

J. SPEED.
 ROLL FOR PAPER SURFACE FINISHING MACHINES.
 APPLICATION FILED APR. 5, 1911.

1,038,505.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

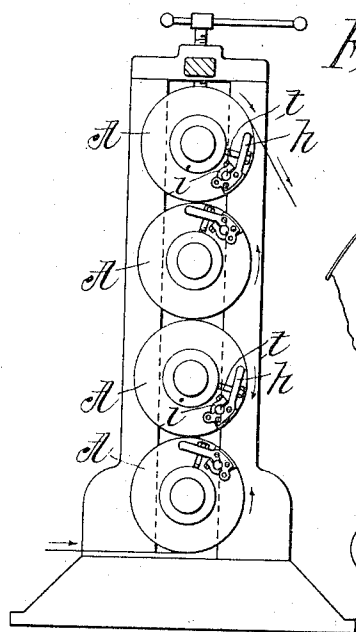


Fig. 1.

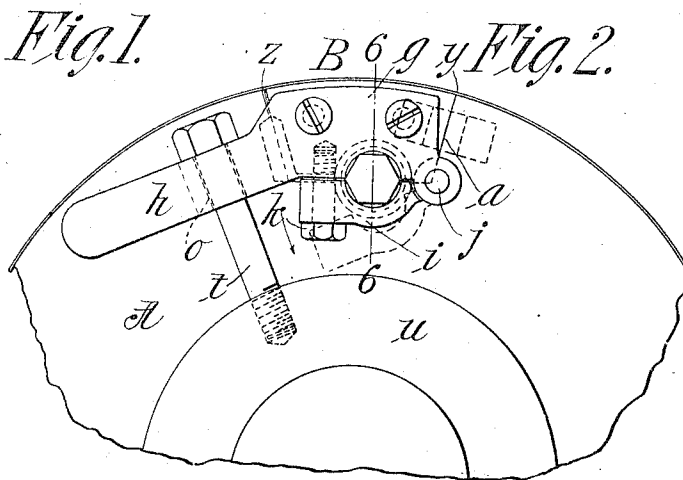


Fig. 2.

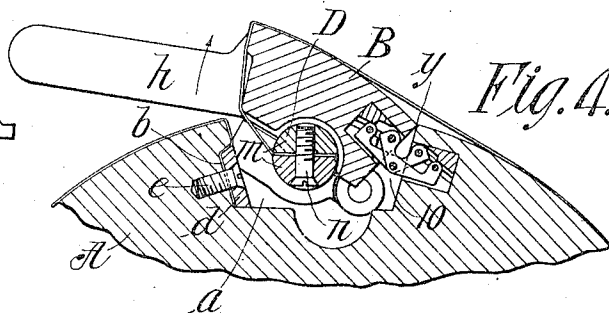


Fig. 4.

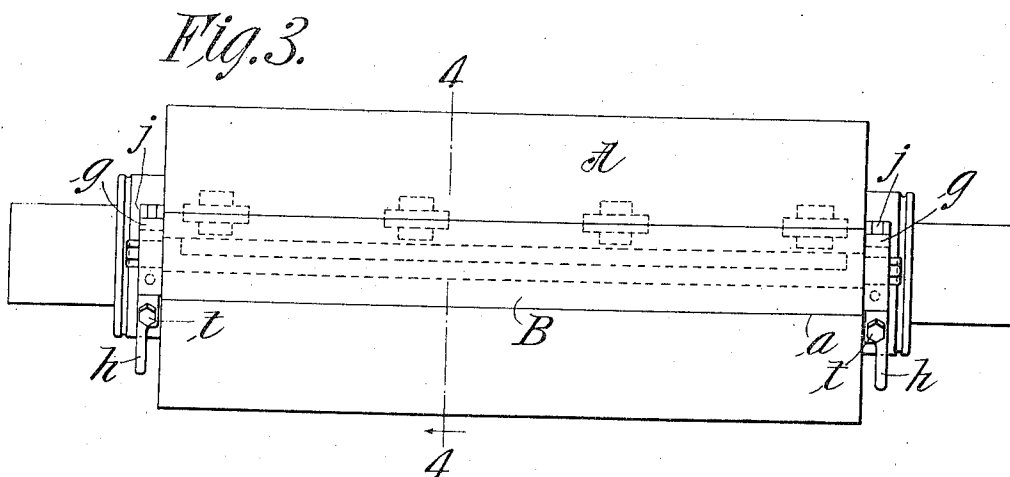


Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 5.

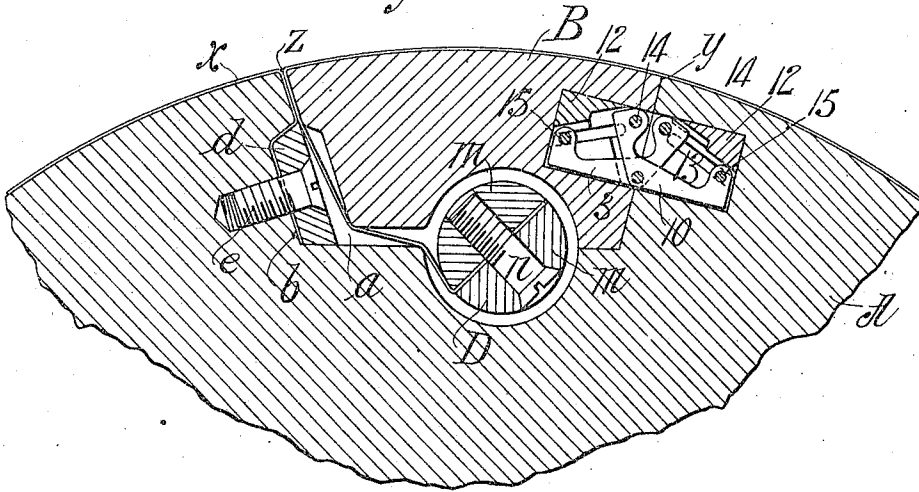
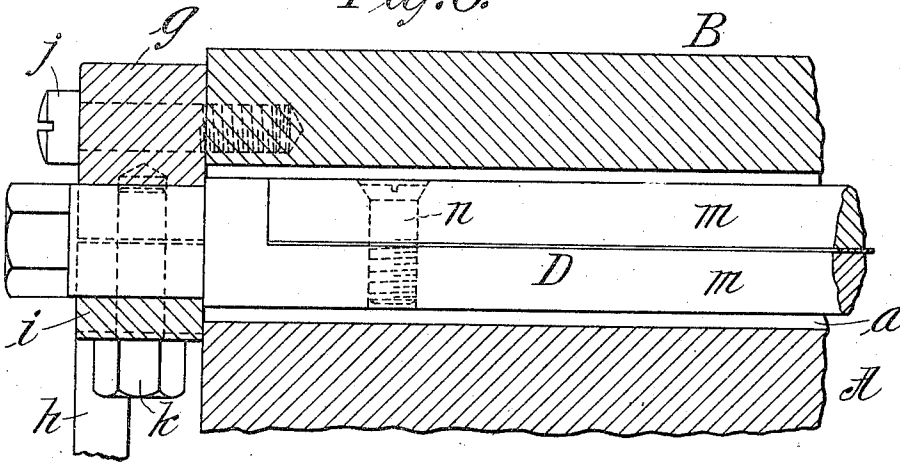


Fig. 6.



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UNITED STATES PATENT OFFICE.

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ROLL FOR PAPER-SURFACE-FINISHING MACHINES.

1,038,505.

Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed April 5, 1911. Serial No. 619,005.

To all whom it may concern:

Be it known that I, JAMES SPEED, a citizen of the United States of America, and resident of Mittineague, in West Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Rolls for Paper - Surface - Finishing Machines, of which the following is a full, clear, and exact description.

In machines for imparting a cloth-like surfacing or finish to paper, rolls resembling those of a calendering machine, are employed having an enveloping covering of cloth, linen, thin metal or other sheet material for imparting a character of finish corresponding to the surface or texture of the roll covering sheet to the paper; and heretofore the rolls have been made generally with an open gap or channel therein down into which the edge portions of the roll covering sheet have been carried and secured, but in the use of rolls so made a comparatively wide seam mark has been produced in the paper, excepting in cases where means for the offsetting of the paper has been employed.

The object of the present invention is to provide rolls to be used in the manner of calender rolls between which the paper may be run to be surface finished and in which by reason of the novel constructions and arrangements of the parts the surface finishing covering sheet practically envelops the entire circumference of the roll so that the seam mark made by approached portions of the covering sheet are practically imperceptible in the finished paper.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings:—Figure 1 is an end view showing the aspect of a paper surface finishing machine in which my invention is embodied; Fig. 2 is an end view of one of the rolls and its equipments; Fig. 3 is a plan view of the roll; Fig. 4 is a partial cross sectional view of the roll as taken on line 4—4, Fig. 3,—showing the bar or segmental portion of the roll body as partially open from its normal position; Fig. 5 is a view similar to Fig. 4 but drawn on a larger scale and showing the parts as in their nor-

mal positions. Fig. 6 is a partial longitudinal section as taken on line 6—6, Fig. 2.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the body of the roll having generally resemblance to a calender roll, several of which are to be used in a stack as indicated in Fig. 1. Each roll has a channel *a* within its periphery which extends longitudinally of the body of the roll and is open at each end of the latter. The channel has in one side wall thereof a longitudinal niche or recess *b* into which one edge portion of the covering sheet *c* of cloth, linen, thin sheet metal, embossed, indented, plain or otherwise as to its surface character, is carried, and retained by the confining strip or rod *d* which is entirely embedded within the niche and confined by a suitable number of screws *e*.

B represents a bar which cross sectionally is of the form of a segment of the roll body and shaped and sized to approximately fill and close the mouth portion of the channel *a*. The outer surface of this segmental bar is curved on an arc of the same radius as the circumference of the roll so that when the bar is in its closed relation, as represented in Fig. 5, it makes a continuation of the roll periphery. This bar B is so hinged to the roll body that in swinging to an open position,—a partially open position being shown in Fig. 4,—it has its movement from a center or fulcrum *y* which is where an outer corner of the bar is coincident with the junction of the periphery of the roll body with one side wall of the recess *a*.

As a means for joining the segmental bar B to the roll body, which is internally located and which is operative to constrain the bar so that its movements will be from the center or fulcrum, *y*, I make use of a type of invisible hinge indicated at 10, not of my own invention and commercially known as the "Soss invisible flush joint hinge" and the construction of which may be ascertained by reference to U. S. Letters Patent of Soss, dated July 17, 1906, No. 825,943 and March 3, 1908, No. 880,697. This hinge comprises castings or holders 12, 12, which are set in opposed recesses therefor in the roll body next to the channel and within the side of the bar B together with

angular members 13, 13, which are pivoted to each other at their elbows and have studs 14 and 15, the one 14 of each being engaged in a channel in one holder and the one 15 of the same member being engaged in a guideway of the other holder, the effect being one for compensating action so that when the hinged parts are closed together the edge of the bar B will lie in contact on the wall of the channel *a* as seen in Fig. 5, with no crack or crevice along the line *y*.

On each end of the bar B is a plate or fixture *g* secured in any suitable manner and made with a lever extension *h*. Supplemental to the fixture *g* is a clamp member *i* pivoted at *j*, the two parts *g* and *i* having semicircular recesses to form bearing supports for the opposite end portions of a winding shaft D which may be alternately loosened and confined by the manipulation of the clamp binding screw *k*. This winding shaft is made split or of two half sections *m*, *m* to receive and hold tightly between them on the tightening of the screw *n* the edge portion of the roll covering sheet material or fabric *x* which is opposite from the edge portion confined in the niche by the clamping rod or strip *d*.

It is understood that the covering sheet *x* passes from its anchorage under the strip *d* on one wall of the channel *a* entirely around the body of the roll across the curved face of the bar B and in jammed relation between the edge of such bar opposite its hinge and in contact on the portion of the fabric near the clamp strip *d*, thence to its connection in the winding shaft D.

The end or ends of the winding shaft projecting outwardly beyond the clamping holder are made hexagonal or suitably otherwise to enable one to turn the shaft and tension the covering sheet, when the clamps therefor are in loosened condition,—the shaft after the tensioning in suitable degree being held against rotative movement or unwinding by the binding screws *k*.

The bar B is so proportioned that its width is the same as the width of the mouth of the channel less approximately twice the thickness of the roll covering sheet material; and when the bar is moved and jammed to its fully closed relation, there is left but the slightest possible and almost imperceptible seam line *z* where the sheet material is bent around the corners respectively of the roll body and the channel closing bar.

As means for forcing or jamming the bar in closed position and there locking the same, provisions are made as follows: Each end of the bar or the fixture *g* which is as one therewith, as before stated, is provided with a lever extension *h*; and this lever extension has an aperture *o* therethrough through which passes the shank of a headed screw *t*, which shank has a screw thread en-

gagement in a reduced hub extension *u* at the end of the roll body, while the head of the screw engages against the lever so that by turning the screw in the proper direction a powerful force for leverage is transmitted to the segmental bar B to force it tightly to its closed relation and to also keep it locked therein. When the bar is to be swung to its widely opened position for the replacement of a roll covering sheet, the screw *t* may be temporarily removed from its operative position.

Various changes may be made in the details of construction here shown and above specifically described without departing from my invention.

I claim:

1. A metallic roll for surface finishing paper having a longitudinal channel within the periphery thereof, a surface finishing covering of sheet material for enveloping the roll having one edge portion entering said channel at one side thereof and secured therein, a bar extending lengthwise of the roll having its outer surface curved correspondingly to the circumference of the roll having a width approximately the same as the mouth of the channel, the other edge portion of said sheet material overlapping the curved exterior of said bar and extended partially around such bar, and means for connecting such edge portion of the sheet material to an internal portion of the said bar.

2. A metallic roll for surface finishing paper having a longitudinal channel within the periphery thereof, a surface finishing covering of sheet material for enveloping the roll having one edge portion thereof entered within said channel at one side thereof, and secured therein, a bar extending lengthwise of the roll having its outer surface curved correspondingly to the circumference of the roll having a width approximately the same as the mouth of the channel and fulcrumed at a corner thereof at the junction of the periphery of the roll and one side wall of the channel, a device for hinge connecting the bar and roll located internally of the roll, said bar being exteriorly overlapped by the other edge portion of the sheet covering material, and means for connecting such edge portion of the sheet material to an internal portion of the said bar.

3. A roll for surface finishing paper having a longitudinal channel within the periphery thereof, a bar fulcrumed at its corner at the junction of the periphery of the roll and one side wall of the channel and an internally located hinge connecting the roll and bar, a winding shaft carried by the bar, a surface finishing covering of sheet material for enveloping the roll and the outer surface of the bar having one edge

portion thereof extended within the channel at one side of the latter and secured therein, having its other edge portion extending across the edge of the bar opposite its fulcrum point and connected with the winding shaft, and means for confining the latter against rotative movement.

4. A metallic roll for surface finishing paper having a longitudinal channel within the periphery thereof, a bar extending lengthwise of the roll having its outer surface curved corresponding to the circumference of the roll and having a width approximately the same as the mouth of the channel, a covering of sheet material having one edge portion thereof entered within the channel at one side thereof and secured therein, said sheet material enveloping the roll and the outer surface of the bar and having its other edge portion extending across the edge of the bar which is adjacent the first named secured edge, and means for tensioning and confining the latter named edge portion of the covering sheet in relation to the bar.

5. A roll for the purpose described having a longitudinal channel within its periphery, a bar having a curved outer surface corresponding to the circumference of the roll and jointed to the roll body so as to swing from a center of movement coincident with one of its corners and the corner constituted by the junction of the periphery of the roll and at one side wall of said channel, a swinging shaft carried at an internal part of the bar and normally within said channel having an end thereof extending beyond the end of the bar provided with means whereby it may be rotated, and means for confining said shaft against rotative movement.

6. A roll for the purpose described having a longitudinal channel therein, a bar having a curved outer extremity jointed to the body of the roll for a bodily swinging movement from one outer corner thereof which is coincident with the junction of the roll periphery and one side wall of the recess, holders on the end of the bar for clamping and adjustably confining the winding shaft, the winding shaft located and longitudinally ranging adjacent an inner portion of the bar and carried by said holders, a sheet material having an edge portion entered in the channel at one side thereof and detachably confined therein, said sheet extending around the roll across

the outer curved face of the bar, across the edge thereof and to a connection with the winding shaft.

7. A roll for the purpose described having a longitudinal channel, a bar having a curved outer surface, shaped to substantially close the mouth of the channel, hinge connected to the body of the roll at one side of the channel, having its end, adjacent the end of the roll body, provided with a lever, and means for securing the lever.

8. A roll for the purpose described having a longitudinal channel, a bar having a curved outer surface, shaped to substantially close the mouth of the channel, hinge connected to the body of the roll at one side of the channel, having its end, adjacent the end of the roll body, provided with a lever, means for securing the lever, means in one side of the channel for securing connection therewith of an edge portion of a roll enveloping sheet, and means carried by the bar for securing connection therewith of the other edge portion of the sheet.

9. A roll for the purpose described having a longitudinal channel, and provided at its end with a hub of reduced diameter, a bar having a curved outer surface and shaped to substantially close the mouth of the channel, hinge connected to the body of the roll at one side of the channel, having its end adjacent the end of the roll body provided with a lever having an aperture therethrough, and a headed screw, the shank of which passes through the aperture in the lever and with a screw engagement into said hub, and the head of which engages the lever.

10. A roll for the purpose described having a longitudinal channel, a bar having a curved outer surface of shape and size to substantially fill the mouth of the channel, hinge connected to the roll at one side of the channel having fixtures at its ends, adjacent the ends of the roll body, comprising each a lever handle and a clamp member, a winding shaft rotatively mounted in said clamping fixtures having means whereby they may be turned, and means for detachably locking the levers.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

JAMES SPEED.

Witnesses:

G. R. DRISCOLL,
WM. S. BELLOW.