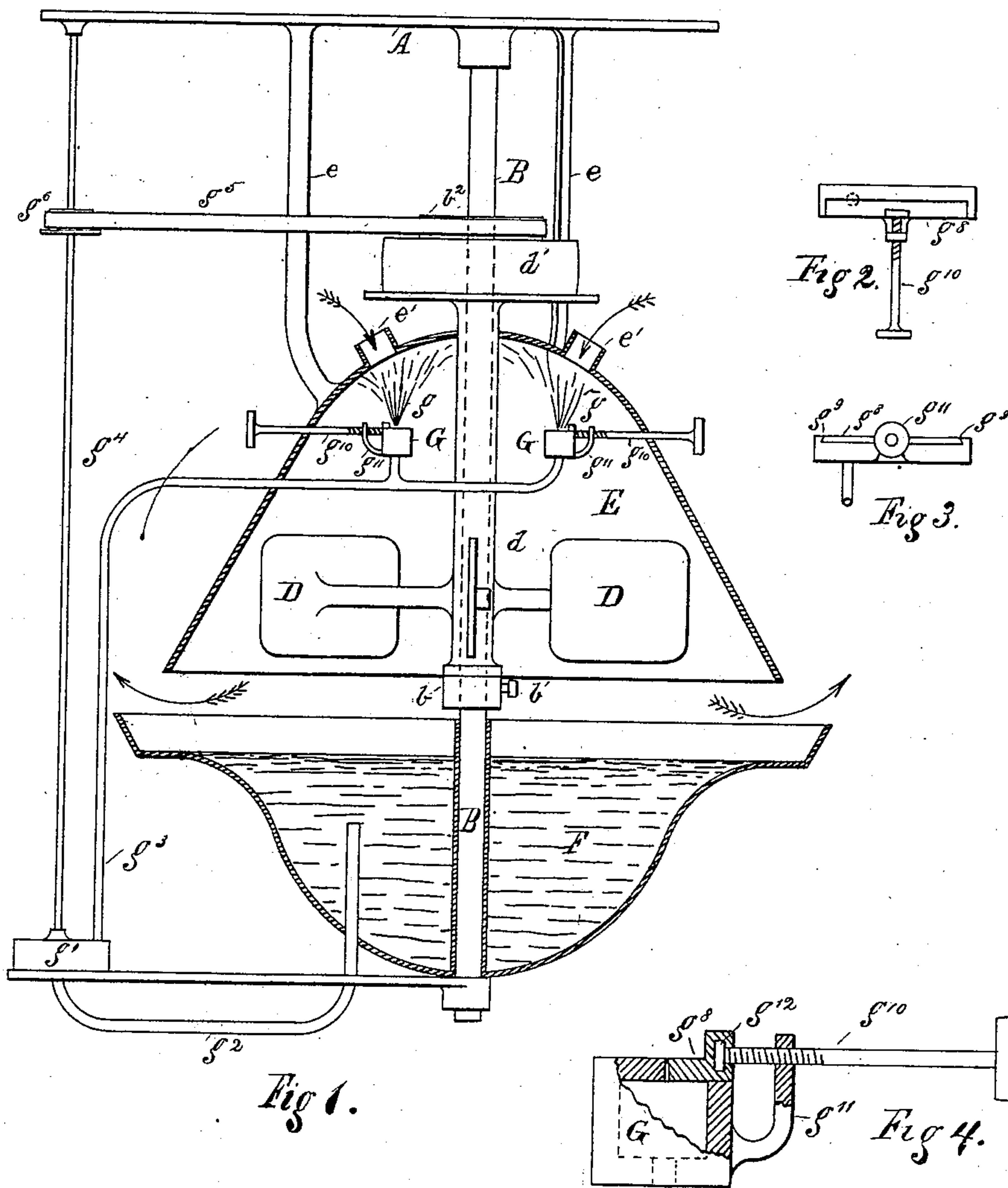


(No Model.)

M. SHERMAN.

APPARATUS FOR MOISTENING THE AIR IN COTTON MILLS, &c.
No. 324,043. Patented Aug. 11, 1885.



Witnesses:

Edward W. Thompson.
Harlan P. Young

Inventor:

Mortimer Sherman,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

MORTIMER SHERMAN, OF LOWELL, MASSACHUSETTS.

APPARATUS FOR MOISTENING THE AIR IN COTTON-MILLS, &c.

SPECIFICATION forming part of Letters Patent No. 324,043, dated August 11, 1885.

Application filed August 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER SHERMAN, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Apparatus for Moistening the Air, of which the following is a specification.

My invention relates to apparatus for moistening the air in places where, for any reason, it may be desirable to increase the humidity of the atmosphere, the object being to mix the water or other liquid with the air in the form of finely-divided and invisible particles.

That the air is frequently too dry in apartments devoted to weaving, spinning, making flour, and other mechanical operations, and that various measures have been resorted to for the purpose of increasing the humidity of such apartments, is well known. The expedients heretofore used therefor have generally been defective in means of varying the supply of moisture according to the varying humidity of the atmosphere and in means of dividing the water into invisible vapor. When the water is merely reduced to a visible mist or spray, it is liable to fall upon and rust machinery and other articles, to wet the floors of the rooms, and to unequally moisten the stock or raw material. To remedy the defects above named is the object of my improvement.

In the accompanying drawings, Figure 1 is a side elevation of my improved apparatus, the reservoir and the mixing-chamber being in central section; Fig. 2, a plan of the valve and its box and stem; Fig. 3, a side elevation of the same, and Fig. 4 an end view, partly in section, of the same.

A is the ceiling of a room in which my apparatus is to be used. B is a vertical cylindrical rod depending from the ceiling and supporting the air-fan D and water-reservoir F, as hereinafter described. The fan D has a long hub or pipe-bearing, *d*, which surrounds the rod B and rests upon a collar, *b*, surrounding said rod and secured in place by a set-screw, *b'*, turning in said collar and thrusting against said rod. The upper part of the hub or pipe-bearing *d* has secured to it a pulley, *d'*, by which the fan is driven by a quarter-turn belt from the main shaft in a cotton or similar factory or by any convenient power

in other places. The fan is surrounded and covered by a downwardly-flaring or dome-shaped mixing-chamber, E, circular in horizontal cross-section, and supported from the ceiling by hangers *e*, said mixing-chamber being provided with one or more air-inlets, *e'*, so that the revolution of the fan D will drive the air out at the bottom of the chamber E, and the outside air at the top will rush in with great force at the inlets *e*, to supply the vacuum above the fan. Below the chamber E is a reservoir, F, also circular in horizontal cross-section, and at the top larger than the bottom of the chamber E, and flaring outward in order that the air driven downward upon the water (with which the reservoir is always partly filled) may have a readier escape from said reservoir (after taking up a vapor from said water) into the room. The air, partly filled with vapor, passing out from the reservoir has the effect to somewhat moisten the air of the room; but in addition to this I moisten the air within the chamber E by as many spray-jets *g* as there are air-inlets *e'*, one of such jets being placed under each of the air-inlets *e'*, so that the air coming into said inlets may evaporate said spray rapidly. The water-pressure for the jets is preferably produced by a centrifugal or rotary fan-pump, *g'*, of ordinary construction, which is fed by the pipe *g''*, leading from the reservoir F to said pump, and discharges water through the pipe *g'''*, leading from said pump, to the valve-boxes G, placed within said chamber E above said fan, the pump-shaft *g''* being driven by a belt, *g'''*, which connects a pulley, *g''''*, secured to said pump-shaft, and another pulley, *b''*, secured to the pulley *d'*, above named. The valve-box G is a metallic box having a sliding cover or valve, *g''''*, the edges of which slide in grooves *g'''''* in said box, being pushed or pulled to close or open the valve *g''''* by turning the horizontal screw *g''''''*, which turns in a threaded hole in a bracket, *g'''''''*, cast or otherwise secured to said box, and has an enlarged inner end which enters a T-slot or bolt-head slot, *g''''''''*, in an upward projection at the outer edge of said valve. If the valve should become clogged, it may be opened wider by turning the screw, and the water will thereupon blow out the obstruction; but when the valve is nearly closed the water will be thrown out in a fine spray.

I claim as my invention—

1. The combination of the downwardly-flaring chamber provided with air inlets, a reservoir adapted to contain water or other liquid and placed beneath and concentric with said chamber, and a fan adapted to rotate within said chamber, and to draw air through said inlets into said chamber, and to expel said air from the bottom of said chamber into contact with the liquid contained in said reservoir and out between said chamber and reservoir, to moisten said air by contact with said liquid, as and for the purpose specified.

2. The combination of the downwardly-flaring chamber provided with air-inlets, a reservoir adapted to contain water or other liquid, and placed beneath and concentric with said chamber, and having an outwardly-flaring top, and a fan adapted to rotate within said chamber, and to draw air through said inlets into said chamber, and to expel said air from the bottom of said chamber into contact with the liquid contained in said reservoir and out between said chamber and reservoir, to moisten said air by contact with said liquid, as and for the purpose specified.

3. The combination of a downwardly-flar-

ing chamber provided near its top with air-inlets, spray-producing valves placed within said chamber beneath said inlets, a fan placed within said chamber and adapted to rotate therein, and to draw the air into said chamber through said inlets, and to expel the same from the bottom of said chamber, and a reservoir placed beneath and concentric with said chamber, and having a top larger than the bottom of said chamber, and adapted to catch the drip from said chamber, as and for the purpose specified.

4. The combination of a downwardly-flaring chamber provided with air-inlets, a fan adapted to revolve within said chamber, a reservoir adapted to contain a liquid, arranged concentrically below said chamber and having a top larger than the bottom of said chamber, a pump, a pipe connecting said pump to said reservoir, and another pipe proceeding from said pump into said chamber and provided with spray-producing valves arranged within said chamber, as and for the purpose specified.

MORTIMER SHERMAN.

Witnesses:

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