(No Model.)

H. T. L. WILKINSON.

SHEET DELIVERY APPARATUS FOR PRINTING PRESSES.

No. 302,458. Patented July 22, 1884.

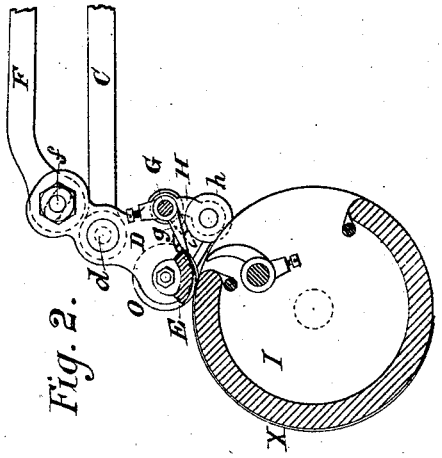

Fig. 2.

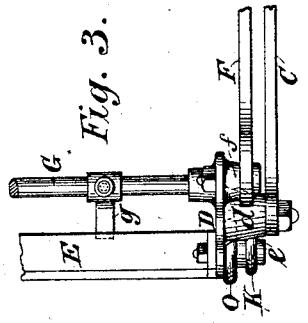

Fig. 3.

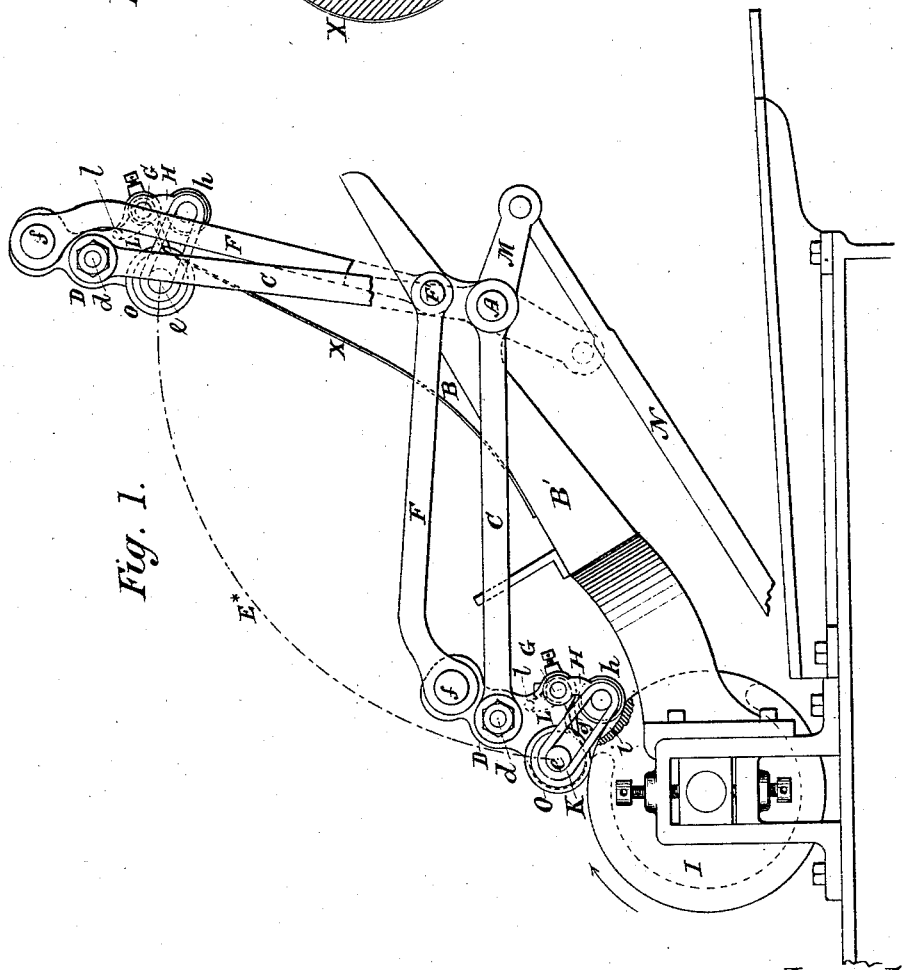

Fig. 1.

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SHEET-DELIVERY APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 302,458, dated July 22, 1884.

Application filed July 17, 1883. (No model.) Patented in England August 18, 1881, No. 3,600.

To all whom it may concern:

Be it known that I, HENRY THOMAS LEIGH WILKINSON, a British subject, at present residing in the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Sheet-Delivery Apparatus for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to sheet-delivery apparatus for cylinder printing-presses composed of gripping devices which have a swinging motion between the impression-cylinder and the receiving-board.

The improvement consists in certain novel combinations of parts hereinafter described and claimed, whereby the swinging and other necessary movements of such grippers are obtained and controlled.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 illustrates in side elevation so much of a printing-machine as is necessary to explain the invention, the sheet-delivery apparatus being represented in its extreme highest and lowest positions. Fig. 2 is a section of the impression-cylinder and the gripping-appliances of the sheet-delivery apparatus, and Fig. 3 is a part plan of the same.

A is a rock-shaft mounted in bearings formed in the brackets B′, which carry the receiving-board B, and extending across from side to side.

C is a lever-arm keyed on the rock-shaft at one side of the receiving-board, there being a similar lever keyed on the rock-shaft at the opposite side. These lever-arms C are at a sufficient distance from the receiving-board to work outside the radius rods or bars F hereinafter described, and to the free end of each arm C is pivoted a check or bracket, D, which is free to oscillate on a stud or pivot, *d*, at or about the middle of its length. The lower arms of the pair of cheeks D are rigidly connected to form a delivery gripper-carrier by studs *e* and a cross-bar, E, which forms the gripping-edge, and the upper arms are pivoted by studs *f* to the free ends of the radius rods or bars F, pivoted one at each side of the receiving-board on fixed studs F, above the rock-shaft A and at a distance therefrom about equal to the distance between the centers of the pivots *d* and *f*.

G is the delivery gripper-shaft, mounted to turn in extensions of the lower arms of the cheeks D; and *g* are the gripper-fingers, fixed by set-screws on the said shaft at suitable intervals, according to the size of the sheet.

H is a short arm, keyed on the gripper-shaft G, having a stud at its extremity carrying a friction-roller, *h*, which rolls on the plain part of the impression-cylinder at one end thereof.

I is the impression-cylinder, provided with the ordinary grippers, actuated in the usual way to grip and release the sheet at the proper times; and *i* is a depression in the plain part at the end of the cylinder, whereon the roller *h* runs, into which the said roller falls at the proper moment to permit the grippers *g* to close against the gripper-edge E to seize the sheet.

K is an india-rubber or other spring, which connects the arm H with one of the studs *e*, and by which the arm H is drawn in a direction to so turn the shaft G in its bearings as to close the gripper-fingers *g* against the gripper-edge E. At the other end of the gripper-shaft G there is fixed a short arm, L, having at its end a stud, *l*, which projects from the side of the arm, so as to come in contact with the radius-rod F just as the apparatus arrives at its highest position, as shown at Fig. 1, and thereby turn the gripper-shaft in the opposite direction, to open the grippers and release the sheet and deposit it upon the receiving-board.

M is an arm keyed on the end of the rock-shaft A, (or forming an extension of one of the lever-arms C,) to which is jointed a connecting-rod, N, worked from a crank-pin or an eccentric or cam on the main shaft, or any other convenient shaft of the machine, or from a crank on an extension of the shaft of the impression-cylinder itself. This crank-pin may be adjustable for the purpose of properly timing the oscillation of the sheet-delivery apparatus with regard to the rotation of the impression-cylinder. The rock-shaft A may have affixed to it a counter-weight (not shown) to counterbalance the sheet-delivery apparatus; or, instead of a counter-weight, a spring may be coiled on the shaft and connected thereto by one end

and to the bearing by the other, so as by its torsion to answer the same purpose. The gripper-edge E is a wooden bar with a curved surface, being a segment of a cylinder, as shown.

O is a roller on the stud *e*, which rolls on the plain part of the impression-cylinder to steady the sheet-delivery apparatus and hold it at the proper distance from the cylinder.

Instead of separate gripper-fingers *g*, a bar or gripping-edge may be attached to the ends of arms like the fingers *g*, so that the paper will be nipped along its entire edge, instead of at intervals only as when separate fingers *g* are used.

The sheet-delivery apparatus oscillates above the receiving-board between the two positions shown in Fig. 1, the arms or levers C turning on the axis of the rock-shaft A as a center, while the radius-rods F turn on their pivots F′, the result being that the brackets D, in which the grippers are carried, receive a compound motion, and their lower parts describe a curve, E*, while the relative positions of the several parts carried by the brackets are very little changed, and consequently the position of the grippers relatively to the sheet remains almost unchanged, and the sheet is taken off by a straight draft or pull, whereby the creasing or marking the edge of the sheet is avoided, which is important in the case of enameled or glazed papers.

X in Fig. 1 represents the position of the sheet just before it is released.

The sheet-delivery apparatus being timed to approach the impression-cylinder at the proper moment, the grippers are opened, as shown in dotted lines in Fig. 2, by the friction-roller *h* meeting the plain part of the cylinder, and are held open (while the crank which operates the sheet-delivery apparatus is passing its dead-point) by the roller rolling on the cylinder until the grippers of the cylinder itself have been opened in the usual way, and the edge of the sheet, by the continued rotation of the cylinder, has been carried between the grippers *g* and the gripping-edge E. At this moment the roller *h* falls into the recess *i*, and the grippers *g* close on the sheet, as shown in Fig. 2, in which X represents the position of the sheet on the cylinder, and at the same intsant the sheet-delivery apparatus is (by its operating-crank having passed its dead-point) caused to recede from the cylinder and draw off the sheet with a gradual and steady pull. Upon the sheet-delivery apparatus reaching the raised position shown, the stud *l* strikes the adjacent rod F, and by the pressure of said rod on said stud the grippers are opened and release the sheet, which falls on the receiving-board B, the sheets being superposed in a regular and even pile.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the impression-cylinder and receiving-board of a printing-press, of a swinging delivery gripper-carrier which is carried by a shaft arranged in fixed bearings near the said board, and which is also pivoted to bars or rods which are themselves pivoted at fixed points near the said shaft, substantially as herein described.

2. The combination of the cheeks or brackets D, the rock-shaft A, and the arms which carry said cheeks or brackets, the radius rods or bars F for controlling the action of said cheeks or brackets, and the gripper-shaft G, furnished with an arm, L, having a projecting stud, *l*, to be operated upon by one of the rods or bars F, for opening the grippers, substantially as herein described.

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