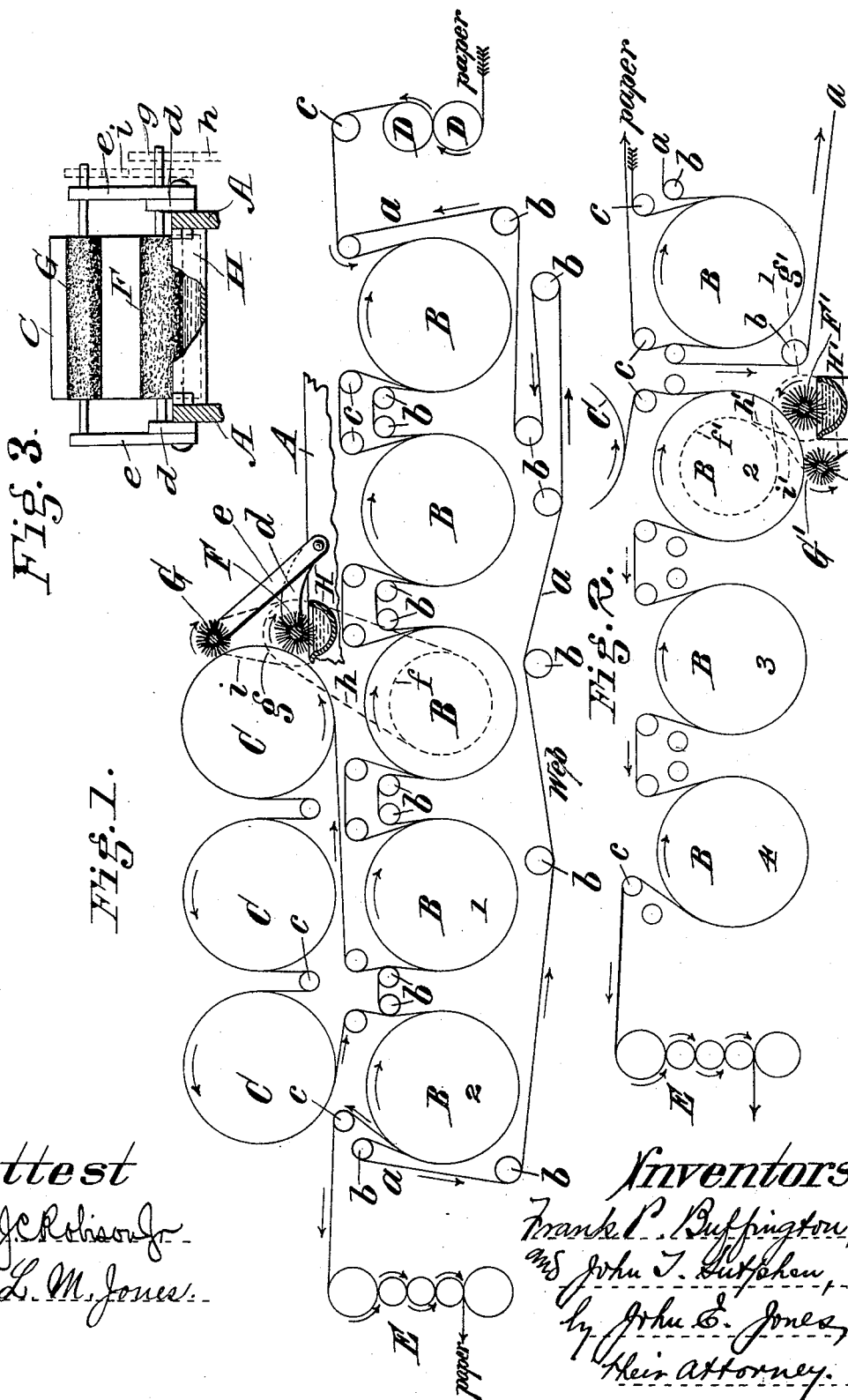


(No Model.)

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APPARATUS FOR COATING PAPER.

No. 520,402.

Patented May 22, 1894.



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UNITED STATES PATENT OFFICE.

FRANK PEARLEE BUFFINGTON AND JOHN THOMAS SUTPHEN, OF MIDDLETOWN, OHIO.

APPARATUS FOR COATING PAPER.

SPECIFICATION forming part of Letters Patent No. 520,402, dated May 22, 1894.

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To all whom it may concern:

Be it known that we, FRANK PEARLEE BUFFINGTON and JOHN THOMAS SUTPHEN, citizens of the United States, residing at Middletown, in the county of Butler and State of Ohio, have jointly invented a new and useful Improvement in Apparatus for Coating Paper, of which the following is a specification.

Our invention relates to apparatus for coating one or both surfaces of paper, or other similar fabric, which will be fully hereinafter described and particularly pointed out in the claims.

In the drawings, accompanying this specification, Figure 1 is a longitudinal elevation, in both diagram and cross-section, showing an ordinary double-deck drying-machine used in paper-manufacture, and one form of apparatus devised by us for applying the said coating to one face of the paper, said coating device being mounted on said drier and practically forming a part thereof in our construction herein; and Fig. 2, a similar view, but with the first three drier-rolls to the right, the press rolls, the upper tier of drier-rolls and upper coating-device (seen in Fig. 1) omitted, and showing two additional drier-rolls to the left, and our lower coating-device for applying the glaze to the other face of the paper. The mechanism shown in this view may be so arranged as to be really a continuation of that shown in Fig. 1, except that it is located in advance of the calender rolls, as it is intended that the machine shall be adapted to coat one or both sides or faces of the paper in one continuous passage through the machine intermediate the press and calender rolls, and Fig. 3 is a plan view to show more clearly the means for supporting the brushes for applying the glaze or other material.

The principal object of our invention is to apply the glaze or other material in a cheap and expeditious manner without the use of extra and costly mechanism.

In carrying out our invention we mount a transverse vat or trough (containing the liquid glaze, or other surfacing-matter to be applied) on the supporting drier-frame adjacent the lower portion of an upper drier cylinder or drum. A pair of rotary, circular-brushes is mounted in a suitable frame above said vat

or trough, parallel both therewith and with said drier-cylinder, and a series of endless chains or belts are applied to sprocket-wheels or pulleys on the shafts of said brushes to operatively-connect them with a driving-wheel on the shaft of one of the lower drier cylinders most convenient, the latter (said belt arrangement) being seen in dotted-lines in Fig. 1. One of said circular-brushes rotates slightly within said vat, taking or carrying glaze therefrom and applying it by peripheral contact to the paper passing over the adjacent cylinder, and the other or accompanying rotary, circular-brush in said frame, uniformly and smoothly spreading or distributing said glaze over the surface of the paper.

We have shown a glaze-device comprising a vat and accompanying carrier and smoothing brushes, adjacent both an upper and a lower drum, whereby one or both faces of the paper may be coated in the drier. Both sets may be obviously contained in a paper-drier, and operated singly or together, or but a single vat and accompanying brushes supplied, as desired.

Instead of using circular bristle-brushes, as shown, it is obvious that rollers of any suitable material and construction could be used to apply and distribute the glaze. It is also obvious that any suitable well-known means (such as ordinary doctors) may be used or supplied in connection with the carrier-brush to remove superfluous glaze from said brush in advance of the glaze being applied to the surface of the paper, and, as such an appliance is very simple and common, it is not deemed necessary to show it in the drawings to detract from or obscure the other more vital and essential parts.

In the accompanying drawings, A represents the supporting-frame, (a very small, broken off portion only being deemed necessary to show;) B, each one of the lower tier or series of ordinary drier-cylinders; C, each one of the upper tier of drier-cylinders; D, D, the ordinary press-rolls between which the paper travels or passes, as customary, on its way to the drier; E, vertical series of the usual calender-rolls between which the paper travels after being first glazed or otherwise coated in its initial passage through the drier,

as hereinbefore described; *a*, the usual endless web or carrier, (tension device therefor not shown;) *b*, each of the web idler-rolls; *c*, each of the paper idler-rolls; *F*, the rotary, glaze carrier and applying brush journaled at its ends in the arms *d*, which project from the frame *A*; *G*, the rotary, glaze spreading and smoothing brush journaled at its ends in the arms *e*, which also project from the frame *A*; *H*, the glaze or coating trough or vat, hung on the frame *A* beneath the carrier-brush *F*, convenient for the latter to charge or feed therefrom; *f*, a pulley (dotted) on a lower drier-cylinder shaft; *g*, a pulley (dotted) on the shaft or carrier-brush *F*; *h*, a driving-belt (dotted) running over said pulleys *f* and *g*; and *i*, a belt (dotted) running over pulley *g* and a pulley (not seen) on the shaft of the smoothing-brush *G*.

The arrows adjacent the several parts indicate their respective directions of movement.

In practice, (for fine-paper,) rolls or very fine brushes will be used to apply the glaze or other coating, and coarse brushes only, for coarse paper. The journals of both the carrier and smoothing-brushes are preferably mounted in the customary, ordinary adjustable bearings (not shown) whereby allowance is made for varying thicknesses of paper and wear of the bristles or faces of the glaze-distributors.

In Fig. 2, we show how our coating-device is mounted at the bottom of the machine adjacent a lower drier-roll, whereby the glaze is applied to the other side of the paper as it passes through the drier. The drier-rolls 1 and 2 of Fig. 1 are shown in this view, and additional lower drier-rolls 3 and 4 also shown, to complete the drying-operation after said lower coating-device has performed its said function. The reference letters and figures of Fig. 1 are carried out in this view excepting those of the coating-device all of which are primed ('), and the belt or chain *f'* crossed so as to communicate the proper motion from the pulley on roll 2 to the pulley on the shaft of brush *F'*. The web *a* in this view is moved or directed back to roll 1, and no web carried over the rolls 2, 3 and 4, thus permitting the coating-devices to apply the glaze without interference of said web.

In practicing our invention the glaze or coating is preferably applied before the pa-

per becomes thoroughly dry, but it is obvious that it may be done in a continuous passage through the machine, after it is dry, before reaching the calender-rolls. It is also obvious that any suitable means may be used for applying the coating to one surface of the paper while the opposite surface is in contact with a heated cylinder.

We claim—

1. In a paper making machine, the combination, with a drier provided with the customary heated cylinders or drums, of a coating apparatus adjacent the surface of one of the drums, and adapted to apply the coating to one surface of the paper while the opposite surface is in contact with the heated surface of said drum, substantially as set forth.

2. In a paper making machine, the combination, with a drier provided with the customary heated cylinders or drums, of a trough or vat adjacent to one of the drums, a rotary cylindrical brush mounted adjacent to the vat, and to one of the cylinders and adapted to apply the coating to one surface of the paper while the opposite surface is in contact with the heated surface of said drum, substantially as set forth.

3. In a paper making machine, the combination with a drier provided with the customary heated cylinders or drums, of a glaze or coating trough or vat adjacent to one of the drums, a rotary carrier-brush operating in said vat and in contact with the surface of the passing paper, a distributing and smoothing rotary brush, and suitable mechanism for driving said brushes and distributing the coating over said surface of the paper during its onward passage through said drier, substantially as herein set forth.

4. In a paper making machine, the combination, with the drier, provided with the customary heated cylinders or drums, of a trough adjacent to one of the drums, a pair of arms at each side of the frame, a coating roller journaled in two of the arms upon opposite sides of the frame, and a spreading roller journaled in the other arms, substantially as set forth.

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Witnesses:

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