(No Model.)

G. TAYLOR & F. S. PEARSON.

ICE MAKING MACHINE.

No. 294,935. Patented Mar. 11, 1884.

Fig. 1.

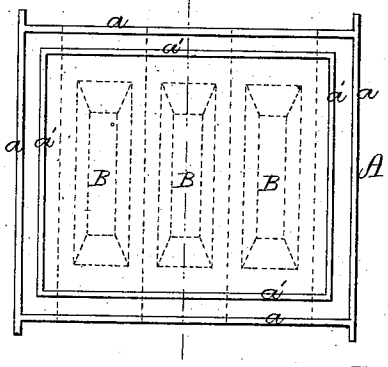


Fig. 2.

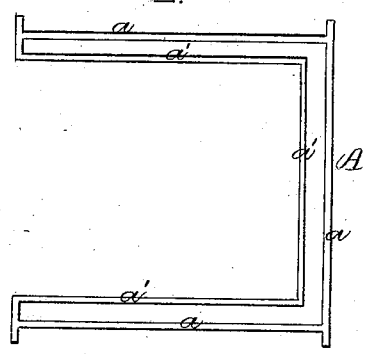


Fig. 3.

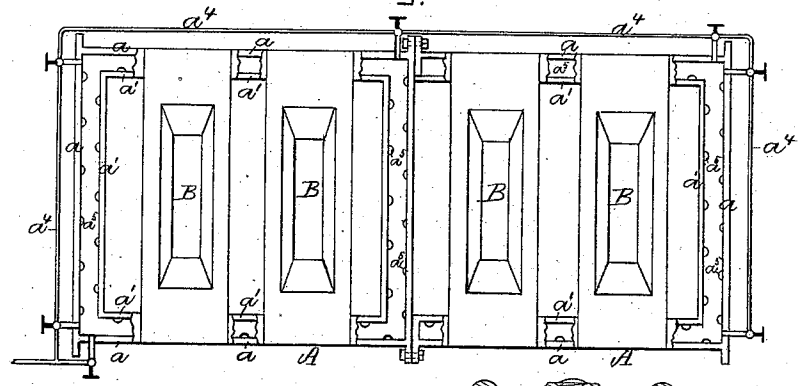


Fig. 4.

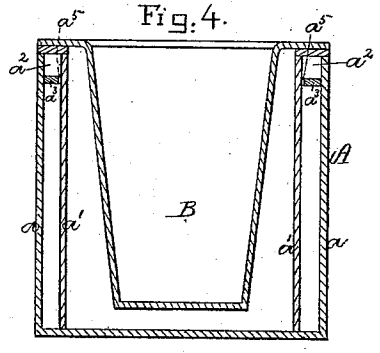


Fig. 5.

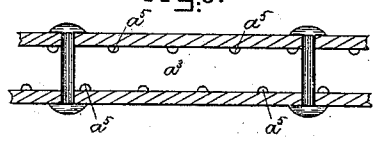
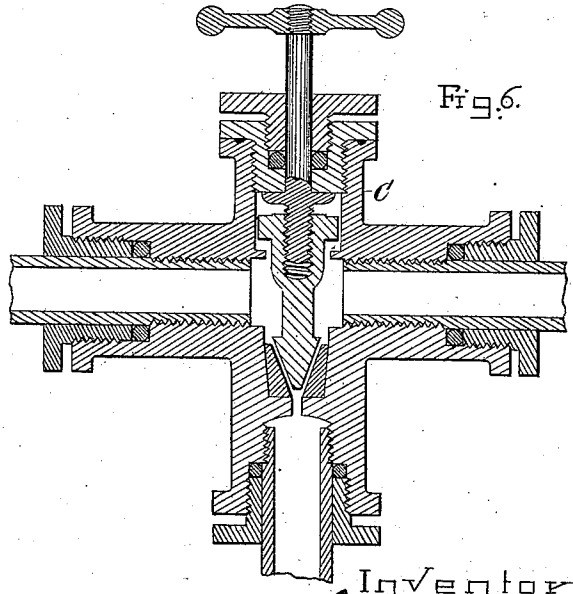


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE TAYLOR, OF EVERETT, AND FRED S. PEARSON, OF MEDFORD, MASSACHUSETTS.

ICE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 294,935, dated March 11, 1884.

Application filed December 12, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE TAYLOR, of Everett, and FRED S. PEARSON, of Medford, both in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ice-Making Apparatus, of which the following is a specification.

Our invention relates to improvements in ice-machines in which the refrigerant is introduced into the space between the double walls of a tank or mold and in direct contact with the walls. Heretofore in such machines the refrigerant has been introduced at one point only, and has been made to traverse the entire length of the machine, its path being sometimes lengthened by means of longitudinal partitions or ribs, forming a tortuous or winding passage. In traveling such long distances the refrigerant has its heat-extracting properties so much reduced before reaching the outlet end of the machine as to have but little effect on the contents of the last pans or molds.

The objects of our invention are to provide means for equally and evenly distributing the refrigerant over all the walls, and to enable the apparatus to be enlarged or reduced in size, as desired. To attain these objects we form a chamber at the top of each of the spaces between the double walls, introduce the refrigerant into these chambers, and so arrange the bottoms of the chambers that the refrigerant can escape only in thin films or small streams against the walls next to the liquid to be cooled or frozen, and so arrange the tanks that two or more may be readily joined together to form an apparatus of any desired size, as hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of a four-sided tank, and Fig. 2 a plan of a three-sided tank. Fig. 3 shows the two joined together. Fig. 4 is a cross-section on line *x x* of Fig. 1; and Fig. 5 shows, on an enlarged scale, the arrangement for spreading the vaporizable liquid; and Fig. 6 shows an improved valve used in connection with our apparatus.

The tanks A, for containing water or an uncongealable liquid, in which pans B, containing water to be frozen, are immersed, are formed with double sides *a a'*. The space between these sides forms a receptacle, into which a liquid—such as liquefied ammonia—is introduced, and which, on being relieved of the pressure requisite to keep it in the liquid state, evaporates rapidly, produces the intense cold incident to such evaporation, and extracts the heat from the liquid in contact with the inner sides of the tank. The sides of the tank exposed to the air are covered with some non-conducting material, as usual in ice-machines of this character.

To bring all the gas in intimate contact with the substance to be cooled and to provide a larger extent of cooling-surface, we form between the walls *a a'* of the tank, and near their top, a chamber, a^2. The bottom a^3 of this chamber is notched, as shown in Figs. 3 and 5, at proper intervals to form a series of outlets, a^5, next to the inner sides of the walls *a a'*; or a continuous narrow opening may be used instead. Through these outlets the liquid passes and spreads over the inner sides of the walls in thin films, when it evaporates and correspondingly reduces the temperature of the walls. The chamber a^2 is connected by pipes a^4 to the force side, and the space between the walls by a similar pipe to the suction side, of a pump, by means of which a condensation and circulation of the ammonia is effected.

The valves C, (shown in Fig. 6,) by means of which communication between the pipes a^4 and the chambers a^2 is regulated, contain certain novel features of construction and packing, and will form the subject-matter of a future application for a patent.

We prefer to have the tanks A supplied with a suitable brine, in which pans B, containing the water, are inserted; but it is evident that the water may be put directly into the tanks and be frozen by contact with the walls, as in what are known as "plate machines."

To render our apparatus capable of being varied in size and capacity, as desired, for transportation or other purposes, we provide a number of tanks, such as shown in Fig. 2. These tanks have three double walls. The ends of two of these walls are adapted to fit

water-tight against the side of any other tank. Each tank is provided with lugs or flanges a^6, by means of which they can be connected to another tank by bolts or screws.

We claim as our invention—

1. In a double-walled tank for making ice, means for equally and evenly distributing a refrigerant consisting of a chamber partitioned off from the top of each space between the walls, and having its bottom provided with outlets next to the walls, as set forth.

2. In an ice-making apparatus, a tank having four double walls, as described, in combination with one or more tanks having three double walls, and adapted to be joined one to another, substantially as and for the purpose set forth.

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Witnesses:
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