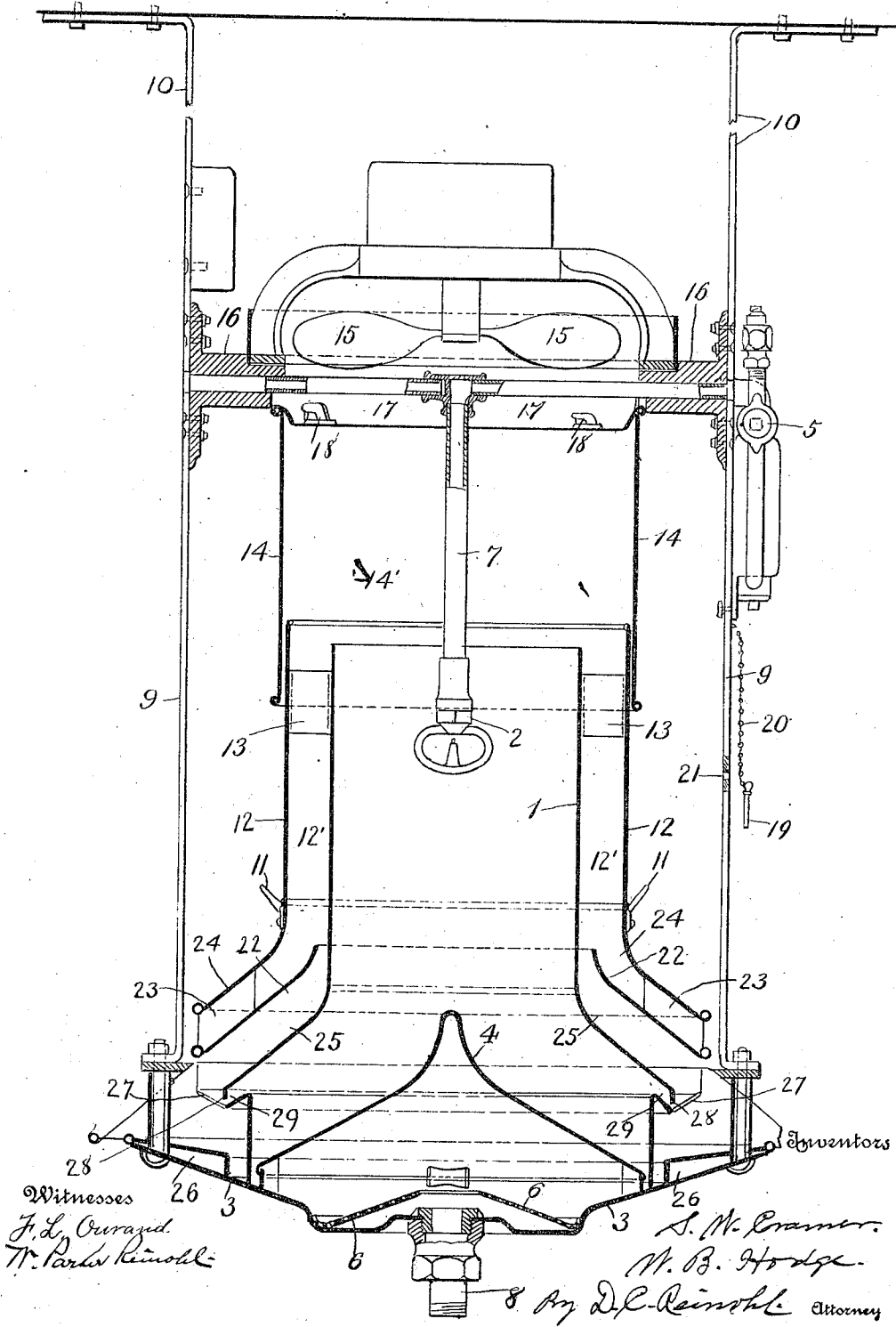


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 HUMIDIFYING AND AIR MOISTENING APPARATUS.
 APPLICATION FILED NOV. 9, 1910.

996,217.

Patented June 27, 1911.



UNITED STATES PATENT OFFICE.

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HUMIDIFYING AND AIR-MOISTENING APPARATUS.

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Specification of Letters Patent. Patented June 27, 1911.

Application filed November 9, 1910. Serial No. 591,504.

To all whom it may concern:

Be it known that we, STUART W. CRAMER and WILLIAM B. HODGE, citizens of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented certain new and useful Improvements in Humidifying and Air-Moistening Apparatus; and we 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.

Our invention relates to means for moistening the air in rooms or factories, has for its object to provide an apparatus which will not only keep the air constantly supplied with any preferred amount of moisture and diffuse such moisture throughout the room, but will also perform the additional function of cleansing the air.

The invention consists in certain improvements in construction of the device shown in the patent to Stuart W. Cramer, #908,964, bearing date of January 5th, 1909, as will be fully disclosed in the following specification and claims.

The accompanying drawing, which forms part of this specification, represents a vertical section partly in elevation of our improved humidifier.

Reference being had to the drawing and the designating characters thereon, the numeral 1 indicates the inner or spray casing within which is the spray nozzle 2.

3 is the pan or collecting basin and 4 the deflecting cone.

5 is a combined stop-cock and strainer for the water supply and 6 is the waste water strainer.

7 is the water supply pipe and 8 the waste water pipe.

9, 9, are supporting hangers for the basin and 10, 10, are supporting hangers for the whole apparatus.

11 are bails for the convenient handling of the casing 1.

12 is an outer casing inclosing the air space 12' between the inner or spray casing 1 and the outer casing 12.

13 are centering and carrying porters definitely and relatively fixing the position of the inner and outer casings with reference to each other and to the other parts of the apparatus.

14 is a vertically movable supplemental

casing inclosing a plenum space 14' between the upper end of the inner spray casing 1 and the fan 15.

16 is a support by which the fan is suspended in its position by the straps 10. 60

17 is a carrying member firmly fixed to the fan supporting member 16, to which the supplemental casing 14 is detachably secured with the bayonet joint 18.

19 is a pin attached to a hanger by a chain 20 and is used as a support for the casing 12 in raised position by being thrust through a hole 21 in the hanger and upon which the lower end of the casing 12 rests.

22 is an auxiliary bell-shaped deflector, rigidly attached to the outer casing 12 by means of carrying porters 23. This deflector 22 separates the space between the two bells into two passages 24 and 25.

26 represents an auxiliary or false bottom fastened to the pan 3 with its upper surface at an angle to that of the pan.

27 is an annular trough or basin to arrest water flowing down the inside of the casing 1 and is provided with a lip 28 forming an extension of the casing, which projects into the trough and forms an effective seal, compelling the air issuing through the concentric passage 29 to pass under the lip and through the water in said trough, thus increasing the efficiency of the humidifier. 85

In endeavoring to increase the evaporative capacity of the humidifier shown in Patent 908,964, Fig. 1, it was found difficult to go beyond a certain point on account of the increased volume of spray issuing from the pan, being drawn back into the fan and re-circulated through the humidifier. This was found to be caused by too great a volume of air being deflected by the pan itself, and while it was extremely necessary to divert a part of this current of air down on to the issuing spray so as to beat the large drops down against the pan, thereby preventing the humidifier from "wetting down", yet it was found when all of the air passing down through space 12' was deflected against the edge of the pan as shown in the patent referred to, that the increased capacity could not be obtained. In order to still retain the beneficial results attained by this outside shell of air beating down the large particles of water against the pan, we have arranged the auxiliary bell 22 which still allows a sufficient portion of this cur- 110

rent of air to beat down the large particles of water against the edge of the pan, but it also diverts a sufficient volume of this current out through the upper passage 24, which is spaced with reference to the edge of the pan so that the proper proportion of air rushes past it instead of actually impinging against it. The inner body of air, therefore, in passing down through the center of the inside casing 1, becoming surcharged with spray and being diverted by the cone, passes outward and meets the current of air following down on the outside of the casing 1 through space 25, which blast of air drives down against the pan any large particles which have not been condensed by either the cone or the side walls of the casing, and these two combined currents of air and spray issue from the edge of the pan where they are again struck by the blast or current of air coming down through space 24. This latter blast or current of air changes the direction of the former so that instead of curving in an upward direction and tending to rise to the top of the room and thereby be sucked back into the fan, this sheet of saturated and surcharged air is blown radially outward. This flattening effect of the auxiliary air current from space 24 is intensified by the slope of the false bottom 26, which, of course, does not require to be made at the particular angle shown, but is preferably at a less acute angle than that of the pan. This construction, therefore, allows a greatly increased distance between the bell on the inner casing and the cone, whereby a greatly increased amount of spray can be drawn from the humidifier with consequently largely increased humidifying capacity. Furthermore, the relative dimensions of the two spaces 24 and 25 do not necessarily need to be the same as shown, but they can be varied to suit different requirements.

Having thus fully described our invention, what we claim is—

1. A humidifier comprising an inner and outer casing, a spray head within the inner casing, a conical deflector, a pan, an annular bell-shaped member between the casings and arranged to form an air passage inside and an air passage outside said bell-shaped member, the latter passage being adapted to deliver air beyond the edge of the pan, and an outward extending spray passage below said air passages.

2. A humidifier comprising an inner and outer casing, a spray head within the inner casing, a conical deflector, a pan, an annular bell-shaped member between the lower ends of the casings arranged to form an air passage inside and an air passage outside said member, the latter passage being adapted to deliver air beyond the edge of the pan, and an outward extending spray passage below said air passage.

3. A humidifier comprising an inner and outer casing, a spray head within the inner casing, a conical deflector, a pan at the lower end of the inner casing, an annular bell-shaped member below the receiving end of said inner casing and arranged to form concentric passages, the outer passage being adapted to deliver air beyond the edge of the pan, and an outward extending spray passage below said air passages.

4. A humidifier comprising an inner and outer casing, a spray head within the inner casing, a bell-shaped member between the casings and arranged to form an air passage inside and an air passage outside said bell-shaped member, the latter passage being adapted to deliver air beyond the edge of the pan, and an outward extending spray passage below said air passage.

5. A humidifier comprising an inner and outer casing, a spray head normally within the casing, a deflector at the lower end of said casing, a pan, an annular auxiliary deflector arranged to form two concentric air passages between said casings, the outer passage being arranged to deliver air beyond the edge of the pan, and an outward extending spray passage below said air passages.

6. A humidifier comprising an inner and outer casing, a spray head within the casing, a deflector at the lower end of the casing, a pan, an outward extending spray passage, and an auxiliary deflector concentrically arranged within the casing to form an annular air passage on each side of said auxiliary deflector, the outward passage being arranged to deliver air beyond the edge of the pan and above the spray passage.

In testimony whereof we affix our signatures, in presence of two witnesses.

STUART W. CRAMER.
WILLIAM B. HODGE.

Witnesses:

R. I. DALTON,
JNO. C. WATSON.