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L. T. MART

SPRAY COOLING CONE DEVICE

Filed Jan. 12, 1927

Fig. 1.

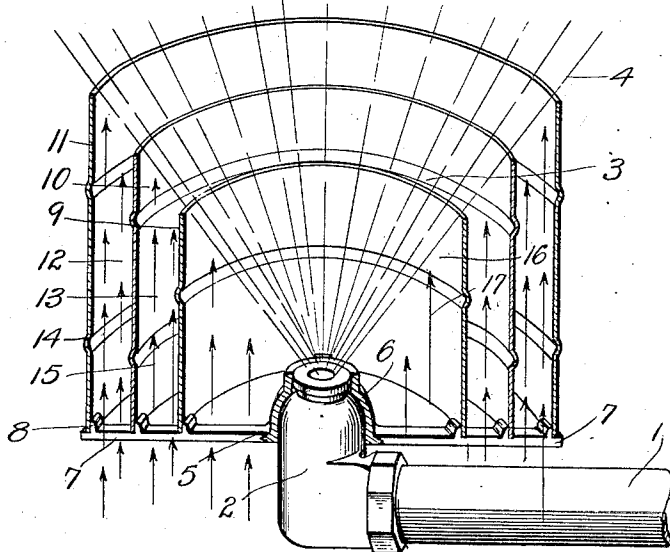
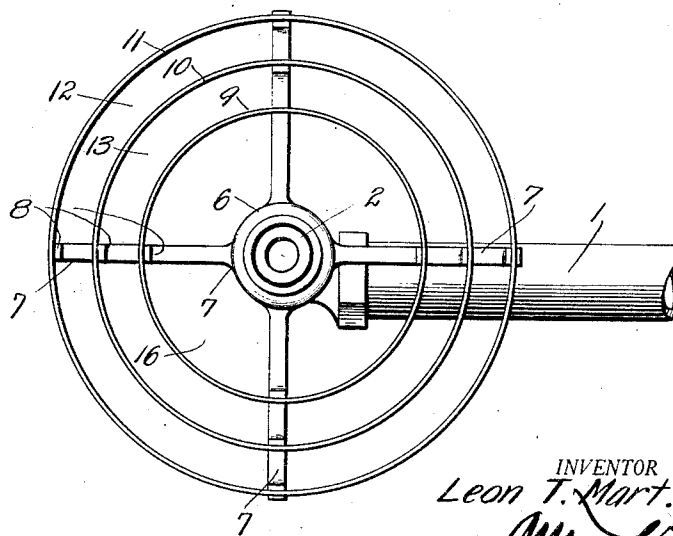


Fig. 2.



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SPRAY-COOLING-CONE DEVICE.

Application filed January 12, 1927. Serial No. 160,608.

My invention relates to devices for cooling liquids, and more particularly to the class of such devices employing means associated with a spray nozzle for enhancing the contact of air with the sprayed water for increase of cooling effect. Devices of this character discharge water vertically through a spray nozzle, the contact of the sprayed water with the air while rising and falling into the provided receptacle, a basin or pond, effecting the cooling. Efforts have been made to increase the relative amount of air contacting a given quantity of water, and it has been found that the use of a single tube concentric with the nozzle and against the upper edge of which the spray impinges, induces an air current and has a favorable effect towards increasing the total amount of air circulating through the spray. I have found, however, that certain obstacles are presented to the desirable efficient functioning of a single tube in such service, chiefly, that a single tube must be of considerable length in order that the current of air induced in it by the spray may be moved upward therein at a uniform velocity throughout its cross section. The requirement stated exists because, should the tube be short, eddy currents develop and the induced draft effect is considerably less than with a long tube; however, there are disadvantages from the manufacturing, sales and installation standpoints in cost, convenience and manipulation to the use of long tubes for the purpose.

I have sought therefore to devise a means of inducing air currents employing a tube factor that will preserve the spraying influence and at the same time induce a substantially greater air current value. This I do by means of a plurality of spaced tubes of varying length so disposed about the nozzle that the ejected spray passes the upper edges of the tubes without being diverted and thereby establishes drafts upwardly through the channels formed by the tubes for providing desirably large amounts of air to the sprayed water.

My device also is easily installed, removed and replaced, factors desirable in a device of this kind, and not adequately provided for in the art.

My invention will be more particularly described with references to the accompanying drawings in which:

Fig. 1 is a sectional view of my device

installed on a water-discharging element.

Fig. 2 is a plan view of the device as installed.

Referring more in detail to the drawings:

1 designates the discharge pipe from a hot water source, and 2 the nozzle for the dispersion of the water in the form of a conical spray as indicated by 3, the numeral 4 designating the periphery of the spray, that is, the path taken by the extreme exterior particles of water in the volume ejected from the nozzle. A spider 5 is supported on the nozzle by means of the cone-like open socket 6 and has arms 7 projecting laterally from the nozzle provided with spaced flanges 8, the spider supporting a plurality of short tubular members of different lengths shown as three in number and designated as 9 inner, 10 middle and 11 outer tube. The tubes, vertically positioned, and concentric with the nozzle, rest upon the spider arms, the lower edges of the tubes in contact with flanges 8 which are adapted respectively to the diameters of the tubes. The structure of the device may be made secure or integral by securing the tubes to the spider.

A particular value of my device resides in the diverse lengths of the tubes and their adjustment to the spray. The tubes are so designed and adjusted that their upper edges are substantially though not necessarily angularly aligned; and, which is also important, bear a carefully computed relation to the periphery of the cone-like spray produced by the nozzle. I prefer to provide the tubes so constructed and adjusted that their upper edges are spaced slightly from the periphery of the spray, whereby the passage of the substance of the spray is unimpeded. I may, however, in variant uses provide that the spray may contact the upper edges of the tubes. The effect of the passing spray is to withdraw air from the annular channels formed by adjacent tubes, the channels between outer tube 11 and middle tube 10 being designated 12, and that between middle tube 10 and inner tube 9 being designated 13. The withdrawal of air from the annular channels tends to establish, and continuance of the influence of the spray tends to promote, the movement of air currents through said channels as indicated by the arrows 14 and 15 in the respective channels. Influence of the spray adjacent the upper edge of inner tube

9 tends to create a vacuum in the inside cylindrical channel 16, and to establish air currents indicated by the arrows 17 there-through.

5 I have therefore provided an attachment for a spray nozzle that utilizes a relatively large proportion of the potential vacuum-creating influence of the spray to establish and maintain air currents moving through
10 the channels into the spray whereby the desired additional amounts of air are supplied to the water for effective cooling; and I have accomplished this result by means that permits the spray free travel. My device
15 consequently is able to deliver a larger amount of water, and to associate a proportionately larger amount of air with the

water, than has been possible heretofore with devices of this character.

What I claim and desire to secure by Letters Patent is:

In combination with a spray nozzle, a socket member seated on said nozzle and having horizontal spider arms provided with spacers, a plurality of cylinders of different
25 diameter and length seated on said arms and retained by said spacers to provide a central, cylindrical flue and a plurality of concentric annular flues, the length of the cylinders being determined to locate the delivery
30 ends of the annular flues closely adjacent the margin of spray from said nozzle.

In testimony whereof I affix my signature.

LEON T. MART.