(No Model.) 2 Sheets—Sheet 1.

R. C. ULBRICH.

HUMIDIFIER SYSTEM AND APPARATUS.

No. 572,780. Patented Dec. 8, 1896.

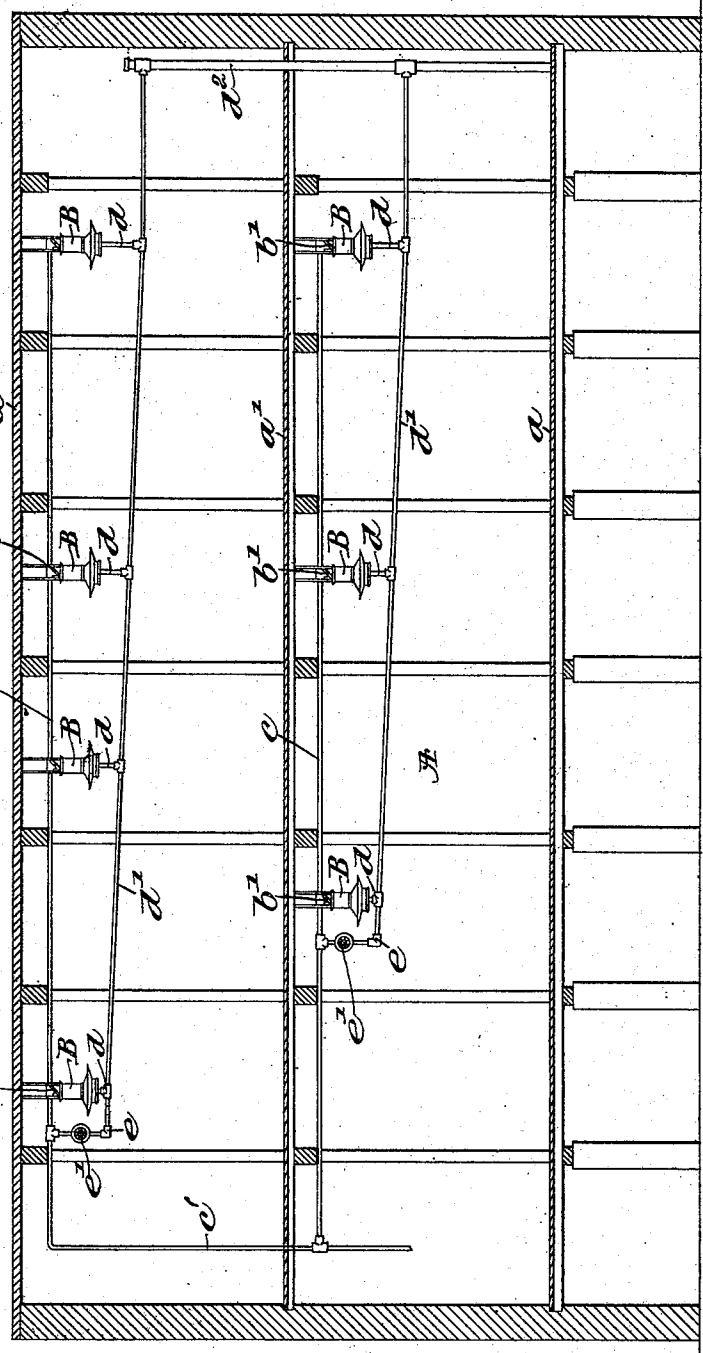

Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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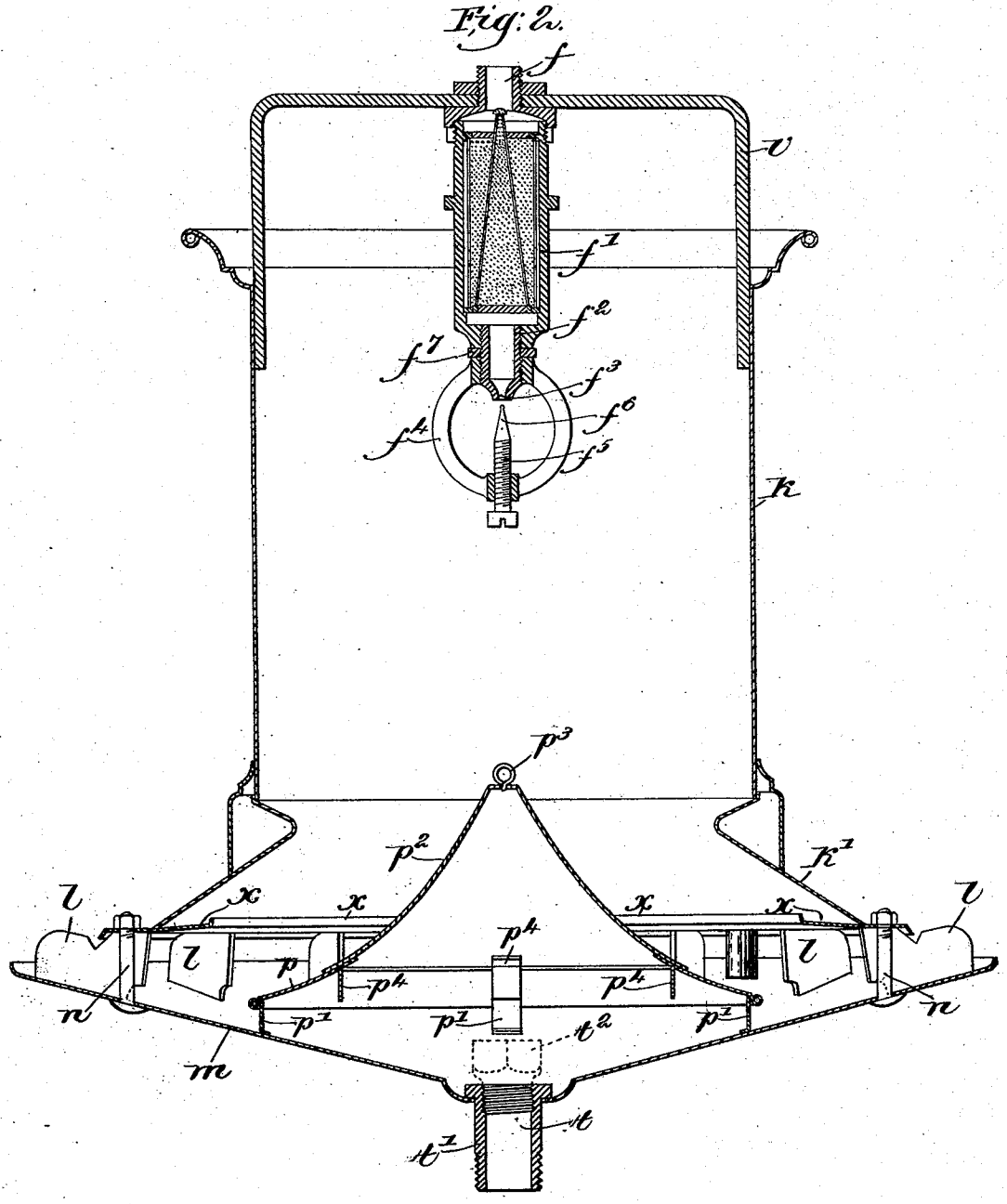
Fig. 2.



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UNITED STATES PATENT OFFICE.

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HUMIDIFIER SYSTEM AND APPARATUS.

SPECIFICATION forming part of Letters Patent No. 572,780, dated December 8, 1896.

Application filed March 23, 1896. Serial No. 584,388. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. ULBRICH, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Humidifier Systems and Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to systems for moistening or humidifying the atmosphere of mills and the like and commonly known as "humidifier systems."

As at present usually installed humidifier systems comprise a plurality of humidifiers distributed throughout the mill or building and fed or supplied by a common water-pipe, the condensation or particles of water which do not pass off with the air being collected in the bottoms of the various humidifiers, from which they are conducted away by or through a common return-pipe. This return is usually more or less sluggish, and, as I have found in practice, usually becomes clogged to a considerable extent with sediment, or in some cases completely stopped by the collection of sediment therein. In the systems as heretofore installed it has been impossible to blow out or free the various pipes of sediment, for the reason that water under pressure, which affords the most convenient means for cleaning the pipes, could not be forced through the same because of the absence of any means for preventing the water, when forced through the return-pipe, backing up into the humidifiers.

My invention has for one of its objects to overcome this defect by providing means whereby fluid or water under pressure may be forced through the entire system for the purpose of cleaning the same without necessarily passing such fluid or water through the atomizing-nozzles and without danger of the water backing up into the humidifiers.

One part of my invention consists in providing suitable valves or means at opposite sides the humidifiers, whereby passage of fluid from either the supply or return pipes may be blocked, and providing at a suitable point a connection between the supply and the return pipes of the system with a suitable valve controlling the same to enable fluid under pressure, introduced through the supply-pipe, to be passed through the latter and the return-pipe to free both from any sediment or obstacle.

My invention also comprehends a novel construction of humidifier apparatus to be hereinafter described.

In the accompanying drawings, Figure 1, in vertical section, shows a structure or mill equipped with a humidifier system embodying my invention; and Fig. 2, a vertical section of a humidifier, such as may be employed in the system Fig. 1.

In the embodiment of my invention illustrated in the drawings the structure or mill A is shown as provided with the main and second floors a a' and roof a^2, and suspended from the said roof and second floors, respectively, are the various humidifiers B B, the same being of suitable or desired construction, such, for instance, as shown in Fig. 2.

The humidifier herein shown and embodying a part of my invention comprises a suitable casing, as k, provided at its upper open end with a suitable bail v, by which it may be suspended in suitable or desired position, and provided at its lower end with an outwardly and downwardly flaring foot-flange k', supported by suitable radial division plates or supports l, resting upon the upwardly-inclined flange or cone m, to which flange k' is firmly secured by suitable fastenings, as, for instance, the bolts n. A lip x, projecting inwardly at the bottom of the flange k', serves to catch the drops of water which follow down the interior of the casing, from which it overflows or is conducted in suitable manner to the well formed by and within the conical base or flange m, from the lowest point in which leads the outlet t through a suitably-threaded nipple t'.

Within the casing and suitably supported upon the conical bottom m, as by the feet p', I have shown an annular cone or ring p, upon which rests the cone proper, p^2, the latter being preferably provided at its upper end with a suitable handle (shown as an eye p^3) by which it may be raised or removed from its seat on the ring p, it having suitable guides or holding devices (shown as feet p^4) to retain

it in position upon the ring p when in use, as in Fig. 2.

The outlet t is provided with a suitable valve, herein shown as a screw-plug t^2, (represented in dotted lines, Fig. 2,) by which it may be closed when desired, access to the outlet for closing and opening this valve being had through the top of the casing with the cone p^2 removed.

The water-inlet f is shown as a suitable fitting secured in or to the bail b, it carrying a suitable depending filter or strainer f', shown as interiorly threaded at its lower end to receive the threaded nipple f^2, having a spraying outlet or nozzle at f^3. Upon this nipple, which is shown as exteriorly threaded for its entire length, I have mounted the ring-like yoke f^4, into or through which, at its lower end, is tapped a spraying device, shown as a screw f^5, having its pointed end f^6 directly opposite and opposed to the delivery-nozzle f^2, so that water issuing through the said nozzle will be sprayed in umbrella-like form downwardly and outwardly toward the interior walls of the casing, to thereby serve not only to draw air downwardly through and within the said casing, but also to charge such air with moisture in desired quantity, the moistened air being directed by the cone p^2 toward the opening between the flange k' and base m, through which said air escapes into the room.

The spraying device herein shown has a capacity of wide adjustment, for the nipple f^2 is adjustable vertically in the casing f' to vary the height of the spray, and the yoke f^4 is adjustable on the nipple, and the spraying-screw f^6 is adjustable in the yoke, a lock-nut f^7 being herein provided to retain the yoke in locked position on the nipple, or it may be used to retain the nipple in locked position in the shell f'.

Referring now to Fig. 1, the several humidifiers are supplied with the humidifying fluid, usually water, through the supply-pipes c c, shown as leading from a common standpipe c', connected with a suitable supply, as the street-main, the returns d, connected with the outlets t of the several humidifiers, being shown as joined to the common return-pipes d', also shown as connected with a common stand or return pipe d^2. Each of the humidifiers is shown as provided with a suitable usual inlet-valve b', controlling the supply of humidifying fluid to the same. At the ends of the respective lines of pipes c and d' I have joined the same by suitable connections e e, controlled by valves e' of suitable or desired construction.

In the normal operation of the system the valves e' are closed and the valves b' and t^2 of the several apparatus are maintained open, the humidifying fluid then flowing through the supply-pipes to the several humidifiers, the condensation and particles of fluid not taken up by the air being conducted through the returns d and d' to a suitable discharge-point.

When any of the pipes of the system become clogged or stopped by reason of the deposit of sediment or other obstacles therein, due to the slow movement of the humidifying fluid therethrough, the inlet and outlet valves b' and t^2 for the several humidifiers may be closed to prevent the fluid under pressure from reaching atomizing-nozzles or the interior of the casings and the valves e' opened, when fluid, such as water, under pressure may be forced rapidly through the supply-pipes and through the connections e e to and back through the return-pipes for the purpose of removing any sediment or obstacles therein. The pipes having been thoroughly cleaned the valves e' are closed and the valves b' and t^2 opened and the system operated as before.

My invention is not limited to the particular construction or arrangement herein shown, nor to its use in connection with any mill or other building in particular, nor in connection with any particular construction of herein-defined apparatus, one part of my invention, broadly stated, lying in a connection independent of the humidifiers between the inlet or supply and outlet or return pipes of the system, whereby fluid under pressure may be forced rapidly through the said pipes for the purpose of cleaning the same.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a humidifier system, the combination with one or more humidifiers, and inlet and return pipes for the same, of a connection independent of said humidifiers, or either of them, between the inlet and supply pipes, and means to control said connections, substantially as described.

2. In a humidifier system, the combination with one or more usual humidifiers, and inlet and return pipes for the same, of one or more connections between the said inlet and return pipes and independent of said humidifiers, and valves in and to control the said connections and to control the inlets and returns for the several humidifiers, substantially as described.

3. A humidifier apparatus containing a suitable casing, a spraying device arranged therein, a return or outlet at the bottom of said casing, and a removable cone covering said outlet removal of which gives accesss to said outlet, substantially as described.

4. A humidifier apparatus containing a suitable casing, a spraying device arranged therein, and an outlet at or near the bottom of said casing, and a ring supported above the bottom of said casing, and a removable cone arranged on said ring and normally covering said outlet, substantially as described.

5. A humidifier apparatus containing a suitable casing, a spraying device arranged therein, an outlet at the bottom of the casing, a

valve controlling the same, and a removable cone normally covering said outlet and its valve removal of the cone permitting the free access to said valve, substantially as described.

6. In a humidifier apparatus, the combination with a suitable casing, of a support arranged within the same, an exteriorly-threaded nozzle tapped in said support, a supporting-yoke threaded on said nozzle, and a spraying screw or point threaded in said yoke, all to operate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD C. ULBRICH.

Witnesses:
FREDERICK L. EMERY,
LAURA S. MANIX.