June 17, 1930. J. W. HARRIS 1,764,260

DECKLE FOR PAPER MAKING MACHINES

Filed Aug. 4, 1925 3 Sheets-Sheet 1

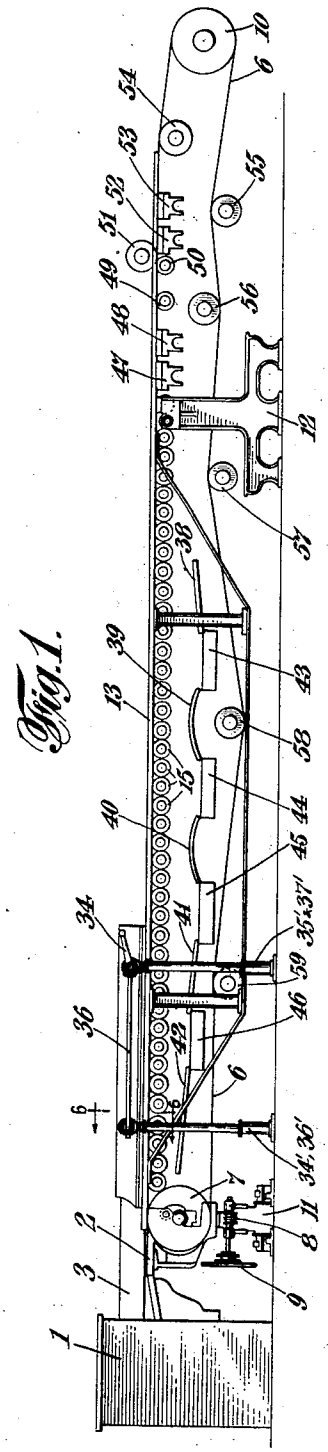


Fig. 1.

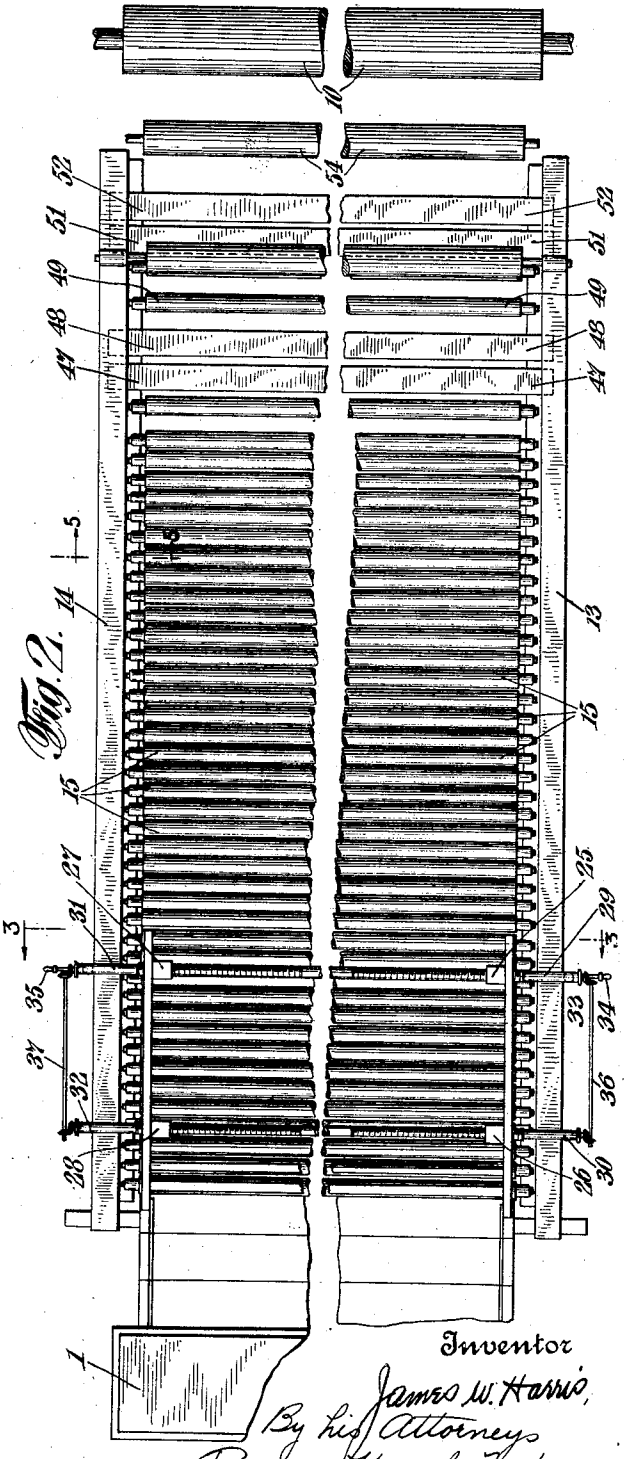


Fig. 2.

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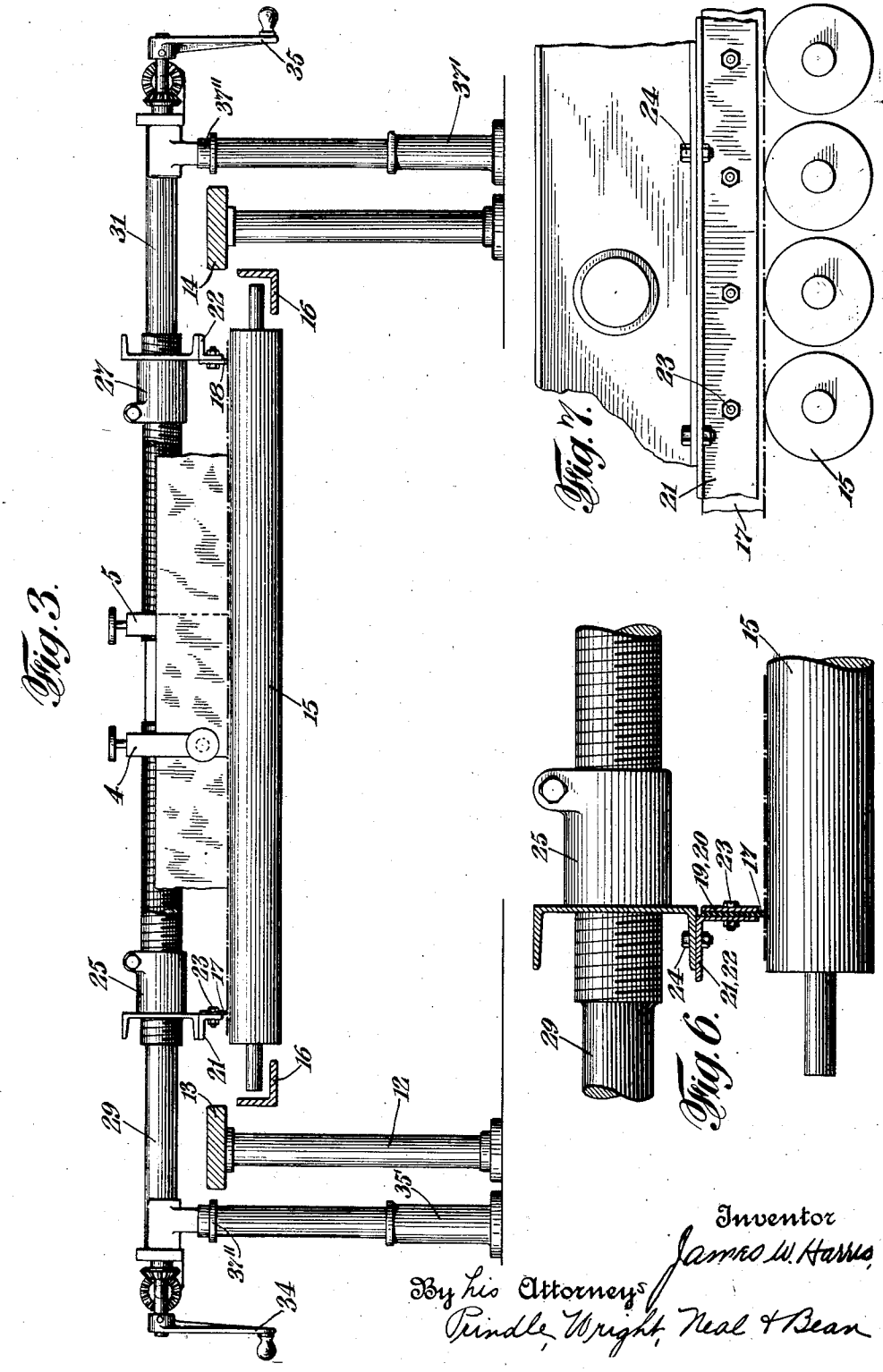


Fig. 3.

Fig. 5.

Fig. 6.

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Fig. 4.

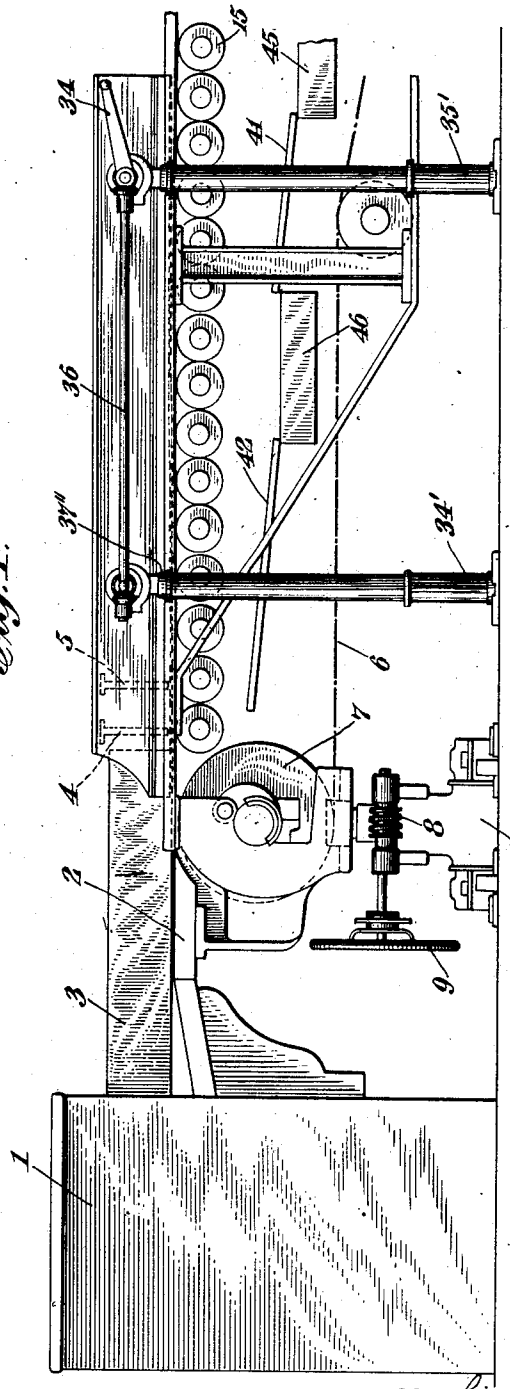


Fig. 8.

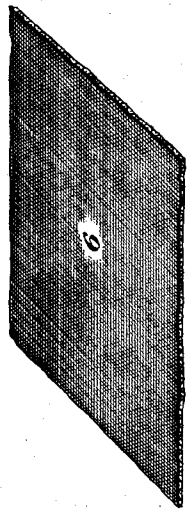
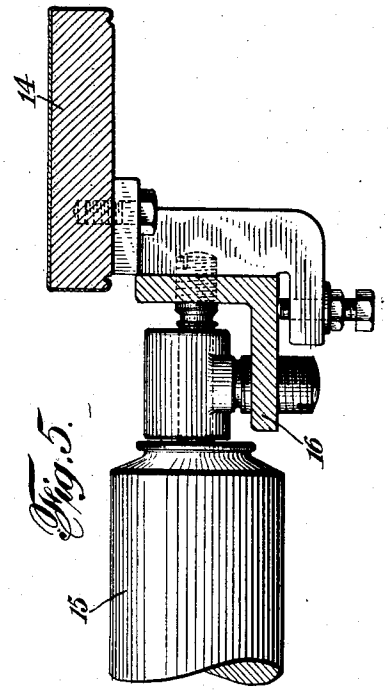


Fig. 5.



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Patented June 17, 1930 1,764,260

UNITED STATES PATENT OFFICE

JAMES W. HARRIS, OF RUMFORD, MAINE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PAPER MACHINERY CORPORATION, OF DAYTON, OHIO, A CORPORATION OF OHIO

DECKLE FOR PAPER-MAKING MACHINES

Application filed August 4, 1925. Serial No. 48,024.

My invention relates to deckles for paper making machines and is applicable to paper making machines of many different kinds.

The object of my invention is to provide a stationary deckle for use in paper making machines generally and which has many advantages over previous deckles used in paper making machines. Previously, in paper making machines the deckles generally in use were comprised of what is known as "deckle straps" which were carried upon rolls so that there would be one deckle strap at each side of the same supported upon and moving with the Fourdrinier wire screen, to prevent the liquid carrying the paper stock from flowing laterally off the wire. By providing stationary deckles, in accordance with my invention, the life of the wire is increased, and the life of the rolls carrying the wire is also increased, as they do not support the weight of the deckles. There is also greater ease in changing the width of the sheet on the machine, and less liability of water and dirt dropping from the upper part of the deckles onto the paper.

Furthermore, the deckles made in accordance with my invention not only enable a sheet of paper to be made, which is better formed and more nearly of the same thickness at the edges while increasing the production of the machine due to the longer life of the wire, but also eliminate the elaborate mechanical devices previously used for carrying the deckle straps, and accordingly decrease the cost of repairs in the upkeep of the machine.

Furthermore, I have found that I may accomplish the above purposes without having such long deckles as were previously used. Further advantages of my invention will appear from a detailed description of the same hereinafter.

While my invention is capable of embodiment in many different forms, by way of illustration I shall describe only one form of the same in the accompanying drawings, in which—

Figure 1 is a side elevation of a paper making machine shown diagrammatically and equipped with my improved form of deckles,

Figure 2 is a plan view of the same,

Figure 3 is a transverse section taken on line 3—3 in Figure 2,

Figure 4 is a enlarged fragmentary side elevation,

Figure 5 is a detail view showing the mounting of the rollers on the rail,

Figure 6 is an enlarged detailed elevation showing an end of one of the deckles made in accordance with my invention,

Figure 7 is a side elevation of Figure 6, and

Figure 8 is a fragmentary view of the wire belt.

In the drawings I have shown a Fourdrinier paper making machine having a stock supply box for receiving the stock carried by a body of water, preferably in the proportion of about 8-38/100 pounds of paper stock to 200 gallons of water, the same being delivered into the stock supply box through any suitable type of screens, in the usual manner. From this point the paper stock flows out of the stock supply box onto an apron 2 to a depth of about 4 inches, the depth being maintained by means of two side aprons 3 and two slices 4 and 5, in the usual manner. From this point the water carrying the paper stock flows under the slices 4 and 5 onto a Fourdrinier wire 6 of the usual kind, which is comprised of a very fine wire mesh screen cloth of brass in the form of a belt passing over a roll 7 having an adjusting mechanism 8, provided with an operating handle 9, for raising or lowering the roll 7. The other end of the wire passes over a suction or couch roll 10 of the usual type. The roll 7 and its adjusting mechanism 8 are carried by a support 11, which, together with two supports 12 near the other end of the machine, act as a supporting means for two longitudinal rails 13 and 14, forming therewith the main frame of the machine. The wire 6 in its forward movement passes over a set of table rolls 15 supported in any suitable bearings carried by angle bars 16 supported in any suitable manner from the rails 13 and 14.

The paper stock which passes under the slices 4 and 5 to be received upon the wire 6 forms a paper web owing to the elimination of the water therefrom, the body of stock being maintained in position at a uniform

depth during the formation of the paper web by means of stationary deckles, comprised of sheets of fabric, such as rubber or any other desired material 17 and 18, located at the two sides to the machine immediately above the wire 6. The supporting means for the rubber sheets 17 and 18 is comprised of outer clamping plates of copper 19 and 20 and inner angle members of copper 21 and 22 secured together by bolts 23. The angle members 21 and 22 are secured by bolts 24 to four deckle frames 25, 26, 27 and 28, which are slidably mounted upon corresponding deckle frame supports 29, 30, 31 and 32, having geared screw threaded shafts 33 passing therethrough to engage with the deckle frames 25, 26, 27 and 28. The said shafts 33 are adapted to be operated by handles 34 and 35 with the aid of longitudinal shafts 36 and 37, having appropriate bearing meshing with the gears 33. It will be noted that the supports 29, 30, 31 and 32 are carried upon suitable uprights 34′, 35′, 36′ and 37′ which, if desired, may be made of telescoping parts, as shown in Figure 1, in order to enable them to be adjusted vertically by means of nuts 37″. The water which passes through the wire 6 at this point in the machine is received by appropriate trays 38, 39, 40, 41 and 42, from which the water flows into laterally removable pans 43, 44, 45 and 46.

After leaving the table rolls 15, the wire passes over any desired type of vacuum boxes 47, 48 and a supporting roll 49 and between a supporting roll 50 and a dandy roll 51. Thence it passes over two vacuum boxes 52 and 53 and a guide roll 54 until the suction roll 10 is reached. Thereafter the wire 6 passes in the reverse direction adjacent to carrying and stretch rolls 55, 56, 57, 58 and 59 back to the breast roll 7.

It will also be noted that the deckles are comparatively short in that they do not extend more than approximately one third the length of the set of table rolls 15, whereas previously the deckle straps have extended even beyond the end of the set of table rolls.

In the operation of my apparatus the paper stock carried by the body of water flows into the stock supply box 1, and thence onto the apron 2, where it is maintained at a depth of substantially four inches by means of the side aprons 3. The paper stock then flows onto the wire 6 and under the slices 4 and 5, which provide a body of the paper stock of uniform depth on the wire. This uniformity of depth is maintained even at the sides of the wire 6, owing to the presence of the stationary deckles at the two sides of the wire, which effectively prevent the body of paper stock from flowing away at the edges of the wire 6. These deckles may be adjusted laterally when desired by means of the handles 34 and 35, all of the four ends of the two deckles being simultaneously moved in a uniform manner during the adjustment. Also the deckles may be adjusted in a vertical direction by adjusting the nuts 37″ and elevating the vertical supports 34′, 35′, 36′ and 37′ or lowering the same, as desired. The water which flows away from the paper stock through the wire 6 is collected in the pans 43, 44 and 45 and flows therefrom continually to a suitable return water pump. The web of paper thus formed on the wire 6 is thereafter conveyed over vacuum boxes 47 and 48 through the supporting roll 50 and the dandy roll 51 and over vacuum boxes 52 and 53 for the removal of the residual water, after which the final traces of water are removed by the suction roll 10, and the web of paper conveyed therefrom to any suitable apparatus for further finishing the paper in the desired manner. The wire 6 then travels in the reverse direction back to the roll 7.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit of the same.

I claim:

1. In a paper making machine a substantially stationary deckle, comprising a sheet of flexible material, means for holding the same, and a laterally adjustable means to which the flexible material holding means is removably secured for supporting the holding means.

2. In a paper making machine a substantially stationary deckle, comprising a sheet of flexible material, clamping plates on opposide sides of the said sheet holding the same, and a laterally adjustable means to which the clamping plates are removably secured for supporting the clamping plates.

3. In a paper making machine of the character described, having a traveling forming wire and means for flowing a stream of stock upon said traveling wire, a stationary deckle for restraining lateral spread of the stock upon the wire, comprising a laterally adjustable channel member extending longitudinally of said wire, a longitudinally extending angle member having one leg removably secured to said channel member, a depending sheet of flexible material adapted to extend to a position to restrain lateral spread of stock upon said wire, and a clamping plate for removably securing said sheet between the other leg of said angle member and said clamping plate.

In testimony that I claim the foregoing, I have hereunto set my hand this 30th day of July, 1925.

JAMES W. HARRIS.