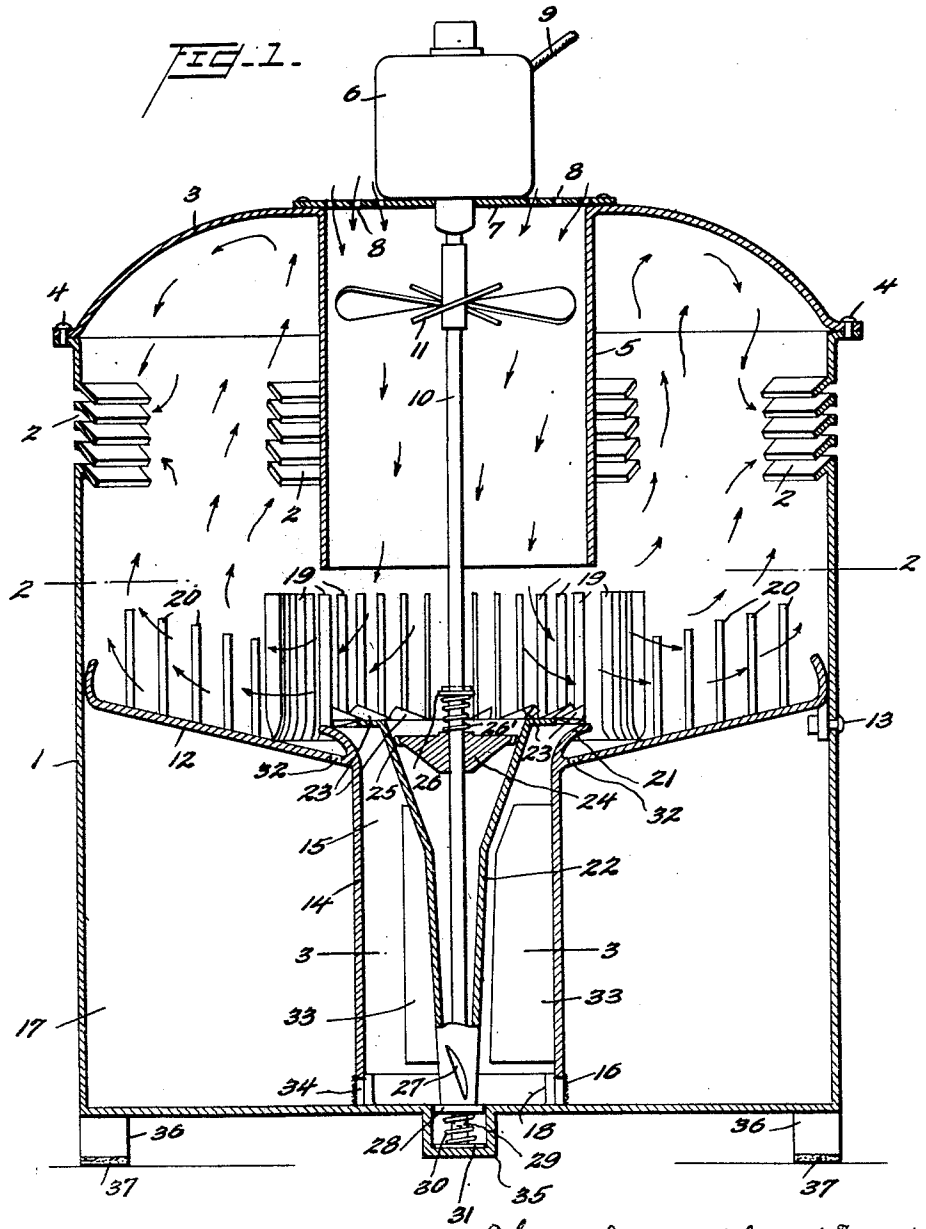
Jan. 17, 1933. H. M. HALL 1,894,864

AIR HUMIDIFIER AND WASHER

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FIG. 1.




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FIG. 2.

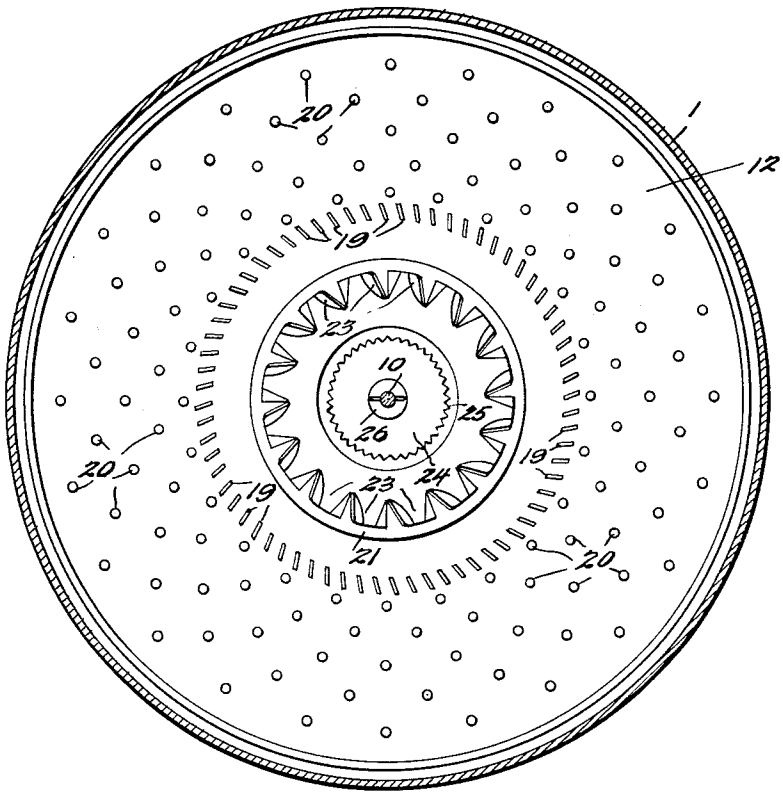
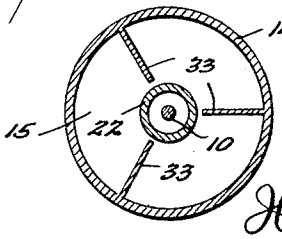



FIG. 3.




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Patented Jan. 17, 1933

1,894,864

# UNITED STATES PATENT OFFICE

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## AIR HUMIDIFIER AND WASHER

Application filed November 2, 1928. Serial No. 316,826.

My invention relates to a humidifier and air washer that is particularly adapted for use in homes, offices, theaters, railroad coaches, etc. in order that the air may be kept up to a desirable humidity.

Referring to the drawings for a more complete disclosure of the invention:

Fig. 1 is a vertical section of the humidifier;

Fig. 2 is a section on the line 2—2 of Fig. 1; and

Fig. 3 is a section on the line 3—3 of Fig. 2.

The device comprises a casing 1 that is provided with a plurality of louvers 2 in its upper portion. On the upper end of the casing a cover 3 is secured by screws 4. Depending from the cover 3 is an air tube 5. Over the air tube an electric motor 6 is supported on a removable base 7, which merely sets on pins with a rubber cushion underneath and between the motor base 7 and casing 3, which is provided with apertures 8 through which air, from the surrounding atmosphere, may enter the air tube 5. A cord 9 connects the motor with an electric light socket. Depending from the motor is a power shaft 10 and keyed on the power shaft is a fan 11.

Supported in the casing 1 is a stationary conical disc 12, secured in adjusted rotatable position by the bolts 13, and provided with a column 14 in which there is a well 15. The lower end of the column 14 is provided with a flange which is supported on the flange 18 on the bottom of the casing.

Supported on the disc 12 are a circle of flat baffles 19 and arranged with their widest flat faces along the radius of the circle. Surrounding the flat baffles are round baffles 20. The upper edge of the well is provided with a curved edge 21 which acts as a mist guide.

Mounted to rotate in the well is a funnel disc 22, which has secured to its upper end raised corrugations 23 which act as fan blades to throw the water at an angle of about 45 degrees against the flat faces of the baffles 19 and also to circulate the mist laden air.

Slidably keyed on the power shaft 10 is a water breaker cone disc 24, provided with notches 25 on its edge, through which water passes on its way to the corrugated fan blades 23, the size of the notches regulating the amount of water that passes through them. The disc 24 is held in place by a compression spring 25 interposed between it and a washer 26 held by a pin through the shaft 10, which also holds the funnel disc in place on the bearing at its lower end. The disc 24 also serves to center the power shaft in the funnel disc.

At the base of the funnel disc 22 is a water opening 27 which is used on machines of the larger type where the funnel disc 22 rests on the ball bearing 29, which closes the opening in the bottom of the funnel disc. In the smaller type of machines, where the funnel disc 22 is not supported by the ball bearing 29, but swings independently of the same, the water opening 27 is not necessary because the water can enter at the bottom of the funnel disc.

For supporting the lower end of the funnel disc, there is provided a bearing 28, supported on a ball bearing 29, carried by a ball bearing spring 30 which rests on a felt bearing 31 in the bearing lug 35. The bearing lug is below the base of the reservoir 17 so that when the reservoir is empty, there is enough water in the bearing lug for lubricating the ball bearing and funnel disc bearing.

Apertures 32 in the disc 12 return the precipitated mist to the water chamber 17.

Around the wall of the well, I place a plurality of fins 33, so arranged as to stop the whirl of the water so that the funnel disc can pick it up. If the fins were absent, the water would whirl in the same direction as the funnel disc and the water would not be picked up by the funnel disc.

At the bottom of the well, is a water intake 34 consisting of holes at the bottom of the well and provided with a screen 16 to prevent the passage of dirt from the water chamber 17 into the well. To regulate the amount of water entering the well, the screws 13 are loosened, and the stationary cone 12 turned to the right to open the openings 34 and to the left to close them.

The machine is provided with legs 36 having felt pads 37 on their bottoms so that it

can be on a table or wherever desired when in operation.

By removing the screws 4 and cover 3, the funnel disc 22 and stationary cone 12 can be removed for cleaning. When in use, the machine should be cleaned every ten days or two weeks, because the dirt that is washed out of the air settles in the bottom of the water chamber 17. By removing the motor base 7, the funnel base can be removed without removing the main cover.

In operation, the funnel disc revolves at 950–1750 R. P. M. Water will enter the opening in the lower portion of the funnel disc and be forced up through it to the corrugated fan or water breaker 23. Here it is forced out against the edge baffles 19 and the round baffles 20 attached to the stationary disc 12. By this tremendous force the water is broken up into a fine mist. The action of the air from the fans 11 and 23 drives this mist upward and out through the mist and air louvers 2. The fan 11 keeps up a circulation of air, drawing it in through the air openings 8, where it enters the air tube 5. It is then forced down through the mist where it is washed. It is then carried to the top of the humidifier where it escapes through the louvers 2.

What I claim as new and useful and desire to secure by Letters Patent of the United States is:

1. In a humidifier, a casing, means within the casing to convert water into mist, comprising a well adapted to contain water, a funnel in the well, means for rotating the funnel to raise the water, a water breaker carried by the funnel and stationary flat baffles adjacent the funnel and adapted to further break up the water received from the water breaker, and round baffles surrounding the flat baffles.

2. In a humidifier, a casing, means within the casing to convert water into mist comprising a receptacle adapted to contain water, a well in the receptacle, a funnel in the well, means for rotating the funnel to raise the water, comprising a power shaft a water breaker cone disc in the funnel and on the power shaft and having openings around its edges.

3. In a humidifier, a casing, means within the casing to convert water into mist comprising a rotary funnel, a power shaft passing through the funnel, a disc interposed between the power shaft and funnel, a bearing for the lower end of the funnel and means for resiliently holding the disc and funnel in operative position.

4. In a humidifier, a casing, means within the casing to convert water into mist and comprising a stationary inverted truncated cone connected to the walls of the casing and a well thereunder and a rotary funnel in the well.

5. In a humidifier, a casing, means within the casing to convert water into mist and comprising a stationary inverted truncated cone connected to the walls of the casing, a well thereunder, a rotary funnel in the well and stationary baffles carried by the said cone.

6. In a humidifier, a casing provided with louvers, an electric motor supported by the casing, an air inlet tube depending from the top of the casing, a fan in the air tube adapted to be rotated by the motor, a stationary inverted truncated cone connected to the walls of the casing, and a well thereunder, a rotary funnel in the well, baffles carried by the stationary cone, the air tube being arranged to carry the dust laden air to the mist above the baffles and to separate the incoming air from the mist laden air.

7. In a humidifier, a casing provided with louvers, an electric motor supported by the casing, an air inlet tube depending from the top of the casing, a fan in the air tube adapted to be rotated by the motor, a stationary cone connected to the walls of the casing, and a well thereunder, a rotary funnel in the well provided with a water breaker fan, baffles carried by the stationary cone, the air tube being arranged to carry the dust laden air to the mist above the water breaker fan and to separate the incoming air from the mist laden air.

8. In a humidifier, a casing, means within the casing to convert water into a mist comprising a water reservoir, a well in the reservoir a rotary funnel in the well for raising water, and a notched cone disc in the funnel.

9. In a humidifier, a casing, means within the casing to convert water into a mist comprising a water reservoir, a rotary funnel therein for raising water, a motor shaft, and a notched cone disc in the funnel, the said shaft being centered relative to the funnel disc by the cone disc.

In testimony whereof I affix my signature.

HUGH M. HALL.