

(No Model.)

A. I. DEXTER.

REFRIGERATOR.

No. 384,965.

Patented June 26, 1888.

Fig. 1.

Fig. 2.

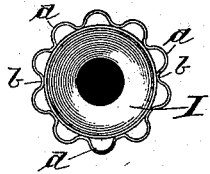
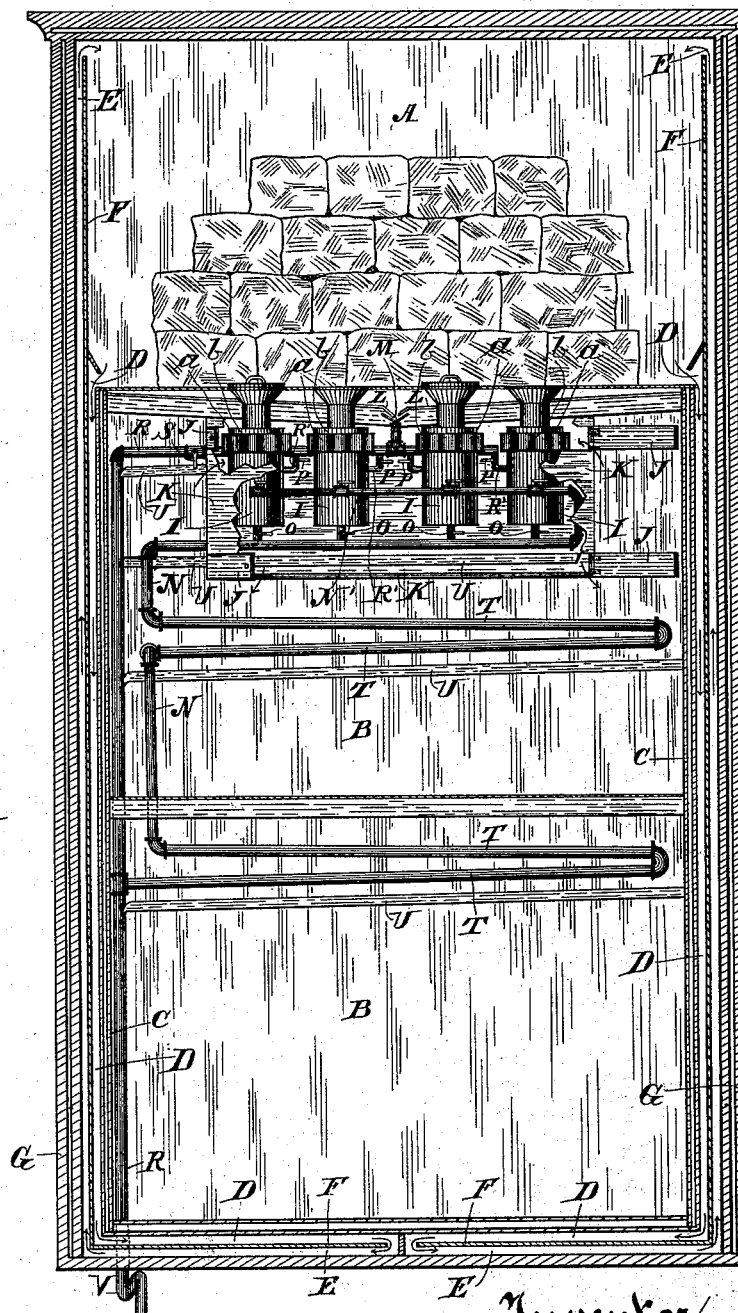
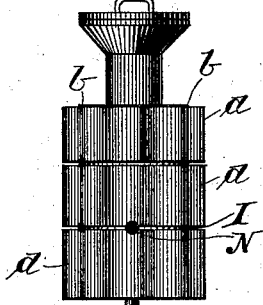


Fig. 3.



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UNITED STATES PATENT OFFICE.

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REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 384,965, dated June 26, 1888.

Application filed March 1, 1888. Serial No. 265,814. (No model.)

To all whom it may concern:

Be it known that I, AVELYN I. DEXTER, of Whitewater, in the county of Walworth and State of Wisconsin, have invented new and useful Improvements in Refrigerators; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in a certain refrigerator for which Letters Patent of the United States No. 371,180 were granted to me October 11, 1887, in which refrigerator the several store-rooms of the refrigerator-building are cooled by contact of the atmosphere therein with the inclosing cold metallic walls of the store-rooms without permitting the cold air from the ice-chamber to enter such apartments.

By my present invention I also exclude the air from the ice-chamber as well as from the exterior by non-conducting instead of metallic walls, which non-conducting walls and the entire apartments are surrounded on all sides by cold-air spaces. It is well known that cold is a negative state or condition which is attained by an absence of heat. I avail myself of this conceded fact in the construction of my refrigerator, and have provided the cold-air space, not that the cold may be transmitted through the walls, as heretofore, but that by providing a circulation of air between the non-conducting walls of the store-rooms and the exterior, the exterior heat of the atmosphere is prevented from penetrating such walls or reaching the store-rooms.

My invention also pertains to the device for absorbing the heat and moisture within the several apartments thus inclosed.

The construction of my invention is explained by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section of the refrigerator and the several apartments and a side view of the apparatus for absorbing the heat and moisture. Fig. 2 represents a top view of one of the ice or freezing tanks, and Fig. 3 represents a side view of one of the freezing-tanks.

Like parts are represented by the same reference-letters in all the views.

A is the ice chamber, which is located in the upper story of the building.

B B are store-rooms, a greater or less number of which may be employed, as desired. The store-rooms B B are inclosed first by a non-conducting wall, C, which is made of any suitable non-conducting material. Surrounding the non-conducting wall C are cold-air passages D D, which communicate downward directly from the ice chamber A to and beneath the lower apartments, B, and from thence communicate with exterior air-spaces, E E, through which the air is conducted back from beneath the store-rooms or lower apartments between the partitions F F and the exterior non-conducting walls, G, and ascends, as it becomes partially heated by contact with the exterior wall, to the upper extremity of the ice-chamber A. The air upon entering the ice-chamber A as it becomes cool descends again to the lower part of the ice-chamber, and from thence passes down through said air-space D again, and is thus caused to continuously circulate downward and upward, whereby such heat as may penetrate the exterior wall to the exterior air-space, E, is instantly carried upward with said upward current of air and discharged into the cooling-room or ice-chamber A, thus preventing the possibility of the transmission of heat from the exterior to the interior store-rooms.

When the apartments have been thus inclosed and the warm air excluded, the temperature of the apartments is lowered and the moisture contained in the atmosphere is withdrawn by the use of one or more freezing-tanks, I, which freezing-tanks are located in the upper part of the upper store-room, and the mouth of said tanks open into or communicate with the ice-chamber A.

As a freezing-mixture, I preferably use ice and salt in the ordinary way, the ice being broken up and intermixed with the salt and thrown into the several tanks I, when by the coaction of the ice and salt thus intermixed the heat of the several apartments thus inclosed is rapidly absorbed by said freezing-tanks, and a very low temperature is obtained in said apartments. Owing to the low tem-

perature of the freezing-tanks and the connecting discharge-pipes, the moisture in the atmosphere is caused to congeal upon the surface of said tanks and pipes, whereby a dry condition of the atmosphere is attained in the several apartments, which is most favorable to the preservation of the products stored. When the freezing-tanks have become coated with ice, the ice is removed by closing the doors J of the surrounding inclosure K, when the temperature of the freezing-tanks I is raised by the admission of water, which flows into the same from the inclined floors L of the ice-chamber A through the ducts M, R, and R', thereby causing the ice upon the exterior surface of the freezing-tanks to be melted, when it is conducted from the refrigerator through drip-troughs U and the pipe R. When using the freezing-tanks for cooling purposes, the waste-cocks O at the bottom of the tanks are closed, so that the cold brine produced by the freezing-mixtures cannot escape, but will accumulate in the freezing-tanks, and said tanks will remain filled with the melted mixture up to the upper discharge-ducts, M', which are located at or near the center of the tanks, whereby all the lower portion of the tanks to the level of the contained brine is retained at a lower temperature, and better results are thereby attained than would otherwise be were the freezing-mixtures permitted to escape as soon as it is melted. When, however, it is desirous to remove the contents of the ice-chambers I, the waste cocks O are opened, when the entire contents of said tanks are discharged into the pipe N, and thereby conducted from the building. When the ice which is thus congealed upon the surface of the ice-chambers has been thus melted and the water arising therefrom has been conducted from the building, the doors J are thrown open and said tanks again exposed to contact with the surrounding atmosphere, when they may be again refilled with salt and ice and the process described repeated. When the freezing-tanks I are thus employed, the water dripping from the ice-chamber is prevented from entering them by closing the cocks P, when the dripping water is conducted from the ice-chamber out through the pipe R; but when using the water from the ice-chamber to melt the ice upon the exterior surface of the freezing-tanks the cock S in pipe R is closed, and the cocks P, communicating between said pipe R and the freezing-tanks, are opened, thus compelling the water dripping from the inclined floors L of the ice-chamber to pass into said freezing-tanks.

As the cold liquid which is produced from the mixture of ice and salt accumulates within and flows from the freezing-tanks I, it is preferably conducted backward and forward along and around the walls of the several apartments, as shown at T T, whereby the heat and moisture in said apartments are rapidly absorbed.

Beneath the coils of pipe thus extended through the several apartments are drip-troughs U, by which the moisture accumulating upon and flowing from the surface of said pipes is conducted from the apartments. The discharge end of the water-pipe R is provided with an upward bend, forming a water-trap, V, which prevents the admission of air through said pipe.

The several freezing-tanks I are provided with one or more corrugated exterior surfaces, a, which are connected at the inward bends, b, of such corrugations with the ice-tanks, and thus increases the cold metallic surface exposed to contact with the surrounding atmosphere, whereby the capacity for absorbing heat and moisture of said freezing-tanks is greatly increased.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a refrigerator, the combination of an ice-chamber, one or more store-rooms or apartments located below said ice chamber, and an exterior and interior non-conducting wall surrounding said store rooms, and central or intermediate partition located between said exterior and interior walls, two cold-air spaces being formed thereby, surrounding said store-rooms, one of which cold-air spaces communicates from the lower part of said ice-chamber downward around and beneath the lower apartments, and the other communicates from the lower extremity of said lower apartment to the top of said ice-chamber, whereby exterior heat is excluded and said lower apartments are kept cold by the exclusion of heat without the admission of air from the ice-chamber, substantially as and for the purpose specified.

2. In a refrigerator having an ice chamber and one or more store rooms or apartments located below said ice-chamber surrounded by exterior and interior non-conducting walls, a central or intermediate partition located between said exterior and interior walls forming cold-air spaces surrounding said store-rooms between said non-conducting walls, whereby said store-rooms are kept cold by the exclusion of exterior heat without admitting cold air from the ice-chamber, in combination with one or more freezing-tanks located in the upper part of said store-rooms and communicating therefrom with the ice-chamber, and water-pipes or ducts for conducting the overflow or water accumulating from the melted ice from said freezing-tanks to the exterior of the refrigerator, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

AVELYN I. DEXTER.

Witnesses:

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