

(No Model.)

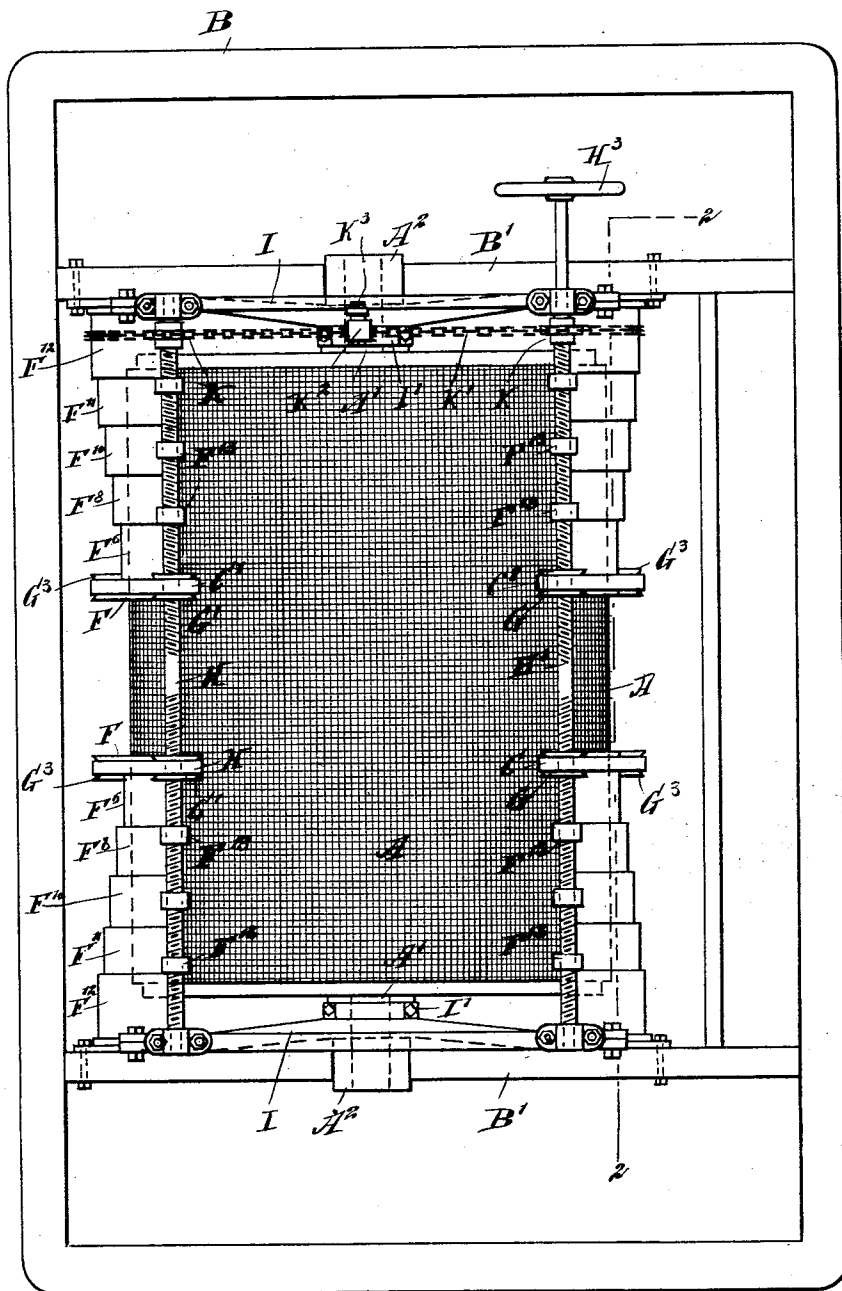
4 Sheets—Sheet 1.

G. L. BIDWELL & S. C. REYNOLDS.
PAPER MAKING MACHINE.

No. 587,918.

Patented Aug. 10, 1897.

FIG. 1.



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FIG. 2.

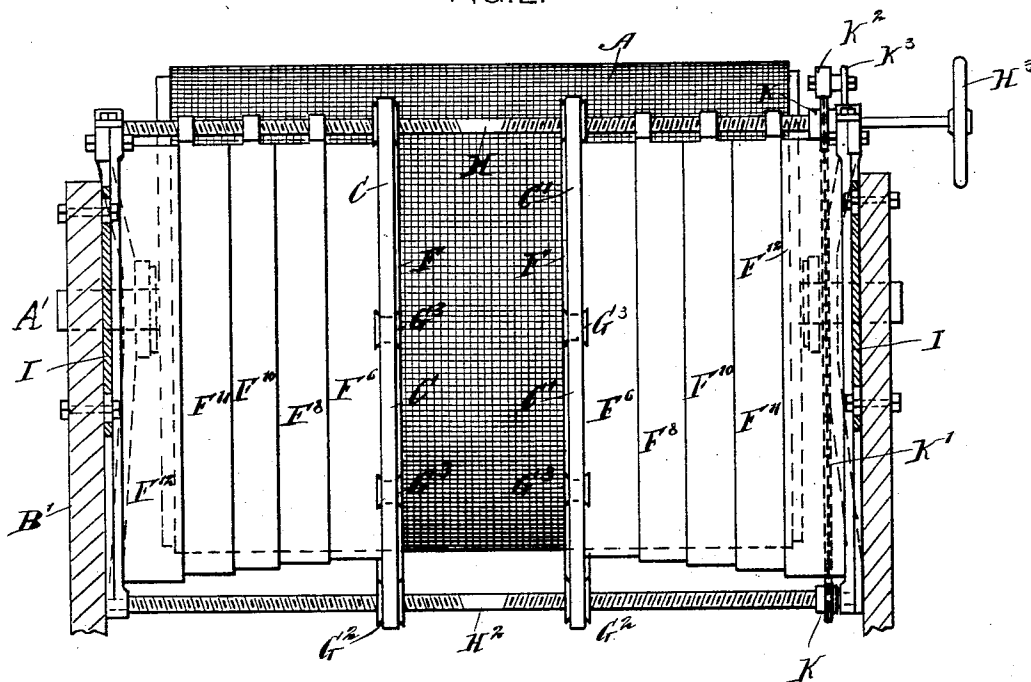
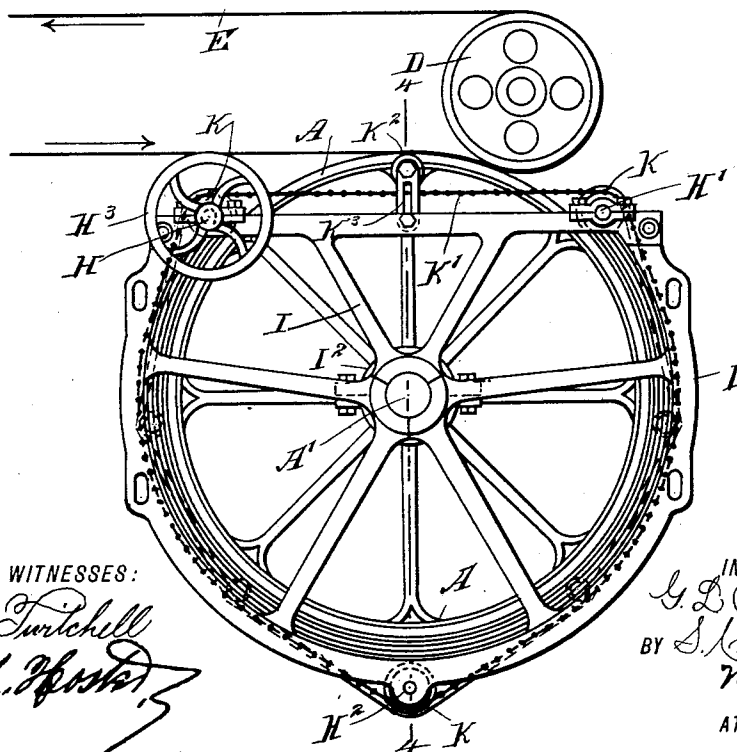


FIG. 3.



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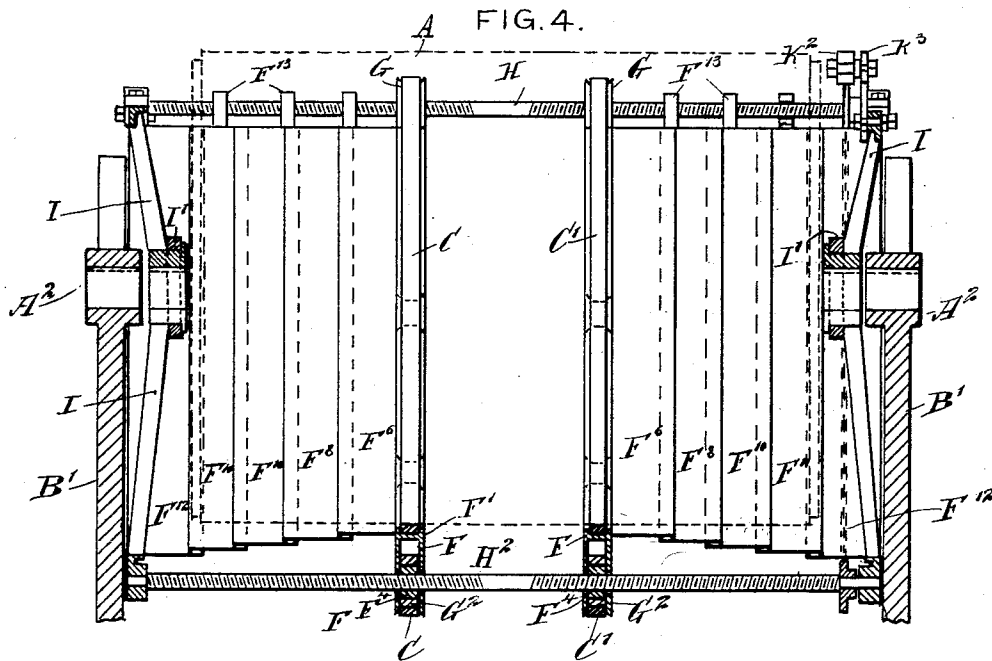
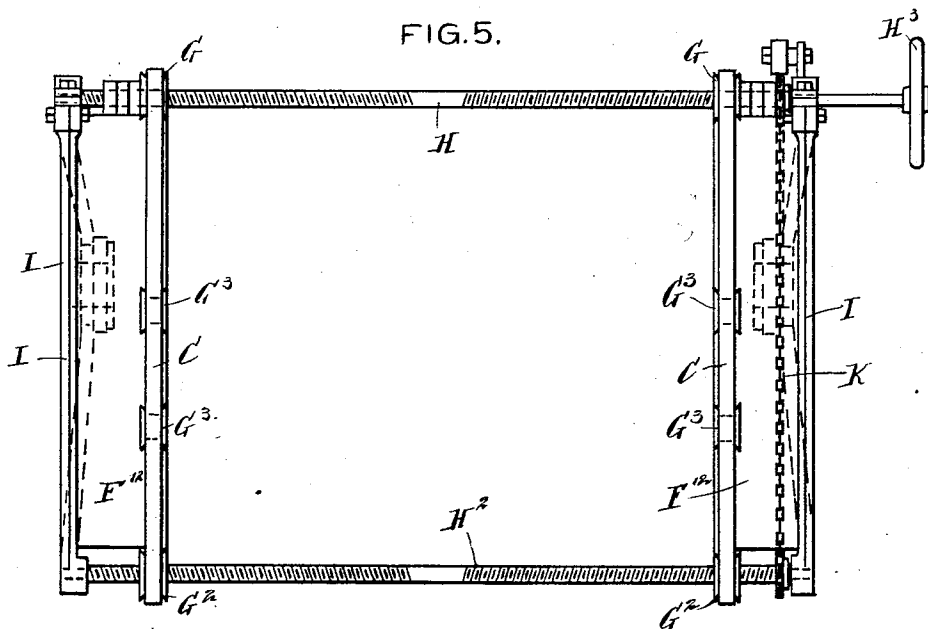
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4 Sheets—Sheet 3.

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FIG. 6.

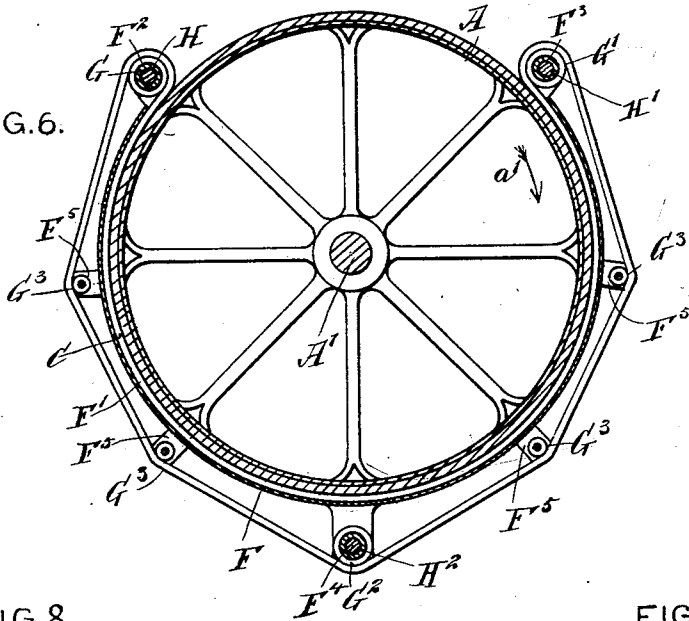


FIG. 8.

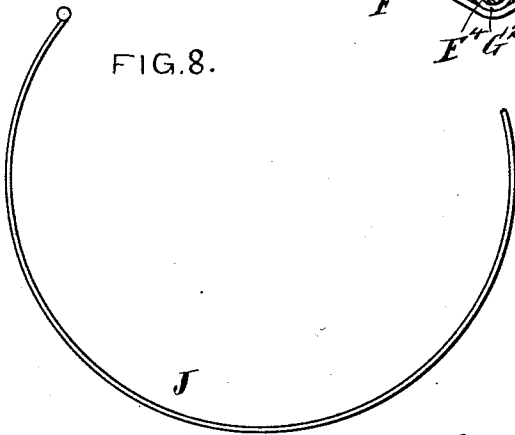
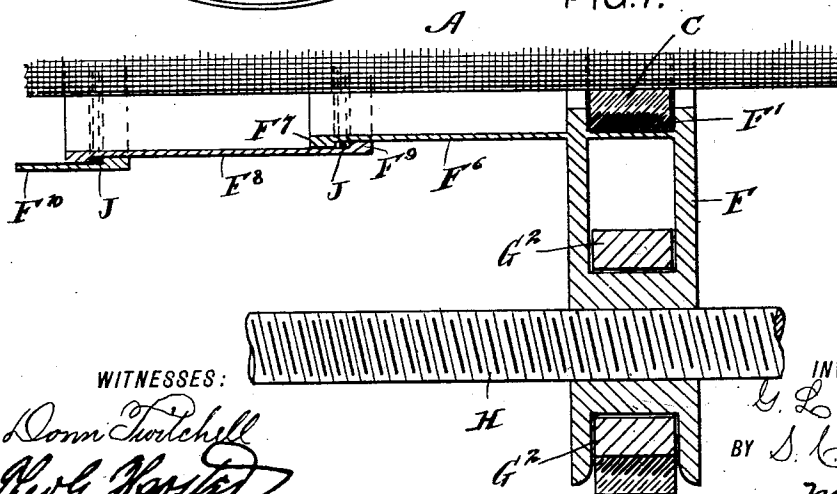


FIG. 9.



FIG. 7.



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UNITED STATES PATENT OFFICE.

GEORGE L. BIDWELL, OF WARREN PAPERMILLS, NEW JERSEY, AND
SAMUEL C. REYNOLDS, OF COMSTOCKS BRIDGE, CONNECTICUT.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 587,918, dated August 10, 1897.

Application filed August 4, 1896. Serial No. 601,593. (No model.)

To all whom it may concern:

Be it known that we, GEORGE L. BIDWELL, of Warren Papermills, in the county of Hunterdon and State of New Jersey, and SAMUEL C. REYNOLDS, of Comstocks Bridge, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in cylinder paper-making machines whereby a perfect couching of the paper-pulp takes place and all waste and loss of pulp are entirely prevented and the deckles can be readily adjusted for any desired width of paper while the machine is in motion.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a vat and cylinder-mold mounted therein and having the improvement applied. Fig. 2 is a cross-section of the same on the line 2 2 of Fig. 1. Fig. 3 is a side elevation with the vat omitted and showing the couch-roll and couther-felt. Fig. 4 is a cross-section on the line 4 4 of Fig. 3, with the cylinder-mold in dotted lines and showing the deckles adjusted for narrow paper. Fig. 5 is an end elevation of the same with the deckles adjusted for wide paper. Fig. 6 is a sectional side elevation of the cylinder-mold and deckles and deckle-shifters. Fig. 7 is an enlarged cross-section of the same. Fig. 8 is a side elevation of the packing for the deckle-shifters, and Fig. 9 is an enlarged section of the same.

The improved cylinder paper-making machine has the shaft A' of its cylinder-mold A journaled in suitable bearings A² in vertical slots in the framework B', arranged in the vat B. The slots in which the bearings of the cylinder-mold are mounted form outlets through which the water from the cylinder can pass. The cylinder-mold A is engaged

on part of its periphery by two deckles C C', made in the form of endless rubber bands, with the face of the band next to the cylinder-mold A of soft or spongy rubber, while the reverse side is composed of a harder and smoother rubber. (See Fig. 7.) The deckles C C' extend around the sides and bottom of the cylinder-mold A, so as to leave the top portion of the cylinder-mold free for the couch-roll D, around which passes a felt E, in the usual manner. (See Fig. 3.)

Now it is evident that by the arrangement described the deckles do not pass between the cylinder-mold and the couch-roll, so that the latter is free to perfectly couch the paper-pulp on the cylinder-mold.

Each of the deckles C and C' passes with its contacting run within a segmental recess F', formed in a segmental deckle-shifter F, surrounding the sides and bottom of the cylinder-mold A, as plainly indicated in the drawings, said deckle-shifter supporting at its upper ends pulleys G G', over which pass the upper parts of the deckle, the outer run of which also passes over a pulley G² and idlers G³, as indicated in Fig. 6. The pulleys G G' G² are mounted to turn on nuts F² F³ F⁴, respectively, held stationary in or forming part of the deckle-shifter, said nuts being engaged by screw-rods H H' H², mounted to turn in suitable bearings in frames I I, made in sections and adjustably held on the framework B' in the vat B. The idlers G³ are supported on brackets F⁵, held on the deckle-shifter F. (See Fig. 6.)

Now it is evident that when the cylinder-mold A is rotated in the usual manner in the direction of the arrow a' then a traveling motion is given to the two inner runs of the deckles C C' in the same direction, while the outer runs of said deckles travel in the inverse direction of said arrow a' and over the pulleys G G' G² and the idlers G³.

From each of the deckle-shifters F extends outwardly a segmental flange or band F⁶, formed at its outer end with an external collar F⁷, on which is fitted to slide a segmental band F⁸, forming an extension or telescoping shifter provided at its inner end with an internal collar F⁹, engaging the exterior surface of the flange F⁶. Between the two col-

lars F⁷ and F⁹ is arranged a segmental packing-ring J, of rubber or other suitable material.

The band F⁸ is connected at its outer end with a second telescoping band F¹⁰ by similar collars and packing-rings, as plainly indicated in Fig. 7, and this band is connected with another band F¹¹, which in turn is connected with a band F¹², held stationary on the corresponding frame I or I'. The several bands F⁶ F⁸ F¹⁰ F¹¹ F¹² can thus be telescoped one into the other when shifting the deckle-shifters longitudinally on the cylinder-mold A, according to the width of the paper to be formed by the machine. The several bands F⁸, F¹⁰, and F¹¹ are provided at their upper ends with ears F¹³, loosely engaging the screw-rods H and H'.

Each of the screw-rods H H' H² is formed with a right and left hand thread, one of which is engaged by the deckle-shifter carrying the deckle C and the other is engaged by the deckle-shifter carrying the deckle C'. Thus when the several screw-rods H H' H² are simultaneously rotated then the deckle-shifters for the two deckles C C' are moved simultaneously toward or from each other to adjust the deckles on the cylinder-mold A, according to the desired width of the paper.

In order to rotate the screw-rods H H' H² simultaneously, we provide each of the screw-rods with a sprocket-wheel K, over which passes an endless sprocket-chain K', adapted to be tightened by a tightening-pulley K², journaled on a bracket K³, adjustably held on the frame I. The screw-rod H' is provided at one outer end with a hand-wheel H³, so that when the operator turns the said hand-wheel H³ and rotates the screw-rod H' then the rotary motion of the latter is transmitted simultaneously by the sprocket-chain K' and the several sprocket-wheels K to the other screw-rods H H², so that all the screw-rods rotate simultaneously to shift the deckle-straps toward or from each other, according to the direction in which the hand-wheel is turned.

The several telescoping bands or flanges F⁶ F⁸ F¹⁰ F¹¹ F¹² being provided with the rolling rubber segmental packing-rings J between their adjacent sliding surfaces and being secured to the frame B' by means of the frames I I from a water-tight connection between the deckles and the sides of the frame B' when the several bands F⁶ F⁸ F¹⁰ F¹¹ F¹² telescope into one another upon shifting the deckle-shifters, so that the face of the cylinder-mold A is at all times surrounded and protected at those parts not occupied and used by the pulp, and consequently no waste of the pulp is liable to take place.

In order to permit the deckle-shifter to be applied to the cylinder-mold without raising the said cylinder-mold out of the vat, we prefer to make the frames I I in sections, as indicated in Fig. 3, each section having a partial hub engaging the shaft A', and the several hub-sections are fastened together by

clamping-bands I', as indicated in said figure. The sections of the frames I I are provided with vertically-disposed slots for the passage of the bolts used in fastening the sections to the framework B', so that said sections can be readily adjusted in a vertical direction to compensate for the wear of the shaft A' in its bearings. Thus the deckle-shifters are readily adjusted to the position of the cylinder-mold A to permit the inner or contacting runs of the deckles to be always in proper relation to the peripheral surface of the cylinder-mold A.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A cylinder paper-making machine, provided with an endless deckle adapted to contact with part of the periphery of the cylinder-mold, the contacting portion of the said deckle being made of soft, spongy rubber, and the reverse side of harder and smoother rubber, substantially as shown and described.
2. A cylinder paper-making machine, provided with deckle-shifters each formed with a segmental recess next to the peripheral surface of the cylinder-mold, and a deckle having its inner run mounted in the said recess, substantially as shown and described.
3. A cylinder paper-making machine, provided with deckle-shifters each formed with a segmental recess next to the peripheral surface of the cylinder-mold, and a deckle having its inner run mounted in said recess, the outer run of the deckle returning on the outside of the deckle-shifter, as set forth.
4. A cylinder paper-making machine, provided with a deckle-shifter having a segmental inner recess, pulleys and idlers journaled on the outside of the deckle-shifter, and an endless deckle adapted to pass with its inner run through the said recess, and with its outer return-run over the said pulleys and idlers, substantially as shown and described.
5. A cylinder paper-making machine, provided with right-hand and left-hand threaded screw-rods adapted to turn simultaneously, deckle-shifters formed with nuts engaging the said screw-rods, and an endless deckle for each deckle-shifter, the inner run of each deckle passing through a segmental recess in the deckle-shifter, while the outer run passes over pulleys and idlers carried by the said deckle-shifter, substantially as shown and described.
6. A cylinder paper-making machine provided with a deckle-shifter having a series of telescoping bands, one of said bands in each set comprising the series being provided with a segmental recess, and an endless deckle adapted to pass with its inner run through said segmental recess, substantially as described.
7. A cylinder paper-making machine provided with a recessed segmental deckle-shifter having segmental telescoping bands secured thereto, an endless deckle in the re-

cess of the shifter and engaging the cylinder-mold with its inner run, right and left hand screw-rods upon which the shifter is mounted, sprocket-wheels on the rods, and chains on the sprocket-wheels, substantially as described.

8. A cylinder paper-making machine provided with a recessed segmental deckle-shifter, right and left hand screw-rods upon which the shifter is mounted, means for simultaneously operating the said rods, an endless deckle adapted to pass with its inner run in the recess of the shifter and segmental telescoping bands secured to the shifter, said bands being provided with segmental packing-rings adapted to roll between adjacent bands, substantially as described.

9. In a cylinder paper-making machine, the combination with a vat, a cylinder-mold mounted therein, and endless deckles, of segmental deckle-shifters recessed to receive the deckles, an extensible connection between the shifters and the vat, and means for simultaneously moving the deckle-shifters toward and from each other, substantially as described.

10. In a cylinder paper-making machine, the combination with a vat, a cylinder-mold mounted therein, and endless deckles, of segmental deckle-shifters recessed to receive the deckles, segmental telescopic bands secured

to each shifter and to the vat, right and left screw-threaded rods upon which the deckle-shifters are mounted and with which the telescoping bands are loosely connected, and means for simultaneously operating the said rods, substantially as described.

11. In a cylinder paper-making machine, a deckle-shifter, comprising a bar adapted to carry the deckle, and a plurality of telescoping sections one of which is secured to the said bar, substantially as described.

12. In a cylinder paper-making machine, a deckle-shifter, comprising a segmental bar recessed to receive the deckle, and a plurality of segmental bands one of which is secured to the said bar, the said bands being provided with collars on their adjacent faces and having segmental packing-rings between the shoulders thereof, substantially as herein shown and described.

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CHARLES K. BIDWELL.

Witnesses to the signature of Samuel C. Reynolds:

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