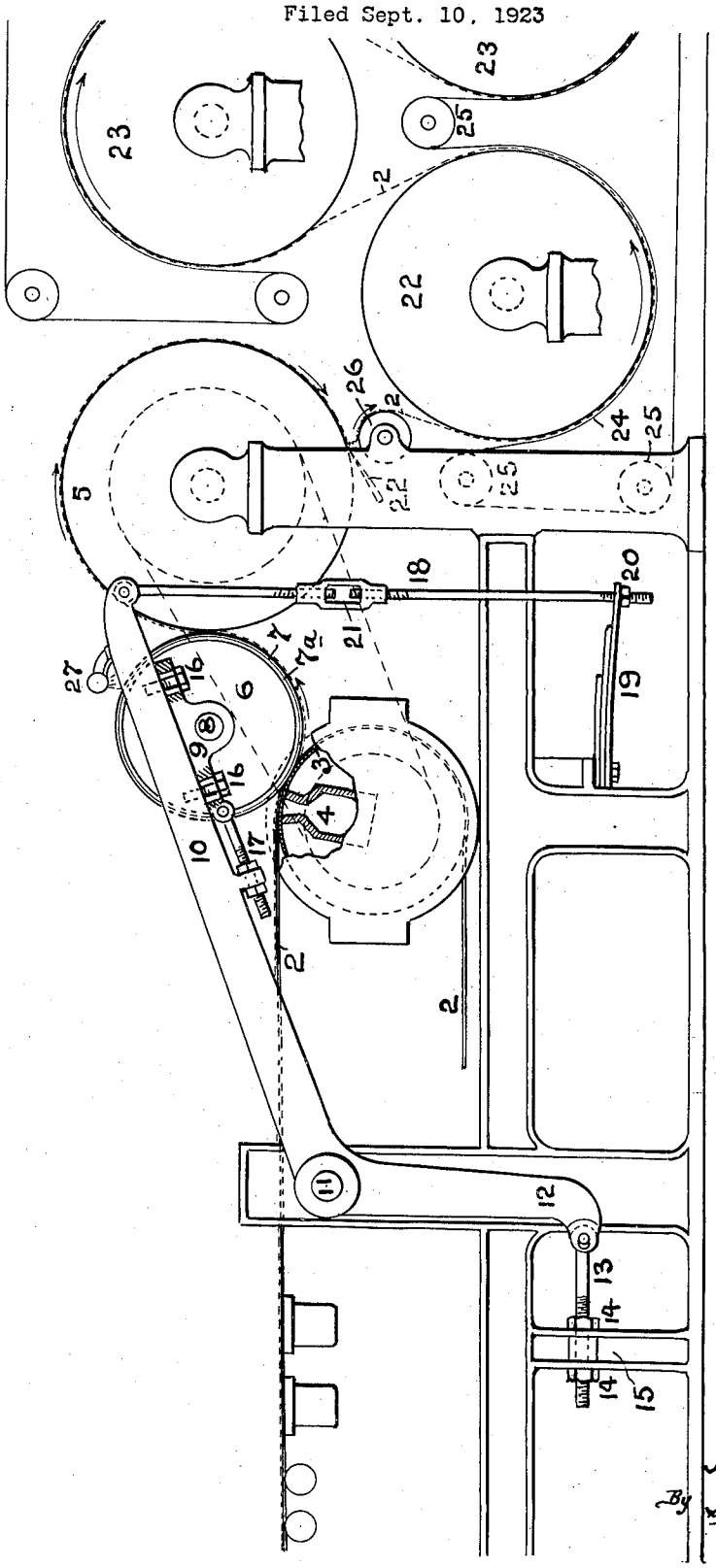
Sept. 15, 1925. 1,553,948

J. J. LOBB

PAPER MAKING MACHINE

Filed Sept. 10, 1923



Inventor.
John J. Lobb.
By
Attorney.

Patented Sept. 15, 1925. 1,553,948

UNITED STATES PATENT OFFICE.

JOHN J. LOBB, OF CHESTER, PENNSYLVANIA, ASSIGNOR TO SCOTT PAPER COMPANY, A CORPORATION OF DELAWARE.

PAPER-MAKING MACHINE.

Application filed September 10, 1923. Serial No. 661,764.

To all whom it may concern:

Be it known that I, JOHN J. LOBB, a citizen of the United States, and resident of Chester, county of Delaware, and State of Pennsylvania, have invented an Improvement in Paper-Making Machines, of which the following is a specification.

My invention has particular reference to improvements in Fourdrinier machines whereby the endless felts now employed for carrying the paper web from the wire apron and couch roll thereof to the dryer cylinders, together with the suction boxes, press rolls, etc., employed therewith are dispensed with, thereby securing simplicity and economy of construction and less liability to breakdowns or other causes of interruption of operation arising out of the complicated and frail character of the transferring means at present employed.

My invention has for an object the employment of a single transfer roll adjustably supported with respect to the couch roll of the Fourdrinier and receiving cylinder (or first drier), by which the wet paper web is conveyed in a continuous manner from the couch roll to the receiving drier and without strain upon the web, whereby the surface speed of the paper and incidentally the capacity of the machine as a whole may be greatly increased without danger of rupturing the paper web.

My object is also to dispense with the press rolls and to employ the transfer roll in conjunction with the couch roll as a substitute, thereby causing the transfer roll to perform the dual function of a press roll and transferring means to the drier.

With the above and other objects in view, the nature of which will be more fully understood from the description hereinafter, the invention consists in the novel construction of paper making machines, as hereinafter more fully described and defined in the claims.

Referring to the drawings: I have shown more or less diagrammatically, the delivery end of a Fourdrinier machine and receiving end of the driers, associated with my improved paper transfer or bridging means between them, whereby the paper in the wet condition is continually supported in passing from the couch roll to the receiving drier.

2 is the ordinary wire apron of the Fourdrinier machine and passes about the couch roll 3 at its delivery end, said couch roll shown in the present instance as a roll having a perforated perimeter and provided within its body with a stationary suction box 4 which enables the moisture to be sucked from the paper web at or adjacent to the line of pressure between the couch roll 3 and the transfer roll 6. I do not restrict myself to the use of a suction couch roll as my invention is equally applicable to a Fourdrinier having a solid surfaced couch roll.

5 represents a receiving cylinder, which may be heated or cold as preferred, and be considered as a receiving drier since it subjects the pressed moist paper to the drying effect of the atmosphere even where no heat is supplied. From this receiving cylinder 5 the paper web is subsequently delivered to the first steam heated drier cylinder 22 and thereafter to the series of similar drier cylinders 23 in the usual manner.

The means for transferring the wet paper web from the couch roll 3 to the receiving cylinder 5 comprises the following instrumentalities. A transfer roll 6 free to rotate and preferably covered with a rubber jacket 7^a about which is a second jacket composed of a pick-up felt 7, has its shaft 8 journaled in adjustable boxes 9 supported by the lever arms 10 (one at each side of the machine) and by which the roll may be suspended and adjusted for proper pressure contact with both the couch roll 3 and receiving cylinder 5. The boxes 9 are held to the lever arms 10 by cap screws 16 extending through slots and the boxes adjustable longitudinally of the arms by adjusting screws 17. By this means the axial position of the roll 6 may be so positioned in respect to the surfaces of the couch roll and receiving cylinder that while considerable pressure may be exerted upon the former, the pressure against the surface of the latter may be adjusted to insure a pressure of greatly less degree. As will be seen, the distance between the roll 3 and cylinder 5 is considerably less than the diameter of the transfer roll 6 and hence the latter is readily adjustable to insure simultaneous and continuous contact with both of them. The transfer roll is supported so as to perfectly contact with both couch

roll 3 and receiving cylinder 5. The couch roll and receiving cylinder are caused to rotate at the same surface speeds by suitable gearing (not shown).

The transfer roll carrying arms 10 are hinged to the main frame of the machine at 11 and provided at their roll carrying ends with downwardly extending rods 18 which at their lower ends connect with leaf or other tension springs 19 adapted to apply a pressure upon the transfer roller 6 to assist gravity in maintaining it in continuous working contact with couch roll 3 and receiving cylinder 5. An adjusting screw and nut means 20 on the lower ends of the rods 18 may be employed to adjust the spring action upon the transfer roll. If desired, the rods 18 may be severed and the adjacent ends oppositely screw threaded and connected by a turn-buckle 21, for adjusting the lengths of the rods and providing further capacity for spring pressure adjustment. The axis 11 of the lever arms 10 is so positioned that in the downward swing of shaft 8 of the transfer roll 6, the surface of said roll will not only press upon the couch roll 3 but also against the receiving cylinder 5 at a point somewhat above a plane between the axis 11 of the frames and axis of the said cylinder 5, and the extent of the pressure thereon may be adjusted by the adjusting screws 17 for the boxes 9 carrying the shaft of the transfer cylinder. In general, it may be said that the tension of the springs 19, together with the weight of the roll 6, determines the extent of its pressure upon the couch roll, whereas the pressure upon the receiving cylinder may be determined by the adjustment of the roll 6 and its boxes 9 toward or from the cylinder 5. While, during the running of the machine, the ends of the roll 6 are free to respond to the springs 19, it is occasionally necessary to raise the transfer roll 6 out of contact with the couch roll 3, as for example when replacing the wire apron; at such times the connection of the rods 18 with the springs 19 may be separated and the lever arms 10 and roll 6 lifted by use of the screws 13 and nuts 14 carried by the main frame 15 and arranged to press upon heel extensions 12 extending downward from the lever arms 10. During the paper making operation the screws 13 have no action upon the lever arms or transfer rolls. Any other suitable means may be employed for raising the arms and roll, if so desired, as I do not restrict myself in this respect.

When the paper is received on the receiving cylinder 5, it sets and assumes a firm condition by the time it reaches the lower part of the cylinder and at this place it is acted upon by a doctor or blade 22 which removes it from the surface of the cylinder. The paper web 2, thus removed, is guided over a roller 26 and passes by gravity downward to the first steam heated drier cylinder 22 and between it and the usual felt 24, the latter being guided, not only against the lower half of the cylinder 22 and the lower cylinders 23, but also by the idler guide rolls 25 in the customary manner. In some cases, two rubber faced press rolls in place of the single roll 26 are employed to press the paper before passing to the first steam heated drier roll 22, and such press rolls may be employed, if so desired, without departing from the spirit of my invention.

My improvements may be employed in connection with any paper making machine, especially those employing a Fourdrinier machine, but is especially useful when the paper web being produced and to be transferred from the wet end of the machine is of a thin, wet, weak and light weight structure, namely one so frail as to require support in its passage from the couch roll to the receiving cylinder or first drier.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable, and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that I do not restrict myself to the details, as the same are susceptible of modification in various particulars without departing from the spirit or scope of the invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A paper making machine having supports for the paper web at its wet and dry ends in separated relation, combined with an interposed transfer means comprising an adjustable roll having a cushioned surface capable of picking up a wet paper web, said roll driven at the surface speed of travel of the paper web, adjustable supporting means at the wet end of the machine for pressing the cushioned surface of the transfer roll upon the wet paper web and cylinder means at the beginning of the dry end of the machine against which the transfer roll presses for transferring the wet paper web to the cylinder and by which it is delivered to the drier means of the dry end of the machine.

2. The invention according to claim 1, wherein further, the means for pressing the cushioned surface of the transfer roll upon the wet paper web includes a roll which supports the paper web and also performs the function of a couch roll, and the adjustable supporting means for the transfer roll are provided with devices for yieldingly pressing the same simultaneously in contact with the couch roll and cylinder means.

3. The invention according to claim 1,

wherein further, the means for pressing the cushioned surface of the transfer roll upon the wet paper includes a roll which supports the paper and also performs the function of a couch roll, and the adjustable supporting means comprises hinged arms to which the transfer roll is journaled, and spring devices acting upon the arms for yieldingly holding the transfer roll simultaneously in contact with both the couch roll and cylinder means.

4. The invention according to claim 1, wherein the means for pressing the cushioned surface of the transfer roll upon the wet paper web includes a roll which supports the paper and also performs the function of a couch roll, and the adjustable supporting means comprises hinged arms to which the transfer roll is journaled, said hinged arms provided with adjustable bearings for the transfer roll whereby the extent of its pressure against the cylinder means for receiving the web may be adjusted, and spring devices acting upon the hinged arms are provided for yieldingly holding the transfer roll simultaneously in contact with both the couch roll and the cylinder means.

5. The invention according to claim 1, wherein the means for pressing the cushioned surface of the transfer roll upon the wet paper web includes a roll which supports the paper and also performs the function of a couch roll, and the adjustable supporting means comprises hinged arms to which the transfer roll is journaled, said hinged arms provided with adjustable bearings for the transfer roll whereby the extent of its pressure against the cylinder means for receiving the web may be adjusted, and spring devices acting upon the hinged arms are provided for yieldingly holding the transfer roll simultaneously in contact with both the couch roll and the cylinder means, and wherein further, means are provided for raising the arms and transfer roll and sustaining it out of contact with the couch roll and cylinder means, said means being out of action when the transfer roll is in transferring action.

6. The invention according to claim 1, wherein the means for pressing the cushioned surface of the transfer roll upon the wet paper includes a roll which supports the paper and also performs the function of a couch roll, and the adjustable supporting means comprises hinged arms to which the transfer roll is journaled, and wherein further, spring devices acting upon the arms are provided for yieldingly holding the transfer roll simultaneously in contact with both the couch roll and the cylinder means, the said cylinder means constituting a cylinder dryer mechanically driven at the same surface speed as the couch roll.

7. The invention according to claim 1, wherein further, there is provided a doctor acting upon the surfaces of the cylinder means for removing the paper web therefrom and delivering it to the steam heated driers of the dry end of the machine.

8. In a paper making machine, the combination of the couch roll, a receiving cylinder whose axis is at a higher elevation than the couch roll, a transfer roll having a peripheral covering of material capable of picking up a wet paper web arranged above the couch roll so as to rest thereon, supporting means for the transfer roll, means for yieldingly pressing the transfer roll upon the surface of the couch roll next to the receiving cylinder, and adjustable means for adjusting the transfer roll with greater or less pressure against the surface of the receiving cylinder.

9. The invention according to claim 8, wherein further, drier means are provided for drying the paper web, and a doctor is provided for scraping the paper web from the receiving cylinder and delivering it to the driers.

In testimony of which invention, I hereunto set my hand.

JOHN J. LOBB.