(No Model.) 2 Sheets—Sheet 1.

G. R. HOTCHKISS & G. F. SMITH.

REFRIGERATOR.

No. 382,982. Patented May 15, 1888.

Fig. 1.

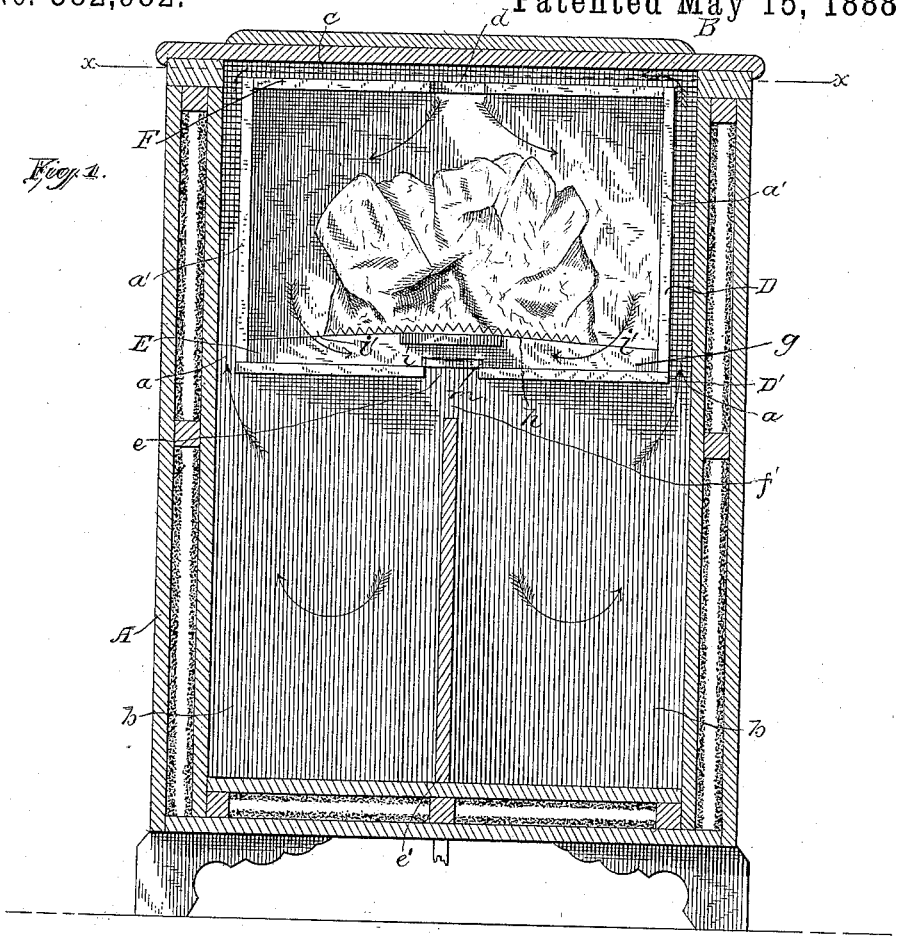


Fig. 2.

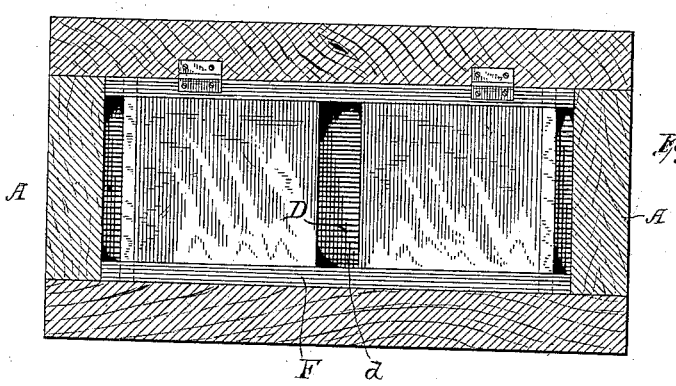
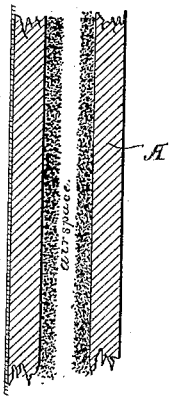


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

G. R. HOTCHKISS & G. F. SMITH.

REFRIGERATOR.

No. 382,982. Patented May 15, 1888.

Fig. 5.

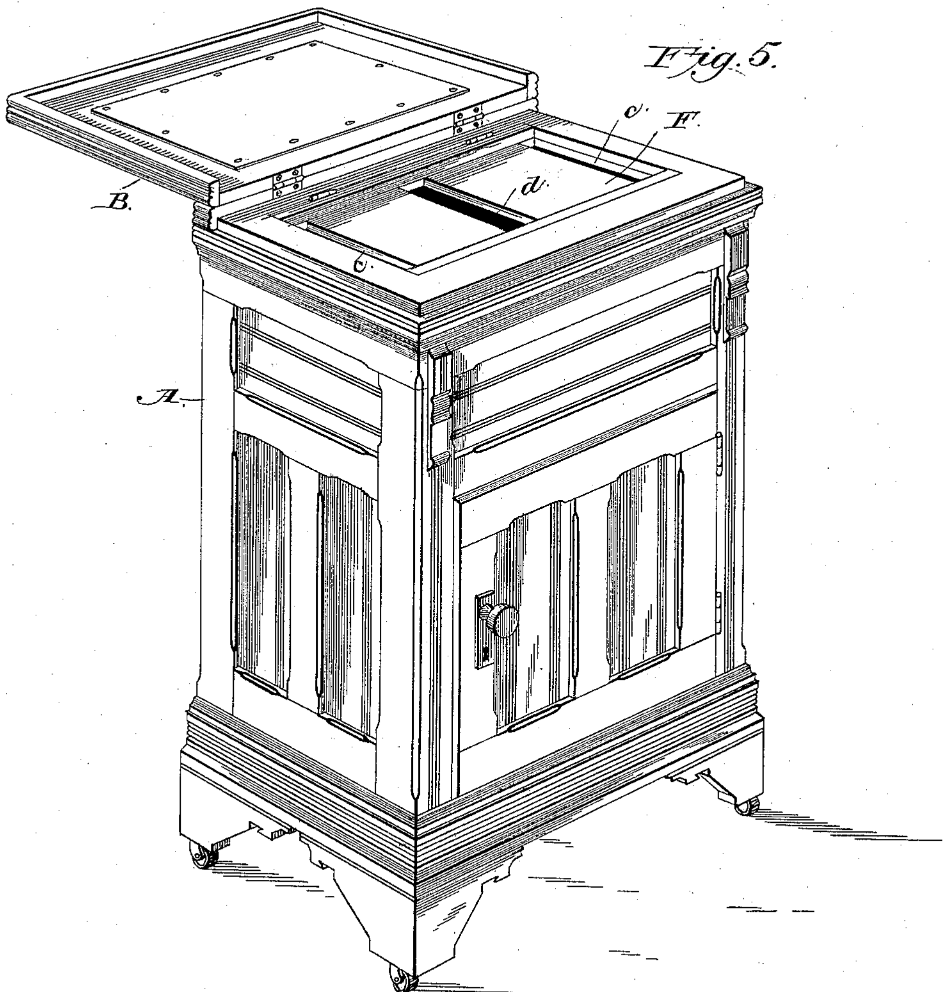
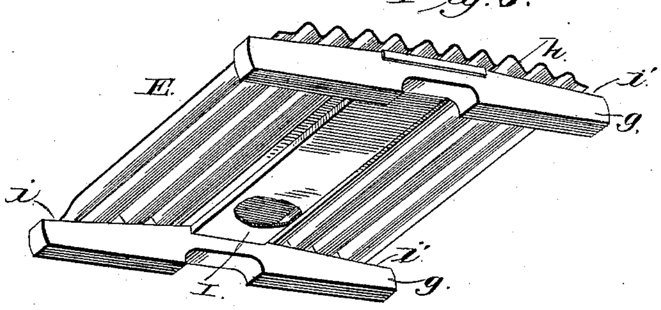


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE R. HOTCHKISS, OF CHICAGO, ILLINOIS, AND GEORGE F. SMITH, OF MICHIGAN CITY, INDIANA.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 382,982, dated May 15, 1888.

Application filed March 10, 1887. Serial No. 230,444. (No model.)

To all whom it may concern:

Be it known that we, GEORGE R. HOTCHKISS and GEORGE F. SMITH, citizens of the United States, residing, respectively, at Chicago, in the county of Cook and State of Illinois, and at Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Refrigerators; and we do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to that class of refrigerators known in the trade as the "central discharge"—that is, one in which a cold current of air is discharged from the center of the ice-box directly into the provision chamber or chambers, from where it is forced into the ice-box again by the weight of the colder air. Thus a constant circulation of air is maintained, thereby reducing it to its lowest temperature and depositing it into the provision chamber or chambers free from all moisture and odors.

The object we have in view is to produce a refrigerator in which it is impossible for condensation to occur at the central discharge-outlet, and one in which the upper air-passage can be cleaned of all accumulations deposited by the warm air coming from the provision-chambers.

We have for a further object a packing or filling, which will be more fully described and claimed.

For a better comprehension of our improvements attention is invited to the accompanying drawings, wherein like letters of reference denote corresponding parts throughout the several views, and in which—

Figure 1 is a vertical cross-section of a refrigerator embodying our improvements; Fig. 2, a section taken on the line *x x* of Fig. 1; and Fig. 3, an enlarged view of one of the walls, showing the packing or filling.

A A represent the body of the refrigerator, constructed with double walls, the space between these walls being filled with a packing, as will be more fully described hereinafter.

B is the outside cover, made, preferably, double, and the inner side being perfectly plain. This cover can be lined with zinc in the usual manner; but this is not essential.

In the top of the refrigerator is situated the ice-box D, which is separated from the provision-chambers *b b* by a horizontal partition, D′. The sides of the ice-box are thin vertical partitions *a′ a′*, supported a short distance from the walls of the refrigerator, so as to form between them and said walls air-passages *a a*, which lead from the top of the provision-chambers to the horizontal air-passage *c*, extending along the top of the ice-box. This ice-box is provided with a hinged cover, F, hinged at any convenient place. This cover is provided at the center with an intermediate air-space, *d*, leading into the ice-box. The partition D′ has a similar air-space, *e*, leading into the provision-chambers. The provision-chambers are divided by a partition, *e′*, running from the front to the rear of the refrigerator. This partition *e′* does not quite extend up to the horizontal partition D′, but leaves a space or air-passage, *f′*, between it and the air-space *e*, which space or air-passage leads into the provision-chambers.

The ice-rack E is composed of two or more rests, *g*, the tops of which incline downward toward the sides of the ice-box, and are covered partly with a corrugated iron top, *h*, leaving air spaces *i′ i′* on each side of the same. This rack should sit firmly and securely on the partition D′, and is made to hold the ice. The center of each one of the rests *g* is mortised out for the reception of the metal air-box *i*. This air-box is an air-tight receptacle, which can be filled with wood or other non-conducting material, this box being wide enough to overlap the opening *e* in the partition D′ and long enough to reach from the front to the rear of the ice-box D. The use and objects of this air-box will be described hereinafter.

The bottom, sides, and top of the ice-box D should be lined with zinc in the usual manner. This zinc lining should be flanged up around the opening *e*, thereby preventing any water from dripping into the provision-chambers. Any superfluous water can be carried off by a drip-tube running down through the partition *e′*.

The top of the cover F of the ice-box should

be thoroughly varnished, painted, or shellacked. By this means a very great obstacle is overcome—viz., to allow the upper air-passage to be cleaned of all foul or offensive matter that collects in the same. It is an indisputable fact that all refrigerators having a permanent upper flue very soon become so full of foul matter deposited by the warm air from the provision-chambers as to render them almost useless.

We will now proceed to describe the packing referred to. This packing is composed of finely-powdered charcoal mixed with paper-pulp or some other adhesive material, and rolled or compressed to about one-eighth of an inch in thickness. In this form it will be quite strong and easy to handle. It should be fastened on the inside of the two walls of the refrigerator-body, as shown in Fig. 3, leaving an air space between the two. Thus the walls of the refrigerator are composed of two board walls, two concentrated charcoal linings, a layer of air, and a lining of zinc, making in all an almost, if not a perfect, non-conductor.

The manner of the circulation of the air is as follows: The cold air from the ice-chamber flowing down through the passage *i' i'* toward the opening *e*, and striking the plates *h*, is condensed; but the presence of the air-box *i* prevents the air from being condensed over the opening *e*. Thus no drippings of condensation will enter the provision-chambers, as this condensation occurs on both sides of the opening. The air now enters the provision-chambers pure and dry, but is soon forced by the weight of the colder air from the ice-box up through the passages *a a* and passage *c*, entering the ice-box at *d*. After being cooled sufficiently, it proceeds as before.

It will of course be understood that the provision-chambers and bottom of ice-box are to be suitably lined with zinc.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a refrigerator having double walls, the combination, with the provision-chambers, of an ice-box located above the same and provided with a central opening communicating with the provision-chambers, the side flues, *a a*, and the two hinged covers separated by a flue-space, which space communicates with the side flues, the inner cover having the slot *d*, communicating with the ice-box, as set forth.

2. In a refrigerator, the double walls and an intermediate lining of charcoal mixed with paper-pulp or some other adhesive material, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEO. R. HOTCHKISS.
GEORGE F. SMITH.

Witnesses:
J. BURBANK,
H. M. HOPKINS.