June 18, 1940. W. THALER 2,204,780

SUCTION ROLL FOR PAPERMAKING MACHINES

Filed Nov. 4, 1937 2 Sheets-Sheet 1

Fig. 1

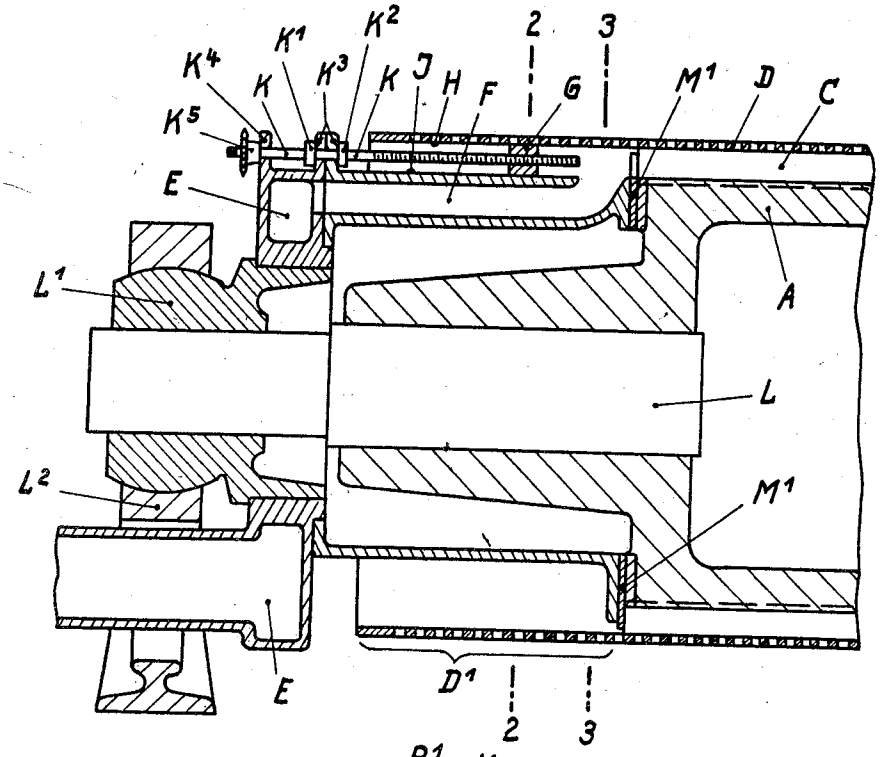
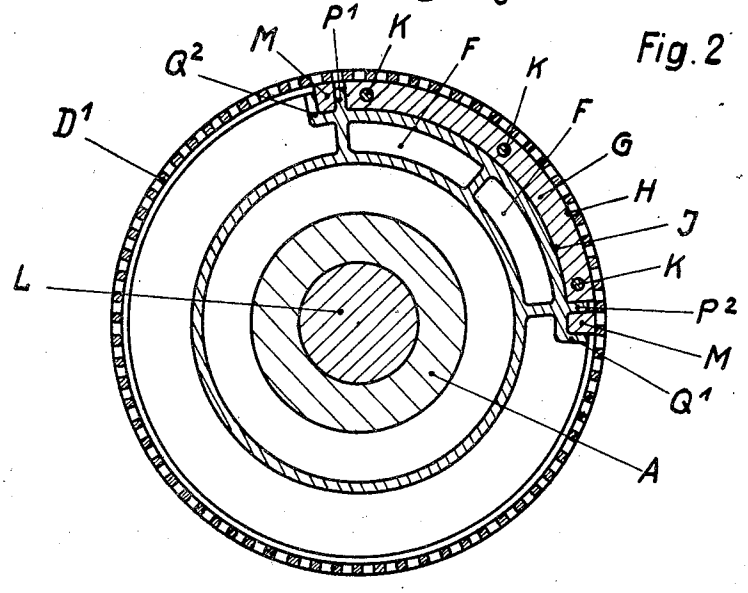


Fig. 2



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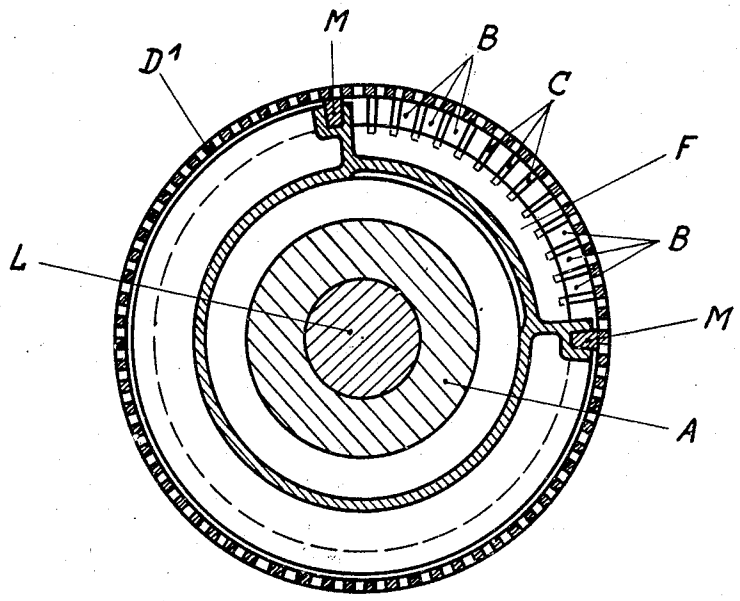
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2 Sheets-Sheet 2

Fig. 3



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Patented June 18, 1940

2,204,780

UNITED STATES PATENT OFFICE

2,204,780

SUCTION ROLL FOR PAPERMAKING MACHINES

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Application November 4, 1937, Serial No. 172,692
In Germany November 6, 1936

1 Claim. (Cl. 92—53)

This invention relates to suction rolls for papermaking machines. More particularly, the invention relates to such rolls having a plurality of radially disposed cells and a foraminated outer wall, and a suction connection.

The object of the invention is to provide in such structures suitable means for varying the width of the suction area of the roll.

Heretofore, proposals to change the outlet discharge of such cylinder rolls have not been satisfactory, causing loss in the stock and variations in the amount of stock being supplied to the papermaking machine.

Also, proposals to control each of the cells have resulted in certain disadvantageous features in the operation thereof.

This invention consists essentially in the provision of an extended portion of the foraminated outer wall beyond the cells of the stock rolls, that is, the cells do not extend under the extended parts of said foraminated outer wall, and regulatable means closing off a portion of said extended outer wall, at the same time closing off the exterior air. This means is preferably adjustable longitudinally of the axis of the stock roll. The adjustment thus provides means for adjusting the suction space, in that it cuts off such suction spaces, on the one hand, and on the other hand cuts off exterior air, during simultaneous cutting off of such part of the outer wall as is not necessary to carry out a certain desired operation of the stock roll in respect to the papermaking machine.

More particularly, the regulatable device extends circumferentially along a part of the circumference of the outer wall, and is bounded by suitable sealing devices.

The invention will be more fully hereinafter described, embodiments thereof shown in the drawings, and the invention will be finally pointed out in the claim.

In the accompanying drawings:

Figure 1 is a longitudinal vertical section of a part of a suction roll for papermaking machines;

Figure 2 is a vertical transverse section taken on line 2—2 of Figure 1; and

Figure 3 is a vertical transverse section taken on line 3—3 of Figure 1.

Similar characters of reference indicate corresponding parts throughout the various views.

The known roll A is provided with radially disposed cells B, and its opposed ends open. Cell walls or partitions C are supported by the roll, circumferentially disposed and radially placed upon said roll A. Around the roll A with its cell walls C and cells B, an outer wall D, provided with a large number of openings, is arranged, said outer wall D being the foraminated outer wall.

A suction device of either one or two suction heads E is so arranged that it communicates by means of suction channels F directly at the ends of the roll A with the cells B formed by the cell walls C. The suction heads E with the suction channels F are stationary, whereas the cell roll A with its cells is so rotated that the single cells B, one after the other, are emptied of air by the suction action. The roll A is supported by and rotated by the shaft L supported in a suitable shaft support L^1 of a standard L^2.

The parts which have just been described are, in general, well-known, and for and in themselves form no part of this invention.

The invention consists in extending the wall D beyond the roller A and the cells therein into the extended portion indicated in Figure 1 by D^1. Such an extension may be either on one side or on both sides of the roller A with its cells B. To some extent, this extended portion D^1 requires a modified construction of the suction channels F in the form shown in the drawings in order to enable the further cooperating elements of this invention to cooperate therewith. For instance, the suction channel F extends into the interior of the foraminated outer wall D^1, and is so disposed in respect to shaft L of the roller A that between the suction channel F and the extended foraminated outer wall D^1, a space is provided which enables the construction therein of the device for adjusting the width of the suction area of the roll. This device is indicated by G in the drawings, and, as seen in Figure 1, is of substantially rectangular cross-section, determined by the distance between the inner surface of the wall D^1 and the outer surface wall J forming part of the suction channel F, that is, the circumferential length of the member G is substantially equal to the corresponding lengths of the suction channels F. Circumferentially considered, this device G extends about a quarter of the circumference of the outer wall D as seen in Figure 2. This member G is limited at its ends by the radial flanges P^1 and P^2 which form part of the wall J. Beyond these flanges P^1 and P^2, circumferentially considered and as seen in Figure 2, extensions Q^1 and Q^2 of the wall J are provided, between which extensions Q^1 and Q^2 and radial flanges P^1 and P^2, sealing means M are inserted to act upon the inner surface of the foraminated extension wall D^1.

The member G is provided with screw threaded

parts engaged by spindles K which have collars K^1 and K^2 at each end of flanges K^3 of the wall J, and these spindles K extend outwardly of another flange K^4, and at the outer side of the flange K^4 a toothed wheel K^5 is keyed to the spindle K. A chain, not shown in the drawings as the same is well-known for purposes of this kind, suitably passes over the wheel K^5 and by the movement of the chain as many spindles K as are provided are simultaneously rotated, and by such rotation move either inwardly or outwardly the member G. In the drawings, Figure 2, three spindles K are shown. Other means for simultaneously operating as many spindles as may be utilized, may be provided.

This member G which might be described as a slide for the width and which is movable along the inner surface H of the extended foraminated wall D^1 and along the outer surface of the wall J in a direction parallel to the axis of the shaft L, said movability being longitudinal of the axis of the shaft L, determines the boundary of the suction space both in width in respect to the desired working width, which does not necessitate the use of certain of the openings of the foraminated wall D^1, and of the exterior air. In other words, the member G acts as a wall operative upon the one hand upon the suction, and on the other hand upon the exterior air.

The member G is so formed from a cut out of a ring or annulus whose measurements in the circumferential direction are such that these measurements correspond to the suction zone of the suction channels F. The adjustment of the member G to the desired working width of the outer wall may be readily carried out by the means described or by other suitable means. In the case where the suction channels extend over a greater arc of the suction cell roller A, the slide G may be provided either with the number of spindles K shown in Figure 2, or a larger number thereof, all of which spindles may be operated by suitable chain actuating means, or the like.

For the purpose of providing a sealing between the rotating roll A with its suction cells B on the one hand, and the suction channel F and the lateral sealing of the suction chambers on the other hand, suitable sealing members of a well-known type may be applied, these being generally indicated by M^1.

In respect to the present invention, it is without importance whether the regulating device G is provided at one or both sides of the cell roller A, and whether or not suction heads E are provided at one or both sides thereof.

The device, in accordance with the invention, permits the suction width of the outer wall surface to be longitudinally adapted to and easily adjusted in respect to the desired paper format, so that the suction losses and inefficient production products are prevented. The slide G makes it possible, in addition to its disposition in respect to the just mentioned selected paper width of stock, to adjust the same during the operation of the papermaking machine.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiments of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claim.

I claim:

In a suction roll for papermaking machines having a foraminated outer wall, a cell roll therein having longitudinal cells over the entire circumference, and spaced inwardly of the outer wall, and a closure member extending circumferentially around one end of the cell roll for closing the ends of the cells and having an opening of a length substantially equal to a quadrant of the circumference of the cell roll and of a depth substantially equal to the depth of the cells, combined with radially disposed stationary walls spaced apart the distance of said quadrant and extending longitudinally of and within the outer wall, a wall concentric with and spaced from the outer wall and connecting said spaced longitudinal walls, adjustable valve member means closing the space formed by said longitudinal walls, said outer wall, and said concentric wall from the atmosphere, and suction conduit means spaced between said longitudinal walls for acting upon the cells of the cell roll as they rotate and pass the quadrant opening of the closure member and for acting upon the space formed by said longitudinal walls, said outer wall, and said concentric wall between the cells and the valve means, to subject them to a common and substantially uniform suction action.

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