

(No Model.)

C. W. TROTTER.
REFRIGERATOR.

No. 433,606.

Patented Aug. 5, 1890.

Fig. 1.

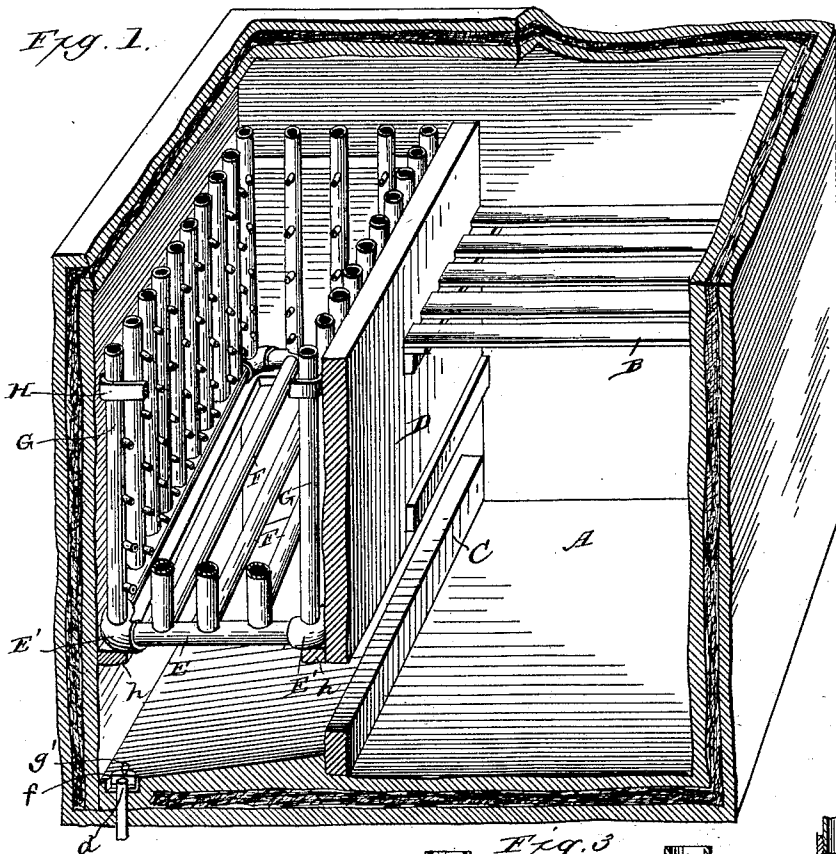


Fig. 2.

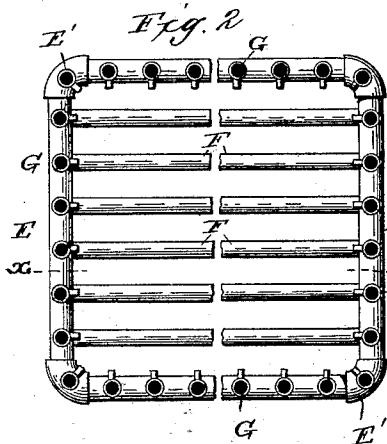


Fig. 3.

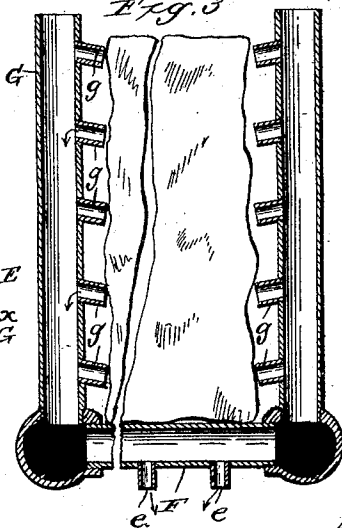
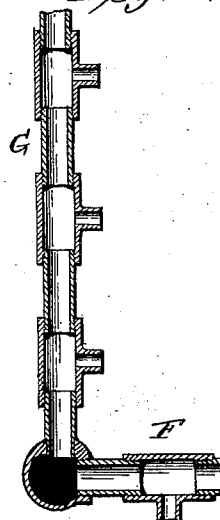


Fig. 4.



Witnesses

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REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 433,606, dated August 5, 1890.

Application filed March 4, 1890. Serial No. 342,624. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. TROTTER, of the city of Rochester, county of Monroe, and State of New York, have invented certain new and useful Improvements in Refrigerators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My present invention has for its object to provide an improved ice box or receptacle for refrigerators and refrigerating-rooms which will not only prevent the objectionable feature of causing a deposit of moisture on the walls of the ice or provision chamber, but will provide for a more thorough and rapid circulation, causing the contents of the provision-chamber to remain cooler and drier than in those now in use.

To these ends the invention consists in providing an ice-receptacle that will permit a free circulation of air, receiving it from any part of the chamber and discharging it at the portion maintained at the lowest temperature.

It further consists in certain improved constructions whereby the air-circulating passages and all the parts can be readily cleansed when desired, thereby preventing accumulations of foul slime and dirt usually present in large refrigerators that cannot readily be cleaned.

It further consists in certain novelties of construction and combination of parts, all as will be hereinafter described, and the novel features pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a perspective sectional view showing the application of my improved ice-receptacle, part of the latter being broken away for convenience of illustration. Fig. 2 is a top plan view of the ice-receptacle detached; Fig. 3, a sectional view on the line $x x$ of Fig. 2; Fig. 4, a view of a modification.

Similar letters of reference in the several figures indicate similar parts.

The chamber lettered A in the drawings, in which the provisions or articles to be kept

cool are located, may be of any desired shape, and may or may not be provided with shelves B, and the ice-chamber may be located at any desired part, apertures being left at the top and bottom of partition D, communicating with the provision-chambers, as usual, so as to afford a free circulation of air, thereby keeping the articles dry and cold. It is always desirable in refrigerators to deliver the air from the coldest part of the ice-box and to provide means for readily conducting warm air from any portion of the ice-chamber to this part, thereby keeping up a more rapid circulation of dry air and obviating the necessity of the air from all parts of the chamber following a certain specified course and being discharged at the same point irrespective of the relative frigidity of other places. In carrying out this feature in my present construction I propose to form a series of air-channels, into which air from the top of the chamber, or even from a lower level in the chamber, will be drawn and discharged at the coldest point, and to this end construct the ice-support hollow with numerous discharge-apertures and connect with it said series of channels.

In the drawings I have shown an ice-receptacle made of metal pipe, which is not only cheap, but very serviceable. The lower part of this chamber I prefer to construct of a frame, rectangular in the present instance, formed with iron pipe, with coupling-pieces E' at the corners, the two end pieces of this frame being connected by longitudinally-extending pipes F, each provided on its under side with a series of apertures, preferably having nipples e screwed therein, and said frame or receptacle rests upon cleats h in the casing. The sides of the ice-receptacle also I prefer to form of vertical channels, such as pipes G, their lower ends being reduced and entering the frame E, and for the purpose of holding these pipes in place they may be connected at or near their upper ends by means of a band or connecting-piece H, as shown, which band or a similar one may be provided around any openings that may be formed in the side of the chamber to hold the free and unsupported ends of any of the pipes. The upper ends of the pipes are preferably open

and their inner sides are provided with a series of apertures into which are screwed nipples *g*, preferably projecting slightly downward, said nipples serving to prevent the ice in the chamber from coming into direct contact with the pipes and causing condensation of moisture on the inside thereof, and also preventing the apertures being covered by the ice. The side pipes are preferably not secured rigidly to the base-frame E, but their lower ends rest loosely in them, as shown, for convenience of construction and cleansing.

The ice may be deposited in the ice-chamber either from the top or a suitable aperture provided at the side, as desired, but in any event rests upon the pipes F, constituting the bottom, or their equivalent, a hollow chamber, and in consequence renders them very cold, and as they are in communication with the pipes at the sides, and the latter are open at the top and also on their inner sides, the warmer air coming over from the provision-chamber will be drawn in them from all parts of the chamber and discharged through pipes F at the bottom at the coldest point, whichever part of the ice-chamber this may be. The cooled air is drawn into the provision-chamber again below partition D, abstracts the heat from the provisions, and, ascending, comes into the ice-chamber again, and so a continuous circulation is kept up.

While it is eminently desirable that the ice-chamber or ice-containing receptacle be made of pipes, as shown, it is not essential that this be done, as the broad idea is to have a series of air-conducting channels capable of being directly cooled at one or more points, from which the air can be discharged, and arranged to draw air from all or nearly all parts without obstruction, making the circulation much more rapid, and consequently keeping the provisions colder and drier.

By making the bottom of the receptacle of pipes, as shown, a good support for the ice is provided, from which the water can drip onto the floor of the chamber, and if the pipes are extended lengthwise from the door affording access to the ice-receptacle they form good ways on which to slide large pieces into place, rendering their movement easier.

The sides of the ice-receptacle being composed of pipes, they directly convey the air to the coldest place and the nipples prevent the ice coming into contact with their sides, which otherwise might cause condensation inside of them, a very undesirable feature in a refrigerator, the primary object being to have a rapid circulation of drying air.

It is desirable that the nipples or openings in the side pipes, as well as the bottom ones, be as large as possible, so that a free circulation may be had, and in order to provide for this I sometimes form the side pipes, and the bottom ones as well, of ordinary pipe T-couplings with nipples between them, as shown in

Fig. 4, the principal objection to this form being that it is a little more expensive to construct; but for small boxes it might be used to good advantage.

The ice-receptacle and all the air-passages can be readily cleansed when desired, either by removing it and connecting one of the pipes with a water-supply, washing them all out thoroughly, or by following the same course while the receptacle is in the main casing.

The water from the melted ice in the construction shown falls upon the bottom of the refrigerator or chamber (a rib or projection C preventing its entrance to the provision-chamber) and thence through a suitable trap to the outside. This trap I prefer to construct as in Fig. 1, the exit-pipe being provided with a vertical extension *d*, over which fits a cover or bell *f*, provided with a handle *g'*, though it will be understood that any other form of trap would answer.

Numerous other modifications could readily be made without departing from the spirit of my invention; and I do not therefore desire to be confined to the precise construction shown, as the improvements could be applied to refrigerator-boxes, rooms, houses, cars, or other places where necessary.

It is not essential that the features of the herein-described invention be applied exclusively to a chamber adapted to contain ice, as any other suitable refrigerating material could as well be employed, and the term "ice-support" is employed in the claim with this understanding.

I claim as my invention—

1. In an ice support or chamber for refrigerators, a hollow base and discharge-apertures therein, in combination with a series of vertical air-channels constituting the sides opening into the ice-chamber and communicating with the interior of the base, substantially as described.

2. In an ice support or chamber for refrigerators, a hollow base with the apertures therein, in combination with a series of vertical air-channels constituting the sides having apertures in different planes and communicating with the interior of the base, substantially as described.

3. In an ice support or chamber for refrigerators, the base composed of a series of tubes having discharge-apertures, in combination with the sides composed of vertical air-channels having openings in different planes and communicating with the base, substantially as described.

4. In an ice support or chamber for refrigerators, the combination, with the hollow base, of a series of vertical pipes composing the sides, having the hollow nipples on their inner sides and communicating with the base, substantially as described.

5. In an ice support or chamber for refrigerators, the combination, with the base con-

sisting of a hollow frame and a series of pipes having apertures therein, of a series of vertical tubes constituting the sides and communicating with said frame and with the interior of the support, substantially as described.

6. In an ice support or chamber for refrigerators, the combination, with the base consisting of the hollow frame having apertures in the upper side and a series of transverse pipes having apertures in their lower sides, of the sides composed of the series of vertical pipes having the apertures and resting

in the apertures in the frame, substantially as described.

7. In an ice support or chamber, the combination, with the base composed of tubes provided with discharge apertures, of the sides composed of hollow tubes opening into the chamber at the top and communicating with the base, substantially as described.

CHAS. W. TROTTER.

Witnesses:

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S. E. TRUE.