

(No Model.)

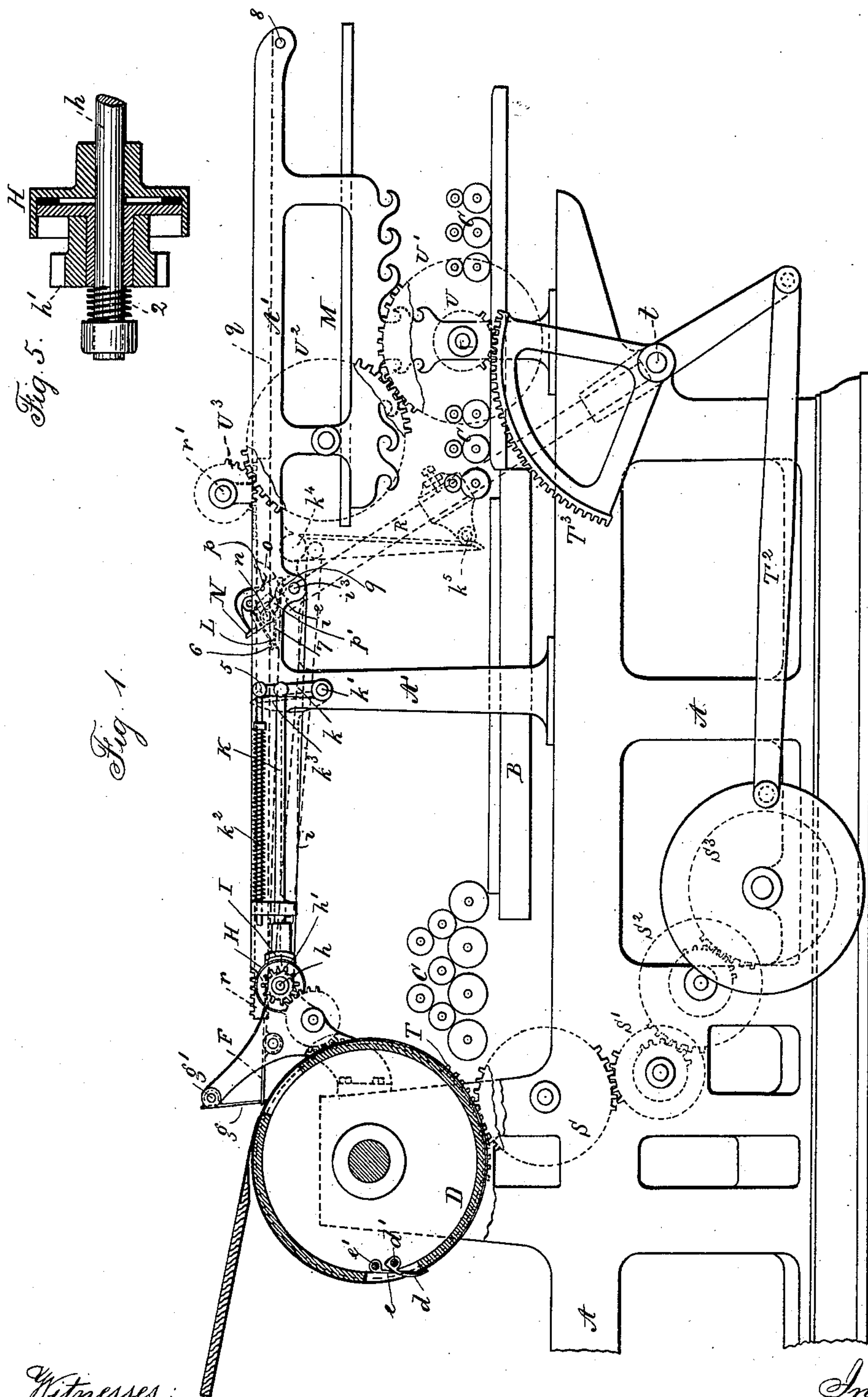
3 Sheets—Sheet 1.

W. SCOTT.

SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 400,875.

Patented Apr. 2, 1889.



Witnesses:
J. Staib.
Chas. K. Smith

Inventor:
Walter Scott
per Lemuel W. Perrell atty

(No Model.)

3 Sheets—Sheet 2.

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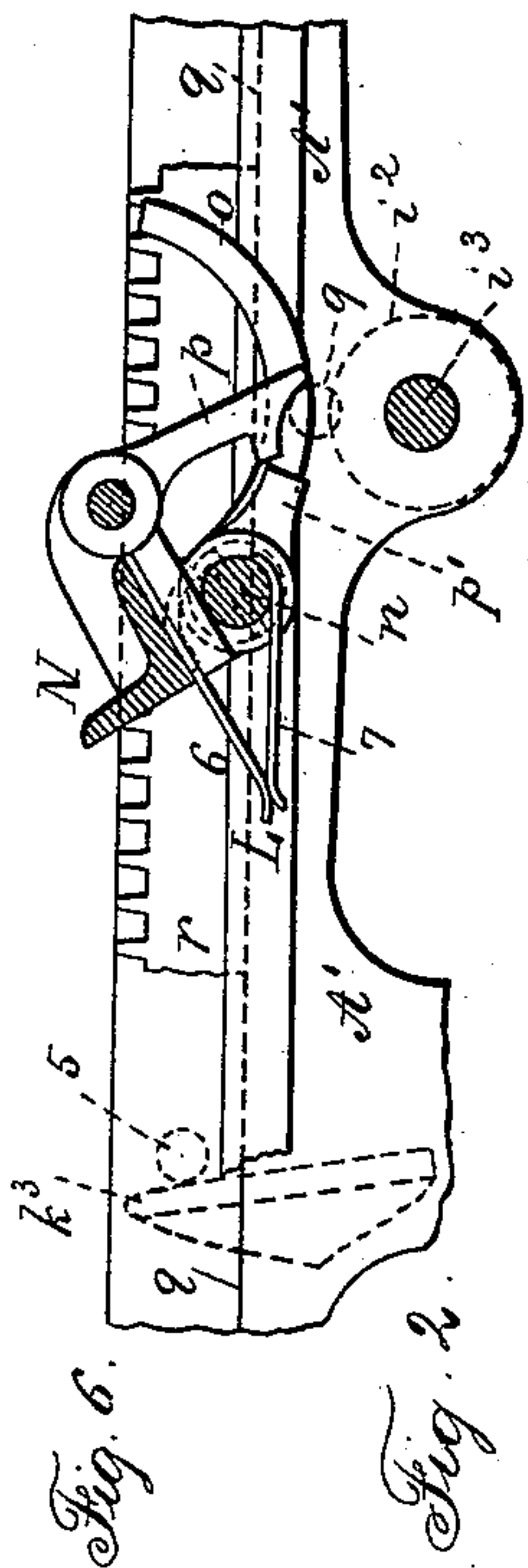
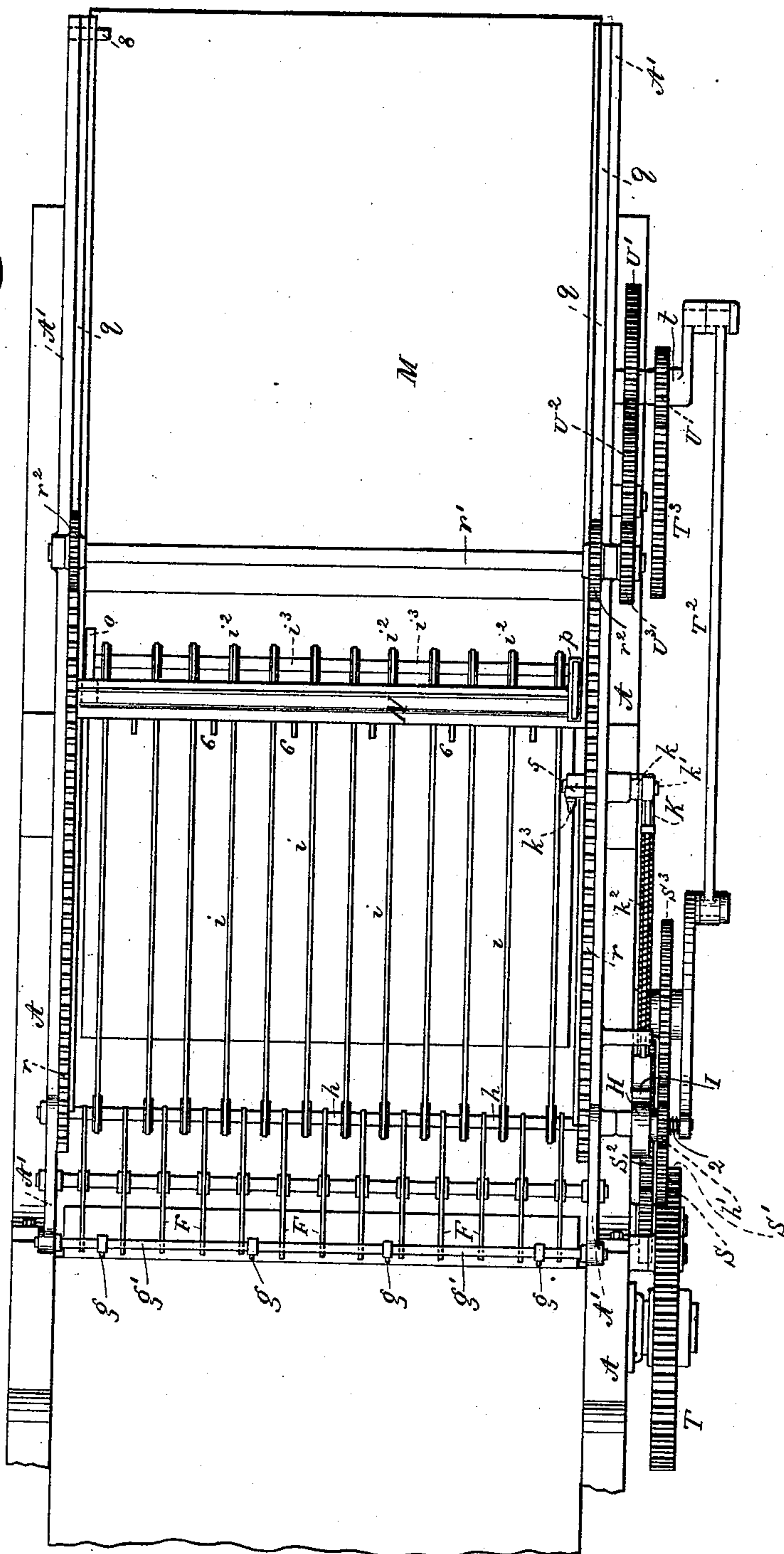


Fig. 2.



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(No Model.)

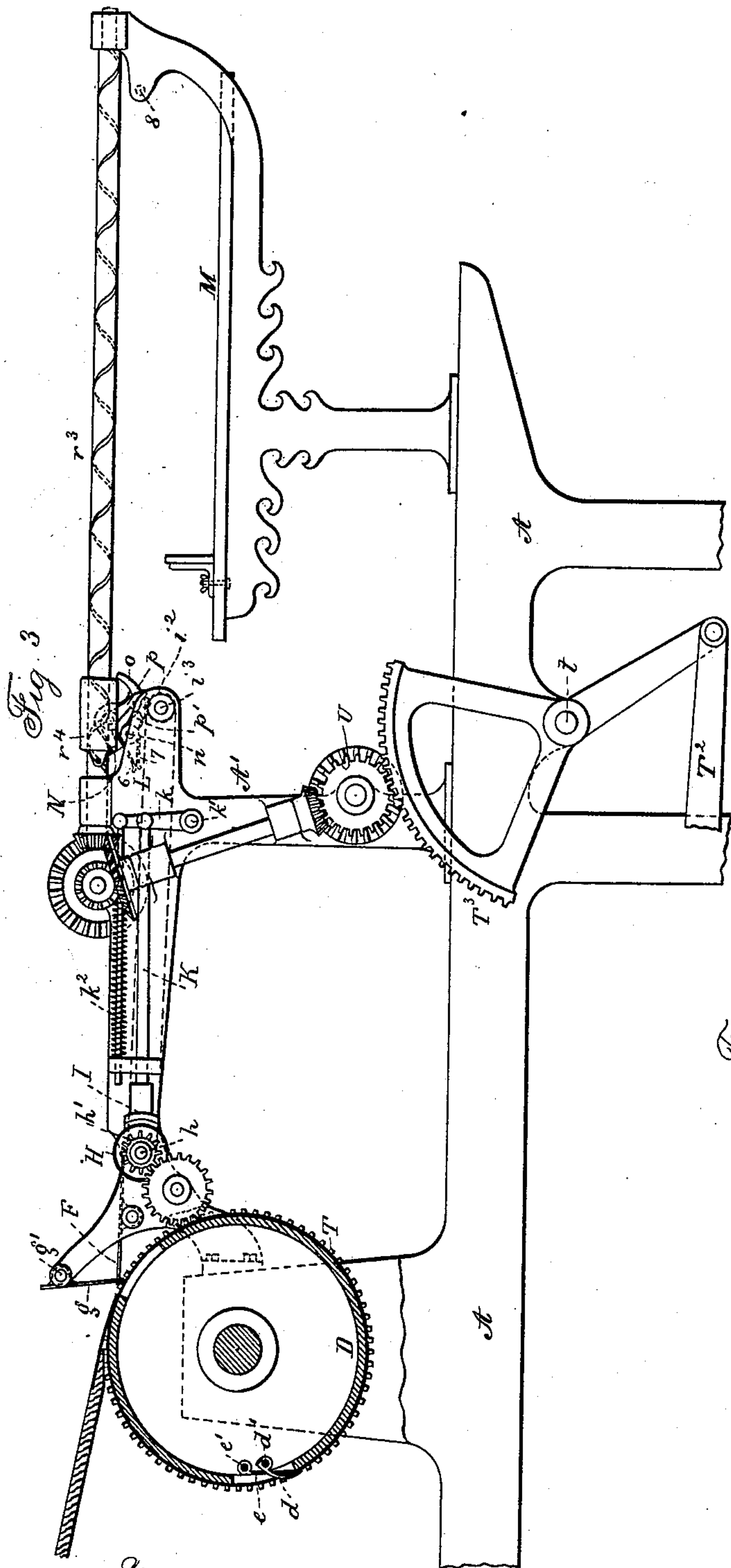
3 Sheets—Sheet 3

W. SCOTT.

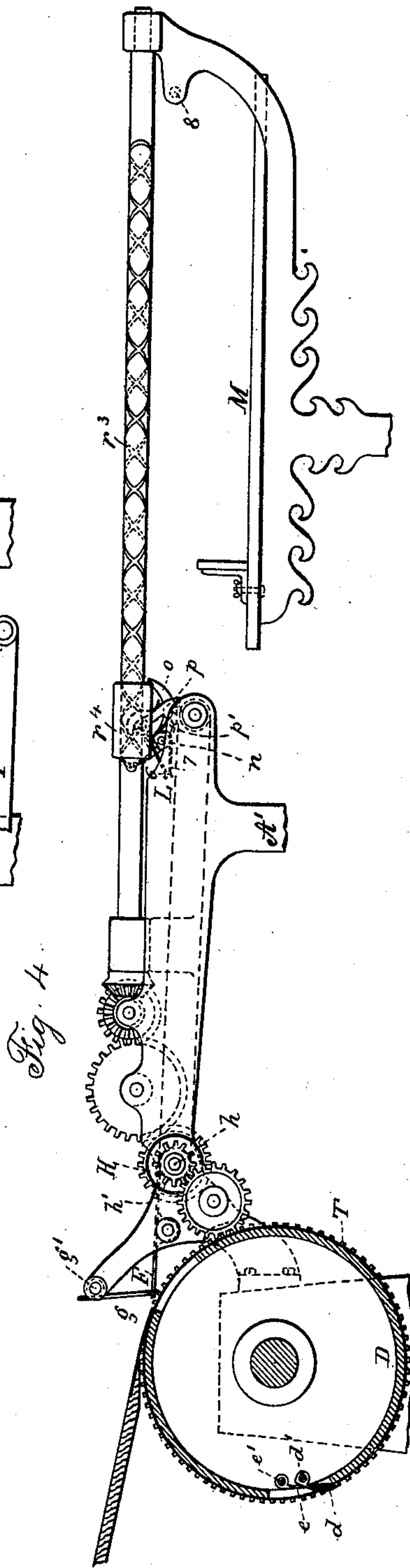
SHEET DELIVERY APPARATUS FOR PRINTING MACHINES.

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 400,875, dated April 2, 1889.

Application filed October 5, 1885. Serial No. 178,991. (No model.)

To all whom it may concern:

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

This improvement is available in printing-presses wherein the impression-cylinder makes two revolutions for each impression—that is to say, the impression-cylinder revolves once while the type-bed is passing beneath the same and the impression is being made, and the second revolution takes place during the return movement of the type-bed, the impression-cylinder being either raised or the type-bed lowered during the return movement of the type-bed.

In my present improvement the advancing end of the printed sheet is lifted at the same time that the grippers are opened and the sheet is run along over a stripper and upon belts that convey the sheet to traveling grippers, that convey such sheet along over the delivery-table and drop such sheet upon said table.

The devices for moving the delivery-grippers may be of any desired character.

In the drawings, Figure 1 is a section of the impression-cylinder and feeding-table and elevations of the sheet-delivery mechanism, other portions of the press being indicated by diagrammatic outlines. Fig. 2 is a plan view of the sheet-delivery mechanism. Figs. 3 and 4 are diagrammatic views illustrating means that may be made use of for moving the delivery-grippers. Fig. 5 is a sectional elevation, in larger size, of the brake-wheel and piston; and Fig. 6 is a sectional elevation of the delivery-grippers and parts connected therewith.

A portion of the main frame of the machine is shown at A, and B represents the position of the type-bed; C, the inking-rollers.

D is the impression-cylinder. The same is to be mounted and revolved in any suitable manner, and any known mechanism may be employed to raise the impression-cylinder every second revolution, or to lower the type-bed upon the return movement.

Within the impression-cylinder D are the

grippers *d*, the same being on a cross-shaft, *d'*, and the grippers are opened and closed in any usual manner. *e* are lifting-fingers extending out from the cross-shaft *e'*. Within the impression-cylinder D the points of these fingers *e* lie beneath the ends of the sheet. They are of thin sheet metal, and recesses may be formed in the surface of the impression-cylinder for their reception.

The gripper *d* and lifting-fingers *e* are operated alternately—that is to say, the grippers *d* are caused to close upon the end of the sheet when the fingers *e* are lying close to the surface of the impression-cylinder D, and when the grippers *d* are raised to liberate the sheet the lifting-fingers *e* are moved away from the surface of the impression-cylinder and lift the advancing end of the sheet above the sheet-strippers F, so that said sheet by its momentum and by the movement given to it by the impression-cylinder is caused to slide along over these sheet-strippers F to the conveying-belts and delivery-grippers hereinafter described.

I remark that the cams for operating the grippers *d* and lifting-fingers *e* may be of any desired form, and they are arranged in the manner usual with presses of this character, so that the grippers are closed at the proper time to seize the paper and hold the same during one revolution of the impression-cylinder, and these grippers are then opened and the sheet delivered upon the strippers during the second revolution of the impression-cylinder.

It is preferable to make use of the gage-fingers *g*, attached at their upper ends to the cross-shaft *g'*. These indicate the position of the end of the sheet, and are swung up out of the way as soon as the grippers *d* take the sheet.

The mechanism for actuating the gage-fingers does not form any part of the present invention, as devices for moving these gage-fingers are well known.

Adjacent to the sheet-stripper F is a cross-shaft, *h*, upon which is fastened a friction-wheel, H, and there is a pinion, *h'*, with a disk adjacent to the friction-wheel H, and a spring, 2, to press the disk toward the friction-wheel. The pinion *h'* is rotated continuously by gearing from a gear upon the shaft of the impres-

sion-cylinder or otherwise. When the friction-brake I is pressed against the friction-wheel II, the rotation of the shaft h is stopped. When the friction-brake I is drawn
5 back, the shaft h is revolved by the pinion and disk against the friction-wheel.

Upon the cross-shaft h are pulleys for endless cords or belts i . These pass around similar pulleys, i^2 , upon the shaft i^3 , and these
10 endless cords or belts i receive the sheet as it is delivered over the sheet-stripper F and convey the sheet along to where the delivery-grippers take the same.

It is desirable to have the endless cords or
15 belts i moving at a slightly less speed than that of the sheet as it is delivered, and to stop the movement of the belts as the grippers advance and seize the sheet and convey it away. With this object in view I employ a slide-bar,
20 K, for supporting the friction-brake I, and this slide-bar K is pivoted at the opposite end to an arm, k , upon a rock-shaft, k' , and there is an expansive spring and rod, k^2 , acting to press the friction-brake away from the
25 wheel II, and upon the rock-shaft k' is an arm or toe, k^3 , against which a pin, 5, is pressed, as explained below, at the time the delivery-grippers are about to grasp the sheet; hence the toe, rock-shaft, arm, and friction-brake
30 are moved and the endless belts i stopped.

The delivery-grippers L receive their motion, as before indicated, from any suitable mechanism, and they grip the sheet, and by their movement convey such sheet away from
35 the endless belts i along over the delivery-table M, and these delivery-grippers L are opened to drop the sheet upon the said table. There is a cross-bar, N, to the under side of which the upper gripper-fingers, 6, are connected, and the lower gripper-fingers, 7, are
40 upon a shaft, n , pivoted at its end to the end pieces of the cross-bar N. There is a spring around the shaft n to close the gripper-fingers 7, and there is a cam-arm, o , upon the shaft
45 n , which cam-arm o runs over a stop, 8, at the termination of the stroke and opens the grippers, and there is a latch, p , to catch an arm, p' , on the shaft n and hold the grippers open during the return motion. This latch is
50 tripped by a stop, 9, upon the frame of the machine, so that the grippers close upon the sheet to take the same away from over the belt i , and the side pieces of the cross-bar N extend sufficiently far to carry the pin 5, before referred to, so that as the grippers L are
55 moved toward the sheet the frame N and pin 5 act upon the friction-brake I, and at the same moment that the friction-brake stops the movement of the endless belts i the stop
60 9 unlatches the shaft n and the gripper-fingers close and grasp the sheet.

It is now only necessary to describe some of the devices that may be made use of for giving motion to the cross-bar and frame N
65 and the grippers connected therewith. I prefer the devices shown in Figs. 1 and 2, and will first describe the same.

Upon the auxiliary frame A' there are ways q at the inner surfaces of the upper portion of the said frame A', and upon these ways q
70 are the racks r , said racks r forming end pieces to the cross-bar N and supporting the same. There are rack-teeth on the top edges of the said racks r , and a cross-shaft, r' , is provided with gear-wheels r^2 , that gear into and give
75 motion to the racks r .

A train of wheels and pinions, S S' S² S³, receives motion from the driving-shaft of the press and is connected with the gear-wheel T
80 upon the shaft of the impression cylinder, and upon a disk cast with the wheel S³ is a crank-pin giving motion by a link, T², to the toothed sector T³, and from this toothed sector a train of gear-wheels, U U' U² U³, gives
85 motion to the cross-shaft r' . These gears are properly proportioned, and by the oscillation of the sector-rack T³ the shaft r' and gear-wheel r^2 are forced to move the racks r , cross-bar N, and the grippers carried by the same
90 backward and forward, and in so doing the sheet is taken by the grippers and carried over to the delivery-table and laid upon the same.

It is to be observed that the pin 5, that acts upon the toe k^3 , projects inwardly from one
95 of the racks r , and that the cam-arm o projects down below the bottom of the said rack r , so as to be acted upon by the stop 8 in dropping the sheet, and the lower end of the latch p also extends below the rack r , in order
100 that the same may be brought into contact with the stop 9 upon the auxiliary frame A' in unlatching the grippers to allow them to shut and grasp the sheet.

If preferred, levers may be made use of in
105 place of the gearing to give motion to the delivery-grippers L. I have shown such levers by dotted lines at R, as upon the cross-shaft t , and these levers may either be connected at their upper ends to the racks r by links, or
110 the cross-bar N may be connected directly to the outer ends of the levers R, in which case, the racks r being dispensed with, the rock-shaft k' will be moved farther back upon the frame A' to the position shown by dotted
115 lines at k^4 , and the arm that acts upon the brake will hang downwardly and be moved by an adjustable roller, k^5 , upon the lever R, the operations of the parts being substantially as before described.
120

In Figs. 3 and 4 I have shown two screws to take the places of the racks r , the cross-bar N, that carries the grippers, being connected to nuts r^4 , that surround the screws r^3
125 and receive motion from them. If the screws r^3 are rotated first one way and then the other by gearing that receives its motion from the sector-rack T³, then the screw-threads will run in one direction only, as seen in Fig. 3; but
130 if the screws are rotated continuously by gearing, such as seen in Fig. 4, then the screw-threads are made to cross and the ends connected to make the screw-thread endless, in order that the bar N and grippers may be run

back and forth by the screws that are rotated continuously and at the proper speed to give the motions to the grippers L each two revolutions of the impression-cylinder.

5 The screw and nut, as adapted to be used for giving motion to the cross-bar and grippers, are not herein claimed, as the same are claimed in a separate application filed by me March 7, 1889, Serial No. 302,239.

10 I claim as my invention—

1. The combination, with the impression-cylinder making two revolutions to each impression, of sheet-strippers upon which the advancing ends of the sheets are passed, endless belts and pulleys to convey the sheets
15 along from the strippers, gripper-fingers to seize the sheet, a cross-bar carrying the grippers, mechanism for giving motion to the cross-bar, and a table upon which the sheet is laid
20 as delivered, substantially as set forth.

2. The combination, with the impression-cylinder and its grippers, of lifting-fingers and their shaft upon the impression-cylinder, stationary sheet-strippers, endless belts and
25 their pulleys, grippers, a cross-bar carrying such grippers, and mechanism, substantially as set forth, for moving the grippers, substantially as set forth.

3. The combination, with the impression-

cylinder and grippers, of sheet-strippers over 30 which the printed sheet passes, endless belts and pulleys for conveying the sheets, a frictional driving mechanism, substantially as specified, for the belts, and a frictional brake for stopping the pulleys and belts, the grippers, and their actuating mechanism, substantially as set forth. 35

4. The combination, with the impression-cylinder, the sheet-strippers, and the belts and actuating mechanism, of the racks, the cross-
40 bar N, the gripper-fingers, a spring to close the same, an arm and stop to open the grippers, a latch to hold the grippers open, and a stop to act upon the latch and allow the grippers to close, substantially as set forth. 45

5. The combination, with the impression-cylinder and its grippers, of sheet-strippers, endless conveying-belts, grippers, a cross-shaft for the same, racks at the ends of the cross-shaft, and pinions for moving said racks, 50 substantially as set forth.

Signed by me this 24th day of September,
A. D. 1885.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.