April 26, 1960 J. E. GOODWILLIE 2,934,140

ADJUSTABLE STOCK INLET FOR PAPER MAKING MACHINE

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Fig. 1

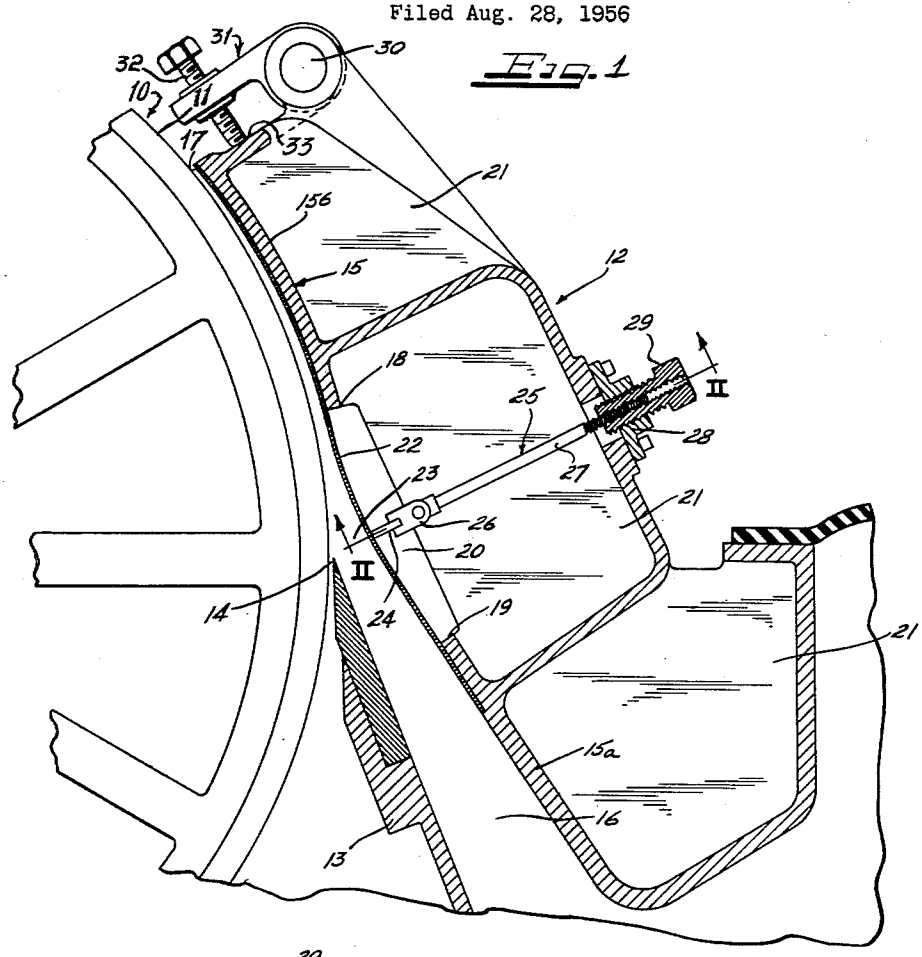
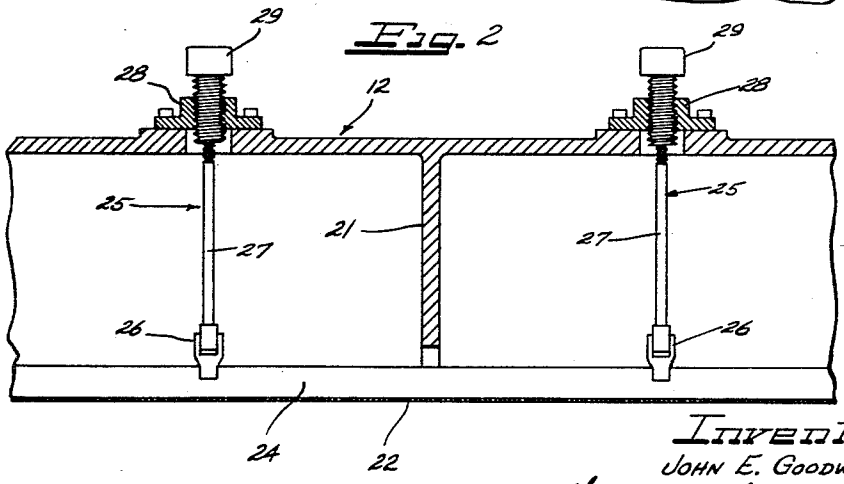


Fig. 2



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ADJUSTABLE STOCK INLET FOR PAPER MAKING MACHINES

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2 Claims. (Cl. 162—317)

This invention relates generally to paper making machines, and more particularly to a variable stock inlet capable of compensating for any flow inequality or tendencies toward making heavy or light streaks in a formed sheet.

The present invention is most generally useful in connection with delivering stock to a cylinder mold roll or a Fourdrinier wire trained over an open breast roll, although other uses and purposes may be apparent to one skilled in the art.

In the past, adjustable stock inlets for cylinder mold rolls and Fourdrinier wires trained over breast rolls have been developed, but have not been capable of being adjusted across the machine in order to compensate for flow inequalities.

Accordingly, it is an object of this invention to obviate the above named difficulties and provide a variable stock inlet for paper machines capable of being adjusted across the machine in order to compensate for any flow inequalities or tendency toward making heavier leg streaks in the formed sheet.

Another object of this invention resides in the provision of an improved adjustable stock inlet for paper machines.

Still another object of this invention is in the provision of an adjustable stock inlet particularly desirable for use in connection with cylinder mold rolls or Fourdrinier wires trained over open breast rolls in order to compensate for any flow inequalities or tendency toward making heavier leg streaks in the formed sheet.

A further object of this invention is to provide an adjustable stock inlet for feeding stock onto a travelling cylindrical forming surface which includes an inner wall having a leading edge in close proximity to the forming surface of the cylinder, an outer wall having a leading edge in close proximity to the surface of the forming cylinder and in circumferentially spaced relationship with the leading edge of the inner wall, and said outer wall having an adjustable flexible section coacting with the leading edge of the inner wall for controlling the stock flow to the forming surface and compensating for any flow inequalities.

Other objects, features, and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheets of drawings, wherein like reference numerals refer to like parts in which:

On the drawings:

Figure 1 is a somewhat fragmentary and diagrammatic vertical sectional view illustrating the invention in connection with a cylinder forming surface; and

Figure 2 is a fragmentary transverse sectional view, with parts in elevation, taken substantially along line II—II in Figure 1 and looking in the direction of the arrows.

As shown on the drawings:

In Figure 1, the adjustable stock inlet of the present invention is illustrated in association with a rotatably

mounted cylinder 10 having a foraminous forming surface 11. This cylinder may be a cylinder mold roll in a cylinder paper machine or an open breast roll around which a Fourdrinier wire might be trained. Further, depending upon the installation, the foraminous forming surface 11 may or may not have a pressure differential thereacross for purposes of aiding in the forming of a paper sheet.

The present invention is concerned with delivering stock to the arcuate forming surface 11 of the cylinder 10 by means of an adjustable stock inlet or stock supply duct, generally indicated by the numeral 12. This stock inlet includes an inner stationary wall 13 having a leading edge 14 extending transverse the forming surface 11 and in close proximity thereto, and in substantial parallel alignment with the axis of the cylinder 10. An outer wall 15 generally coacts with the inner wall 13 and includes a lower substantially straight section 15*a* coacting with the inner wall 13 to define therebetween a converging stock passageway 16, and an upper portion 15*b*, arcuate in shape and coacting with the forming surface 11 of the cylinder 10 to define a forming area therebetween and a slice opening 17 in circumferentially spaced relationship with the inner leading edge 14 of the inner wall 13. The upper outer wall portion 15*b* terminates in a leading edge at the slice opening 17 and extends downwardly to a point above the leading edge 14 of the inner wall 13 as indicated by the numeral 18, while the upper end of the lower portion 15*a* terminates on the other side of the leading edge 14 of the inner wall 13 at 19, thereby defining across the machine an opening 20 between points 18 and 19. Ribs or webs 21 serve to make the entire casting rigid and capable of carrying pressures encountered in operation.

Closing the opening 20 and extending as a lining on the inner face of the outside wall 15 is a thin sheet or plate 22, which could be constructed of light gauge stainless steel, fabric reinforced rubber, or any other equivalent material giving a flexible characteristic. This flexible member coacts with the leading edge 14 of the inner wall 13 to define therebetween a main slice opening or throat 23 which controls the stock flow onto the forming surface 11.

In order to adjust the positioning of the flexible member 22, a bar 24 is fastened to the non-stock engaging side of the member and extends entirely across the width of the machine. This bar is fitted with a plurality of adjustable positioning members, generally designated by the numeral 25 which are equally spaced across the machine such as shown in Figure 2. Each adjustable positioning member includes a clip 26 fastened to the bar 24, an adjusting rod 27 pivotally connected to the clip 26, an internally threaded boss 28 mounted on the outer wall structure, and an externally threaded adjusting nut 29 threadedly engaged in the boss 28 and provided with internal threads for threadedly receiving the outer free end of the adjusting rod 27. These adjusting parts illustrate a vernier type of adjustment, wherein the nut 29 has comparatively fine internal threads and comparatively coarse external threads, so that rotation of the nut gives a movement of the adjusting rod 27 equal to the difference in the pitch of the two threads for each revolution of the nut. Thus, the flexible member 22, being provided with the plurality of adjustable positioning members 25 is capable of finely adjusting the main slice opening 23 from point to point across the width of the machine in order to compensate for inequalities of flow to the forming surface or tendency toward making heavier light streaks in the formed sheet.

Further major adjustments of the slice opening 23 may be accomplished since the entire outer wall 15 of the

inlet is pivotally mounted at 30, wherein pivotal movement of the outer wall around pivot 30 opens or closes the main slice opening 23 in order to suit operational conditions, while keeping the final opening 17 substantially unchanged. For adjustably positioning the outer wall, a fixed bracket arm 31, is provided with a threaded opening receiving a threaded adjusting screw 32. The end of the screw engages a face 33 on the wall 15. The weight of the wall will tend to pivot the wall clockwise, as shown in Figure 1, and against the screw 32, and the screw is rotated to adjust the operating position of the wall 15. Additionally, the pivot point 30 may be mounted for adjustable horizontal shifting in order to adjust the opening 17.

Hence, it is seen that the flexible member 22 extending across the opening 20, which covers an area starting ahead of the actual slice position and extending beyond this position, is capable of being deformed in the cross machine direction, wherein the basic weight of the sheet can be corrected from point to point across the machine width.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

I claim as my invention:

1. In a paper machine, a rotatably mounted foraminous cylinder having a cylindrical forming surface, and a stock inlet for delivering stock to said forming surface on the upgoing side of said cylinder, said inlet comprising an inner stationary wall extending upwardly having a leading edge in close proximity to said forming surface on the upgoing side, an outer wall having a leading edge circumferentially spaced from said leading edge of said stationary wall and in close proximity to said forming surface, and said outer wall having a transversely extending flexible portion intermediate adjacent rigid portions and opposite the leading edge of said stationary wall to define a throat for controlling stock flow to said forming surface, and means for adjustably positioning said flexible portion including a plurality of spaced adjustable members engaging the back side of said flexible portion, and means for simultaneously pivoting said entire outer wall including said flexible and said rigid portions relative to said forming surface and inner wall.

2. In a paper machine, a rotatably mounted foraminous cylinder having a cylindrical forming surface, and a stock inlet for delivering stock to said forming surface on the upgoing side of said cylinder, said inlet comprising an inner stationary wall having a leading edge in close proximity to said forming surface on the upgoing side, an outer wall having a leading edge circumferentially spaced from said leading edge of said stationary wall and in close proximity to said forming surface, and said outer wall having a transversely extending flexible area with non-flexible areas ahead and behind said flexible area, said flexible area located opposite the leading edge of the stationary wall to define a throat for controlling stock flow to said forming surface, means for adjustably positioning said flexible portion including a plurality of spaced adjustable members carried by the outer wall and engaging the back of said flexible area, and means for simultaneously adjustably positioning said entire outer wall including said flexible area and said non-flexible areas relative to said forming surface and inner wall.

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