March 31, 1936. G. A. ENGERT ET AL. 2,036,168 PAPER MACHINE AND PROCESS OF MAKING PAPER
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This invention relates to machines for de-liquefying liquid suspensions of solid materials and for forming webs of said solid materials.

More specifically this invention relates to improvements in paper machines of the type having an endless liquid pervious belt traveling through a paper stock vat while entrained around a forming cylinder member. The invention includes an efficient recirculation system for white water drained from the pulp stock during the web formation.

In our U.S. Patent No. 1,224,154 dated August 29, 1933, we have described and claimed a paper machine of the general type to which the features of the present invention are applicable.

According to our present invention, a formative cylinder is rotatably mounted in a pond of pulp stock in a stock vat which may be fed from both sides. The preferred vat has two adjustable mating boards. A traveling liquid pervious belt such as a forming wire or a felt is entrained about the periphery of the cylinder. Large drain openings are provided on each end of the cylinder for maintaining the interior of the cylinder substantially free from liquid. The top part of the cylinder is sealed from the atmosphere by a sealing cap and drain or suction boxes provided at the sides of the sealing cap for aiding the formation of a web on the traveling belt encircling the cylinder as will be more fully hereinafter described.

The stock fed to the vat enters in the sides of the vat through a plurality of pipes from a header feed pipe.

The ends of the cylinder are sealed from the stock pond by a novel adjustable traveling seal which also acts as a decoil strap for gauging the width of the paper being formed on the cylinder.

The water drained from the interior of the cylinder and the drain or suction boxes adjacent to the sealing cap is directly reused in the forming of paper pulp suspensions which are fed to the stock pond. Thus, in our machine, there is no loss of liquid except that relatively small amount retained by the formed fibrous web which is transferred to the presses and driers. However, this amount of water lost from the system is more than replenished by water from the shower pipes used to wash the formative periphery of the cylinder.

It is therefore an object of this invention to provide a novel wet end for paper machines.

Another object of this invention is to provide a double flow vat for liquid suspensions of solid materials in which two separate types of suspensions may be delivered to the vat.

Another object of this invention is to provide a novel feed pipe arrangement entered through the sides of the vat for quietly and smoothly feeding stock to the vat pond.

Another object of this invention is to provide a double flow vat for paper machines with two adjustable mating boards.

Another object of this invention is to provide a recovery system for liquids obtained in the filtering of suspensions.

Another object of this invention is to provide a recirculating system for white water materials discharged from cylinder vats.

A further object of this invention is to provide a traveling seal and deckle for cylinder types of paper machines.

Still further object of this invention is to provide a process of forming paper having distinct characteristics on each side.

Another object of this invention is to provide a process of de-liquefying suspensions which forms a mat of the solid particles from the suspensions and directly re-uses the liquid portion.

Other and further objects will be apparent to those skilled in the art from the following specification and annexed drawings which form a part of the specification.

On the drawings:

Figure 1 is a vertical cross sectional view of a preferred form of stock vat, rotatable cylinder and sealing cap therefor according to this invention.

Figure 1A is an enlarged fragmentary cross sectional view of the drain opening in the vat shown in Figure 1, and illustrating attendant size controlling mechanism for the opening.

Figure 1B is an enlarged broken front elevational view of the drain opening shown in Figures 1 and 1A taken substantially along the line IB—IB of Figure 1A.

Figure 2 is a cross sectional view taken substantially along the line II—II of Figure 1 showing the traveling seal for the ends of the rotating cylinder.

Figure 3 is an elevational view, with parts shown diagrammatically, of the liquid recirculating apparatus according to this invention.

Figure 4 is a fragmentary top plan view of the apparatus shown in Figure 3.

Figure 5 is a fragmentary plan view of one of the drain boxes.

As shown on the drawings:

As shown in Figure 1, the reference numeral...
The castings or frames 14 are slideable on tracks 12 in the bottom 13 of the vat so that the size of the vat circle may be varied. Each frame 14 provided on its lower leg with a gear rack 14b engaging a gear 14c secured to an axle 14d mounted at the ends in the end walls of the vat. One end of each axle 14d extends through the vat wall and is provided with a lever for rotating the axles to move the frames 14 back and forth in the tracks 12a to vary the distance of the vat circle walls 15 from the cylinder as desired. Thus one side of the circle may be moved up close to the cylinder while the other side may be moved away from the cylinder.

The cylinder 17 is built up of a plurality of spaced spiders having hubs 18 secured to an axle 19 as shown. Each hub 18 has a plurality of integral radially extending arms 20 which form the branches 20a for providing the periphery 21 of the spider member. A foraminous wire 22 is secured over transversely extending rods (not shown) welded to the peripheries 21 of the spiders to form a foraminous cylindrical surface for receiving a traveling belt such as the foraminous wire 23. Any type of cylinder construction that eliminates distortion and deflection may be used however.

The top part of the cylinder 17 is sealed from the atmosphere by means of a sealing cap 24 secured to the end walls of the vat. The sealing cap 24 carries a pair of separate boxes 25 and 26 at the sides thereof. The box 25 has a foraminous top surface 27 and the suction box 26 has a foraminous top surface 28. Drain pipe lines 29 enter into the interior of the box 25 at both ends thereof for quickly draining any water entering from the pond so that a hydrostatic pressure head is applied to the traveling belt 23 as it enters into the stock pond 16.

A vacuum pipe line 30 enters into the suction box 26 at both ends and is curved into the interior of the box so that suction is applied to the belt 23 as it leaves the pond.

Paper stock from a main supply is flowed through a pipe 31 into a manifold header 32a having a plurality of branch pipes 31b, 31c, and 31d communicating with the vat through the side wall 12. The stock flows upward along the wall 12 around a baffle 17a over a vertical baffle 32 and down under an adjustable vertical baffle 33. The baffle 33 may be raised and lowered by a handwheel 34 in screw thread relation therewith. After passing under the baffle 33, the stock flows upwardly through a perforated flow ever roller 35 and over an adjustable making board 36 which may be raised and lowered over the metal face 35 defining the vat circle.

Stock from an auxiliary supply may be flowed through a pipe 40 into a header pipe 40a having branches such as 40b, 40c, and 40d communicating with the vat 10 through the side wall 11. This auxiliary stock flows around baffle 17a up along the side wall 11, over a vertical baffle 41 and under an adjustable vertical baffle 42. The baffle 42 may be raised and lowered by means of a handwheel 43 which is in screw thread relation therewith.

After flowing under the baffle 42, the auxiliary stock is allowed to flow upward over an adjustable making board 44 into the vat pond 16. To prevent a mixing of the auxiliary stock with the main stock in the pond and to distance the excess stock, a slotted opening 15a, best shown in Figs. 1a and 1b may be provided in the vat circle on 16; ascending side of the cylinder allowing a small drainage of stock therethrough to drain pipes 15b in both vat end walls inside the circle. Partition walls 15d may be inserted in the inside of the circle to convey the liquids to the pipes 15b.

The walls 15d are spaced apart sufficiently so that the space therebetween will always communicate with the pipes 15b irrespective of the position of the adjustable vat circle. The pipes 15b may communicate with the main or auxiliary mixing boxes 76 or 78 hereinafter described. The opening 15a may have a slidable closure plate 15c for regulating the size of the opening.

The position of the closure plate 15c as shown in Figures 1a and 1b, may be regulated to control drainage through the opening 15a by any suitable regulating mechanism. For example, a pair of arms 15e for hinging the periphery of the back of the plate 15c near the ends thereof. The arms 15e are raised and lowered to slide the plate 15c across the opening 15a by means of threaded studs 15f in screw thread relation with sockets 15g in the cross member 4a of the adjustable vat circle.

The studs 15f are rotatably connected at the ends thereof to the arms 15e as shown at 15h. The sockets 15g may be conveniently sealed from the stock above the cross member 41a by means of screw bolts 15i threaded in the top of the sockets. These bolts 15i are readily removed and a key (not shown) may be inserted in the sockets 15g to rotate the studs 15f therein and thus raise or lower the closure plate across the openings 15c.

Obviously the closure plate 15c may be mounted behind the sheet metal 15 without departing from the principles of our arrangement. This type of mounting is sometimes to be preferred to prevent an obstruction in the stock pond 16.

The adjustable making board 44 is composed of a metal forming board 45g which forms the circle walls 15 by means of a hinge 45. A pliable metal or rubber strip 47 protects the hinge 45 from the stock and prevents any obstruction in the flow of the stock. The hinge 45 is also protected from the stock pond 16 by a pliable member 41a secured to the vat circle.

The member 45 carries a slidable top piece 48 which may be readily raised and lowered along the member 45 by means of the slot and bolt arrangement 49. The top piece 48 is connected, through a link 51, with an adjusting screw 50. This arrangement permits the spacing of the making board 44 at variable distances from the cylinder 17 and also permits the regulating of the effective height of the making board.

The adjustable circle arrangement which we have provided makes possible the provision of a relatively large pond of stock on one side of the cylinder while the other side may be moved up close to the cylinder thereby giving a definite control to the formation area. The making board 44 may be moved back away from the cylinder 17 to define a considerable pond of stock against the suction box 26 and emerging side of the cylinder. With the vat circle moved up close
the cylinder on the ascending side and the drain 18c in operation, there can be no intermingling of stock from the descending side of the cylinder with the auxiliary stock in the pond.

At the point where the white water enters the vat, the web passes over the guide rolls 20 and 30, and then enters the stock vat 10, whereafter the web passes over the guide roll 50, the forming wire is directed down over the drain box 25 and around the foraminous cylinder 17 in the vat. As the guide passes over the guide roll 50, an initial deposit of fibers from the stock pond 15 is formed on the wire. This deposit is formed immediately from the fibers in suspension flowing over the making board 30. Because of the immediate deposition caused by quick drainage, the fibers are forced on the wire in whatever form they may exist in suspension. The cylinder is maintained mechanically clean at all times by the provision of large drain openings 20 at the bottom thereof. The cylinder, furthermore, may be evacuated by means of a vacuum pipe line 80 communicating with the interior of the cylinder.

As the forming wire 23 advances around the revolving cylinder 17, additional fibers from the stock pond 18 are forced on the initially formed mat and fibrous web is built up on the wire. The high hydrostatic head developed by maintaining the stock pond level near the top of the cylinder while the interior of the cylinder is drained free from liquid, plus the suction from the vacuum pipe 80 communicating with the interior of the cylinder, effect a rapid radial deposition of fibers on the forming wire. It should be understood that the cylinder need not be evacuated since the high hydrostatic head developed by complete drainage of the cylinder alone is sufficient to effect a forced continuous drainage which is uninterrupted from the time that the wire enters the pond until it emerges therefrom. The complete drainage of the box 25 causes an immediate in-tial deposition which is not interrupted as the wire advances onto the cylinder, as will be described in connection with Figure 5. The flexible continuous sheet forming machine provides many alternative methods of operation without redesigning the apparatus.

Additional fibers may be sucked on the web formed on the descending side of the cylinder by feeding additional paper stock through the feed pipe 45 and over the making board 44. As the fibrous web formed on the descending side of the cylinder passes over the suction box 26, the fibers flowing over the making board 44 are sucked onto the web and a composite integral sheet is thus formed. The complete water drainage of the box 25 causes an immediate in-tial deposition which is not interrupted as the web advances onto the cylinder, as will be described in connection with Figure 5. The flexible continuous sheet forming machine provides many alternative methods of operation without redesigning the apparatus.

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a pipe line 10 leading into the main mixing box 70. The cylinder is evacuated through a pipe line 63 by a pump 62 or exhausting to the atmosphere.

Since only a vapor will be drawn through the pump 62a, it is not necessary to return the very small amount of condensed water to the system.

A small vent 62b is provided in line 63 to break the vacuum when desired.

In this manner all of the white water from the main cylinder drains, from the drain and suction box adjacent to the sides of the sealing cap, from the suction turning roll, and from the flat suction box, is returned to the system so that the only white water that is left is that small amount retained in the fibrous web on the forming wire 29 as it goes to the press and drying cylinder.

A concentrated pulp stock is made up in a main stock beater 101 and flowed through a va lved pipe line 100 into the main stock chest 100. As the stock is needed it is pumped from the chest 100 by a pump 100a through a pipe line 100b into the screen 107 where it is filtered and flowing into the main mixing box 76 through pipe line 116. The stock is mixed to the proper consistency in the main mixing box 76 with white water from pipes 75, 80c, and 106 and allowed to flow by gravity through the feed pipe 21 into the manifold 21b or feeding through branch pipes 21d, 21c and 21e there by insuring an even distribution of stock to the vat. Any excess white water in the mixing box 76 is drained into the storage tank 111 through a drain line 111a.

An auxiliary stock beater 112 is provided to supply a concentrated stock pulp to the auxiliary stock chest 118 through a valve pipe line 113a. A pump 118 is provided to flow the stock from the chest 118 through the pipe 114a into the screens 117a. From the screens 117a the stock flows by gravity through the pipe 115 into the auxiliary mixing box 76 where it is diluted with white water from the pipes 73 and 30d and flowed through the pipe 40 into the manifold 40a and into the vat pond on the ascending side of the cylinder, through its branches 40b, 40c and 40d. As shown stock in the screens 117a and 117b may be diluted with white water through pipe 74.

White water from the storage tank 111 is pumped by means of a pump 118 into a supply line 116a connected through valved branch lines 117 and 118 to the main beater and auxiliary beaters 107 and 112 respectively. The white water in the storage tank 111 is used to make up the concentrated stock suspension in the stock beaters.

We have found that our recirculating system operates indefinitely without the addition of any water since the loss of water in the web is more than made up by the water entering through the showers 69 and 69a. All of the water except that retained in the web, however, is kept in the system and our apparatus is therefore operable at very low cost since it entirely dispenses with the large water wastage problem universally accompanying the manufacture of paper. Because of the economic re-use of the white water, we are able to use more dilute suspensions of stock than were economically in use prior to our invention.

The use of dilute suspensions aids in the production of uniform formation as the fibers are well mixed.

Since auxiliary stock beaters and mixing boxes are provided in addition to the main mixing boxes and stock beaters, it is obvious that we may form a sheet having entirely distinct properties on each side. Thus the auxiliary stock may be colored to form a two colored sheet since the colored fibers deposited on the initially formed web will only color one side of the web.

This vat 126 feeds gravity feeds that no unequal flow due to irregular pump action can occur.

It should be understood that our machine may be controlled to a nicety by regulating the height of the making boards and also by regulating the distance of the auxiliary making board to any desired amount from the ascending side of the cylinder.

In Fig. 5 there is shown a fragmentary plan view of the box 25 showing the manner in which the foremoomous core 27 is mounted over the box so that the forced drainage is not interrupted as the wire passes thereover. The bottom of the box 25 contacts the face 27 along a narrow edge 22b and is secured thereto. However, the holes 21a in the face 27 which are adjacent to the narrow edge 22b (as shown in Fig. 4) are filled with the forced drainage as it passes over this section of the box 25 the forced drainage is not interrupted since one part of these holes communicates with the drained interior of the box while the other part communicates with the drained cylinder. The forced drainage is thus continuous from the time the wire 22 enters the stock pond 16 until it emerges therefrom.

Having now described our invention, we are aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention and we, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

We claim:

1. A feeding apparatus for de-liquefying machines comprising, in combination, a vat for receiving a pond of liquid suspensions to be de-liquefied, feed boxes on both sides of said vat, feed pipes communicating with the sides of said boxes, a rotatable cylinder in said vat, a filter medium on the periphery of said cylinder, means for draining liquid from the interior of the cylinder, means for mixing said drained liquid with the suspensions to be de-liquefied, and means for dawning said diluted suspensions to said feed boxes.

2. A feeding apparatus for de-watering machines comprising, in combination, a vat for receiving a pond of an aqueous suspension to be de-watered, an evacuated cylinder rotatably mounted in said vat, a water pervious belt entrained around said cylinder, means for sealing the interior of the cylinder from the atmosphere, means for quickly draining water from the interior of the cylinder, a mixing box for receiving concentrated aqueous suspensions, a pipe connecting said drain means with said mixing box to transmit liquid thereto diluting the aqueous suspensions therein and a pipe line for feeding said diluted suspensions to said vat.

3. A paper machine comprising, in combination, a double flow stock vat, stock feed boxes on each side of said vat, a cylinder rotatable in said vat, means for draining white water from the interior of the cylinder, a pair of stock mixing boxes, means for supplying stock to said boxes, means for diluting the stock in said mixing boxes with white water drained from the cylinder and...
means for flowing said diluted stock to said feed boxes by gravity.

4. A recirculating apparatus for white water recovery, comprising, in combination with a paper machine, a drain for white water, a return or recirculating pump for propelling the drained white water, a pair of stock mixing boxes above said paper machine, means for supplying concentrated aqueous suspensions of stock to said mixing boxes, a pair of pipe lines connecting said pump with said mixing boxes, a mixing box containing drained white water thereto to dilute the stock therein, and a pair of pipe lines leading from said mixing boxes for feeding the diluted stock to the paper machine by gravity.

5. A recirculating apparatus for recovering all of the white water from the wet end of a paper machine, comprising, in combination with a paper machine having a rotating cylinder, a sealing cap, drain boxes on the sealing cap, a suction roll and a stationary suction box, means for completely draining white water from the cylinder, the suction rolls and suction box, a stock mixing box, means for supplying a concentrated stock suspension to said mixing box, means for diluting said stock with the drained white water and means for flowing said diluted stock by gravity to the paper machine.

6. A double flow stock vat for a paper machine, comprising a vat circle, stock feed boxes on each side of said circle, adjustable baffles in said feed boxes, a making board on each side of the vat circle, means for raising and lowering said making board and means for moving all one of said making boards about an axis.

7. In a cylinder vat, in combination, a feed box, a vat circle, a rotatable suction member in said vat circle, a making board on said vat circle, and means for varying the distance of said making board from said cylinder.

8. In a machine of the class described having an open ended cylinder rotatably mounted in a stock vat with chime rings on its inside wall, opposite to the ends of the cylinder, a plurality of guide rolls around the stock vat and a pair of endless belts trained around said guide rolls and overlapping the ends of the cylinder and chime rings for sealing the cylinder from the vat.

9. In a machine of the class described having a stock vat for receiving a pond of pulp stock, said a cylinder rotatable in said vat, means for sealing the ends of the cylinder from the pond comprising an endless strap entrained around each end of the cylinder and adapted to travel therewith.

10. A seal for cylinders with open ends rotatably mounted in stock vats having laterally extending chime rings on their inside walls opposite to the ends of the cylinders comprising an endless belt entrained around the outside of the vat and each end of the cylinder and adapted to travel with the cylinder, said seal overlapping the chime rings and being adjustable to vary the effective width of the cylinder.

11. In a machine of the class described having a stock vat for a pond of stock, a cylinder rotatable in said vat, a sealing cap for said cylinder, a cylinder cap for sealing the cylinder from the pond, a traveling belt slidable over the sealing cap on each end thereof and entrained around the chime rings and the cylinder end ends extending below the sealing cap for sealing the cylinder from the pond.

12. In a machine of the class described having a stock vat and a forming wire entrained around a revolving suction member in said vat, adjustable traveling seals for the ends of said suction member and traveling deckle straps on said forming wire.

13. The process of forming fibrous web material which comprises sucking fibers from their position in aqueous suspension radially onto a traveling forming wire, and said wire advances through a pond of said stock, quickly draining all of the water passing through the wire to effect an uninterrupted suction therefore, and recirculating said water for diluting the aqueous suspensions of stock supplied from the beaters.

14. The process of forming paper which comprises forming a pond of an aqueous suspension of stock, advancing a forming wire through said pond entrained around a revolving member, forcing the fibers from their position in the pond radially onto the wire, quickly draining all of the white water from the revolving member to develop a high hydrostatic head, recirculating said water to stock mixers for diluting the stock supplied thereto and feeding said diluted stock to the pond by gravity.

15. The process of re-using white water drawn from paper machines which comprises flowing said water to mixing boxes and mixing said water with the drained white water and feeding said diluted stock to the paper machine.

16. The process of making paper having unlike surface characteristics which comprises sucking stock from a pond onto a wire to make the wire advances through the pond entrained around a revolving suction member and supplying a different type of stock in separately regulated amounts to the fibers already sucked on the wire as the wire emerges from the pond for imparting a distinct surface characteristic thereto.

17. The process of forming paper with one surface having different characteristics than the other surface which comprises sucking fibers of one type from their position in aqueous suspension in a pond of stock radially onto a traveling forming wire entrained around a revolving suction member immersed in the pond as said wire descends into the pond and sucking auxiliary fibers of another type onto the fibers already on the wire as the wire emerges from the pond.

18. The process of making two sided paper sheets which comprises supplying one type of paper stock to one side of a double flow vat sucking the fibers of said stock onto a traveling forming wire advancing through the vat, supplying another type of stock to the opposite side of the vat and depositing fibers from said stock onto the fibers already on the wire as the wire emerges from the vat.

19. A white water recirculation apparatus for paper manufacturing comprising in combination, stock beaters, stock chests connected therewith for receiving the stock from the beaters, refining screens communicating with the chests for screening stock therefrom, mixing boxes in communication with the screens, a cylinder vat, white water drains therein, means for flowing drained white water to the mixing boxes for diluting the stock therein and means for feeding the diluted stock to the vat.

20. In combination with a double flow vat having main and auxiliary feed boxes and a vat pond for receiving a rotatable cylinder, a main stock beater, an auxiliary stock beater, a main and an
auxiliary stock chest for receiving stock from the beaters, a main and an auxiliary refining screen, means for flowing stock from the main chest to the main screen, means for flowing stock from the auxiliary chest to the auxiliary screen, means for diluting the stock in the screens with white water drained from the cylinder, main and auxiliary mixing boxes, means for flowing stock from the main screen to the main mixing box, means for flowing stock from the auxiliary screen to the auxiliary mixing box, means for selectively flowing white water drained from the vat to said mixing boxes for diluting the stock and means for feeding the diluted stock to the feed boxes of the vat.

21. A stock vat having an adjustable vat circle comprising a pair of spaced opposed arcuate members defining the circle, tracks on the bottom of the vat, and means for moving the members along the tracks to vary the size of the area defined by the circle.

22. A stock vat having a bottom, sides and ends, a plurality of frame members slidable on the bottom of the vat having arcuate shaped faces for defining one half of a vat circle, a plurality of identical frame members in space opposed relation to the aforesaid faces, a gear rack on each frame member, a pair of axes rotatably mounted in the vat end walls, and gears on said axes engaging said racks adapted to move the frame along the track as desired for varying the size of the circle area defined by the frames.

23. A feed device for paper stock to a vat comprising a pipe for conveying stock, a manifold, header pipe in communication therewith, and branch pipes leading from the header to the interior of the vat near the bottom thereof.

24. The process of forming fibrous web material which comprises sucking fibers from their position in aqueous suspension in a pond onto a traveling forming wire by high hydrostatic pressure as said wire advances through the pond around a rotating cylinder while maintaining the pressure against the wire uninterrupted from the time the wire enters the pond until it emerges therefrom.

25. An air tight seal for the top portion of a foraminous cylinder rotatably mounted in a vat having side and end walls comprising, in combination, a substantially vertical air tight drain box extending across the vat and having the ends thereof sealed in the side walls of the vat, a substantially vertical air tight suction box extending across the vat in spaced horizontal relation from the drain box and having its ends sealed in the side walls of the vat, oppositely disposed foraminous faces on said boxes and a horizontal cap member secured to the end walls of the vat joining said boxes together.

26. A double flow stock vat for a paper machine comprising a vat circle defining a stock pond, making boards on each side of said circle, means to supply stock to the stock pond over each of said making boards, a drain opening below one of said making boards to prevent intermingling in the stock pond of stock supplied thereto, and means to adjust the size of said opening.

27. In a paper machine of the class described, a stock vat, a vat circle therein defining a stock pond, feed boxes on each side of said vat circle to supply stock to said pond, a cylinder rotatable in said pond, a drain slot in said vat circle on the ascending side of said cylinder to prevent intermingling of stock from the separate feed boxes, a closure plate slidable across said slot to vary the size of the opening, and means to actuate said closure plate.

28. The process of forming fibrous web material which comprises sucking fibers from their position in aqueous suspension in a pond onto a traveling forming wire entrained around a revolving suction member immersed in the pond as said wire descends into the pond, sucking auxiliary fibers on the fibers already on the wire as said wire emerges from the pond and draining small amounts of the aqueous suspension in the pond from a point below the region where auxiliary fibers are deposited on the wire to prevent intermingling of the auxiliary fibers with the other fibers in the pond.

29. The process of making paper with one surface having different characteristics from the other surface which comprises sucking fibers of one type from their position in aqueous suspension in a pond of stock radially onto a traveling forming wire entrained around a revolving suction member immersed in the pond as said wire descends into the pond, sucking auxiliary fibers of another type onto the fibers already on the wire as said wire emerges from the pond, and draining quantities of stock from a point in the stock pond below the auxiliary stock deposition region to prevent intermingling of the two types of fibers in the stock pond.

30. The process of forming fibrous web material which comprises sucking fibers in aqueous suspension, advancing a forming wire through said pond while entrained around a revolving suction member, depositing fibers on said wire while subjecting the wire and fibers thereon to a constant uninterrupted suction and draining excess stock from the pond below the top level thereof to prevent a building up of excess fibers in the pond.

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