March 29, 1932. T. H. BROADHURST 1,851,941

PAPER MAKING MACHINE

Filed July 21, 1928 2 Sheets-Sheet 1

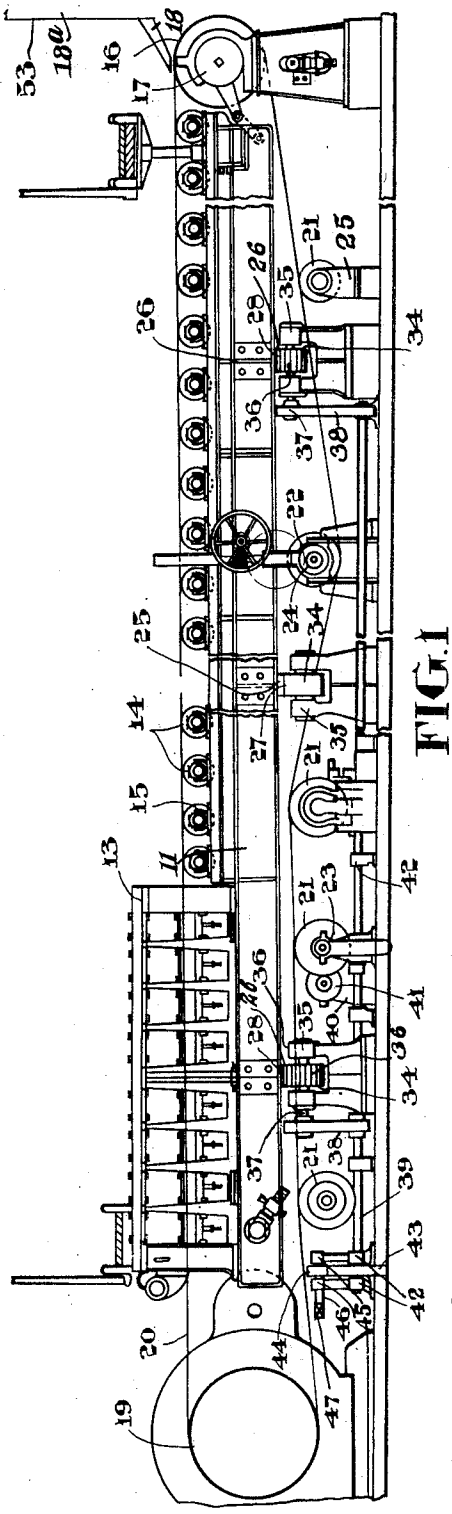

FIG. 1

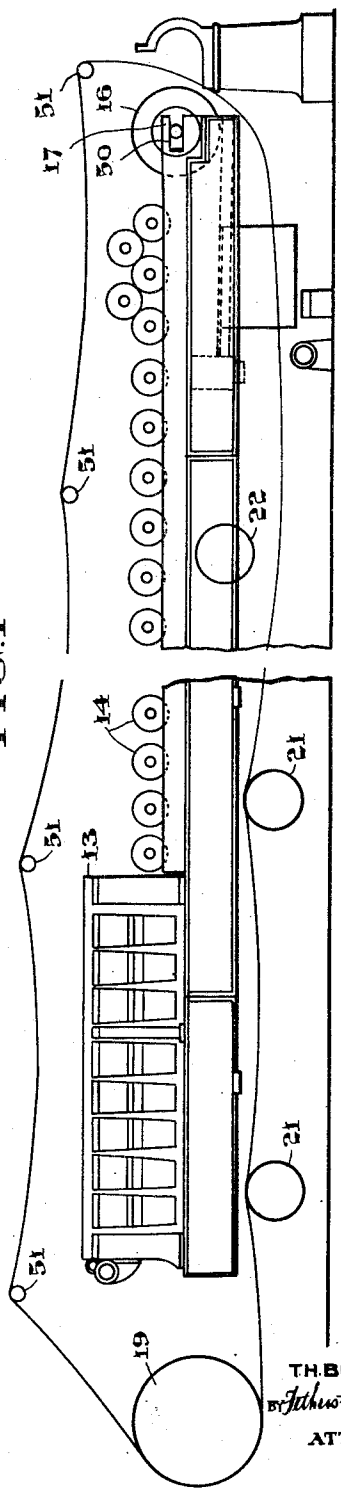

FIG. 2

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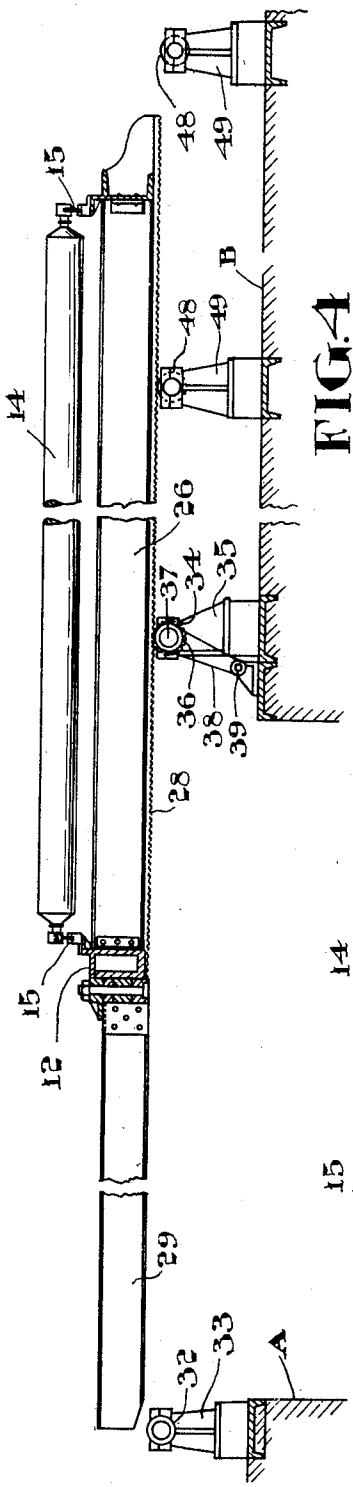

FIG. 4

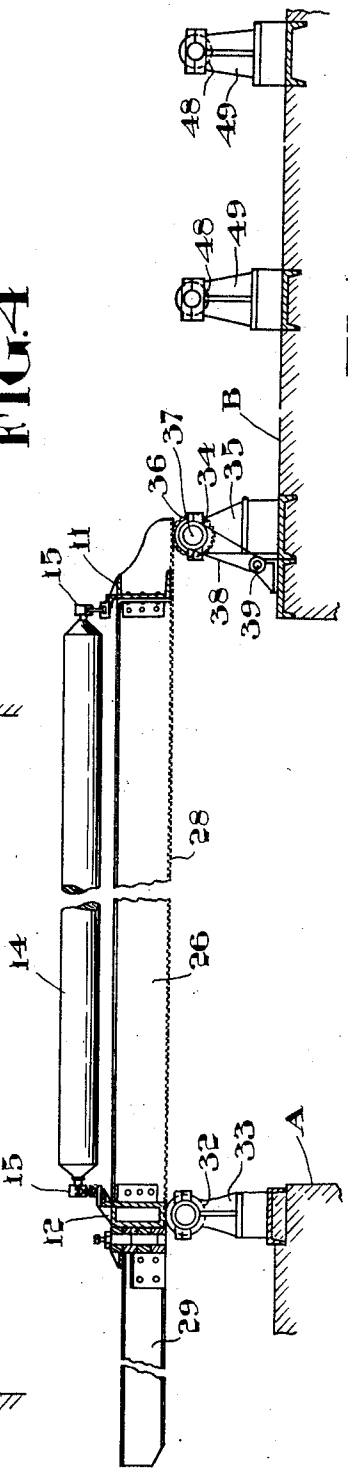

FIG. 3

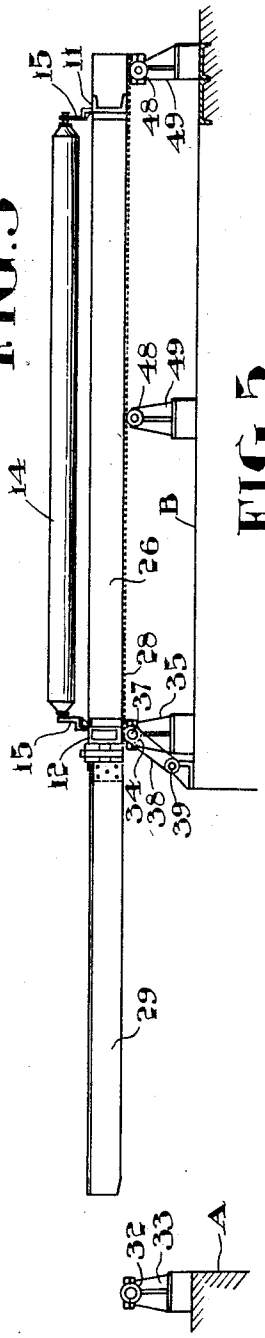

FIG. 5

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PAPER MAKING MACHINE

Application filed July 21, 1928. Serial No. 294,441.

This invention relates to new and useful improvements in paper making machines and particularly to the Fourdrinier type of machine in which the table is moved laterally when placing a new wire thereon. The main object of the invention is to simplify the construction of the machine so that the wire may be quickly and readily changed without removing any of the parts, such as wire supporting parts, drain boxes, and the like, mounted in the bed of the machine.

Another object is to provide novel and efficient means for moving the table in the transverse direction to facilitate the placing of the wire thereon with the minimum of labour and expense.

As disclosed herein the invention contemplates the provision of a table having a frame including spaced side members connected by transverse rail forming members. When the table is in its operative position, the rail forming members rest on a plurality of main supporting rollers carried by stationary posts secured to the underlying floor structure. Certain of the main supporting rollers are rotated, at times, by suitable power operated mechanism supported independently of the table mechanism. When so rotated these rollers co-operate with the engaging rail forming members to propel the table laterally from an operative to an inoperative position, or vice versa. During shifting of the table to an inoperative position, the leading end of at least certain of the rail forming members are brought into engagement with supplementary supporting rollers arranged in the aisle beside the machine, these supplementary rollers being carried by stationary posts aligned with the rail forming members adapted to be supported thereby. Suitable arms are hinged to the side of the table frame remote from the aisle into which the table is shifted during the wire changing operation, the hinge connections being located so that the arms, when swung to a position at right angles to the table frame, are aligned with certain of the transverse rail members to provide continuations thereof. The arms are extended from the table when the latter is to be shifted to an in operative position and serve, during a portion of the shifting operation, to bridge the gap that would otherwise be left between the trailing side of the moving table and the main rollers normally supporting said side. In this way, tilting of the table during lateral movement is effectively avoided. When displacement of the table to an inoperative position is complete, the extension arms are folded flat against the adjacent side of the table frame to prevent interference with the wire changing operation. After the new wire has been arranged in position the arms are again extended to assist in supporting the table during the return of the table to its operative position.

Proceeding now to a more detail discussion of the invention, reference will be had to the accompanying drawings wherein

Fig. 1 is a side elevation of a Fourdrinier paper machine equipped with a laterally movable table constructed and supported in accordance with this invention.

Fig. 2 is a view in side elevation showing the wire slackened and the manner in which certain elements of the machine are rearranged on the table to facilitate the wire changing operation.

Fig. 3 is an end elevation showing the table in operative position with the supporting arms extending outwardly therefrom.

Fig. 4 is an end elevation partly in section showing the table supported at an intermediate point during its travel from an operative to an inoperative position, or vice versa.

Fig. 5 is an end elevation partly in section showing the manner in which the table is supported in laterally displaced position at one side of its normal or operative position.

Referring more particularly to the drawings, 11 and 12 designate the side members

of a laterally movable Fourdrinier table supporting at one end thereof the usual suction boxes 13 and table rolls 14, the latter being shown as rotatably mounted in bearings 15 secured to the side members. The breast roll 16 is mounted at one end of the machine on suitable bearings 17 clear of the adjacent end of the table and in proximity to the outlet nozzle 18 of the head box 18*a*. The usual suction roll 19 is shown at the opposite end of the machine and the endless wire 20 passes around the suction and breast rolls with the upper reach of the wire resting on the table rolls and suction boxes in the usual manner. The lower reach of the wire passes beneath the table in contact with the guide and carrying rolls 21 and tension roll 22, these rolls being respectively mounted in the bearings 23 and 24. The side members 11 and 12 of the table are connected by transversely extending rail forming members appearing at 25 and 26. In the present instance, three rail forming members are provided, including an intermediate member 25 having a smooth lower surface 27 and a pair of end members 26 having their lower surfaces provided with serrations or teeth 28. A pair of arms 29 having smooth lower surfaces are hinged to the table member 12 at points in line with the rail forming members 26 and are adapted to be swung into and out of alignment with said members 26. These arms, when not in use, fold flat against the side member 12.

When the table is in its operative position above the floor pit A (see Fig. 3), the side 12 rests on a series of main supporting rollers indicated at 32. These rollers 32 are journalled in stationary posts 33 mounted on the floor structure at the side of the pit remote from the aisle B into which the table is moved when displaced laterally to an inoperative position, as hereinafter described. Only one roller 32 appears in the drawing, but it will be understood that three of these rollers are provided and that the two end rollers are located in line with the rail forming members 26 while the intermediate roller is located in line with the remaining rail forming member 25. Additional main supporting rollers 34, corresponding in number to the rollers 32, are journalled in posts 35 arranged immediately adjacent the aisle side of the pit A and serve to support the side 11 of the table when the table is in the position shown in Fig. 3. Each roller 34 is aligned wth one of the rollers 32 and is adapted to rotate in supporting engagement with the underside of one of the rail forming members of the table during movement of the table from the position shown in Fig. 3 to the position shown in Fig. 5, or vice versa. The rollers 34, engaging the rail forming members 26, are equipped with teeth or serrations 36 meshing with the teeth or serrations 28 to provide rack and pinion means for propelling the table laterally to and from the positions shown in Figs. 3 and 5. The toothed or serrated rollers 34 are carried by spindles 37 which are connected by belts or chain drives 38 to a power driven shaft 39. Shaft 39 is driven through gearing 40 by a motor 41 and is journalled in bearings 42. Shaft 39 is also manually operable through the medium of a gear 43 fixed to said shaft and meshing with a pinion 44 positioned between bearings 45 and fixed to a spindle 46 journalled in said bearings. One end of the spindle 46 is extended and squared, as indicated at 47 to provide for the attachment of a handle thereto, in the event that the motor 41 is rendered inoperative by current failure or other causes. When the table is displaced to an inoperative position within the aisle B, as shown in Fig. 5, it will be noted that the side 12 is supported by the rollers 34 while the side 11 and the intermediate portion of the table are supported by auxiliary rollers 48 journalled in supporting posts 49 mounted in the aisle B. Preferably, two laterally spaced auxiliary rollers 48 are arranged in line with each of the main supporting rollers 34, but this is optional since it is not absolutely necessary to provide any auxiliary supporting rollers 48 in line with the rollers 34 supporting the rail forming member 25 of the table. As a matter of fact, the rollers 32 and 34 co-operating with the rail forming member 25 may also be dispensed with and the table supported in both its operative and inoperative position solely by means of the rollers 32, 34 and 48 co-operating with the rail forming members 26.

In the use of this invention, the paper making wire when worn is cut and withdrawn from the machine. The breast roll 16 is then lifted from its bearing 17 and placed on suitable supporting faces provided for this purpose at the breast roll end of the table as shown to advantage in Fig. 2. Certain of the table rolls are also removed from their normal positions and piled upon the remaining rolls. The arms 29 are next swung into a position of alignment with the rail forming members 26 of the table. The motor 41 is now operated to rotate the toothed rollers 34 in a direction to propel the table to the right from the position shown in Fig. 3. During this movement of the table, the leading ends of the rail forming members 25 and 26 pass into supporting engagement with the auxiliary supporting rollers 48. As the trailing edge of the table proper moves out of supporting engagement with the rollers 32, the arms 29 are brought into engagement with these rollers and serve to hold the table level until the table has moved to a position where the center of gravity is located at the right of the supporting rollers 34. When the table is in its full displaced or inoperative position it is supported partly by the main supporting rollers 34 and partly by the auxiliary sup-

porting rollers 48, it being noted in this connection that the toothed or serrated rollers 34 are, at all times, in propelling engagement with the rail forming members 26. After the table reaches the position shown in Fig. 5, the arms 29 are swung inwardly to lie flat against the side member 12 and thus avoid interference with the wire placing operation. As shown in Fig. 2, one of the wire tensioning rolls is removed and the new wire then placed over the suction roll with the upper reach of the wire supported in elevated position by a suitable arrangement of temporary supports 51 such as commonly used for this purpose. The wire is thus supported in the form of a loop through which the table and the parts of the machine mounted on the table are permitted to pass freely during return movement of the table to its operative position. In effecting this return movement of the table, the arms 29 are again swung to extended position so that as the table is moved to the left from the position shown in Fig. 5 to the position shown in Fig. 3, these arms are brought into supporting engagement with the rollers 32 as the right hand portion of the table is moving out of engagement with the right hand auxiliary supporting rollers 48, the horizontal position of the table being maintained by the auxiliary rollers 48 located nearest to the rollers 34, until the table has travelled to the left to a position where the center of gravity is located to the left of the rollers 34. After return of the table to its operative position, the supports 51 are withdrawn and the breast roll 16 reengaged with its bearing 17 while at the same time the displaced wire supporting rolls 14 are returned to their normal positions on the table. The previously removed tensioning roll is then replaced in position and serves to draw the wire into contact with the suction boxes, table rolls, breast roll and suction roll so that the machine is again ready to receive paper stock from the head box outlet 18.

Having thus described my invention, what I claim is:—

1. A Fourdrinier paper machine equipped with a laterally movable table, rollers mounted independently of the table and arranged to support the table in either an operative or a laterally displaced position, and means for rotating certain of the rollers to propel the table to or from either of said positions.

2. A Fourdrinier paper machine equipped with a laterally movable table, main supporting rollers bearing against the table to support the table in operative position, auxiliary rollers arranged to bear against the table to assist in supporting the table when the table is in a laterally displaced position and means for rotating certain of the main supporting rollers to propel the table to or from either of said positions.

3. A Fourdrinier paper machine equipped with a laterally movable table, rollers mounted independently of the table and arranged to support the table in either an operative or a laterally displaced position and means for driving certain of the rollers to propel the table to or from either of said positions, said driven rollers being in direct, uninterrupted propelling engagement with the table in all positions of the latter.

4. A Fourdrinier paper machine equipped with a laterally movable table, extension arms hinged to said table and adapted to be extended therefrom during lateral movement of the table, independently mounted rollers arranged to support the undersides of the table and arms during lateral movement thereof, and means for driving certain of said rollers to furnish the power for moving the table laterally.

5. A Fourdrinier paper machine equipped with a laterally movable table including transverse rail members, extension arms hinged to the table to travel therewith, said arms being adapted to be extended from the table to form continuations of the rail members during lateral movement of the table, independently mounted rollers arranged to engage the undersides of the rail members and extension arms to support the same during lateral movement, and means for rotating certain of said rollers to propel the table from an operative to a laterally displaced position and vice versa.

6. A Fourdrinier paper machine equipped with a laterally movable table having a frame including side members connected by transverse rail forming members, a plurality of independently mounted main supporting rollers arranged so that the side members of the table frame rest thereon when the table is in its operative position, auxiliary supporting rollers arranged in laterally spaced relation to the table when the table is in said operative position, said table being movable laterally from its operative position to a laterally displaced position wherein the table is supported partly by the auxiliary rollers and partly by certain of the main rollers, and means for rotating certain of said main rollers to propel the table laterally in either direction, said propelling rollers acting against the undersides of the rail forming members during movement of the table.

7. A Fourdrinier paper machine equipped with a laterally movable table including side members connected by transverse rail forming members, arms hinged to one of said side members and adapted to be extended outwardly therefrom to form continuations of the rail forming members, main supporting rollers arranged to support the table in its operative position and to bear against the undersides of the rail forming members and the extended arms during movement of the table

from its operative to a laterally displaced position or vice versa, auxiliary supporting rollers arranged to bear against the underside of the rail forming members when the table is in its laterally displaced position, and means for driving certain of the main supporting rollers to propel the table to and from either of said positions, the contacting surfaces of the driving rollers and the rail forming members being formed to provide a rack and pinion drive connection therebetween.

In witness whereof, I have hereunto set my hand.

THOMAS H. BROADHURST.