

L. C. WILLIAMSON.
REFRIGERATING APPARATUS.

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UNITED STATES PATENT OFFICE.

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REFRIGERATING APPARATUS.

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To all whom it may concern:

Be it known that I, LUTHER C. WILLIAMSON, a citizen of the United States, residing at Union City, in the county of Randolph and State of Indiana, have invented certain new and useful Improvements in Refrigerating Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improved cold-water refrigerator for farm, dairy, and household purposes; and the object is to provide a simple and inexpensive apparatus designed to utilize the circulation of cold water to maintain a low temperature in the refrigerant or provision chamber.

The present apparatus can be used with equal facility and advantage in cities where water is artificially supplied through pipes as well as in the country or on a farm where a wind-wheel or other motor is used to raise the water to the structure to insure a continuous circulation through the same.

With the above-stated ends in view my invention may be said to consist of a metallic provision-chamber arranged within a suitable inclosure and provided with suitable shelves or ledges for the support and reception of vessels or provisions, an elevated reservoir or tank arranged above or in the upper part of the provision-chamber and provided with perforations for the escape of water down the sides or interior of said provision-chamber, and a supply-pipe emptying into the elevated reservoir or tank, all as will be hereinafter fully described, and particularly pointed out in the claims.

To enable others to more readily understand my invention and its applicability to its different conditions, I have illustrated the invention in two different forms in the accompanying drawings, in which—

Figure I is a perspective view with parts broken away to show the interior construction and arrangement of an apparatus designed particularly for farm or dairy purposes. Fig. II is a horizontal sectional view on the plane

indicated by the dotted line *x x* of Fig. I. Fig. III is a perspective view, partly in section, illustrating the applicability of the improvements to a portable or household refrigerator.

Like letters of reference denote corresponding parts in the several figures of the drawings.

Referring more particularly to Figs. I and II, A designates the interior metallic provision-chamber, which is arranged within a suitable inclosure B. This interior provision-chamber is constructed of zinc or any other suitable sheet metal, and said chamber is arranged within the inclosure B, so as to leave an intermediate air-space C, which entirely surrounds the interior chamber. The exterior inclosure is built of wood or any other material in any desirable or preferable manner; but I prefer to construct the exterior inclosure of walls having a double thickness, so as to leave intermediate spaces to receive a heat-excluding packing or filling, with which those skilled in the art are familiar. The exterior inclosure or house surrounding the metallic interior chamber A preferably rests on a foundation of masonry D, and in this foundation is provided an air-inlet *d*, covered by a register *d'*, while in the upper part of the structure B, preferably at the gables, I provide the air-outlets E, whereby air is free to pass into and out of the inclosure B and circulate around the interior metallic chamber A. I prefer to erect or place the metallic chamber A on a foundation F of masonry when the apparatus is adapted for farm and dairy purposes, as in Figs. I and II, and in this foundation is formed the curb *f*, or it may be provided with vessels *f'* to receive milk, cream, or any other product or substance which it is desirable to keep cool. In the upper part of the interior metallic chamber A or above the same I provide the metallic tank or reservoir H, which is of such area as to practically cover the interior chamber. In fact, the tank or reservoir may be made to form the top of the interior chamber. This reservoir is preferably flat and shallow, as shown, and it is provided with an upwardly-extending flange and with a series of perforations *h'*, which extend continuously around the tank near the edges thereof and within the vertical flange or rim *h*. These perforations are so placed

as to direct the flow of water down the sides or the interior of the metallic chamber A, and the water is carried off by an eduction-pipe I, which has its receiving-orifice communicating with the curb *f*, so as to receive all the water and convey it to a point outside of the chamber A and the inclosure B. The water is supplied to the elevated tank or reservoir by means of a vertical supply-pipe J, which has the goose-neck or bend *j* at its upper end terminating over the tank or reservoir, or said bend may have a rose or spreader to spray the water over the surface of the tank and insure a more uniform and equal distribution of the water. This supply-pipe may lead to a cistern or well, and mechanical devices may be employed to positively force or pump the water through said pipe to the tank or reservoir. I have shown a wind engine or mill associated with a pump to force the water from a well to the pipe; but other mechanical contrivances can be substituted for such engine or mill and pump without departing from the spirit of my invention.

The operation is apparent. The cold water from the well is forced through the supply-pipe to the elevated tank or reservoir, where it is spread and divided to flow in numerous small streams through the perforations *h'* into and through the metallic chamber A. The water is collected in the curb *f* and discharged through the eduction-pipe. The interior chamber is cooled by this constant flowing of the small streams of cold water, so that the temperature therein is maintained at such a point that will serve to keep milk, cream, vegetables, or other articles in a wholesome condition, while at the same time the air is free to circulate through the inclosure around the air-space C and in contact with the metallic chamber.

In the embodiment of my invention shown in Fig. III the same essential features are preserved—namely, the interior metallic chamber adapted to contain the shelves or ledges on which articles or food can be placed, the elevated reservoir or tank with its perforated bottom, the supply-pipe, the collecting-trough

k at the bottom of the metallic chamber contiguous to the walls thereof, and the eduction-pipe leading from said trough. The supply-pipe may be connected to a main or other suitable source of supply, and, if desired, a small motor may be used to operate a pump for forcing water through the supply-pipe, so that water is elevated to the tank or reservoir and discharged therefrom through the metallic chamber.

As is usual, the exterior inclosure and the interior metallic chamber are provided with suitable doors, which permit access to the interior of the apparatus.

What I claim as new is—

1. The combination of a metallic chamber arranged within a suitable inclosure and having the collecting curb or trough arranged in juxtaposition to the walls thereof and extending inwardly to afford a cooling-trough along the side or sides of the cooling-chamber, the elevated tank or reservoir having the perforations arranged close to the walls of said chamber, and the supply-pipe leading to an exterior source of water-supply and having its discharge end terminating within the tank or reservoir, substantially as described.

2. The combination of a metallic chamber arranged within a suitable inclosure and having a series of shelves, the collecting curb or trough arranged in juxtaposition to the walls of the chamber and extending inward to afford a cooling-trough along the sides of the cooling-chamber, the elevated tank or reservoir having the flaring edges provided with perforations arranged close to the walls of said chamber, the supply-pipe leading to an exterior source of water-supply and having its discharge end terminating in the tank or reservoir, and the eduction or waste pipe, substantially as described.

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

LUTHER C. WILLIAMSON.

Witnesses:

DAVID GETTINGER,
WEBSTER LAMBERT.