(No Model.)

J. T. HAWKINS.

ALBERTTYPE PRINTING MACHINE.

No. 358,661. Patented Mar. 1, 1887.

Fig. 1.

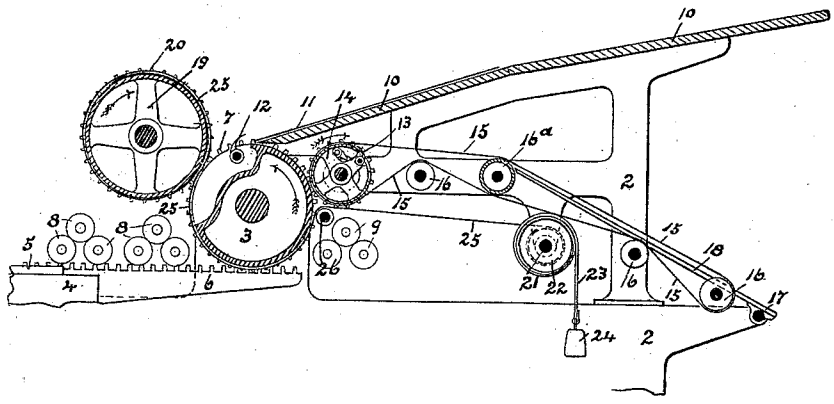
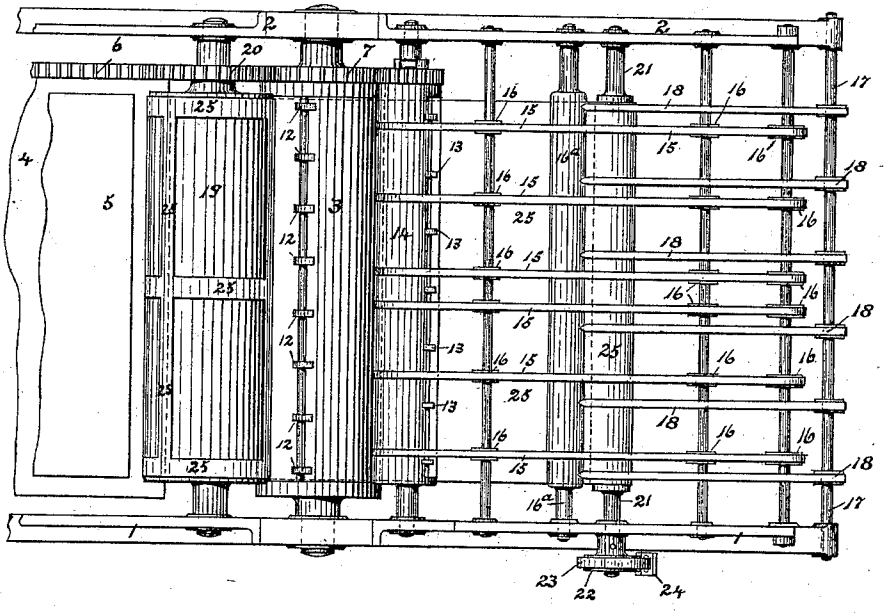


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN T. HAWKINS, OF TAUNTON, MASSACHUSETTS.

ALBERTTYPE-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 358,661, dated March 1, 1887.

Application filed September 16, 1886. Serial No. 213,707. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. HAWKINS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Alberttype-Printing Machines, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a machine to print from alberttype-plates by power as automatically as printing is now done on lithographic and typographic cylinder-machines.

The invention consists in sundry additions to the oscillating-cylinder printing-machine for which patents have been granted to me, Nos. 257,576 and 326,216, dated May 9, 1882, and September 15, 1885, respectively.

In printing from alberttype-plates a frisket or mask-sheet must at every impression be interposed between the plates and impression-cylinder, with openings cut in said mask-sheet where the impression is made upon the sheets to be printed, the object of the mask-sheet being to prevent contact of the sheet to be printed with the plate at all other points. In this process, also, there are required two distinct sets of inking-rollers and concomitant apparatus, each set supplying to the plate an ink of different quality and consistency.

In the adaptation of the stop-cylinder machine to this character of printing as heretofore done the manipulation of the mask-sheet so far interferes with the feeding and delivery of the sheet to be printed as to deprive the machine of nearly all its automatic features and to render the feeding and entire operations of the machine very slow. In the best arrangement of stop-cylinder machines now in use for this purpose the mask-sheet is carried on a curved frisket-frame hinged to the impression-cylinder, and while the cylinder is at rest after a sheet has been printed the feed-board is first slid back to allow of the mask-sheet and its frame being thrown forward to uncover the printed sheet, the printed sheet taken off by hand, the feed-board slid down into place, the succeeding sheet fed to the guides, and as the cylinder is started the mask-sheet frame brought into place, all these operations being successively performed for each impression.

In the accompanying drawings, Figure 1 is a sectional vertical longitudinal elevation of such parts of the above-mentioned machine as are involved in this invention, and Fig. 2 is a plan of the same with feed-board removed.

In said figures the several parts are indicated by numbers, as follows: Numbers 1 and 2 indicate the main side frames of the machine. 3 indicates the impression-cylinder, 4 the reciprocating plate or form-bed, and 5 the plate. A rack, 6, is secured to the plate-bed, meshing with a corresponding gear-wheel, 7, secured to one end of the impression-cylinder, by means of which the impression-cylinder is rotated in either direction through the reciprocating motion imparted to the bed, as described in Patent No. 257,576, above referred to.

Number 8 indicates one, and 9 the other, set of inking-rollers, the set of rollers 9 taking the place of damping-rollers, indispensable to the lithographic process, but not required in printing from the alberttype-plates, for the reason that in the alberttype process only occasional dampening is performed by the application of some chemical liquid compound. Said dampening is not performed at every impression, but only at intervals, as some certain changes take place in the plate which requires to be restored by the application to it of the chemical liquid above referred to; hence the rollers 9 can take the place usually occupied by the water-damping rollers in lithographic presses, one set of rollers, 8, depositing upon the plate an ink of thick consistency, and the other set, 9, a secondary ink of very thin and otherwise varying quality.

10 indicates the feed-board, and 11 a sheet about to pass into the machine as laid to the guides. (Not shown.)

The number 12 indicates the impression-cylinder grippers, and 13 the delivery-cylinder grippers, the delivery-cylinder 14 being actuated to rotate intermittently in one direction only, as described in Patent No. 326,216, above mentioned.

The number 15 indicates the delivery tapes or cords, and 16 leading-pulleys for the same, 16^a indicating a leading-roller, over which the tapes run. 17 indicates the fly-shaft, to which are attached the usual fly-fingers, 18. A reel-cylinder, 19, is journaled in the frames 1 and

2, having secured to it a gear-wheel, 20, which meshes with the cylinder gear-wheel 7, by means of which the cylinder 19 is rotated in unison with the impression-cylinder. A reel-roller, 21, is journaled in the frames 1 and 2, carrying on one end a sheave-pulley, 22, enwrapped by a strap or cord, 23, one end of the said strap being secured to said sheave-pulley. To the free end of the strap 23 is secured a weight, 24. The mask-sheet 25 has one end secured in any suitable way to the cylinder 19, and the other end to the roller 21. A leading-roller, 26, is journaled in the frames 1 and 2, over which the mask-sheet runs to keep it clear of the ink-rollers 9. The mask-sheet passes over cylinder 19, under impression-cylinder 3, over the leading-roller 26, thence over and around the reel-roller 21. The weight 24 is only sufficient and serves to keep the mask-sheet in contact with the impression-cylinder 3, reel-cylinder 19, reel-roller 21, and leading-roller 26. In Fig. 2 rectangular openings are shown in the mask-sheet, where it enwraps the reel-cylinder 19, corresponding to the areas on the plates from which the impressions are to be taken.

The complete operation of the parts is as follows: The position of the parts in both figures is given at the time a sheet to be printed is just going to be clasped by the grippers 12, with the bed 4 at the extremity of its non-printing stroke. During the printing-stroke the sheet to be printed is carried down between the mask-sheet and the impression-cylinder, leaving those parts only not covered by the mask-sheet to come in contact with the plates or form. As the impression-cylinder 3 moves in the direction of the arrow the mask-sheet 25 is unwound from the reel-cylinder 19, being carried under the impression-cylinder in unison with it by the combined action of the impression-cylinder 3 on the plates 5 and the weight 24 taking up the slack. Upon the arrival of the head of the printed sheet at the point of contact or nearest approach of impression-cylinder 3 and delivery-cylinder 14, the sheet is released by the grippers 12 and seized by grippers 13 in a way well known, these grippers being operated to open and close at the proper time in any of the equally well-known ways. The sheet is then delivered by grippers 13 upon conveying tapes or cords 15, and conveyed by the latter over the fly-fingers 18, which are by any of the usual means oscillated at the proper times to deposit the sheet upon a receiving-table. (Not shown.) The attendant feeder has all the time consumed by the latter part of the printing-stroke of the bed 4 and by the whole of its return or non-printing stroke within which to feed the sheets to the guides, and during this return the mask-sheet is rewound upon the reel-cylinder 19 and unwound from the reel-roller 21 by the combined action of the impression-cylinder 3 and the reel-cylinder 19, bringing everything again into the position shown in the figures at the end of the non-printing stroke, ready to commence upon another sheet.

It is obvious that in place of the strap 23 and weight 24 a coiled spring may be used as their full equivalent, as in the ordinary window-shade roller, without departing from the gist of this invention. I do not, therefore, confine myself to the use of the strap and weight; nor do I confine myself to the precise arrangement of the leading-rollers 26, as one or more of said rollers may be located as may best adapt them to the specific form of machine upon which the device is used.

Having thus fully described my said improvements, as of my invention I claim—

1. In an oscillating-cylinder printing-machine, in combination with its impression-cylinder, a frisket or mask-sheet held in contact with the exterior surface of said cylinder and operated by mechanism, substantially as described, whereby it is caused to move in unison with said impression-cylinder in both directions, as and for the purposes set forth.

2. In an oscillating-cylinder printing-machine, in combination with its impression-cylinder, a reel-cylinder, as 19, geared to said impression-cylinder, so as to have a surface velocity equal therewith, a reel-holder, as 21, actuated as described, a suitable leading roller or rollers, and a frisket or mask-sheet secured at one end to said reel-cylinder and at the other to said reel-roller, whereby said frisket or mask-sheet is held in contact with the under surface of said impression-cylinder and caused to move in both directions in unison therewith, substantially as and for the purposes set forth.

3. In an oscillating-cylinder printing-machine, the combination of an oscillating impression-cylinder, as 3, carrying grippers, as 12, a reel-cylinder, as 19, geared thereto, so as to have equal surface-velocities therewith, a reel-roller, as 21, a frisket or mask-sheet, as 25, secured at its ends to the said reel cylinder and roller, a sheave, strap, and weight, as 22 23 24, upon said reel-roller, a delivery-cylinder, as 14, carrying grippers, as 13, suitable conveying tapes or cords, as 15, and an oscillating fly, as 18, whereby, when the sheets are fed to said grippers 12, said sheets are automatically taken between the impression-cylinder and frisket or mask-sheet, there held while being printed upon, and automatically delivered upon a suitable receiving-table, substantially as and for the purposes set forth.

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