G. E. COXE.

REFRIGERATOR.

APPLICATION FILED FEB. 13, 1914.

1,143,362.

Patented June 15, 1915.

3 SHEETS—SHEET 1.

Fig. 8.

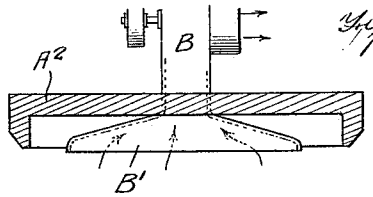


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

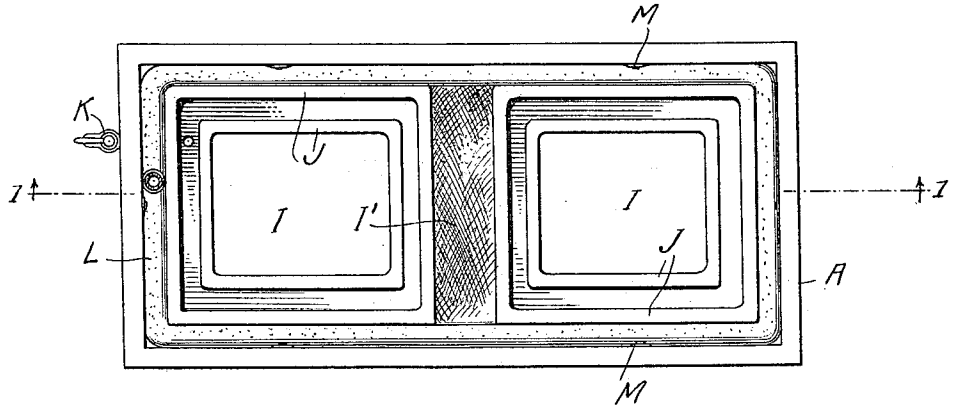


Fig. 3.

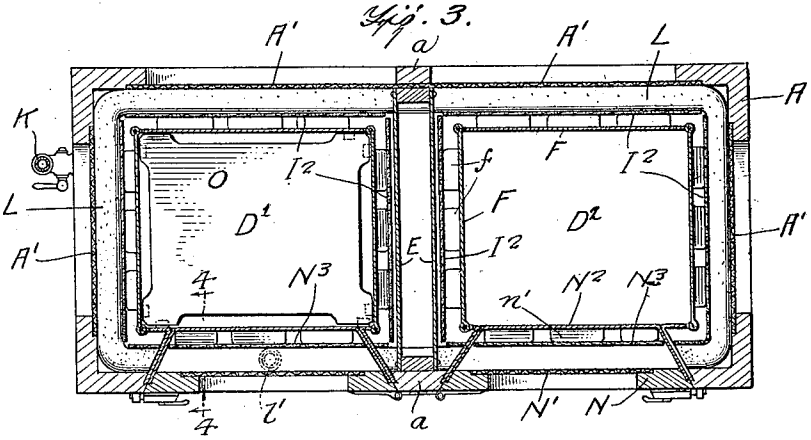


Fig. 9.

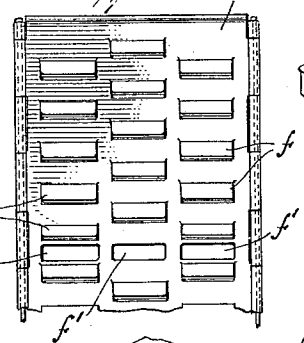


Fig. 10.

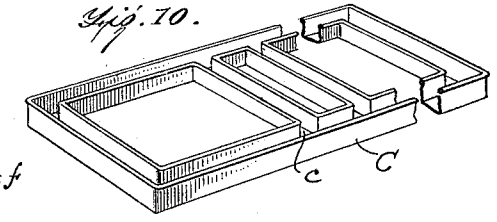


Fig. 12.

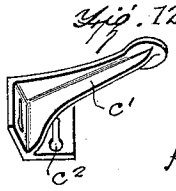


Fig. 11.

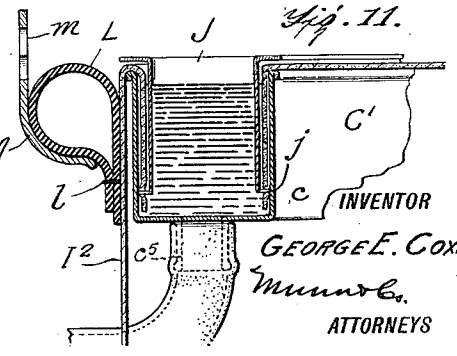
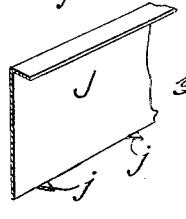


Fig. 13.



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3 SHEETS—SHEET 3.

Fig. 4.

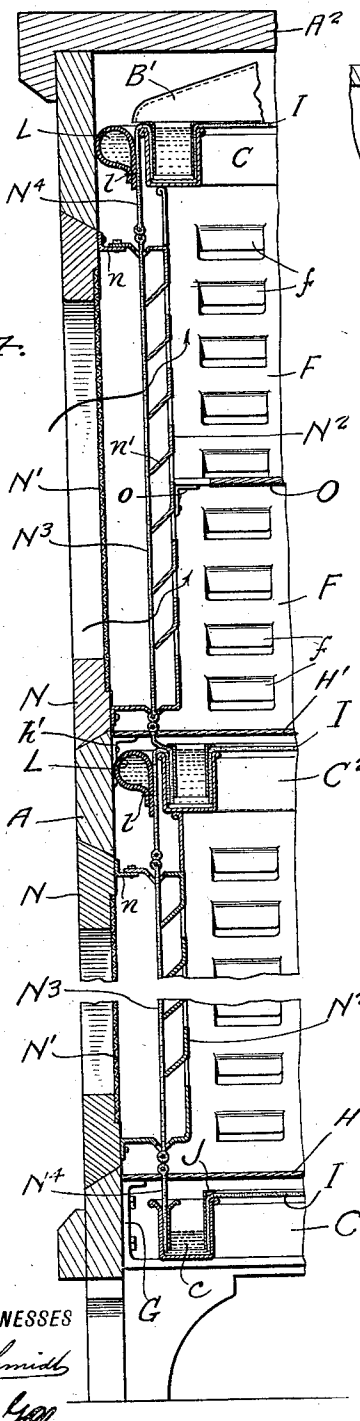


Fig. 5.

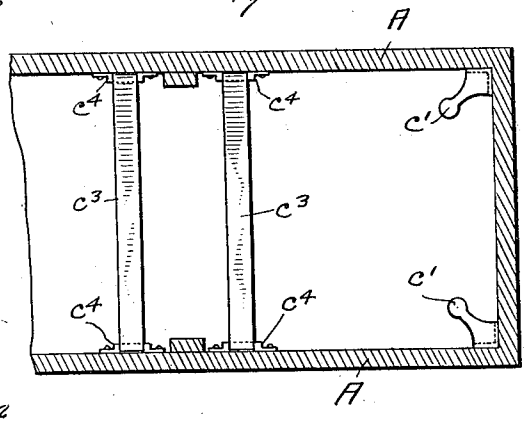


Fig. 6.

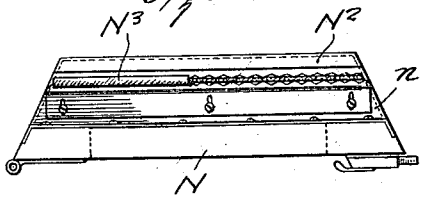
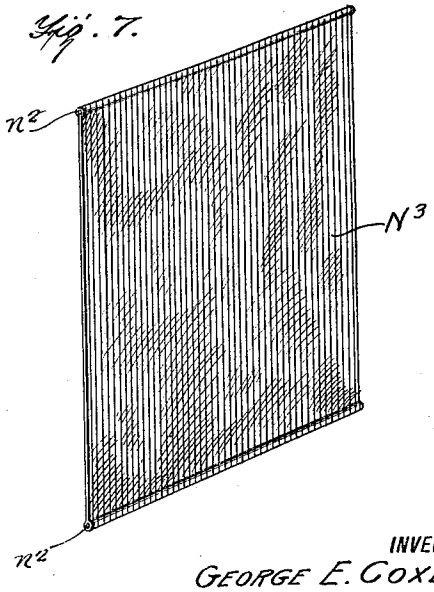


Fig. 7.



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UNITED STATES PATENT OFFICE.

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REFRIGERATOR.

1,143,362. Specification of Letters Patent. Patented June 15, 1915.

Application filed February 13, 1914. Serial No. 818,550.

To all whom it may concern:

Be it known that I, GEORGE E. COXE, a citizen of the United States, and a resident of Santa Rita, in the county of Grant and State of New Mexico, have invented an Improvement in Refrigerators, of which the following is a specification.

My present invention relates to refrigerators and more particularly to that type of refrigerators generally known as "iceless refrigerators" in which the lowering temperature is obtained upon the principle of evaporation of liquids, my object being to provide a refrigerator of this character embodying certain novel features of construction and arrangement whereby a maximum evaporation may be obtained and a thorough circulation maintained at all times and whereby certain other advantages to be hereinafter described may be gained in order that a high degree of effectiveness may be present at all times.

The accompanying drawings illustrate the various details constituting one form of the embodiment of my invention and will be hereinafter referred to in order that they may be thoroughly understood and in order that the advantages arising therefrom may be thoroughly appreciated.

In these drawings, Figure 1 is a vertical section taken through the complete refrigerator substantially on line 1—1 of Fig. 2. Fig. 2 is a plan view with the cover removed. Fig. 3 is a horizontal section taken therethrough substantially on line 3—3 of Fig. 1. Fig. 4 is an enlarged vertical section from the forward portion of the refrigerator taken substantially on line 4—4 of Fig. 3. Fig. 5 is a horizontal section taken on line 5—5 of Fig. 1. Fig. 6 is a plan view of one of the doors. Fig. 7 is a whole perspective view of one of the capillary curtains removed. Fig. 8 is a vertical transverse section taken on line 8—8 of Fig. 1. Fig. 9 is an elevation of a portion of one of the inner walls. Fig. 10 is a perspective view of one of the capillary pans. Fig. 11 is an enlarged section through one side of one of the capillary pans with its capillary members in position. Fig. 12 is a whole perspective view of one of the supporting brackets for the capillary pans. Fig. 13 is a perspective view of a fragmentary portion of one of the capillary holding plates.

Referring now to these figures, the frame of my improved refrigerator consists of a body A, the side, front and rear walls of which are provided with openings, the openings of the side and rear walls being covered by suitable reticulated material such as for instance the screens A′ as best shown in Figs. 1 and 3. The base of the body A is also open and is substantially uncovered to assist in promoting a thorough circulation of air through the entire body, although this base as well as the rear wall may be provided with supporting stiles G′ and *a*, respectively, extending across the openings thereof. The top of the body is closed by a cover A^2 upon which may be mounted a suction fan B for promoting a forced circulation and the flaring suction nozzle B′ of which is extended inwardly through the cover at a point substantially central between the side edges thereof for a purpose to be hereinafter described.

Mounted in the upper and lower portions of the body A and at various intermediate portions as desired are a plurality of capillary pans which divide the body horizontally. In the present embodiment I have shown upper and lower pans C and C′ and an intermediate pan C^2 centrally between the upper and lower pans so that the body is divided into upper and lower horizontal chambers of which the lower chamber forms an enlarged food compartment D. The upper chamber is divided by spaced vertical walls E located at a point substantially central between the sides of the refrigerator body and forming an air flue open at its lower end into the lower enlarged food chamber D. This air flue thus divides the upper chamber vertically into juxtaposed food chambers D′ and D^2 and is provided with lateral openings *e* at an intermediate point communicating with said food compartments D′ and D^2. The upper end of the flue E is also open and is directly below the suction nozzle B′ of the fan when the cover A^2 is in position as clearly seen by reference to Figs. 1 and 8.

These food compartments D, D′ and D^2 are each surrounded by inner walls F, these inner walls being spaced from the walls of the body sufficient to form surrounding air spaces between them, and the walls of the upper compartments D′ and D^2 being utilized to support the upper capillary pan C.

The intermediate capillary pan C^2 is supported upon corner brackets *c*′, one of which is shown in detail in Fig. 12, each of the

brackets having bayonet slots engaging bolts fixed to the body A in order that they may be readily removed. The lower capillary pan C′ is supported upon the stiles G′ and also upon a surrounding flanged bar G the upper portion of which supports the tray H which in turn supports the walls F of the lower food compartment D. Trays H′ supported upon brackets h', in turn support the walls F of the upper compartments D′ and D².

The intermediate capillary pan C² is also supported upon intermediate cross bars c^3 as shown in Fig. 1 these bars being removably supported at their ends in brackets c^4.

The inner walls F of the several food compartments are formed of plates the side edges of which are hinged as best shown in Figs. 3 and 9, these plates having vertical series of apertures with outwardly and downwardly inclined integral lips or projections f and certain of the walls of the upper food compartments adjacent to the sides of the flue E may have openings f' as shown in Fig. 9 in order to communicate directly with the lateral flue openings e before mentioned.

Each of the capillary pans C, C′ and C², the former of which is shown in detail in Fig. 10, is provided with side openings of the same size and a relatively smaller central opening and is further provided with troughs c surrounding the several openings and in communication with one another to receive a supply of liquid as best shown in Fig. 11, the side openings of each of the pans being covered by flexible capillary curtains I stretched thereover, the edges of which curtains depend into the troughs c and the central openings of the upper and lower capillary pans C and C′ are also covered by curtains I′ the edges of which are extended into the troughs in like manner. Similarly capillary curtains I² are extended vertically upon all sides of the several food compartments upon the outside of their inner walls F, the upper and lower edges of these capillary curtains I² being also extended into the troughs of the capillary pans above and below the same.

In this manner the several food compartments are entirely surrounded by moisture carrying curtains through which the air circulating through the food compartments is drawn in order to set up the desired evaporation and thus causing lowering temperature.

The edges of the several curtains extending into the troughs of the several capillary pans are preferably held by frames or plates J, the side walls of which depend into the troughs and are provided at their lower edges with spurs or projections j engaging the curtain edges as best shown in Fig. 11.

Each of the capillary pans is also provided with a depending outlet tube c^5 to which is connected one end of a flexible pipe k, the opposite end of which is connected to a valved drainage fitting k' communicating with a vertical drain pipe K depending upon one exterior side of the refrigerator body whereby the several pans may be drained and cleaned when desired.

Surrounding the intermediate capillary pans C and C² are supplementary liquid holders in the form of tubes L each of which consists of a strip of material the side edges of which are brought together and stitched as best shown at l in Fig. 11 in order to form a lower joint through which the water may seep out onto the depending curtains I², around the upper portions of which the said tubes are extended. These tubes are supported by brackets M having bayonet slots m engaging bolts projecting inwardly from the body A similar to the engagement of the corner brackets c' before mentioned.

The openings of the front wall of the body A have beveled edges as best seen by reference to Figs. 3 and 4 and receive the doors N which are identical except as to size and are provided with similarly beveled edges. These doors have openings covered by screens N′ similar to the screen covered openings of the body walls and each door has a surrounding bracket n extending inwardly therefrom and to which is secured a vertical plate N² having apertures and outwardly and downwardly projecting integral lips n', these plates being adapted to set into and form parts of, the adjacent inner walls of the respective food compartments and also having vertical capillary curtains N³, into the upper and lower edges of which are secured stiffening wires n^2, these curtains being adapted to contact at their stiffened edges with similarly stiffened edges of short curtains N⁴ extending into the troughs of the capillary pans.

The several food compartments may have any number of intermediate trays one of which is indicated at O in the food compartment D′ and is shown as supported upon lugs o projecting inwardly from the side walls. The supplementary liquid holding tubes L may be supplied with fluid through filling apertures to which funnels and the like l' are attached.

Thus it will be seen that each of the several food compartments into which the body of the refrigerator is divided are surrounded by air spaces in direct communication with the exterior of the refrigerator through its screen covered wall and door openings, and with moisture holding capillary members receiving a constant supply of liquid and through which air is drawn to effect a circulation within the refrigerator.

It is also to be noted that the inner walls of the several food compartments support

the depending curtains in proper relation due to their integral lips or projections *f* and the projections *n'* and that these projections serve to return to the capillary curtains any excess moisture dropping from above.

The circulation is constant through the entire refrigerator by means of the suction fan B and all odors are promptly removed from the food compartments, thus rendering the refrigerator sanitary in a high degree and continuously effective in its operation.

It will also be noted that the entire refrigerator may be readily cleaned by removing the cover A^2 and successively lifting out the several capillary pans, the curtains and the inner walls and troughs of the several food compartments.

It is also to be noted that the several capillary pans may be drained and cleaned without necessitating their removal, by means of the drain pipe K and its valved drain fittings communicating with the depending outlets on the pans as before described.

By the use of a refrigerator of this type a desirably low temperature may be obtained without the use of ice and with the added advantage of a continuous circulation of fresh air and discharge of odors from the various foods stored therein.

I claim:

1. In a refrigerator of the character described, the combination of a body or frame open at its sides and base, and divided into a plurality of food compartments, apertured inner walls surrounding each of the food compartments and forming air spaces between the same and the walls of the body or casing, capillary curtains also surrounding the said food compartments and the forward curtains of which compartments are in sections, liquid holding pans into which portions of all of the curtains are extended, and doors leading into the fronts of the several compartments, each door carrying a section of the front curtain of its respective compartment, and each door carried curtain section having projecting reinforced edges contacting with the compartment carried sections of the same curtain when the respective door is closed.

2. In a refrigerator of the character described, the combination of a body or frame open at its sides and base and divided into a plurality of food compartments, capillary curtains disposed to entirely surround each of the said food compartments and to cover the top and bottom thereof, liquid holding pans mounted above and below each of the said compartments and into which portions of the said capillary curtains are extended, and means for forcing circulation through the several compartments all for the purpose described.

3. A refrigerator comprising a body open at its sides and base, a plurality of inner walls forming food compartments spaced from one another, liquid holding pans disposed above and below each of the food compartments, capillary curtains extending around each of the food compartments upon the exterior of said inner walls with their upper and lower edges extending into the said liquid holding pans, said inner walls having portions of the material up set therefrom to form apertures and outwardly projecting lips engaging the said capillary curtains, all substantially as and for the purpose set forth.

4. A refrigerator comprising a body open at its sides and base, a plurality of inner walls removably held therein and forming food compartments spaced from one another, liquid holding pans removably disposed above and below each of the food compartments, capillary curtains extending around each of the food compartments upon the exterior of said inner walls with their upper and lower edges extending into the said liquid holding pans, said inner walls having portions of their material upset therefrom to form apertures and outwardly projecting lips engaging the said capillary curtains, and means for causing a forced circulation through the several food compartments, all substantially as and for the purpose set forth.

5. In a refrigerator of the character described, the combination of a body open at its sides and base, liquid holding pans disposed horizontally within the body and each having apertures and liquid holding troughs surrounding the said apertures, inner walls extending between the said pans and spaced from the walls of the body, said inner walls forming food compartments therein, capillary curtains extending over the openings of the pans at the upper and lower portions of the compartments, other capillary curtains extending vertically along the inner walls of each of the food compartments, the edges of all of said curtains being extended into the liquid holding troughs of the pans, and said inner walls having apertures and outwardly and downwardly inclined projections extending into contact with the capillary curtains mounted vertically around the food compartments all for the purpose described.

6. In a refrigerator of the character described, the combination of a body open at its sides and base and divided to form a single lower compartment and a pair of juxtaposed upper compartments, means for producing a forced circulation through the body, a cover for the body on which the said means are disposed and through which they communicate with the body, a flue mounted vertically in the body between the upper

compartments and opening at its lower end into the lower compartment, capillary curtains disposed around each of the said food compartments, and means for feeding moisture to the said curtains, the said flue having side openings adjacent each of the said upper food compartments all for the purpose described.

GEORGE E. COXE.

Witnesses:
MYRON G. CLEAR,
PERRY B. TURPIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."