(No Model.) 2 Sheets—Sheet 1.

# J. WALTHER.

## SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 348,075. Patented Aug. 24, 1886.

Fig. 2.

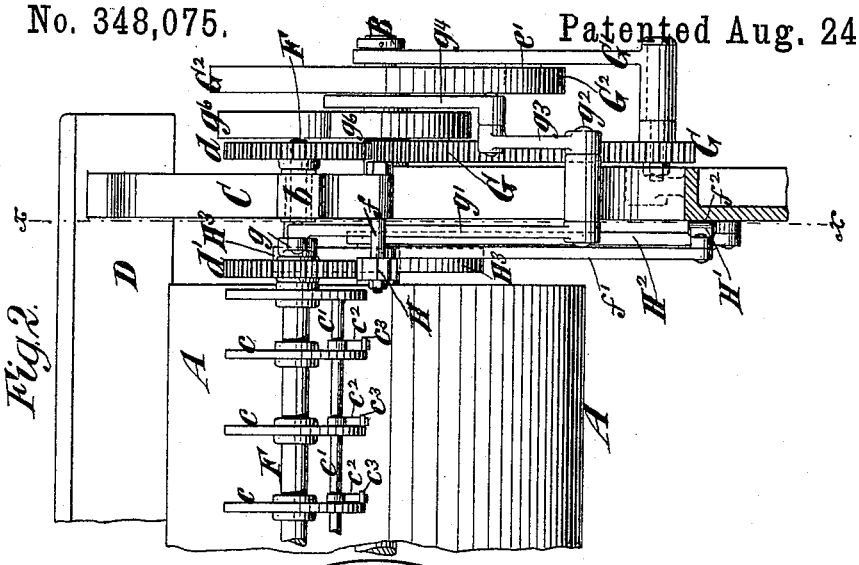
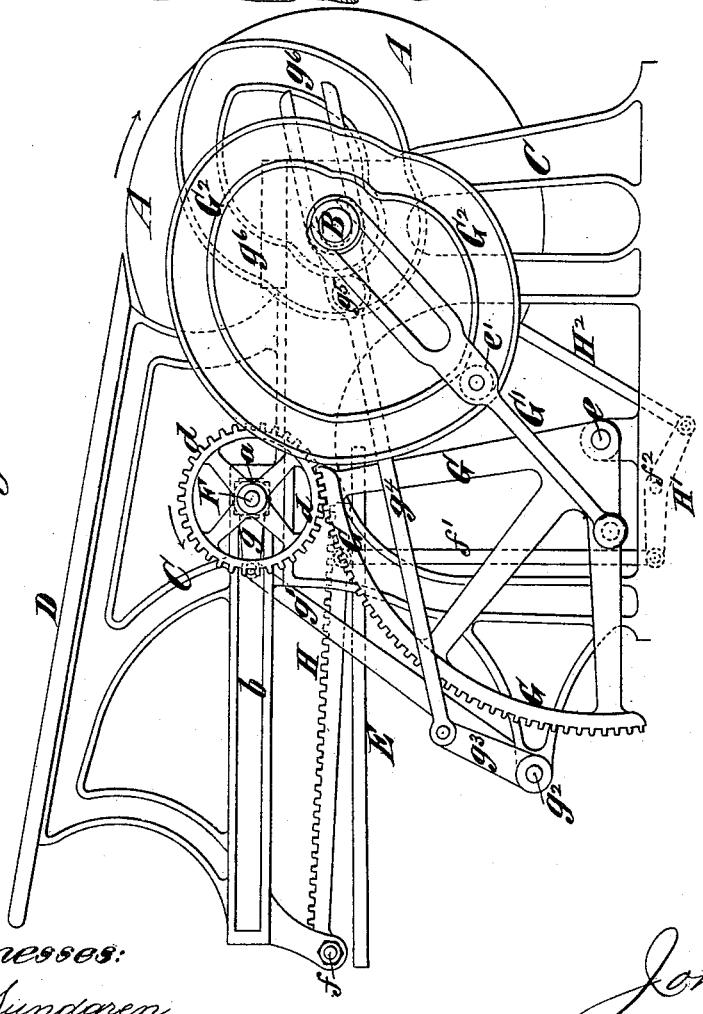


Fig. 1.



Witnesses:
C. L. Sundgren
Emil H. Porter

Inventor:
John Walther
by his Attys
Brown & Hall

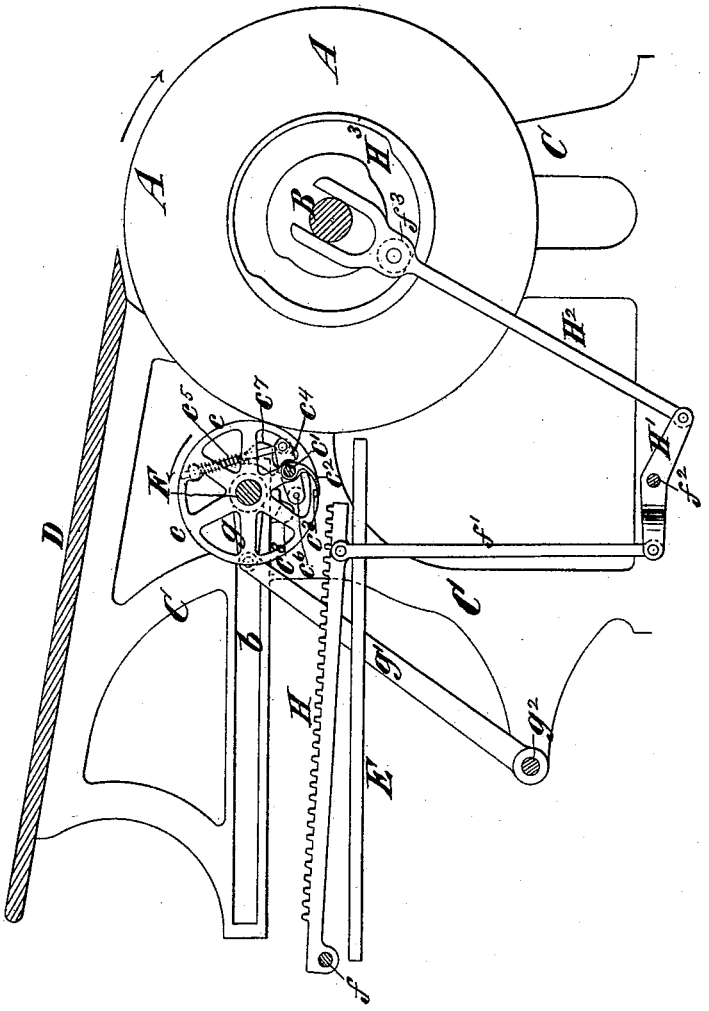
(No Model.) 2 Sheets—Sheet 2.

# J. WALTHER.

## SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 348,075. Patented Aug. 24, 1886.

Fig. 3.




Witnesses:
C. L. Sundgren
Emil Herter

Inventor:
John Walther
by his attys
Brown & Hall

# UNITED STATES PATENT OFFICE.

JOHN WALTHER, OF BROOKLYN, NEW YORK, ASSIGNOR TO CALVERT B. COTTRELL, OF STONINGTON, CONNECTICUT.

## SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 348,075, dated August 24, 1886.

Application filed January 14, 1886. Serial No. 188,536. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WALTHER, 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-Machines, of which the following is a specification.

My invention relates more particularly to what are known as "back-delivery presses," in which the printed sheet, after being taken from the impression-cylinder, is deposited on a receiving-table arranged behind the cylinder and beneath the feed-board; but the invention may, if desired, be embodied in presses of other kinds.

The invention consists, essentially, in the combination, with an impression-cylinder and a receiving-table, of guideways extending from the cylinder above said table, a series of wheels provided with delivery-grippers mounted upon a shaft and having a reciprocating movement bodily along said guideways toward and from the cylinder, the said wheels also having a rotary motion while they are adjacent to the cylinder, to take the printed sheet from the cylinder and roll it upon them, and also having their rotary motion in the same direction continued during their movement away from the cylinder, to unroll the sheet from them and deposit it upon the receiving-table.

The invention further consists in novel combinations of mechanism, which are hereinafter described, and pointed out in the claims, and which serve to impart to the shaft carrying the gripper-wheels the rotary motion whereby it is caused to take the printed sheet from the impression-cylinder and roll it upon the wheels, the bodily movement in a direction away from the cylinder, and a return movement toward the cylinder, and the rotary motion which is imparted to the wheels during their bodily movement away from the cylinder, in order that they may unroll the printed sheet from them and deposit it upon the receiving-table.

In the accompanying drawings, Figure 1 is a side elevation of such portions of a press as are necessary to illustrate my invention. Fig. 2 is an end elevation of the parts shown in Fig. 1, looking from the left hand of Fig. 1; and Fig. 3 is a vertical section upon the plane of the dotted line *x x*, Fig. 2.

Similar letters of reference designate corresponding parts in the several figures.

A designates the impression-cylinder, and B the shaft thereof, which is fitted to suitable bearings in the side frames, C, of the press.

D designates the feed-board from which the sheets of paper are delivered to the impression-cylinder, and E designates the receiving-table, which, as here shown, is arranged beneath the feed-board and at the back of the cylinder.

I have not here shown the bed of the press for operating in conjunction with the cylinder, as my invention does not in any wise relate thereto, and the bed may be mounted and operated in any suitable way and by any mechanism commonly used or suitable for such purpose.

Behind the cylinder is a shaft, F, which has a bodily movement in a direction away from and toward the cylinder, and which, as here shown, has its journals in boxes *a*, which are fitted to slide in guideways *b*, formed in the frame C of the press. Upon the shaft F are secured a number of gripper-carrying wheels, *c*, each provided with delivery-grippers. The wheels *c* on the shaft F constitute, in effect, a carrier-reel for the sheet and the wheels *d'*, the said shaft F, and the boxes *a*, whereby the shaft is held and supported, constitute, in practical effect, a carriage for the reel. These grippers may be of any suitable construction, and operated by means such as are ordinarily employed in presses. As best represented in Fig. 3, the gripper-wheels *c* have a gripper-shaft, *c'*, extending through them parallel with the shaft F, and provided adjacent to each wheel *c* with a gripper-finger, $c^2$, which serves to hold the paper against the gripper-rest $c^3$, projecting from the side of the wheel, as best shown in Fig. 2.

In order to properly deliver the printed sheet the shaft F and its gripper-wheels *c* should have imparted to them a rotary motion when they are adjacent to the cylinder A, as shown in the drawings, whereby they are caused to take the printed sheet from the cylinder and roll it upon them, and afterward

the shaft F and wheels *c* are given a reciprocating movement bodily away from the cylinder in the guideways *b*, and during their bodily movement away from the cylinder are rotated in the same direction, as before, in order that they may unroll from them the printed sheet and deposit it upon the receiving-table E. These several movements of the gripper-shaft and gripper-wheels F may be imparted to them by any suitable combination of mechanism, the mechanism for such purposes in printing-presses being commonly operated by cams of suitable shape.

As shown in Fig. 1 of the drawings, the gripper-wheels *c* are adjacent to the cylinder, and their rotary motion in the direction indicated by the arrows in Figs. 1 and 3 is just about to commence.

Upon the shaft F is a gear-wheel, *d*, and G designates a gear-sector, which is fulcrumed at *e*, and which is operated by a rod, G′. Upon the shaft B of the impression-cylinder is a grooved cam, $G^2$, with which engages a roller, *e′*, on the rod G′, and, as the cam continues to rotate from the position shown in Fig. 1 and in the direction of the arrows, the rod G′ will impart to the sector G a movement which will rotate the wheel *d* and the shaft F and gripper-wheels *c* in the direction indicated by the arrows in Figs. 1 and 3. The parts are so proportioned that the sector G will continue its operating movement just described entirely beyond and out of gear with the gear-wheel *d* on the shaft F, and as the sector passes out of gear with said wheel a vertically-movable rack, H, which I have here shown as pivoted at *f*, will be raised into engagement with a wheel, *d′*, on the shaft F. The mechanism whereby this rising-and-falling movement of the rack H is produced is best shown in Fig. 3, and also partially in Fig. 2. The rack H is connected by a rod, *f′*, with a rocker-arm, H′, which is fulcrumed at $f^2$, and this rocker-arm is operated by a rod, $H^2$, which is bifurcated or forked to straddle the shaft B, and which has upon it a roller, $f^3$, engaging a grooved cam, $H^3$, on the shaft B. After the rack H has been raised into engagement with the wheel *d′*, as above described, the bodily movement of the shaft F and its wheels *c* in a direction away from the cylinder commences, and by the engagement of the wheel *d′* with the rack H the rotation of the gripper-wheels *c* in the direction indicated by the arrows is continued during their bodily movement away from the cylinder, and they are thereby caused to unroll the printed sheet from them and deliver it upon the receiving-table E. The mechanism whereby the bodily movement of the shaft F and wheels *c* is produced is here represented as comprising arms *g* on the shaft F, to which are connected levers or arms *g′* upon the rock-shafts $g^2$. The rock-shafts $g^2$ also have arms $g^3$, to which are attached rods $g^4$, which are bifurcated or forked to straddle the shaft B, and are provided with rollers $g^5$, engaging grooved cams $g^6$ upon the shaft B. I have here represented the parts for producing the bodily movement of the shaft F, which are on one side of the press, and it will be understood that the same cam $g^6$ must be provided on the opposite end of the cylinder-shaft B, and that the parts through which it transmits bodily movement to the shaft F must be duplicated on the opposite side of the press. While the shaft F and its wheels are moving bodily away from the cylinder, and before they return to the position shown in Figs. 1 and 3, the gear-sector G is returned to the position shown in Fig. 1. After the shaft F and its wheels *c* have been brought back to the position shown in Figs. 1 and 3, and the gear *d* has come into engagement with the sector G, as shown in Fig. 1, the rack is dropped out of engagement with the wheel *d′*, and the shaft F is left free to be turned by the next operation of the gear-sector G. In order to open and close the grippers $c^2$ at the proper times, I have represented on the end of the shaft *c′* an arm, $c^4$, with one end of which is connected a spring-actuated rod, $c^5$, for closing the grippers, and the other end of which carries a roller, $c^6$, which, by making contact with either of the cams $c^7$ $c^8$, is moved to open the grippers $c^2$. As the wheels *c* are rotated in the direction indicated by the arrows in Figs. 1 and 3, the roller $c^6$ on the gripper-arm $c^4$ first comes in contact with the cam $c^7$, and the grippers $c^2$ are thereby opened to take the printed sheet from the cylinder. As the wheels *c* continue their rotation, and after the printed sheet has been rolled up on them, the roller $c^6$ comes in contact with the cam $c^8$, thereby opening the grippers and releasing the front edge of the sheet, and, as the wheels *c* are moved bodily outward away from the cylinder and their rotary motion continued, they unroll the printed sheet from them and deliver it upon the receiving-table E.

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

1. The combination, with an impression-cylinder, of a carrier-reel and reciprocating carriage supporting the carrier-reel, constructed and arranged to operate substantially as and for the purpose described.

2. The combination, with an impression-cylinder and a receiving-table, of guideways extending from the cylinder above said table, a series of wheels provided with delivery-grippers mounted upon a shaft and having a reciprocating movement bodily along said guideways toward and from the cylinder, the said wheels also having a rotary motion while they are adjacent to the cylinder, to take the printed sheet from the cylinder and roll it upon them, and also having their rotary motion in the same direction continued during their bodily movement away from the cylinder to unroll the sheet from them and deposit it upon the receiving-table, substantially as herein described.

3. The combination, with an impression-cylinder and receiving-table, of a series of

wheels provided with delivery-grippers, a cam and a gear-sector operated thereby to rotate the wheels and roll upon them the printed sheet taken from the cylinder, and a system of cam-actuated levers whereby the wheels are moved bodily away from the cylinder to unroll the printed sheet and deposit it on the receiving-table, substantially as herein described.

4. The combination, with an impression-cylinder and receiving-table, of a shaft carrying a series of gripper-wheels, a cam and gear-sector operated thereby and engaging a gear-wheel on said shaft to rotate the gripper-wheels and wind upon them the printed sheet delivered from the cylinder, mechanism, substantially as described, for moving said shaft and wheels bodily away from and toward the cylinder, and a vertically-movable rack, which, by engagement with a wheel on said shaft, causes said shaft and its wheels to rotate to unroll the sheet and deposit it upon the receiving-table during their movement away from the cylinder, substantially as herein described.

JOHN WALTHER.

Witnesses:
FREDK. HAYNES,
HENRY MCBRIDE.