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J. C. PERDUE
CENTRIFUGAL SPRINKLER

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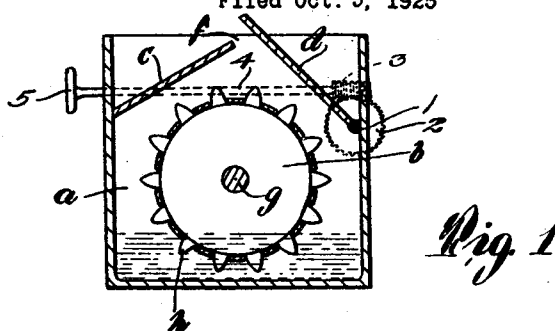


Fig. 1

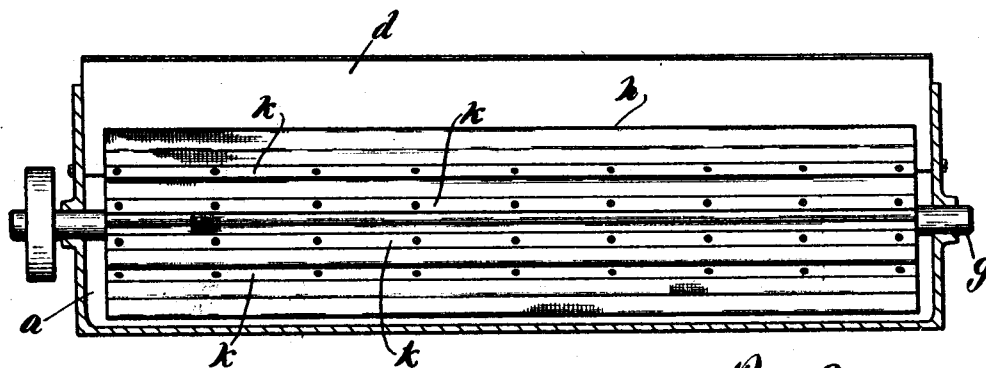


Fig. 2.

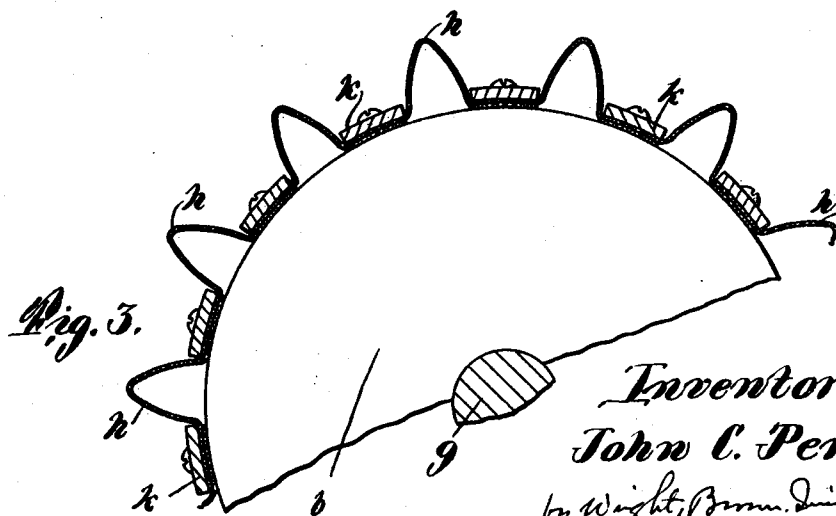


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN C. PERDUE, OF METHUEN, MASSACHUSETTS, ASSIGNOR TO MANUFACTURERS' MACHINE COMPANY, OF NORTH ANDOVER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CENTRIFUGAL SPRINKLER.

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The present invention relates to means for scattering water, or other liquid; particularly for the purpose of atomizing such liquid by throwing it forcibly against adjacent impact or impingement surfaces. Such means or devices are rotatably mounted so as to be partially submerged in a body of the water, or other liquid to be atomized, and operate by picking up the liquid in the course of their rotation, and throwing the liquid off by centrifugal force. Devices in the nature of rotary brushes, consisting of a central core and bristles or wire on their lateral surfaces have heretofore been used for this purpose, and called brushes, although their functions are unlike the ordinary uses to which brushes are put. Therefore, and also in order to give a concise distinguishing term to the device in which my invention is embodied, I will, in the following specification, generally refer to it by the term "brush", although in the construction of its water-carrying elements it is radically unlike the brushes heretofore used for sprinkling and atomizing purposes, or other purposes. I will also generally refer to the liquid which is acted upon by the use of my brush as water, because that is the liquid most commonly used, but in so doing I have not intended to indicate any limitation in the use to which my invention may be put, or in the scope of the protection which I claim for it.

My object has been to provide a brush capable of revolving, in partial submergence in water or other liquid, with a minimum of disturbance or production of wave action in the liquid, and capable of lifting from the body of water small masses in a finer state of division and a wider separation from one another than is obtained with the brushes heretofore used in sprinkling and atomizing apparatus. The novel characteristics by which these objects are accomplished, and the combination of a brush having such characteristics with the cooperating parts of a complete atomizing apparatus, constitute the invention which I claim and shall now describe.

In the drawings,—

Fig. 1 is a cross section illustrating an atomizer containing my improved brush as the water throwing element thereof;

Fig. 2 is a longitudinal section of the atomizer showing my brush in side elevation;

Fig. 3 is a fragmentary detail view on a larger scale.

Like reference characters designate the same parts in all the figures.

The complete atomizer comprises a box or casing *a* having a bottom, ends, sides, and other impact surfaces, adapted to contain a body of water, or other liquid, to be atomized, and a brush or sprinkler *b*. In the upper part of the casing are plates or covers *c*, *d*, which together overlie the entire space above the brush between the side walls of the casing. One of such plates, as *d*, is preferably mounted with provision for angular adjustment, and crosses the adjacent edge of the other plate, its adjustment enabling an emission slot *f* of greater or less width to be opened between the two plates. For the purpose of such adjustment the plate *d* may be secured on a shaft 1 having bearings in the end walls of the casing and protruding, at one end at least, beyond the adjacent end wall. The protruding end of the shaft may be equipped with a worm gear 2 meshing with a worm 3 on a shaft 4, which is supported in bearings suitably mounted on the casing, and on which is a suitable handle 5. This affords a self-locking means which is always instantly operative to adjust the plate as desired. The atomizer structure as thus far described, however, is not my invention, and is illustrated here to show the environment in which my novel brush may be usefully employed.

My invention resides in the novel construction of the brush *b*. In its embodiment here illustrated, such brush comprises a cylindrical core mounted on a shaft *g*. Such core may be solid or hollow, and if hollow, it is preferably made of a tube with heads attached to its ends.

On the surface of said core are mounted water lifting and throwing elements *h*. These

elements are of a foraminous or reticulated structure, being most conveniently made of wire cloth, of which the gauge of the wires and width of the meshes between them are preferably similar to those of fly screening, but may be either finer or coarser. Such wire cloth is bent or folded so as to form ridges and laterally projecting webs adjacent to the bases of such ridges. Conveniently and preferably, each ridge is made of a single strip of the wire cloth, bent as above described, and as clearly shown in the drawings. A number of the ridges, including all of them, may be made by appropriately bending and forming a single piece of the wire cloth and placing it on the core so as more or less completely to surround the core.

Preferably, the wire cloth ridges are arranged longitudinally of the core and parallel to its axis, and secured by means of holding strips or battens *k*, which are laid upon the before named base webs and are secured to the core by screws placed at suitable intervals, or by other means. The wire cloth ridges may extend the full length of the core or throughout any desired fraction thereof. It is not necessary that they be parallel to the axis, for they might be applied with a helical or skewed arrangement, but the parallel arrangement is the simplest and best.

When the brush of this invention is used for sprinkling water, it is preferably made of materials which are not corroded or otherwise injured by water. For instance, all parts of the brush, including the wire cloth ridges, may be made of brass; or different materials may be used for different parts.

When the atomizer is used for its intended purpose, the casing is filled with water up to a height sufficient to submerge the lower part of the brush, but preferably only a minor part, or none at all, of the core. Possibly indeed, the water level may be high enough only to receive the ridges when in their lowermost position, and not up to the holding battens.

Brushes made as herein disclosed have the advantage that when rotating at high speed, the wires forming the ridges cut through the water with a minimum of disturbance and without causing wave action or throwing the water out of place. When the wire cloth ridges leave the water, they pick it up in small drops, which lodge and remain on the intersections of the wires; all the water which cannot find such lodgement draining away through the meshes of the fabric. Thus when the water is first picked up, it is initially subdivided into small particles and these particles are widely separated from one another.

It is to be understood that the brush is rotated at high speed by any suitable means applied to its shaft outside or inside of the atomizer casing. Hence the bits of water lifted by the brush are thrown off by centrifu-

gal force. These particles, striking forcibly against the impingement surfaces formed by the adjacent walls of the casing and the plates *c*, *d*, are shattered into a fine mist or fog, which is circulated and carried out of the casing by the air currents induced by the rotation of the brush.

In thus particularly describing the construction of my improved brush, and particularly the wire cloth lifting elements thereof, I have not intended to indicate a restriction to such specific construction of the protection which I claim, but I include within my protection other structures and devices capable of obtaining substantially the same effects in an equivalent way.

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

1. In an atomizer having impact surfaces, a centrifugal distributor revolubly mounted in said atomizer and comprising a central core and foraminous water lifters secured to said core, extending longitudinally thereof and projecting radially therefrom.

2. In an atomizer adapted to contain a body of water and having enclosing impact surfaces, a centrifugal distributor mounted in said atomizer to rotate about a substantially horizontal axis and having peripheral elements adapted to dip into such body of water, said elements being constructed with scattered lifting portions and intermediate open spaces.

3. In an atomizer adapted to contain a body of water and having enclosing impact surfaces, a centrifugal distributor mounted in said atomizer to rotate about a substantially horizontal axis and having peripheral elements adapted to dip into such body of water, said elements being of reticulated construction having scattered collection points and intermediate open spaces.

4. In an atomizer adapted to contain a body of water and having enclosing impact surfaces, a centrifugal distributor mounted in said atomizer to rotate about a substantially horizontal axis and having peripheral elements adapted to dip into such body of water, said elements being composed of wire cloth projecting in generally radial directions from the axis of the distributor.

5. In an atomizer adapted to contain a body of water and having enclosing impact surfaces, a centrifugal distributor mounted in said atomizer to rotate about a substantially horizontal axis and having peripheral elements adapted to dip into such body of water, said elements being composed of strips of wire cloth folded to form ridges and applied to said distributor in such manner that said ridges project radially therefrom.

6. A water distributor comprising a core adapted to rotate about a substantially horizontal axis over a body of water, and wire

cloth applied to said core in such an arrangement and form as to provide ribs projecting from the surface of the core in a generally radial direction with reference to the axis of
5 the core. folded to form ridges and flanges extending laterally from the bases of said ridges, 10 applied to the core with said flanges against the surface of the core, and battens overlying the flanges and secured to the core.

7. A water distributor comprising a core adapted to rotate about a substantially horizontal axis over a body of water, wire cloth

In testimony whereof I have affixed my signature.

JOHN C. PERDUE.