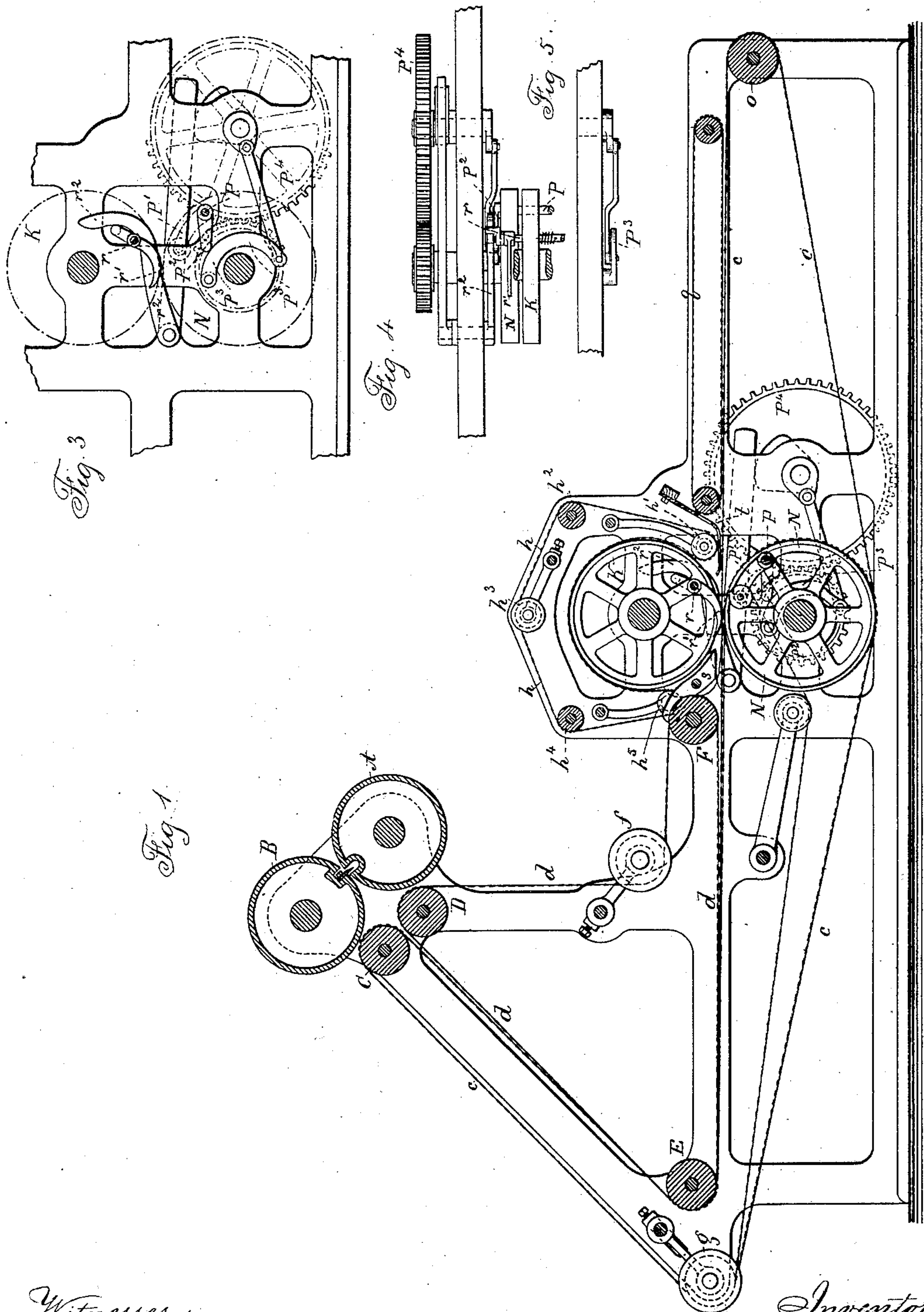



2 Sheets—Sheet 1.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

Patented Jan. 5, 1886.



Witnesses:
J. Staib
Chas. H. Smith.

 Inventor:
Charles Potter Jr.
per Lemuel W. Perrell atty

(No Model.)

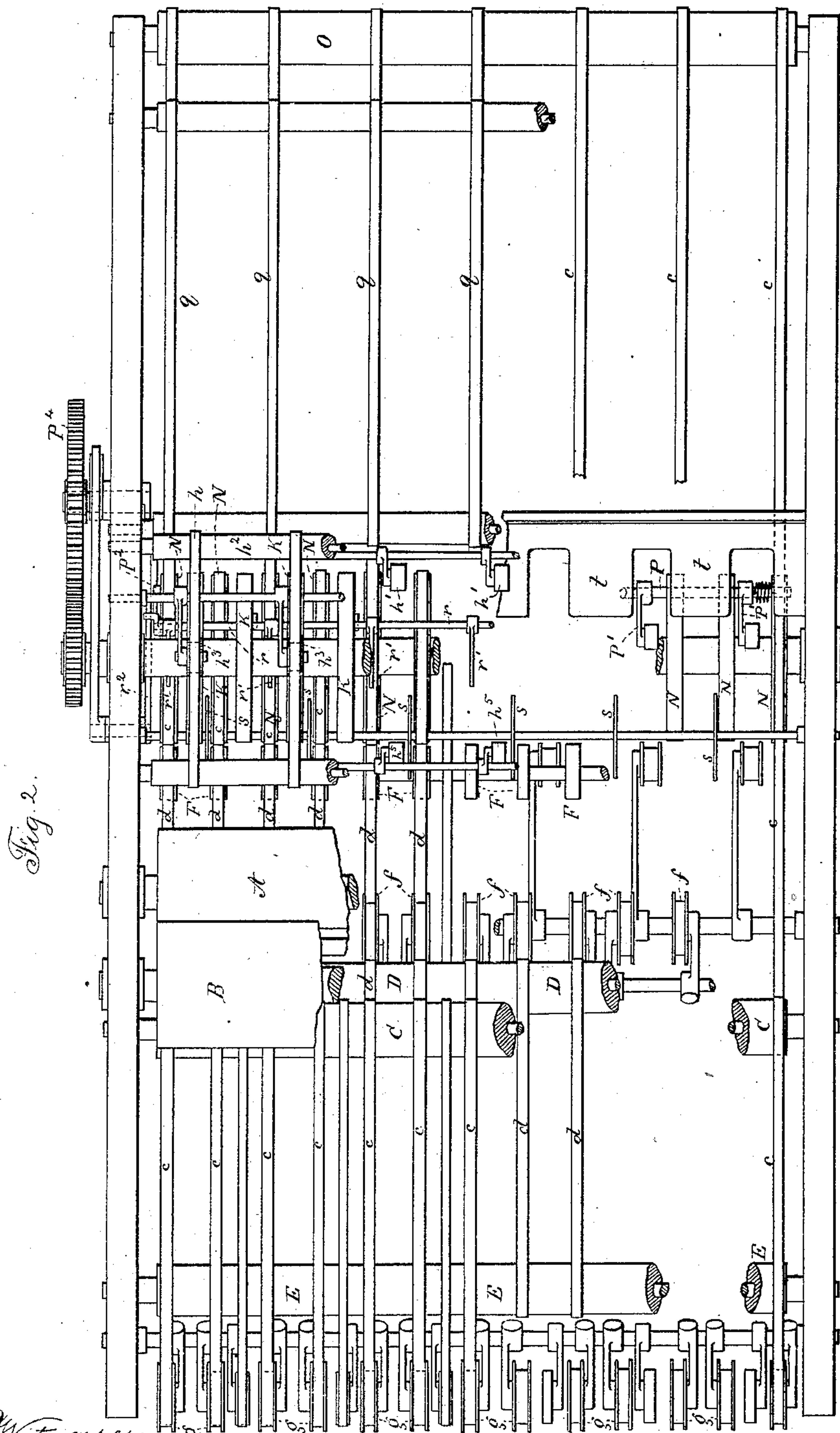
2 Sheets—Sheet 2.

C. POTTER, Jr.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 333,668.

Patented Jan. 5, 1886.



Witnesses:
I Staib
Chas H. Smith

Inventor:
Charles Potter Jr.
per Samuel W. Serrell attn.

UNITED STATES PATENT OFFICE.

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

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 333,668, dated January 5, 1886.

Application filed October 26, 1885. Serial No. 180,918. (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 and the two sheets delivered to a folding-machine.

My present invention relates to a device for laying one sheet upon the other previous to passing said sheet to the folding-machine; and it is a modification of an apparatus more fully set forth in an application of like date herewith, Serial No. 180,917.

In the drawings, Figure 1 is a vertical section illustrating my improvement, and 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 employed to move the lifting-fingers and pushers. Fig. 4 is a plan view of these same parts; and Fig. 5 is a detached view of one of the cams and its connections.

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 pulleys C D, beneath the roller E, belts d, returning around the roller 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-cylinder A B; hence the sheets of paper will be pulled apart successively when the advancing end of the sheet is firmly grasped by the belt 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 lapping-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, 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 lapping-cylinder they are carried by belts to the delivery or folding apparatus. The advancing ends of the sheets are to be directed to this imposing-cylinder, and the sheets as laid upon each other are passed away by the advancing ends of the sheet upon the imposing-cylinder being forced away from such cylinder and the two sheets passed in between the delivery-tapes e g and led 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' h² h³ h⁴ h⁵. One roller, h³, 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 preferably 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 of the 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-cylinder 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* resting upon the same.

5 Upon the cylinder N, I place a cross-shaft, P, the same being in suitable bearings upon the pulleys composing such cylinder, and upon this shaft and between the respective pulleys are arms P'. These arms will be more
10 or less numerous in proportion to the width of sheet. These arms are curved upon their outer surfaces, and the rock-shaft P, in addition to being carried around bodily by the cylinder N, is partially rotated every second
15 revolution of such cylinder N, if the sheets are delivered in pairs, or partially rotated twice in succession and then remains quiescent the third revolution of the cylinder N, if the sheets are delivered three together, and so on. Each
20 time the shaft P is partially rotated the arms P' lift up the advancing end of the sheet and pass the same in between the tapes *h* and the cylinder K, so as to be carried up and around such cylinder K, and the arms P' are
25 thrown down, after thus lifting the sheet, by a spring around the rock-shaft P, or other suitable means. I prefer and use a crank-arm, P², at the end of the rock-shaft P, and a cam, P³, for moving the same and raising the fingers
30 and the paper. This cam should be moved into the path of the arm P² by means of a wheel, P⁴, that is revolved once for each two or three or more revolutions of the cylinder N, according to the number of sheets that are
35 carried up to and laid upon the imposing-cylinder K before being delivered. It is necessary to guide the advancing end sheet around the imposing-cylinder as it is passing down to lie upon the second sheet. For this purpose seg-
40 mental guide-plates *s* are inserted between the pulleys F and *h*⁵, and beneath the lower ends of these guide-plates *s* the sheets pass along to the imposing-cylinder. There is a shaft, *r*, passing through holes in the respective pulleys
45 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 50 with a cam, *r*², to give to the shaft *r* a partial rotation and force down the fingers. The parts are made in such a manner that these fingers act upon the advancing end of the sheet or sheets around the lapping or impos- 55 ing 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 sheets to pass off horizontally between the tapes *c* and *q* to the folding or other receiving 60 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 65 that the advancing end of the sheet, as it is carried up and around the lapping-cylinder, passes over the edges of the guide-plates, and the two or more sheets, laid together, pass along beneath these guide-plates *t* as they are 70 conveyed away by the tapes.

I do not herein lay claim to the lapping-cylinder, tapes, or bands, or to the lifting of the advancing end of the sheet, as these de- 75 vices are fully set forth in a separate application of like date herewith, as above mentioned, and the broader claims are made in the same.

I claim as my invention—

The combination, with the lapping-cylinder K, the tapes or belts *h*, and the pulleys for the 80 same, of the cylinder N, the rock-shaft P, supported by and moving with the same, the arms P', extending out from such rock-shaft and forming lifters for the advancing end of the sheet of paper, and the mechanism, sub- 85 stantially as set forth, for partially rotating the rock-shaft and actuating the arms, 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.