G. E. MILLER.

FLUID STUFFING BOX.

APPLICATION FILED MAY 23, 1912.

1,073,273. Patented Sept. 16, 1913.

Fig. 1.

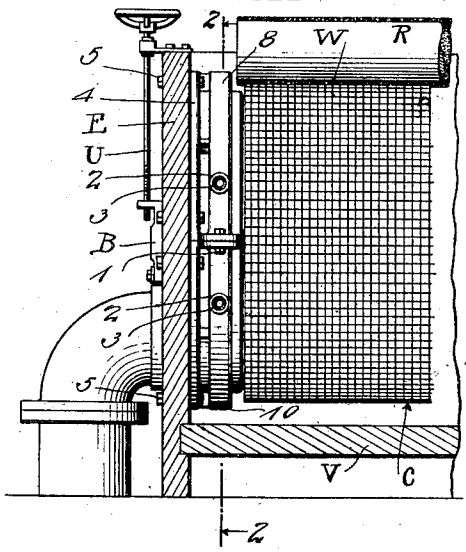


Fig. 2.

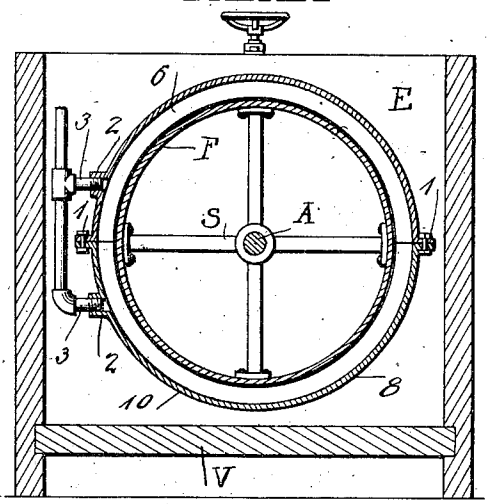
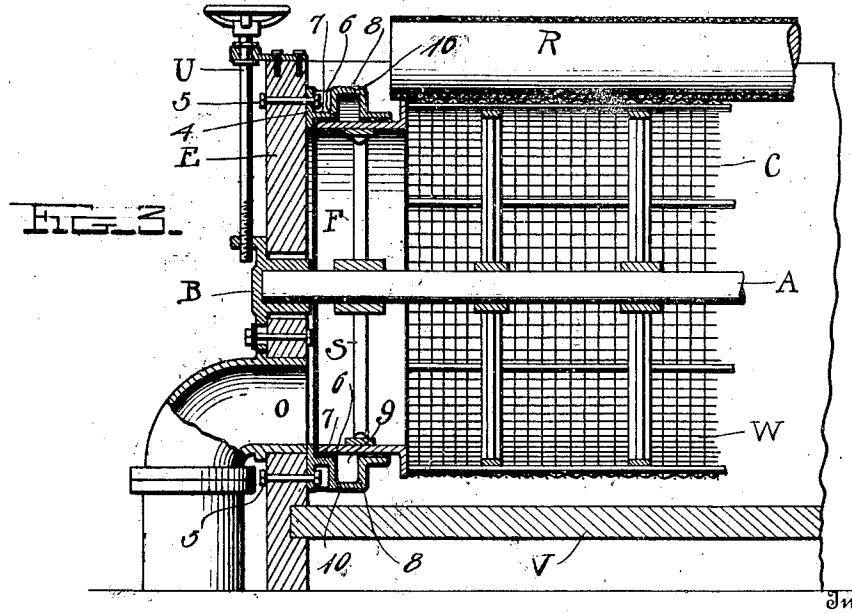


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FLUID STUFFING-BOX.

1,073,273. Specification of Letters Patent. Patented Sept. 16, 1913.

Application filed May 23, 1912. Serial No. 699,225.

To all whom it may concern:

Be it known that I, GEORGE E. MILLER, a citizen of the United States, residing at Madison, in the county of Somerset and State of Maine, have invented certain new and useful Improvements in Fluid Stuffing-Boxes; 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.

This invention relates to paper making, and more especially to cylinder machines; and the object of the same is to produce an improved stuffing box made in sectors which when assembled will inclose the extremity of the cylinder so as to prevent leakage of water and waste of the fibers and yet to avoid friction on and wear of the cylinder itself. This and other objects are accomplished by constructing the stuffing box in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a longitudinal section through one end of the vat, with the cylinder, couch roll, and stuffing box in elevation; Fig. 2 is a cross section on the line 2—2 of Fig. 1; Fig. 3 is an enlarged longitudinal section through all parts assembled.

In the drawings I have illustrated my invention in connection with the cylinder of a paper making machine, although I do not desire to be limited to this use of the same. Such a machine as ordinarily constructed includes a water vat V having upright ends E through one or both of which are outlets O, and both of which carry bearings B which are rendered vertically adjustable by any suitable means such as upright screws U and bolts or screws for holding the bearing adjustably. In said bearings is journaled the axle A of a cylinder C having an open-work body surrounded by wire cloth W and reduced flanges F at its extremities each by preference mounted on a spider S which is secured to the axle A as shown; and the couch roll R rests upon the cylinder C and rotates it in the usual manner. As is well known to those familiar with the art, the vat contains water carrying fibers in solution, and when the outlets are opened and water drawn off from the interior of the cylinder there is a certain current below the water level in the vat tending to carry the water and fibers toward and into the cylinder C, with the result that the fibers adhere to the wire cloth W thereon and are carried around to the couch roll or felt, by which they are removed from the cylinder and eventually formed into paper sheets in a manner not necessary to amplify. Various attempts have hitherto been made to prevent the escape of the water and fibers in the vat around the ends of the cylinder and out the outlet O without its being passed through the wire cloth W, and yet such stuffing boxes as have been made and employed in this connection either set up so much wear on the exterior of the cylinder that the wire cloth thereon is soon torn to pieces, or the braking action on the cylinder is so great that the couch roll will not rotate it with ease.

No novelty is claimed for the parts thus far described, but I have set forth below the details of a fluid stuffing box which I prefer to use in this connection although, as above suggested, it might be used elsewhere with equally good results.

Coming now more particularly to the details of the present invention, the stuffing box which I employ is by preference made of brass and in a plurality of sectors connected end to end by ears at their extremities through which pass bolts 1 as best seen in Fig. 2, each sector by preference having a boss 2 which is tapped to receive a pipe 3 through which fluid such as water may be fed into the same under pressure a little greater than the pressure of the water within the vat V. The advantage of making this stuffing box in sectors (of which two only are shown in Fig. 2) is that its sectors can be put in place within the ends E of the vats V and around the flange F of the cylinder C, without removing the axle A of the latter from its bearings B. Assuming, however, that the sectors when secured end to end make up a complete ring, the body of the stuffing box is of the cross section best seen in Fig. 3 and comprises a collar 4 bolted at several points as at 5 to the end E of the vat V and preferably having an internal shoulder 6 fitting over the extremity of the flange F on the cylinder C; a flat body 7 closely surrounding but just out of contact with said flange F, and therefore producing no wear when the cylinder is rotated; and a channeled member 8, preferably formed

integral with the body 7 and disposed between the edges thereof with its mouth 9 opening toward the flange F and its base 10 pierced at suitable points with openings communicating through the bosses 2 with the pipes 3 by means of which the fluid employed is fed to the interior of this channel. Preferably such fluid is water, although whatever fluid is employed should be under a little greater pressure than that in the vat. The cylinder is rotated by the means above described, or by any suitable means, and if the couch roll R rests upon the cylinder C its bearings B may need adjustment from time to time when they become worn.

In the use of this improved stuffing box, the parts are assembled by inserting the lowermost sector beneath the flange F and placing the uppermost sector above it, and connecting their ears by the bolts 1, and then connecting the flange 4 by the bolts 5 with the end E of the vat. All this can be done without removing the cylinder from the vat, although doubtless it would be necessary to stop its rotation and withdraw the water from such shaft. When the parts finally assume the position shown in the drawings, the fluid is turned on through the pipe or pipes 3 so that it flows into the annular space within the channeled member or members 8, out of which it must and does leak slowly between the body 7 thereof and the exterior of the rotating flange F of the cylinder. But as the pressure of the fluid in this stuffing box is greater than the pressure of the liquid within the vat V, it will be impossible for any of said liquid to flow in a contrary direction, and if the fluid employed in the stuffing box is water the overflow thereof will mingle with the water and fibers in the vat without injury to the product.

Especial attention is directed to the fact that the parts of this stuffing box need not contact at any point with the flange F or the cylinder C, especially if the bearing B is properly adjusted, and if there is no contact there can be no friction and no wear, and the leakage referred to has been shown to be without objection.

What is claimed as new is:—

In a paper making machine, the combination with a cylinder having a concentric flange extending beyond its end and in communication therewith, of a vertical support located adjacent to the open flanged end of the cylinder, a bearing movably located within an opening formed in said support and adapted to be adjusted vertically, an axle passing through the cylinder with its end projecting beyond the flanged portion thereof and revolubly received by said bearing, an outlet passing through the support and communicating with the cylinder, a stuffing box surrounding the flanged end of the cylinder and including a body made of sections bolted together, said box being larger in circumference than the flanged portion of the cylinder, and means secured to the support for adjusting the bearing, whereby the flanged portion of the cylinder is accurately adjusted in respect to the stuffing box.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE ERNEST MILLER.

Witnesses:

MALON BOYINGTON,

AMEDEO CHRISTOPHER.