

(No Model.)

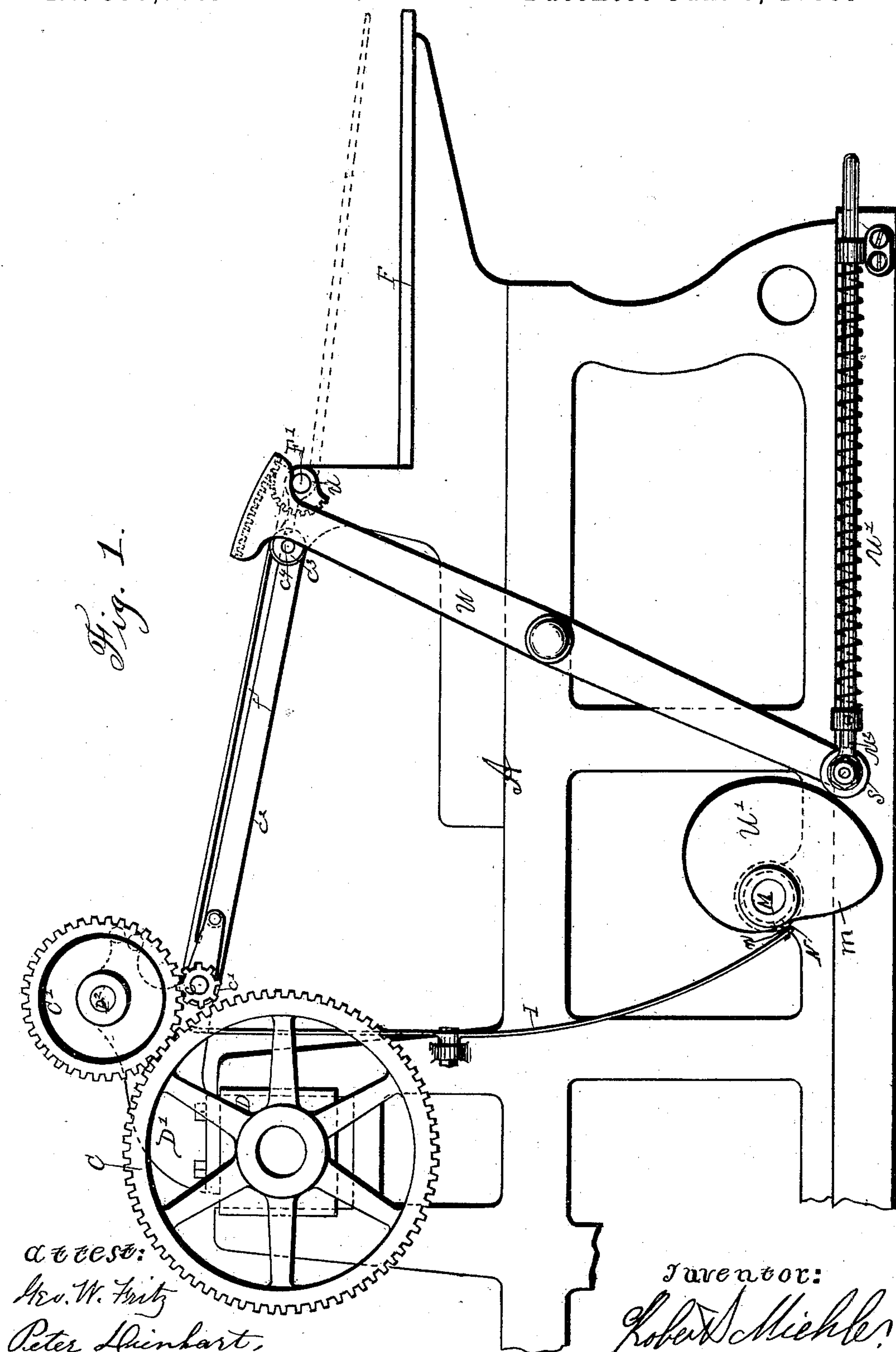
3 Sheets—Sheet 1.

R. MIEHLE.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 395,710.

Patented Jan. 8, 1889.



(No Model.)

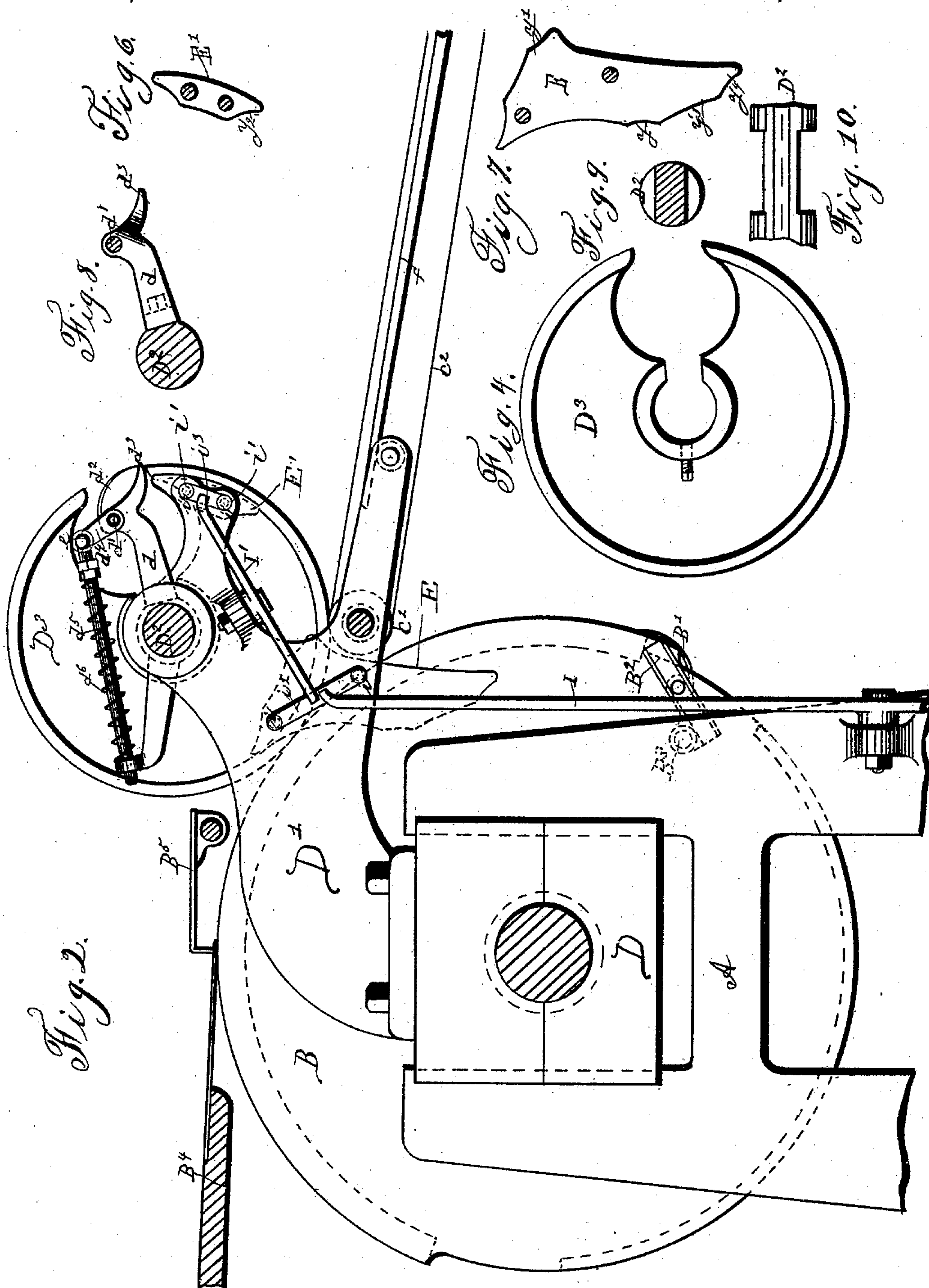
3 Sheets—Sheet 2.

R. MIEHLE.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 395,710.

Patented Jan. 8, 1889.



Attest:

Geo. W. Fritz-
Peter Lienhart.

Inventor:

Robert Miehle.

(No Model.)

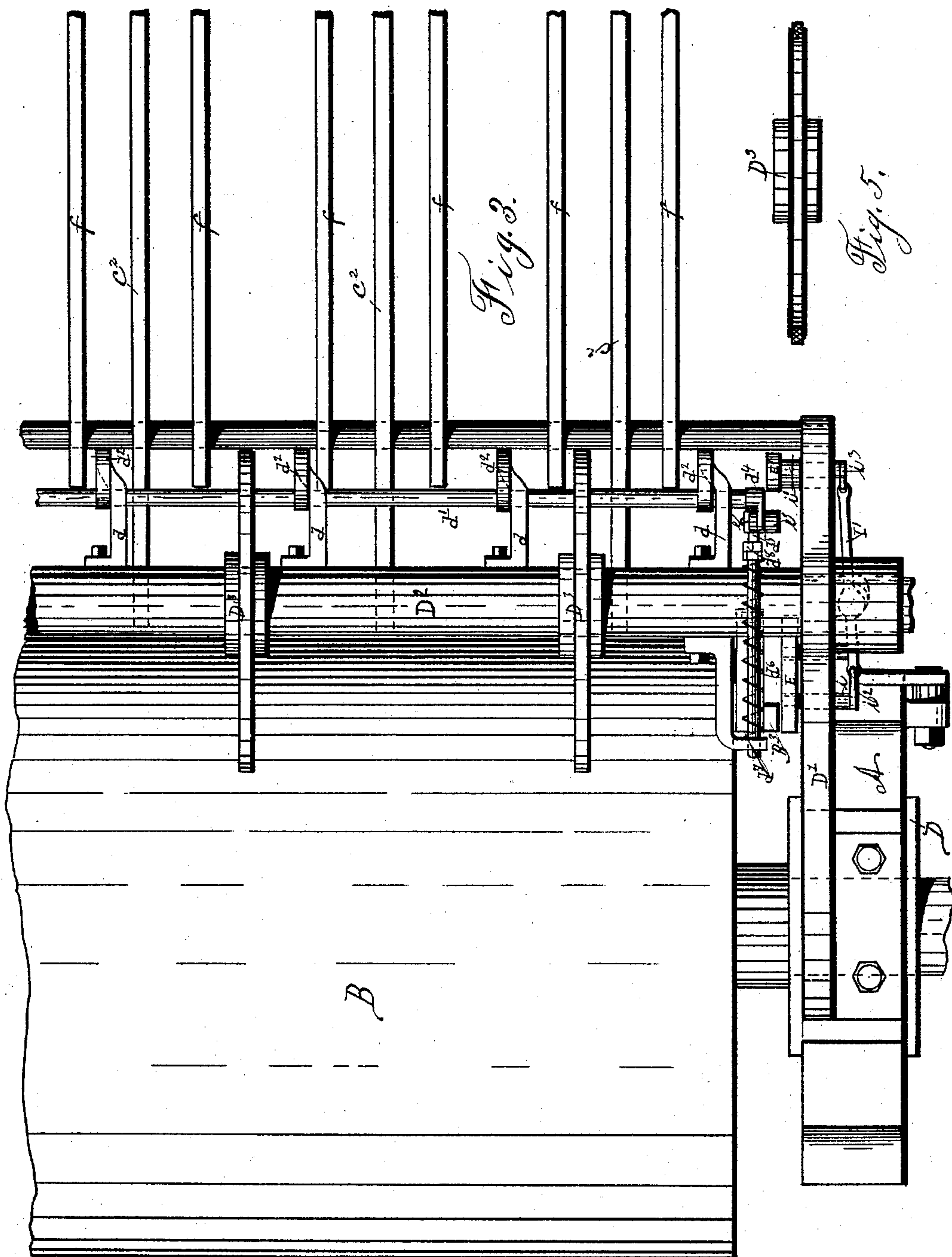
3 Sheets—Sheet 3.

R. MIEHLE.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 395,710.

Patented Jan. 8, 1889.



Witness:

Geo. W. Fritz
Peter Spierhant.

Inventor:

Robert A. Miehle.

UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS.

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 395,710, dated January 8, 1889.

Application filed March 8, 1887. Renewed August 22, 1888. Serial No. 283,514. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, residing at the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Sheet-Delivery Apparatus for Printing-Machines, of which the following is a specification.

The herein-contained improved arrangements and combinations of parts comprise a sheet-delivery for cylinder printing-presses, in which the sheet can be delivered from the top or front of the cylinder to the forward end of the press with the clean or dry side to the fly-fingers.

In the accompanying drawings, Figure 1 is a side elevation of a two-revolution-cylinder printing-press with the improved delivery mechanism connected thereto. Fig. 2 is an enlarged sectional side view, with the gearing removed, showing the impression-cylinder and delivery mechanism in detail. Fig. 3 is a top plan view of Fig. 2. Figs. 4 and 5 are views showing the delivery-reels. Figs. 6 and 7 show the operating-cams for the delivery and cylinder grippers. Fig. 8 shows one of the brackets in which the grippers are held. Figs. 9 and 10 show the recessed parts of the delivery-shaft for allowing the reels being placed thereon or removed therefrom when necessary.

In the drawings, letter A designates the main frame of the press; B, the cylinder, provided with the usual grippers, B', and operating-tumbler B², which is provided with a wiper, B³. The pins for operating the said tumbler to open and close the grippers for taking the sheet from the feed-board B⁴ it is thought unnecessary to show or describe. The feed-board B⁴ and feed-guides B⁵ are shown in their relative position with the delivery mechanism.

C designates the cylinder main gear, which communicates motion to the delivery-gear C'. This in turn meshes with the smaller gear, c, secured upon the end of tape-roller c', upon which are placed tapes c², which in their circuit pass around tape-pulleys c³ upon rod c⁴, mounted in the upper portion of the main frame at the front end of the press.

Upon the cylinder journal-boxes D are secured the supporting-brackets D', in which is

mounted delivery-shaft D², containing delivery-reels D³, and brackets d, in which rod d' is held, said rod carrying delivery-grippers d², which bear with their points upon the curved end or stops d³ of the brackets d. On the outer end of rod d' is a crank, d⁴, which has a pin, e, projecting from either side, the outer side being provided with a wiper, e', the inner side having connected thereto a rod, d⁵, containing a spring, d⁶, which bears against stop d⁷ and nut d⁸, the tendency of the spring being to keep the points of grippers d² bearing against stops d³ when the same are not operated by the inclined cam-plates E and E'. Each of these cam-plates are secured to the frame and are held in their proper positions by pins i and i', which slide loosely in said frame. At the outer end of these pins are fastened plates i² and i³, which are operated upon by the forked lever I and I' by the following means:

Projecting into the groove of cam N upon the shaft M at the outer side of the main frame is a stud, n, secured upon the lower end of the lever I, which is pivoted upon the main frame, and which, as the shaft revolves, swings the said lever through the action of the cam-groove to and from the main frame, whereby the upper end, which is forked, moves the plate i² and with it cam-plate E, so that the same is brought at intervals into and out of the path of wiper e' upon crank d⁴.

The cam-plate E' receives its movement through lever I', which has both ends forked to engage plates i i'. It is obvious that when movement is imparted to plate i in one direction the plate i' is moved in the other direction, as lever I' is pivoted at or about its center.

The receiving-table F is mounted upon the front end of the press-frame, upon which the printed sheets are deposited by the vibrating fly-fingers f, which are secured to the rod F'. This rod is provided with a segmental gear, u, at its outer end, which is operated by the rock-lever U, which in turn receives motion through cam U' upon shaft M, and through spring u' upon the connecting-rod u², which tends to keep the friction-roller s bearing against the surface of cam U'.

The operating time of shaft M is one revo-

lution for one impression upon the form by the cylinder for which the same makes two revolutions, the delivery-grippers being timed four revolutions for one impression upon the form by the cylinder.

The operation of the device is as follows: Beginning at the time the sheet arrives at the top with the cylinder after the impression has been taken, and the cylinder-grippers approach the delivery-grippers, which revolve at the same speed as the cylinder, the wiper B^3 engages with the incline y upon the cam-plate E , which tends to open the cylinder-grippers to release the sheet. At the time the sheet is about to be released by the cylinder-grippers the wiper e' passes the incline y' , which allows the spring d^6 to turn crank d^4 , which closes the delivery-grippers upon the sheet against the stops d^3 . The sheet then passes upward with the delivery-grippers, meanwhile being supported by the delivery-reels. In order to not drop the leading edge of the sheet as wiper e' passes the cam-plate E to complete one revolution with the sheet, the same is moved outward from the path of the wipers by the action of the grooved cam N and rock-lever I , which also moves cam-plate E' into the path of the wiper e' through the forked lever I' , so that when the delivery-grippers arrive at a point to have just passed the tape-roller c' with the leading edge of the sheet the wiper e' engages the incline y^2 of cam-plate E' . The sheet now continues on its outward travel upon the tapes c^2 until the same arrives at a point at which the fly-fingers are timed to lift it bodily upward and turn it over upon the fly-table, which occurs as the incline m of cam U' passes the friction-roller s , which is forced against the cam-surface by the compression-spring u' . From the time the cylinder-grippers release the sheet the same are kept in an open position while the wiper B^3 rolls against the inner circular part, y^3 , of the cam-plate E , which holds them open just long enough to prevent them striking the tape-roller c' , after which the wiper B^3 passes the incline y^4 , which allows the grippers to close by the usual spring provided for this purpose.

In order to keep the sheet moving at the proper speed when the same is being discharged to the tapes by the delivery-grippers, the reels may be grooved and a strip of rubber or any other flexible material secured therein, as shown in Fig. 5, the diameter of which is a little larger than the plain reel, so that the same will ride upon the tape-roller c' and force the sheet outward. This arrangement also facilitates heavy paper or card board being delivered directly from the cylinder to the tapes, when sufficient unprinted marginal space permits of the same, or the reels in such cases may be entirely dispensed with. To accomplish this, the rock-lever I' is disengaged from operating upon the cam-plate E' after the same is moved inward to operate the de-

livery-grippers. The same are then operated at every revolution by the cam-plate E' , as the same then remains stationary.

Just inside of brackets D' the shaft D^2 is cut away at either side, as shown in Figs. 9 and 10, to allow of placing or removing the delivery-reels when more or less are required, the opening in the delivery-reels being just sufficient for allowing the same to be slipped over the narrow portion of the shaft and also to allow the same being moved lengthwise without interfering with the brackets d .

In some cases a cylinder having a surface the whole length of the impression part of the cylinder, and just allowing an opening for the delivery-grippers to operate in, may be used instead of the independent reels.

By giving one revolution and over to the delivery grippers and reels I am enabled to deliver the sheets positively to the fly-frame or receiving devices without hinderance, as the sheets are firmly held by the delivery-grippers until the same are entirely removed from the impression part of the cylinder, to which they adhere when charged with electricity, or when printing the second side before being thoroughly dry. It is also desirable to give one revolution and over to the delivery-reels when the device is applied to oscillating and stop cylinder presses, which do not carry the sheet around far enough to discharge the same.

I do not claim in this application the revolving sheet lifters or grippers being journaled in stationary bearings located at the front or top of the cylinder to seize the edge of the sheet and start it away from same, as this is embraced and claimed in my application, Serial No. 144,070, filed September 26, 1884.

I claim as my invention—

1. In a cylinder printing-press, the combination, with the impression-cylinder, of the revolving delivery-grippers and delivery-reels located at the front or top of the cylinder, the said delivery-grippers receiving one revolution and over before discharging the printed sheet to the delivery mechanism or receiving device, substantially as described.

2. In a cylinder printing-press, the combination, with the impression-cylinder, of delivery-grippers, delivery-reels, and the receiving-tapes located at the front or top of the cylinder, the delivery-grippers receiving one revolution and over before discharging the printed sheet to the said tapes, substantially as described.

3. In a cylinder printing-press, the combination, with the impression-cylinder, of the delivery-grippers, reels, tapes, and fly-fingers located at the front or top of the cylinder, the delivery-grippers receiving one revolution and over before discharging the printed sheet to the said tapes, substantially as described.

4. In a cylinder printing-press, the combination, with the impression-cylinder and vibrating fly-fingers, of the revolving delivery-

grippers located at the front or top of the cylinder for seizing the leading edge of the printed sheet and discharging it upon the fly-fingers with the non-printed or dry side to
5 said fly-fingers, which deposit the same upon the fly-table with the last-printed side down, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT MIEHLE.

Witnesses:

GEO. W. FRITZ,
PETER DIENHART.