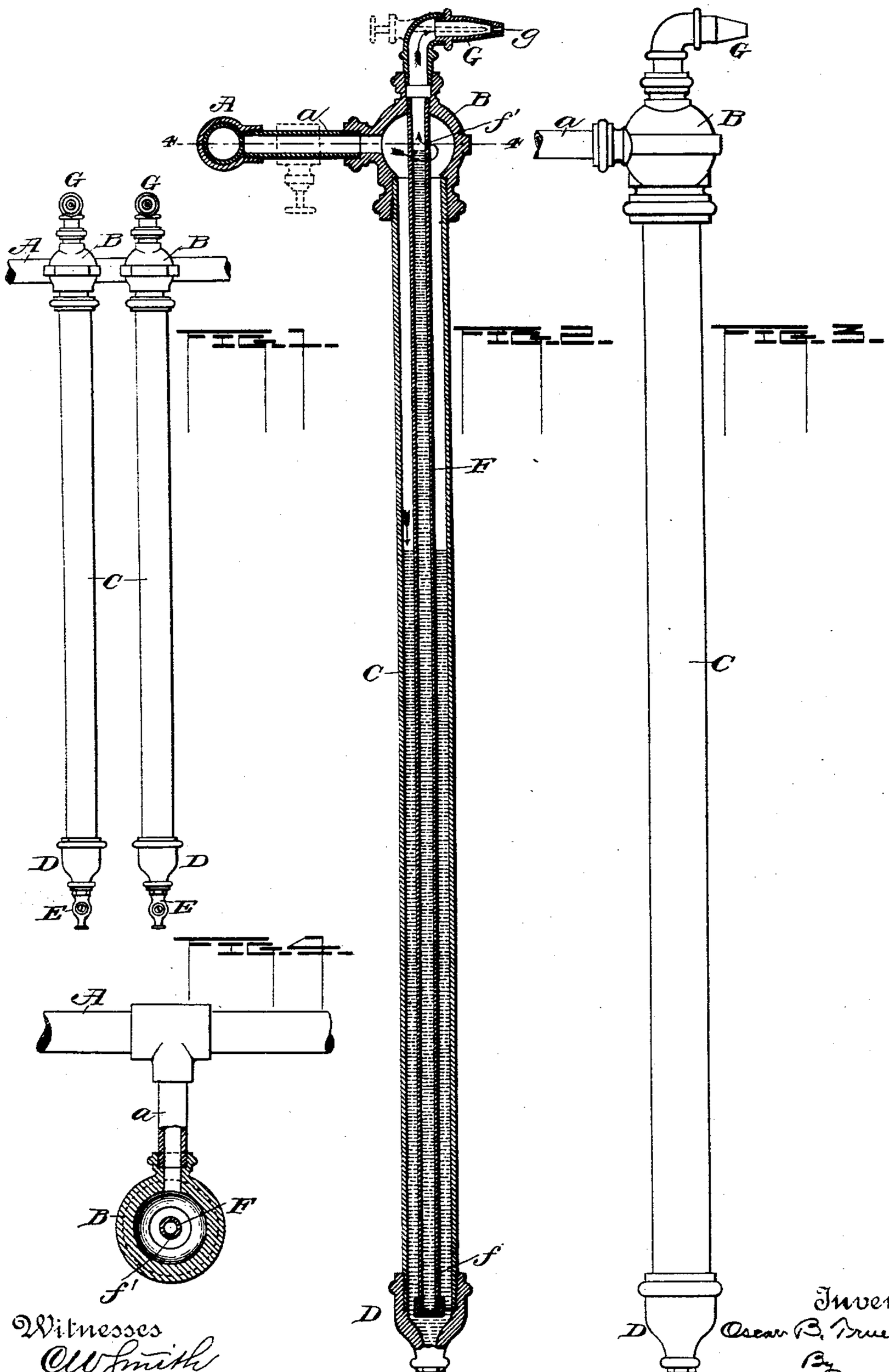
(No Model.)

O. B. TRUESDELL.

VAPORIZER FOR MOISTENING AIR.

No. 541,190. Patented June 18, 1895.



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VAPORIZER FOR MOISTENING AIR.

SPECIFICATION forming part of Letters Patent No. 541,190, dated June 18, 1895.

Application filed March 9, 1895. Serial No. 541,132. (No model.)

To all whom it may concern:

Be it known that I, OSCAR B. TRUESDELL, a citizen of the United States, residing at Sturbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Vaporizers for Moistening Air; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to mill appliances, and it consists in an improved device for moistening the air in cotton mills and other places where a damp atmosphere is desirable or necessary. It is customary to use steam for this purpose, allowing it to escape directly into the room; but this is objectionable in some respects, because the steam condenses on the walls and machinery and other cool objects. The aim of my invention is to obviate this objection, while retaining steam as the moistening agent, on account of the ease with which it can be carried to any part of the mill from the boiler room, without the use of expensive circulating apparatus.

In my atomizer or vaporizer, the steam is allowed to condense in a receptacle, and the water of condensation is then blown out through a pipe and discharge nozzle in a fine spray by means of a small steam jet, admitted to the pipe through a restricted opening.

In the accompanying drawings, Figure 1 is a view of two of my vaporizers connected with a header. Fig. 2 is a vertical section of one of the vaporizers on an enlarged scale. Fig. 3 is an elevation of the same; and Fig. 4 is a cross-section on line 4 4, Fig. 2.

Steam is conveyed through the mill by means of pipes or headers A, to which the vaporizers are connected at suitable points by short branch pipes *a*. Each vaporizer consists of a hollow head B having an inlet with which the pipe *a* connects and from which depends an outer receptacle or tube C, preferably some two feet long, its lower end being closed by a cap D provided with a drip cock E. Inside the tube C is an inner receptacle or pipe F of smaller diameter, closed at the lower end and rising through the head B to connect by a tight joint at its upper end with a nozzle G, projecting above the head B and having a small jet orifice *g*. In the lower part of the pipe F is one or more small holes *f*, while near the upper end of the pipe inside the head B is a small hole *f'*.

The operation of the device is as follows: The steam condenses in the annular space between the tube C and the pipe F, the water of condensation collecting at the bottom and flowing through the hole *f* into the pipe F. As the tube and pipe fill up, the pressure of the steam in the tube forces the water up in the pipe F, as indicated by the shaded areas in Fig. 2, until the top of the inner column reaches the hole *f'*. This hole is too small to permit the steam to enter fast enough to create a back pressure on the inner column of water, but as it flows in it picks up the water and blows it in a fine spray out of the nozzle G. The steam is condensed by the water, as in an injector, so that nothing but watery vapor issues from the nozzle. This arrangement moistens the air with a comparatively cool spray of water instead of by a hot steam jet. The operation of all the vaporizers is practically the same, since they are not affected by relative proximity to or remoteness from the boiler room. If desired, valves may be used to regulate the supply of steam and the quantity of spray ejected, as indicated by the dotted lines in Fig. 2.

When the vaporizer is not in use, the water may be drawn off through the drip cock E.

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

1. A vaporizer for moistening air by steam, consisting of a tubular receptacle for the water of condensation, a pipe inclosed in and opening into said receptacle and provided with a discharge nozzle, and a steam inlet in said pipe at or near the normal level of the water in the inclosed pipe, substantially as described.

2. A vaporizer for moistening air by steam, consisting of two communicating receptacles for holding the water of condensation, one being a tube connected with the steam supply, and the other a pipe having a discharge nozzle, the latter having also a restricted open-

ing admitting steam at the level of the water therein, substantially as described.

3. A vaporizer for moistening air by steam, consisting of a tube forming a receptacle for water of condensation, a pipe inside the tube having a water inlet in the lower part and a steam inlet in the upper part thereof, and a nozzle communicating with the upper end of said inner pipe, substantially as described.

4. A vaporizer for moistening air by steam, consisting of a head provided with a steam inlet, a tube depending from said head, a pipe of small diameter placed inside of said tube, and rising through said head, the pipe being provided with a hole in its lower part and a small steam inlet in its upper part, and a nozzle connected with the upper end of said pipe, substantially as described.

5. The combination with the header A, of a vaporizer consisting of the head B, the depending tube C provided with the cap D and drip cock E, the inner pipe F having the holes *f f'*, and the nozzle G connected with the upper end of the pipe F, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

OSCAR B. TRUESDELL.

Witnesses:

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