

A. A. HUNTING.
DRYING CAN OR CYLINDER.

(Application filed Aug. 11, 1900.)

(No Model.)

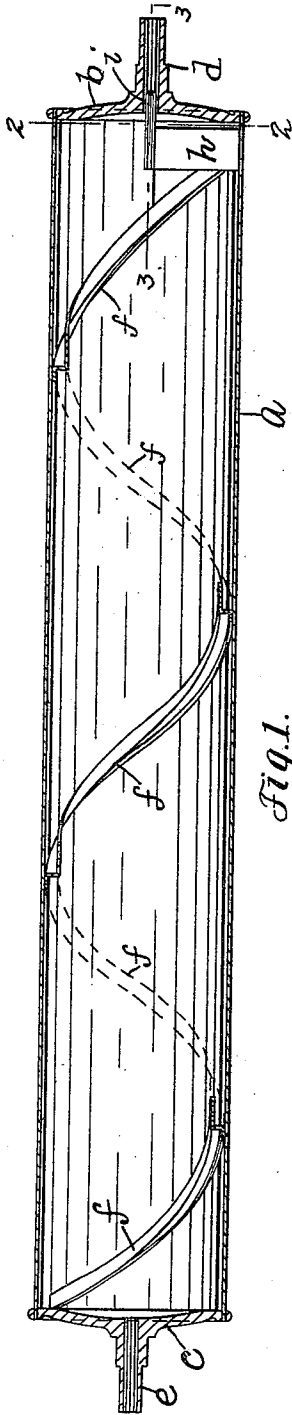


Fig. 1.

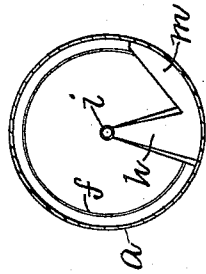


Fig. 2.

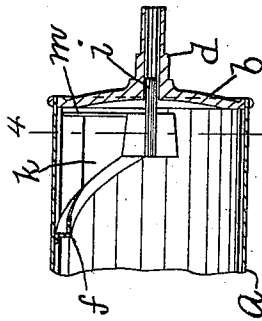


Fig. 3.

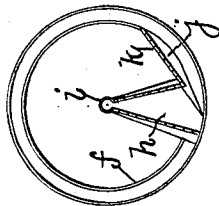


Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

ALFRED A. HUNTING, OF SALEM, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO GEORGE S. HOOKER, OF WATERTOWN, NEW YORK.

DRYING CAN OR CYLINDER.

SPECIFICATION forming part of Letters Patent No. 666,477, dated January 22, 1901.

Application filed August 11, 1900. Serial No. 26,547. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. HUNTING, a citizen of the United States, residing in Salem, county of Essex, and State of Massachusetts, have invented an Improvement in Drying Cans or Cylinders, 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 drying cylinders or cans such as now commonly employed in paper, textile, and other mills, and has for its object to provide the said cylinders or cans with means whereby the water of condensation may be continuously removed substantially as fast as formed while the can is in operation. For this purpose the can or cylinder is provided on its interior with an ejector, preferably made in the form of a spirally-arranged open gutter or conductor, which is attached to the interior circumference of the can and for the best results communicates with a reservoir or pocket provided with a suitable discharge or outlet pipe, which may project into a hollow trunnion of the can. The spiral gutter or conductor may extend from the center toward the opposite ends of the can; but I prefer to have the conductor or gutter start at one end of the can and make one or more turns toward the opposite or discharge end of said can. I may prefer also to make the spiral gutter or conductor of increasing size from what may be termed its "water-inlet" end toward its discharge end to thereby take care of the increasing volume of water as the latter is picked up and conveyed toward the discharge end of the can or cylinder. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a longitudinal section of a drying can or cylinder embodying this invention; Fig. 2, a cross-section on the line 2 2, Fig. 1; Fig. 3, a sectional detail on the line 3 3, Fig. 1; and Fig. 4, a cross-section on the line 4 4, Fig. 3.

The drying cylinder or can herein shown as embodying this invention comprises the cylindrical body *a* and heads *b c*, provided with the hollow trunnions *d e*. The cylinder or can is provided within it with a water-ejector,

preferably made as herein shown and comprising an open gutter or conductor *f*, which may be made of angle metal soldered or otherwise secured to the inner circumference of the can and which may be arranged, as herein shown, in the form of a spiral which extends from near one head, as *c*, to near the other head *b*. The gutter or conductor may be given one or more turns of the spiral, as shown in Fig. 1, and for the best results the said gutter may be made of gradually-increasing size from the inlet end to its discharge end and preferably communicates at its discharge end with a reservoir or pocket *h*, (see Fig. 4,) which may be triangular in shape and extend radially toward the longitudinal axis of the cylinder, where it communicates with a discharge-pipe *i*, extended into the hollow trunnion *d*. The radial pocket or reservoir *h* may, and preferably will, be provided with a lateral extension *j*, formed by the top plate *k*, gutter *f*, and side wall *m*, and which extension forms an enlargement of the reservoir to take care of a large volume of water and prevent its being returned into the cylinder or can during the rotation of the can. The spiral gutter is preferably secured to the can or cylinder substantially at a pitch of forty-five degrees.

In operation the steam admitted into the drying can or cylinder is condensed by the cool or wet material passing about the outside of the can, and the water of condensation is picked up by the spiral gutter as the can revolves and is retained therein and carried toward the discharge end, where it enters the reservoir or pocket and is ejected out through the discharge-pipe *i*. The water of condensation is thus ejected from the drying cylinder or can substantially as fast as formed, and as a result condensation of the steam is diminished, and the formation of air films or bubbles next to the metal cylindrical body of the can is avoided or at least reduced to a minimum, and the loss of heat, due to the heat passing to the water of condensation and out through the discharge-pipe, is reduced to a minimum, while a maximum percentage of the heat passes out through the metal body of the cylinder to the material on the outside thereof.

The can or cylinder represented in Fig. 1 may be supposed to be of maximum length, approximating one hundred and fifty-six inches, and with a can of such length the gutter will preferably be given one or more turns of the spiral. In some mills cans or cylinders of materially less length but of increased diameter are employed, such cans being frequently about fifty inches long and from forty-eight to ninety-six inches in diameter, and with this latter class of cans or cylinders the gutter may not be given a complete turn of the spiral owing to the size of the can or cylinder.

It is to be observed that the gutter is provided with a wall which is substantially parallel with the inner circumference of the can or cylinder and forms an open gutter which extends toward the discharge end of the cylinder, so that as the cylinder is rotated the water of condensation is picked up by the gutter, which retains the water in it and carries the same toward the discharge end of the cylinder or can.

I claim—

1. The combination with a drying can or cylinder, of an ejector for water of condensation spirally arranged within said can or cylinder in the direction of the length of the same and provided with a wall cooperating with the inner circumference of the cylinder to form opposing sides of a gutter or channel, substantially as described.

2. The combination with a drying can or cylinder, of an ejector for water of condensation spirally arranged within said can or cylinder in the direction of the length of the same and provided with a wall cooperating with the inner circumference of the cylinder to form opposing sides of a gutter or channel, and a reservoir within the can communicating with the outside thereof and into which the water of condensation is carried by said ejector, substantially as described.

3. The combination with a drying can or cylinder, of a spirally-arranged gutter or conductor attached to the inner side of the can and open toward the discharge end of the cylinder or can, and a discharge-pipe with which said gutter communicates, substantially as described.

4. The combination with a drying can or cylinder provided with a hollow trunnion, of a discharge-pipe communicating with said trunnion, and a spirally-arranged open gutter or conductor on the inside of the can or cylinder and communicating with said discharge-pipe, substantially as described.

5. The combination with a drying can or

cylinder, of a spirally-arranged gutter within the said can or cylinder open toward the discharge end of said cylinder, a radially-extended reservoir with which said gutter communicates, and a discharge-pipe extended from said reservoir to the outside of said can, substantially as described.

6. The combination with a drying can or cylinder, of a spirally-arranged open gutter within the said can or cylinder, a radially-extended reservoir provided with a laterally-extended chamber and with which said gutter communicates, and a discharge-pipe extended from said reservoir to the outside of said can, substantially as described.

7. The combination with a drying can or cylinder, of a spirally-arranged open gutter or conductor extended longitudinally of the said can or cylinder on the inner side of the same, and a reservoir communicating with the outside of the can and with which the said gutter communicates, substantially as described.

8. The combination with a drying can or cylinder, of a spirally-arranged open gutter within the can and of increasing capacity toward its discharge end, substantially as described.

9. The combination with a drying can or cylinder, of a spirally-arranged gutter attached to the inner circumference of the can and communicating with the outside of the can and open substantially toward the discharge end of the can or cylinder, substantially as and for the purpose specified.

10. The combination with a drying can or cylinder, of an ejector for water of condensation within the cylinder and extended longitudinally thereof at an angle to the longitudinal axis of the said cylinder and provided with a wall cooperating with the inner circumference of the cylinder to form opposing sides of an open gutter, substantially as described.

11. The combination with a drying can or cylinder provided with a steam-inlet and with an outlet for water of condensation, of a spirally-arranged gutter within said can or cylinder and open substantially toward the discharge end of the can or cylinder and communicating with said water-outlet, substantially as described.

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

ALFRED A. HUNTING.

Witnesses:

JAS. H. CHURCHILL,
GEORGE A. RICHARDS.