIAHTIC, CONNECTICUT.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **111,950**, dated February 21, 1871.

To all whom it may concern:

Be it known that I, JOHN H. LESTER, of Niantic, in the county of New London, State of Connecticut, have invented certain new and useful Improvements in Refrigerators.

My invention is adapted for family use, as also the larger structures for hotels, markets, &c.

It consists in the employment of coarse felt as a material for the filling, and in provisions for ventilating, drying, &c., in connection therewith.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a vertical section of a portable refrigerator, and Fig. 2 is a section of another form of the same.

Similar letters of reference indicate parts corresponding in function in all the figures.

To manufacture my portable refrigerator in the best manner I esteem it important to provide two chambers or two independent refrigerators in one structure, the uppermost opening chest-wise, so as to form what is ordinarily termed a chest-refrigerator at the top, and the other opening laterally, so as to form a cupboard or the more ordinary style of refrigerator at the bottom.

I have indicated these parts by the same letters in the figures, and a description of one structure will serve for both; but I will explain the advantages due to the peculiar combination of both styles in one structure.

The peculiar advantage due to a chest-refrigerator is, that the door may, with proper care in opening and closing slowly, be operated many times at short intervals without changing the air in the refrigerator.

The increased density of the air within the chest-refrigerator, due to its low temperature, retains it within the chest, and allows articles to be withdrawn and replaced without much agitating or mixing the air. I therefore use the upper part or the chest-refrigerator for those articles which require the most frequent access.

The peculiar advantages of the cupboard-refrigerator may be also availed of in the lower part in the distribution of a large quantity of

materials on easily-accessible shelves, and obtaining access to either without disturbing those above.

I use this portion of my double refrigerator for the articles which are more rarely required. I put a thin non-conductor between the two parts of the double refrigerator, as shown.

A is the outer casing, made ordinarily of oak, or other suitable wood, in the form of a rectangular box.

A' A' are ordinary doors, through which access is obtained to the space in the interior.

B is a continuous lining, of zinc, which forms the interior surface of the refrigerator-walls.

D D are thick sheets of coarse wool, hair, or analogous furry material, matted together by felting. They may be of the same character and thickness which has long been manufactured for covering steam-boilers; but where metallic rivets, nails, or the like have been heretofore employed in such structures to hold several thicknesses together I substitute stitching with woolen yarn or analogous non-conducting material.

It is usual to prepare felt for covering boilers of a thickness of about one inch. I propose to employ two or three such thicknesses in my refrigerator, taking care to match together the pieces of which they are composed so that they shall "break joints" and make a continuous envelope of this peculiarly non-conducting material.

I have, in experimenting with this material, discovered that it is important to allow a free access of the external air to the exterior face of the felt. To provide for this I allow a space which is entirely void, or contains at intervals a slight stud of wood or other good non-conducting material, to maintain the space between the felt and the exterior wood, as indicated by *d*. In this space *d* the air has free circulation.

I provide a door, E, (see Fig. 1,) on each of the faces of the refrigerator, which, when open, allows a free ventilation of this space *d*. These doors should be opened at intervals in the use of the refrigerator, so as to allow the felt to dry and the air in the space *d* to become thoroughly changed. This keeps the felt sweet and allows it to serve perfectly for an indefinite period.

The interior of the doors should be ventilated in the same manner as the other faces.

Instead of the doors E, I propose, in some cases, to provide long narrow openings at the top and bottom of each side, controlled by slides, as indicated by E in Fig. 2.

When the slides are open the air has free access, entering through one orifice and flowing out through another.

When the slides are closed the space *d* remains as before between the felt D and the exterior of the casing A, but there is little or no communication between it and the external atmosphere.

I esteem the non-conducting power of the refrigerator greatest in this condition—to wit, with the slides E, Fig. 2, or the doors E, Fig. 1, closed—and esteem it important for that reason not to keep the orifices always open, but to provide the means, as herein described, for opening and closing when desired. The best practice is to open them for a few hours, more or less, every day.

I claim as my invention—

1. The air-space *d*, outside of the main filling material D, and within the exterior wall, A, of a refrigerator, with means E for ventilating or for closing the ventilation of such space, as herein set forth.

2. The hair-felt refrigerator herein described, having coarse hair felted and used in a dry state between rigid walls or casings, with provisions for ventilating the outer surface of the felt and keeping dry the entire non-conducting material, substantially as and for the purposes herein set forth.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

JNO. H. LESTER.

Witnesses:

C. C. LIVINGS,
A. HOERMANN.