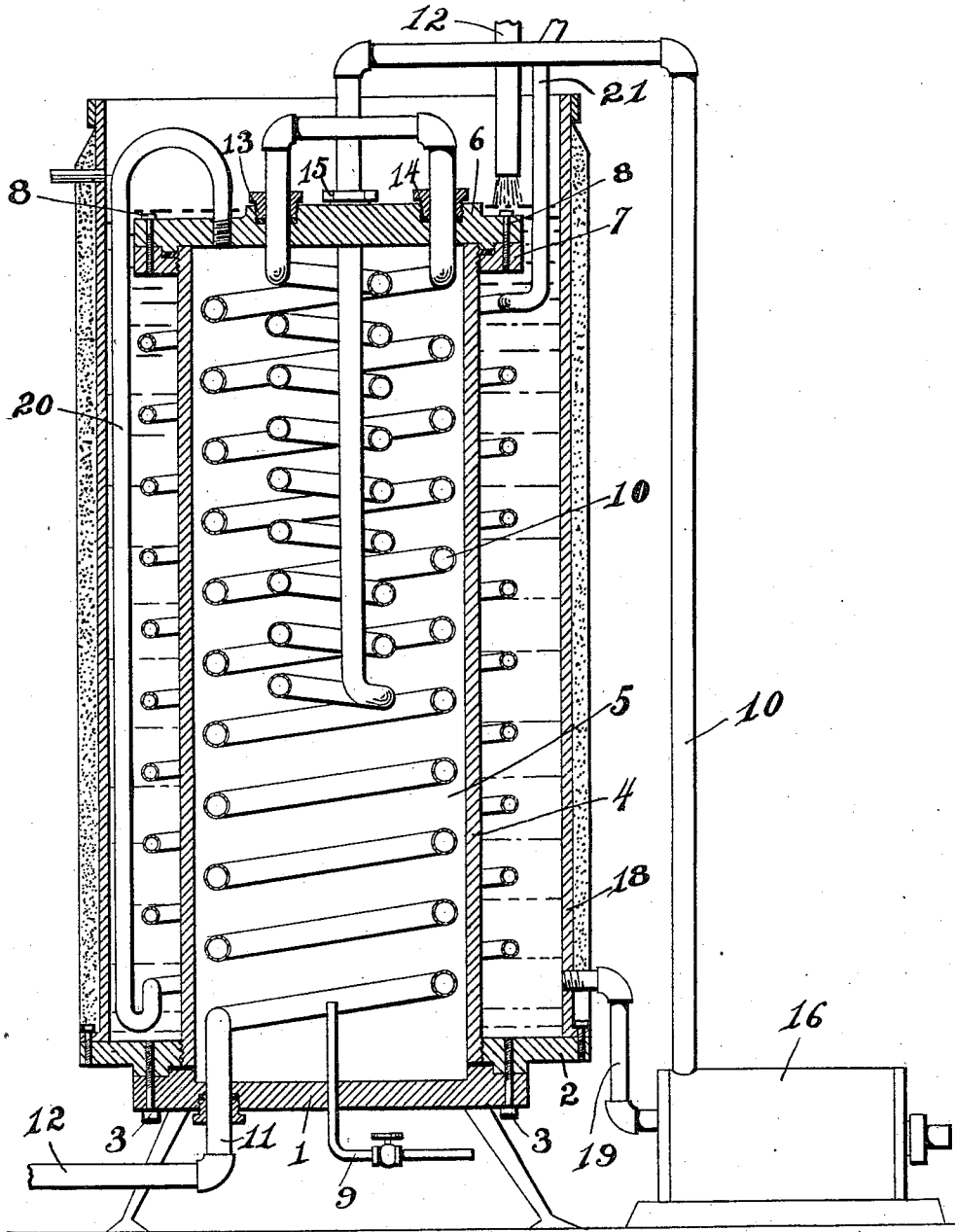


G. R. JARMAN.
HEAT INTERCHANGER.
APPLICATION FILED MAY 13, 1912.

1,052,345.

Patented Feb. 4, 1913.



Witnesses
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HEAT-INTERCHANGER.

1,052,345.

Specification of Letters Patent.

Patented Feb. 4, 1913.

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To all whom it may concern:

Be it known that I, GEORGE R. JARMAN, a citizen of the United States of America, and resident of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Heat-Interchangers, of which the following is a specification.

This invention relates to refrigeration and particularly to heat interchangers, the said invention being designed as an improvement on Patent 745,499, issued to me December 1, 1903.

An object of this invention is to provide in conjunction with the heat interchanger forming the subject matter of the above mentioned patent, means for utilizing the ammonia gas in its transit from the expansion chamber to the compressor whereby brine may be forecooled prior to its being put into circulation by the brine pump, that is to say, the brine returning to the pump is cooled to a considerable extent by the ammonia gas passing from the expansion chamber to the compressor.

A still further object of this invention is to accomplish the result indicated within the heat interchanger forming the subject matter of the said patent by means which will be comparatively inexpensive and without changing the structure of the said heat interchanger.

With the foregoing and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawing, forming part of this specification, wherein I have illustrated the invention by a view in vertical section through the heat interchanger.

In these drawings, I show a suitably supported base plate 1 to which a ring flange 2 is secured by means of the screws 3, the said flange 2 having internal threads for the reception of the cylinder 4 which forms the expansion chamber 5 having as its end, the base plate 1 and as its head the plate 6 which is held on the ring 7 by the screws 8, the said ring 7 being threaded on the cylinder. The base plate 1 has a pipe 9 leading therethrough which delivers the liquefied ammonia to the expansion chamber 5,

wherein the said ammonia evaporates and expands and rises in the chamber. The expansion chamber contains a coil pipe 10, leading through the base plate 1, the end 11 of said coil pipe being connected to a pipe 12 which may lead to the ice box or room to be cooled, it being understood that the pipe 10 is designed for the distribution of brine which is pumped through the pipe 10, the said brine being cooled by the evaporating ammonia in the expansion chamber 5. The plate 6 has stuffing boxes 13, 14, and 15, through which sections or portions of the brine distributing pipes 10 extend, the said pipe 10 being connected to the brine pump 16. The ring 2 has at its periphery a casing 18 producing with the cylinder 4 an annular channel or receptacle for relatively warm brine that has been returned by the circulating pipe 12 from ice box or room to be cooled, the returning end of which extends into the top of the casing and discharges into the annular channel just described. The brine delivered to the annular channel or receptacle is drawn by the pump 16 through the pipe 19 which pipe is connected to the interior of the casing as shown.

As a means for forecooling the brine delivered to the annular channel and prior to the time it is drawn therefrom by the pump, the ammonia gas which has served its purpose of cooling the brine in the expansion chamber is discharged from the said expansion chamber through the pipe 20 which is threaded or otherwise connected through the plate 6 with the interior of the expansion chamber 5, the said pipe 20 being extended downwardly into the annular channel to the bottom thereof and it is then coiled around the cylinder 4 in upwardly disposed convolutions to a point near the top of the annular channel where it terminates in a vertically disposed portion 21 which is connected in any appropriate way with a compressor and condenser, not shown, which will operate to deliver again the ammonia in the liquid condition through the pipe 9 to the expansion chamber.

From the foregoing description, it will be observed that the brine circulating system includes the annular chamber in which the coil pipe 20 conducts the ammonia gas in its passage from the expansion chamber to

the compressor, thus utilizing the said ammonia gas in its passage from the expansion chamber to the compressor and economizing in the operation of the heat interchanger
5 without increasing the size of the same as compared with that usually employed in ice or refrigerating machines.

I claim—

10 In a heat interchanger, a cylinder forming an expansion chamber provided with closures for the ends thereof, a casing surrounding and spaced from the said cylinder and forming therewith an annular channel, a pipe communicating with the interior of
15 the expansion chamber for the delivery of liquid ammonia thereto, a pipe in communication with the expansion chamber at the

end thereof opposite the ammonia delivering pipe, said second mentioned pipe extending downwardly in the annular channel 20 and being coiled around the cylinder within said annular channel for the conduct of exhaust ammonia gas and a brine circulating coil within the expansion chamber, and a circulating pump in communication with 25 the said coil and in communication with the annular channel, the said annular channel having brine return pipe discharging therein.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses. 30

GEORGE R. JARMAN.

Witnesses:

EMILY C. NELSON,

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
