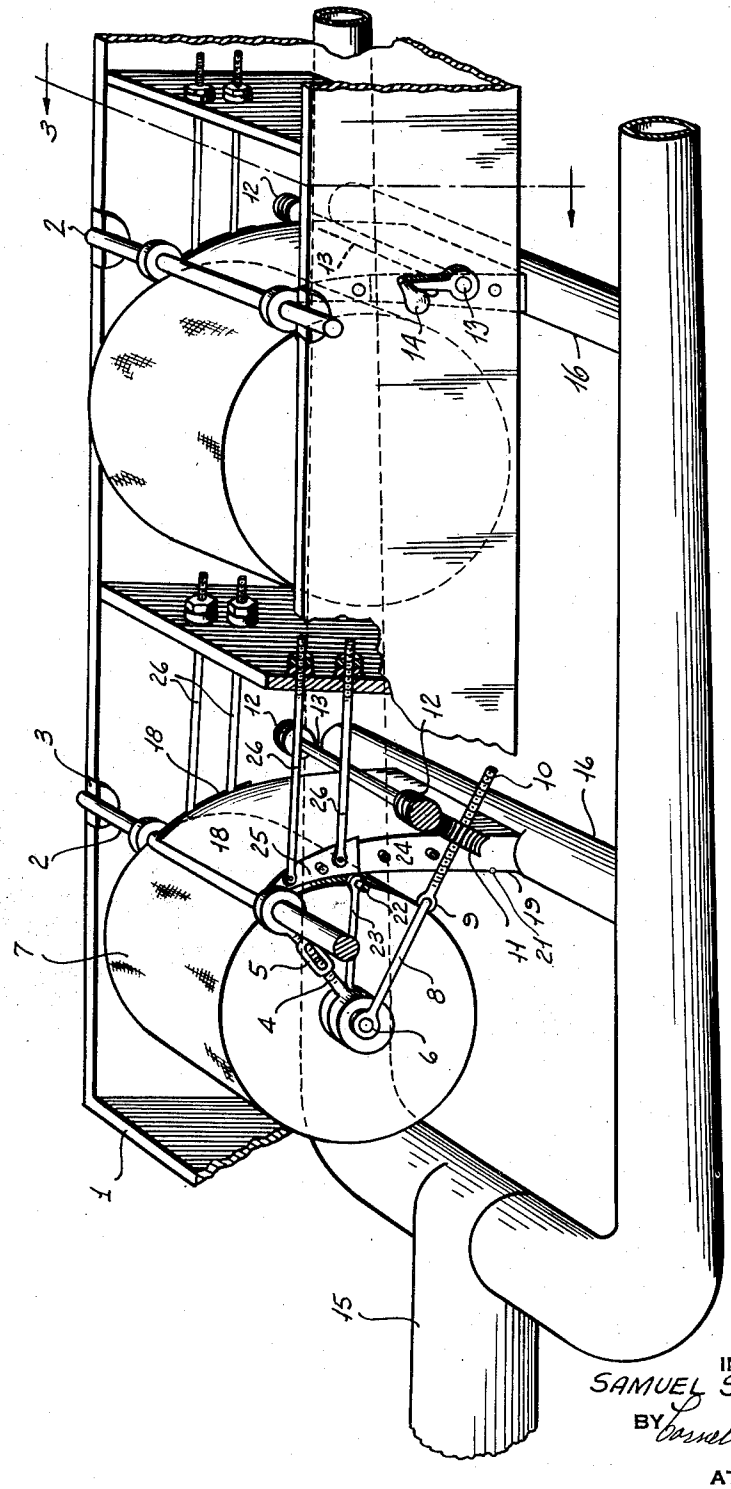
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PAPERMAKING MACHINE

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Fig. 1



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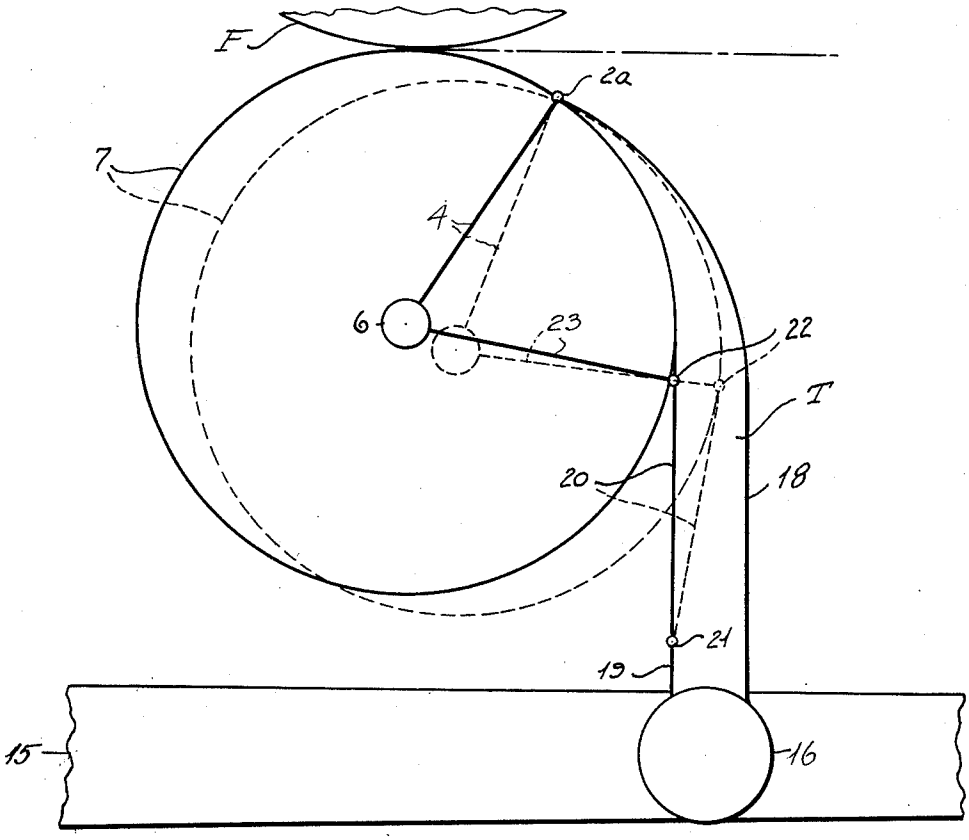


Fig 2

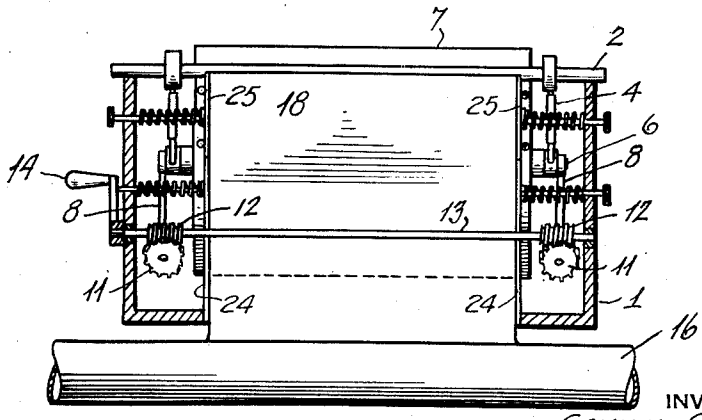


Fig 3

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PAPERMAKING MACHINE

Samuel S. Stevens, Plattsburg, N. Y.

Application December 5, 1950, Serial No. 199,163

5 Claims. (Cl. 92—43)

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This invention relates to the art of paper making and is directed more particularly to the control of the feed of pulp stock to the foraminous wall of a rotary mold roll or to a mesh screen traveling about the surface of such a roll.

In accordance with this invention, the mold roll, either with or without a traveling web, is mounted for oscillatory movement about a supporting shaft positioned beyond the circumference of the roll and parallel to the axis thereof, while the stock is fed to the roll through a delivery duct, the discharge end of which is rigidly secured with respect to said shaft. The discharge opening of said duct is immediately below said shaft and is juxtaposed to the surface of the roll to the end that stock is delivered through the duct may be fed therefrom to the roll.

The duct has inner and outer walls, the inner wall being that nearest the roll and the outer wall being the more remote therefrom. The outer wall of the duct is rigid and it is rigidly mounted so that it as well as the shaft normally are held stationary. A portion of the inner wall of the duct, however, is pivotally supported at both its upper and lower ends. The support at the lower end is in the form of a stationary pivot while the pivotal support at the upper end is linked to the roll in such manner that, as the roll is bodily oscillated about the axis of the shaft, this latter pivot means with it and thus causes the sectional area of the duct juxtaposed with said point of pivoting to be increased or diminished in accordance with the direction of movement of the roll. This movable portion of the inner wall of the duct thus constitutes what may be termed a "throat plate" and through the movement of this plate as stated, the cross sectional area of the throat contiguous to said plate, may be varied to regulate the amount of stock fed to the roll.

The throat plate and the roll are interconnected, so that movement of the roll will effect corresponding movement of the plate, with regulation of the feed, and the relation of the discharge opening of the duct and the roll are thus maintained, and the feed is regulated in accordance with practical requirements.

With this arrangement a very nice adjustment of the feed may be obtained in a very simple and efficient manner through the use of relatively simple mechanism embodying relatively few moving parts.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and appended claims,

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when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative only, and not as defining the limits of the invention.

Figure 1 is a perspective view with portions broken away to more clearly show the parts and their relation.

Figure 2 shows schematically the effect of relative movement between the parts as hereinafter more fully explained. This view is, generally speaking, a vertical section longitudinally of the machine.

Figure 3 is a transverse section taken on the line 3—3 of Figure 1.

In Figure 1 of the drawings I have shown two mold rolls mounted in tandem within separate compartments of a tank. Each of these assemblies is the same as the other and any number of such rolls may be utilized as desired. Consequently the description of one will suffice for all.

In said drawings, 1 designates the tank, across the top of each compartment of which is mounted a shaft 2 supported in suitable bearings 3. Suspended from this shaft on links 4 provided with turn buckles 5, is the shaft 6 of a rotatable mold roll 7, there being such a link at each end of the roll.

Embracing the shaft at each end of the roll is one end of a link 8, the other end of which is connected by a universal joint 9 to a post 10 threaded through a worm wheel 11. The worm wheel is fixed against axial movement so that rotation of the worm wheel will axially move the corresponding post 10. The worm wheels 11 at the opposite ends of the roll mesh with worms 12 fixed on a shaft 13 projecting through one side of the tank and provided with a crank 14 or any other suitable operating member whereby the worms 12 may be simultaneously rotated to oscillate the roll 7, i. e., move it along an arcuate path about the axis of the shaft 2.

Stock is fed from any suitable source of supply through a conduit 15 and a branch pipe 16 to a stock delivery duct 17. This duct has a stationary outer wall 18 and an inner wall 19. The outer wall 18 extends from the pipe 16 to the shaft 2 and is absolutely rigid. In practice it is generally stiffened by appropriate fins or reinforcing members, so that it is stationary and stiff throughout, its lower end being connected to the pipe 16 and its upper end being anchored to the shaft 2. The upper portion of this wall,

moreover, is curved into substantial tangential relation to the roll 7 at its upper end.

The inner wall is preferably made with a rigid section 19 which projects a short distance above the pipe 16, while the remainder of that wall, which constitutes the throat plate 20, is mounted for pivotal movement. Its lower end is secured to a fixed pivot 21, while its upper end carries at its lateral edges pivots 22 connected by links 23 to a shaft 6. If desired, these links may be provided with turnbuckles for the purpose of adjustment.

Between the pivots 22 and the axis 2a of the shaft 2, as shown in Figure 2, that portion of the delivery duct is open and constitutes the discharge opening or outlet mouth and that portion of the duct directly below the pivots 22 and juxtaposed with the throat plate 20 constitutes the throat T of the delivery duct.

With this arrangement, it will be apparent that the mold roll 7 is adapted to be arcuately moved about the axis 2a of the shaft 2 at the discharge end or "slice point" of the delivery duct. During this movement of the roll, the outer wall 18 of the duct remains stationary, while the upper end of the throat plate 20 moves with the roll. Figure 2 shows, in full lines, the roll and throat plate in one position which corresponds to the maximum volumetric feed of stock. If the roll is moved from its full line position to the dotted line position of this figure, it carries with it the upper end of the throat plate and thus very materially decreases the cross sectional area of the throat T with consequent corresponding decreases of the volumetric feed of stock to the discharge opening or mouth of the duct. By thus adjusting the roll the amount of stock fed to the outlet mouth may be controlled with great nicety, in a simple and efficient manner.

The lateral edges of the duct are closed by appropriate deckles of any convenient design. As shown in Figures 1 and 3, the lower portion of the duct is closed by spring pressed deckles 24, the left hand edges of which are secured to the throat plate but slide freely against the edges of the corresponding portions of the outer wall 18. The upper portion of the duct is closed at its lateral edges by spring pressed deckles 25 at the opposite sides of the duct, these being preferably adjustable by rods 26. The deckles 24 and 25 may overlap one another to preclude serious leakage and such leakage may also be diminished by surfacing the inner faces of the deckles with rubber or any other suitable gasket material.

In an apparatus of this invention, the regulation of the stock may be accomplished while the apparatus is in operation and without necessarily stopping either the rotation of the roll or the feed of the stock. The layer of material deposited upon the roll is taken off by the usual felt F.

In the accompanying drawings, I have illustrated the invention in one of its practical forms. I wish it understood, however, that the invention is not limited to the particular details of construction therein shown. For example, the links

may be operated from hydraulic or pneumatic pistons instead of through the worm and gear arrangement described or in any other suitable way, which will bring about the adjustment of the roll as stated. For the reason given, the present invention is to be understood as fully commensurate with the appended claims.

The applicant herein is the inventor in an application Serial No. 141,090, filed January 28, 1950.

Having thus fully described the invention, what I claim as new and desire to secure as Letters Patent is:

1. A paper making machine comprising: a rotatable mold roll mounted for bodily movement along an arcuate path about a pivot parallel to its axis of rotation and positioned substantially at its circumference, in combination with a stock delivery duct with its discharge mouth juxtaposed with the circumference of the roll, said duct having a stationary outer wall with its slice point at the axis of arcuate movement of the mold roll, and said duct also having an inner wall the foremost portion of which constitutes a throat plate with its forward edge in substantial contact with the mold roll and its rear edge connected to a fixed pivot, and means for imparting arcuate movement to the roll.

2. Paper making machine as claimed in claim 1, including connections between the forward edge of the throat plate and the roll to effect pivotal movement of the throat plate about its fixed pivot as arcuate movement is imparted to the roll and to maintain the forward edge of the throat plate in substantial contact with the roll in all operative positions of the roll.

3. Paper making machine as claimed in claim 1, wherein the outer wall of the duct is rigid throughout while the rear edge of the throat plate is pivoted to a portion of the inner wall which is rigid with the outer wall.

4. Paper making machine as claimed in claim 1, wherein the throat plate is linked to the roll whereby arcuate movement of the latter effects corresponding pivotal movement of the former.

5. Paper making machine comprising: a rotatable mold roll mounted for bodily movement along an arcuate path about a pivot parallel to its axis of rotation and positioned at substantially its circumference, a stock delivery duct mounted in stationary posiiton with its slice point at the axis of arcuate movement of the mold roll and having a throat plate mounted for movement on a pivot and linked to the roll to maintain the forward end of the throat plate substantially in contact with the circumference of the roll during all positions of arcuate adjustment of the latter.

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