April 16, 1929. H. L. KUTTER 1,709,026

PAPER MAKING MACHINERY

Filed May 1, 1925

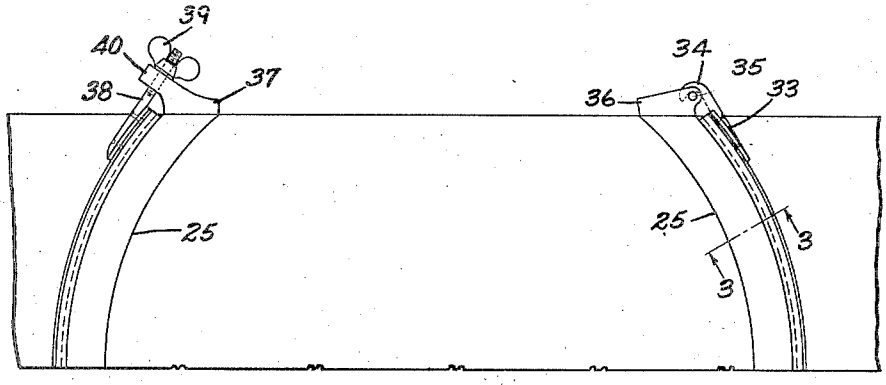


Fig. 2

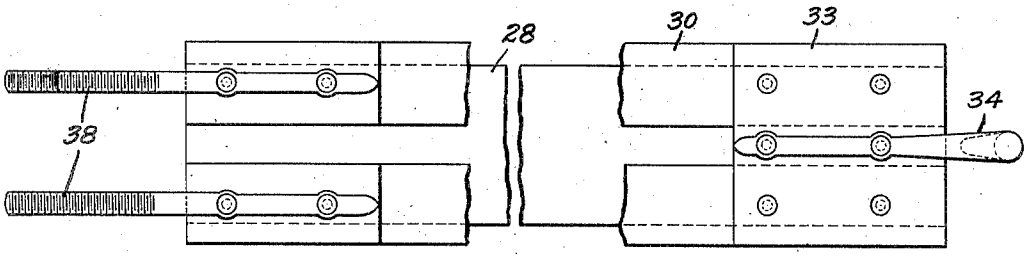


Fig. 4

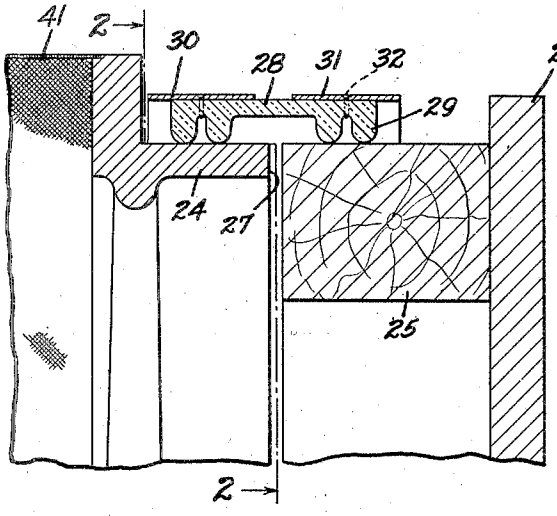


Fig. 3

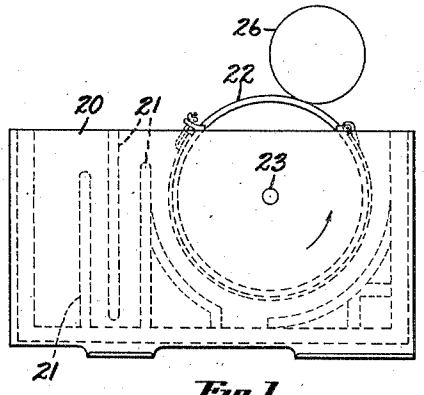


Fig. 1

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UNITED STATES PATENT OFFICE.

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PAPER-MAKING MACHINERY.

Application filed May 1, 1925. Serial No. 27,222.

The present invention relates to apparatus employed in the manufacture of paper, and relates particularly to a machine for handling wood pulp, paper stock or the like employed in the manufacture of paper.

One of the principal objects of the present invention is to provide means for preventing the loss of wood pulp between the relatively movable parts of such a machine.

Another object of the invention is to provide in a machine having a cylinder mold, means for preventing the escape of wood pulp between the end of the cylinder mold and the adjacent stationary part of the machine.

Other and further objects of the invention will be apparent from the following description when taken in connection with the accompanying drawings in which:

Fig. 1 is a somewhat diagrammatic elevational view of a vat having a cylinder mold mounted therein;

Fig. 2 is an enlarged view in elevation of a portion of the vat, the view being taken generally on the line 2—2 of Fig. 3;

Fig. 3 is an enlarged cross sectional view on the line 3—3 of Fig. 2; and

Fig. 4 is a development of the strap means embodied in the present invention.

Referring particularly to Fig. 1 of the drawings 20 designates a vat of the type employed in the manufacture of paper from wood pulp, paper stock or the like. Such a vat may be provided with transverse vertical baffle plates 21 arranged in staggered relation, over which and under which the wood pulp is adapted to flow towards a cylinder mold designated generally by the reference character 22. The cylinder mold herein illustrated is of hollow cylindrical construction and is disposed transversely of the vat between the front and rear walls thereof and is mounted to rotate about an axis designated at 23. The cylinder mold comprises a perforated or screen surface which may be suitably mounted and, as herein illustrated, is provided at each end with a circular cylindrical end portion 24. In extension of the cylinder mold and adjacent the circular cylindrical portion 24 is a collar of wood or other suitable material 25 which may be secured to the side wall of the vat 20 in any suitable manner, the collar preferably having a circular cylindrical outer surface corresponding to the cylindrical surface of the part 24 of the cylinder mold.

The interior of the cylinder mold is connected through suitable means to a pump (not shown) which withdraws the water from inside the cylinder, the pulp laden water outside the cylinder tending to flow through the screen to take its place. As it does so the solid portions of wood pulp are caused to deposit upon the surface of the cylinder mold to form a layer of wood pulp thereon. The layer of wood pulp deposited upon the surface of the cylinder mold is held to the surface of the cylinder mold by the vacuum or reduced pressure upon the interior thereof and is carried upwardly to a point above the vat where the layer of wood pulp may be removed by suitable well known means including a roller 26, it being understood that the wood pulp is delivered up by the cylinder mold 22 in a continuous or unbroken sheet which may be subsequently dried, pressed or otherwise treated to form finished paper.

In machines as heretofore constructed a large amount of wood pulp has been lost through leakage, the wood pulp mixture being drawn through the gap or space 27 between the cylinder mold and the collar 25 by reason of the suction inside the cylinder mold. The present invention provides means for preventing loss of wood pulp through such leakage such means consisting of a deckle packing or sealing material 28 which overlies or bridges the gap between the portion 24 of the cylinder mold and the collar 25. This deckle may consist of any suitable elastic or flexible material adapted to conform to the surfaces of the parts 24 and 25 and to seal the gap irrespective of variations and relative shifting movements of the parts such, for example, as may be occasioned by the misalignment of the parts 24 and 25, inaccuracies in manufacture or mounting thereof, or warping of the parts after the machine is in use. The deckle 28 is herein illustrated as comprising a central portion which is normally out of contact with the cylindrical surfaces of the parts 24 and 25, and thickened side or rib portions 29 extending therearound and bearing against the parts 24 and 25. While the deckle may be made of any suitable flexible material it has been found that very good results are obtainable by the use of rubber, and especially with a particular grade or composition of rubber which has been found to present a very smooth surface in the presence of the water to which it is

exposed, thereby introducing a minimum of friction between the deckle and the part 24 which rotates thereunder.

To adjust or equalize the sealing pressure of the packing upon the parts 24 and 25 there is provided an adjustable strap means consisting preferably of the straps 30 and 31 one of which overlies that part of the deckle in engagement with the cylinder mold 24 and the other of which overlies the portion of the deckle in engagement with the collar 25. The straps 30 and 31 extend around the deckle 28 and may be fastened thereto at suitable intervals by rivets or other suitable fastening means 32. The deckle 28 and the straps 30 and 31 are secured at one end to a fastening plate 33 having a hook portion 34 adapted to hook over a pin 35 carried by bracket 36, which bracket may be secured to any convenient part of the vat as for example to the collar 25 as best shown in Fig. 2. The other ends of these members 28, 30, and 31 are adjustably secured to a bracket 37 positioned and secured similarly to the bracket 36. Each of the straps 30 and 31 is provided at its other end with a screw threaded portion 38 adapted to carry a wing nut 39 cooperating with lug 40 formed on the bracket 37.

It will be noted upon reference to Figs. 1 and 2 that the means for sealing the space between the cylinder mold and the collar 25 comprises generally a strap which seals that portion of the gap 27 which is below the normal level of the wood pulp in the vat and which is secured at its ends to some part of the vat above the level of the wood pulp mixture. In this manner the ends of the sealing strap means are readily accessible to permit either the adjustment of the strap or its removal. It is to be observed that each of the adjusting straps 30 and 31 may be adjusted separately by turning up the winged nuts 39 whereby any desired sealing pressure may be established between the deckle strap and the portion 24 of the cylinder mold or between the deckle strap and the collar 25. While the adjusting strap means has been herein illustrated as consisting of a pair of adjusting straps, it is to be understood that the invention is not limited to this particular construction but that the invention contemplates any suitable means for urging the deckle strap into proper sealing relation with reference to the parts 24 and 25, and that the deckle strap might be of such construction and strength as to itself provide the desired sealing pressure thereby dispensing with the pressure strap or straps as additional or separate elements.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a collar adjacent the end of the cylinder, means for effectively sealing the cylinder and collar against the passage of wood pulp therebetween, said means comprising a sealing material bearing against said cylinder and collar, and separate straps opposite said cylinder and said collar respectively for holding said sealing material in effective sealing relation with said cylinder and said collar.

2. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a collar adjacent the end of the cylinder, means for effectively sealing the cylinder and collar against the passage of wood pulp therebetween, said means comprising a sealing material bearing against said cylinder and collar, separate straps opposite said cylinder and said collar respectively for holding said sealing material in effective sealing relation with said cylinder and said collar, and means for adjusting said straps independently of one another.

3. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a body member including a collar adjacent the end of the cylinder and in extension thereof, means for effectively sealing the cylinder and collar against the passage of wood pulp therebetween, said means comprising a sealing material overlying and bearing against said cylinder and collar, strap means for holding said sealing material in effective sealing relation with said cylinder and collar, hook means for detachably connecting one end of said strap means to said body, and means for adjustably connecting the other end of said strap means to said body.

4. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation and having an extended end portion of cylindrical form, a body member having a collar of cylindrical form in extension of the cylinder and corresponding in diameter with the end portion thereof, a deckle strap of flexible sealing material bridging the gap between the collar and the cylinder and overlying said collar and the end portion of the cylinder, and adjustable strap means overlying the deckle strap for holding said deckle strap in effective sealing relation with said cylinder and said collar.

5. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation and having an extended end portion of cylindrical form, a body member having a collar of cylindrical form in extension of the cylinder and corresponding in diameter

with the end portion thereof, a deckle strap of flexible sealing material bridging the gap between the collar and the cylinder and overlying said collar and the end portion of the cylinder, and strap means for holding said sealing material in effective sealing relation with said cylinder and said collar, said strap means including a pair of straps in engagement respectively with the portions of the deckle strap overlying the cylinder and the collar, such straps being adjustable to vary the sealing pressure between the deckle strap and the cylinder and collar respectively.

6. In an apparatus for treating wood pulp, paper stock or the like, a vat, a horizontally disposed cylinder mold mounted for rotation therein with its upper portion extending above the normal level of the wood pulp in said vat, a collar adjacent the end of the cylinder mold, and strap means for effectively sealing the gap between the end of said cylinder mold and said collar against the passage of wood pulp, said strap means being secured at its ends to said vat above the normal level of the wood pulp therein, and one of said securing means having provisions for independently adjusting the sealing pressure of the sealing means against said cylinder mold and said collar respectively.

7. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a collar adjacent the end of the cylinder, means for effectively sealing the cylinder and collar against the passage of wood pulp therebetween, said means comprising a sealing material having a rib bearing against said cylinder and a rib bearing against said collar, and strap means for holding said sealing material in effective sealing relation with said cylinder and collar.

8. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a collar adjacent the end of the cylinder, means for effectively sealing the cylinder and collar against the passage of wood pulp therebetween, said means comprising a sealing material bearing against the periphery of said cylinder and the periphery of said collar, and means for independently adjusting the sealing pressure of said sealing material against said cylinder and said collar respectively.

9. In an apparatus for treating wood pulp, paper stock or the like, a cylinder mounted for rotation about a longitudinal axis, a body member having a collar of cylindrical form in extension of said cylinder, and strap means for sealing the cylinder and collar against the passage of wood pulp therebetween, said strap means overlying and bearing against the outer cylindrical surfaces of the cylinder and collar respectively and having provisions for independently adjusting the sealing pressure against said cylinder and said collar respectively.

In testimony whereof I hereto affix my signature.

HERMAN L. KUTTER.