

(No Model.)

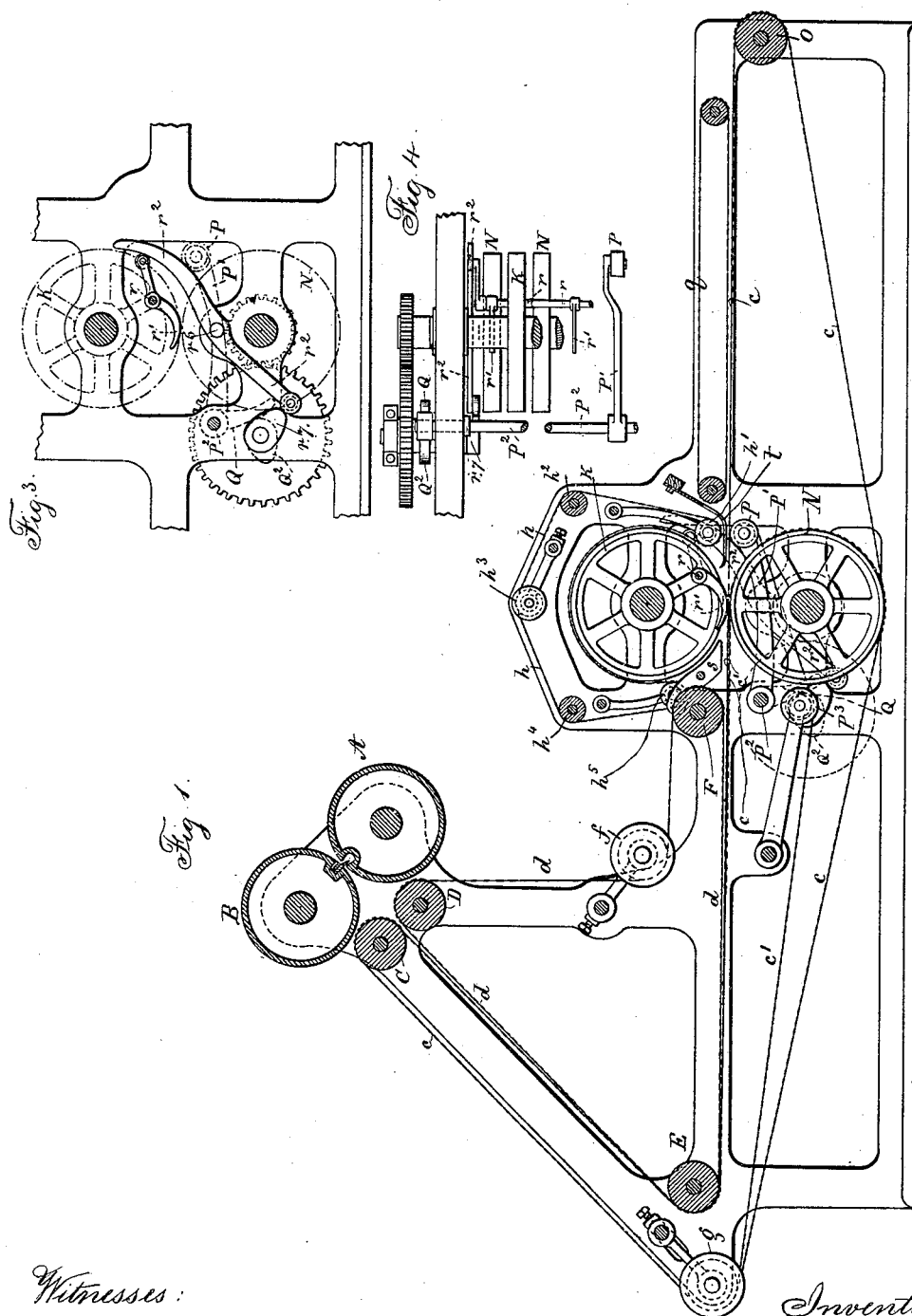
2 Sheets—Sheet 1.

C. POTTER, Jr.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 344,497.

Patented June 29, 1886.



Witnesses:
J. Stait
Chas. H. Smith

Inventor
Charles Potter Jr.
per Lemuel W. Ferrell atty

(No Model.)

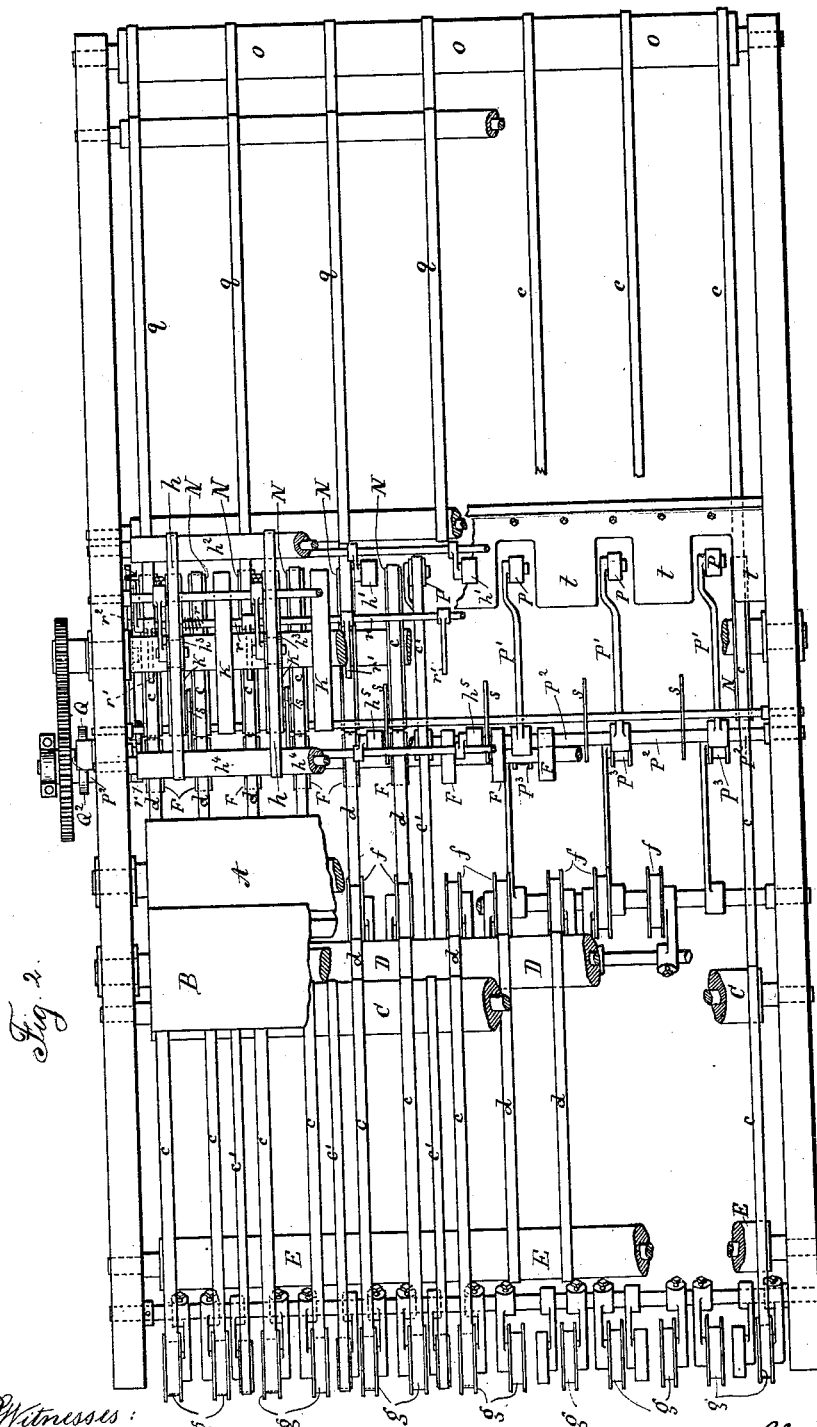
2 Sheets—Sheet 2.

C. POTTER, Jr.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 344,497.

Patented June 29, 1886.



Witnesses:
J. Strait
Chas. H. Smith

Inventor:
Charles Potter Jr.
per Samuel W. Cornell atty

UNITED STATES PATENT OFFICE.

CHARLES POTTER, JR., OF PLAINFIELD, NEW JERSEY.

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 344,497, dated June 29, 1886.

Application filed October 26, 1885. Serial No. 189,917. (No model.)

To all whom it may concern:

Be it known that I, CHARLES POTTER, JR., of Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Sheet-Delivery Apparatus for Printing-Machines, of which the following is a specification.

Printed sheets have heretofore been delivered from a printing-press and one sheet laid upon or beneath another sheet and the two sheets delivered to a folding-machine; but difficulty has arisen in obtaining a perfect register of one sheet upon the other and in preventing the sheet or sheets remaining upon the imposing-cylinder instead of being discharged at the proper moment.

The object of my present invention is to lay one sheet upon the other and to pass said sheets to the folding mechanism. This I accomplish in a very reliable manner by passing one sheet around a cylinder by endless tapes and then imposing such sheet upon the second sheet and passing the two to the folding-machine.

In the drawings, Figure 1 is a vertical section illustrating my improvement. Fig. 2 is a plan of the same, some of the upper parts being removed in a portion of the figure to show the lower parts. Fig. 3 is a diagram of the cams for moving the lifters and pushers, and Fig. 4 is a plan view of these same parts.

A B represent the cutting-cylinders, between which the web of printed paper from any ordinary printing-press passes.

c d represent endless belts passing around the rollers C D, beneath the roller E, and the belts *d* pass around the pulleys F, and at *f* are tightener-pulleys for the belt *d*, and at *g* are tightener-pulleys for the belt *c*. The distance between the cutting-cylinders A B and the roller E is slightly greater than the length of the sheet, and these belts *c d* are speeded to travel faster than the web of paper passing between the cutting-cylinders A B; hence the sheets of paper will be pulled apart successively, when the advancing end of the sheet is firmly grasped by the belts as they pass around the roller E, and the sheets of paper are carried along between the belts *c d* to the lapping-cylinder K. This imposing or lapping cylinder K is composed of numerous pulleys placed side by side on the same shaft, having between them spaces, and the circumference

of this imposing-cylinder is as great as the length of the sheet with the distance between one sheet and the next added, so that if the advancing end of one sheet is directed up to this imposing-cylinder and carried around with the same, the advancing end of the first sheet will coincide with the advancing end of the second sheet, and this second sheet may be directed upon and carried around this imposing-cylinder. In this way two, three, or more sheets can be laid upon each other as they are passed around this imposing-cylinder, and when the sheets are discharged from this imposing-cylinder they are carried by belts or tapes to the delivery or folding devices. The advancing ends of the alternate sheets are to be directed to this imposing-cylinder by any suitable mechanism, and the sheet that is carried up and over the imposing-cylinder is caused to lie flat upon the second sheet by the advancing end of the sheet being forced away from such imposing-cylinder, and the two sheets are passed in between delivery-tapes that lead them to the folding devices.

As before stated, the imposing-cylinder is composed of a series of pulleys, and there is to each pulley an endless belt or tape, *h*, resting against the upper surface of such pulley and passing around the guide-rollers *h' h'' h''' h''''*. One roller, *h''*, in each range of guide-rollers is for tightening the belt, such tightener being upon the end of an arm supported by a shaft and capable of being swung thereon in tightening such belt, as usual in belt-tighteners.

Beneath the imposing-cylinder K is a second cylinder, N, also composed of a range of pulleys; but these pulleys are placed so that they do not correspond to the pulleys on the lapping-cylinder, but are intermediate to the same. The belts *c* correspond in their positions with the pulleys on this cylinder N, so that each of the belts *c* passes over one of these pulleys; but one belt is passed down and around such pulley, and the next belt extends along over such pulley N to and passes around the roller *o*, thence back beneath the pulley in the cylinder N, the object of this arrangement of the belts being to provide a traveling table to convey the sheets to the imposing-cylinder, and then to carry the sheets as laid one upon the other from the imposing-cylind-

der to the delivery or folding apparatus. It will now be understood that if the advancing end of one sheet is raised up, so as to bend the same to the curvature of the imposing-cylinder, such sheet will be run in between the pulleys of the imposing-cylinder K and the belts *h*, that are over the same. This I accomplish by means of lifters composed of the pulley P upon the ends of the arms P', which arms extend out from the rock-shaft P². These pulleys P are in line with the pulleys of the imposing-cylinder K, so that when the rock-shaft is moved and the pulley raised the advancing end of the sheet is turned upward, pressed against and moved with the imposing-cylinder. These lifting-pulleys P alone might be made use of; but I prefer to employ the tapes *c*, that pass around the roller C and down beneath the roller E, thence over the lifter-pulley P, and down beneath the guide-pulley P³, and back below the tightener *g*. The belts or tapes *c* between the rollers are in the same plane as the belts *e*, and are between such belts; hence the sheet as it rests upon and is brought along by the belts to the imposing-cylinder is carried by the belts *c*, and said belts and the pulleys P when raised lift the sheet and it is carried up by and upon the imposing-cylinder, as before described.

The mechanism for giving motion to the rock-shaft and the lifter-pulleys P may be of any desired character. I have shown the arm Q and cam Q² for the purpose. If the delivery apparatus is to deliver two sheets together, the cam Q² will revolve once to every two revolutions of the imposing-cylinder. If three sheets are to be delivered at once, the cam Q² will be rotated once for each three revolutions of the imposing-cylinder. It is necessary to guide the advancing end of the sheet as it is passing down to lie upon the second sheet. For this purpose segmental guide-plates *s* are inserted between the pulleys F and *h*⁵. The sheets, as they pass along to the imposing-cylinder, go under the lower ends of these guide-plates. There is a shaft, *r*, passing through holes in the respective pulleys of the imposing-cylinder, and upon this shaft are pushing-fingers *r'* between such pulleys. A spring is made use of to partially rotate the shaft *r*, and turn the fingers toward the axis of the imposing-cylinder, and at the end of the shaft *r* is a crank-arm that passes into contact with a cam, *r*², to give to the shaft *r* a partial rotation, and forces down the fingers. The cam *r*² is movable, as now described. The cam *r*² is shown as pivoted at *r*⁶, and acted upon by a revolving cam, *r*⁷, so as to bring the cam *r*² into the path of the arm upon the shaft *r* whenever the fingers *r'* are to be acted upon to press down the advancing end of the sheet. The parts are made in such a manner that these fingers act upon the advancing end of the sheet or sheets around the lapping-cylinder, so as to force the advancing end of said sheet or sheets down upon the next sheet that lies upon the tapes, causing said sheet or

sheets to pass off horizontally between the tapes *c* and *g*, to the folding or other receiving apparatus, which being of any ordinary character is not represented in the drawings or described herein. Segmental guide-plates *t* or fingers are, by preference, introduced between the pulleys or rollers *h'* and tapes *c*, so that the advancing end of the sheet, as it is carried up and around the lapping-cylinder, passes over the edges of these guide-plates *t*, and the two or more sheets laid together pass along beneath these guide-plates *t*, as they are conveyed away by the tapes. It will now be apparent that the movements given to the sheets are of the most positive and reliable character, and there is no risk of the sheets failing to register properly at their margins when the parts have been properly adjusted, because the tapes *c* are lifted by the pulleys P, and lie upon the surfaces of the imposing-cylinder pulleys, and the sheet is carried directly up by such belts, and then held to the pulleys of the imposing-cylinder by the belts *h*, while being carried up and around such imposing-cylinder, and the delivery of the sheet is rendered equally positive by the action of the pushing-fingers.

I claim as my invention—

1. The lapping-cylinder and the pulleys and belts passing around and above the same, in combination with a cylinder, N, of pulleys below the lapping-cylinder, and lifter-rollers D, cutting-cylinders, and accelerated belts or tapes *c* and *d*, for separating and feeding the sheets, some of the belts *c* passing around the cylinder N, others around the lifter-rollers, and others passing over and beyond the cylinder N, to convey away the sheets after being lapped or imposed, substantially as specified.

2. The combination, with the cutting-cylinders and the ranges *c* and *d*, of accelerated belts or tapes for conveying away and separating the sheets, of the lapping-cylinder composed of a range of pulleys, endless belts for such pulleys, and guide-rollers for the same, a cylinder beneath the lapping-cylinder composed of a range of pulleys, around which the belts *c* pass, lifters between the pulleys of the lower cylinder, and mechanism, substantially as specified, for acting upon such lifters to raise the alternate ends of the advancing sheets, substantially as set forth.

3. The combination, with the lapping-cylinder and the guide-rollers and endless tapes around and above the lapping-cylinder, of the cylinder N, composed of a range of pulleys, the accelerated feeding-belts passing around such pulleys, lifter-rollers and arms for the same, and belts passing around the lifter-rollers, substantially as set forth.

Signed by me this 19th day of October, A. D. 1885.

CHARLES POTTER, JR.

Witnesses:

D. E. TITSWORTH,
J. M. TITSWORTH.