

S. H. BUNNELL.

HUMIDIFIER.

APPLICATION FILED MAR. 29, 1909.

941,187.

Patented Nov. 23, 1909.

3 SHEETS—SHEET 1.

Fig: 1,

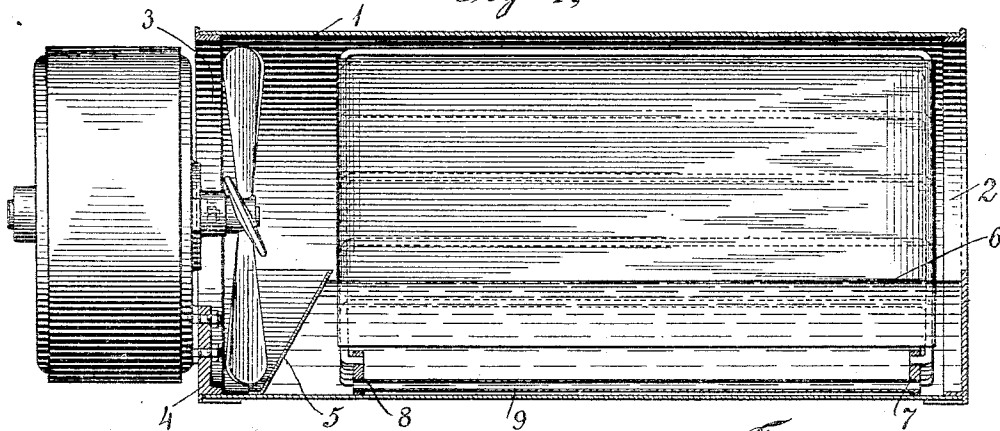


Fig: 3,

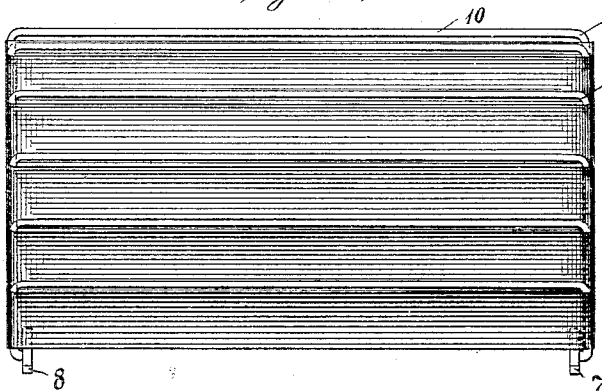


Fig: 2,

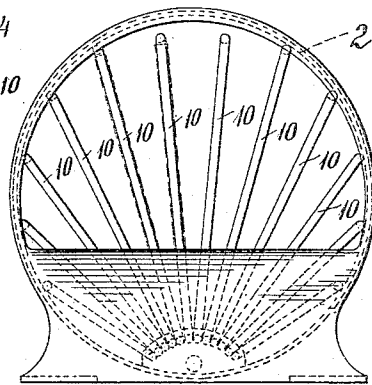
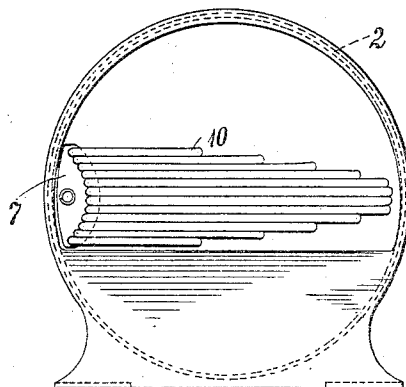


Fig: 4,



Witnesses:
S. P. Palumbo.
H. Gaertner.

Inventor
Sterling Haight Bunnell
By his Attorney
Myron H. Phelps

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Fig. 5,

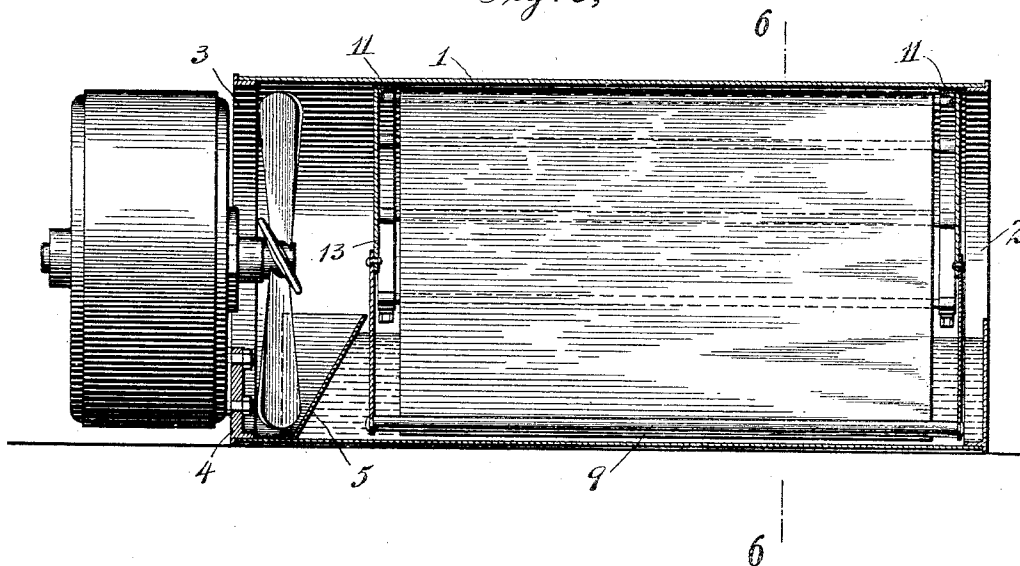
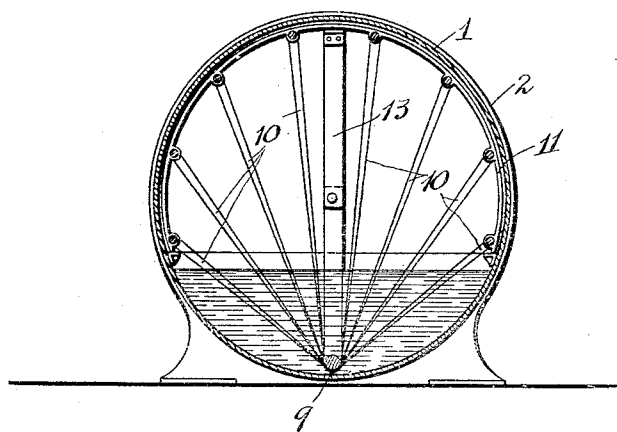


Fig. 6



Witnesses:
S. Pepi-Palmer.
M. Gaertner.

Inventor
Sterling Haight Bunnell
By his Attorney
Neyron H. Phelps

S. H. BUNNELL.

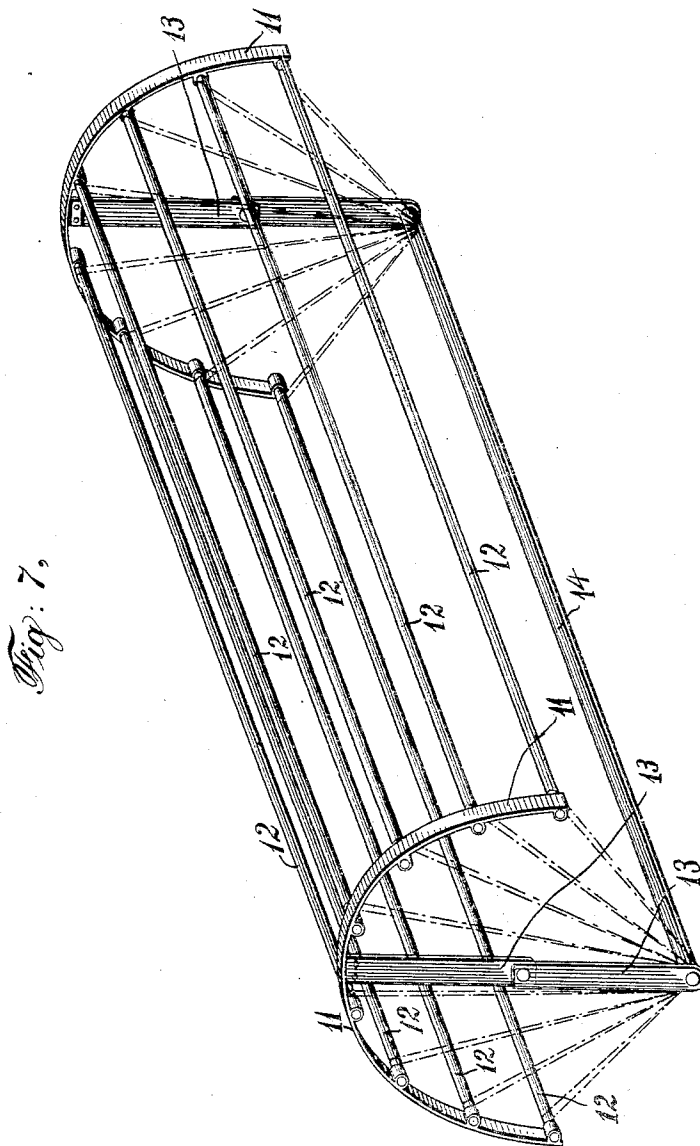
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3 SHEETS—SHEET 3.



Witnesses:
D. P. Palumbo
M. G. Gaultner.

Inventor
Sterling Haight Bunnell
By *W. H. Byles* Attorney
Myron H. Phelps

UNITED STATES PATENT OFFICE.

STERLING HAIGHT BUNNELL, OF NEW YORK, N. Y., ASSIGNOR TO THE GRISCOM-SPENCER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

HUMIDIFIER.

941,187.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed March 29, 1909. Serial No. 486,593.

To all whom it may concern:

Be it known that I, STERLING H. BUNNELL, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Humidifiers, of which the following is a specification.

My invention relates particularly to those humidifiers in which moisture is obtained from evaporation from wetted surfaces.

Hitherto, the wetted surfaces have been held in position by frames of suitable construction, inclosed in cases adapted to confine the air passing thereover and provided with openings closed by a suitable door or lid by which access may be had to the interior for the purpose of removing or cleansing the surfaces. Such openings and the doors or lids for the same add to the cost of the humidifier, and it is one object of my present invention to dispense with them. To that end I have devised a collapsible frame for the wetted surfaces, which frame may when collapsed be passed through the opening provided for the humidified air, either to introduce the wetted surfaces into the casing, or to remove the same therefrom.

In the drawing Figure 1 is a side elevation of apparatus embodying my invention, partly in section. Fig. 2 is an end view of the same; Fig. 3 is a side elevation of the collapsible frame having the wetted surfaces thereon, when in its expanded position; and Fig. 4 is an end elevation of the casing, showing also the frame in its collapsed or folded position while being introduced into the casing. Figs. 5, 6 and 7 represent a modified construction.

The casing 1 is shown herein as cylindrical, but it may be rectangular, or of other form.

The head 2 fitted to one end of the casing is a circular flange provided with a base supporting one end of the apparatus, and having a closed lower portion for retaining the fluid and permitting the egress of the humidified air.

The opposite end of the casing is provided with a flanged ring 3 having a base similar in shape to that of 2, and an arm 4 to which is bolted a motor operating a fan which forces air through the cylinder.

A D-shaped partition 5 spans the end of the cylinder inside of the fan, forming, with

the solid part of the head 2, a water reservoir, which is normally filled with water to the point shown by the water line 6 in Fig. 1.

The frame carrying the wetted surfaces is made of lengths of bent wire 10 or other suitable material pivotally connected to each other so that they may be folded for introduction into the casing, or removal therefrom. This pivotal connection may be made in any suitable manner, that which I have shown herein being as follows: Two small castings 7 and 8, connected by rod or tube 9, are provided with a number of holes into which the ends of the bent wires are introduced, as shown in Figs. 1 and 2. These wires are made in pairs, the two wires of each being of the same size, and the pairs being of graded sizes, decreasing in size from the center outward. The outer pairs are thus adapted to rest against the sides of the casing when the frame is expanded, as shown in Fig. 2.

When the frame is to be introduced into the casing, it is covered with cloth or other fibrous material suitable for absorbing and retaining moisture, folded as shown in Fig. 4, and passed through the open end of shell. The castings 7 and 8 are then placed in the lower part of the casing and the frame expanded to the position shown in Fig. 2. The reservoir portion of the casing being filled with water, air is forced past the wetted surfaces and out of the casing by means of the fan.

In the modified construction of Figs. 5, 6 and 7 the collapsible frame consists of two bow-shaped pieces 11 adapted to enter the opening in the end of the casing and connected by rods 12; suspended from pieces 11 by toggle joints 13 is a rod 14. The absorbent surface or cloth is passed around the bars 12 and 14 successively, as shown by broken lines.

When the frame is to be introduced into the casing, the bar 14 is raised by bending the toggle joint. If preferred, the toggle joint may, in this form of construction, be omitted, the absorbent surface being held taut by the weight of the bar 14.

I claim—

1. In a humidifier, the combination of a casing provided with an opening for the passage of air and a removable fabric-supporting frame, the same being collapsible

so that it may be introduced into or taken from the casing through the air-exit opening, substantially as set forth.

2. In a humidifier, the combination of a
5 cylindrical casing provided with an opening for the passage of air, and a collapsible frame suitable when collapsed to be introduced through said opening, said frame being made up of a number of pairs of
10 pivoted members graded in size and thus

adapted, when the frame is expanded, to rest against the interior of the casing, substantially as set forth.

In witness whereof, I have signed my name in the presence of two witnesses.

STERLING HAIGHT BUNNELL.

Witnesses:

GEO. H. HULL,

DONALD M. GROVE.