

J. L. NILSSON.
REFRIGERATING DEVICE.
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1,040,739.

Patented Oct. 8, 1912

Fig. 2.

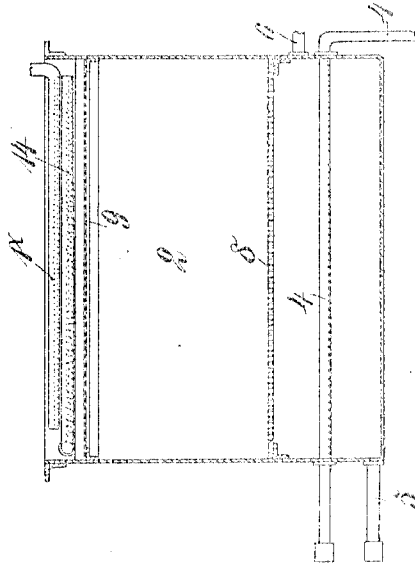
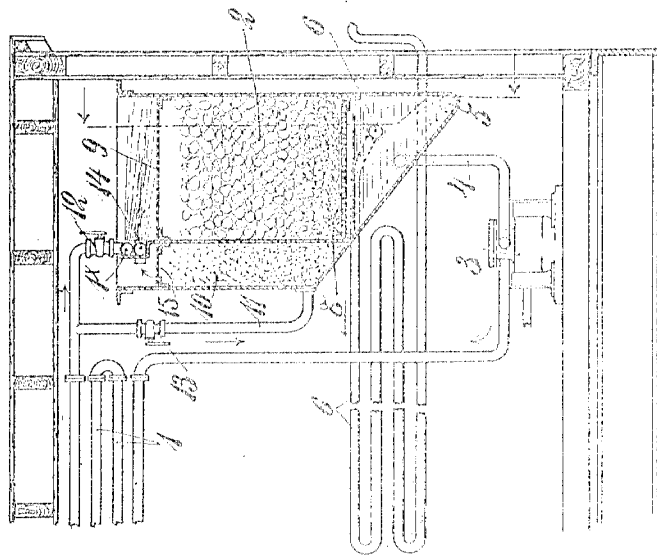


Fig. 1.



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UNITED STATES PATENT OFFICE.

JÖNS LAURITZ NILSSON, OF KRISTIANSTAD, SWEDEN.

REFRIGERATING DEVICE.

1,040,739.

Specification of Letters Patent.

Patented Oct. 8, 1912.

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To all whom it may concern:

Be it known that I, JÖNS LAURITZ NILSSON, a subject of the King of Sweden, and residing at 63 Stortorget, Kristianstad, in the Kingdom of Sweden, have invented certain new and useful Improvements in Refrigerating Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

In order to maintain a low temperature for instance in a railroad car, adapted for the transport of meat, or generally in a refrigerating chamber, one or more refrigerating members generally consisting of a pipe-system, combined with one or more ice-receptacles is the most effective and cheapest, water being caused to circulate through the said member or members and the ice-receptacle and a chamber or receptacle for salt combined with the latter. For using the said refrigerating method it is however necessary to successively remove dirt and the like contained in the ice and salt and passing from the same, when melting, to the water, as otherwise the pipes are rapidly stopped and the pump, causing the water to circulate, is prevented from operating. By paying notice to the said precautions cheap waste salt and ice of less purity may be used, the refrigerating operation being thereby cheaper.

This invention relates to arrangements in refrigerating devices of the class mentioned above, by means of which the said objects are gained.

The invention also relates to means by which the percentage of salt in the water can be adjusted.

The refrigerating chamber may be of any type. In the accompanying drawing the refrigerating device is illustrated adapted to a railroad car.

Figure 1 is a longitudinal section of a part of the said railroad car. Fig. 2 is a cross section of the ice-receptacle.

1 is the refrigerating member consisting of a pipe which is located in the refrigerating chamber and through which the liquid circulates; the said pipe being zigzag shaped for the providing of a great cooling surface. 2 is the ice-receptacle, and 3 the pump, causing the liquid to circulate. When the refrigerating device is provided in a railroad car the said pump may be actuated by a motion transmitting mechanism connected with one of the shafts of the car, not shown in the

drawing. In other cases the pump is driven by a motor. The liquid passes from the pump through the pipe system to the ice receptacle 2 and from the latter through a pipe 4 to the pump 3. The receptacle 2 tapers downward in order that dirt and the like may gather in the narrowest bottom part, in which a tap hole 5 for the said dirt is provided. An overflow pipe 6 is provided at a higher level forming a special pipe system, through which escapes the surplus of liquid formed by the melted ice. The pipe 4 mentioned above extends from a point in the receptacle 2 located at a level situated substantially midway between the opening 5 and the surface of the liquid, the height of which is determined by the outlet opening of the pipe 6. Owing to the said arrangement the light parts as well as the heavy parts of the solid dirt are prevented from passing with the liquid to the pump, as the former floats on the surface of the liquid, which always is on a level with the outlet opening of the pipe 6, and the latter sinks down to the bottom of the receptacle. A horizontal part of the pipe 4 is located in the receptacle, the lower side of the said part being perforated, while its top side is unperforated. The said part of the pipe 4 extends outside the receptacle and is provided with a removable plug, cap or the like. Owing to the said arrangements the dirt is prevented in the most reliable manner from passing from the receptacle into the pipe 4, and the latter can easily be cleaned by means of a long brush introduced into the pipe by removing the cap or plug on the end thereof. The ice is supported by a grating 8 located at substantially the same level as the overflow pipe 6. In order that the refrigerating capacity of the liquid escaping through the pipe 6 may be utilized, the said pipe forms one or more loops, which arrangement results in a not inconsiderable saving of ice. An intermediate removable straining wall 9 is provided in the top part of the receptacle. The liquid leaving the pipe 1 is spread on the said strainer 9 by the end part 1* of the pipe being located in the receptacle above the wall 9 and perforated. Solid parts are thereby separated from the liquid and retained by the strainer, from which they are removed from time to time by cleaning the strainer. The perforated part 1* of the pipe 1 is located at one of the side walls of the receptacle in order to per-

mit the strainer 9 to be lifted out of the receptacle.

Salt is provided in a chamber 10 forming a compartment of the receptacle 2 or a special receptacle. A branch pipe 11, communicating with the pipe 1 at a point near the receptacle 2, is connected with the bottom part of the said compartment. The pipe 1 has a cock 12 located between the branch pipe 11 and the receptacle 2, and the branch pipe 11 is provided with a cock 13. A perforated pipe 14 connects the top part of the compartment or receptacle 10 with the part of the chamber 2 located above the strainer 9 and is also mounted at one of the side walls of the receptacle. A removable strainer 15 is located in the compartment 10, above the salt. By the said arrangements it is possible to control the percentage of salt in the liquid, which is of great importance, because the liquid is diluted more rapidly or slowly, according as the consumption of the ice is greater or less, and the addition of salt must be greater or less in the same degree, in order that the freezing-point of the liquid, which may be assumed to be -6° centigrade, may be constant. The said control is effected by means of the cocks 12 and 13. For obtaining a greater percentage of salt the cock 12 is shut to some extent and the cock 13 is opened correspondingly and vice versa. Owing to the fact that the liquid can pass from the compartment 10 into the chamber 2 only through the strainer 15 located above the salt and through the pipe 14 solid dirt, which the salt may contain, is prevented from passing with the liquid into the chamber 2.

I claim as my invention:

1. In a refrigerating device, the combination of a refrigerating member, an ice-receptacle with which the said member is connected, a pump or the like for causing a liquid to circulate through the said receptacle and member, the said ice-receptacle being provided with an overflow opening for the surplus of liquid produced by the melting ice and also with a tap hole at the bottom of the receptacle for the removal of solid dirt, and a conduit between the receptacle and the pump leading from a level located between the said overflow opening and the tap hole.

2. In a refrigerating device, the combination of a refrigerating member, a receptacle

for ice, tapering downward at its bottom, a pump for causing the liquid to circulate through the said member and receptacle, a conduit connecting the receptacle with the pump, an overflow pipe, the said conduit extending from a point in the receptacle on a lower level than the said overflow pipe, and a clean out connection in the narrowest bottom part of the receptacle for the removal of solid dirt which may have gathered therein.

3. In a refrigerating device, the combination of a refrigerating member, a receptacle for ice, and through which member and receptacle a liquid is caused to pass, an overflow connection in the receptacle for the removal of surplus liquid produced by the melting ice, a chamber in said receptacle adapted to contain salt, a conduit leading from the said refrigerating member and emptying into the said salt receptacle, and means for controlling and regulating the flow of liquid through the said conduit.

4. In a refrigerating device, the combination with a refrigerating member and a receptacle, through which the liquid circulates, of straining means, through which the liquid passes from the said member to the said receptacle, a chamber or receptacle for salt, a conduit leading from the said member to the said chamber for salt for conveying a part of the liquid thereto, and straining means through which the said part of the liquid so diverted from the main circulation is caused to pass before returning to the main body of circulating liquid.

5. In a refrigerating device, the combination of a refrigerating member, a receptacle having compartments adapted respectively to contain ice and salt, means for causing the circulation of a liquid through said refrigerating member and the ice compartment of the said receptacle, and means for passing a liquid in varying quantities through the salt compartment of the said receptacle to control the percentage of salt in the said liquid circulating through the said refrigerating member.

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

JÖNS LAURITZ NILSSON.

Witnesses:

HEDING MELINDER,
ROBERT APELGREN.