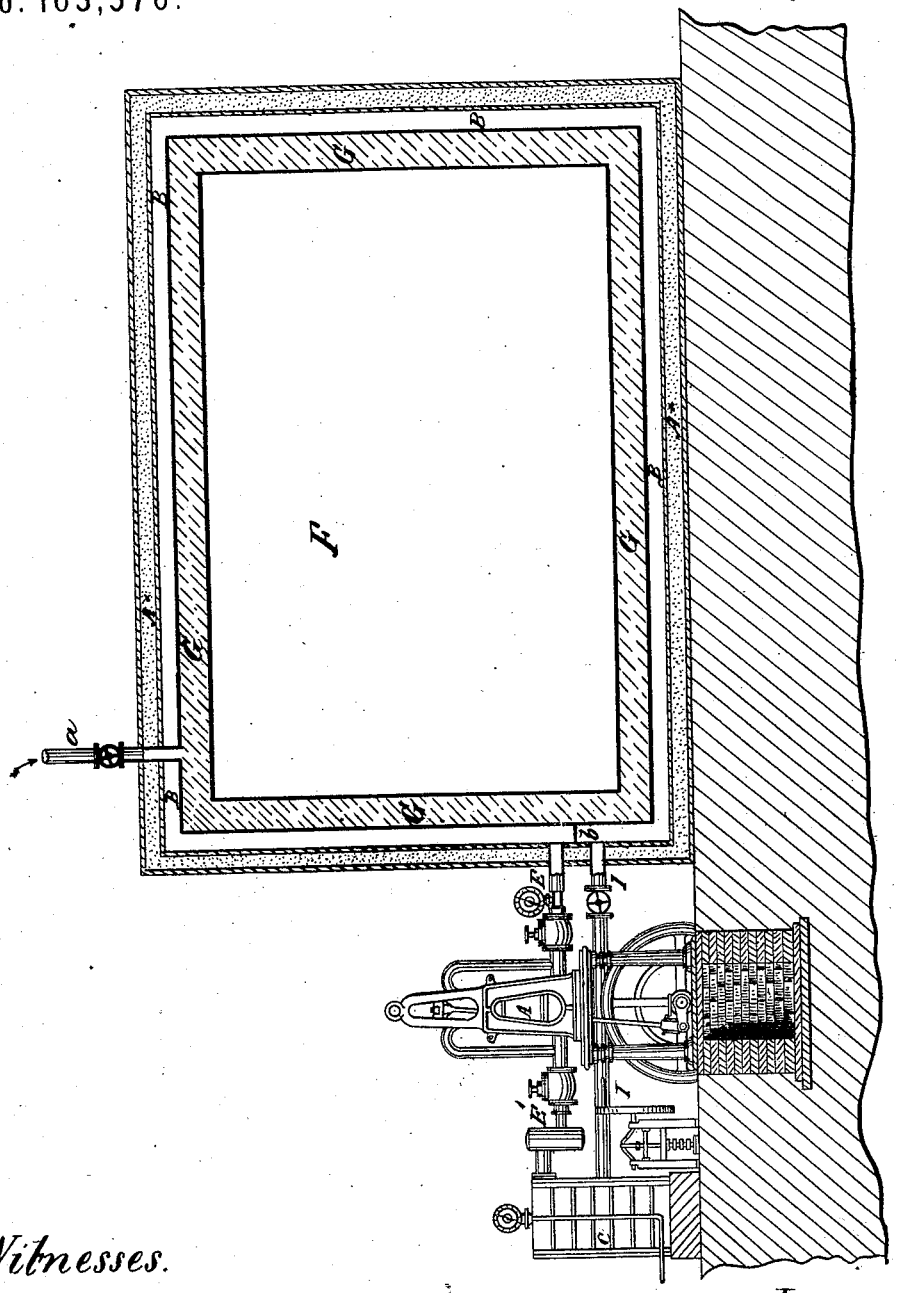
G. H. CHINNOCK.

Refrigerating Apparatus.

No. 163,576. Patented May 25, 1875.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE H. CHINNOCK, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN REFRIGERATING APPARATUS.

Specification forming part of Letters Patent No. **163,576**, dated May 25, 1875; application filed October 26, 1874.

CASE C.

To all whom it may concern:

Be it known that I, GEORGE H. CHINNOCK, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Apparatus for Refrigerating Purposes, of which the following is a specification:

This invention is designed for use in closed refrigerating-chambers, such as are used for keeping fruit, vegetables, meat, &c., at the low temperature required for the preservation of the same during considerable periods of time.

The invention consists in a novel combination of an ice-making machine with a refrigerating-shell surrounding, in whole or in part, the chamber or room closed against access of external air, whereby the operation of the ice-making machine is caused to refrigerate, to any desired degree, the interior of said chamber, or the like. The invention further comprises the combination, with such machine, shell, and chamber, of an ice-box, whereby, a solid body of ice being interposed between the refrigerating-shell and the chamber, the temperature within the latter is kept at or below the freezing-point independent of any irregularity in, or temporary cessation of, the refrigerating action exerted through or within the shell by the ice-making machine.

Any known ice-making machine of suitable construction may be used as an element of my novel combination, it being only essential (so far as concerns said machine) that the same should operate to produce a refrigerating effect within the shell aforesaid in order that such effect may be transmitted to the interior of the chamber.

As shown in the drawing, (a vertical longitudinal sectional view,) my invention is constructed to work with what is known as the Siebe ice-making machine, which, being well known to those familiar with the theory and practice of ice-making, requires but a general description to render intelligible its function in the operation of my invention.

A is a double-acting air-pump, and C is a condenser. The refrigerating-shell is shown at B, and has its inner side or surface formed of thin sheet metal. Externally this shell is covered by a layer, A*, of sawdust, or other non-conductor of heat, held in place by suitable surrounding walls. Between it and the chamber (shown at F) is the ice-box G, which, preliminary to the starting of the apparatus into operation, is filled with water. The sides of the chamber F (which form the inner walls of the ice-box, just as the inner sides of the shell B form the outer walls of the said box,) should be made of sheet metal, and should be corrugated or otherwise shaped to permit a certain degree of yielding from the expansion of the water when frozen, as hereinafter fully set forth. The water, in the first instance, is passed into this ice-chamber through a suitable inlet-pipe, *a*, furnished with an appropriate stop-cock. The refrigerating-shell is provided at that end adjacent to the air-pump with a partition, *b*. Above this partition is a pipe, E, provided with suitable valves and connecting with the pump A, the latter also connecting, by another pipe, E′, with the condenser C. The latter connects, by a pipe, I, with the shell aforesaid below the partition *b*.

In the operation of the apparatus the liquid ether from the condenser is admitted through the pipe I into the lower part of the shell B, and, in consequence of a vacuum or partial vacuum formed within the said shell by the action of the pump A, the ether then evaporates and absorbs heat from and through the inner sides or wall of the shell and thereby congeals the water in the box G, the ether after evaporation being carried back to the condenser by the action of the pump in order to be again transferred to the shell for use over again, and so on repeatedly. The chamber F being by this means surrounded by a mass of ice is of course kept at a temperature at or below the freezing-point of water; all moisture of its contained air is precipitated as frost, leaving the air dry, and organic substances capable of preservation by freezing may be preserved for an indefinite period within the chamber F, which is, of course, closed against all access of the external atmosphere, its door or entrance, which may be of any suitable construction, being snugly fitted to wholly

close the said chamber when the said door is shut. Moreover, as the mass of ice will not at once yield to any temporary cessation or diminution of the action of the ice-making machine, the uniformity of the temperature within the chamber is not affected by such lack of continuous or uniform action on the part of the machine as exerted upon or within the refrigerating-shell. When desired, however, the ice-box may be dispensed with and the chamber cooled by the direct action of the refrigerating-shell; but it is believed that the temperature within the chamber will be less uniform than when the ice-box is employed.

When preferred, the refrigerating-shell, either alone or in conjunction with the ice-box, may extend around or upon a portion only of the chamber F; but in this case the degree of refrigeration will be proportionately reduced.

It will be observed that in this use of the Siebe ice-making machine the brine employed to transfer the refrigerating effect from the refrigerator, so termed, of said machine to the ice-molds is dispensed with, as not necessary in the employment of the machine as an element in my novel combination of parts.

What I claim as my invention is—

1. The combination of an ice-making machine, so termed, and a refrigerating-shell cooled or operated by the said machine, and surrounding in whole or in part a chamber closed against the access of external air, substantially as and for the purpose set forth.

2. The combination, with an ice-making machine, so termed, a refrigerating shell cooled or operated by the said machine, and arranged to cool a chamber closed against access of external air, of the ice-box provided between such shell and chamber, substantially as and for the purpose herein set forth.

GEO. H. CHINNOCK.

Witnesses:
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