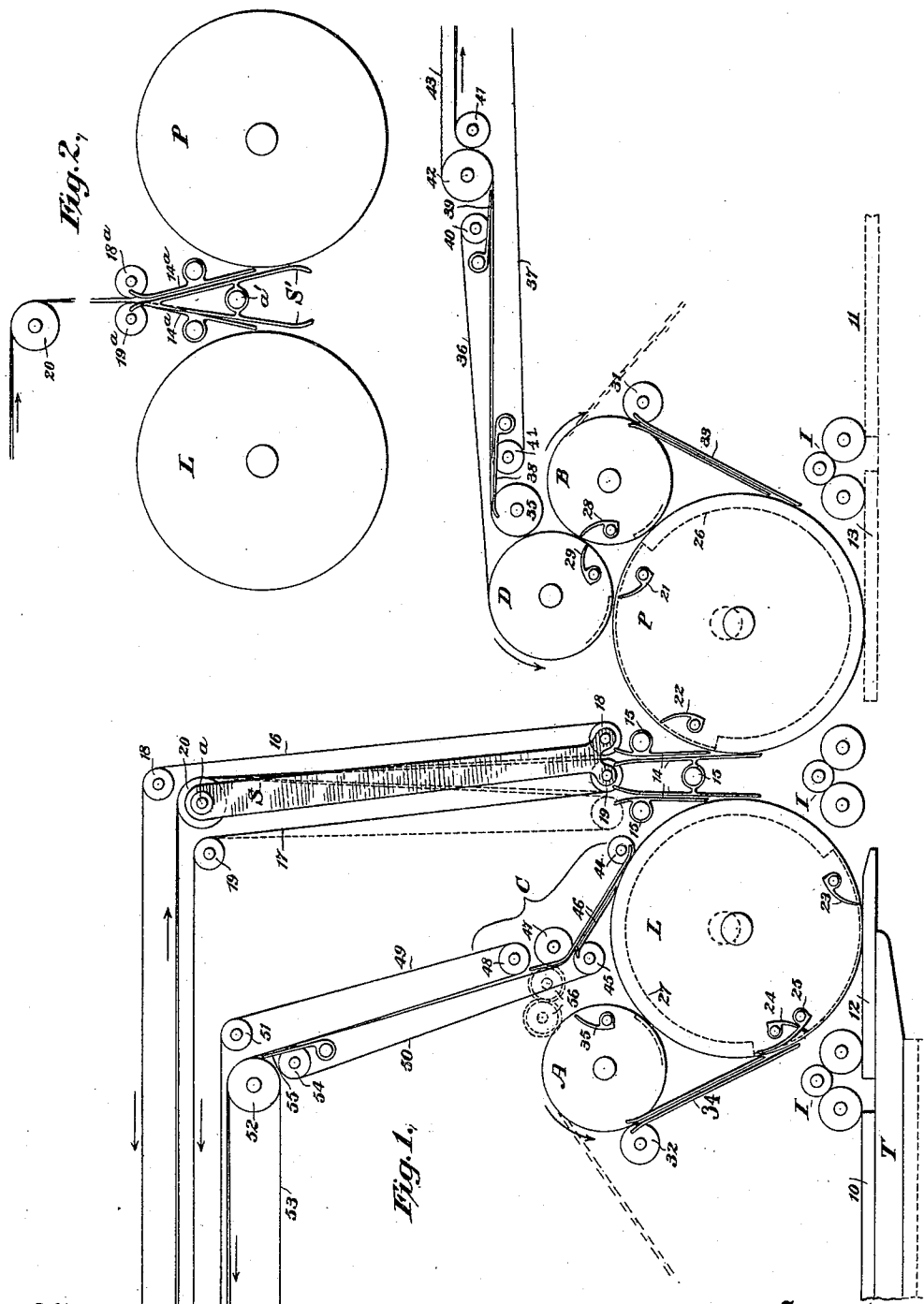


(No Model.)

W. SCOTT.
PRINTING MACHINE.

No. 480,042.

Patented Aug. 2, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,042, dated August 2, 1892.

Application filed February 10, 1891. Serial No. 380,890. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

My invention relates to printing-presses wherein the impression is taken between a flat bed and a cylinder.

The objects of my invention are, first, to print and deliver two perfected copies for each stroke of the bed; second, to print upon one side of sheets and to deliver the same.

In carrying out the first object of my invention I use a reciprocating type-bed, two oscillating impression-cylinders geared thereto, reversing appliances for each impression-cylinder at the outer side thereof, delivery means above each impression-cylinder, and an apparatus for feeding the sheets down between the cylinders, and preferably I use switching devices in connection with the feed.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a side view of my invention. Fig. 2 is also a side view showing a modification of my invention.

The type-bed T, having the forms 10 11 thereon and ink-tables 12 13 at the ends thereof, is geared to the two cylinders L R in a well-known manner. Ink-rollers I supply ink to the forms. The cylinder R has grippers 21 22 and an impression-surface 26. The cylinder L has grippers 23 24, impression-surface 27, and throw-offs 25. Tapes 16 17 feed the sheets from feed-tables or from any suitable cutting apparatus, as cylinders, the tapes 16 running around rollers 18 and 20 and the tapes 17 around rollers 19 and 20. These tapes may feed the sheets down between the impression-cylinders directly, the cylinders being placed close to each other, the grippers 21 23 of the two cylinders taking the leading edge of a sheet, as hereinafter described, directly from the tapes; but I prefer, however, the arrangement shown in the figures of the drawings, where guides 14 are used for each cylinder, the guides being secured at 15 to a suitable part of the framework, and a switching device for directing one sheet to one cylinder and the next sheet to the other cylinder, and so

on. This switching device may consist of swinging arms S, pivoted at *a* to the shaft carrying the rollers 20, the swinging arms carrying the lower rollers 18 19 of the pair of tapes 16 17 and swinging from one pair of guides 14 to the other pair of guides 14 at the proper times.

The reversing appliances consist of cylinders A B and guides 34 33 and feed-rollers 32 31. The cylinder A has grippers 30, and the cylinder B has grippers 28.

The delivery means may consist of a cylinder D, having grippers 29 and suitable tapes. I have shown tapes 36 passing about the cylinder D and rollers 39 35 and tapes 37 passing about rollers 41 41. Tapes 43 about rollers 42 are also used. Guides 38 support the paper from the roller 35 to tapes 37 and guides 40 from the tapes 37 to the tape 43, or the delivery means C may consist of the throw-offs, as 25, feeding-roller, as 44, and guides 46 to suitable tapes. I have shown a pair of tapes 49 50, the tapes 49 passing about rollers 48 51, and the tapes 50 about rollers 45 54. These tapes may be driven from the reversing-cylinders by suitable gearing, as 56, a roller 47 being used to feed the paper up between the tapes. The tapes 49 50 deliver the sheets to tapes 49 53, the tapes 53 running about rollers 52, and a guide 55 directing the sheet over the roller 52.

The reversing-cylinders and the delivery-cylinders (when used) may be driven by suitable means, as those set forth in my patent, No. 456,741, dated July 28, 1891. Each of these cylinders rotates each in its own direction.

In the modification shown at Fig. 2 the cylinders L R and reversing and delivery apparatus may be as in Fig. 1, and the feed-tapes at their lower bights may run about stationary rollers 18^a and 19^a, the swinging arms S' being placed between the cylinders L R and the guides 14^a and being pivoted at *a'*, the arms S' swinging at the proper times to direct the sheets alternately to the cylinders L R, and in this case the arms support and guide the sheet to the grippers of the cylinders.

The devices operate as follows: The parts being in the positions shown in Fig. 1, (in practice a sheet would be in the guides 34 and about the reversing-cylinder A,) as the type-

bed moved to the right (which motion may be given it by suitable means well known for that purpose) the grippers 24 of the cylinder L would take the leading edge of the sheet from the guides 34, and shortly afterward the cylinder L would begin to take an impression from the type-forms. Next, the grippers 21 of the cylinder R would take the leading edge of the sheet from the guides 14. The next step is the beginning of the delivery of the sheet from the cylinder L by means of the throw-offs 25, friction-roller 44, and guides 46 to the tapes 49 50. At about this time the cylinder R begins to take an impression and next to deliver the sheet to the reversing-cylinder B and its grippers 28, the grippers 21 opening for that purpose. When the type-bed has reached its extreme position to the right, (shown in dotted lines,) the grippers 22 of the cylinder R are just above the lower end of the guides 33 and the leading edge of the sheet is well down those guides. The grippers 23 of the cylinder L are to the left of the delivery means C, and the swinging arms S are in their left-hand position (shown in dotted lines) ready to deliver the next sheet to the cylinder L. As the type-bed moves to the left, the cylinder R takes the sheet from the guides 33 and takes the impression. The cylinder L takes the leading edge of a fresh sheet from the guides 14, the cylinder R begins to deliver the sheet to the delivery-cylinder D and its grippers 29, and this cylinder begins to deliver the sheet to the tapes and rollers, and later the cylinder L begins to take an impression from the type-forms. The cylinder L delivers the sheet to the reversing-cylinder A and its grippers 30, and these to the guides 34 and feed-roller 32, and the parts return to the positions shown in Fig. 1.

The operation of the modification shown at Fig. 1 is similar to that described, the arms S' swinging at the proper times, as will be understood readily.

The sheets printed upon one side may be delivered to fliers (indicated by broken lines in Fig. 1) or other devices by the reversing-cylinders, the grippers of which may be operated at the proper times by suitable cams, &c., commonly used for that purpose. The guides 33 34 may be replaced by any feed devices, as boards, and sheets printed on one side or not may be fed to the cylinders and delivered by the delivery means shown after being printed on one side; or one of the cylinders L R may be lifted from the forms during the stroke of the bed in one direction and the other lifted during the other stroke of the bed (shown by broken line-circles, which indicate the positions of the shafts of cylinders L R when these are raised) by any suitable means—such, for instance, as are shown in my patent, No. 425,710, dated April 15, 1890, thus preventing "set-off," and in this case each cylinder L R would take one impression to each double stroke of the bed. After the leading sheet has been taken by one cylinder

from the feed apparatus the next sheet becomes the leading sheet and is taken by the other cylinder.

The sheets may be cut from a roll of paper by cylinders and at the same time the copies may be partially cut apart and may be separated after the printing has been done, in a manner now to be described.

The tapes 37 43 run faster than the tapes 36 and the tapes 49 53 run faster than the tapes 50. When the leading edge of a sheet enters between the rollers 41 42, its other end is between the cylinder D and roller 35. The pull thus caused separates the copies. A like separation of the copies takes place on the other side when the leading edge of the sheet reaches the roller 52, the other end being held between the cylinders L and 44.

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

1. In a printing-machine, the combination of a reciprocating type-bed carrying the forms, two oscillating impression-cylinders, a sheet-feeding apparatus common to the two cylinders, the cylinders alternating in receiving the leading sheet therefrom, and delivery means for each cylinder, substantially as described.

2. In a printing-machine, the combination of a reciprocating type-bed carrying an inner and an outer form, two oscillating impression-cylinders arranged to print in both directions of their movement, a sheet-feeding apparatus common to both cylinders, the cylinders alternating in receiving the leading sheet from the feeding apparatus, sheet-reversing appliances, and delivery means, substantially as described.

3. In a printing-machine, the combination of a reciprocating type-bed carrying an inner and an outer form, two oscillating impression-cylinders which take impressions in both directions of their movement, an apparatus feeding the sheets to the cylinders at adjacent points thereof, the cylinders alternating in taking the leading sheet, reversing appliances for each cylinder, and delivery means for each cylinder, substantially as described.

4. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, an apparatus for feeding the sheets down between the cylinders, the cylinders alternating in receiving the leading sheet from the feeding apparatus, and reversing appliances and delivery means for each cylinder, substantially as described.

5. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, an apparatus for feeding the sheets down between the cylinders, the cylinders alternating in receiving the leading sheet from the apparatus, reversing appliances at the outer side of each cylinder, and delivery means above each cylinder, substantially as described.

6. In a printing-machine, the combination

of a reciprocating type-bed, two oscillating impression-cylinders, an apparatus for feeding the sheets down between the cylinders, guides and switching devices directing one sheet to one cylinder and the next sheet to the other cylinder, and reversing appliances and delivery means for each cylinder, substantially as described.

7. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, an apparatus for feeding the sheets down between the cylinders, guides and switching devices directing one sheet to one cylinder and the next sheet to the other cylinder, reversing appliances at the outer side of each cylinder, and delivery means above each cylinder, substantially as and for the purposes described.

8. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, a set of feeding-tapes, guides and swinging-arms directing one sheet to one cylinder and the next sheet to the other cylinder, reversing appliances at the outer side of each cylinder, and delivery means above each cylinder, substantially as and for the purposes described.

9. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, a set of feeding-tapes, 30 swinging arms carrying a pair of the rollers for said tapes, guides for each cylinder, reversing appliances at the outer side of each cylinder, and delivery means above each cylinder, substantially as and for the purposes described. 35

10. In a printing-machine, the combination of a reciprocating type-bed, two oscillating impression-cylinders, a set of feeding-tapes, 40 rollers for said tapes, swinging-arms carrying a pair of said rollers and having its axis of motion coincident with the axis of another of said rollers, guides for each cylinder, reversing appliances at the outer side of each cylinder, and delivery means above each cylinder, substantially as and for the purposes described. 45

Signed at New York, in the county of New York and State of New York, this 9th day of February, A. D. 1891.

WALTER SCOTT.

Witnesses:

F. GOODWIN,
R. W. BARKLEY.