

R. M. HUNTER.
MIST PRODUCING NOZZLE.
APPLICATION FILED NOV. 17, 1910.

1,041,798.

Patented Oct. 22, 1912.

Fig. 1

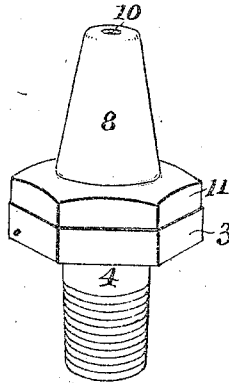


Fig. 2

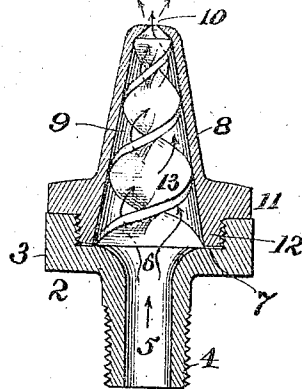
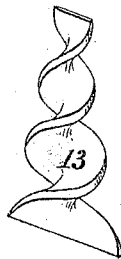


Fig. 3



Witnesses
R. M. Kelly,
E. H. Barlow.

Inventor

R. M. Hunter

UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WARREN WEBSTER & COMPANY, A CORPORATION OF NEW JERSEY.

MIST-PRODUCING NOZZLE.

1,041,798.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed November 17, 1910. Serial No. 592,763.

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, a citizen of the United States, and a resident of the city of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Mist-Producing Nozzles, of which the following is a specification.

My invention has reference to mist producing nozzles and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

The object of my invention is to provide an effective device for rapidly spraying a liquid with a rotary action whereby the spray spreads out from the nozzle in an inverted cone of fine mist.

My object is further to produce the desired results with a nozzle composed of but few parts, all of which are static and so constructed that they will not be subjected to wear or clogging.

My invention consists of a nozzle head having a water passageway through it terminating in a small aperture through which the rotary spray emerges, the passage immediately under the aperture being made tapering, with the smallest end adjacent to the aperture, combined with a tapering screw tightly fitting the said conical passage and receiving the water at its large end and causing it to take on a rotary motion in passing through the nozzle and at the same time accelerating its forward motion.

My invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the drawings, in which:—

Figure 1 is a perspective view of a mist producing nozzle embodying my invention; Fig. 2 is a vertical sectional elevation of the same; and Fig. 3 is a perspective view of the tapering screw removed from the nozzle head.

2 is the base or body of the head and is provided with a large hexagonal portion recessed at 7 and terminating in a nipple having an aperture 5 and screw threaded at 4 so as to be adapted for attachment to ordinary piping through which the water is to be fed to the nozzle. The aperture 5 in the nipple is preferably enlarged at 6 in the

inner part of the head 3. 8 is a tapering nozzle portion having its larger end provided with a polygonal flange 11 and a screw threaded annular flange 12 which screws into the head 3 of the body part. The tapered chamber 9 of the nozzle part 8 has its larger end preferably of considerably larger cross section than the cross section of the aperture in the nipple 5 at its smallest part, the flare of the aperture in the nipple adjacent to the nozzle permitting the water to spread into the large end of the tapered chamber of the nozzle. The small end of the nozzle 8 is provided with a central aperture 10 which is preferably of relatively small area compared to the small end of the tapered chamber 9 into which it opens. I also prefer that the annular edge of the aperture 10 shall be reduced in thickness so as to approximate a knife edge.

Arranged within the tapered chamber 9 is a tapered water guide 13 formed in spiral shape very much like a section of an auger bit but tapering in outer dimensions, the taper of the spiral flanges being substantially commensurate with the taper of the chamber 9 so that the said spiral guide portion 13 snugly fits the tapered chamber 9 of the nozzle portion and extends throughout its entire length. It is thereby supported within the tapered nozzle and no pressure of the water can drive it forward. Its lower end is substantially even with the bottom of the annular flange 7 of the tapered nozzle and when the said flange is screwed into the head 3, the spiral guide 13 is held in place and sufficient pressure may be applied to it when screwing the two parts of the spraying device together to create a sufficient friction between said parts and the spiral tapered water guide 13 which will prevent the latter from rotating under the action of the water passing through the spiral passages formed thereby. The small end of the spiral water guide 13 is terminated preferably at a short distance below the aperture 10 so that the water which leaves the two spiral passages may unite before passing through the aperture 10.

The operation of this device will be readily understood; the water is supplied to the aperture 5 of the nipple and passes therefrom into the large end of the conical chamber 9 where it sprays out and is caused to take on a spiral motion by being required to

pass through the spiral apertures formed by the spiral guide 13 and the walls of the chamber 9. This motion to the water is positive and at the same time the speed of travel of the water is accelerated because it is required to flow through a gradually diminishing area of passage so that when the water reaches the small end of the tapered chamber 9, it is moving at a very rapid speed and at the same time rotating with great force. These combined motions, namely, rectilinear and rotary, cause the water upon passing through the aperture 10 to burst into a fine mist, such that it is in excellent condition of subdivision to be absorbed by the atmosphere in connection with humidity controlling devices or for other purposes.

It is evident that the spiral guide 13 may have its pitch gradually increased from the large to the small end and is shown of that construction in Fig. 2, the said increasing pitch assisting the acceleration of movement given to the water in its passage through the nozzle.

The head 3, as well as the flange 11, is preferably formed with polygonal perimeters so as to enable the application of wrenches in connecting the two parts comprising the main body of the device and also for connecting and disconnecting with the water supply piping.

The construction is exceedingly simple and contains no parts to wear out or get out of order. Furthermore, no error in assembling can be made so that any ordinary mechanic may remove the tapered nozzle

portion for purposes of cleaning the device without fear of improperly connecting the parts in reassembling.

I have shown my improvement in the form which I have found excellently adapted for commercial purposes, and while I prefer this construction, the details thereof may be modified without departing from the spirit of the invention.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

In a spraying nozzle for producing mist, the combination of a head having a water supply aperture, a nozzle portion detachably secured upon the head and having a tapered chamber within the same, the large end of which chamber is next to the head and the small end terminating at its apex in a boundary formed like a knife edge with the incline on the inside as a continuation of the taper of the chamber, and a tapered guide piece fitting the tapered chamber nearly to its apex and providing a transverse spiral wall to form two spiral tapered passages, the small end of which wall is made of small thickness to permit the two spiral columns of water to unite into a solid body before passing through the final portion of the tapered chamber adjacent to the aperture.

In testimony of which invention, I hereunto set my hand.

R. M. HUNTER.

Witnesses:

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E. H. BARLOW.