June 22, 1965 E. D. BEACHLER ETAL 3,190,792

CYLINDER TYPE PAPER MAKING MACHINE

Filed Nov. 9, 1961 2 Sheets-Sheet 1

FIG. 1

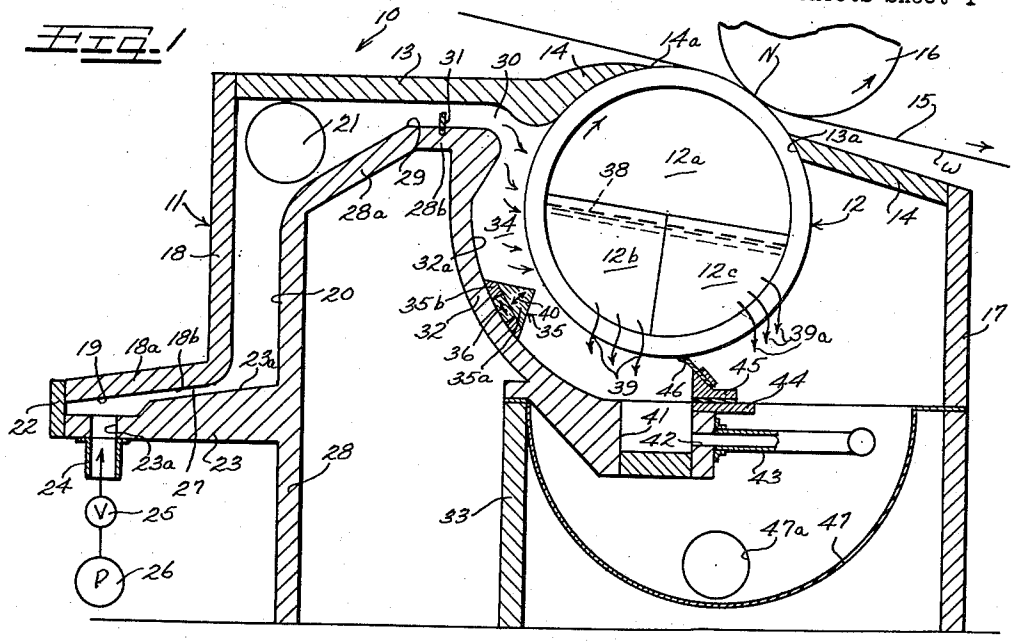
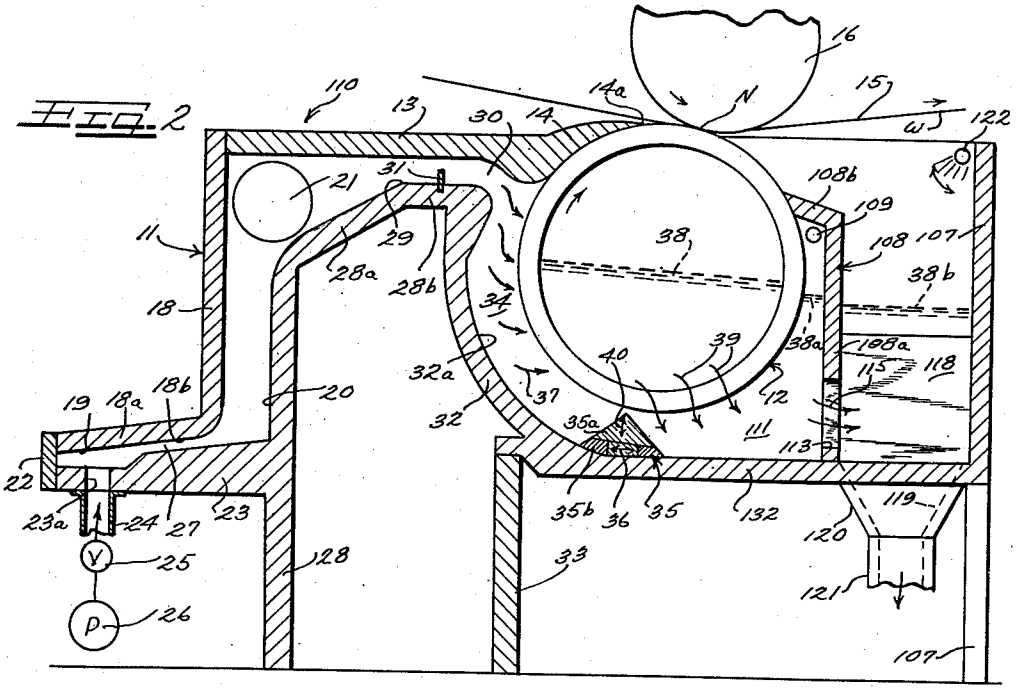


FIG. 2



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FIG. 3

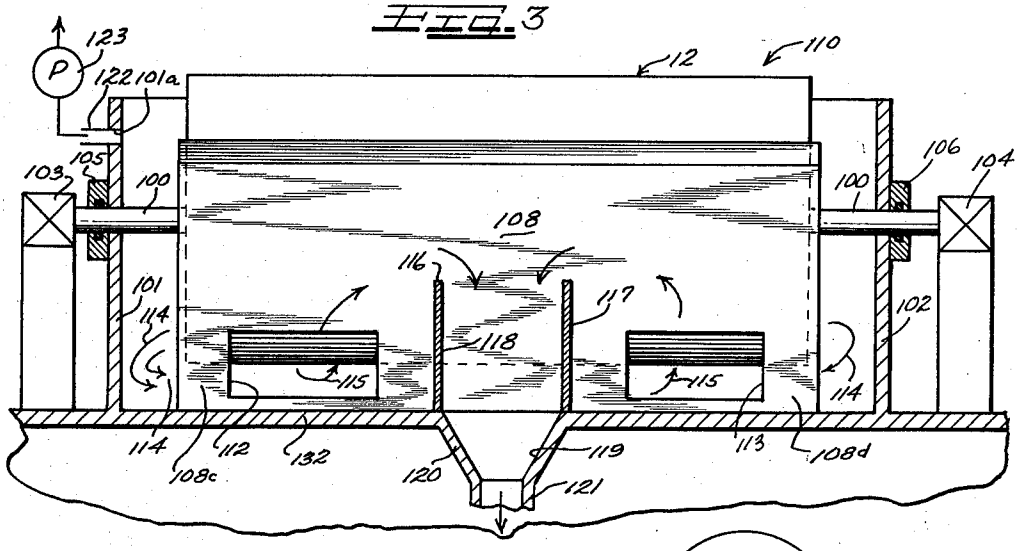
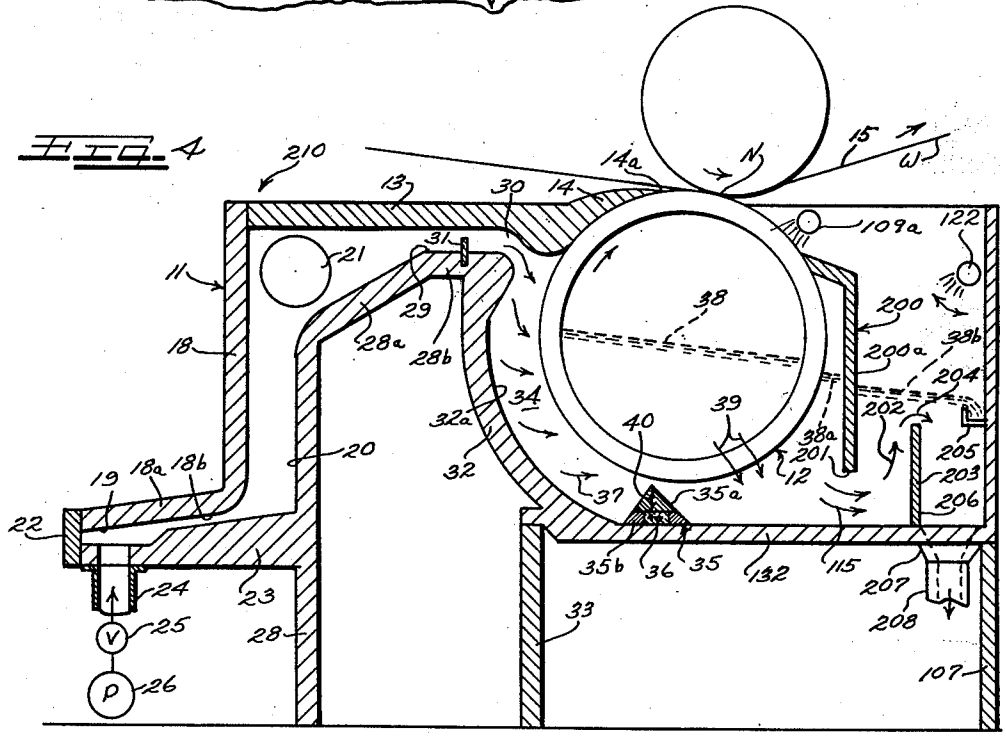


FIG. 4



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CYLINDER TYPE PAPER MAKING MACHINE

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3 Claims. (Cl. 162—264)

The present invention relates broadly to the art of paper making, and is more particularly concerned with a novel cylinder mold and vat arrangement having minimum space requirements and a controllable forming surface length, and further being productive of a level basis weight product.

Currently in the art of counterflow vats the cylinder mold is immersed in a pond of liquid containing suspended paper fibers therein. The pond is continuously supplied at a rate which will maintain the pond level against the mold at the desired elevation. A continuous flow of liquid takes place from the pond into the cylinder, which is of an open surface construction covered with a fine weave wire mesh. As the liquid flows into the cylinder, the fibers suspended therein are deposited upon the surface of the wire mesh to form a fibrous mat.

In the present practice, the liquid or white water within the mold flows outwardly through the opposite ends thereof. This creates a gradient from the center of the mold to the ends. Since, as is known, the drainage from the pond into the mold is related to the difference between the pond level and the level in the mold, it is apparent that the amount of liquid flowing from the pond into the mold will vary from point to point across the width of the paper machine. This difference in rate of flow frequently causes a corresponding difference in the weight of the mat formed on the mold surface from point to point across the face of the mold. This condition is described in the art by reference to the basis weight profile, a plot of basis weight measurements taken in series across the width of the web, as formed.

Another problem existing with present counterflow vat designs lies in the fact that for many purposes the forming (peripheral) length of a mold is greater than is required to form a mat of the weight desired. This is particularly the case in those instances wherein the cross machine width is relatively great and a large mold diameter is required for structural reasons. In such a case the sheet is formed in the weight required and subsequent drainage of liquid takes place through the formed mat as it moves peripherally on the mold through the pond. This drainage is not of sufficient volume or velocity to hold the suspended fibers against the already formed mat, and as a result, these fibers are washed from the formed mat and mingle in the balance of the liquid in the pond to cause a thickening of the liquid as the mat proceeds around the vat circle from the initial forming area. Such thickening in many cases is detrimental to the uniformity of the formation occurring on the wire surface. To in part overcome the thickening problem, those versed in the art have resorted to the use of relatively low stock consistencies, however, the penalties paid for this approach are greater gallonages being supplied to the vat per pound of fiber delivered and a consequent increase in pumping horsepower.

Each of the foregoing disadvantages of the prior art is herein avoided. First, the mold and vat are so constructed that the liquid flow from the mold does not take place solely through the ends thereof. The mold ends can be closed to any degree desired, or in fact closed completely, so that either a portion or the total liquid flow is effected through the side of the mold opposite the forming surface. In this manner, the liquid level in the mold at the forming surface is essentially uniform entirely across the width of the machine. As a result, uniform flow of liquid into the mold occurs across the machine width, with the consequent formation of a mat of uniform weight entirely throughout. Basis weight profile irregularity is accordingly effectively and completely overcome.

Secondly, means adjustable along the vat circle is herein provided with the important advantage that the length of the forming surface required for a specific application can be controlled or selected. Since the forming length is not defined solely by the depth of immersion of the cylinder mold in the pond, there is eliminated the noted problem of fiber washoff and consequent thickening of the liquid as it proceeds around the vat circle to the initial forming area. The thickening is thus greatly minimized, and higher consistencies at the inlet to the vat circle can accordingly be utilized. This results in a lower gallonage per pound of fiber delivered being supplied to the vat, and a consequent marked saving in pumping horsepower.

In addition, by the structural arrangement herein provided the underflow baffle can be eliminated and deaeration structure located adjacent to the vat. This requires only slightly more space than a normal vat, whereas if a deaerating device was attached to a conventional vat, substantial space in the aisle or drive area would be required. Deaeration structure by the instant concept is so located that it does not interfere with normal access to either side of the vat, and leaves aisle or drive space substantially free.

It is accordingly an important aim of the present invention to provide an improved cylinder type paper making machine wherein the flow channel to which the forming surface on a cylindrical mold is presented is of controllable length and extends not substantially greater than one-half the distance around the mold circumference.

Another object of this invention lies in the provision of cylinder mold apparatus in which a level feed is presented to the mold forming wire and wherein conventional liquid flow upwardly from solely the opposite ends of the mold is eliminated.

Still another object of this invention is to provide a paper making machine of the cylinder type wherein a substantial portion of liquid drainage is from the mold side generally opposite the mold forming surface, whereby there is obtained a level basis weight product.

A further object of the preesnt invention lies in the provision of a cylinder mold arrangement which has minimum space requirements and which is constructed to readily incorporate therein deaeration apparatus either integral therewith or in immediate adjacency thereto.

A further object of this invention is to provide, in a paper machine, an enclosure having an opening in the top thereof, a foraminous cylinder rotatably suspended in the enclosure and projecting partially through the opening therein, curvate means within the enclosure radially spaced from the cylinder and defining therewith a stock flow channel, gate means connected to the curvate means and essentially closing the channel at one end thereof, means for delivering a stock flow to the channel whereby the fibers therein are deposited on the cylinder on one side of the gate means and liquid flows into the cylinder, and means continuously removing the liquid from the cylinder on the other side of the gate means.

An even further object of this invention lies in the provision of a cylinder type paper making machine provided with an enclosure having an opening in the top thereof, a foraminous cylinder rotatably suspended in the enclosure and projecting partially through the opening therein, curvate means interiorly of the enclosure radially spaced from the cylinder and defining therewith a stock flow channel, baffle means connected to the curvate means

and adjustable therealong for controlling the length of forming surface on the cylinder movable through the channel, and duct means for delivering a stock flow to the channel.

Other objects and advantages of the invention will become more apparent during the course of the following description, particularly when taken in connection with the accompanying drawings.

FIGURE 1 is an end elevational view, with parts thereof in section, illustrating cylinder mold apparatus constructed in accordance with the principles of this invention;

FIGURE 2 is a view similar to FIGURE 1, and showing another form of mold and vat arrangement embodying the novel concepts of this invention;

FIGURE 3 is a side elevational view of the structure of FIGURE 2, and showing particularly the novel means for providing side flow of the extracted liquid; and

FIGURE 4 is a sectional view with parts thereof in elevation showing from one side another structural arrangement constructed in accordance with instant teachings.

Referring now first to FIGURE 1 of the drawings, there is shown therein cylinder mold apparatus designated generally by the numeral **10**, and comprising enclosure means designated in its entirety by the numeral **11**. Rotatably suspended within the enclosure **11** is a cylinder mold **12**, which as is customary in the art, may be of open surface construction circumferentially wrapped by a fine weave wire mesh. As will be later described, the cylinder **12** may be completely closed at opposite ends or partially closed, and for this purpose each end wall may be of segmental construction and be provided with an immovable wall portion **12***a* and a pair of movable or swingable quadrant portions **12***b* and **12***c*. The quadrant portions **12***b* and **12***c* are carried in any suitable manner at their apices and are swingable in opposite circumferential directions to open or close a portion of or the entire opposite ends of the cylinder mold **12**. Of course, means other than that illustrated can be utilized for this purpose, if desired.

The enclosure means **11** comprises suitable end wall structure (not shown), and is further provided with a roof portion or top wall **13** having an opening **13***a* therein through which partially extends the foraminous cylinder **12**. The opening **13***a* is defined by one end of a wall segment **14** and by a slice point **14***a* formed on the curvate slice lip **14**. A paper web W deposited on the cylinder mold **12** in a manner to be later described is removed from the forming surface of the cylinder **12** by a moving felt **15** engaged by a couch roll **16**, which may be rubber covered. As appears in FIGURE 1, the foraminous cylinder **12** and couch roll **16** define a nip N, and if desired, the couch roll **16** may be mounted in a manner to permit vertical movement so that the couch roll can rise and fall with any thickness variations in the web removed at the nip N.

Enclosure means **11** is further constructed to provide a side wall **17** connected to the inclined wall segment **14** and erected from suitable foundation structure. The opposite side of the enclosure means **11** may be formed by a partial wall **18** connected to the roof portion **13** and having an inclined portion **18***a* cooperating to define a stock inlet throat **19** communicating at one end with a generally vertical stock channel portion **20**, at the upper end of which may be located a rectifier roll **21**, in the manner customary in the art.

The stock inlet chamber or throat **19** is closed at one end by a side wall portion **22**, and connected thereto is a generally horizontal wall portion **23** apertured at **23***a* to communicate the inlet throat **19** with the interior of a stock inlet conduit **24**, through which stock is flowed under action of valve means **25** and pump means **26**, the specific functions of which will be later described. The generally horizontal wall portion **23** may be seen to be shaped with an inclined inner surface **23***a* extending generally parallel with inner surface **18***b* of the inclined wall portion **18***a*. The inlet throat may be seen to have a relatively greater cross sectional area than the channel **27** defined by the wall surfaces **18***b* and **23***a*, and this sizing of the throat **19** and channel **27** is desirable to effect velocity changes in the stock flow. Thus, as the stock proceeds from the conduit **24** into the throat **19** a velocity reduction is effected to evenly blend and distribute the stock, while in the restricted channel **27** the stock velocity is increased prior to entry into the generally vertical channel **20**. Of course, other inlet arrangements can be utilized for particular applications.

The vertical stock flow channel **20** is defined by the inner surface of the upright wall portion **18** and by the inner surface of an inner wall member **28** erected from the foundation structure. The wall member **28** at the upper end of the vertical stock channel **20** has an inclined wall portion **28***a*, the inner surface of which forms a convergent throat **29** with the inner surface of the roof portion **13**. The wall member **28** has a relatively short horizontal portion **28***b*, which along its inner surface extends generally parallel to the inner surface of the roof portion **13** and defines therewith a stock inlet mouth **30**. As is customary in the art, a making board **31** may be positioned shortly upstream from the inlet mouth **30**.

The enclosure means **11** of the cylinder mold apparatus **10** illustrated in FIGURE 1 further includes a curvate wall member **32** which may be integral with the wall member **28** and is supported upon an upright member **33**. The curvate wall member **32** has a smooth arcuate inner surface **32***a* generally uniformly radially spaced from the cylinder mold **12** and defining therewith a stock flow channel **34** (which is often referred to in the trade as a "vat circle"), which has as its upper extremity the stock inlet mouth **30**. Adjustably mounted at a predetermined location along the inner surface **32***a* of the curvate wall member **32**, and defining the lower extremity of the stock flow channel **34**, is a gate member or baffle means **35**.

The baffle means **35**, as provided in accordance with the novel concepts of this invention, has a number of important functions. First, by being circumferentially adjustable as indicated by the arrow **36** thereon, a flow channel **34** of any desired length may be provided, and thereby eliminated is the earlier noted problem of fiber wash-off and high stock consistencies which result when the forming length is defined solely by the depth of immersion of the cylinder mold in the pond. Second, the baffle means **35** by its relatively close adjacency to the circumference of the cylinder mold **12** provides what may be termed a "dry vat."

More specifically, the baffle means **35** confines the stock to the channel **34**, and during stock flow into the channel **34** in the direction indicated by the arrows **37** and during rotation of the foraminous cylinder mold **12** the stock is screened to deposit on the wire mesh the fibrous portion thereof. The liquid portion or white water, on the other hand, flows through the wire mesh and into the interior of the cylinder **12**. The white water interiorly of the foraminous cylinder is indicated by the phantom line designated by the numeral **38**, and during continued mold rotation the white water continuously flows from the cylinder in generally the direction indicated by the arrows **39**, or from a location on the cylinder generally opposite to the slice lip **14**.

In this manner, and by draining or removing the white water from a side of the cylinder mold **12**, as contrasted with discharge exclusively through the ends of the cylinder, the level of the white water **38** within the mold and along the stock flow channel **34** is essentially uniform across the width of the mold **12**. This results in a uniform flow of liquid or white water into the mold across the machine, and the corresponding formation of a mat of uniform weight on the mold across the machine. The "sidewise" or cross-the-machine drainage can of course

be supplemented by endwise drainage through the opening of either or both of the quadrant members 12*b* or 12*c*. However, by flowing the major amount of the white water in a generally radial direction, rather than axially, the former gradient from the center of the mold to the ends thereof is essentially entirely eliminated. As was earlier pointed out, the drainage from the pond into the mold is related to the difference between the pond level and the level in the mold, and accordingly, in the prior art practice the amount of liquid flowing from the pond into the mold varies from point to point across the width of the paper machine. This difference in rate of flow frequently causes a corresponding difference in the weight of the mat formed on the mold surface from point to point across the face of the mold. Generally speaking, the mat is heavier adjacent the ends, and this causes ultimate difficulties when endeavors are made to print the paper by conventional means. Often, in this event, it is necessary to use rubber plates for printing, however, generally the printing obtained is of poor quality.

The baffle means 35 provided in accordance with this invention may assume various configurations, and the generally triangular shape should accordingly be considered illustrative only. The exemplary embodiment of baffle means 35 may be seen to comprise a generally triangular body portion 35*a* mounted upon shim means 35*b*, the latter means permitting adjustability of the triangular body portion 35*a* relative to the mold periphery and in the direction indicated by the arrow 40 applied to the body portion. The baffle means 35 is effective, in addition to the manners earlier described, to establish a relatively greater pressure in the stock flow channel 34. Further, relative movement of the triangular body portion 35*a* of the baffle means 35 in the direction indicated by the arrow 40 provides a fine control of stock flow velocities adjacent to the forming face of the cylindrical mold 12.

The cascading or radially discharging white water moving in the general direction indicated by the arrows 39 may be received in various ways on the "stock-free" side of the baffle means 35. As appears in FIGURE 1, the curvate member 32 at the lower end thereof may be formed with a channel or trough 41 passaged at 42 in one wall thereof to be in fluid communication with conduit means 43 leading to a station at which the white water is concentrated with fibers and ultimately under action of the pump means 26 returned to the cylinder mold apparatus 10. The trough 41 along one side may mount ledge means 44 supporting a wiper block 45 to which is attached a wiper blade 46 of rubber or the like for the purpose of cleaning the cylinder mold surface prior to advancement to the stock flow channel 34. Of course, showers could be used for this purpose, and is known to the art.

It may be found upon occasion that a portion of the discharging white water 39*a* is centrifugally cast beyond or to the right of the trough means 41, as viewed in FIGURE 1. For this purpose, there may be utilized a tank member 47 connected to the wall members 17 and 33, and provided with an outlet 47*a*, which may be connected to the recirculation system in the manner of the conduit 43. The opening 47*a* is normally provided in one or both of the end walls of the tank 47, and of course, the tank means 47 is coextensive with the width of the cylinder mold 12, as is the trough means 41, so that there is inherently a certain amount of white water travel from the outlet of the conduit 43 (whether or not it is submerged by white water) to the return opening 47*a* to afford inherently aeration of the white water while it is in the tank 47.

Another structural embodiment productive of the novel results herein stated is illustrated in FIGURES 2 and 3, and in the latter two views like parts from FIGURE 1 have like numerals applied thereto. Parts which are different therefrom, on the other hand, are designated by numerals in the 100 series.

The cylinder mold in FIGURES 2 and 3, as well as the cylinder of FIGURE 1, is equipped at opposite ends with shaft means 100 extending through opposed end walls 101 and 102 of the enclosure means 11, the shaft means being journaled in bearing means 103 and 104 and receiving thereon seal means 105 and 106. In the cylinder mold apparatus 10 of FIGURE 1, as well as in the apparatus 110 of FIGURES 2 and 3, the shaft means 100 is connected to suitable drive means to impart rotation to the mold cylinders.

The curvate wall member 32 which cooperates with the cylinder mold 12 to define the stock flow channel 34 is formed with an extended wall portion 132 connected to a side wall 107. If desired, the wall portion 132 can be extended to support the bearing structure 103–104 and the end walls 101 and 102 may be erected therefrom. The extended wall portion 132 may also connect with an interior wall member 108 having a generally vertical wall portion 108*a* and a sloping roof or top wall portion 108*b* terminating in close adjacency to the mold cylinder 12. Thus, it can be seen that the curvate wall member 32, the generally horizontal extension 132 therefrom, the wall member 108, and the slice lip 14 substantially entirely enclose the roll member 12. Within this enclosure, and connected if desired to the wall member 108, is shower means 109 to cleanse the roll periphery of any adherent fibers.

The enclosure means referred to in the preceding paragraph in cooperation with the baffle or gate means 35 define the earlier noted stock flow channel 34, and there is as well defined thereby a white water or liquid flow channel 111 on the side of the baffle means 35 opposite to the stock flow channel 34. The white water flow channel or chamber 111 receives the extracted liquid from the mold interior during screening of the stock and deposition of the fibrous portion thereof on the mold forming surface, which is generally defined at opposite ends by the baffle means 35 and slice point 14*a*. The mold cylinder 12 of FIGURES 2 and 3 is illustrated as of open-ended construction, although means of the illustrative character designated as 12*a–c* in FIGURE 1 may also be employed in FIGURES 2 and 3.

Liquid or white water discharged from the mold interior in generally the direction indicated by the arrows 39 and received in the white water flow chamber 111 flows therein at a constant rate and is maintained within the chamber 111 at generally a uniform level, indicated at 38*a* and shown to be slightly below the white water level 38 within the mold 12. To provide a flow path for the white water to deaeration structure and ultimate return to the stock inlet assembly, the wall member 108 has formed therein a plurality of openings 112 and 113 adjacent the lower end thereof, and illustratively the openings are two in number and generally rectangular in configuration, although obviously a greater number of openings of different shape could be utilized.

If the mold ends are open as illustrated in FIGURES 2 and 3, the liquid flow from the open ends is generally in the manner indicated by the arrows designated as 114 in FIGURE 3. It may be observed that liquid flowing from the ends is turned by the wall members 101 and 102 and flows into relatively short length channels defined by the solid wall portions 108*c* and 108*d* and the wall member 107. The flow from the mold ends then merges with the white water from the chamber 111 and which passes through the wall openings 112 and 113 in generally the manner indicated by the arrows 115 in FIGURES 2 and 3.

Generally centrally of the axial length of the cylinder mold 12 and extending between the wall members 107 and 108 intermediate the openings 112 and 113 is a pair of spaced baffle members or plates 116 and 117 over which the white water flows in opposite axial directions to enter an outlet flow channel 118 defined by the baffle members

116 and 117 and by the wall members 107 and 108. The outlet flow channel 118 can be seen to be generally square when viewed in plan, and communicating therewith is a generally funnel-shaped channel 119 provided by a similarly shaped member 120 depending downwardly from the extended wall portion 132 of the curvate wall member 32. The funnel-shaped outlet member 120 is connected to tubular conduit means 121, as by being integral therewith, and the conduit means 121 by suitable piping leads to a stock chest or the like wherein the white water is concentrated with pulp and fed under action of the pump means 26 to the cylinder mold apparatus 110.

The wall member 108 and particularly the wall portion 108*a* thereof provides a deaeration under flow baffle while the channel 118 and fluid flow paths communicating therewith from the openings 112 and 113 in the baffle member 108 provide a deaeration channel wherein, and assisted by an oscillatory foam spray or shower means 112, air trapped in the white water is removed prior to passage of the liquid from the conduit means 121 to the stock chest. It is important in this connection to observe from FIGURE 2 that the deaeration structure forms an integral part of the cylinder mold apparatus 110 and occupies relatively little space when provided as a part of the web forming apparatus. Thus, in order to accomplish immediate deaeration, the only additional space required is the distance from the wall member 108 to the wall member 107. On the other hand, with the conventional vats of substantial size, the modification thereof to incorporate deaeration means would add substantially to the aisle space or the drive area of the vat. Such aisle space is generally at a premium, and were deaeration means located at opposite ends of the vat, it is immediately apparent that there would be interference with access to opposite ends of the vat and the drive means for the vat. In the present instance, however, by locating the deaeration channel and related structure to one side of the cylinder mold, there exists no interference problem. Further, in the prior art arrangements wherein aisle space was not available for the deaeration means, such means was necessarily located remote from the cylinder mold apparatus, and this requires substantial length of piping and introduces problems by reason of the pumping head in relatively large pipe lines.

In FIGURE 2, the gate member or baffle means 35 functions in the manner earlier described in connection with the like-numbered member in FIGURE 1. The gate member is adjustable radially with respect to the periphery of the cylinder mold 12 for velocity control reasons, and as is indicated by the arrow 36 on the member 35, the gate means is circumferentially adjustable to control the length of the forming surface. The fibrous material is deposited on the rotatable foraminous cylinder 12 in a like manner to that described in connection with FIGURE 1, and the white water is withdrawn into the chamber 111, and in this regard a pressure differential is desirably created on the forming surface of the roll in order to subject the roll or mold 12 to suction pressure. A negative pressure is developed within the enclosure defined by the slice lip 14, curvate wall 32 and horizontal extension 132 thereof and by the wall member 108 in any suitable manner, and as is shown in FIGURE 3, an end wall 101 may be apertured at 101*a* to receive conduit means 122 communicating with vacuum pump means 123. By creating a suction pressure on the mold 12 the tendency of the nip N to run extremely wet during high speed operation is overcome.

The white water from the chamber 111 and from opposite ends of the mold, if open, flows as described toward and over the baffle members 116 and 117, the liquid level as it cascades over the baffle members 116 and 117 being designated in FIGURE 2 by the phantom lines identified as 38*b*. Thus, there is a decreasing fluid level from the mold interior, to the white water chamber 111 and to the deaeration channel 118. Within this channel air bubbles are removed, and as was stated, the white water is then directed in any suitable manner to a stock chest.

A further structural embodiment constructed in accordance with the principles of this invention is illustrated in FIGURE 4, and like numerals from the earlier views have been applied to like parts therein. Essentially, the differences between cylinder mold apparatus 210 of FIGURE 4 and the apparatus 110 of FIGURES 2 and 3 lie in the structural arrangement for accomplishing deaeration of the white water. Those elements in FIGURE 4 differing from FIGURES 2 and 3 are identified by numerals in the 200 series.

As appears in FIGURE 4, along one side of the cylinder mold 12 and connected to the end wall structure of the enclosure means 11 is a wall member 200 having a generally vertical wall portion 200*a* spaced from the extension 132 of the curvate wall means 32 to define an opening or passage 201. The opening 201 may extend continuously between the opposed end walls 101 and 102 (FIGURE 3), or the passages 201 may be spaced in the manner earlier referred to in connection with the openings 112 and 113 in FIGURES 2 and 3.

In any event, white water or liquid flowing from the interior of the cylinder mold 12 passes through the opening 201 in the direction indicated by the arrows numbered 115, and flows upwardly as shown by the arrows 202 and over an upright baffle member 203, as indicated by the arrow 204. The baffle member 203 may extend continuously between the end walls of the enclosure means 11.

The white water moving upwardly between the wall portion 200*a* and baffle means 203 flows over the top of the named baffle member to generally the level indicated at 38*b*. In this way entrained air is more readily released from the white water and the flow velocity pattern is isolated from cross flows generated by entrance into outlet 208. A skimmer 205, separately drained, is mounted on wall 107 at the appropriate elevation to remove froth and foam.

The baffle means 203 and wall member 107 spaced therefrom define a deaeration channel 206 through which the white water flows and in which a substantial portion of any entrapped air is removed from the flowing liquid. The liquid then passes into a generally trough-shaped member 207 and into conduit means 208, which communicates with the stock chest in the manner earlier described in connection with FIGURES 2 and 3. In other respects the structure and function of the arrangement of FIGURE 4 corresponds to that described with reference to FIGURES 2 and 3, with the minor exception that the cleansing shower head 109*a* in FIGURE 4 is located outside the enclosure.

It may be seen from the foregoing that applicants have provided a cylinder type paper making machine wherein fluid flow through the cylinder mold is provided on a side thereof opposite the forming surface, and thereby a product is obtained having a level basis weight. As was described, the instant invention further provides a controllable forming surface length, and additionally features minimum space requirements which permits incorporation of deaeration structure immediately adjacent the vat with little added space, as compared to conventional structures.

It should be noted in this regard that the arrangement shown would operate with equal success were the level of water in the mold below the terminus of the flow channel 34. In this case the level of the mold would have no effect on the rate of drainage in the forming zone, which would then taken place under the head of liquid in the flow channel. Under these conditions, the major objective would be to obtain a shorter forming length than can be obtained in current practice with conventional vats.

It will be understood that modifications and variations may be effected without departing from the spirit and scope of the novel concepts of the present invention.

We claim as our invention:

1. In a paper machine comprising a vat having a shaped

wall member supported therein, a foraminous cylinder rotatably supported in said vat in spaced relation with said wall member along a portion of the circumference of said cylinder, gate means spanning the space between said cylinder and said wall member and dividing said space into a stock flow passage and into a water flow passage, and conduit means supplying stock to said stock flow passage whereby fibers in said stock are blocked by said cylinder and the water in said stock flows into said cylinder and is cast therefrom through the side of the cylinder and into the water flow passage, the improvement of baffle means within the vat providing a deaerating channel in fluid communication with said water flow passage receiving the water therefrom and removing any air bubbles entrained therein.

2. In a paper machine, an enclosure, a foraminous cylinder rotatably supported in said enclosure, wall means connected to said enclosure and spaced from said cylinder along a portion of its circumference to define a channel with said cylinder, gate means conected to said wall means and dividing said channel into a stock flow channel portion and a water flow channel portion, means supplying stock to said stock flow channel portion whereby during rotation of said cylinder through said latter channel portion fibers in said stock are deposited on said cylinder and the water in said stock flows into the cylinder and is received in said water flow channel portion, a passaged baffle member extending generally upright in close running relation to said cylinder and cooperating with said wall means, said gate means and said cylinder to maintain a generally constant level of water in said water flow passage, and a pair of spaced wall members within said enclosure and connected to said baffle member and to said wall means providing a deaerating channel in fluid communication with said water flow passage through the passage in said baffle member for removing any entrained air bubbles in said water.

3. In a paper machine, an enclosure having opposed

side and end walls, a foraminous cylinder rotatably supported in said enclosure, wall means connected to said enclosure and spaced from said cylinder along a portion of its circumference to define a channel with said cylinder, gate means connected to said wall means and dividing said channel into a stock flow channel portion and a water flow channel portion, means supplying stock to said stock flow channel portion whereby during rotation of said cylinder through said latter channel portion fibers in said stock are deposited on said cylinder and the water in said stock flows into the cylinder and is received in said water flow channel portion, a passaged baffle member extending generally upright along one side of said cylinder and cooperating with said wall means, said gate means and said cylinder to maintain a generally constant level of water in said water flow passage, and an upright wall member extending in spaced generally parallel relation with said baffle member and with an adjacent side wall of said enclosure and over which water flows from said water flow passage through the passage in said baffle member to be deaerated prior to return to said stock supply means.

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