No. 803,925. PATENTED NOV. 7, 1905.

F. OHDE.

BRINE DISTRIBUTING APPARATUS FOR COOLING SYSTEMS.

APPLICATION FILED MAY 11, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

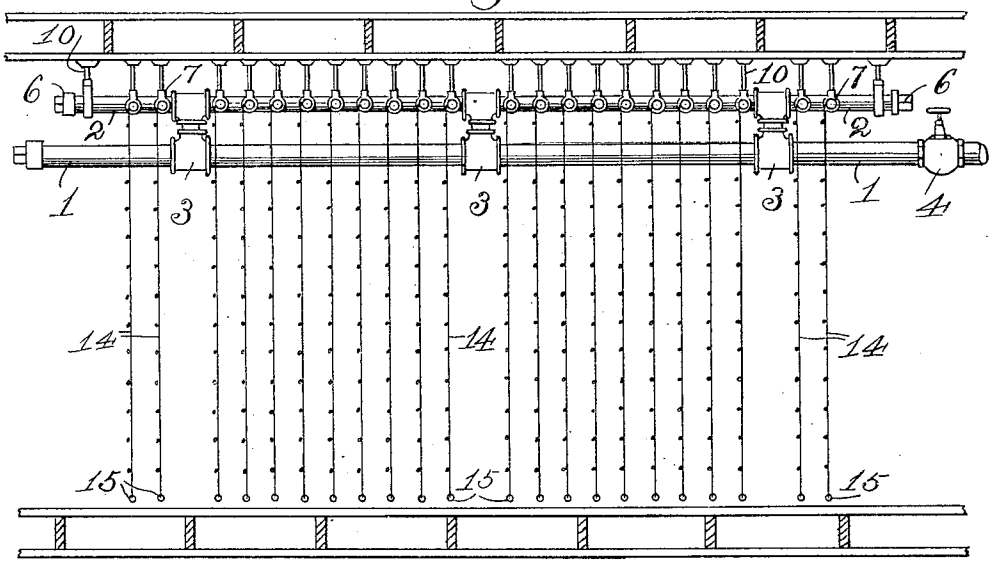
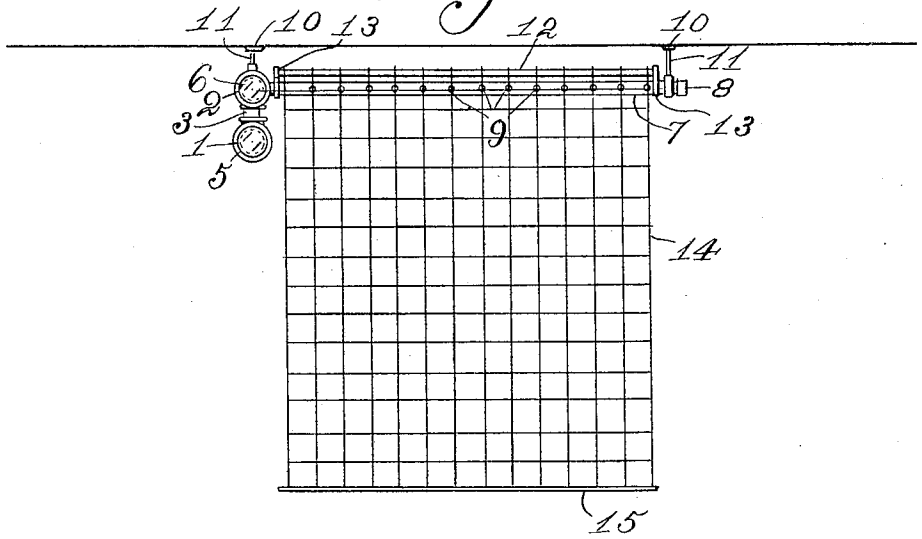


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

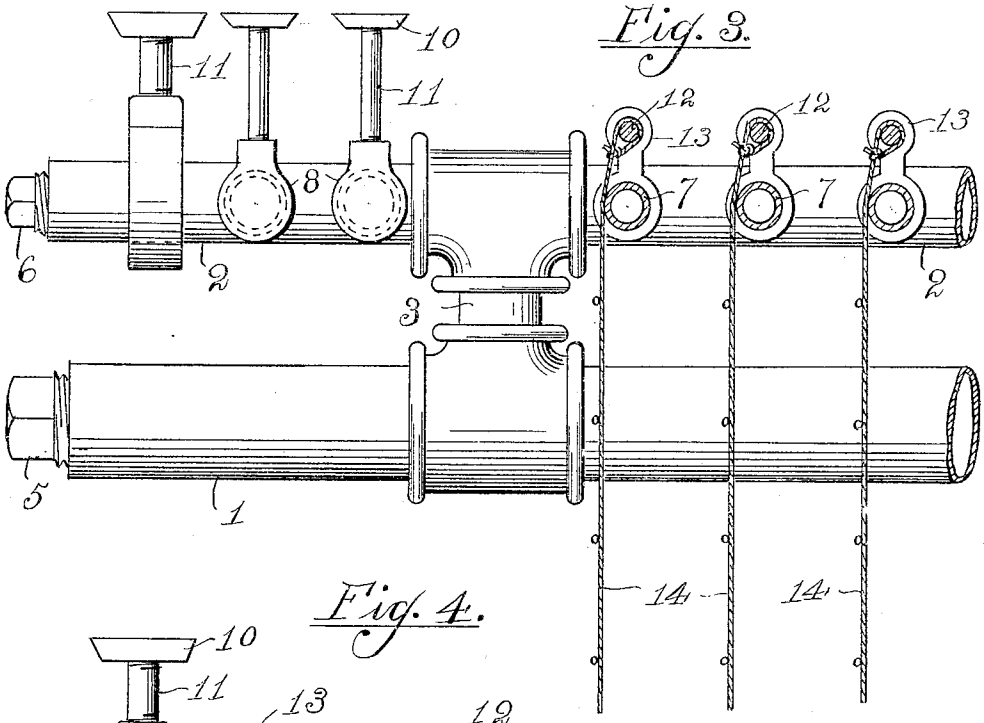
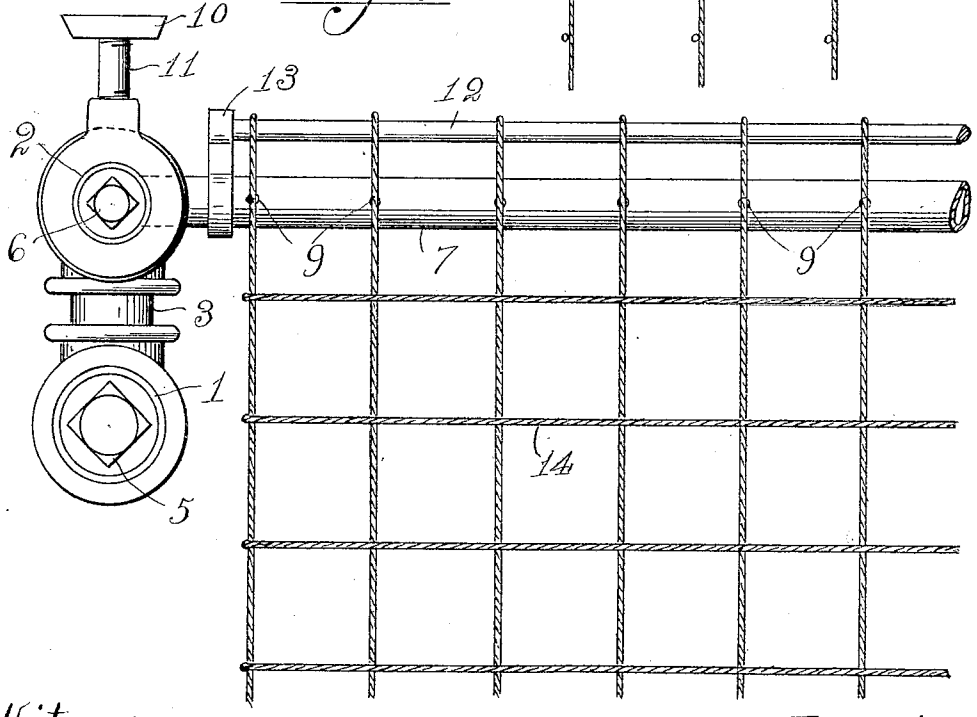


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRINE-DISTRIBUTING APPARATUS FOR COOLING SYSTEMS.

No. 803,925 Specification of Letters Patent. Patented Nov. 7, 1905.

Continuation of application Serial No. 132,958, filed November 26, 1902. This application filed May 11, 1904. Serial No. 207,413.

To all whom it may concern:

Be it known that I, FRED OHDE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brine-Distributing Apparatus for Cooling Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in a brine-distributing apparatus for cooling systems, such as are employed in refrigerating plants, the object being to provide an apparatus by means of which such brine will be uniformly distributed over cooling-surfaces and the temperature thereof lowered by evaporation of a part thereof; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

The present application is a continuance of my previous application, Serial No. 132,958, filed November 26, 1902, and in the accompanying drawings, illustrating my invention, Figure 1 is a sectional view of a cooling-chamber in which an apparatus embodying my present invention is installed. Fig. 2 is an end elevation of the apparatus shown in Fig. 1. Fig. 3 is an enlarged detail view, partly in section, showing the details of construction. Fig. 4 is an end elevation, on an enlarged scale, showing cooling-surfaces or curtains in section.

In refrigerating plants in which brine is employed as the heat-absorbing agent and which is maintained in constant circulation it is essential to the production of the best results that such brine should be thoroughly cooled at one point in its passage—that is, after having passed through the refrigerating system and absorbed heat it should be thoroughly cooled before being again introduced into the system. Such cooling is easily effected by passing such brine over curtains or other suitable cooling-surfaces where a part of the water evaporates and thereby serves to absorb the contained heat. It is very essential that such brine should be very uniformly distributed, so that no part of same shall escape its due amount of evaporation, and thus prevent any of the warm brine from being returned into the refrigerating system.

A large number of variously constructed and arranged brine-distributing devices for cooling systems have been installed in different plants, the general nature of such systems being identical and consisting of a plurality of interconnected ducts, which are gradually reduced in size, so that the smallest ducts form the discharge and are perforated at intervals, the brine passing through said perforations impinging against the cooling-surfaces.

So far as I am informed no means have been provided for maintaining a uniform pressure in the discharge-pipes throughout their entire length, so that the distribution of the brine will be absolutely uniform, and the absence of such means is the source of a great deal of trouble and annoyance, besides causing a great decrease in efficiency of the refrigerating system.

My invention consists in providing a large main 1, and a parallel supply-pipe 2 of smaller diameter than said main 1 and connected with the latter at intervals by means of couplings 3. Said main is controlled by a valve 4, disposed at one side of said couplings 3, and beyond said couplings at its other end is preferably closed by a plug 5. The said supply-pipe 2 is closed at its ends by means of plug 6 and is preferably relatively so arranged that the couplings 3 connect with same at a plurality of uniformly-distributed points intermediate its ends, so that each of said couplings 3 feeds a predetermined equal portion of said pipe 2. Connected with said pipe 2 are a plurality of horizontally-disposed discharge-pipes 7, closed at their free ends by means of plugs 8, which are parallel with each other and uniformly spaced apart, each of said discharge-pipes being provided longitudinally with perforations 9 of equal size disposed at regular intervals, the total area of such perforations being preferably less than the cross-sectional area of each of said discharge-pipes and the total cross-sectional area of all perforations of all of said discharge-pipes being less than the cross-sectional area of said main, so that the latter will be capable of supplying more liquid than said perforations are capable of discharging, this being one of the most essential features of my invention. The said main and supply pipes and said discharge-pipes are suitably supported or hung by means of adjustable hangers 10 of ordinary construction, whereby sagging of any of said pipes is readily prevented or taken up, each of said couplings comprising a member of the pipe, a member secured to the ceiling, and a right-

and-left-threaded rod 11, entering the screw-threaded openings in said members. The brine discharge from said pipes 7 is directed against suitable reticulated curtains hung vertically and over which such brine flows, thereby being finely divided and exposed to the action of the air, which causes evaporation, and thus cools said liquid. To hang such curtains in proper position relatively to the discharge-pipes, I provide rods 12, disposed parallel with and above said discharge-pipes 7, such rods being supported at their ends in supporting members 13, mounted on said pipes 7. The curtains 14 are hung on said rods and by reason of the smaller diameter of the latter will bear against said pipes at one side and thence hang vertically downward. The said curtains 14 consist, preferably, of a net of large mesh made of heavy cord, such cords being disposed vertically and horizontally and said vertically-disposed cords being spaced the same distance apart as said perforations 9 in said pipes 7, and so hung that each of said cords extends directly into the path of brine discharged from each of said perforations. The brine so discharged passes downwardly over said cords, distributing itself over the horizontally-disposed cords, and thus becomes finely divided, as will be obvious. In order to hold said cords steady and retain same in position, the lower ends of same are weighted by means of rods 15, which serve to maintain the vertical cords taut. The brine is received or collected from the curtains in suitable receiving-pans, (not shown,) from which it is drained and conducted back to the cooling-apparatus chamber, the refrigerating-coils of ice-machines or coils over which cold fresh water flows to absorb heat from the brine.

It will be readily seen that by means of my brine-distributing apparatus a uniform distribution and fine division of the brine is effected, so that all of it is cooled equally and to the desired degree, so that when it is returned into the refrigerating system its heat-absorbing power is restored. Such brine may be cooled to a lower temperature in any suitable manner after having passed over said curtains.

I claim as my invention—

1. A brine-cooling apparatus comprising in combination a horizontally-disposed main, a supply-pipe disposed parallel therewith and connected with said main at a plurality of points, horizontally-disposed discharge-pipes connected with said supply-pipe at regular intervals and extending at substantially right angles thereto, each of said discharge-pipes being provided with a row of uniformly-distributed perforations discharging laterally of the discharge-pipe, the total area of which is less than the cross-sectional area of said main, and a curtain suspended in the path of liquid discharged from said perforations, said main and supply-pipe being closed.

2. A brine-cooling apparatus comprising a main closed at one end and provided with a valve between its ends, a supply-pipe extending parallel with said main, and being closed at its ends, a plurality of regularly-disposed couplings connecting said main between its closed end and said valve with said supply-pipe between the ends of the latter, a plurality of horizontally-disposed parallel discharge-pipes connected with said supply-pipe at regular intervals and being provided with a row of uniformly-spaced perforations, the total area of said perforations being less than the cross-sectional area of said main, and reticulated curtains disposed in the path of liquid discharged from said perforations.

3. In a brine-cooling apparatus, a main supply-pipe, a valve in said pipe, a plug in the dead end of said pipe, an auxiliary pipe, connections between said pipes, plugs in the ends of said auxiliary pipe, lateral discharge-pipes leading from said auxiliary pipe, said discharge-pipes being perforated and having end closures, adjustable hangers for supporting said auxiliary and discharge pipes, rods secured above said discharge-pipes and curtains supported from said rods engaging the sides of the discharge-pipes.

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

FRED OHDE.

Witnesses:
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L. KLEINHAUS.