June 5, 1934. B. A. MALKIN 1,961,771

SLICE ASSEMBLY FOR PAPER MACHINES

Filed Jan. 14, 1933 3 Sheets-Sheet 1

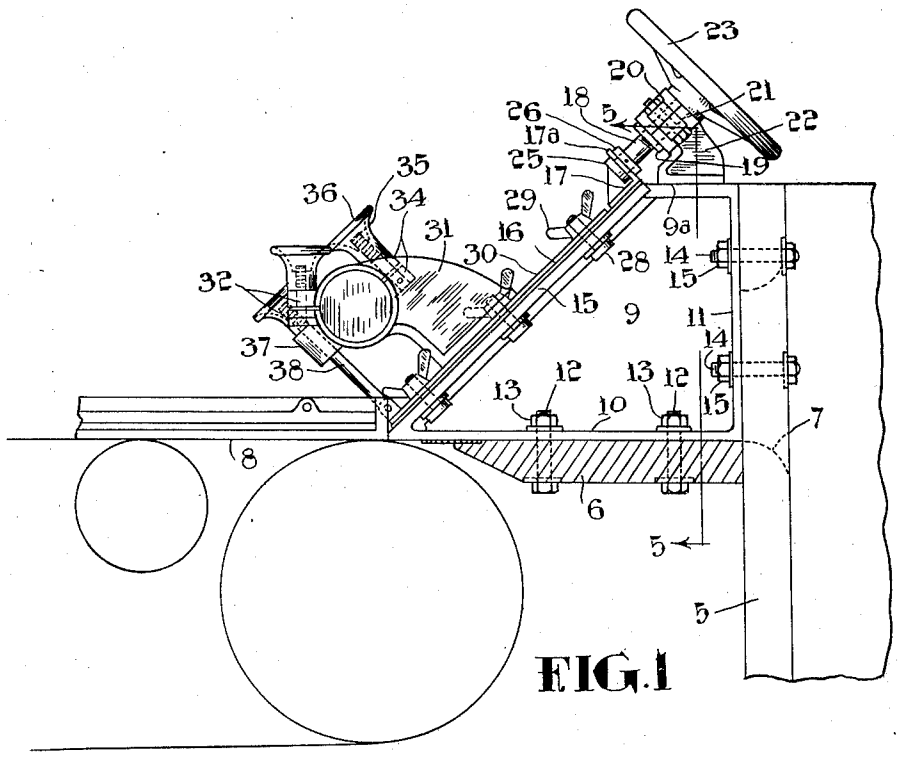


FIG. 1

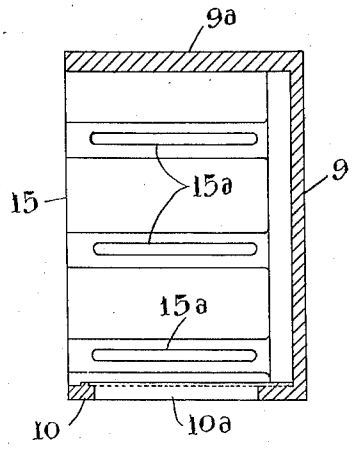


FIG. 5

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SLICE ASSEMBLY FOR PAPER MACHINES

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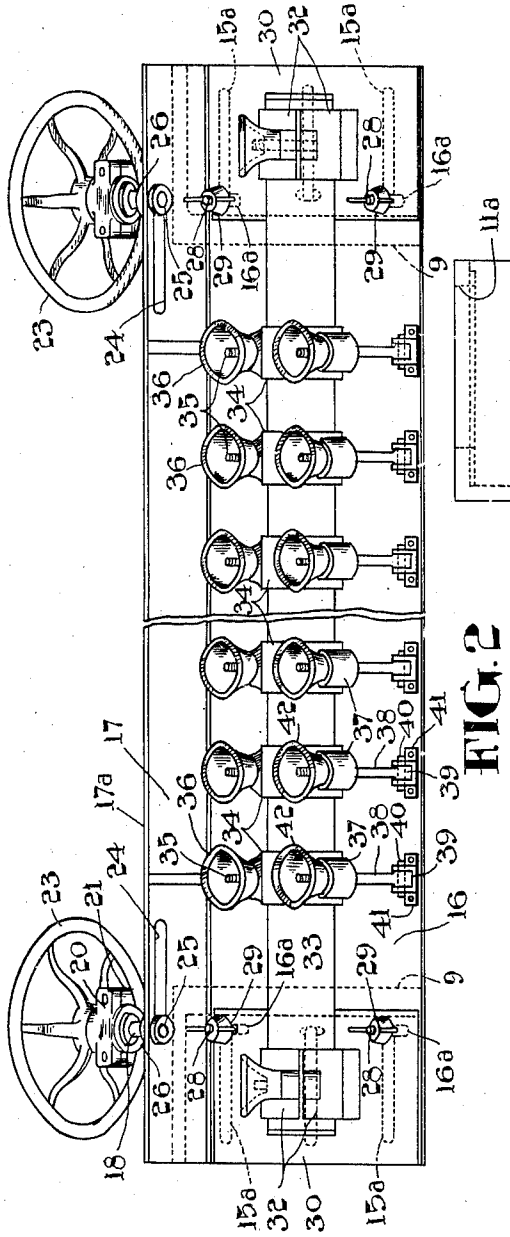


FIG. 2

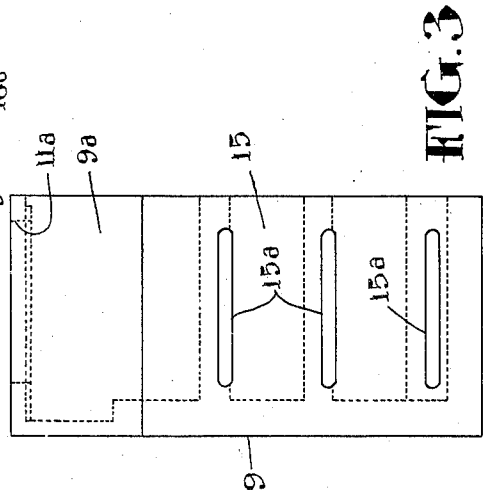


FIG. 3

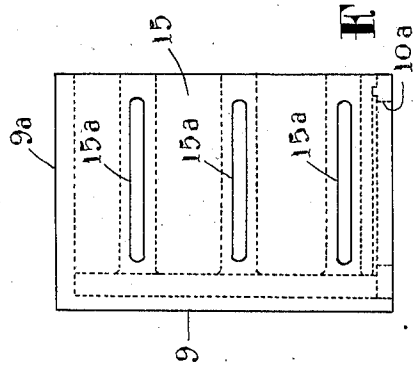


FIG. 4

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SLICE ASSEMBLY FOR PAPER MACHINES

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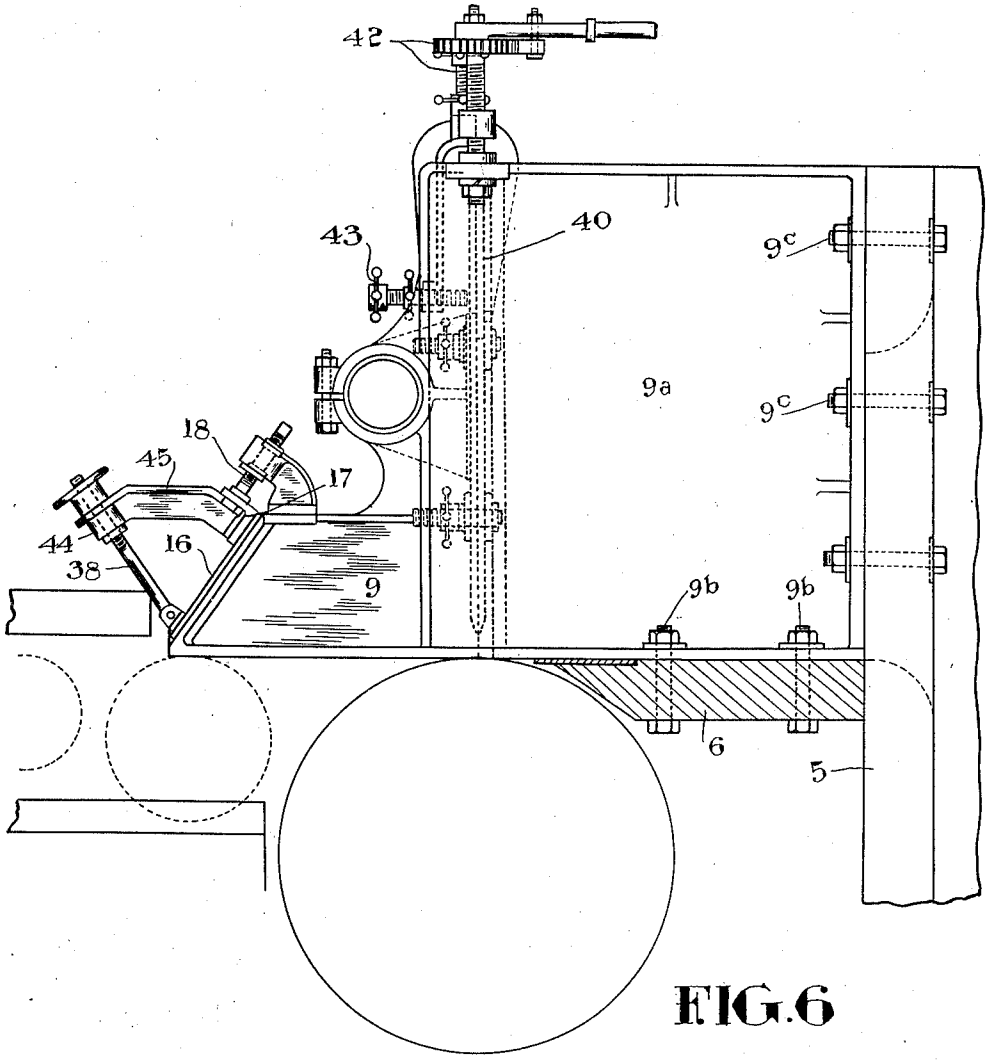


FIG.6

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SLICE ASSEMBLY FOR PAPER MACHINES

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Application January 14, 1933, Serial No. 651,733

16 Claims. (Cl. 92—44)

This invention resides in the provision of an improved slice assembly for Fourdrinier paper making machines which may be used as a first, second or third slice.

In its preferred embodiment, the invention comprises a flat slice plate supported, in a vertically inclined position, by a pair of laterally adjustable pond sides, said plate being mounted on and fastened to the pond sides so as to have the capacity of bodily adjustment in the plane of its inclination, and being also equipped with means for locally flexing the lower edge thereof at various points between the pond sides.

With this assembly the depth of the flow opening between the slice plate and the forming wire may be regulated by adjusting the slice plate in the plane of its inclination; by flexing the lower edge of the plate; or by doing both. These adjustments are effected without varying the width of the flow opening as determined by the relative spacing of the adjustable pond sides. Conversely, the pond sides may be adjusted with respect to each other and with respect to the slice plate to regulate the width of the flow opening without disturbing the depth of said opening as determined by previous adjustments of the slice plate relative to the pond sides.

Proceeding now to a more detailed description of this invention, reference will be had to the accompanying drawings, in which—

Fig. 1 is a side elevation of a slice assembly provided in accordance with this invention as it appears when used as a first slice in connection with a conventional Fourdrinier machine.

Fig. 2 is a front elevation of the slice assembly per se.

Fig. 3 is a top plan view of one of the adjustable pond sides.

Fig. 4 is a front view of the pond side appearing in Fig. 3.

Fig. 5 is a view showing one of the pond sides in vertical section, the plane of the section being substantially along the line 5—5 of Fig. 1.

Fig. 6 is a view similar to Fig. 1 but showing one manner in which the slice assembly of the present invention may be employed as a second slice in connection with a Fourdrinier machine.

In the construction shown in Figs. 1 to 5 inclusive, 5 designates a head box provided with an apron board 6 over which the pulp stock is conducted from the head box outlet 7 to the forming wire 8. According to the present invention a pair of laterally adjustable pond sides 9 are mounted on the apron board 6 at opposite sides of the opening 7. Each pond side is provided with a horizontal attaching flange 10 and a vertical attaching flange 11, the former being fastened by bolts 12 and nuts 13 to the apron board 6 and the latter by bolts 14 and nuts 15 to the front wall of the head box. The openings in the flanges 10 and 11 through which the bolts 12 and 14 pass are elongated as shown at 10*a* and 11*a* (see Figs. 3 and 5). This permits lateral adjustment of the pond sides to regulate the width of the intervening flow passage. The pond sides 9 are also shaped to present vertically inclined sufaces 15 which serve to support the ends of a flat and similarly inclined slice plate 16 which is of relatively thin and flexible construction. An angle 17 secured to the upper portion of the slice plate 16 has its end portions attached to a pair of adjusting screws 18 which are in threaded engagement with nuts 19 carried between the clamping sections 20 and 21 of a pair of brackets 22 mounted on the upper horizontal portions 9*a* of the pond sides. Each screw 18 is equipped with an operating handle 23 and its lower end passes through an elongated slot 24 in the outwardly projecting flange 17*a* of the angle 17, said flange being confined between the head 25 at the lower end of the screw and an opposing collar 26 so that adjustment of the screws 18 serves to raise and lower the slice plate in the plane of its inclination, thereby regulating the depth of the flow opening provided between the lower edge of the plate and the forming wire 8.

The slice plate 16 is also fastened to the pond sides 9 by means of the bolts 28 and the wing nuts 29. These bolts pass through horizontal elongated slots 15*a* formed in the inclined portions 15 of the pond sides and also through vertical elongated slots 16*a* formed in the slice plate 16. As will be evident from the drawings, the horizontal elongation of the slots 15 permit the pond sides 9 to move independently of the slice plate when these pond sides are adjusted laterally with respect to each other to regulate the width of the intervening flow passage. Similarly, the vertical elongation of the slots 16*a* formed in the slice plate 16 permits the latter to be raised and lowered relative to the pond sides when the screws 18 are operated for this purpose. It will also be evident that, during lateral adjustment of the pond sides relative to the slice plate, the screws 18 are free to move relative to the slice plate due to the horizontal elongation of the slots 24. Each end of the slice plate 16 carries thereon a plate 30 which is welded or otherwise rigidly fastened to the slice plate and is suitably apertured for the passage of the bolts 28. These

plates 30 carry brackets 31 provided with split clamping members 32 embracing the ends of a cylindrical rod 33. Spaced along the length of this rod are a plurality of split clamps 34 which are clamped to the rod by means of the studs 35 and the nuts 36. Each clamp 34 is provided with a boss 37 through which extends a bolt 38 having its lower end formed to provide an eye 39 which is pivotally secured by means of the pin 40 and bracket 41 to the lower edge portion of the slice plate 16. The upper ends of the bolts 38 project beyond the bosses 37 and are in threaded engagement with suitable adjusting nuts 42. By turning the nuts 42 pressure may be applied through the bolts 38 to effect local flexure of the slice plate at different points along the unsupported span extending between the pond sides 9 so that finer adjustments with respect to varying the depth of the flow passage beneath the slice plate may be obtained in addition to that resulting from operation of the slice plate shifting screws 18.

In the modified construction shown in Fig. 6 the pond sides 9 are cast integral with larger pond sides designated 9*a*. In this case the larger pond sides 9*a* are fastened to the apron board 6 and to the front wall of the head box 5 by bolts 9*b* and 9*c*. The openings in the pond sides 9*a* for the passage of these bolts 9*b* and 9*c* are elongated substantially as described in connection with Figs. 1 to 5 inclusive so that the pond sides 9*a* together with the attached pond sides 9 may be adjusted laterally to regulate the width of the flow passage provided therebetween. The pond sides 9*a* carry between them a lengthwise adjustable slice plate 40 which constitutes the first slice. In the present instance the slice plate 40 together with its adjusting devices indicated at 42 and 43 represents a well known type of adjustable slice plate design which forms no part of the present invention, and therefore need not be described in detail. In this particular installation the slice plate 16 carried by the pond sides 9 constitutes a second slice which is bodily adjustable through the agency of the adjusting screws 18 in the same manner as previously described. In the case of Fig. 6 there is also a slight modification with respect to the bolts 38 through which pressure is applied by flexing the lower edge of the slice plates 16. In this instance the upper portions of these bolts pass through bosses 44 formed at the free end of brackets 45 carried by the angle 17 to which the slice plate adjusting screws 18 are attached. Other than this the construction shown in Fig. 6 with respect to the pond sides 9 and the slice plate 16 will be the same as described in Figs. 1 to 5 inclusive.

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

1. A slice for paper making machines comprising a vertically inclined slice plate mounted to have the capacity of bodily adjustment in the plane of its inclination.

2. A slice for paper making machines comprising a vertically inclined slice plate mounted to have the capacity of bodily adjustment in the plane of its inclination and means for flexing the lower edge of the plate at various points along its length.

3. A slice for paper making machines comprising a flat vertically inclined slice plate of relatively thin and flexible construction mounted to have the capacity of bodily adjustment in the plane of its inclination and means for flexing the lower edge of the plate at various points along its length.

4. A slice for paper making machines comprising a flat slice plate and a pair of pond sides presenting vertically inclined surfaces supporting said plate in a vertically inclined position.

5. A slice for paper making machines comprising a flat slice plate and a pair of laterally adjustable pond sides presenting vertically inclined surfaces supporting said plate in a vertically inclined position.

6. A slice for paper making machines comprising a flat slice plate and a pair of pond sides presenting vertically inclined surfaces supporting said plate in a vertically inclined position, said pond sides being adjustable relatively to said plate to vary the width of the flow passage provided therebetween.

7. A slice for paper making machines comprising a flat slice plate and a pair of pond sides presenting vertically inclined surfaces supporting said plate in a vertically inclined position, said plate being adjustable in the plane of its inclination and relatively to said pond sides.

8. A slice for paper making machines comprising a flat slice plate and a pair of pond sides supporting said plate in a vertically inclined position, said pond sides being adjustable with respect to each other and with respect to the slice plate to vary the width of the flow passage provided therebetween and said slice plate being adjustable relatively to said pond sides and in the plane of its inclination.

9. A slice for paper making machines comprising a flat slice plate and a pair of pond sides supporting said plate in a vertically inclined position and fastening means between the plate and the pond sides arranged to permit independent adjustment thereof.

10. A slice as claimed in claim 9 in which the slice plate is adjustable in its plane of inclination without disturbing the adjustment of the pond sides and in which the said pond sides are adjustable laterally with respect to each other and relatively to the slice plate without disturbing the aforesaid adjustment of the plate in its plane of inclination.

11. A slice for paper making machines comprising a flat slice plate, a pair of pond sides presenting vertically inclined surfaces supporting the ends of the slice plate so that the plate is thereby disposed in a vertically inclined position and adjusting devices connected between the pond sides and the slice plate for adjusting said plate in the plane of its inclination.

12. A slice for paper making machines comprising a flat slice plate, a pair of pond sides presenting vertically inclined surfaces supporting the ends of the slice plate so that the plate is thereby disposed in a vertically inclined position, means for adjusting the plate in its plane of inclination by moving it upwardly or downwardly along the inclined supporting surfaces of the pond sides and means for flexing the lower edge of the plate at various points along its length.

13. A slice for paper making machines comprising a flat slice plate, a pair of pond sides presenting vertically inclined surfaces supporting the ends of the slice plate so that said plate is thereby disposed in a vertically inclined position, and fastening means for the slot and bolt type securing the end portions of the slice plate to the pond sides whereby said plate is capable of being raised or lowered along the inclined supporting surfaces of the pond sides to affect vertical adjustment of the plate in its plane of inclination and means for so adjusting said plate.

14. A slice for paper making machines comprising a pair of pond sides presenting vertically inclined surfaces, a flat slice plate having its ends resting on said surfaces whereby said plate is disposed in a vertically inclined position, adjusting means carried by the upper portion of the pond sides and connected with the upper edge of the slice plate adapted to raise and lower the slice plate along the inclined surfaces of the pond sides.

15. A slice as claimed in claim 14 including means carried by said plate for flexing the lower edge of the plate at various points along the unsupported- span extending between the pond sides.

16. A slice for paper machines comprising a pair of pond sides presenting vertically inclined front wall portions, a flat slice plate arranged with its ends resting on said inclined wall portions whereby said plate is disposed in a vertically inclined position, said plate having a series of vertically spaced lengthwise extending slots formed in the end portions thereof which are supported by the inclined walls of the pond sides and each of said walls being provided with a series of slots arranged so that each slot crosses the plate slot, and fastening bolts passing through the registering slots of the pond sides and the plates so that when the fastening bolts are loosened the plate may be adjusted on the inclined walls of the pond sides or the latter may be adjusted to different positions along the length of the plate.

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