

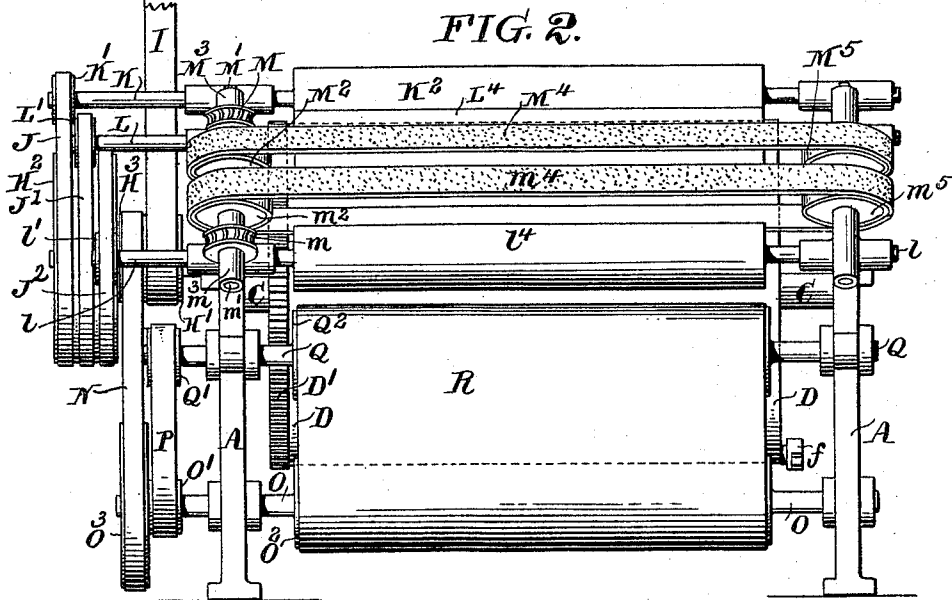
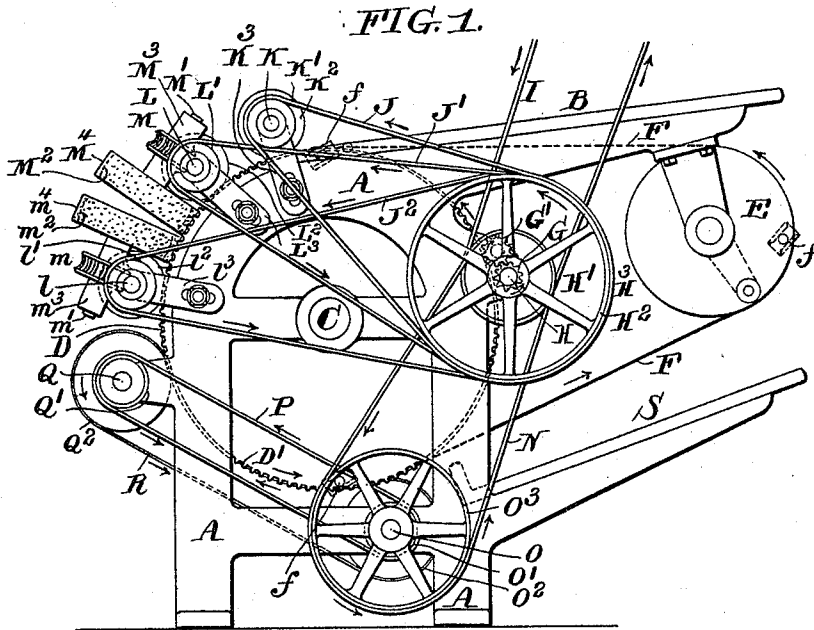
(No Model.)

W. H. R. TOYE.

METHOD OF AND APPARATUS FOR POLISHING PRINTED MATTER.

No. 585,368.

Patented June 29, 1897.



Witnesses.

Camp Dury
Stewart

Inventor.

William H. R. Loge

James P. Chambers
his Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM H. R. TOYE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, ROBERT P. BROWN, AND EDWARD L. BAILEY, OF SAME PLACE.

METHOD OF AND APPARATUS FOR POLISHING PRINTED MATTER.

SPECIFICATION forming part of Letters Patent No. 585,368, dated June 29, 1897.

Application filed November 12, 1895. Serial No. 568,669. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. R. TOYE, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Methods of and Apparatus for Polishing Printed Matter, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to polishing, brightening, or glazing of printed matter without the use of a varnish or other coating material, my object being to impart a bright finish to printed matter, whether reading matter or pictures, and also to remove surplus ink and thoroughly rub into the paper recently-printed matter, in this respect taking place of the generally-used laborious and tedious operation of placing the sheets between press-boards and subjecting them to an intense pressure in a standing-press.

My invention is based upon the fact that printed matter can be polished, brightened, and well rubbed into the paper by subjecting the printed sheets before the ink has become dry and hard to the action of rubbers working over the face of the paper in different directions; and my invention consists in the method of polishing and brightening printed matter by subjecting it to such a rubbing operation, first lightly and then progressively more energetic, and also in mechanical devices adapted for carrying this method into operation, as well as for general polishing, and which will best be understood as described in connection with the drawings in which they are illustrated, and in which—

Figure 1 is a side elevation of a polishing-machine embodying my improvements, and Fig. 2 a front elevation thereof.

A indicates the framing of the machine; B, the feed-board, upon which the sheets are fed to the apparatus; C, the shaft of a rotating drum D, which in the construction shown serves as a support for the backs of the sheets being polished, and is provided at one end with a gear-wheel D'.

F indicates the carrier, which is made up of flexible cords or chains passing around the drum D and around the carrier sheave or

sheaves E, the carrier being provided with grippers *f f*, &c., arranged at a proper distance apart and operating like the grippers of a printing-machine carrier.

G is a spur-wheel meshing with the spur-wheel G', and through it driving the gear-wheel D' and the cylinder D, said wheel G being secured to the main shaft H, to which is also secured a pulley H', around which passes the driving-belt I.

H² indicates a drum secured to and rotating with the shaft H and around which passes, in the construction shown, three belts, (indicated at J, J', and J².) The belt J also passes around a pulley K', secured to a shaft K, to which shaft is also secured a cylinder or brush K², which lies across the face of the drum D, pressing upon it with a light pressure and rotating in the same direction to the rotation of the drum, so that the contacting faces move in opposite directions.

The belt J' passes around a pulley L', secured to a shaft L, to which shaft is also secured a worm L², which engages with a worm-wheel M on a shaft M', secured in a bearing M³ and operating a pulley M². A similar pulley (indicated at M⁵) is situated on the other side of the drum D, and a belt M⁴ passes around the two pulleys and across the face of the drum D. I prefer also to secure to the shaft L a revolving cylinder or brush L⁴, lying, like the similar cylinder or brush K², across the face of the drum and pressing lightly against it. This cylinder or brush L⁴ also revolves in the same direction as the revolution of the drum. The belt J² passes around a pulley l', secured to a shaft l, to which shaft is also secured a worm l², which meshes with a worm-wheel m, secured in a bearing m³ and to a shaft m', on the end of which shaft is secured the pulley m², a belt m⁴ passing around this pulley and around a pulley m⁵, situated on the opposite side of the machine, the belt m⁴, like the belt M⁴, passing across and resting lightly against the face of the cylinder D, the two belts being preferably operated in opposite directions, as indicated by the arrows in the drawings. The shaft l also preferably carries a revolving cylinder or brush l⁴, operating like the similar cylinders L⁴ and K². Around a pulley H³ on the shaft H passes a

belt N, which also passes around a pulley O³, secured to the shaft O, to which shaft is also secured a drum O² and a pulley O'. Around the pulley O' passes a belt P, which also passes around a pulley Q' on a shaft Q, said shaft carrying a drum Q², and around the drums Q² and O² passes a broad belt R, which, by reason of the position of the two drums, conforms to face of the drum D, and by reason of the gearing shown moves in the opposite direction to the face of the drum.

S indicates the reception-board for the polished sheets after they have passed through the apparatus.

It will be noticed that the paper, after leaving the delivery-board B and before it is deposited in the receiving-board S, is subjected to the action of three brushes or cylinders, (indicated at K², L⁴, and L⁴,) each acting for a very short time on any given part of the printed matter, and that the printed matter is also rubbed in a direction at right angles to the rubbing of the cylinders aforesaid by the belts M⁴ and m⁴, said belts also rubbing over the face of the printed matter in opposite directions to each other. After the printed sheets have been subjected to the action of these rubbing devices it then passes between the drum D and the belt R and is subjected, during a relatively considerable time, to the rubbing of a polishing part of this belt, which covers a considerable part of the face of the drum.

My improved method of polishing and brightening printed matter, which consists in rubbing the printed face of the paper first with light and then with harder pressure, so as to polish and brighten the print before the ink has become dry, may of course be carried into effect irrespective of the mechanism used for applying the process. With regard to the mechanism shown I may state that the exact construction of the apparatus as well as the number and arrangement of the rubbing devices may be considerably changed without departing from the spirit of my invention. The arrangement shown has been carefully devised and will be found to give excellent results in practice, and for the best results there should in all modifications be provided, in combination with the carrier and supporting surfaces for the printed sheets,

two or more rubbing devices, one or more of which move in a different direction or directions from the others, and all of which have but a short and light contact with the printed paper at any one part, and a rubbing-belt situated on the delivery side of these rubbing devices and arranged to maintain a longer and relatively firmer contact with the printed surface.

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

1. The method of polishing and brightening printed matter which consists in printing upon paper and then before the ink has become hard and dry rubbing the surface of the paper and printed matter first with light and then with harder pressure.

2. In a machine for polishing printed matter, the combination with a carrier and a support for the printed sheets, of two or more rubbing devices some of which move in different directions from the others over the support and each having but a short and light contact with the printed paper at any one part and a rubbing-belt situated on the delivery side of the rubbers aforesaid and arranged to maintain a relatively longer and firmer contact with the printed paper.

3. In a machine for polishing printed matter, the combination with a supporting-drum and a carrier for feeding the printed sheets through the machine, of rubbing-rolls set across the drum and revolving in the same direction as the drum and rubbing-belts lying across the drum and moving at right angles thereto.

4. In a machine for polishing printed matter, the combination with a supporting-drum and a carrier for feeding the printed sheets through the machine, of rubbing-rolls set across the drum and revolving in the same direction as the drum, rubbing-belts lying across the drum and revolving at right angles thereto, and a rubbing-belt extending along and across the drum and moving in the opposite direction thereto.

WILLIAM H. R. TOYE.

Witnesses:

CHARLES F. ZIEGLER,
D. STEWART.