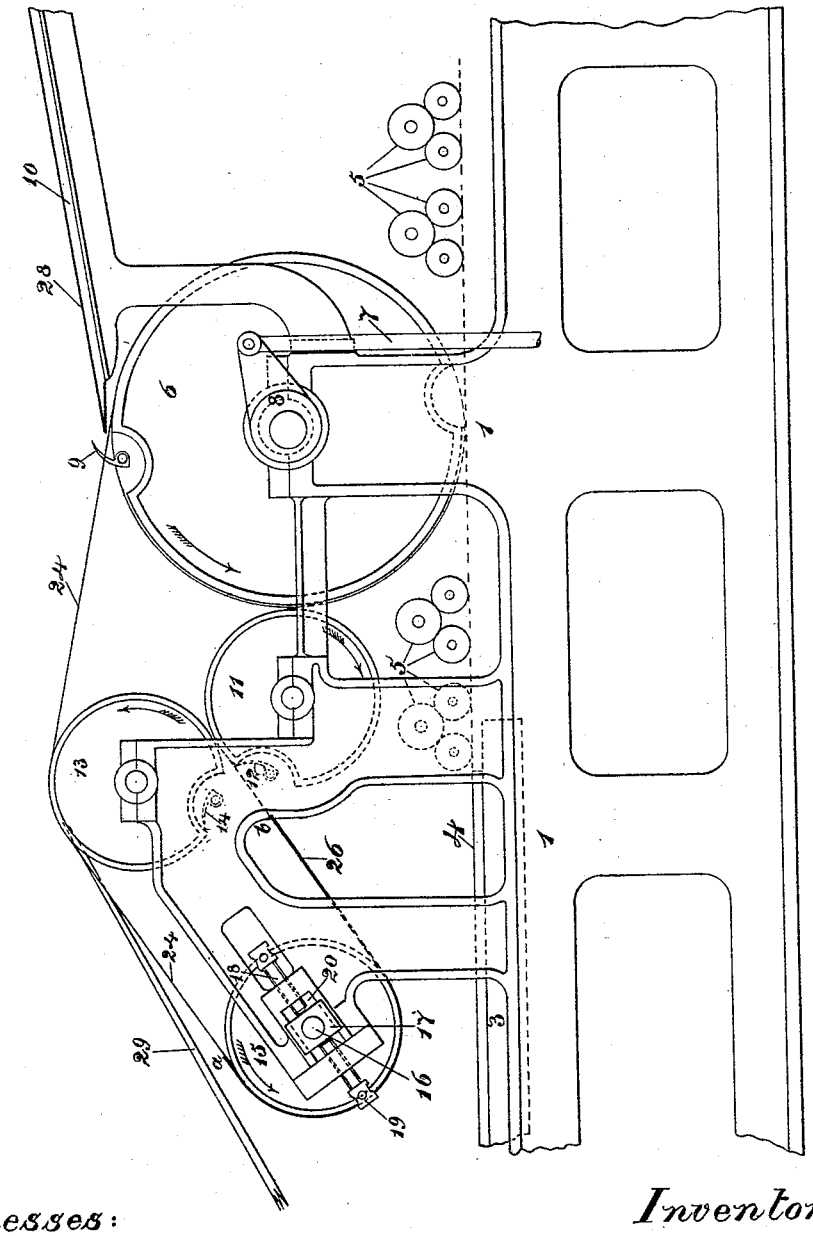
(No Model.) 3 Sheets—Sheet 1.

W. C. HAWKINS.

MACHINE FOR PRINTING FROM COLLOTYPE OR PHOTO-GELATINE PLATES.

No. 454,268. Patented June 16, 1891.

Fig. 1



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

(No Model.) 3 Sheets—Sheet 2.

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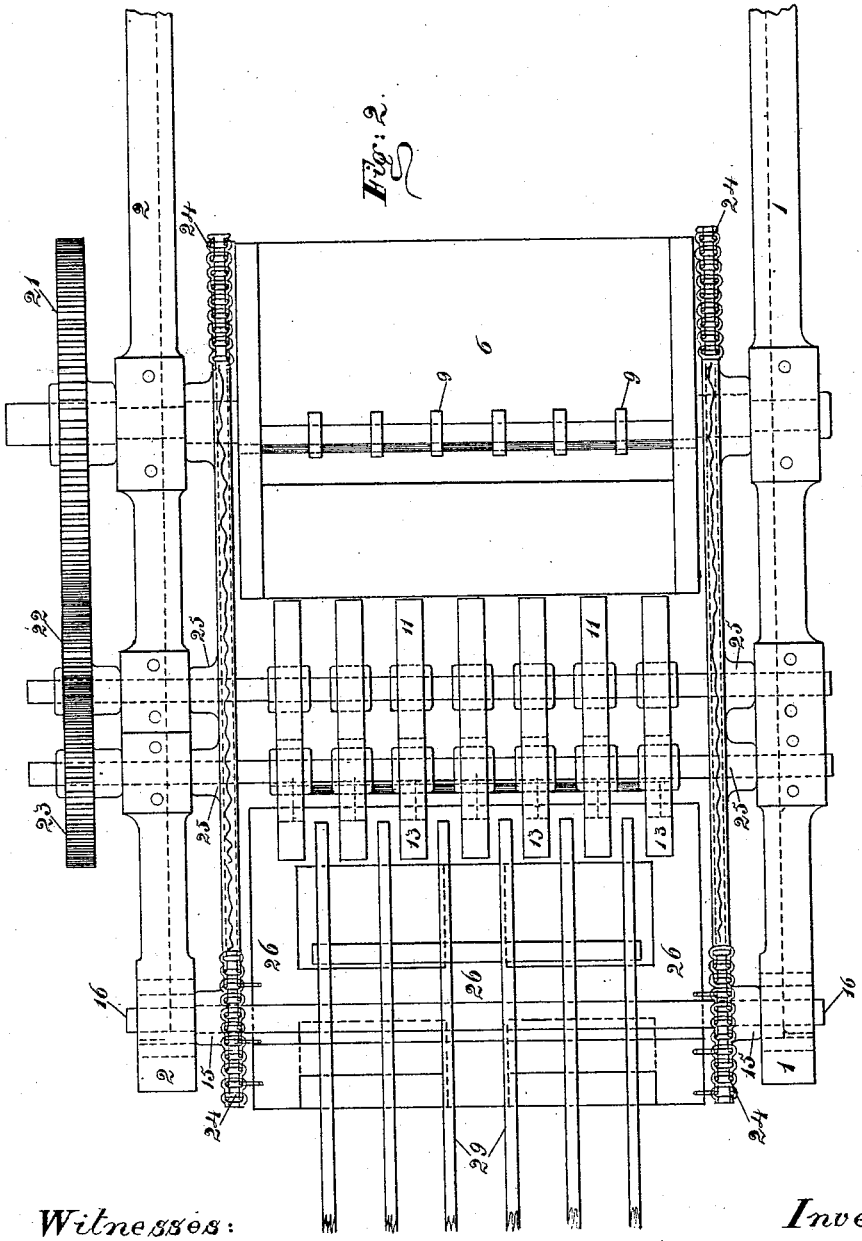
MACHINE FOR PRINTING FROM COLLOTYPE OR PHOTO-GELATINE PLATES.

No. 454,268. Patented June 16, 1891.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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MACHINE FOR PRINTING FROM COLLOTYPE OR PHOTO-GELATINE PLATES.

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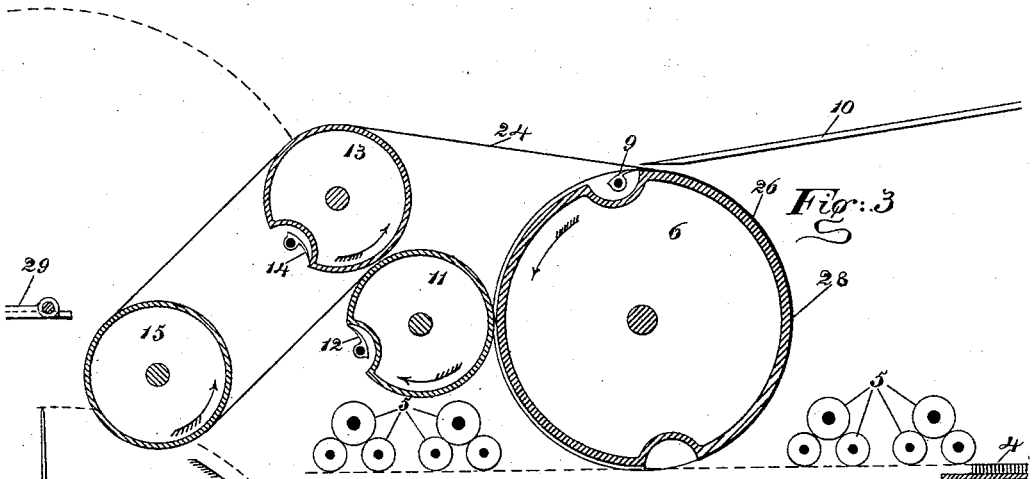

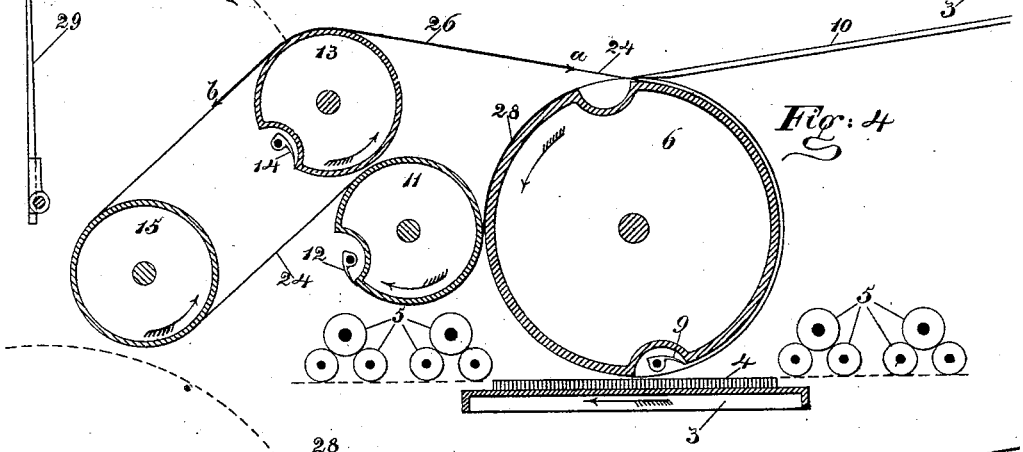

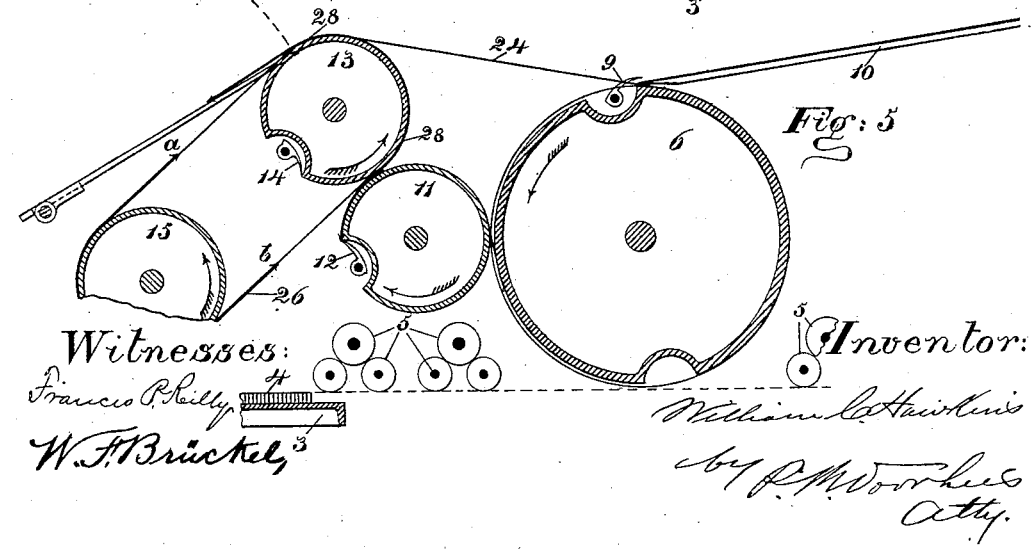

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UNITED STATES PATENT OFFICE.

WILLIAM C. HAWKINS, OF TAUNTON, MASSACHUSETTS, ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF NEW YORK.

MACHINE FOR PRINTING FROM COLLOTYPE OR PHOTO-GELATINE PLATES.

SPECIFICATION forming part of Letters Patent No. 454,268, dated June 16, 1891.

Application filed November 12, 1890. Serial No. 371,183. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Machine for Printing from Collotype or Photo-Gelatine Plates, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

In printing from collotype or photo-gelatine plates there is required to be interposed between the printing-plate and the sheet to be printed on a frisket or mask-sheet to prevent contact of the sheet to be printed with the plate beyond the outline of the picture proper and to give a definite outline to such picture.

With this end in view it is the object of this invention to provide a printing-machine which while printing from such photo-gelatine or collotype plates will automatically manipulate the mask-sheet and deliver the printed sheet also automatically.

The invention will first be described in detail, and then particularly set forth in the claim.

In the accompanying drawings, Figure 1 is a side elevation of so much of what is generally known in the art as a "two-revolution cylinder printing-machine" as is necessary to illustrate the invention. Fig. 2 is a view in plan of the same with sundry parts omitted, the more clearly to show the parts beneath. Figs. 3, 4, and 5 are diagrammatic elevations designed to show the positions of the parts at several stages of the passage of the sheet through the machine.

Various details of construction, well known in the art as applied to similar machines, are omitted as not necessary to illustrate this invention—as, for instance, the method of reciprocating the form-bed and rotating the impression-cylinder in unison therewith, the mechanism for operating the several sets of grippers, the inking mechanism, the fly-operating mechanism, driving mechanism, and a portion of the mechanism for raising and lowering the impression-cylinder, &c.

In said figures the several parts are respectively indicated by reference numbers and letters, as follows:

The numbers 1 and 2 indicate the main frames, in which the several parts are carried and journaled.

The number 3 indicates the reciprocating form-bed; 4, the printing-plate; 5, the inking-rollers, and 6 the impression-cylinder, which is caused to rise and clear the form on the non-printing stroke of the form-bed to make contact therewith on the printing-stroke by suitable connection to properly-moving parts of the machine by the rods 7 and eccentric boxes 8 in a well-known way. Said impression-cylinder carries the usual series of grippers 9 to take the sheet from a suitable feed-board 10 and hold it while being printed. A transfer-cylinder 11 or an equivalent series of pulleys of half the diameter of impression-cylinder 6 carries a series of grippers 12. A delivery-cylinder 13, or series of equivalent pulleys of equal diameter with the transfer-cylinder 11, carries a series of grippers 14. A pair of sprocket-wheels 15 are mounted on the shaft 16, which is journaled in adjustable boxes 17, adjusted and held in adjustment by set-screws 18 19, the boxes 17 sliding in suitable slots 20 in the frames 1 and 2. Said boxes are made adjustable for the purpose of keeping the chains 24, hereinafter referred to, in proper tension. On the axis of cylinder 6 is mounted a spur-gear 21, and on the axes, respectively, of cylinders 11 and 13 are mounted the spur-gears 22 and 23. The gears 21 22 23 are not shown in Fig. 1, their absence contributing to clearness in the other parts, and their use and presence may well be understood in such a view. The ends of impression-cylinder 6 are formed into sprockets corresponding to the peripheries of sprocket-wheels 15.

The numbers 24 indicate endless chains conforming to the sprocket ends of impression-cylinder 6 and the sprocket-wheels 15, the end wheels 25, Fig. 2, of cylinders 11 and 13 being also sprocketed in order to lead chains 24 over and under them, as shown. The mask-sheet 26 is attached at its sides to the chains 24.

The cylinders 11 and 13 are driven from the impression-cylinder 6 by the gears shown in Fig. 2 and the sprocket-wheels 15 by the chains 24.

The operation of the machine is as follows:

With the parts in position, Fig. 1, a sheet 28 is fed from the feed-board 10 and taken and held by the grippers 9. The sheet 28 then passes down between the chains 24, to be printed, and at the point of nearest approach of impression-cylinder 6 and transfer-cylinder 11 the frisket 26 passes on top of the sheet and becomes interposed between the sheet and the printing-plate 4, except where openings are cut in the mask. Upon arrival at position, Fig. 3, the mask 26 and sheet 28 will lie together on the impression-surface of cylinder 6 after the sheet has been printed. Passing to position, Fig. 4, the grippers 9 remain closed until they have carried the sheet down again between the chains 24 to the point of nearest approach of impression-cylinder 6 and transfer-cylinder 11. When grippers 9 of impression-cylinder 6 meet grippers 12 of transfer-cylinder 11, grippers 9 open, releasing, and grippers 12 of transfer-cylinder 11 close upon the sheet 28 and carry it around under transfer-cylinder 11. Meanwhile the frisket 26 has passed and extends from *a* to *b*, Fig. 4. Continuing on into position, Fig. 5, the grippers 12 of transfer-cylinder 11 meet grippers 14 of delivery-cylinder 13, the former opening to release and the latter closing upon the sheet, which is then carried around over delivery-cylinder 13, and at the proper time grippers 14 release the sheet to pass between the chains 24 upon and down the fly 29, the tail of the mask-sheet having meanwhile passed out of the way of the sheet to be delivered. Meanwhile the mask-sheet will have again passed to the position *a b*, Fig. 5, ready to meet the succeeding sheet as it comes from the feed-board 10.

Plain belt-driving may be substituted, if desired, for sprocket-driving; but the more certain sprocket-driving is preferable as avoiding possible belt-slipping.

It is obvious that the invention herein described and illustrated as applied to a flat-bed machine is equally applicable to a machine printing from rotary curved printing-plates.

Having thus fully described my said invention, I claim—

In a printing-machine, in combination with a printing-plate, an impression-cylinder carrying grippers, a transfer-cylinder, as 11, carrying grippers, a delivery-cylinder, as 13, also carrying grippers, said grippers coacting with those of the two other named cylinders to transfer a printed sheet from said impression-cylinder to said delivery-cylinder, wheels, as 15, a pair of endless chains or belts, as 24, passing around said impression-cylinder, over said transfer-cylinder, under said wheels, and over said delivery-cylinder, and a frisket or mask-sheet secured to said chains or belts, substantially as and for the purposes set forth.

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