(No Model.) 4 Sheets—Sheet 1.

H. A. W. WOOD.

DELIVERY MECHANISM FOR PRINTING PRESSES.

No. 594,055. Patented Nov. 23, 1897.

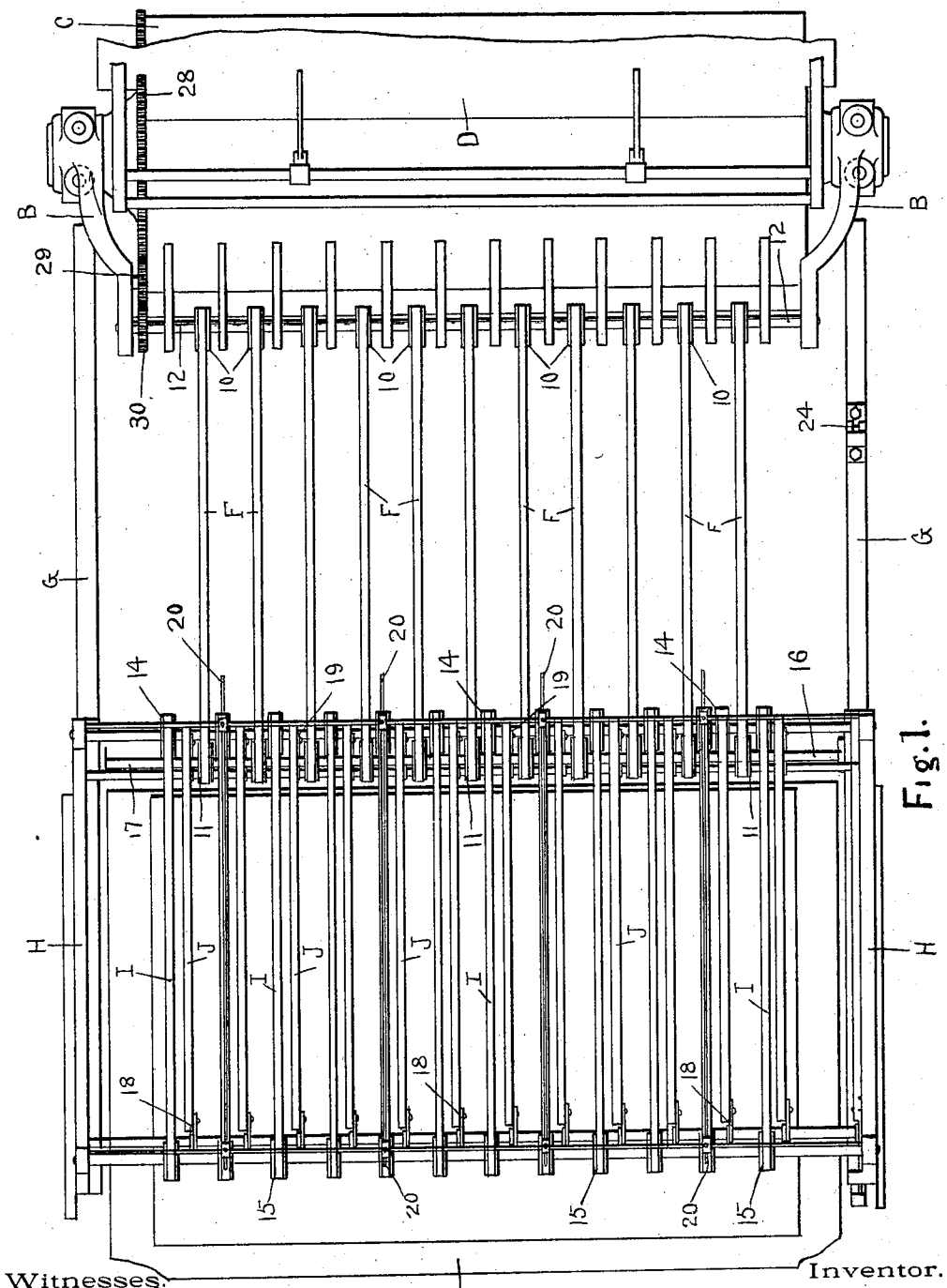


Fig. 1.

Witnesses:
Frederick P. Harlow
E. M. Healy

Inventor.
H. A. W. Wood,
By Southgate & Southgate
Attorneys

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

(No Model.) 4 Sheets—Sheet 2.

H. A. W. WOOD.

DELIVERY MECHANISM FOR PRINTING PRESSES.

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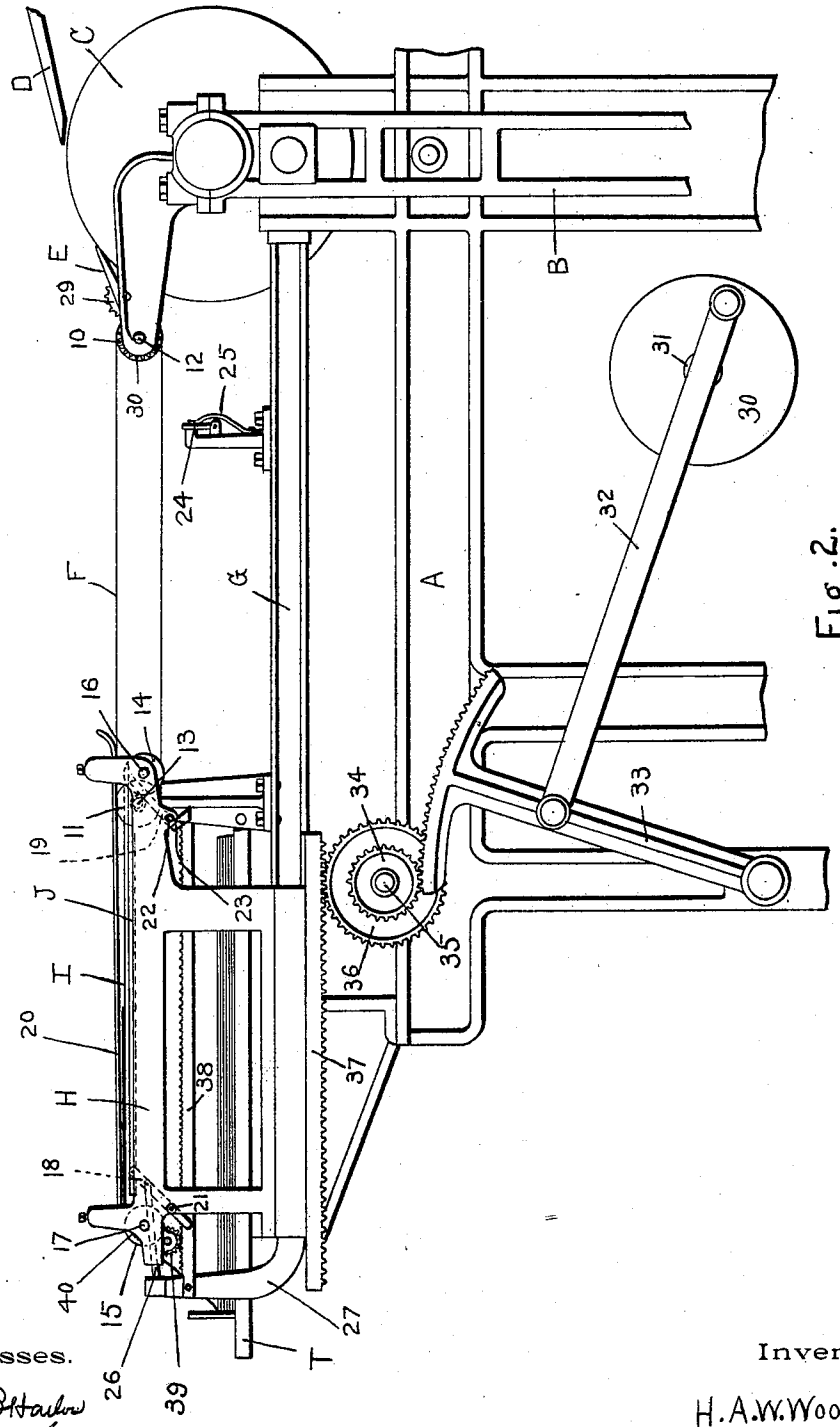


Fig. 2.

Witnesses.

Frederick B. Hawley

E. M. Healy.

Inventor.

H. A. W. Wood.

By Southgate & Southgate

Attorneys

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

(No Model.) 4 Sheets—Sheet 3.

H. A. W. WOOD.

DELIVERY MECHANISM FOR PRINTING PRESSES.

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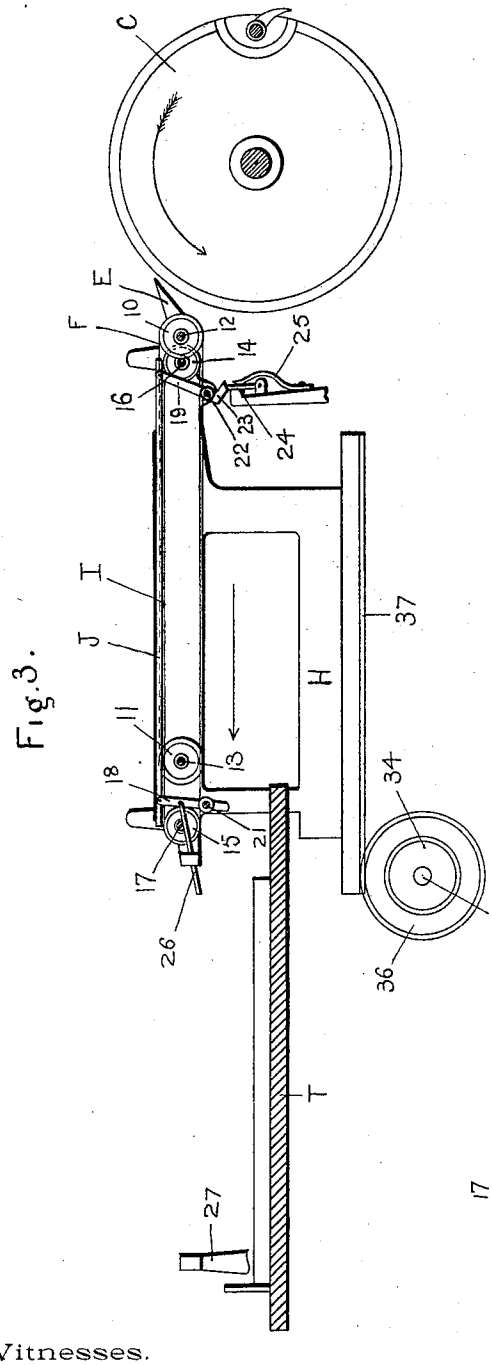


Fig. 3.

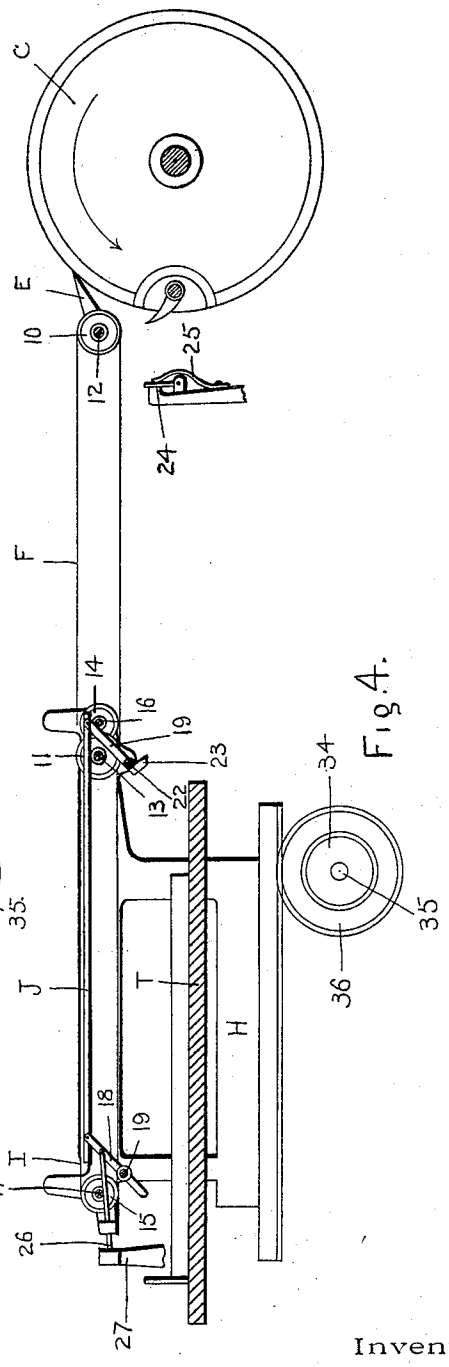


Fig. 4.

Witnesses.
Frederick B. Harlow
E. M. Healy

Inventor.
H. A. W. Wood.
By
Southgate & Southgate
Attorneys

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

(No Model.) 4 Sheets—Sheet 4.

H. A. W. WOOD.

DELIVERY MECHANISM FOR PRINTING PRESSES.

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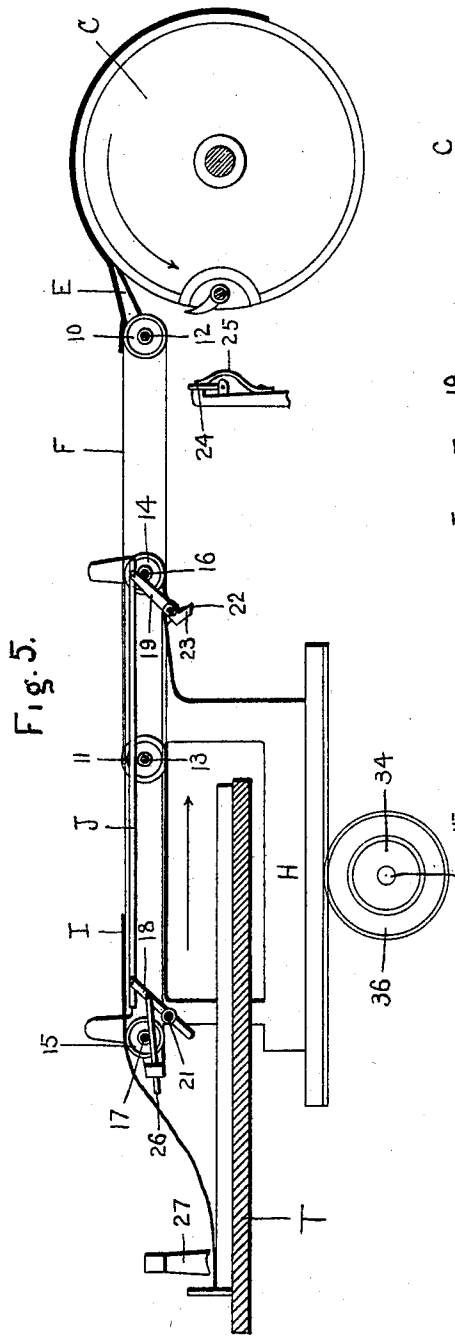


Fig. 5.

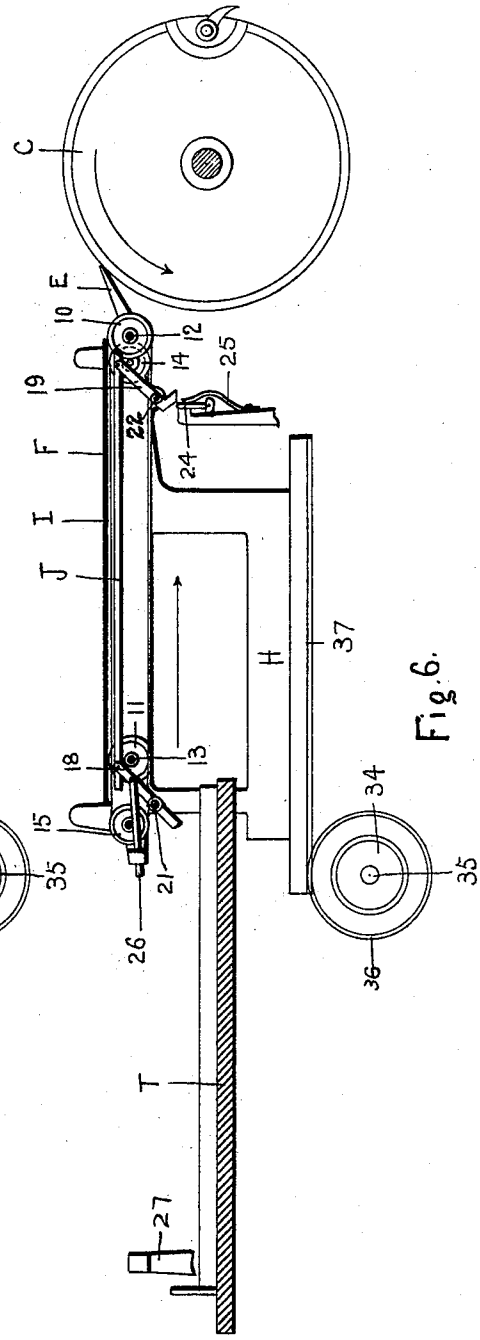


Fig. 6.

Witnesses.
Frederick P. Barlow.
E. M. Healy.

Inventor.
H. A. W. Wood.
By Southgate & Southgate
Attorneys

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

UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE CAMPBELL PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 594,055, dated November 23, 1897.

Application filed August 19, 1896. Serial No. 603,179. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Improvement in Delivery Mechanism for Printing-Presses, of which the following is a specification.

My invention relates to that class of delivery mechanisms for printing-presses which are designed to deliver sheets with their printed side uppermost.

The object of my invention is to provide a simple and compact delivery mechanism which comprises simple and efficient instrumentalities, which are arranged to act without the aid of grippers or clamps, for engaging with and crumpling the edges of the sheets and to arrange said instrumentalities to transfer a sheet from an impression-cylinder of a printing-press to a delivery-table without contact with the freshly-printed surface.

To these ends my invention consists of the parts and combinations of parts as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying four sheets of drawings, Figure 1 is a plan view of a sufficient part of a printing-press to illustrate the application of my invention thereto. Fig. 2 is a side view of the same; and Figs. 3 to 6, inclusive, are diagrammatic sectional views, the parts being shown in different relative positions.

A delivery mechanism for printing-presses constructed according to my invention comprises a shifting or bodily-movable set of delivery-tapes and movable frames or fly-sticks, said parts being arranged so that the fly-sticks will deposit the sheet upon the bodily-movable tapes and the tapes will then deliver said sheet upon the delivery-table.

In the preferred construction of my delivery mechanism I employ a constantly-running first set of tapes which may be driven in any preferred manner and may be geared to or actuated from the impression-cylinder of the press. Intermeshing with the first set of tapes and arranged at a somewhat lower level I employ a set of reciprocating or bodily-movable delivery-tapes and a plurality of movable frames or fly-sticks. The delivery-tapes and fly-sticks are mounted in a movable carriage which can be reciprocated in any of the ordinary ways, preferably by means of a crank-driving mechanism. When a sheet has passed from the impression-cylinder of the printing-press onto the first set of tapes and the movable carriage commences its movement away from the impression-cylinder, the movable frames or fly-sticks are actuated by means of a stop and are raised so as to support and carry the sheet during the travel of the carriage away from the impression-cylinder. When the carriage reaches the end of its travel away from the impression-cylinder, the movable frames or fly-sticks are actuated by means of a second stop and are lowered so as to deposit the sheet upon the delivery-tapes, which are mounted in the movable carriage. During the return stroke of the carriage the delivery-tapes are actuated to deposit the sheet upon the delivery-table. The means which I preferably employ for driving the delivery-tapes comprise a stationary rack and gearing meshing therewith and connected to drive the tape-rolls of the delivery-tapes.

Referring to the drawings and in detail, A A designate the side frames of a printing-press, and B B designate the ordinary vertically-movable frames which carry the impression-cylinder C. Illustrated as coöperating with the cylinder C is a feed-board D. These parts may be of any of the ordinary or approved constructions and need not be herein described at length.

Coöperating with the impression-cylinder C, I arrange a set of stripping-fingers E for directing the sheets down upon the first set of tapes F. The tapes F are mounted upon tape rolls or pulleys 10 and 11, carried by shafts 12 and 13, respectively, said shafts being journaled in fixed bearings in the frame of the machine.

Fastened on the side frames A A of the press are suitable ways or guides G, upon which is mounted the movable carriage H. Mounted in the movable carriage H at a slightly-lower level than the tapes F is a set of delivery-tapes I, which are carried by tape

rolls or pulleys 14 and 15, secured upon the shafts 16 and 17, respectively, which are journaled in the side frames of the carriage.

Arranged between the delivery-tapes I are a plurality of movable frames or fly-fingers J. As illustrated, the fly-sticks J are supported by parallel links or levers 18 and 19, which are fastened upon rock-shafts 21 and 22.

The delivery-table T is secured in the framework of the press in a position substantially corresponding with the outer position of the traveling carriage H. A stop 24 is held in place by a spring 25 to engage with a downwardly-extending projection or finger 23 from the rock-shaft 22 when the movable carriage H commences its travel away from the impression-cylinder and is adapted to turn the rock-shaft 22 and to raise the movable frames or fly-sticks J to lift a sheet off of the tapes F. When the movable carriage reaches the outer end of its travel, a link or piece 26, connected to one of the links or levers 18, is arranged to engage a stop 27, extending up from the framework of the press to move the movable frames or fly-sticks down, so as to deposit the sheet upon the delivery-tapes I. A plurality of guides or shields 20 are mounted in the movable carriage I to prevent the sheets from becoming blown off or displaced.

The driving mechanism for the traveling carriage and for the tapes can be arranged in any of the ordinary or preferred manners.

As illustrated, the impression-cylinder C is provided with a gear 28, which is geared to drive the tape-rolls 10 by means of an intermediate 29 and a pinion 30, fastened upon the tape-roll shaft 12.

For actuating the movable carriage H, I preferably employ a crank-actuated driving mechanism in order that the carriage may be reversed at the end of its travel in either direction without substantial jar or shock.

As illustrated in Fig. 2, 31 designates a cross-shaft, which may be driven in any of the ordinary or preferred manners, and is provided at its ends with a crank-disk 30, which is connected by means of a pitman 32, to actuate an oscillating sector 33, which meshes with and drives a pinion 34, secured upon the cross-shaft 35.

Fastened upon the shaft 35 are gears 36, which mesh with racks 37, carried by the carriage H.

The delivery-tapes I are preferably driven from the motion of the traveling carriage.

As illustrated, 38 designates a rack, which is rigidly secured in the framework of the machine and meshes with a gear 39, which drives a gear 40, secured upon the tape-roll shaft 17. In practice the gear 40 is made, preferably, a trifle smaller than the tape-roll 15, so that as the traveling carriage I moves back toward the impression-cylinder the sheet will be given a slight forward movement, so as to carry the same positively into engagement with the stop at the end of the delivery-table T.

The operation of a delivery mechanism constructed according to my invention is most clearly illustrated in Figs. 3 to 6, inclusive.

As shown in Fig. 3, the traveling carriage H has just commenced to move away from the impression-cylinder C, and the movable fly frames or sticks have just been shifted to raise or pick a sheet off from the first set of tapes F.

As illustrated in Fig. 4, the movable carriage H has just completed its movement away from the impression-cylinder, and the movable frames or fly-sticks have been depressed to deposit the sheet upon the delivery-tapes I.

As illustrated in Fig. 5, the movable carriage H is substantially in the middle of its movement back toward the impression-cylinder, and, as shown in Fig. 6, the parts have been moved substantially to the same position illustrated in Fig. 3, so that when the movable carriage again moves away from the impression-cylinder the movable frames or fly-sticks J will be raised to lift or pick another sheet off from the set of tapes F.

By means of this construction it will be seen that I have provided an extremely efficient form of delivery mechanism which can be readily and cheaply constructed, and which will deliver the sheet printed side up without the use of clamps or grippers.

It is also to be noted that in the construction I have illustrated all the parts are either driven directly from the impression-cylinder of the printing-press or from the movement of the traveling carriage.

It is obvious that instead of employing the primary or first set of tapes F the sheets, as they are taken off from the impression-cylinder, may simply be allowed to run over stationary guides or arms. In some places I may use a cam in place of the crank-disk 30, so that the carriage may have a dwell near to the impression-cylinder.

I am aware that many other changes may be made in delivery mechanisms by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the forms which I have shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a delivery mechanism for printing-presses, the combination of movable frames or fly-sticks, and a set of bodily-movable tapes, the said parts being arranged so that the fly-sticks will deposit a sheet upon the bodily-movable tapes, and the tapes will then deposit said sheet upon the delivery-table, substantially as described.

2. The combination of a movable carriage, delivery-tapes and frames or fly-sticks mounted therein, and means for actuating said parts so that the sheet will be carried by the fly-sticks while the carriage is moving in one direction, and by the tapes while the carriage

is moving in the other direction, substantially as described.

3. The combination of two sets of tapes, one set of tapes being mounted on tape-rolls having fixed bearings, the other set being bodily movable, and means for transferring a sheet from the first to the second set of tapes, substantially as described.

4. The combination of a set of tapes mounted on tape-rolls having fixed bearings, a movable carriage, a second set of tapes mounted therein, and movable frames or fly-sticks for transferring a sheet from the first to the second set of tapes, substantially as described.

5. The combination of a set of tapes onto which the sheet first passes, a set of delivery-tapes intermeshing with the first set of tapes, said delivery-tapes being bodily movable forward and backward, and movable frames or fly-sticks for transferring a sheet from the first to the second set of tapes, substantially as described.

6. The combination of a set of tapes onto which the sheet first passes, a movable carriage, delivery-tapes mounted therein, fly sticks or frames also mounted in said carriage, and stops for actuating the fly sticks or frames to transfer a sheet from the first set of tapes onto the second set of tapes, substantially as described.

7. The combination of a set of tapes onto which the sheet first passes, a movable carriage, delivery-tapes mounted therein, movable frames or fly-sticks also mounted in said carriage, and means actuated by the movement of the carriage for driving the delivery-tapes and actuating the fly sticks or frames, substantially as described.

8. The combination of a set of tapes onto which the sheet first passes, a movable carriage having delivery-tapes and movable frames or fly-sticks mounted therein, and means for raising the fly-sticks so as to support the sheet while the carriage is moving away from the impression-cylinder, and for lowering said fly-sticks when the carriage reaches its extreme position away from the impression-cylinder, substantially as described.

9. The combination of a set of tapes onto which the sheet first passes, and a set of bodily-movable delivery-tapes and fly sticks or frames intermeshing with the first set of tapes, substantially as described.

10. The combination of a set of tapes onto which the sheet first passes, a movable carriage having delivery-tapes and movable frames or fly-sticks mounted therein, a stationary rack and gearing meshing therewith for actuating the delivery-tapes, and means for raising the fly-sticks so as to support the sheet while the carriage is moving away from the impression-cylinder, and for lowering said fly-sticks when the carriage reaches its extreme position away from the impression-cylinder, substantially as described.

11. The combination of a set of tapes onto which the sheet first passes, gearing driven from the impression-cylinder of a printing-press for actuating said tapes, a movable carriage having delivery-tapes and movable frames or fly-sticks mounted therein, a crank-driving mechanism for said carriage, a stationary rack and gearing meshing therewith for actuating the delivery-tapes, and stops arranged to raise the fly-sticks so as to support a sheet while the carriage is moving away from the impression-cylinder, and so as to lower said fly-sticks when the carriage reaches its extreme position away from the impression-cylinder, substantially as described.

12. In a delivery mechanism for printing-presses, the combination of a set of tapes onto which the sheet first passes, and a set of bodily-movable delivery-tapes intermeshing therewith, said tapes being arranged at different relative levels, and means for transferring a sheet from the first set of tapes onto the delivery-tapes, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

H. A. WISE WOOD.

Witnesses:
BENJAMIN FARRINGTON,
H. W. COZZENS, Jr.