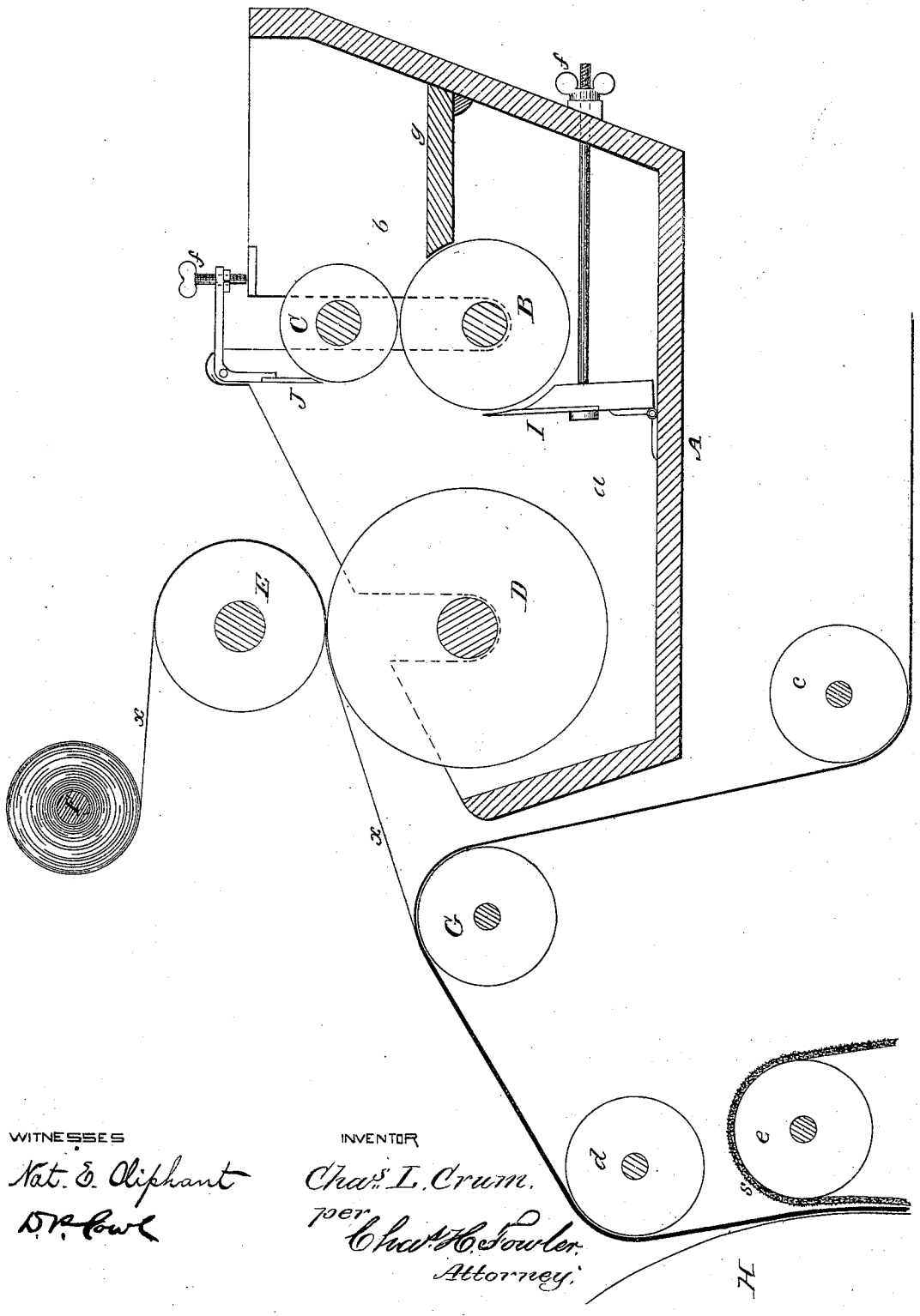
C. L. CRUM.

MACHINE FOR LINING PAPER.

No. 193,364. Patented July 24, 1877.



WITNESSES

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IMPROVEMENT IN MACHINES FOR LINING PAPER.

Specification forming part of Letters Patent No. **193,364**, dated July 24, 1877; application filed April 5, 1877.

To all whom it may concern:

Be it known that I, CHARLES L. CRUM, of Winchester, in the county of Frederick and State of Virginia, have invented a new and valuable Improvement in Paper-Pasting Machine; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters and figures of reference marked thereon.

The drawing is a representation of a side elevation, partly in section, of my invention.

This invention has relation to machines employed for the purpose of manufacturing cardboard, or lining paper or straw board with thin paper.

Heretofore this class of machines have been so constructed that the paste was required to be applied to one of the sheets by means of two or more rolls, between which the sheets of paper to be pasted were made to pass and receive a thin coating of paste taken up from the reservoir containing the same by means of a roll running in said reservoir and dipping into the paste, after which the paste was applied to a second or distributing roll, for the purpose of mashing up or grinding the paste, and by said distributing-roll applied to the sheet of paper which passes between that and a third or pressing roll. Or the paste was applied to the paper by means of a pasting-roll within a reservoir, in connection with a second or doctor roll, running against the front side of said pasting-roll to mash up the lumps and regulate the quantity of paste deposited upon the sheet of paper, which is pressed upon the pasting-roll by a pressing-roll, as above described. After the sheet of paper is coated with the paste, it has been usual to unite it with the unpasted sheet of paper or board by pressing them, in their undried state, between suitable pressing-rolls.

The object and purpose of the present invention is to destroy all lumps and other irregularities in the paste, previous to applying it to the pasting-roll, thereby avoiding the use or employment of the usual second distributing or doctor roll, and securing a better and more uniform coating of paste upon the sheet or sheets of paper or board to be united; also bringing or uniting the pasted sheet with the unpasted sheet, in such a manner as to avoid air-blisters forming between the sheets, or irregularities in pasting, caused by displacement of the coating of paste by the pressing-rolls.

My invention, therefore, consists in a paste-reservoir of a pasting-machine, the same having two rollers for grinding the paste, located so as to divide said reservoir into two compartments for the ground and unground paste.

My invention also consists, in connection with a reservoir having two compartments formed by the location of two paste-grinding rolls therein, of a pasting-roll placed in one of said compartments to take up the ground paste and deliver it to the sheet or sheets of board or paper.

My invention further consists, in connection with a reservoir having two compartments formed by the location of two paste-grinding rolls, as specified, of one or more scrapers for taking off the paste adhering thereto.

My invention also consists, in connection with a paste-reservoir, a pasting-roll, and a pressing-roll, of a roll over and upon which the two sheets are brought in contact, said roll being placed above a straight line drawn from the intersection or point of contact between the pasting-roll and pressing-roll, and the top of the guide-roll, over which the united sheets pass previous to coming in contact with the drying-cylinder, for the purpose of causing a slight pressure between the two sheets in order to exclude the air, and thereby avoid all blisters and irregularities in the union of the sheets.

In the accompanying drawing, A represents a reservoir for containing the paste, and has placed therein a roll, B, having its bearings in the sides of the frame of the machine, and may be rotated by means of suitable gearing. A second roll, or pressing-roll, C, is placed over the roll B, the peripheries of which are slightly separated from each other by means of adjustable boxes, or, if desired, by an enlargement of one or both rolls for a short distance from each end thereof, the roll C being rotated by suitable gearing or by frictional contact with the roll B.

The rolls B C divide the reservoir A into two compartments, *a b*, the compartment *a* containing the paste-roll D, and above it is a pressing-roll, E. The paste-roll D is preferably covered upon its face with a suitable felting, while the pressing-roll E should be solid and have adjustable bearings, so that the pressure exerted by it upon the roll D can be regulated. A suitable distance above the pressing-roll E are the usual shafts F, running in bearings upon the top of the machine, and carrying the rolls of paper to be pasted, the paper, as represented at *x*, passing from said shaft between the rolls D E, and thence over a roll, G, where it meets the unpasted sheet of paper or board from a guide-roll, *c*, after which the two united sheets pass over a roll, *d*, and between the drying-felt *s*, which passes around a roller, *e*, and the drying-cylinders, one of which is shown at H.

To describe more particularly the position or location of the roll G in relation to the other rolls it will be noticed that said roll is placed slightly above a straight line drawn from the intersection or point of contact between the rolls D E and the top of the roll *d*. The object in so doing is to cause a slight pressure between the two sheets in order to exclude the air, but not enough to expel the paste or destroy the uniform coating, thereby avoiding all air-blisters and irregularities in the union of the sheets.

I J are adjustable scrapers, the edges of which are brought to or from the peripheries of the rolls B C by thumb-screws *f*, or other suitable means, and the lower scraper, I, may be hinged to the floor or bottom of the reservoir A, and the scraper J made in angular form and pivoted to the side or other convenient place within the reservoir.

A shelf, *g*, may also be secured to the side of the reservoir on a line between the axes of the two rolls B C, upon which the paste is deposited, and passes between the rollers, by which all lumps and irregularities are destroyed, the paste adhering to the face of the rolls being taken off by the scrapers I J, and falls into the compartment *a*, where it comes into contact with the paste-roll D, and is carried up by it and deposited upon the sheet of paper *x*, coming from the paper-roll upon the shaft F, the quantity of paste deposited being regulated by the pressing-roll E.

After the united sheets pass over the roll *d* and between the drier-felt *s* and drying-cylinders, the latter being heated by hot air or steam, they are dried and finished ready to be rolled up into rolls, or cut into sheets, as the demand may be for the product.

The paste-roll D, if desired, can receive its motion by suitable belt and pulley connected with the other parts of the machine; but when the strength of the paper being pasted will admit, said motion may be imparted by the paper itself. In the latter case the tension of the paper is more uniform, and more thoroughly prevents the sheet of pasted paper from wrinkling when applied to the unpasted sheet.

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

1. The reservoir of a pasting-machine, provided with two paste-grinding rolls, which are located within the reservoir in such manner as to divide it into substantially two compartments for containing the ground and unground paste, as herein shown and described.

2. The combination, with a reservoir, of a pasting-machine having two compartments formed by the two paste-grinding rolls, as specified, of a pasting-roll, the same being located within one of said compartments for taking up the ground paste, substantially as and for the purpose specified.

3. The reservoir of a pasting-machine, having two compartments formed by the two paste-grinding rolls, as specified, in combination with one or more scrapers for taking off the paste from said rolls, substantially as and for the purpose described.

4. The combination, with a reservoir of a pasting-machine, of a pasting-roll, a pressing-roll in direct contact therewith, a guide-roll, over and upon which the two sheets are brought in contact, located as specified, and a drying-cylinder, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES L. CRUM.

Witnesses:
NAT. E. OLIPHANT,
CHAS. H. FOWLER.