

(No Model.)

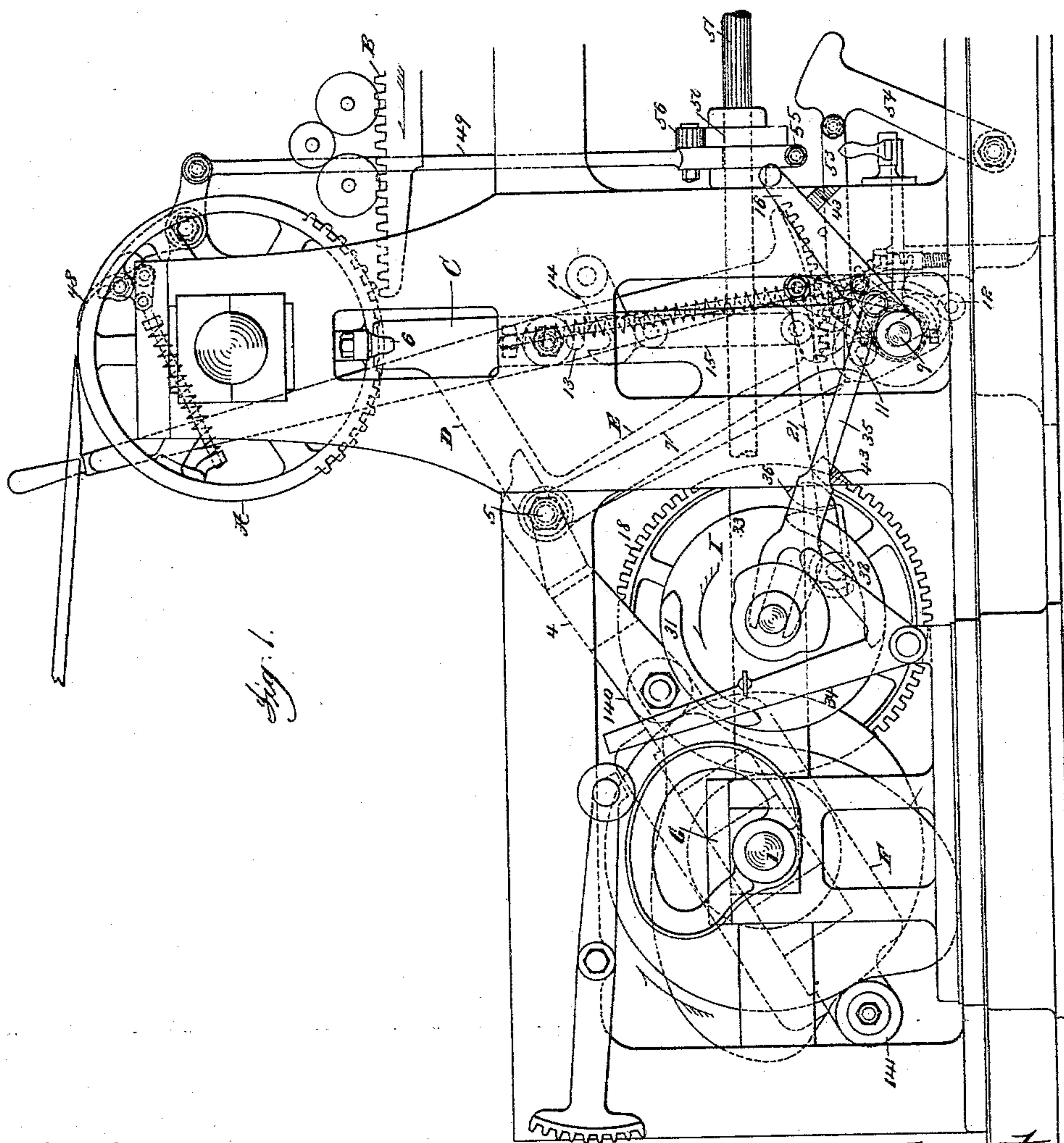
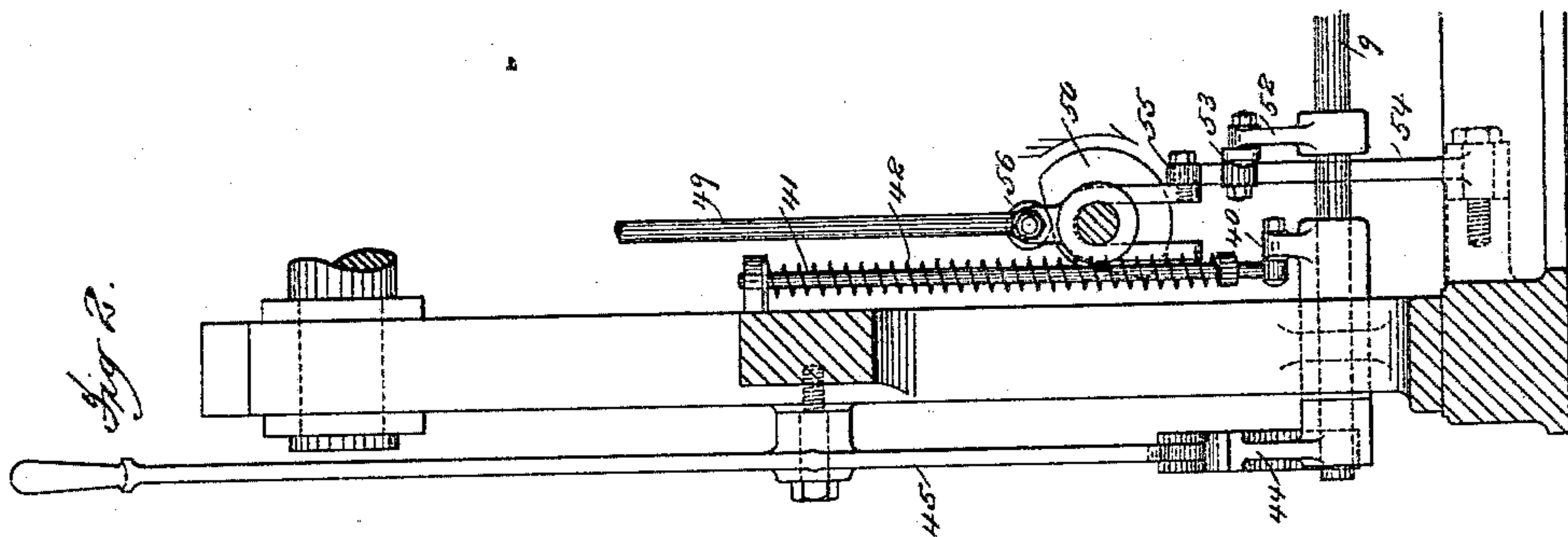
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S. D. TUCKER.

STOP MECHANISM FOR CYLINDER PRINTING MACHINES.

No. 401,473.

Patented Apr. 16, 1889.



Attest
Geo. H. Lott
J. M. Borer

Inventor:
Stephen D. Tucker
by Philip Phelps & Avery
Attys.

(No Model.)

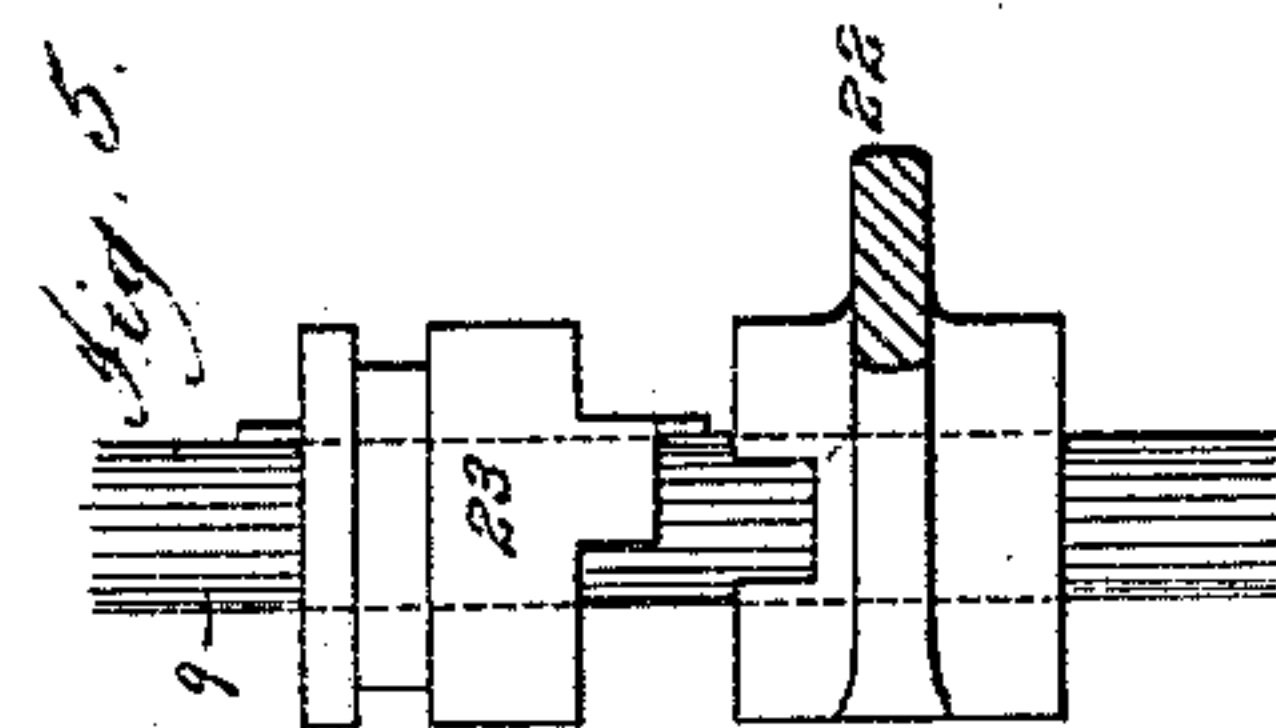
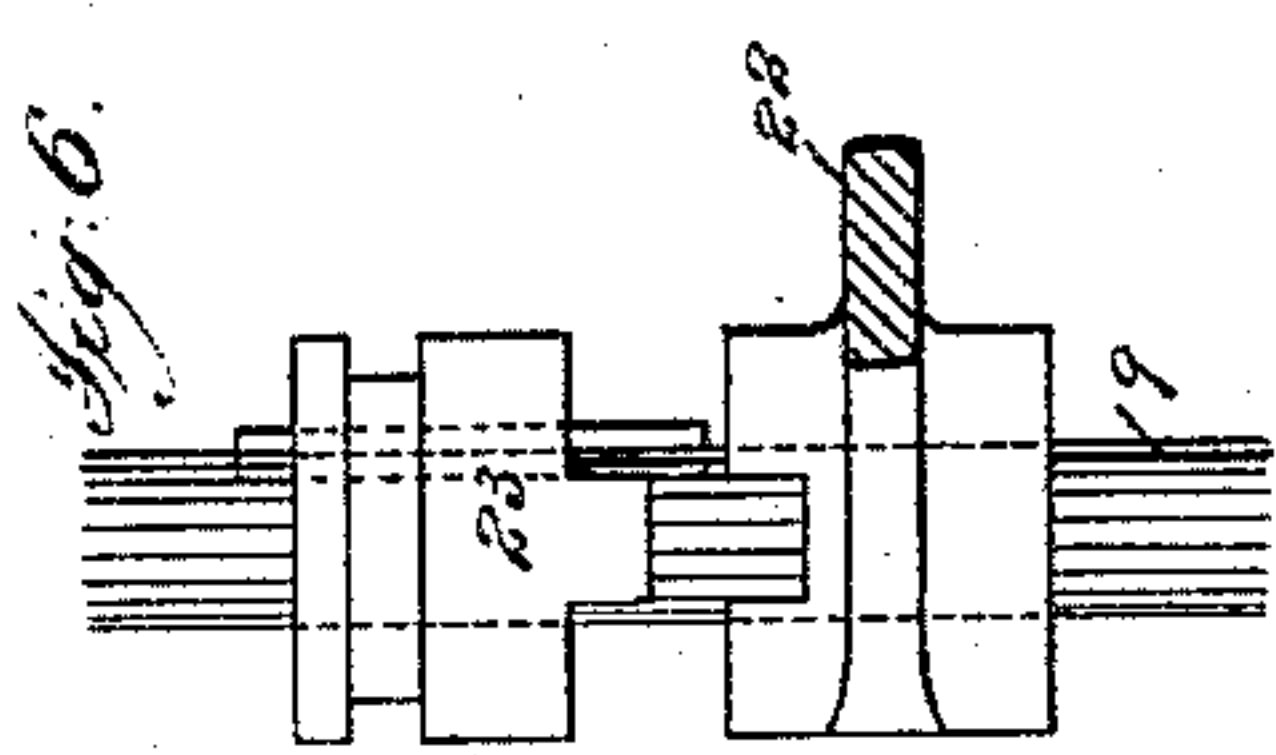
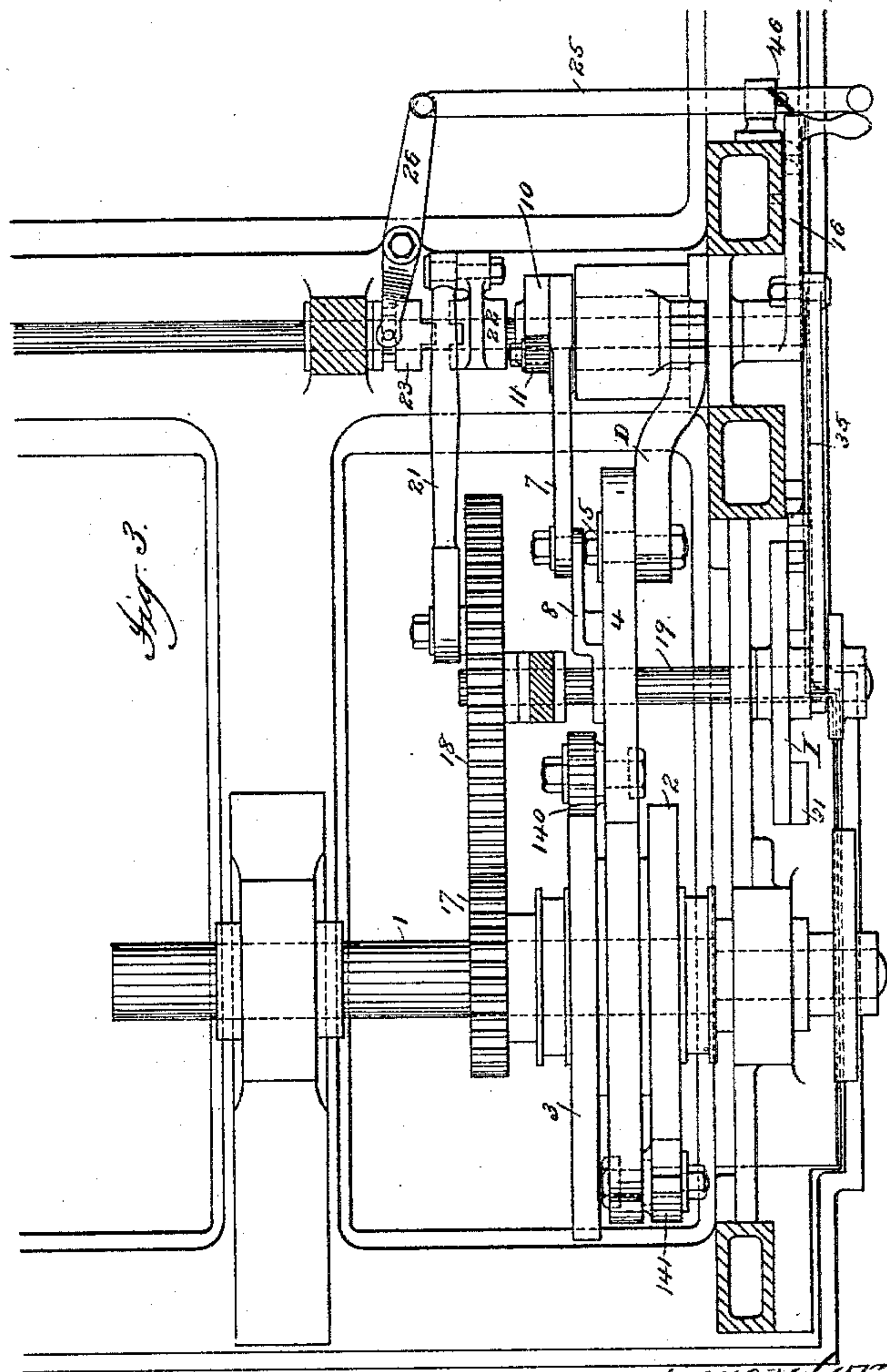
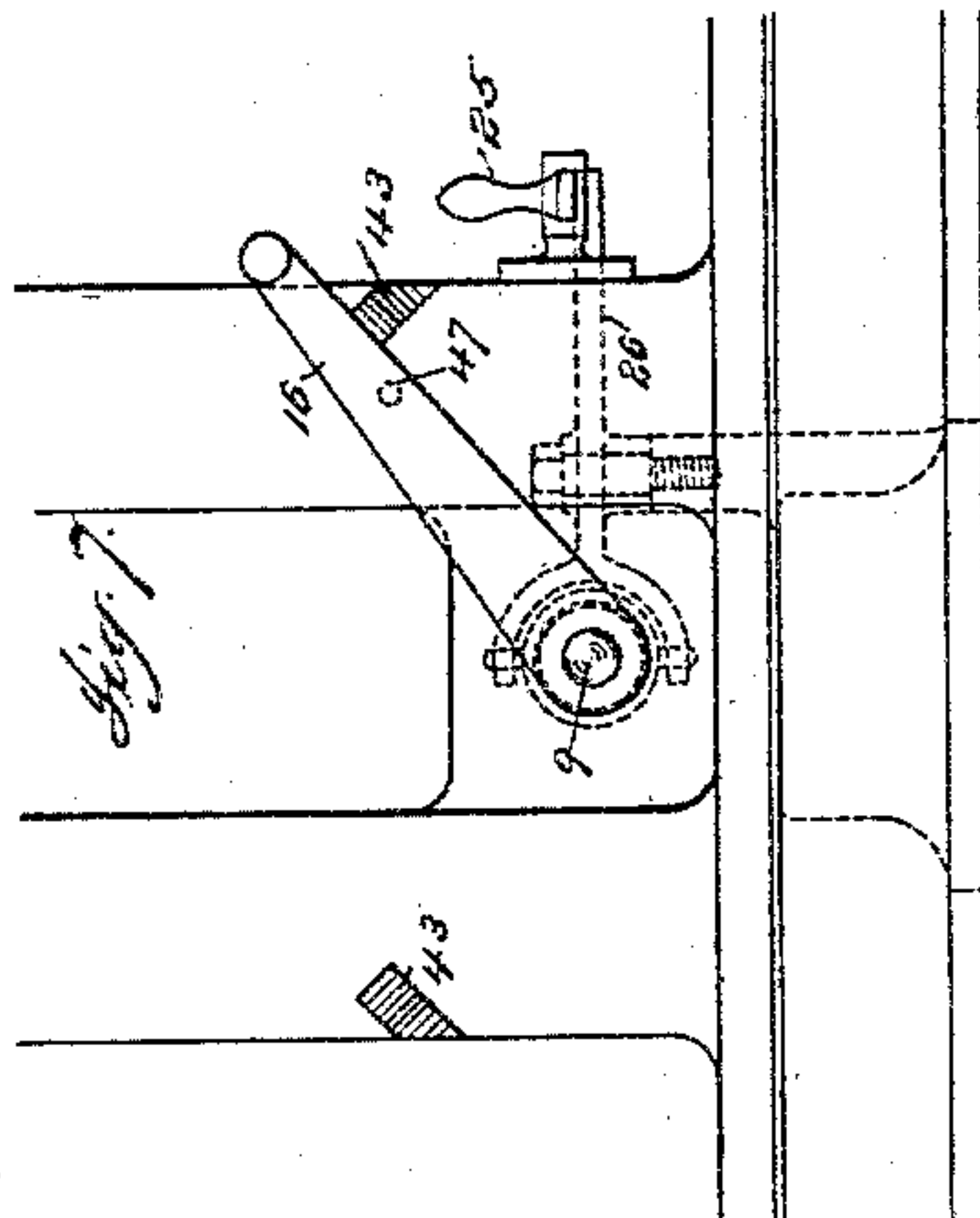
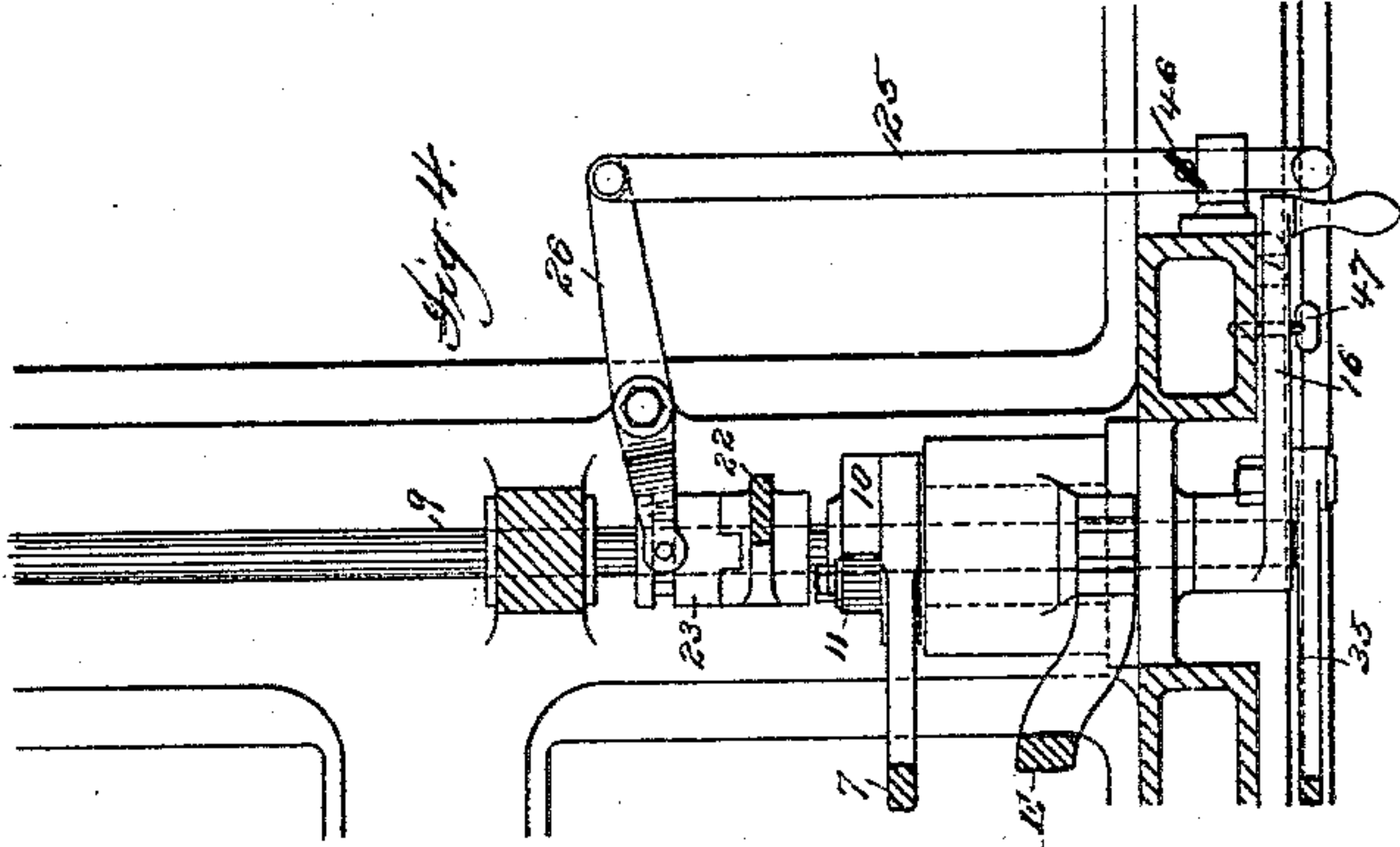
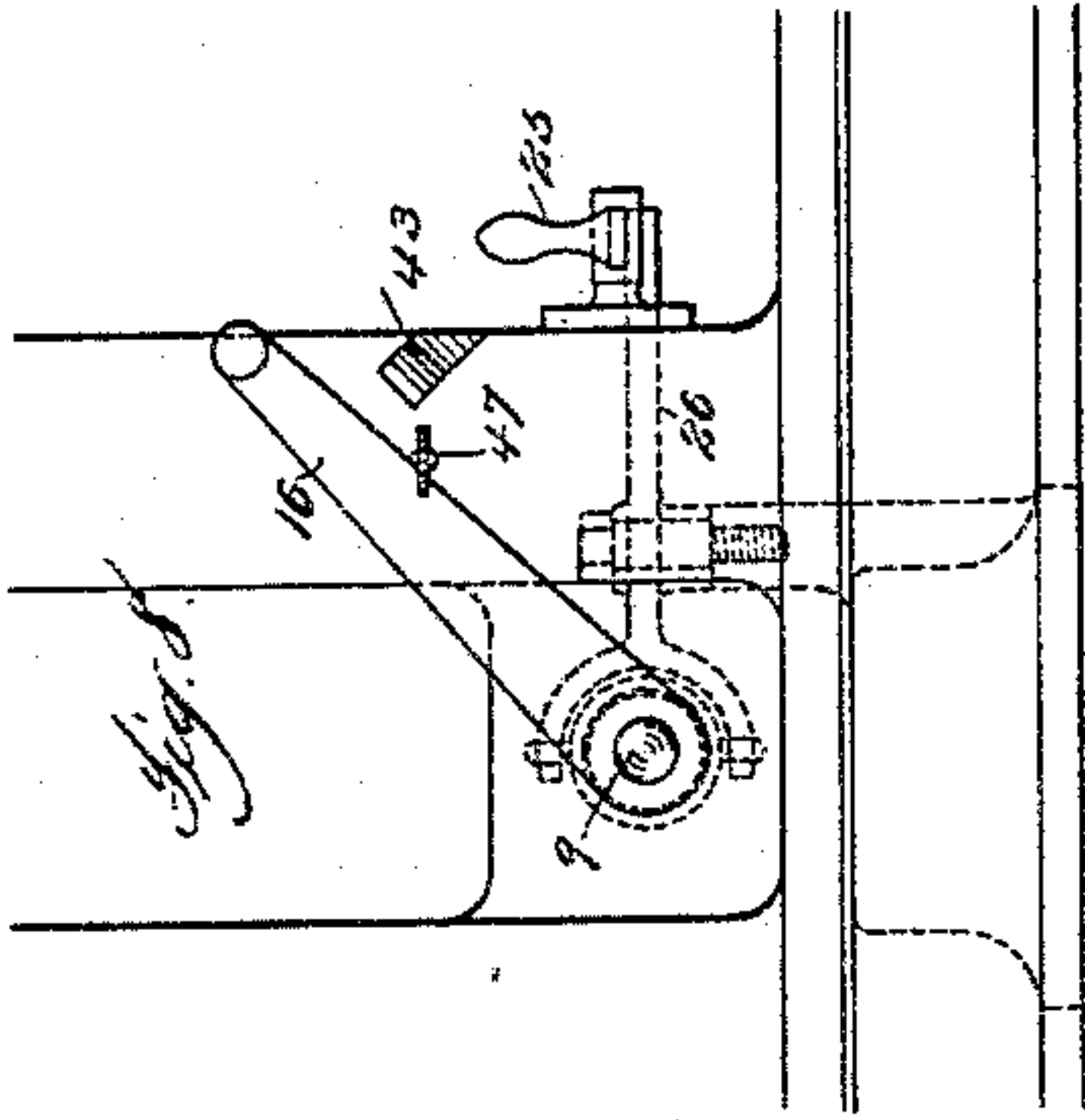
2 Sheets—Sheet 2.

S. D. TUCKER.

STOP MECHANISM FOR CYLINDER PRINTING MACHINES.

No. 401,473.

Patented Apr. 16, 1889.



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UNITED STATES PATENT OFFICE.

STEPHEN D. TUCKER, OF NEW YORK, N. Y.

STOP MECHANISM FOR CYLINDER PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 401,473, dated April 16, 1889.

Application filed June 7, 1888. Serial No. 276,380. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN D. TUCKER, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Stop Mechanism for Cylinder Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates, generally, to that class of printing-machines known as "stop-cylinder presses;" and the invention relates particularly to improvements in the means for controlling the rotation of the impression-cylinder with respect to the movement of the bed, whereby the cylinder is held stationary during the return movement of the bed or during each alternate reciprocation of the bed where more than single inking of the form is required.

The present invention consists in certain improvements upon the construction and organization shown and described in the United States Letters Patent No. 344,507, heretofore granted to me, to which Letters Patent reference is made for a more detailed illustration and description of the general organization and operation of the mechanism.

In the accompanying drawings, Figure 1 is a side elevation of so much of an ordinary form of stop-cylinder printing-machine as is necessary to illustrate the construction and application of the devices constituting the present invention. Fig. 2 is a sectional elevation of one side of the machine, looking from the right of Fig. 1. Fig. 3 is a horizontal section taken below the bed of the machine. Fig. 4 is a similar view showing the parts in a different position. Figs. 5 and 6 are enlarged views of the clutch mechanism shown in Figs. 3 and 4, showing the parts in different positions. Figs. 7 and 8 illustrate a detail, which will be hereinafter referred to.

Referring to said drawings, it is to be understood that A represents the usual gear with which the impression-cylinder is provided, and which operates to give motion to the impression-cylinder by engagement with a rack, B, formed upon one side of the bed. The gear A is arranged to engage with the

rack B during the movement of the bed in one direction to revolve the cylinder for the impression, but is mutilated at one point, so as to permit the bed to move in the opposite direction without imparting any motion to the cylinder. The cylinder is provided with the usual stop mechanism, consisting of a stud, 6, which engages with a catch-lever, C, at the proper time to arrest and hold the cylinder, and which also operates to start the cylinder at the proper time to cause the gear to engage with the rack upon the bed. The catch-lever is fulcrumed to rock upon a boss projecting from the side frame, and is provided with two arms, D E, which unite and carry a stud, 5, which is engaged by a hooked cam-bar, 4, having a stock, F, which is slotted to embrace and reciprocate upon a bearer, G, carried by a crank-shaft, 1. The shaft 1 is provided with two cams, 2 3, which act upon bowls 140 141 upon the stock, so as to reciprocate the latter, and thereby impart a rocking motion to the catch-lever C. The cam-bar 4 is provided with an offset-piece, 8, to which is connected a coupling-bar, 7, the opposite end of which is bifurcated and straddles a rock-shaft, 9, having a cam, 10, which engages with bowls 11 12 upon the bar in such manner as to impart a reciprocating motion to the bar and thereby rock the cam-bar 4, so as to engage and disengage its hooked end with and from the stud 5. The catch-lever C is provided with a stud, 13, which is engaged by a hooked arm, 14, pivoted to the frame-work and operated by means of a rod, 15, which is connected to the coupling-bar 7. The rock-shaft 9 is provided with a hand-lever, 16, located outside the frame-work, and by which the shaft can be rocked, so as to cause the cam 10 to impart a reciprocating movement to the coupling-bar 7.

The operation of the apparatus as thus far described is as follows: When the hand-lever 16 is moved to the right, as indicated in Fig. 1, the shaft 9 and cam 10 will be moved to such position as to allow the hooked end of the cam-bar 4 to engage with the stud 5, and thus connect the cam-bar to the catch-lever. So long as the parts are in this position the catch-lever will be operated at each reciprocation of the bed to engage with the stud 6,

and stop and hold the cylinder while the bed is making its return movement, and to start the cylinder and throw the gear A into engagement with the rack B as the bed makes its stroke in the opposite direction. By throwing the hand-lever 16 over to its extreme position to the left the cam 10 will operate, through the coupling-bar 7, to raise the cam-bar 4 out of engagement with the stud 5, and at the same time raise the arm 14 into engagement with the stud 13. The lever C, being then in engagement with the stud 6, will be uncoupled from the bar 4 and coupled to the arm 14, and will thereby be locked in position, so as to hold the cylinder stationary. The cam-bar will then move idly, and the bed will be free to continue its movements to distribute the ink or for any other purpose without imparting any movement to the cylinder.

In order to hold the hand-lever 16 in either position to which it is shifted, the shaft 9 is provided with an arm, 40, to which is pivoted a rod, 41, which passes through a suitable guide upon the frame-work, and is provided with a spring, 42.

The frame-work is provided with stops 43, against which the lever rests when at the limit of its motion in either direction, and the arm 40 is so arranged upon the shaft 9 that the action of the spring 42 upon the arm operates to hold the lever 16 and the shaft in either position to which it is rocked. The shaft 9 is provided at its end opposite the lever 16 with a segment, 44, which is engaged by a similar segment upon the end of a hand-lever, 45, which terminates in a position convenient to the attendant who supplies the sheets to the impression-cylinder. By this means the attendant can, whenever he desires, rock the shaft 9, and thus, through the connections which have been described, throw the impression-cylinder into and out of operation.

The apparatus as thus far described is capacitated to throw the impression-cylinder into operation and cause it to operate at each reciprocation of the bed, and also to throw it out of operation and cause it to remain idle while the bed continues to reciprocate. It is sometimes, however, desirable to provide for what is termed "double-inking"—that is to say, to cause the impression-cylinder to operate only at each alternate reciprocation of the bed, so that the form or forms will be twice presented to the ink-rolls before each sheet is printed. To accomplish this it is necessary that the impression-cylinder should be thrown out of operation and remain idle during one reciprocation of the bed, and then be thrown into operation during the next reciprocation, and so on. For this purpose the rock-shaft 9 is provided with a clutch mechanism, one member of which turns freely upon the shaft and is provided with an arm, 22, which is connected by a rod, 21, with a crank-pin carried by a gear, 18, mounted upon a shaft, 19, and which engages with a gear, 17, of half its size mounted upon the crank-shaft 1. The other

member, 23, of the clutch mechanism is splined to and slides freely upon the shaft 9, so that when the two members of the clutch are engaged they operate, through the connections which have been described, to impart to the shaft and its cam 10 a rocking motion, which will engage and disengage the cam-bar 4 and arm 14 with and from the catch-lever C at each alternate reciprocation of the bed, thus allowing the forms upon the bed to be presented twice to the inking-rolls before each impression. To engage and disengage the two members of the clutch, the member 23 is provided with a forked arm, 26, which enters a groove in the clutch in the usual manner, and is connected to a rod, 25, which extends outward through the frame-work and terminates in a suitable handle. The rod 25 is provided with a locking screw or pin, 46, by which it can be held in position to engage or disengage the clutch, as indicated in Figs. 3 and 4. The stops 43 are so positioned that when the lever 16 rests against either one of the stops the member 23 of the clutch will be carried slightly beyond the position which will permit it to engage with the other member of the clutch, as indicated in Fig. 5. In order, therefore, to engage the two members of the clutch to cause the shaft 9 to be rocked automatically to throw the cylinder into and out of operation, it is first necessary to raise the lever 16 slightly, as indicated in Fig. 8, and thus bring the two members of the clutch into alignment, as indicated in Fig. 6. By then operating the rod 25 the clutch can be engaged. To serve as a guide to the attendant in bringing the two members of the clutch into position to engage, the frame-work may be provided with an opening, 47, into which a pin can be inserted, as indicated in Fig. 8, which will serve to indicate to the attendant when the lever has been rocked to the proper point. It is only while the bed is making its return run that the cam-bar 4 should be connected and disconnected with and from the catch-lever C, and to prevent this being done at any other time by the shifting of the hand-lever 16, there is provided a governing device for controlling the movements of the hand-lever. For this purpose a disk, I, is secured to the outer end of the shaft 19, and is provided upon its face with two sharp-pointed curved guards, 31 32, which extend over about one-half the circumference of the disk, leaving spaces 33 34 between them. These guards co-operate with a bar, 35, one end of which is connected to the hand-lever 16, while its opposite end is forked and straddles the shaft 19, and is provided with a lozenge-shaped stop-piece, 36, fixed on its side next to the guards 31 32 in such position that when the lever 16 is turned to the right the stop 36 will be outside the path of the guards, while when the lever is turned to the left it will be inside the path of the guards. It is obvious from this that the lever 16 cannot be turned from one position to the other to connect or dis-

connect the cam-bar from the catch-lever, except at such times as one of the spaces 33 or 34 is in front of the stop 36, and the guards are so placed that one of the spaces is in front of the stop only when the bed is making its return run.

The impression-cylinder is provided with the usual sheet-grippers, 48, which are normally held in a closed position by means of a spring, and are opened at the proper time to receive the sheet by means of a rocking cam which is operated in the usual manner through a connecting-rod, 49, from a cam, 50, upon a horizontal shaft, 51, which is constantly driven. From this it results, if means is not provided for preventing it, that the grippers will continue to open and close at each reciprocation of the bed, no matter whether the impression-cylinder is idle or is operated at each reciprocation or at each alternate reciprocation. As it is not desirable that the grippers should thus open and close idly when the impression-cylinder is out of operation, the shaft 9 is provided with an arm, 52, which is connected by a link, 53, with a rocking bar, 54, which is arranged to engage with a bowl, 55, projecting from the lower end of the rod 49 in such manner that whenever the shaft 9 is rocked so as to disengage the cam-bar 4 from the catch-lever C the bar 54 will be rocked into position to engage with the stud or bowl 55 and hold the rod 49 so as to keep its bowl 56 out of the path of the cam 50, and thus cause the grippers to remain open so long as the shaft 9 is in this position. Whenever the shaft is rocked in the opposite direction, so as to re-engage the cam-bar 4 with the catch-lever, the bar 54 will be rocked away from

the bowl 55, and the grippers will be permitted to operate in the regular way.

What I claim is—

1. The combination, with the cylinder and its stop mechanism, of the rock-shaft 9, for automatically throwing the stop mechanism into and out of operation, and having a rocking motion beyond the points necessary to connect and disconnect the stop mechanism, and a clutch mechanism for connecting and disconnecting the shaft, one member of which is normally held beyond the limit of the movement of the other part when the two are disconnected, substantially as described.

2. The combination, with the cylinder and its gear A, of the catch-lever, the cam-bar for operating the lever, the coupling-bar, rock-shaft 9 and cam 10, for operating the cam-bar, the clutch upon the shaft 9, and connections, substantially such as described, for rocking the shaft 9 at each alternate reciprocation of the bed, the arm 40, secured to the shaft, the spring 42, acting upon the arm 40 to hold the shaft in either position to which it is rocked, and the stops 43, for limiting the movement of the shaft, which are arranged to permit the shaft to be rocked in either direction slightly beyond the position which will permit the two members of the clutch to engage, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

STEPHEN D. TUCKER.

Witnesses:

J. A. HOVEY,

FRED. W. H. CRANE.