M. GREENEBAUM.

Combined Refrigerator and Water-Cooler.

No. 211,565. Patented Jan. 21, 1879.

Fig. 1

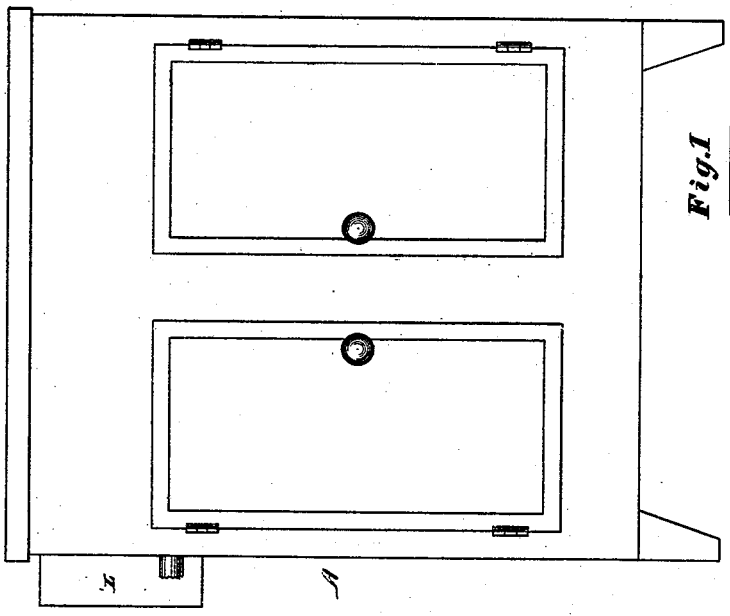

Fig. 4

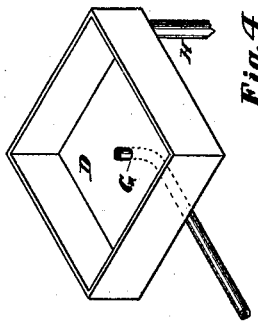

Fig. 3

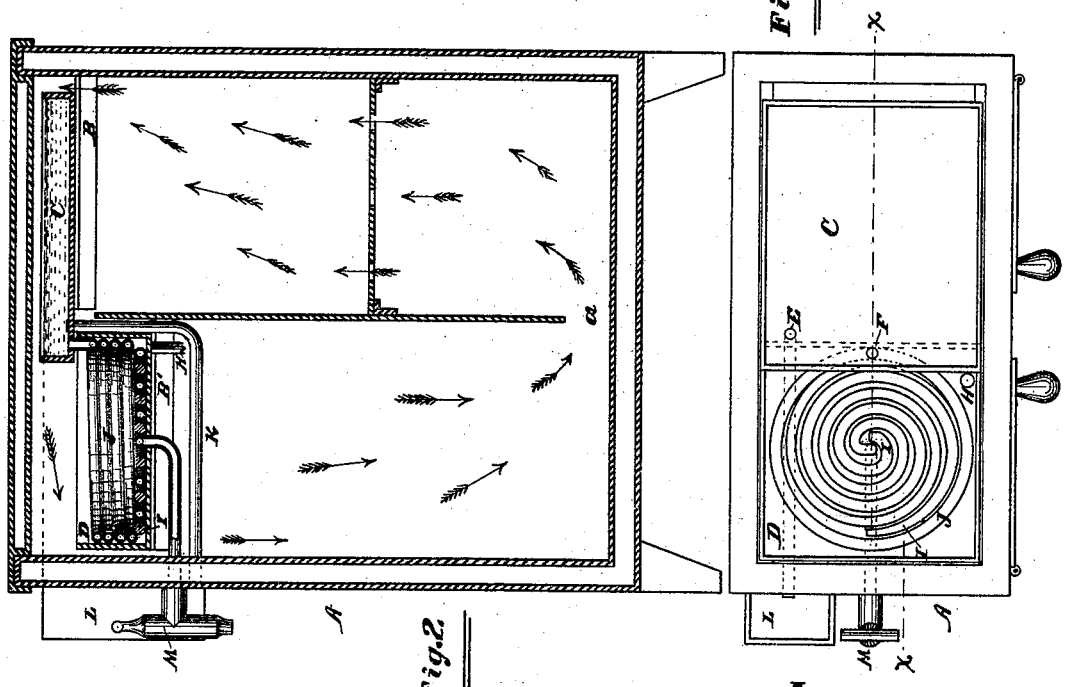

Fig. 2

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MICHAEL GREENEBAUM, OF CHICAGO, ILLINOIS, ASSIGNOR TO HENRY L. FRANK, OF SAME PLACE.

IMPROVEMENT IN COMBINED REFRIGERATOR AND WATER-COOLER.

Specification forming part of Letters Patent No. **211,565**, dated January 21, 1879; application filed August 8, 1878.

To all whom it may concern:

Be it known that I, MICHAEL GREENEBAUM, of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Combined Water-Cooler and Refrigerator; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, of which—

Figure 1 is a front elevation of a combined water-cooler and refrigerator embodying my invention; Fig. 2, a vertical section thereof; Fig. 3, a plan view when the lid is removed; and Fig. 4, a perspective view of the ice-box.

The object of my invention is to produce a refrigerator suitable for all the usual purposes, and in which the ice employed for cooling the interior shall serve also for cooling water for drinking purposes, without, however, coming into contact with the said water, thus affording at the same time great economy, convenience, and cleanliness.

My invention consists, first, in having the ice-holder within the refrigerator consist of what may be termed a "basket" formed from a continuous coil of pipe, of which one end communicates directly or indirectly with the hydrant or other water-source, and the other passes to some point convenient of access, where it may be provided with a faucet; secondly, in providing the chest, in addition to the basket of coiled pipe, with an interior reservoir intermediate between the said coil and the water-source, to the end that the water may be considerably reduced in temperature by standing within the refrigerator before it enters the coil of pipe in contact with the ice; and, thirdly, in combining with the said coil and interior reservoir an exterior reservoir, placed at a sufficient altitude to keep the interior one supplied, which exterior reservoir, in the event of there being no hydrant-connection, affords a convenient means of filling, and where there is a hydrant-connection tends to diminish the strain upon the interior one.

Referring to the drawings, A represents a refrigerator or cooling-chest, which may be made in any suitable or well-known way. I deem it best to support this chest on legs, to make the walls hollow, and to provide it with hollow doors and with a hollow lid. If partition-walls are employed they should be so made as to cause the chambers thereby formed to communicate with each other—as shown, for example, at *a*.

B B′ are cleats arranged in the upper part of the chest A and fastened to the walls thereof, the cleats B′ being considerably lower than the cleats B, as shown.

C is a dish, tray, or tank, constituting the interior reservoir, and it may be open at the top or wholly inclosed, as the circumstances may require. This reservoir is supported by the cleats B. D is a box for sustaining the basket and catching the drip, and is supported by the cleats B′.

The tank C and box D may be supported in any suitable manner, and the cleats B B′ are not, therefore, essential parts of my invention. I deem it preferable, however, to make the tank and box easily removable, so that they may be cleaned with facility.

As the office of the box D is merely to support the basket of coiled pipe, which constitutes the ice-holder proper, and to catch and carry off the drip, any other means which will serve these same purposes may be substituted for it.

E is an inlet-opening, and F an outlet-opening, in the tank C. G is an opening in the bottom of the box D, and H is a drip-pipe leading from the said box. J is the hollow coil or worm within the box D, and it not only covers the bottom of the said box, but also extends up the sides of the same, as shown in the drawings, thus forming a sort of basket for the ice. This construction presents great advantages over a flat coil, since it largely increases the length of the coil, and hence the volume of water cooled, and still keeps the pipe in close contiguity to the ice. I sometimes make the basket only three-sided, leaving one side open for the insertion of the ice.

One end of the coil J enters or communicates with the opening F, and the other passes through the hole G in the bottom of the ice-box.

I is a coil of hard rigid material, lying in the bottom of the box D and fitting between

the convolutions of that part of the coil J which lies in a horizontal plane. The purpose of this second coil is to serve as a guard or protector to the coil J, which might otherwise be dented and damaged as the ice is dropped upon it. It should therefore be at least as thick as the coil J. If preferred this particular guard may be dispensed with and other means employed instead—as, for instance, strips of wood laid upon the coil; and if the coil is composed of sufficiently strong material no protector at all is necessary.

K is a pipe entering the port E. It is shown in the drawings as passing beneath the coil J; but, if preferred, it may pass over the same, in which case it might be desirable to have the port E in the side or top instead of the bottom of the tank C. L is the exterior reservoir, attached to the side of the chest A, and it must, as before stated, be at a sufficient altitude to supply the tank C.

I prefer to have the pipe K, which connects the two, enter the reservoir L at some distance above the bottom, in order that none of the sediment which may settle shall be carried into the interior reservoir.

The lower or inner end of the coil J passes through the opening G in the ice-box and is continued through the wall of the refrigerator, terminating in a faucet, M.

Water poured into the vessel L passes, of course, through the pipe K and into the tank C, thence entering the coil J. When drawn off at the faucet M it must therefore have passed through the coil in contact with the ice and become cold in its progress, especially if it has stood for some time within the coil, as will generally be the case.

As the ice melts the water so produced runs from the box D through the waste-pipe H, which may carry it out of the chest in any convenient manner.

The coil J should be made of block-tin or other material which will not injuriously affect the water.

The interior of the chest A will be kept at a cool temperature, for the air against the ice becoming chilled tends downward, thus producing a circulation in the direction indicated by the arrows.

The combining of a water-cooler and refrigerator in the manner which I have described has many advantages. It affords economy of space, since the walls of the one constitute the walls of the other, and of expense, since the same body of ice is made useful for a double purpose.

It is obvious that, so far as the simple cooling of the water by means of the ice within the refrigerator is concerned, the main function is performed by the basket of coiled pipe. This coil may, therefore, as hereinbefore stated, be connected immediately with the hydrant or other water-source; but by employing the interior reservoir in addition further advantages are gained, as the water is partly cooled before entering the coil. This internal reservoir may, if desired, communicate immediately with the water-source, (and in many cases it is best to have it so do,) either by being made wholly inclosed and of sufficient strength to withstand the pressure, or else wholly inclosed or open at the top, and provided with a float-valve or an overflow-outlet to prevent the water from rising above a given height. It is best to make it of metal or some other material which will enable the water within it to be cooled rapidly, and as shallow as the circumstances will warrant. It is often advisable to add the exterior reservoir also; and this reservoir may be connected to the hydrant by means of an automatic float-valve. I usually also provide it with a plug-valve in the form of a vertical tube passing through a hole in the bottom and reaching to a considerable height in the vessel, the tube thus serving as an overflow, and when withdrawn permitting the water to run entirely out for purposes of cleaning or to avoid freezing; but, if preferred, a simple cock may be used instead.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a refrigerator-chest, a water-cooler, the latter consisting of a basket formed of coiled or convoluted pipe, serving as a support or holder for the ice, and communicating at one end mediately or immediately with a hydrant or other water-supply, the other end passing to some point convenient of access for drawing off the water, substantially as described.

2. In combination with a refrigerator-chest, the basket of coiled pipe for holding the ice, said pipe having means for drawing off the water connected to it at one end, and a tank or reservoir within the said chest, into which the water passes before entering the said coiled pipe, substantially as described.

3. In combination with a refrigerator-chest, a coiled pipe for supporting the ice, said pipe having means for drawing off the water connected to it at one end, an interior reservoir communicating with the said coiled pipe, and an exterior reservoir or receiving-vessel, from which the water passes into the interior reservoir through a suitable connecting-pipe, substantially as described.

MICHAEL GREENEBAUM.

Witnesses:
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