J. JAMISON.

Steam-Trap for Drying-Cylinders.

No. 220,243. Patented Oct. 7, 1879.

Fig. 1.

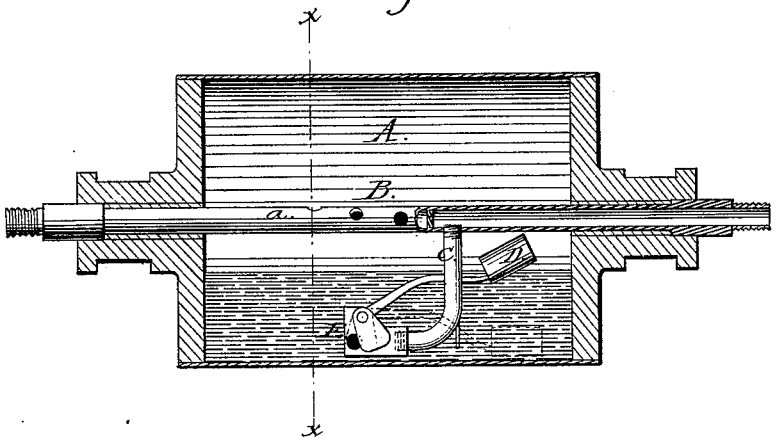
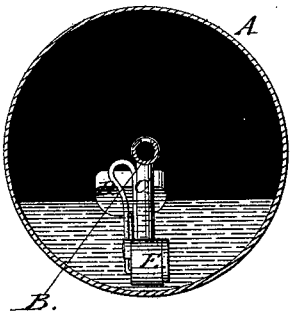


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN JAMISON, OF TURNER'S FALLS, MASSACHUSETTS.

IMPROVEMENT IN STEAM-TRAPS FOR DRYING-CYLINDERS.

Specification forming part of Letters Patent No. **220,243**, dated October 7, 1879; application filed June 30, 1879.

To all whom it may concern:

Be it known that I, JOHN JAMISON, of Turner's Falls, in the county of Franklin and Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam and Water Traps for Drying-Cylinders, of which the following is a true and full specification, with the accompanying drawings.

This invention relates to that class of steam and water traps used in forcing or conducting the water of condensation formed in drying-cylinders, which are heated by steam and largely used in mills for the manufacture of paper, woolen and cotton goods, and in calico-printing.

Heretofore it has been common to force the steam for heating directly into the drying-cylinders through the journals, into the ends of which the steam-pipe is packed, the journal, in effect, being made only a continuation of the steam-pipe, but always with a leakage and escape of steam, from the inevitable wear of the end of the stationary steam-pipe being packed into the moving grinding-journal, requiring constant repacking. The condensed water, which accumulates rapidly in these cylinders, has usually been conducted out by means of a pipe attached to the inside of the cylinder-head, extending across its diameter, and curved near the bottom, so as to take up at each revolution a quantity of water which was blown out or discharged through an opening in the cylinder-head as at each revolution of the cylinder it was lifted and turned over. As this water was blown out a considerable amount of steam escaped with it, and continued to do so till the end of the discharge-pipe, in revolving, was again filled with water. The percentage of steam thus escaping and wasted is large enough to very materially affect the heat in the cylinder, and in a battery of four, six, or more draws very largely on the supply of steam, and adds a heavy item of expense.

Other devices somewhat different are sometimes used, but are liable to the same objection, besides the minor one of having a large space at the ends of the driers constantly pervaded with spent steam and wet with hot water.

Figure 1 is a longitudinal section through the drying-cylinder; Fig. 2, a transverse section of the same.

Similar reference-letters denote like parts.

A is the drying-cylinder. B is the steam-pipe passing through the journals of the cylinder and the cylinder longitudinally, having in it perforations *a a a*, for the discharge of the steam to heat the drier, of the same capacity as the pipe itself. In this pipe, midway between the cylinder-heads, is a partition, on one side of which steam enters the cylinder, and on the other the water condensed is discharged. These perforations are in the half of the pipe next the entrance of the steam. On the other side of this partition, in the steam-pipe B, is fastened a pipe, C, which passes almost to the bottom of the cylinder, when it turns and terminates with a valve or gate, E. This gate or valve E has an opening in its side, which is closed by a gate balanced on a pin. On the upper end of this sliding gate is fastened a rod projecting forward some inches. To the end of this rod is secured a float, D, which, rising on the surface as the water increases in the bottom of the cylinder, pushes back the rod attached to it and to the sliding gate, whereby the gate is opened and the water of condensation rushes into the valve-opening, and, by the pressure of the steam, is forced up into the closed half of the steam-pipe and out through it, where, by a connection on its end, it is conveyed into a tank, or back to the boiler, without the loss of heat or the escape of steam, the float falling just as fast as the water is lowered by the discharge, and the gate is closed at the same rate.

It will be seen that in this way, as the water is discharged as the gate is opened, and as that is automatically controlled by the amount of water acting on the float, nothing but water can pass out, and not a particle of steam can escape or be wasted.

The steam-pipe passing through the journals of the cylinder is made tight at both ends by a sleeve of brass or other metal, that may be readily renewed, fitting closely into the journal-bearings with ordinary steam-packing, preventing all loss of steam. This of itself is a great advantage on the ordinary way ol driving the steam directly through the journal

into the cylinder, as it is impossible with the constant wear of the journal against the end of the steam-pipe to make the fitting continue secure and steam-tight.

With my device the water is kept constantly discharging without the loss of a particle of steam either through the discharge-pipe or by leakage at the journals.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with a drying-cylinder, the pipe B, divided by a central diaphragm or partition, on one side of which are perforations to discharge the steam into the said cylinder, and on the other a pipe to discharge the water condensed, as specified.

2. The pipe B, provided with a central diaphragm, on opposite sides of which are, respectively, perforations and a discharge-pipe, said pipe being packed against its bearings, as described, in combination with cylinder A, as and for the purpose set forth.

3. A valve or gate connected with a discharge-pipe of a steam drying-cylinder, and adapted, as described, to eject through one end of said pipe the water condensed from the steam received from the opposite side of a central diaphragm within such pipe, substantially as and for the purpose specified.

4. In combination with cylinder A, the pipe B, discharge-pipe C, and valve E, operated by float D through the condensed water at the bottom of said cylinder, as and for the purpose set forth.

JOHN JAMISON.

In presence of—
JAMES S. GRINNELL,
WM. H. ALLEN.