

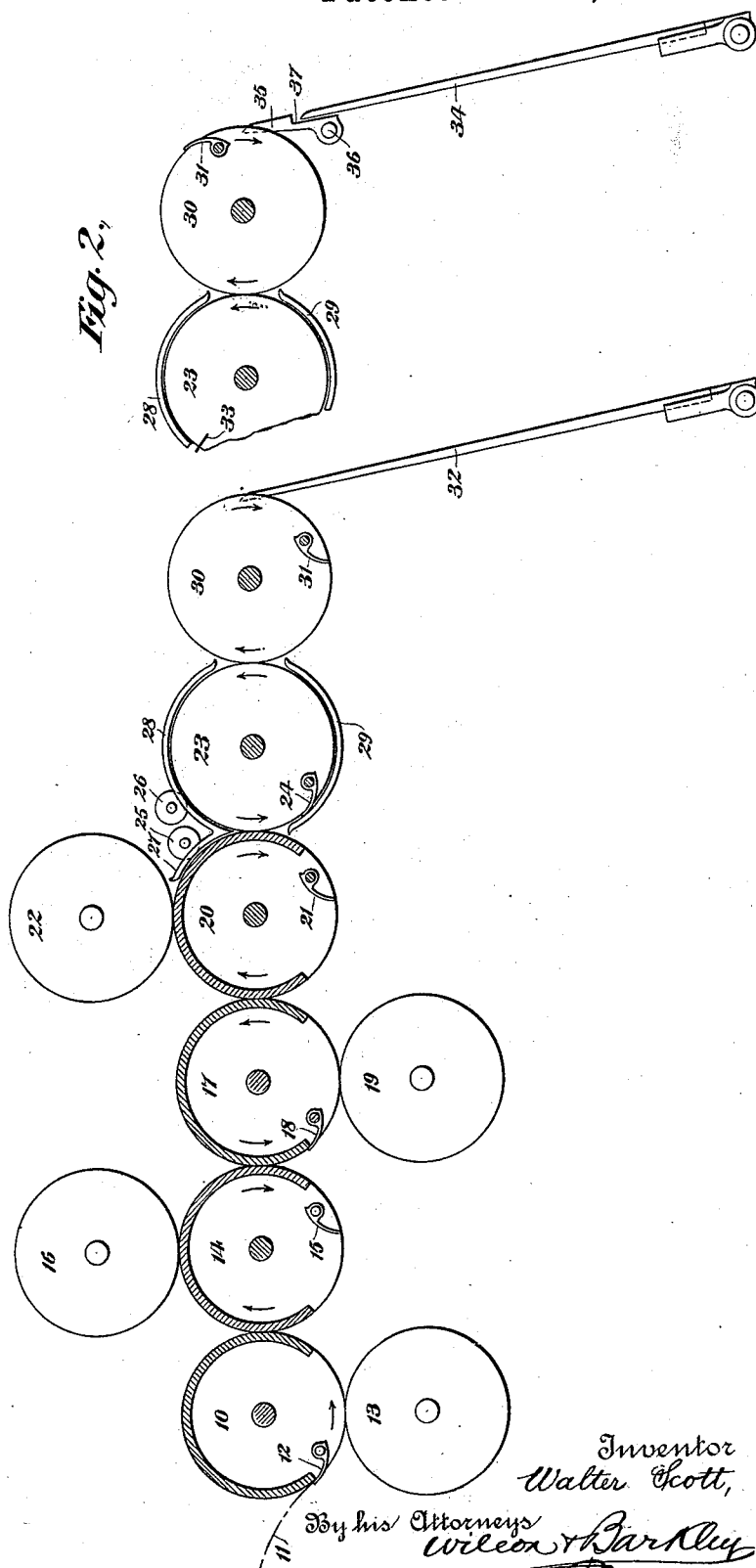
(No Model.)

3 Sheets—Sheet 1.

W. SCOTT.
PRINTING MACHINE.

No. 510,193.

Patented Dec. 5, 1893.



Witnesses
C. E. Ashley
H. W. Lloyd.

Inventor
Walter Scott,

By his Attorneys
Wilson & Barkley

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Fig. 3,

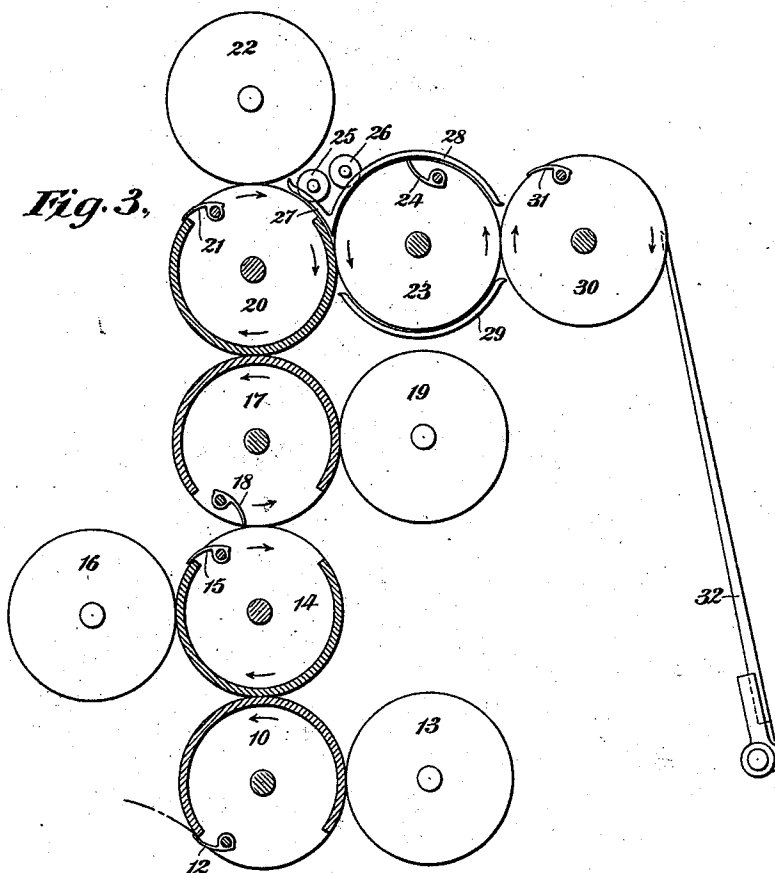
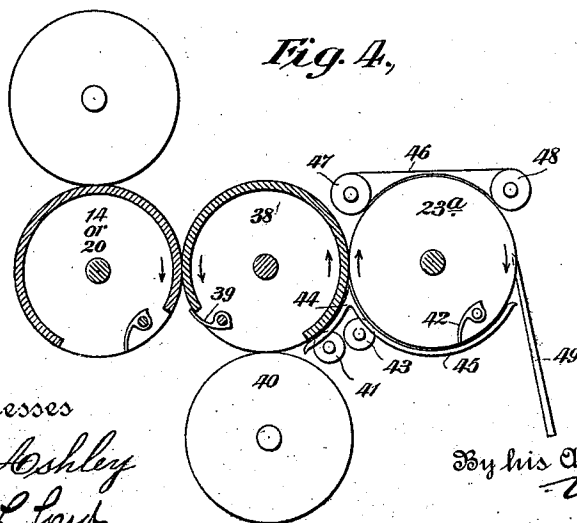


Fig. 4,



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(No Model.)

3 Sheets—Sheet 3.

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Fig. 5,

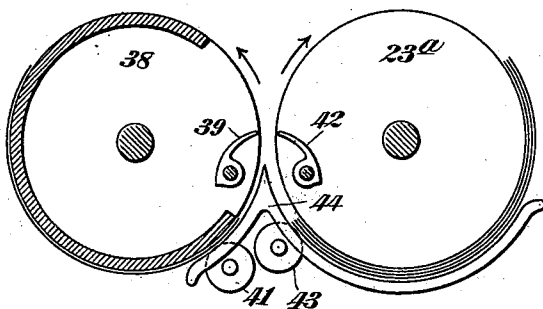
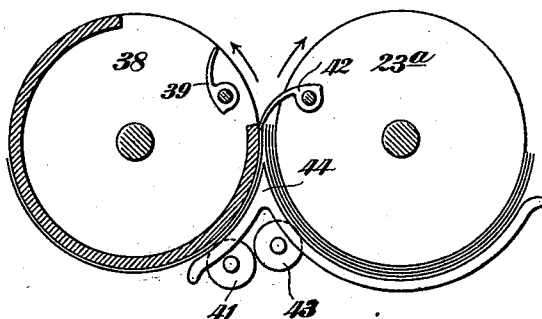


Fig. 6,



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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,193, dated December 5, 1893.

Application filed November 17, 1891. Serial No. 412,233. (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 and consists in the combinations of devices hereinafter described and more fully pointed out in the claims concluding this specification.

One form of my invention is shown in the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation of one arrangement of the invention. Fig. 2 illustrates a modification of the delivery devices. Fig. 3 is a side elevation of another arrangement of the invention. Fig. 4 illustrates a modification thereof, and Figs. 5 and 6 are views showing the operation and positions of the parts during the transfer of sheets to the collecting cylinder.

The object of the present invention is to print sheets in colors; to collect said sheets and to deliver the same.

Referring to Fig. 1, there are shown a series of printing couples, to wit, impression cylinders and the coacting plate or type cylinders, a sheet collecting cylinder, a transfer and delivery cylinder and fliers. The sheets are fed in any usual way, as from a board, to the first impression cylinder 10, as indicated by the line 11, the grippers 12 of the said cylinder taking the sheets. The sheet 11 receives a first color on the one side from the form cylinder 13; is next released by the grippers 12 as they pass the second impression cylinder 14, the grippers 15 of which simultaneously close and take the sheet. The sheet next receives a first color on the other side thereof from the form cylinder 16. As the grippers 15 pass the third impression cylinder 17, the grippers 18 thereof close and grippers 15 open and the said sheets are transferred to said cylinder 17. The sheet next receives a second color on the first side imprinted from the form cylinder 19. As the grippers 18 pass the fourth impression cylinder 20, they open and the grippers 21 of said cylinder 20 close and take the sheet. The sheet

next receives another color on the second side imprinted from the plate cylinder 22. If it is desired to print in more colors on one or both sides, the number of printing couples may be increased; and in case fewer colors be wanted upon one side the forms may be left off one or more of the plate cylinders, and the corresponding impression cylinder or cylinders become transfer cylinders. After receiving the last impression the sheets are delivered to the collecting cylinder 23 the grippers 21 opening before they reach the plane of the axes of cylinders 20, 23, and grippers 24 of cylinder 23 closing as they pass cylinder 20. If grippers 21 were opened as they passed cylinder 23 they would break through any sheets collected thereon. The grippers 24 of cylinder 23 open before they reach the above named plane for a like reason. A cylinder 25 co-acts with cylinder 20 to feed the sheets down between the said cylinders 20, 23; and a pressure roller 26 co-acts with cylinder 23 for like purpose. The grippers 21, 24, open after they pass rollers 25, 26 respectively. I prefer to have guides adjacent cylinder 20 to direct the leading ends of the sheets down between that cylinder and the collecting cylinder. I also prefer to have guides 28 extend over cylinder 23 and downward between that and cylinder 20 for a like purpose. Said guides 27 and 28 are curved to lie close to their respective cylinders and may be integral with each other and be suitably secured to the frame-work of the machine. Curved bars or guides 29 may be used to retain the sheets on cylinder 23 close thereagainst. At the opposite side of cylinder 23 from cylinder 20 is the delivery cylinder 30, having grippers 31, which take the collected packs of sheets from cylinder 23 at stated times after the desired number of sheets have been collected on said cylinders, the grippers 31 closing and the grippers 24 opening in the usual manner as they pass the opposing cylinders. The cylinder 30 may deliver the packs of sheets in any desired manner as to fliers 32, which lay them upon a delivery board (not shown.)

In the machine thus far described the impression, collecting and delivery cylinders lie in a horizontal plane, the plate cylinders being placed alternately on opposite sides of the

row, and the sheets on the last impression cylinder and collecting cylinder moving downward as they come together.

In Fig. 2 is shown a modification of the collecting and delivery devices. The collecting cylinder 23 may be fitted with pins 33 instead of with grippers, the cylinder 30 being fitted with grippers 31 as before, the fliers 34 do not extend to the delivery cylinder 30 and a series of rocking fingers are placed intermediate the delivery cylinder and the fliers. The fingers are carried by a rock shaft 36 suitably journaled in the frame-work. The fliers 34 may be shorter than shown, and the ends thereof lie behind the lower end of the fingers 35, the face of the fliers lying in or behind (to the left) of the face of the fingers 35, but I prefer to rabbet the fingers as at 37, and have the ends of the fliers overlap the same, as shown. By the described construction the length and weight of the fliers are decreased; and the defects due to the warping of the same are avoided. Also, the upper ends of the fliers are quickly steadied by resting against the rabbeted portions of the stripper-fingers 35. The operation is as follows: The grippers 31 open as they approach the fingers 35 which strip the sheets from the cylinders and guide them onto the fliers; the fliers deliver the sheets in the usual way.

The impression cylinders may be arranged in a vertical row as in Fig. 3, and the plate cylinders be placed alternately on opposite sides thereof as above described; or the plate cylinder co-acting with the upper impression cylinder may be placed thereabove; and the collecting and delivery cylinders are placed to the right (in this case) of the upper impression cylinder. The elements in Fig. 3 are the same as in Fig. 1 and are marked with the same reference numbers as in that figure. The operation of the parts is obvious from the foregoing description and need not be repeated here.

In the machines thus far shown the collecting cylinder takes the sheets from the last impression cylinder on its downward moving side, and the delivery cylinder takes the packs of sheets from the collecting cylinder on the upward moving side thereof and transfers them to the fliers for delivery.

In Fig. 4 is shown the arrangement of the parts when the collecting cylinder takes the sheets from the last impression cylinder on the upward moving side thereof. In this case the collecting cylinder delivers the packs of sheets to the fliers directly. The last impression cylinder as 38, has grippers 39 thereon which take the sheets from the preceding impression cylinder which may be the cylinder 14 or 20 of the series above described. The sheets may receive a color from the plate cylinder 40 and is carried upward. The grippers 39 open after passing the pressure roller 41 before they reach the plane of the axes of cylinder 38 and collecting cylinder 23^a. The grippers 42 of the collecting cylinder open af-

ter they pass the pressure roller 43 and before they reach said plane and close as they pass the impression cylinder to take the sheets. I prefer to use curved guides 44 adjacent the cylinder 38 to retain and guide the sheets upward, also to use curved guides 45 under and adjacent cylinder 23^a to retain the sheets thereagainst and to guide them upward to the transfer place. If desired devices may be used over the collecting cylinder to retain the sheets thereagainst. I have shown a set of tapes 46 on rollers 47, 48 for this purpose. When the desired number of sheets have been collected on the cylinder the grippers 42 open as they approach the fliers 49 and the sheets are run thereon and delivered in the usual manner.

The grippers of the various cylinders may be operated by usual means (not shown) at the times stated it being understood that the means operating the grippers of the collecting cylinder only open to deliver the sheets after two or more sheets have been collected thereon. When a delivery cylinder is used to transfer the sheets from the collecting cylinder to the fliers or other delivery, the grippers thereof only close to take sheets from the collecting cylinder at the times the grippers of the latter open as just described, to deliver the sheets.

The various cylinders described are geared together in an obvious manner (not shown). The various plate or form cylinders may be inked by any suitable apparatus which is not shown, since it may be of usual forms.

In so far as certain features of my invention are concerned, the various cylinders may have pins in lieu of grippers, which may be operated in usual ways in transferring sheets from one cylinder to another.

Instead of having the last impression cylinder deliver the sheets to the collecting cylinder, it may deliver them to an intermediate transfer cylinder and the last deliver them to the collecting cylinder. The forms of the last type cylinder may be omitted, thus making the corresponding impression cylinder a transfer cylinder only.

What I claim is—

1. The combination of an impression cylinder, having grippers thereon, a collecting cylinder contiguous to said impression cylinder, and having grippers thereon, the grippers of both said cylinders opening as they approach the point of transfer, a transfer cylinder having grippers taking the packs of sheets from the collecting cylinder at stated times, and delivery means, substantially as and for the purposes described.

2. The combination of an impression cylinder, having grippers thereon, a collecting cylinder contiguous to said impression cylinder and having grippers thereon, the grippers of both said cylinders opening as they approach the point of transfer, a pressure roller for each of said cylinders co-acting therewith to feed the sheets to said transfer point, guides

adjacent each cylinder to confine the sheets thereagainst, a transfer cylinder having grippers taking the packs of sheets from the collecting cylinder at stated times, and delivery means, substantially as and for the purposes described.

3. The combination of a cylinder having sheet retainers thereon, fingers stripping the sheets from the cylinder, and flaps overlapping a rabbeted portion of said fingers and receiving the sheets therefrom and delivering them, substantially as described.

4. The combination of a cylinder having grippers thereon, a collecting cylinder contiguous to said cylinder, and having grippers thereon, the grippers of both said cylinders opening as they approach the point of transfer, a pressure roller for each of said cylinders co-acting therewith to feed the sheets to said transfer point after the grippers open, as described, and delivery means, substantially as described.

5. The combination of a cylinder having grippers thereon, a collecting cylinder contiguous to said cylinder, and having grippers thereon, the grippers of both said cylinders opening as they approach the point of transfer, a pressure roller for each of said cylinders

co-acting therewith to feed the sheets to said transfer point, guides adjacent each cylinder to confine the sheets thereagainst, and a delivery, substantially as described.

6. The combination of a cylinder having sheet retainers thereon, a collecting cylinder contiguous to said cylinder and having sheet grippers, the said grippers opening as they approach the point of transfer, and means for feeding the sheets on the collecting cylinder to said transfer point after the grippers open, substantially as described.

7. The combination of a cylinder having sheet retainers thereon, a collecting cylinder contiguous thereto and having grippers thereon, the said grippers opening as they approach the transfer point, and a roller co-acting with the collecting cylinder to feed the sheets to said transfer point after the grippers open, substantially as described.

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

WALTER SCOTT.

Witnesses:

R. W. BARKLEY,
F. GOODWIN.