

L. DORAN.
REFRIGERATOR.

APPLICATION FILED SEPT. 24, 1907.

947,627.

Patented Jan. 25, 1910.

Fig. 1.

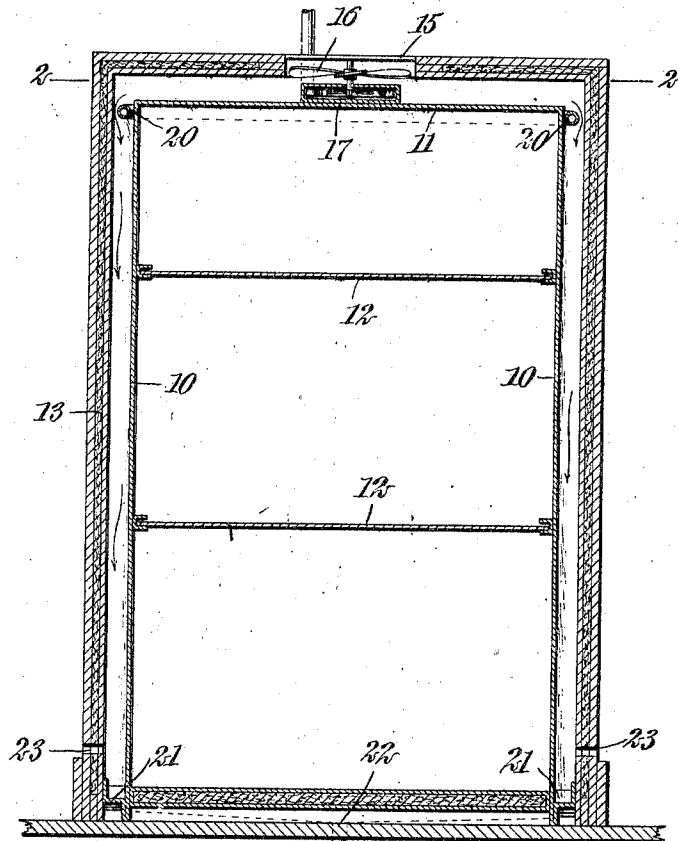
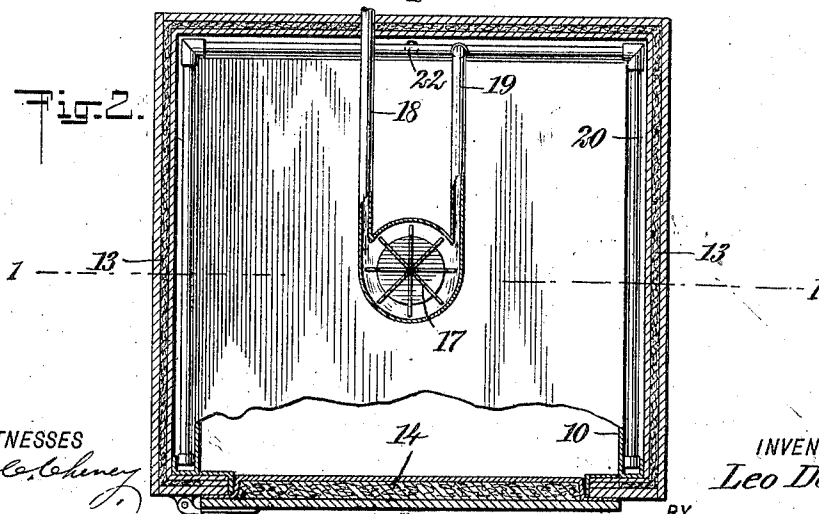


Fig. 2.



WITNESSES
John C. Cheney
6017 Fairbank

INVENTOR
Leo Doran
BY *Mumford*
ATTORNEYS

UNITED STATES PATENT OFFICE.

LEO DORAN, OF PORT ARTHUR, ONTARIO, CANADA.

REFRIGERATOR.

947,627.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed September 24, 1907. Serial No. 394,263.

To all whom it may concern:

Be it known that I, LEO DORAN, a subject of the King of Great Britain, and a resident of Port Arthur, in the Province of Ontario, Dominion of Canada, have invented a new and Improved Refrigerator, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in cooling devices, and more particularly to a refrigerator adapted to be cooled by a cooling liquid rather than by the employment of ice, the construction being such that the liquid is distributed over an evaporating surface and air is caused to circulate over the surface to evaporate a portion of the water and thus lower its temperature.

One special object of the invention is to utilize the current of water delivered to the evaporating surface for operating the fan which causes the circulation of air.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures, and in which—

Figure 1 is a vertical section through a refrigerator constructed in accordance with my invention said section being taken on the line 1—1 of Fig. 2; and Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

The specific embodiment of my invention which I have illustrated in the accompanying drawings involves a rectangular casing provided with shelves and resembling in appearance an ordinary refrigerator, although it is evident that the principle employed may be utilized in various other forms and constructions.

In the construction illustrated there is provided a storage chamber for the reception of the articles to be cooled, and this chamber is preferably formed by substantially vertical walls 10 and a top wall 11. Any suitable form of shelves 12 may, if desired, be supported within the chamber. The walls are preferably of enameled metal and form three sides of the chamber. Inclosing the chamber and spaced therefrom is any suitable form of insulating wall 13, which wall is connected to the inner walls 10 at the front edges of the latter, and this outer insulated wall is provided with any suitable door or closure 14, whereby access may be gained to the interior of the chamber. The space between the inner and the outer walls consti-

tutes an evaporating space and through this space air is caused to circulate to facilitate the evaporation of water flowing over the outer surface of the inner walls. For delivering the water and creating the air circulation, I preferably provide an opening 15 in the top of the outer casing, and substantially equi-distant from the side walls; and within the opening is disposed a suitable fan 16. By disposing the opening 15 in the center of the flat top and mounting the fan within this opening, the fan is equi-distant from all sides of the refrigerator and creates an equal circulation of air through the evaporating spaces at each of the sides.

Directly beneath the fan there is provided a water wheel 17 operatively connected to said fan and adapted to be rotated by a current of water entering through a conduit 18 and escaping through a conduit 19. The first-mentioned conduit leads from any suitable source of water under pressure and the last-mentioned conduit leads to a spray pipe 20 extending across the rear of the refrigerator and along the two opposite sides adjacent the upper edge of the inner walls 10. The casing of the water wheel and the pipes 18 and 19 leading to and from the same, are in direct contact with the top wall 11 of the provision compartment. The warmest air in the compartment will be in engagement with the under surface of the wall 11 and if this air be warmer than the water delivered through the water motor, the air will be cooled by direct conduction of the heat through said wall 11 to the water before the latter is evaporated. The spray pipe is provided with openings so disposed that the water escaping therefrom will be directed against the outer surface of said walls and flow thereover to the lower portion of the refrigerator. The water entering the conduit 18 operates the wheel and is then delivered to the spray pipe. The operation of the water wheel causes the rotation of the fan, which latter forces a current of air through the evaporating space to evaporate the water flowing over the walls. The excess of water not evaporated is collected in any suitable form of trough 21 at the lower portion of the evaporating space and may escape through a suitable waste conduit 22. The air after passing over the moistened surface may escape through suitable apertures 23 at the lower portion of the outer casing. It will thus be noted that the

water serves a triple function, in that it operates the fan, removes heat from the upper portion of the refrigerator by conduction, and evaporates in evaporating spaces to cool the side walls of the provision compartment. The fan serves to create a circulation of air through the evaporating spaces, and by positioning the fan in the center of the top, it draws equal quantities of air from all sides.

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

1. A refrigerator, having double side walls forming an evaporating space therebetween and having double top walls forming therebetween a space communicating with said evaporating space, the outer walls at the lower portion thereof being provided with openings therethrough for the passage of air and the outer top wall being substantially flat and provided with a centrally-disposed opening therethrough substantially equidistant from said side walls for the passage of air, a fan disposed within said top space and adjacent the opening in the outer top wall and serving to create a substantially uniform circulation of air through all portions of the evaporating space, a water wheel operatively connected to said fan, means for delivering water under pressure to said water wheel, and means for delivering water from said water wheel to said evaporating space adjacent the upper portion thereof, whereby the water wheel serves

to operate said fan, and the exhaust water is evaporated in said evaporating space by the circulation of air therethrough independently of any circulation of air within the refrigerator.

2. A refrigerator, having double side walls forming an evaporating space therebetween and having double top walls forming therebetween a space communicating with said evaporating space, the outer top wall being provided with an opening therethrough, a fan disposed within said top space and serving to circulate air through said evaporating space, a water wheel operatively connected to said fan and also within said top space and having the casing thereof in engagement with the inner top wall upon the outer surface thereof, spray pipes within said evaporating space at the upper portion thereof, means for delivering water under pressure to said water wheel, and means for delivering said water from said water wheel to said spray pipes, whereby the water serves to operate the fan, cool by direct conduction in the upper space, and cool by evaporation in the evaporating space.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEO DORAN.

Witnesses:

MAGGIE O'NEILL,
W. D. BRUCE TURVILLE.