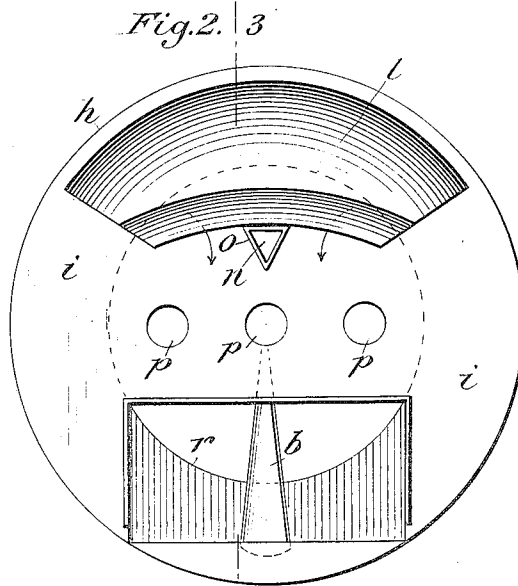
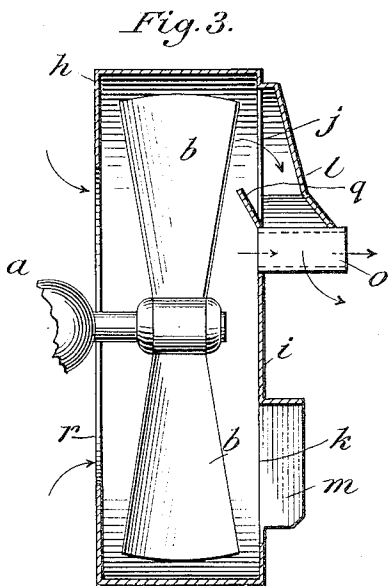
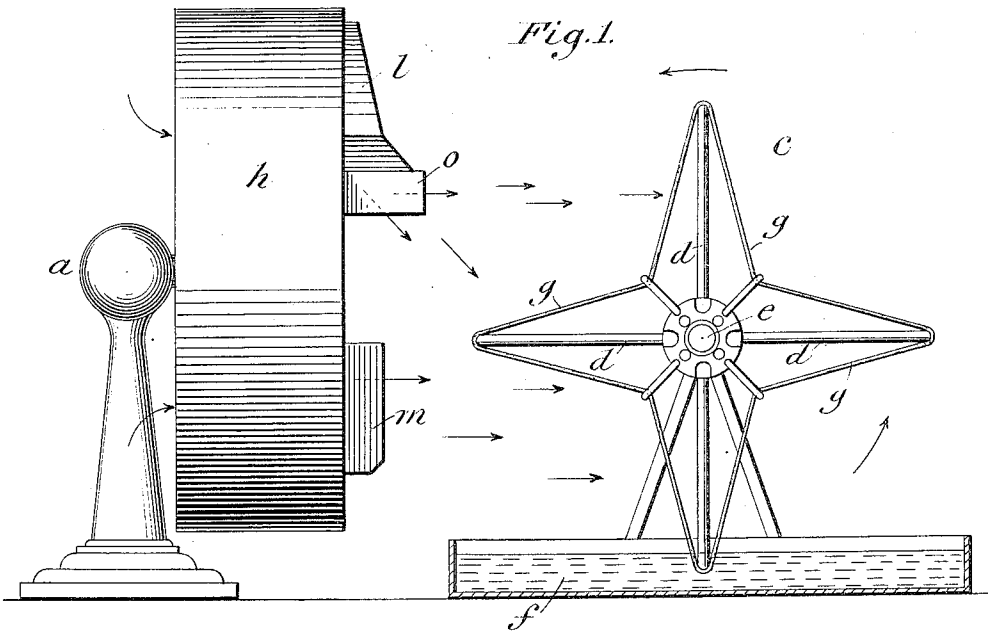


902,622.

Patented Nov. 3, 1908.



Witnesses:

L. B. Landon
C. E. Jordan

Inventor:

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By David H. Fletcher
his Att'y.

UNITED STATES PATENT OFFICE.

CHARLES SUBERT, OF CHICAGO, ILLINOIS.

HUMIDIFIER.

No. 902,622.

Specification of Letters Patent.

Patented Nov. 3, 1908.

Application filed November 20, 1907. Serial No. 403,016.

To all whom it may concern:

Be it known that I, CHARLES SUBERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Humidifiers, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in the different figures indicate like parts.

My invention relates to that type of humidifier for moistening air in buildings, in which a fan is employed to force a current of air against the wings of a revoluble frame covered with an absorbent material and arranged to be brought into contact with water.

I have found in practice that when an air current is taken directly from the fan blades without any intervening controller, any slight modifying influence, such, for example, as a change in the position of the fan or the opening of a door or window, may cause the humidifier to stop; and, if not noticed at once, it may remain at a standstill indefinitely when the action of the air from the fan will have an opposite effect from that intended by producing drought instead of moisture. Moreover, the direct action of the fan, as described, if run with sufficient speed to insure the continuous rotation of the humidifier, will cause the motion of the latter to accelerate so as to spatter the water.

The object of my invention is to combine with a fan and revoluble humidifier frame, a shield so constructed that all of the air will be utilized to the best advantage; the greater portion being directed against the humidifier wings in such a way as to insure continuous rotation thereof; while a portion may be utilized as a retarder or governor,—thereby insuring a substantially uniform speed at a predetermined rate,—all of which is herein-after more particularly described and definitely pointed out in the claims.

In the drawings, Figure 1, is a side elevation of a fan and revoluble humidifier embodying the features of my invention, Fig. 2, is a front elevation of the fan shield, and Fig. 3, is a sectional view of the fan shield taken upon the line 3, Fig. 2, viewed in the direction of the arrow there shown.

Referring to the drawings, *a*, Figs. 1 and 3,

represents generally a well known form of electric fan, the blades *b*, of which are shown in said last named figure. Said fan is placed in operative proximity to a humidifier, generally designated by *c*, Fig. 1, which consists of a revoluble frame *d* having a central shaft *e*, mounted in suitable bearings above a water reservoir *f*. Over said frame is stretched a cover *g* of absorbent material arranged to form a series of radial wings, which, when rotated, successively dip into the water of the receptacle. The fan is placed in position so that a current of air therefrom may serve to actuate the frame.

Surrounding the fan is a shield consisting of a hollow cylinder *h*, having a front *i*, but open at the back. Said shield may be supported in any well known way upon the frame of the fan or otherwise. Main eduction openings *j*, *k*, the latter of which is shown in Fig. 2, and both in Fig. 3, are formed in the front *i*, one in the upper and the other in the lower part of said front. Over the opening *j* is placed a downwardly and outwardly flaring shield *l*, open at the bottom, for directing the air from the upper portion of the fan downwardly and outwardly, so as to impinge obliquely upon the upper face of the wings, as indicated by the arrows, as said wings are presented successively in substantially horizontal positions. Extending outwardly from the opening *k*, are flanges *m* which serve to direct the current of air from the lower portion of the fan horizontally against the lowermost wing of the humidifier, as indicated by the arrows.

Instead of employing mechanical brake for impeding the motion of the humidifier frame and preventing an acceleration of speed, I have found that the air itself may be utilized to accomplish this result. For this purpose I provide an opening *n*, Fig. 2, in the front *i* and extend therefrom a conduit *o*, also shown in the other figures, of any desired cross-section, but preferably triangular, outwardly in a substantially horizontal plane above the axis of the humidifier frame. This causes an independent current of air of relatively small volume, to be directed against the uppermost vanes as they move towards the fan, which acts as an automatic governor to retard and control the speed of the wings.

I have found in practice that by means of

my improved device the volume of air which may be brought into direct contact with the absorbent material, may not only be much increased but that the continuous rotation of the humidifier may be thereby insured and the speed regulated.

If preferred, means may be provided for varying the amount of the retarding current by varying the size of the opening; but I have not found this necessary in practice. One or more openings *p*, Fig. 2, may be formed in the front *i*, if desired, but I do not consider them essential. A flange *q*, Fig. 3, is, by preference, formed upon the lower edge of the opening *j*, which tends to direct the air in the upper part of the shell through said opening and that immediately below through the opening *n*.

I have stated that the shield is open at the back. This opening may be co-extensive with the diameter of the shield; but inasmuch as the openings in the front *i* are insufficient to permit all of the air to escape therefrom that would be drawn from a rear opening having a diameter as large as that of the shield, I have found in practice that a back pressure occurs as a result of such construction, and hence I prefer to provide a flange *r*, Fig. 3, in the rear, which serves to prevent the back-flow of air at the periphery, which would otherwise occur as a result of centrifugal action, and to force said air outwardly from the front openings.

By means of my improved device a humidifier may be operated with certainty and at a speed which will insure the best results without spattering the water.

It is obvious that the device may be greatly modified in shape and appearance and the wings or vanes may be varied in form without departing from the spirit of the invention.

I make no claim herein to the construction of the humidifier frame, that being described and claimed in a separate application filed herewith as Serial No. 403,017.

Having thus described my invention, I claim:—

1. In a device of the class described, the combination with a revoluble humidifier frame, of means for projecting a volume of air against one portion of said frame to cause its rotation, and means for projecting a lesser volume of air against another portion of said frame in opposition to the former, to control its speed and prevent acceleration.

2. In a device of the class described, the combination with a revoluble humidifier frame, of a fan, a shield interposed between said fan and frame, an opening in said shield for directing a current of air against said frame upon one side of its axis to cause its rotation, and a separate opening therein for directing a smaller current of air against

said frame upon the opposite side of said axis from that of the first.

3. A humidifier in which is combined a revoluble frame having wings or vanes, with an absorbent material mounted thereon, means for bringing said material into contact with a liquid, a fan for inducing a current of air to actuate said frame, and an interposed shield arranged to simultaneously direct opposing currents of said air of relatively different volumes, against different wings.

4. A humidifier in which is combined a revoluble frame having wings or vanes, with an absorbent material mounted thereon, means for bringing water into contact with said absorbent material, a fan for inducing a flow of air to actuate said frame, means interposed between said fan and frame for directing the main body of the air from opposite sides of the axis of the fan in a way to drive the frame in a given direction, and means for directing a lesser portion of air from said fan in a direction to oppose the rotation of said frame.

5. A humidifier in which is combined a revoluble frame having wings with an absorbent material mounted thereon, means for bringing water into contact with said absorbent material, a fan for inducing a flow of air to actuate said frame, a shield interposed between said fan and frame provided with two main front openings one above and the other below the axis of the fan, one for directing the air downwardly and forwardly at an angle to the plane of the shield while the other directs it forwardly and horizontally against the wings of the frame, below the frame axis, and means for directing a smaller current of air forwardly against the wings of the frame in a plane above the axis of the latter.

6. In a device of the class described, the combination with a revoluble humidifier frame having an absorbent material mounted thereon, of means for bringing a liquid into contact with said material as the frame is rotated, a fan for inducing a current of air to actuate said frame, an interposed shield having a front opening arranged to direct a current of air against a predetermined portion of said frame, a front opening arranged to direct a current of air of lesser volume against a different portion of said frame to oppose the action of said first current, and means in the rear of said shield for preventing a back flow of air.

7. In a device of the class described, the combination with a revoluble humidifier frame having an absorbent material mounted thereon, said frame being arranged to rotate upon a horizontal axis, of means for bringing a liquid into contact with said material as the frame is rotated, a fan for inducing a current

of air to actuate said frame, and a shield interposed between said fan and frame, said shield having an opening in front, and means for directing the air forwardly and downwardly against the wings of the frame.

5 In testimony whereof, I have signed this specification in the presence of two subscrib-

ing witnesses, this 16th day of November 1907.

CHARLES SUBERT.

Witnesses:

D. H. FLETCHER,
CARRIE E. JORDAN.