(No Model.)

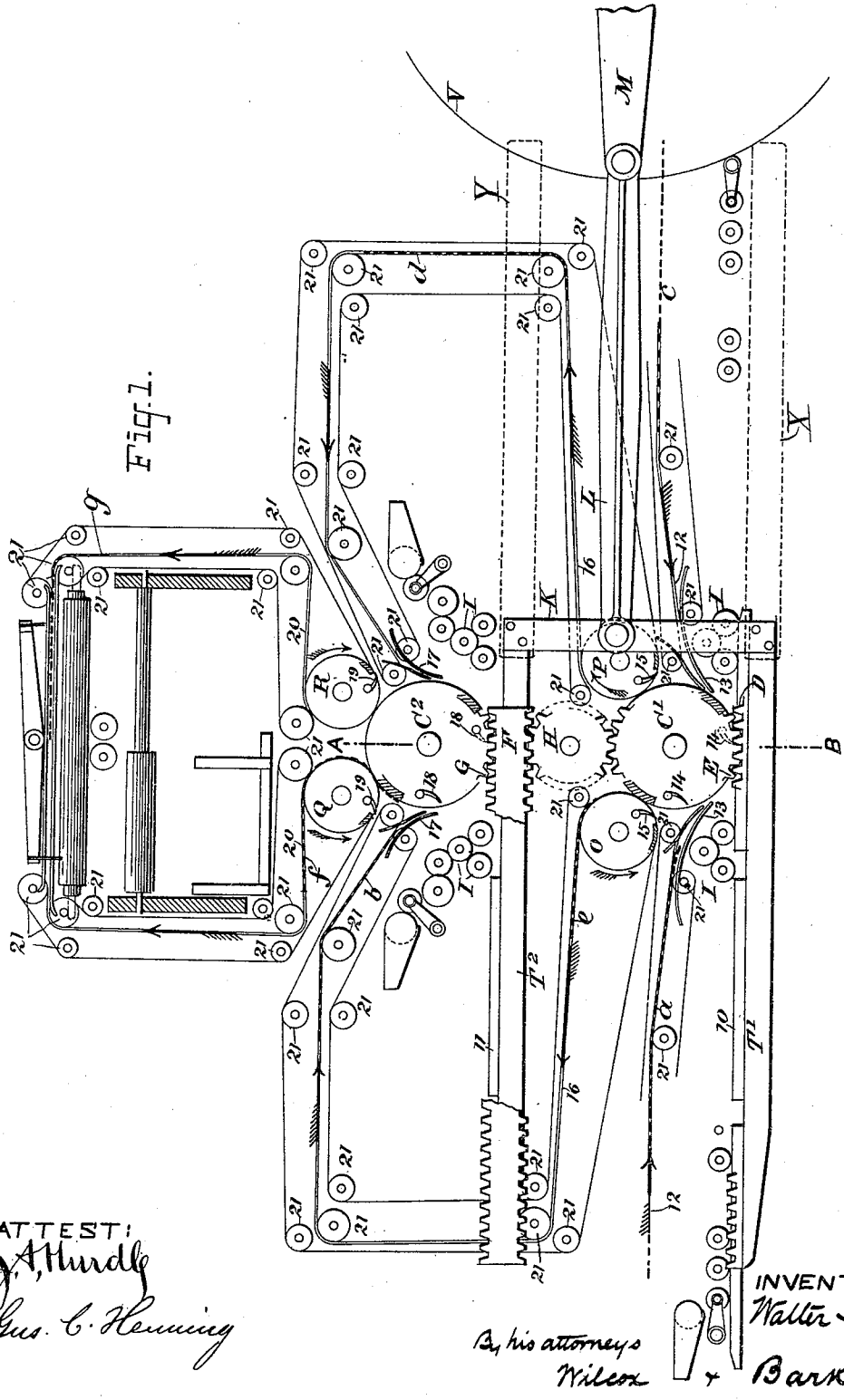
2 Sheets—Sheet 1.

W. SCOTT.

PRINTING MACHINE.

No. 480,970. Patented Aug. 16, 1892.

Fig. 1.



ATTEST:
J. A. Hurdle
Geo. C. Hemming

INVENTOR:
Walter Scott
By his attorneys
Wilcox & Barkley

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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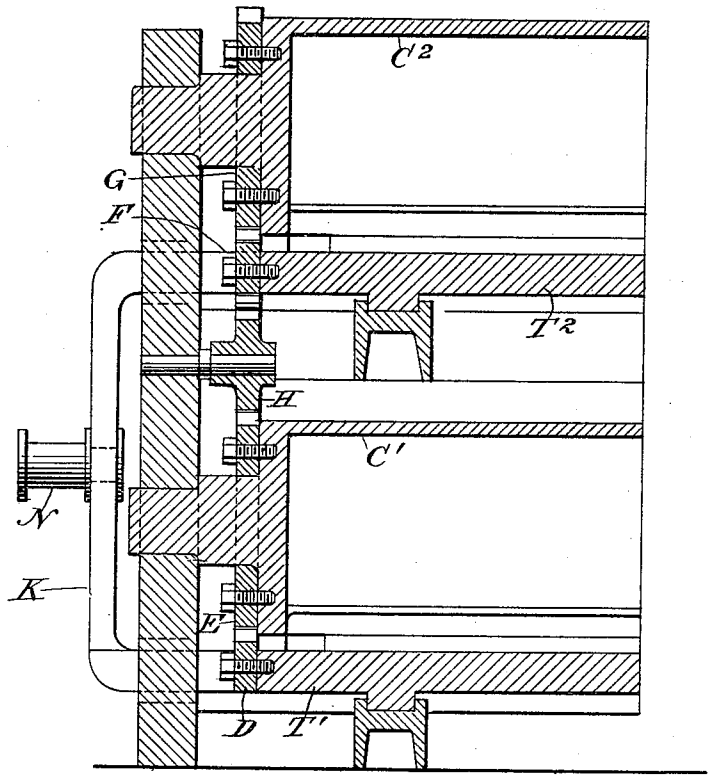
PRINTING MACHINE.

No. 480,970. Patented Aug. 16, 1892.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,970, dated August 16, 1892.

Application filed February 10, 1891. Serial No. 380,891. (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-machines wherein the impression is taken between a flat bed carrying the type-form and a cylinder.

The object of my invention is to increase the capacity of such machines in printing and delivering sheets, whether printed upon one side or perfected.

I employ to print and deliver sheets printed upon one side only a reciprocating type-bed, an oscillating impression-cylinder, and duplicate feeding and delivery devices. To print perfected copies, I employ two type-beds, two impression-cylinders, and, preferably, duplicate feed and delivery devices for each cylinder and duplicate sheet-carriers between the first delivery and second feed devices. It is obvious that in the last case there may be but one feed and one delivery apparatus for each cylinder, with one sheet-carrier between the two cylinders, without in any way departing from my invention.

My invention is shown in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the machine, showing the essential parts. Fig. 2 is a view, partly in section, on the line A B, of a portion of the machine.

In the machine shown in the drawings I employ two type-beds T′ T² and two oscillating impression-cylinders C′ C². The bed T′ and cylinder C′ are geared together by the rack D and gear-wheel E, while bed T² and cylinder C² are connected by the rack F and gear-wheel G. The rack F may be double and drive the cylinder C′ by means of the intermediate gear H and gear E, dispensing with rack D, or all the gearing shown may be used to drive the cylinders. There are slots, as X Y, in the framework of the machine (the frame is not shown) to clear the frame K, connecting the type-beds. A reciprocating motion is given the beds by the crank M, connecting-rod L, and pin N on the frame K. The crank M may be driven in any suitable way—for instance, it may be on the shaft of the gear V or on the side of gear V and the gear be driven by a pinion, pulley, and belt from any suitable source of power.

Tapes 12 and guides 13 are used to feed the sheets to the first cylinder C′. Tapes 16 and guides 17 are used to carry the sheets from the first cylinder C′ to the second cylinder C² and, in conjunction with guides 17, to feed the sheets printed upon one side to the second cylinder C². I show delivery-cylinders O P to take the sheets from the cylinder C′ and to feed the same to the carrying-tapes 16. The delivery-cylinders Q R take the sheets from the cylinder C² and deliver the same in any suitable way, as to fliers or to tapes, as 20, which may run the sheets to fliers or to a folding mechanism. The tapes 12, 16, and 20 run around suitable pulleys, as 21, as ordinarily. One part of each pair of tapes 16 and 20 runs around its corresponding delivery-cylinder, as shown.

Grippers 14 and 18 on the cylinders C′ C², respectively, take leading edges of the sheets from the feed devices, while grippers 15 19 on the delivery-cylinders O P and Q R, respectively, take the sheets from the impression-cylinders, the grippers of which open at the proper times. These grippers are operated at the proper times by any suitable means commonly used for that purpose.

The delivery-cylinders are given each its own rotary motion in the directions shown by the arrows by any suitable means, such as those set forth in my patent numbered 456,741 and dated July 28, 1891, or other means may be used, it being understood that the means for driving these cylinders form no part of the present invention.

The tapes are operated in any suitable way by means usually employed for that purpose.

The forms 10 and 11 are inked by the rollers I I, disposed as shown. There may be ink-tables on the lower bed and the usual fountains, duct, and distributing-rollers. For the inking-rollers of the upper bed fountains, duct, and distributing-rollers may be employed instead of the ink-tables, fountains, &c., as this gives a more compact arrangement of the sheet-carriers 16 without interference from the upper type-bed.

The sheets may be cut from rolls and fed to

the tapes 12, or they may be fed in by hand, though I prefer the first method.

I have shown the machine as delivering the printed sheets to a folder for convenience. I show seven sheets *a*, *b*, *c*, *d*, *e*, *f*, and *g* in the various stages of feeding, delivering, carrying, and delivery to a folder. I have also shown an "outside" form on one of the type-beds as the lower one and an "inside" form on the other as the upper one. This arrangement permits the sheets to be properly folded by the folder. In the positions shown the beds will move to the right, turning the impression-cylinders in a corresponding way. After a short movement of the parts the grippers 14 and 18 at the left-hand sides of the cylinders C' C² will grasp the leading edges of the sheets *a* and *b*. The sheets *e f* will be run off the delivery-cylinders O Q. The sheets *c d* will be run along toward the feed-guides, and the sheet *g* will be run into the folder. As the parts continue to move, the sheets *a b* will take impressions on their under sides and will be delivered to the grippers 15 19 of the cylinders P R, respectively, and from these cylinders to the tapes 16 20 on that side. When the type-beds have reached their extreme right-hand positions, the sheet *c* will be in a position corresponding to that shown for the sheet *a;* sheet *d* will be in one similar to that shown for the sheet *b;* sheet *e* will occupy one corresponding to that shown for sheet *d;* sheet *f* will be running into the folder, and sheet *g* will be folded. On the return stroke of the beds the grippers 14 18 (shown to the right in the drawings) will take the leading edges of the sheets *c d*, and as the stroke is completed the parts will be in the positions shown, it being understood that new sheets will be in the places occupied by sheets *a c*, that sheet *a* will be where *d* is shown, *d* where *f* is shown, *f* will be folded, *c* will be where *e* is shown, *e* will be where *b* is shown, *b* where *g* is shown.

In case it were desired to print upon but one side of a sheet, the tapes 16 or the cylinders O P can be arranged to run the sheets upon fliers and so to delivery-boards.

Having fully described my invention, what I desire to secure by Letters Patent is—

1. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, a sheet-feeding appliance for each cylinder, a sheet-delivery device for the cylinder taking the first impression, and a sheet-carrier between the delivery of the first and the feed of the second impression-cylinder, substantially as described.

2. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, two sheet-feeding appliances for each impression-cylinder, two sheet-delivery devices for the cylinder taking the first impression, and two sets of sheet-carriers connecting the delivery devices of the first cylinder with the feeding appliances of the second cylinders in pairs, substantially as described.

3. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, two sheet-feeding appliances, and two sheet-delivery devices for each cylinder, and two sets of sheet-carriers, connecting the delivery devices of the first cylinder and the feeding appliances of the second cylinder in pairs, substantially as and for the purposes described.

4. In a printing-machine, the combination of two reciprocating type-beds, two impression-cylinders, two feeding appliances for each cylinder, a pair of delivery-cylinders for each impression-cylinder, and sheet-carriers connecting the delivery-cylinders of the first and the feeding appliances of the second impression-cylinders in pairs, substantially as described.

5. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, these parts being in pairs one above the other, two feeding appliances and two delivery devices for each cylinder, and two sets of sheet-carriers connecting the delivery devices of the first and the feeding appliances of the second impression-cylinder, substantially as and for the purposes described.

6. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, two feeding appliances, and two delivery devices for each cylinder, two sets of sheet-carriers connecting the delivery devices of the first and the feeding appliances of the second cylinder in pairs, and gearing between one of the type-beds and both the cylinders, substantially as described.

7. In a printing-machine, the combination of two reciprocating type-beds, two oscillating impression-cylinders, their sheet feeding and delivering means, the sheet-carriers, the driving-crank, connecting-rod, and frame connecting the beds together, substantially as described.

8. In a printing-machine, the combination of two reciprocating type-beds, each carrying a printing-surface, an oscillating impression-cylinder coacting with each bed, appliances for supplying sheets to one of the impression-cylinders, and means for carrying the sheets printed on one side to the second impression-cylinder to print the other side, substantially as and for the purposes described.

9. In a printing-machine, the combination of two reciprocating type-beds simultaneously moving in one direction, an oscillating impression-cylinder coacting with each bed, appliances for supplying sheets to one of the impression-cylinders, and means for carrying the sheets printed upon one side to the second cylinder, substantially as described.

10. In a printing-machine, the combination of a reciprocating type-bed carrying an inner and an outer form, an oscillating impression-cylinder, devices for delivering the sheets at two points, and sheet-carrying means connected with each delivery and to opposite

sides of a folder, whereby the perfected sheets from one delivery enter at one side of the folder and the perfected sheets from the other delivery enter the folder at its other side, both sheets being folded with the same printed side out, substantially as described.

11. In a printing-machine, the combination of two reciprocating type-beds, an oscillating impression-cylinder coacting with each bed, appliances for supplying sheets to one of the cylinders, means for carrying the sheets printed upon one side from the first to the second cylinder, devices for delivering the perfected sheets from the second cylinder, and sheet-carrying means connecting the delivery and a folder, whereby the sheets are delivered to the folder, substantially as described.

12. In a printing-machine, the combination of two reciprocating type-beds, an oscillating impression-cylinder coacting with each bed and taking an impression as it moves in each direction, appliances for supplying sheets to one of the cylinders at two points, means for carrying the sheets from the first cylinder and delivering them to the second cylinder at two points, sheet-carrying means connecting from the deliveries of the second cylinder to the opposite sides of a folder, whereby the perfected sheets are folded with the same printed side out, substantially as described.

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.