

No. 675,117.

Patented May 28, 1901.

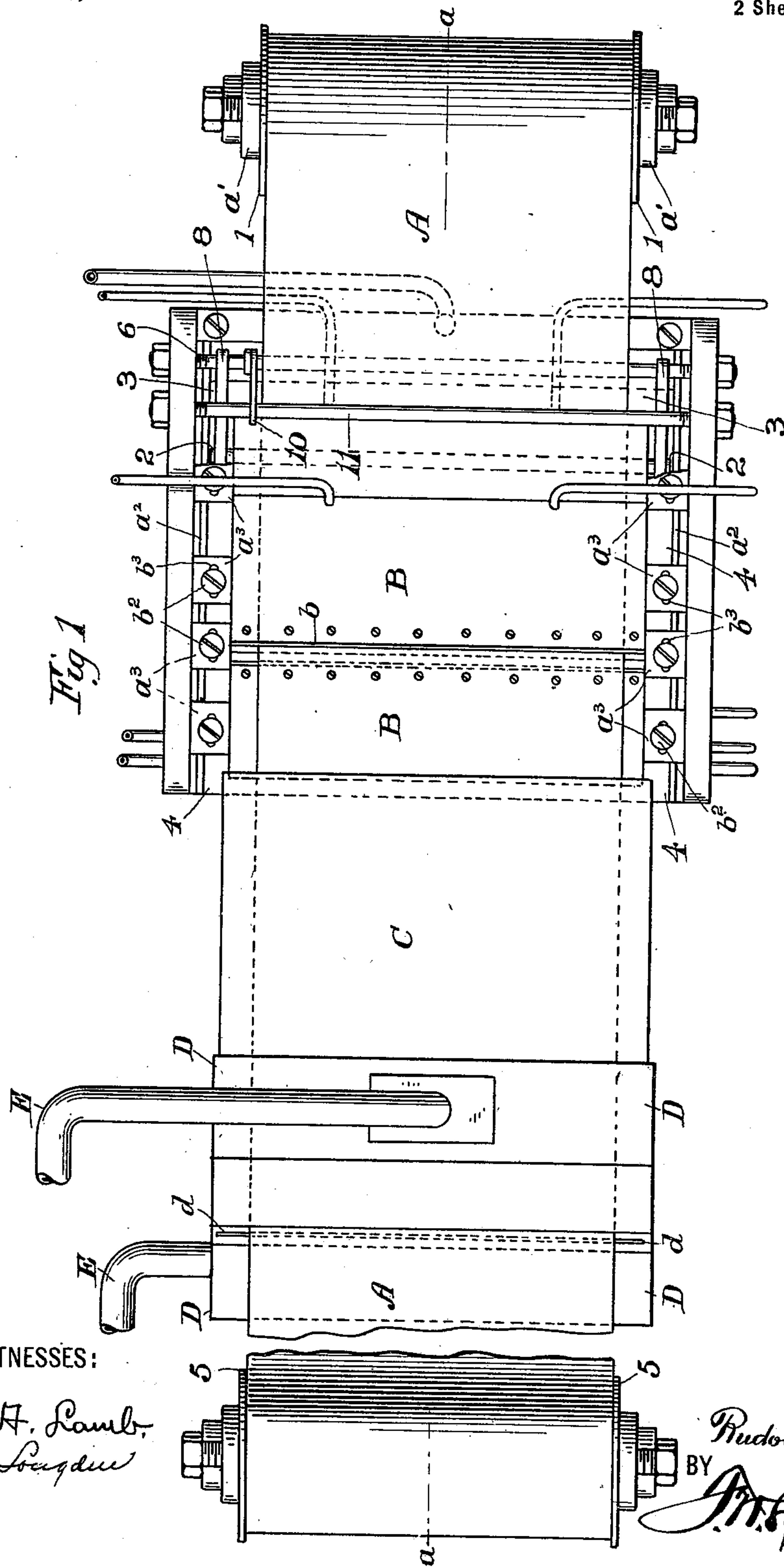
R. STOCKER.

APPARATUS FOR MANUFACTURING MANIFOLD CARBON PAPER.

(Application filed Apr. 7, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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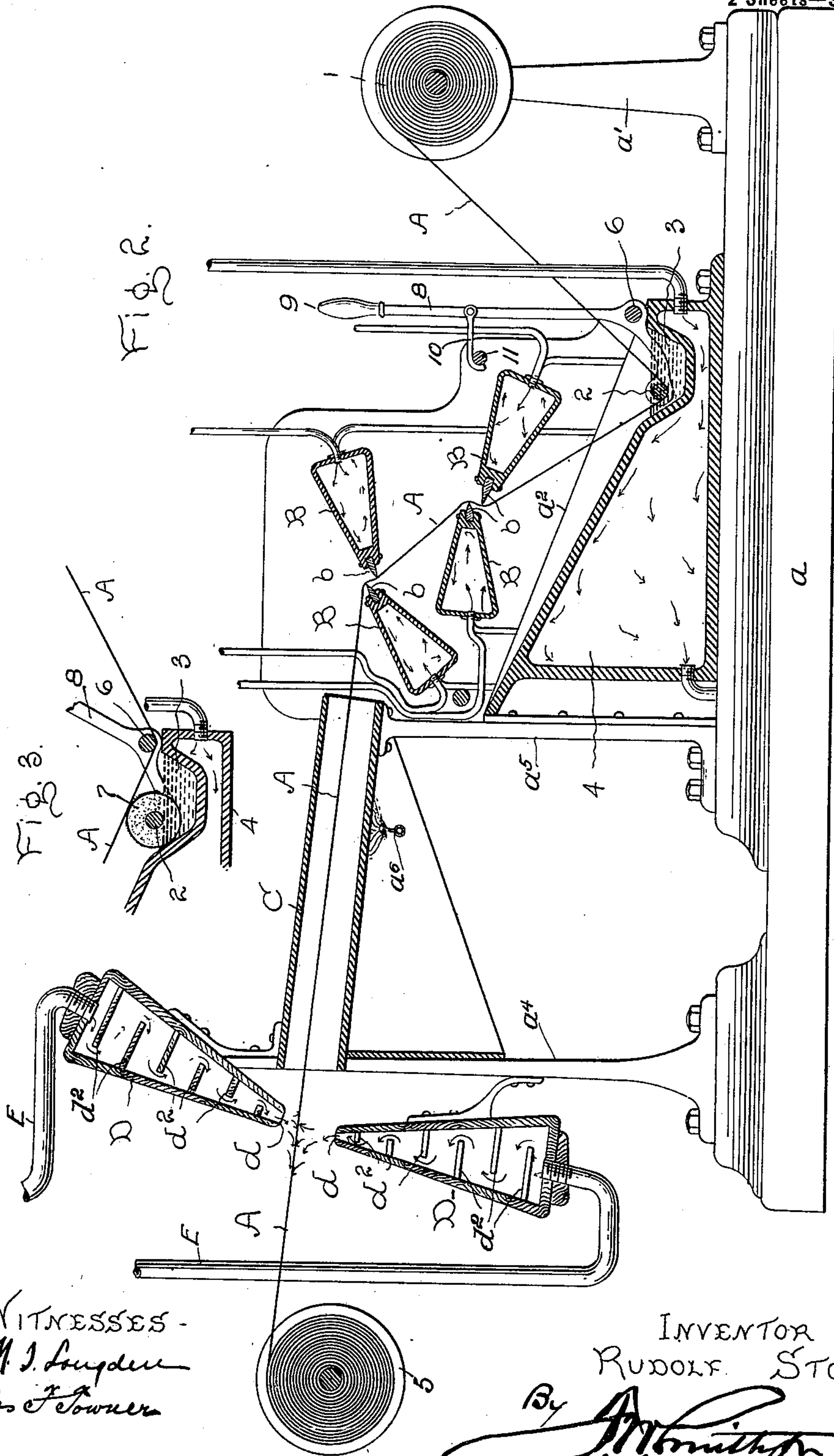
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WITNESSES -
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UNITED STATES PATENT OFFICE.

RUDOLF STOCKER, OF LONDON, ENGLAND.

APPARATUS FOR MANUFACTURING MANIFOLD CARBON-PAPER.

SPECIFICATION forming part of Letters Patent No. 675,117, dated May 28, 1901.

Application filed April 7, 1900. Serial No. 12,018. (No model.)

To all whom it may concern:

Be it known that I, RUDOLF STOCKER, a citizen of the United States, residing at London, England, have invented certain new and useful Improvements in Apparatus for Manufacturing Manifold Carbon-Paper, of which the following is a specification.

My invention relates particularly to means for manufacturing what is termed "two-sided" manifold carbon-paper—*i. e.*, paper having both sides coated with a transferable substance or ink. This invention can, however, be used equally as well in the manufacture of "single" manifold-copying paper—*i. e.*, paper having only one side coated with the transferable substance.

Hitherto many difficulties have been experienced in manufacturing manifold-paper, especially "double" manifold-paper; and it is the object of my present invention to overcome these difficulties.

In the accompanying drawings, Figure 1 is a plan view of the improved machine. Fig. 2 is a sectional view of the same, taken on line *a a* of Fig. 1; and Fig. 3 is a sectional view of the ink trough or reservoir and an inking-roller that is used when only one side of the paper is to be coated.

a is the bed-plate of the apparatus, and *a'* is a standard rising from the bed-plate and which supports a reel 1, that holds the paper A, which is to be coated.

4 is a steam-box which rests upon the bed-plate and whose upper surface is inclined downwardly to a trough 3, which latter is formed directly in the surface of the steam-box, and 2 is a roller journaled within the lower end of the L-shaped lever 8 and contained within the trough, which lever is pivoted around a rod 6, secured to the frame of the machine. The sides of the steam-box extend upwardly above the upper inclined surface, as shown at *a*² in Figs. 1 and 2, for the purpose presently to be explained, and the ink or other coating substance is contained within the trough 3 and is of such a depth as to submerge at least the lower portion of the roller 2.

B represents steam-boxes from the lateral extremities of which extend lugs *a*³, which rest upon the frame of the machine and are provided with elongated slots *b*³, through

which pass screws *b*² into the frame of the machine, the object of this construction being to enable the boxes to have a slight adjustment in a horizontal plane. These steam-boxes B are arranged in pairs, one above the other, and are preferably of a general wedge shape and have the small ends of each pair substantially opposite each other, and in these ends are secured knife-like scrapers *b*. These steam-boxes B, with the knives in the ends thereof, constitute "scrapers," which remove the surplus ink or coating substance from the paper in the manner presently to be explained, and these boxes, as well as the box 4, are heated by steam or gas in any ordinary and suitable manner, the object of the heating of the box 4 being to keep the ink or other coating substance in a liquid form, while the object of heating the boxes B is to keep the scraper-knives *b* hot and to radiate considerable heat, so that the coating on the paper will not harden materially during the process of scraping. Immediately beyond the scrapers is a long flat oven C, heated by an ordinary gas-jet *a*⁵ and which is supported on standards *a*⁴ *a*⁵, which rise from the bed of the machine, and just beyond the outer end of this oven are air-blast devices D, held in position on the upright *a*⁴ and communicating with any suitable air-blast led into the boxes of these devices through suitable pipes E.

In order that the blasts of air may not be delivered through the nozzles *d* of the devices D, so as to be concentrated at one point, I provide both of these boxes with partitions *d*², extending only part way across the diameters of the boxes from heel to nozzle, but provided with openings that are so arranged as to cause the blast to take a sinuous course during its passage through these devices, thereby spreading out and distributing the air-blast evenly as it passes through the nozzles of the cones.

In utilizing my improved apparatus the following method of procedure is observed: The paper A is unwound from the reel 1 in the usual manner and passes underneath the roller 2 and is therefore coated on both sides with the ink or other liquid in the trough 3. There is more or less of a surplus of the coating substance on the paper after it leaves the roller 2, and I accordingly pass the paper be-

tween the heated pairs of scrapers *b*, which latter are adjusted so as to bear against the opposite sides of the paper with the proper degree of firmness. The substance removed
 5 by the scrapers *b* drops upon the upper inclined surface of the box 4 and flows back again into the trough, and the paper after the scraping process is passed through the oven C and thence between the opposing noz-
 10 zles of the air-blasts D to any suitable reel 5, on which it is finally wound. The scrapers not only remove the surplus coating substance, but also serve to evenly spread or distribute the substance upon the paper, while
 15 at the same time this substance is prevented from becoming chilled by reason of the heat which radiates from the boxes B as the paper leaves the scraper-knives *b*, and therefore the substance will not adhere to the
 20 scrapers and clog the same, as it would do if the scrapers were cold. The object of passing the coated paper through the long oven C is to completely liquefy the coating substance, so that it can be suddenly chilled
 25 when subjected to the cold-air blasts between the nozzles of the devices D, which sudden chilling action gives a very desirable finish to the paper.

Heretofore in the manufacturing of manifold-paper it has been the custom to place
 30 the reel on which the coated paper is wound a considerable distance from the machine proper in order that the surrounding atmosphere may thoroughly dry the coating substance before the winding; but this necessi-
 35 tates a waste of floor-space, and the paper also gathers dust and other foreign particles, which renders the paper defective. In my improvement the air-blasts thoroughly chill
 40 and dry the coated substance, and therefore my winding-reel 5 is placed very near the air-blasts.

I have shown and described my apparatus as equipped for coating the paper on both
 45 sides; but no change in the construction is necessary for the purpose of coating the paper on one side only except that I mount an inking-drum 7 upon the roller 2 and pass the
 50 paper beneath the rod 6 and thence over and against the drum 7 to the scrapers, as shown at Fig. 3.

The upper end of the lever 8 is provided with any suitable handle 9, and an ordinary
 55 latch 10 is pivoted to the lever a short distance below the handle and engages over a rod 11, which extends from the frame of the machine, the object of this latch and rod con-

struction being to hold the lever in the position shown at Fig. 2. By lifting the latch the lever may be swung back, so as to ele- 60
 vate the lower end thereof, and thereby cause only the lower portion of the inking-drum 7 to be submerged in the coating substance when a single side of the paper is to be coated.

I prefer to use two pairs of heated scrapers, 65
 as shown; but a single pair or more than two pairs may be used, or, in fact, when paper is coated only on one side a single scraper may be used, all without departing from the spirit of my invention, and I do not wish to be lim- 70
 ited in this respect, the gist of my invention resting in the broad idea of using heated scrapers preparatory to passing the coated paper through the oven and between the air-
 75 blasting devices.

I have ascertained that my invention is a decided improvement over the usual method, which utilizes oscillating or revolving brushes, since these brushes become clodded and mis-
 80 shapen after a short usage, thereby rendering it well-nigh impossible to manufacture a uniform paper.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 85

1. The combination of the supplying and receiving reels and the intervening trough through which the paper is guided and where-
 90 in it is submerged and coated with the scraping-knives arranged in pairs to act on opposite sides of the paper, and provided with means for heating the same, a heated oven through which the paper subsequently passes and two air-blasts acting in opposite direc-
 95 tions against opposite sides of the paper at the same point.

2. The combination of the supplying and receiving reels and the intervening trough through which the paper is guided and where-
 100 in it is submerged and coated, with the scraping-knives arranged in pairs to act on opposite sides of the paper and provided with hollow boxes and means for supplying heated fluid to the same, a heated oven through which the paper subsequently passes and two air-
 105 blasts acting in opposite directions against opposite sides of the paper at the same point.

In witness whereof I have hereunto set my hand this 14th day of March, 1900.

RUDOLF STOCKER.

Witnesses:

H. D. JAMESON,
 T. L. RANDS.