

(No Model.)

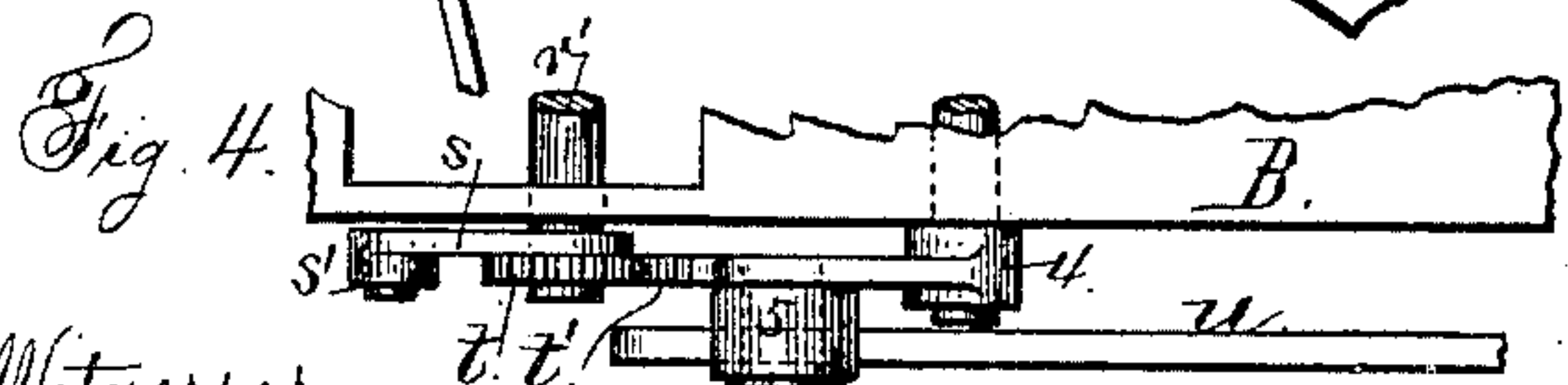
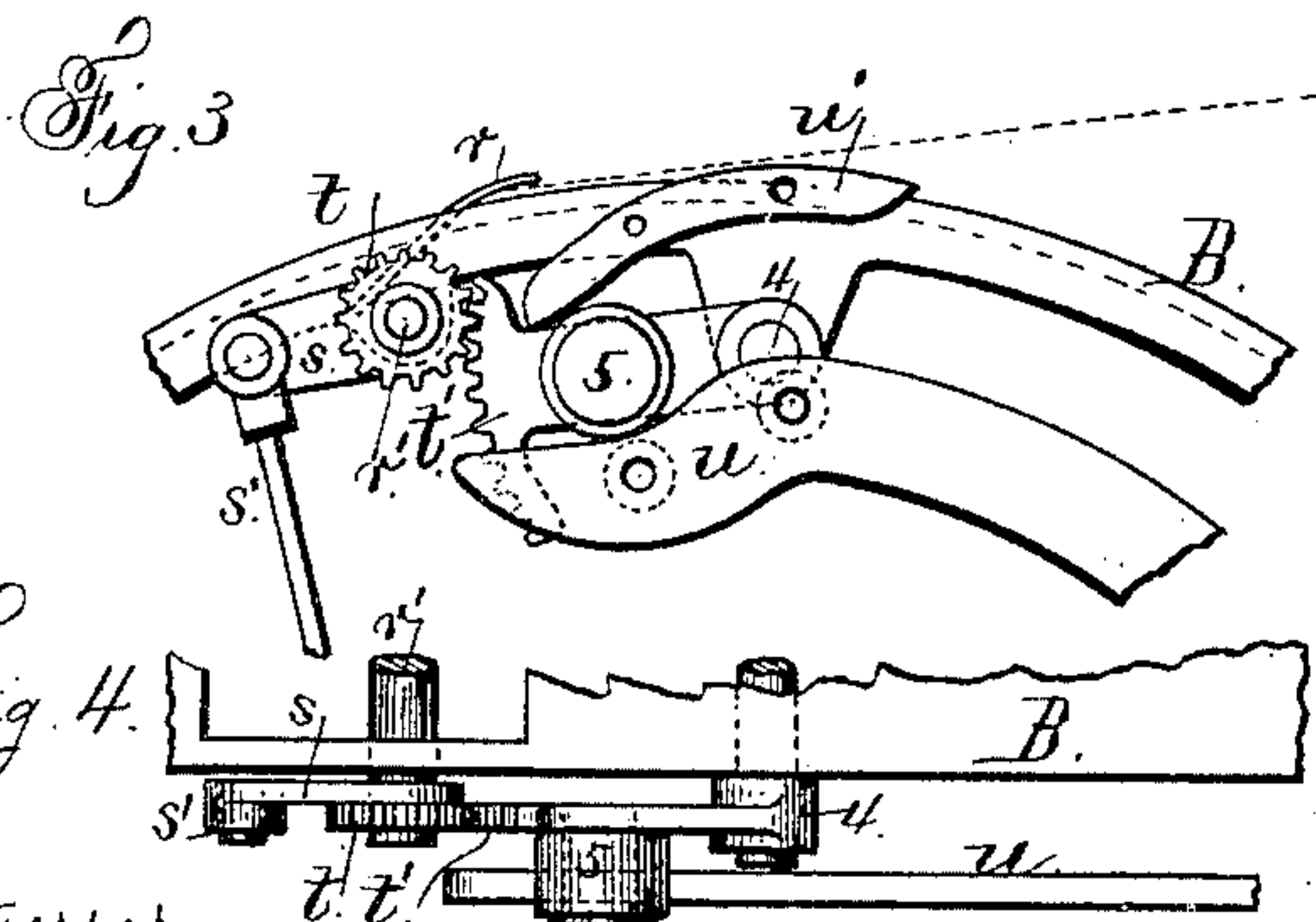
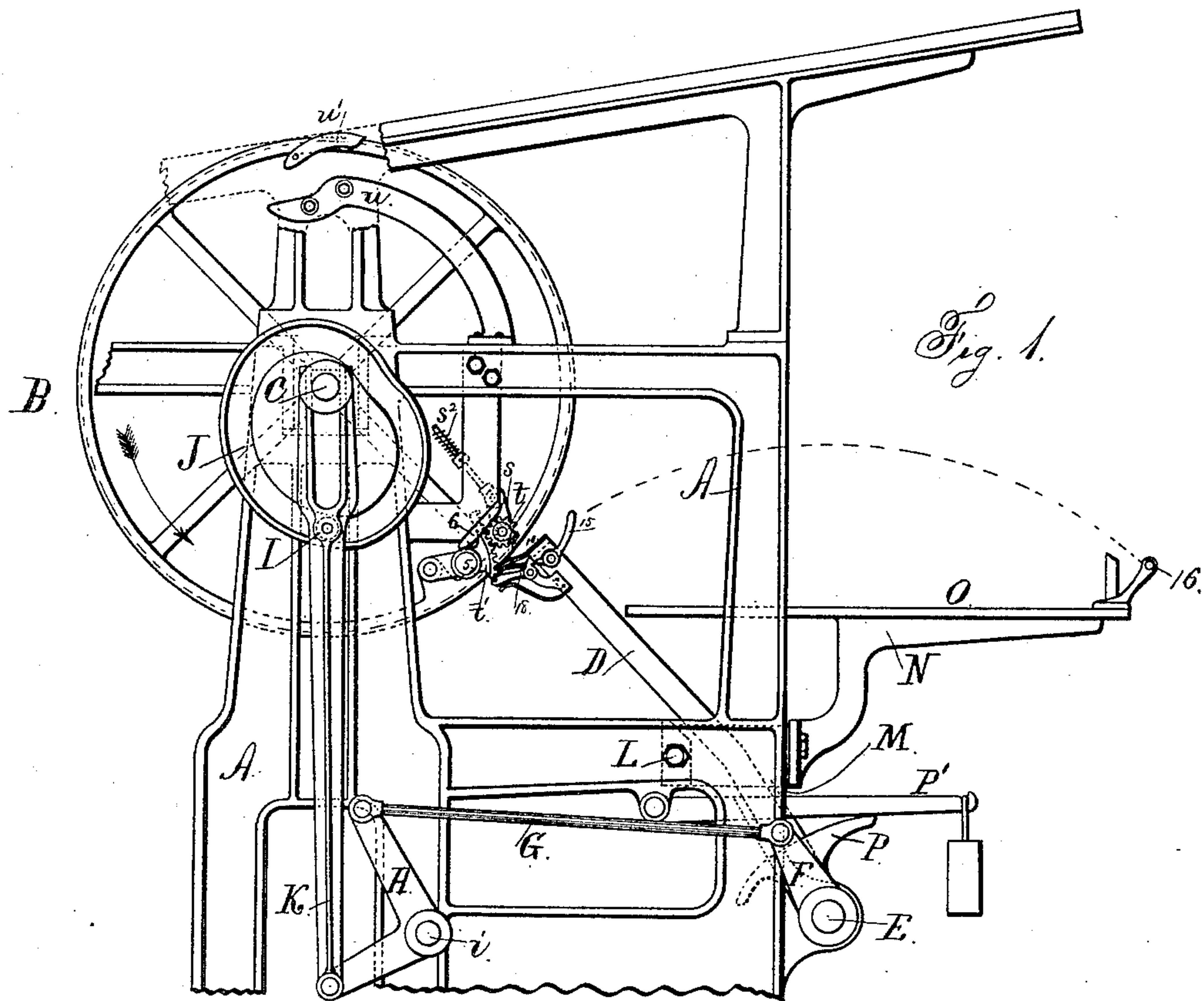
2 Sheets—Sheet 1.

W. SCOTT.

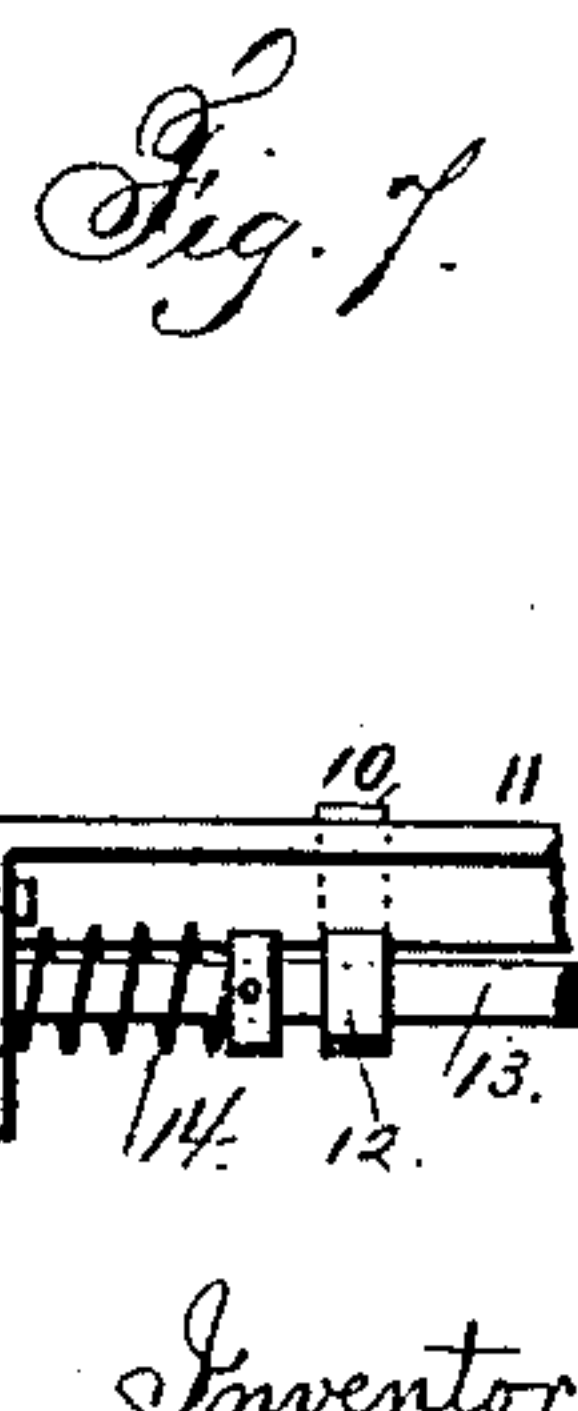
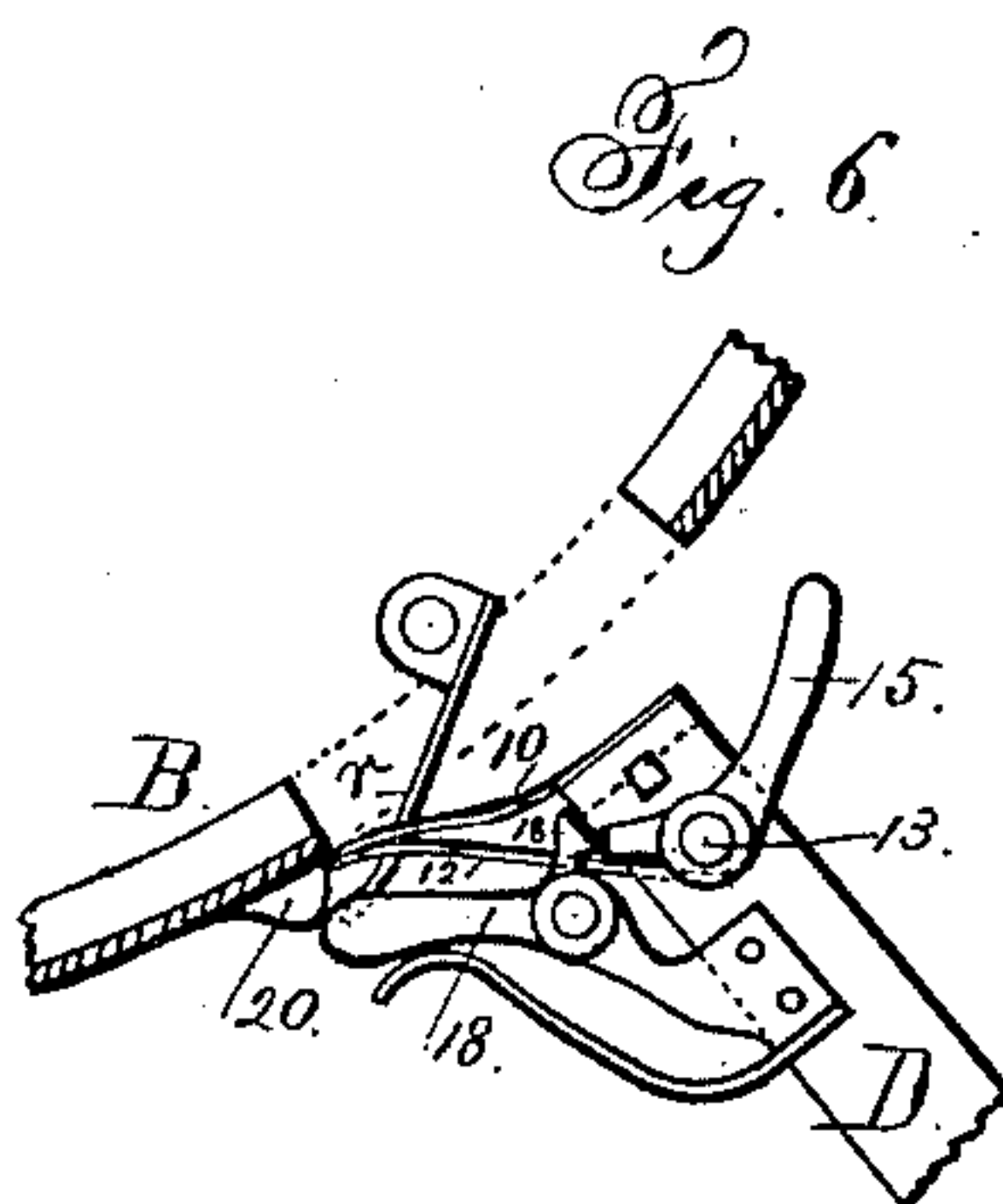
SHEET DELIVERY MECHANISM FOR PRINTING MACHINES.

No. 325,118.

Patented Aug. 25, 1885.



Witnesses
Harold Ferrell
Chas. H. Smith



Inventor
Walter Scott
per Lemuel W. Ferrell atty

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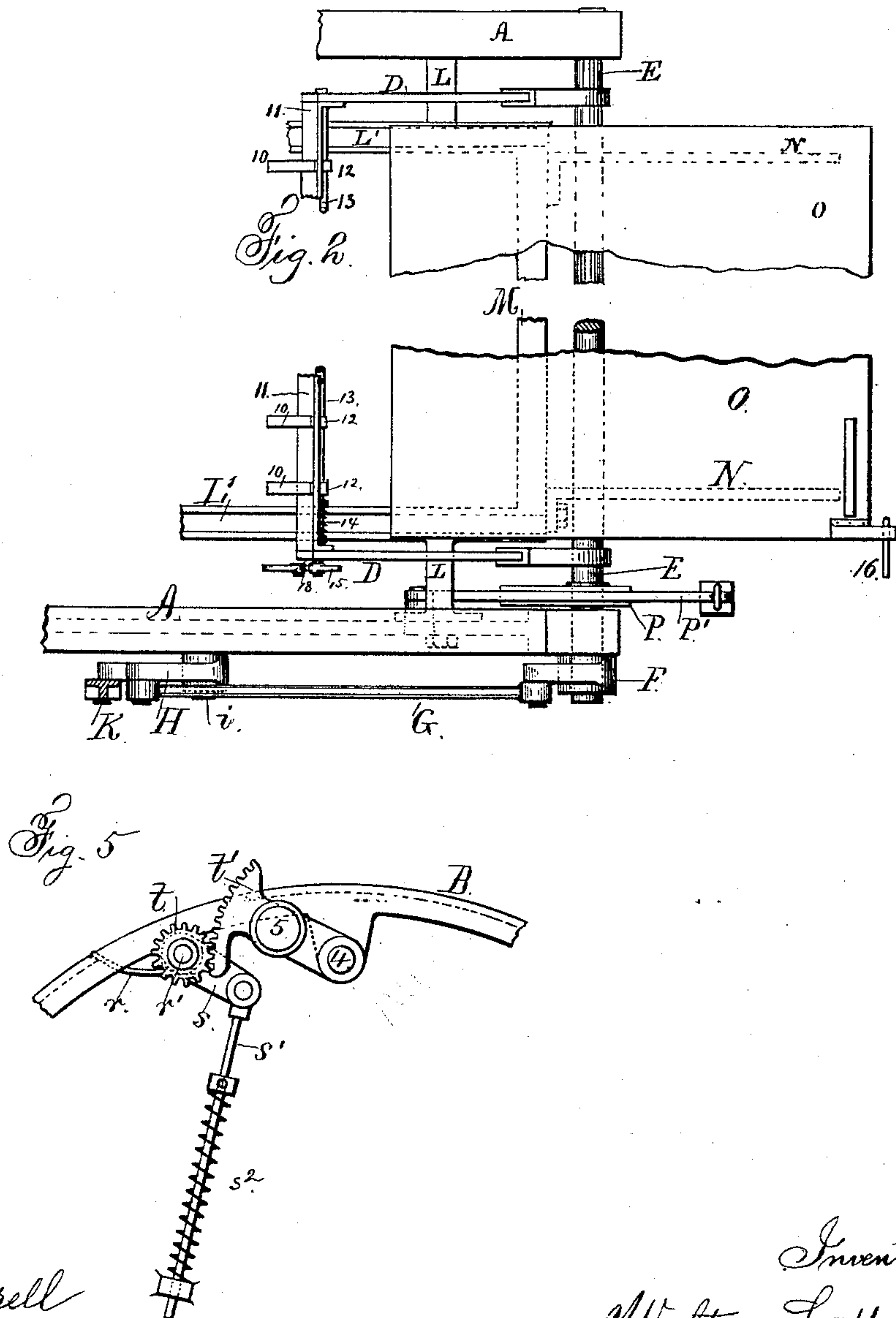
2 Sheets—Sheet 2.

W. SCOTT.

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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

SHEET-DELIVERY MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 325,118, dated August 25, 1885.

Application filed December 28, 1883. (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 an Improvement in Sheet-Delivery Mechanism for Printing-Machines, of which the following is a specification.

This improvement relates to a fly-frame and grippers adapted to grasping the sheet, and taking it directly from the impression-cylinder and laying the same upon a delivery-table; also to an improvement in the gripper devices.

In the drawings, Figure 1 is an elevation of a portion of a printing-press. Fig. 2 is a partial plan view of the fly-frame and delivery-table. Fig. 3 is an end elevation of the gripper cams and gears. Fig. 4 is a plan of the same. Fig. 5 is an end elevation of the gears with the grippers open. Fig. 6 shows the grippers of the fly-frame, and Fig. 7 represents one angle of the fly-frame and the grippers.

The frame A is adapted to receive the parts of the press. I have shown the impression-cylinder B upon the shaft C. This impression-cylinder is adapted to a reciprocating bed. The same being well known, is not shown. If the press is a stop-cylinder, the impression-cylinder will remain quiescent during the movement of the bed in one direction. If the press is a two-revolution cylinder, the impression-cylinder will revolve once while the impression is being made, and a second time while the type-bed is moving in the opposite direction.

My present invention relates to the peculiar devices for delivering the sheet and to the gripper mechanism.

The fly-frame is composed of the arms D, upon a rock-shaft E, the grippers being at the outer ends of the fly-frame.

To give the rock-shaft E and fly-frame the required movement, I attach a crank, F, at the end of the rock-shaft E, and from this a connecting-rod, G, extends to the bent lever H, pivoted at *i* upon the frame. The link K is slotted at its upper end, so as to be guided by the shaft C, which passes through such slot, and its lower end is hinged to the bent lever H. This link K may be guided in a fixed slide or bearing. There is a cam, J,

upon the shaft C, and a roller, I, upon the link K, and the cam is grooved and of such a shape, substantially as shown, that the fly-frame will be given the proper swinging motion in first one direction and then the other and convey the sheet from the impression-cylinder and lay it upon the table O.

The grooved frames L' are of the ordinary character for supporting the type-bed, and have a cross-frame, M, at one end, and in order that the fly-frame may be free and have sufficient space to move in at the sides of the delivery-table I place the arms or bearers L further inside the frame and out of line with the frame M, and to this frame M the brackets N are fastened for supporting the delivery-table O.

In order to counterbalance the fly-frame, I place upon the rock-shaft E the cam toes P, and upon these the weighted lever P' presses, and the shape of these cam-toes is such that the weight will counterpoise such fly-frame by being raised by the cam-toes near each end of the movement of the fly-frame in either direction.

The grippers *r* are upon the shaft *r'*, which crosses the impression-cylinder in the usual manner. At one end of the gripper-shaft is a crank-arm, *s*, to which is connected the rod *s'*, around which is an expansive helical spring, *s''*, and the rod *s'* passes through an eye on the cylinder. This rod and spring will press the grippers to hold them closed or when turned entirely back, as seen in Fig. 5, according to the direction in which the crank-arm *s* and spring and rod may stand, and in order to give a nearly half-rotation to the shaft and grippers I make use of the pinion *t* and the toothed sector *t'*, the latter being pivoted at 4 and having a roller, 5, that is acted upon by the cams *u u'*, that are fastened upon the frame. The cam *u* acts upon the sector and roller at the rising side of the cylinder beneath the feed-board so as to gradually open and swing back the grippers, and they pass beneath the feed-board entirely open, and then the cam *u'*, roller 5, and sector *t'* immediately give a half-rotation the other way to the gripper-shaft, throwing the grippers around and catching the paper, the parts assuming the position shown in Fig. 3. At the place where the fly-frame takes the sheet it is only necessary to raise the grip-

pers enough to liberate the advancing edge of the sheet. This is done by the cam 6 acting on the roller 5.

The grippers upon the fly-frame are composed of the fingers 10 upon the cross piece 11 of the fly-frame and the gripper-fingers 12 upon the shaft 13. There is a spring, 14, that tends to close the grippers. The lever 15 on the shaft 13, coming against the stationary stop 16 just before the fly-frame reaches its extreme backward movement, opens the grippers to deliver the sheet, and the latch 18, catching the short end of the lever 15, holds the fly-gripper open. There is a tail to the spring-latch 18 and a projection, 20, on the impression-cylinder B. This projection is placed so that it comes in contact with the tail of the latch and unlatches the gripper-lever and shaft just as the end of the sheet has passed in between the grippers so that they close on the same, and the fly-frame has by this time commenced to move by the action of the cam J, and its motion is increased so as to draw off the sheet as fast as the impression-cylinder is delivering the same, and by this means the sheet is carried away and laid upon the table O.

In cases where this improvement is applied to a stop-cylinder press the parts may be in the form and position represented, the fly-frame and grippers drawing the sheet off as printed; but when the improvement is applied to a two-revolution press the cam J has to be driven by gearing, so as to make one revolution for each sheet that is printed.

In my application No. 115,823, filed December 28, 1883, the two sets of gripper fingers on the fly-frame receive support from a cross-shaft that is partially rotated in the ends of the fly-frame arms. I do not herein claim such a device, nor two sets of gripper-fingers in the fly-frame.

In Letters Patent No. 214,065 a fly-frame, grippers, and latch are shown; but the grippers are unlatched by the latch coming in contact with a stationary stop. Hence the grippers might close accidentally before the advancing end of the sheet upon the impression-cylinder has passed into said grippers; whereas in my device the fly-frame with its open grippers completes its stroke and remains in position, and the sheet enters the fly-frame grippers a

moment before the moving stop 20 on the cylinder unlatches the grippers 12, allowing the spring 14 to close said grippers and grasp the sheet.

I claim as my invention—

1. In combination with the fly-frame and its grippers, the cam-toes upon the rock-shaft of the fly-frame, and the weighted lever pressing upon such cam-toes, substantially as set forth.

2. The frames L', the cross-frame M, the bracket N, extending out from the frame M, and the delivery-table O, supported by such brackets, in combination with the bearers L, connecting the frames A and L', the rock-shaft E, below the table O, and the fly-frame having the arms D, that pass in between the frame A and the edges of the table O, substantially as set forth.

3. The combination, with the impression-cylinder and its grippers, of the pinion *t*, segment-gear *t'*, the crank-arm *s*, spring and rod *s'* to the gripper-shaft, the roller 5, the cams *u* *u'*, for closing the grippers, and the cam 6, for opening the grippers, substantially as specified.

4. The feed-table and impression-cylinder and its grippers, in combination with a delivery-table below the feed-table, a fly-frame, and a rock-shaft for the same below the delivery-table, the gripper-fingers 10, fixed upon the fly-frame and passing in between the sheet and the impression-cylinder, the gripper-fingers 12, the shaft 13, carrying the same and supported in the fly-frame near the outer end of the same, and the cam 20 upon the impression-cylinder to cause the grippers 12 to close and grasp the advancing end of the sheet, substantially as set forth.

5. The combination, with the impression-cylinder and its grippers, the fly-frame D and cross-piece 11, the gripper-fingers 10, the shaft 13, and its gripper-fingers 12, of a latch, 18, upon the fly-frame, a stop, 20, upon and moving with the impression-cylinder to unlatch the latch 18, and a spring, 14, to close said grippers and grasp the sheet, substantially as set forth.

Signed by me this 20th day of December, A. D. 1883.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.