

(No Model.)

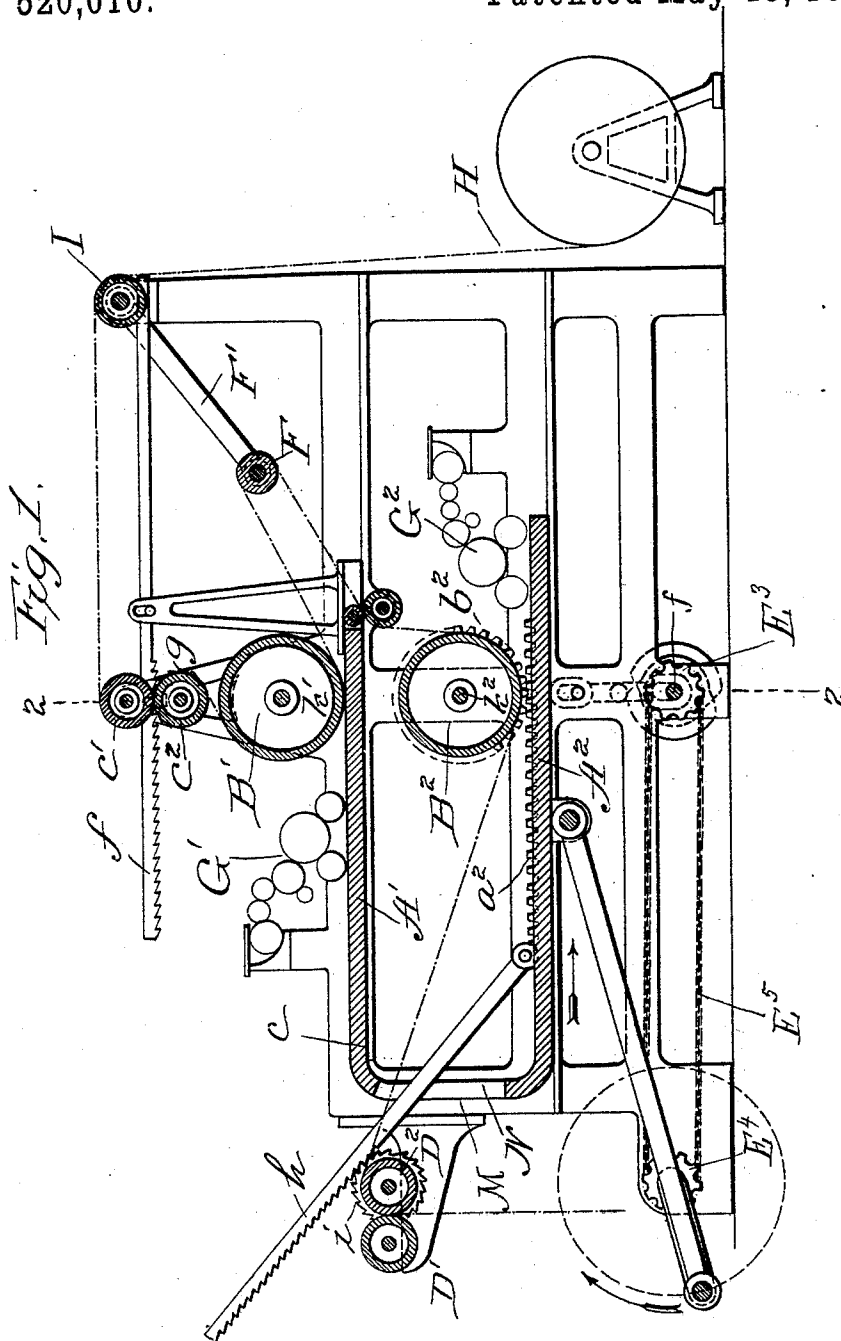
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C. E. PREUSSE.

MACHINE FOR PRINTING AND DIVIDING ENDLESS LENGTHS OF PAPER.

No. 520,010.

Patented May 15, 1894.



Attest
Notary Public
F. L. Middleton

Inventor
C. E. Preusse
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ATTY

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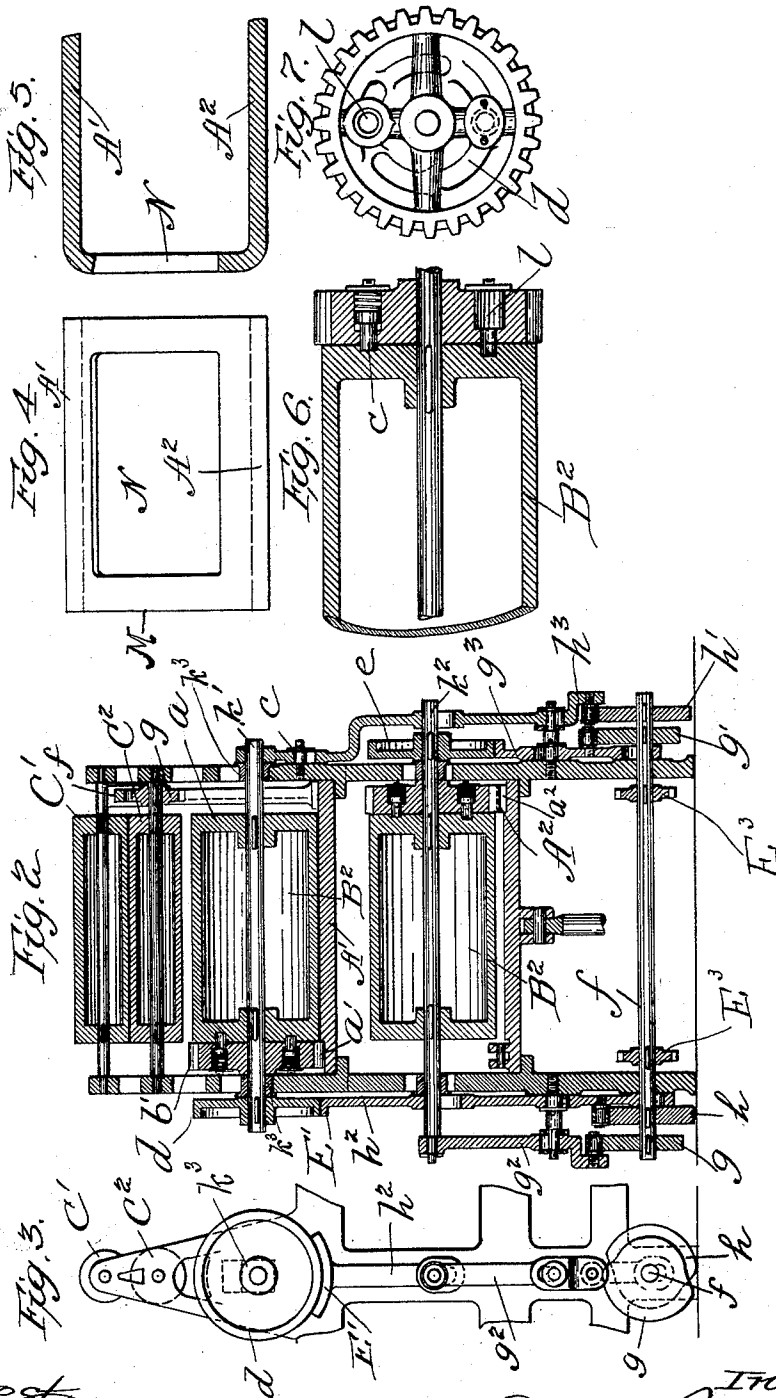
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UNITED STATES PATENT OFFICE.

CARL ERNST PREUSSE, OF LEIPSIC, GERMANY.

MACHINE FOR PRINTING AND DIVIDING ENDLESS LENGTHS OF PAPER.

SPECIFICATION forming part of Letters Patent No. 520,010, dated May 15, 1894.

Application filed May 26, 1893. Serial No. 475,639. (No model.)

To all whom it may concern:

Be it known that I, CARL ERNST PREUSSE, of 21 Hospitalstrasse, Leipsic, in the Kingdom of Saxony and German Empire, have invented a new and Improved Machine for Printing and Dividing Endless Lengths of Paper, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1, is a sectional elevation of a machine constructed in accordance with my invention. Fig. 2, is a section on line 2—2 of Fig. 1. Fig. 3, is a detail view of the central portion of one side of the machine. Figs. 4 and 5 are detail views of the beds A' and A² showing the manner of connection, and Figs. 6 and 7 are detail views of the impression roller.

This invention relates to a machine for printing upon and dividing endless lengths of paper.

The machine consists mainly of two superposed reciprocating beds A' and A² (Fig. 1) firmly connected to each other upon which the type or type forms are fixed, two impression cylinders or rollers B' and B², and of the rollers C' and C² and D' and D² (for feeding and delivering the paper respectively) which are driven from the table. In the connecting piece M of the beds A' and A² there is an opening N the object of which is hereinafter described. The beds A' and A² (Fig. 1) move forward and backward on guides between suitably arranged frames. At the side of each bed there is arranged a toothed straight rack α' and α^2 in which the toothed wheels b' and b^2 engage and which serve to rotate the impression cylinders. The impression cylinders and the toothed wheels are constructed as follows:

The toothed wheels b' b^2 (Figs. 1, 6 and 7) are loose on the shafts k' k^2 while the printing cylinders are keyed fast thereon. In each of the toothed wheels there is a hole l , in which works a bolt c pressed by a spring against the wall of the cylinder and beveled at that end which is directed toward the cylinder. In the end of the cylinder is an inclined groove d (Figs. 6 and 7). When the bed A moves in the direction of the arrow Fig. 1 the toothed wheel b is rotated by the rack α' and guides the bolt c , into the groove d where

the said bolt meets a resistance and moves the cylinder B' with it. After the cylinder B' has made one revolution it is held fast by the brake E' and is also raised by the brake acting in conjunction with a thrust rod h^3 upon the opposite side of the machine, in the upper end of which thrust rod, the extended end of the shaft k' is journaled. The bearings k^3 of the shaft k' are adapted to slide vertically in the frame to permit this action. The brake bar h^2 and the thrust rod h^3 have their lower ends eccentrically connected with the shaft f which is operated by a sprocket wheel E³ driven through a sprocket chain E⁵ by a sprocket wheel E⁴ on the driving shaft. The brake and thrust rods are preferably operated in their vertical movement by means of eccentrics h h' splined on the shaft f with their peripheries bearing against anti-friction bearing rollers connected to the lower ends of the rods. On the rearward movement of the bed A' the direction of rotation of the toothed wheel C changes and the bolt c slides along the inclined path of the groove d out of the same and thus the cylinder B', still held (for safety and security) by the brake E' remains stationary when the bed A' moves back.

The construction of the bed A² with the cylinder B² and its brake mechanism is exactly similar with the exception that both work in the reverse direction to bed A' and cylinder B'. Now since the beds A' A² are fixed to each other and the inclined groove in the end of cylinder B² corresponding to the groove d is oppositely placed to said groove d or inclined in the opposite direction the bed A' prints only during the forward movement and the bed A² prints only during the rearward movement.

The paper-feeding rollers C' and C² are located above the cylinder B'.

The paper is fed in the following manner:— On the bed A' is a post which moves the toothed bar f with it. The said bar engages with the ratchet wheel g which is fixed on the shaft of the paper-feeding roller C² and thus rotates the latter. This must take place only when the bed A' moves in the direction of the arrow x and only so much paper must be fed as is required for printing. As the teeth of both the bar and ratchet wheel are

inclined and the bar is free to have slight upward movement the teeth of the bar will ride over those of the wheel on the return stroke without turning it. Now since as already
 5 stated both beds work in opposite directions to each other the paper which has been printed by bed A' but is not yet to be operated on by table A² is taken up by the oscillating arm F' with roller F (Fig. 1) and
 10 is held until the bed A² in returning has use for said paper. Simultaneously with the commencement of the printing period of the bed A² with cylinder B² the delivery rollers D' and D² (Fig. 1) commence to draw out
 15 through the opening N (Figs. 4 and 5) in the connecting piece M of the beds A', A² the paper, which is now printed on both sides. The delivery rollers are driven from the bed A² (Fig. 1) by means of the rack *h* and ratchet
 20 wheel *i* and must only work during the return movement of the bed A² this being accomplished by reason of the inclination of the teeth of bar *h* causing them to ride over the teeth of the ratchet wheel on the forward
 25 movement of the table.

On the delivery rollers D' D² is a perforating comb or other suitable dividing mechanism which works in the well known manner.

Each bed has provided for it a separate
 30 inking apparatus G' G² which is actuated in the well known manner from the beds A' and A² respectively by means of toothed wheels.

The mode of operation of the machine is as follows: The paper H is led from a roller (Fig. 1)
 35 1) which is located behind the machine over the roller I to the paper feeding rollers C' and C² under the printing cylinder B' over the roller F on an oscillating arm, the guide rollers K, L under the printing cylinder B² to the
 40 paper-delivering (*i. e.* drawing off) and perforating or dividing rollers D' D². When this has taken place the machine is set in operation. First the bed A' which has already taken up ink begins with the printing cylinder B' and at the same time the rack *f* and
 45 the ratchet wheel *g* begin to work in combination with the paper feeding rollers C' C² which supply the machine with the requisite amount of paper. The oscillating arm with

roller F is depressed in consequence of the
 50 feeding of the paper. The printed paper is always stretched taut and the roller F keeps the paper in this condition until the bed A² commences to work, which takes place, when the bed A' has arrived into its end position
 55 during which time the bed A² has also taken up ink. During the printing period of the bed A² the paper delivering and perforating rollers D' D² also commence to work (by means of the rack *h* and ratchet wheel *i*) and deliver
 60 the paper which is now printed on both sides out of the machine. This is repeated again and again so that two sides of the paper are printed during one revolution of the machine. The printed paper is then divided into suitable
 65 portions by means of the perforating combs or other dividing devices provided on the rollers D' D² or by other equivalent or suitable means as desired.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for printing endless lengths of paper first on one side and then on the other, a pair of horizontally reciprocating type beds located one above the other coupled together, a pair of impression rollers co-acting with said type beds and alternately operated thereby and a brake connected to each impression roller for raising the same and holding it stationary while the other
 75 roller is printing, substantially as described.

2. In a machine for printing endless lengths of paper a pair of horizontally reciprocating type beds coupled together, a pair of alternately operating impression rollers coacting
 85 therewith, paper feeding and delivering rollers, ratchet wheels connected therewith, and rack bars operated by the reciprocating bed frame and having their free toothed ends contacting with the ratchet wheels, substantially
 90 as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL ERNST PREUSSE.

Witnesses:

CARL BORNGRAEBER,
 ERNST GRAUENHORST.