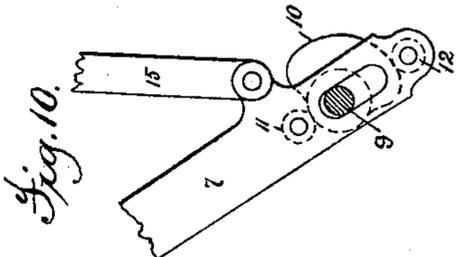
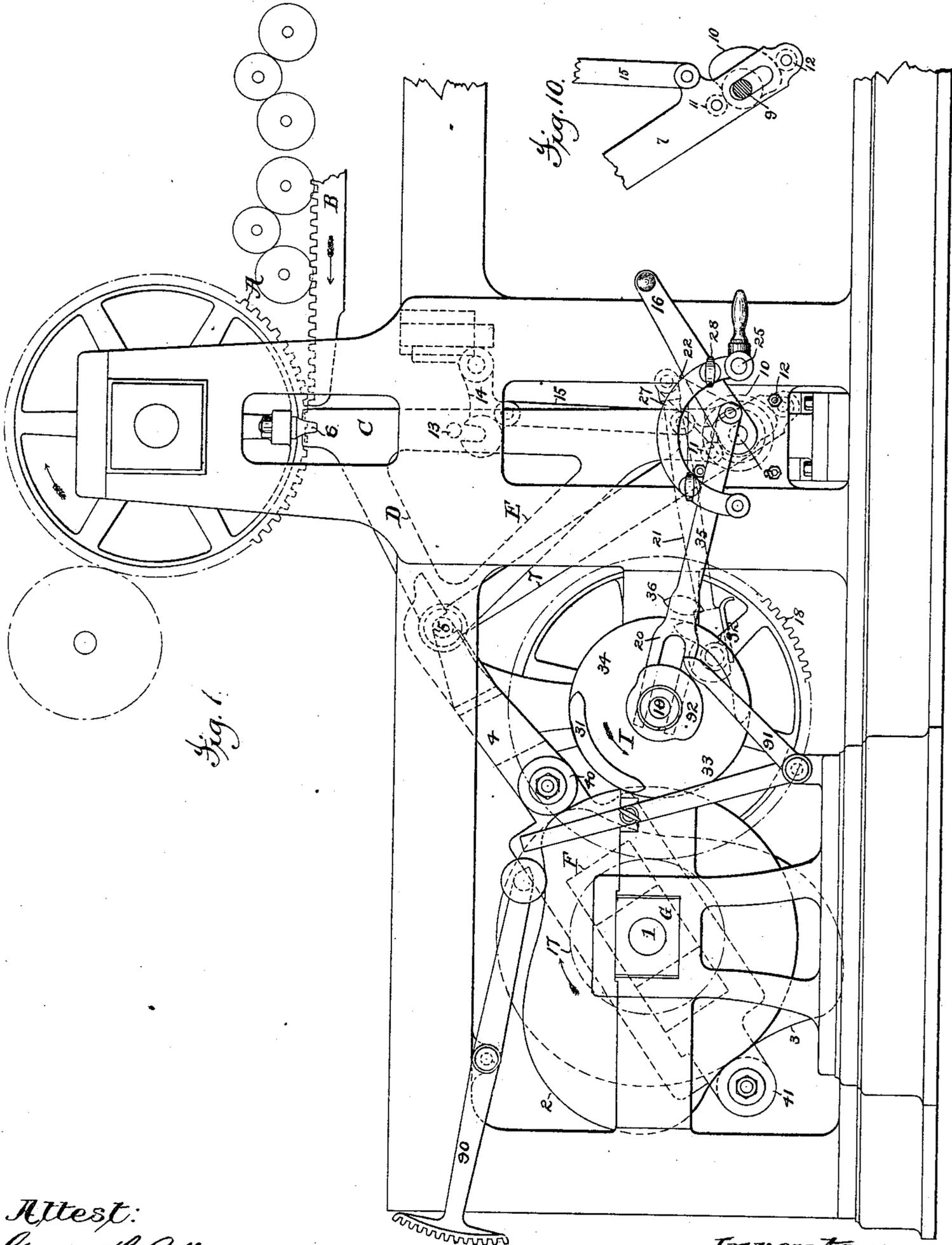


S. D. TUCKER.

STOP CYLINDER PRINTING MACHINE.

No. 344,507.

Patented June 29, 1886.



*Fig. 1.*

*Fig. 10.*

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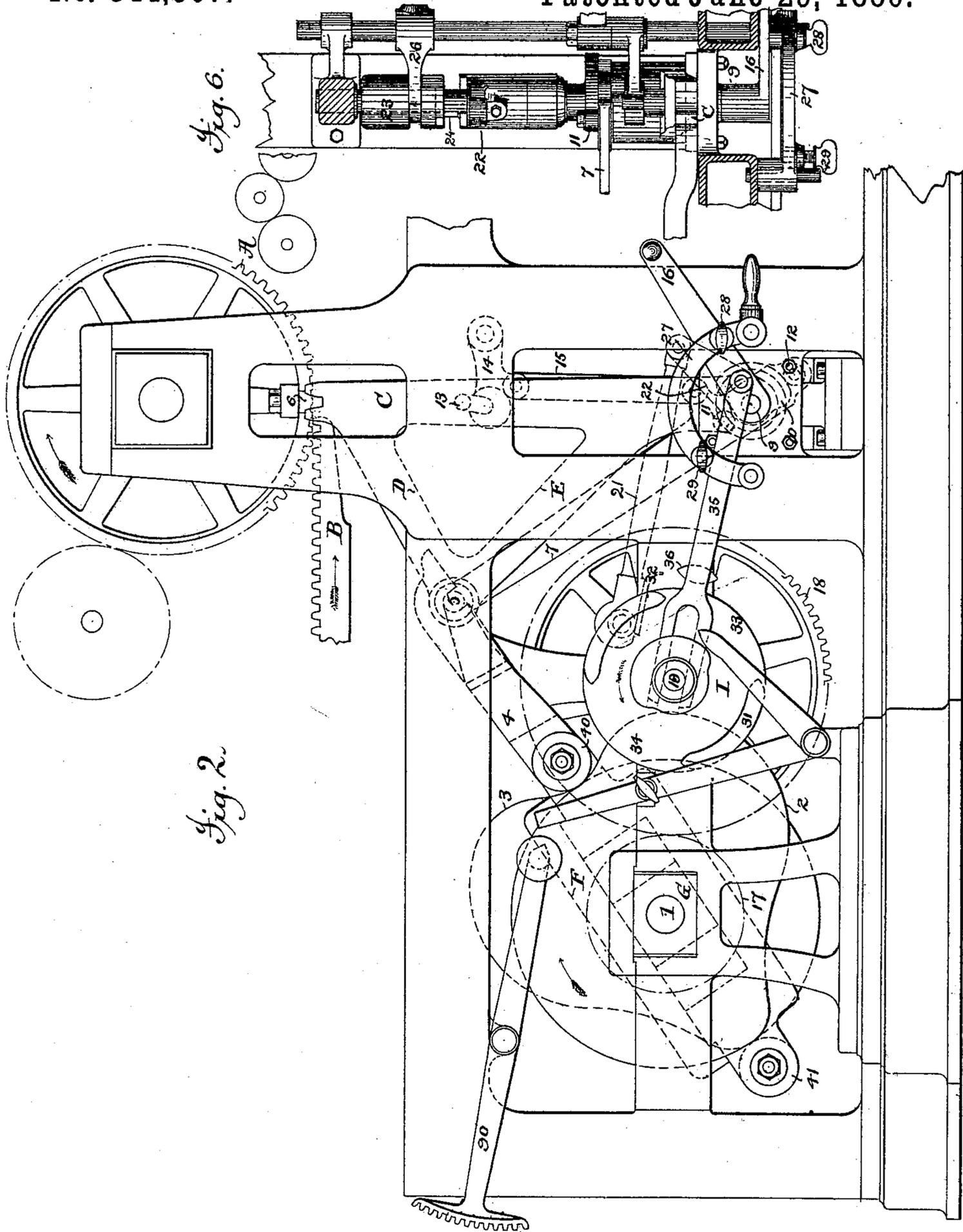
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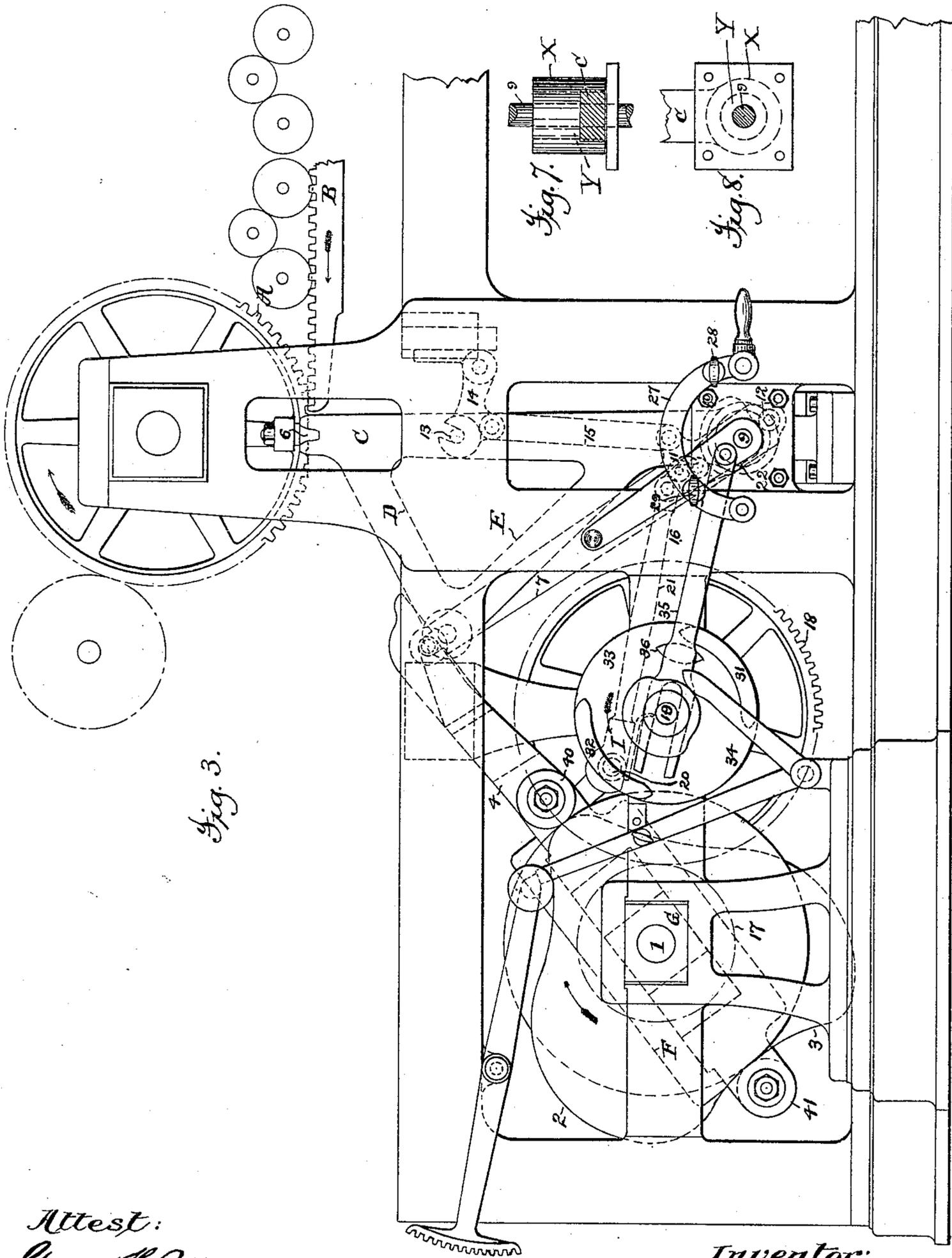
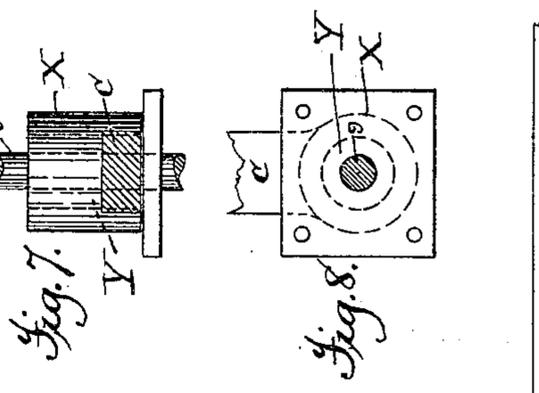


Fig. 3.



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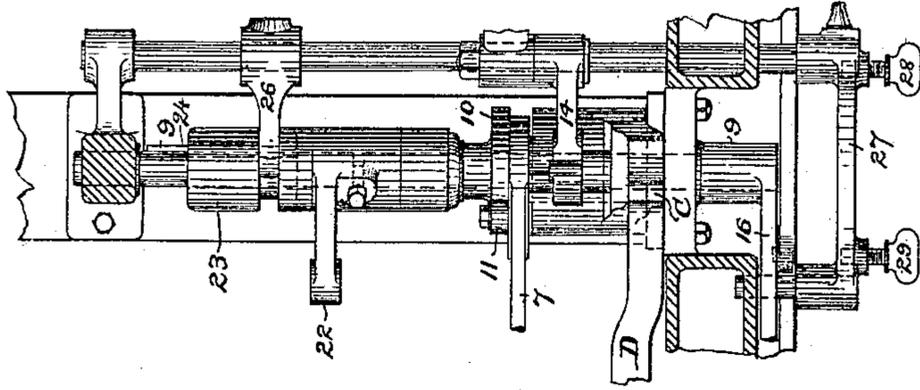
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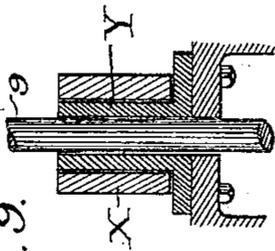
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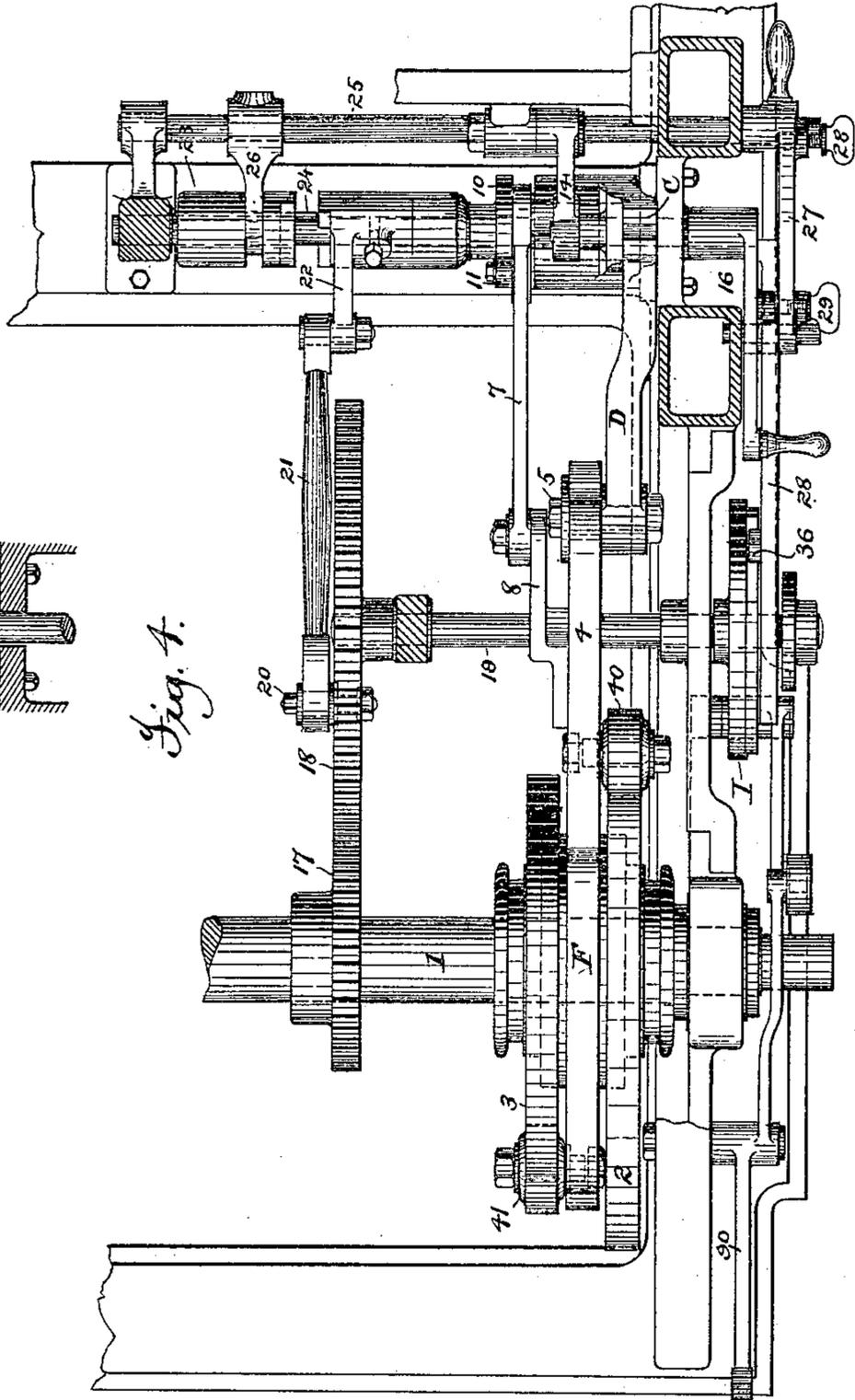
*Fig. 5.*



*Fig. 9.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

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

## STOP-CYLINDER PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,507, dated June 29, 1886.

Application filed August 28, 1884. Serial No. 141,628. (No model.)

*To all whom it may concern:*

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

The present improvements relate to the means for controlling the rotation of the impression-cylinder with respect to the movement of the bed in stop-cylinder printing-machines, and especially to the means employed for starting the cylinder at the proper time to bring its wheel into gear with the rack upon the type-bed, and thus cause the cylinder and type-bed to run forward in unison to give an impression on the form, and at the completion of such forward travel to arrest the movement of the cylinder and hold it stationary during the return movement of the bed, or its repeated reciprocations where more than single inking of the form is required.

The improvements consist in the novel structure and combination with the catch-lever for stopping the impression-cylinder while the type-bed continues to run, and starting the impression-cylinder wheel into engagement with the bed-rack, so that the cylinder and bed shall run together, of means for coupling the said catch-lever with its actuating mechanism and disconnecting it therefrom, and of means for causing such coupling and uncoupling at proper times to prevent injury to or imperfect operation of the mechanisms, all of which is more specifically explained and claimed.

The drawings exhibit an embodiment of this invention, but only so much of a printing-machine is shown as is required to illustrate the application of these improvements and their construction and operation.

In the drawings, Figures 1, 2, and 3 are side elevations. Fig. 1 exhibits the impression-cylinder wheel as about to engage with the bed-rack at the beginning of the forward travel to produce an impression, the parts being in position to cause the cylinder to co-operate with each forward run of the bed; Fig. 2, the same positions of the parts, but at the

time when the cylinder-wheel is stopped by the catch-lever and the bed is beginning its backward run; and Fig. 3, the positions of the parts when the mechanisms are arranged to hold the impression-cylinder stationary and permit the bed to run back and forth twice to each impression for double inking. Fig. 4 is a plan view of the mechanisms in the position to let the bed run entirely free of the cylinder as when inking up. Fig. 5 shows the automatic means for coupling and uncoupling the catch-lever at proper times to cause the impression-cylinder to co-operate with the bed at its alternate forward runs and corresponds with Fig. 3. Fig. 6 is a plan view illustrating the position of some of the parts, as shown in Figs. 1 and 2. Figs. 7, 8, and 9 show the catch-lever, its hollow supporting pivot or sleeve, and a shaft running through said pivot. Fig. 10 shows some of the details for coupling and uncoupling the catch-lever.

The impression-cylinder wheel A, which gears with a rack, B, on one side of the type-bed during the forward travel of the bed, is cut away at one point, as usual, so as to permit its disengagement from such rack at the completion of the forward travel of the cylinder and bed while producing an impression, and thus allow the cylinder to be stopped and the bed to run without turning the cylinder. This cylinder-wheel is provided at one side and opposite its cut-away portion with a stud or tooth, 6, with which a catch-lever, C, engages at proper times to arrest said wheel and cylinder or start them forward to bring the wheel into gear with the bed-rack.

The catch-lever C is provided with a boss, X, which embraces and turns upon a sleeve, Y, that is bolted to the side frame. (See Fig. 9.) The rock-shaft 9 passes through this sleeve, and the sleeve thus becomes the pivot for the catch-lever. This catch-lever is provided with two lateral arms, D E, which unite and carry a stud, 5, that co-operates with a cam-bar, 4, the hooked end of which may be engaged with and disengaged from the stud 5 by means of a coupling-bar, 7, whose upper end is pivoted to an offset piece, 8, on the jointed end of the cam-bar 4.

The lower end of the coupling-bar 7 is slotted to pass the shaft 9, and is reciprocated by means of friction-rollers 11 12, carried by the

bar, and which embrace a cam, 10, fast on the shaft 9. The jointed or engaging end of the cam-bar 4 is recessed to provide a hook-like structure for engaging the stud 5, whereby the cam-bar and catch-lever may be connected, so that the latter will partake of the movements of the former, and disconnected when the catch-lever is to remain stationary, and the stock F of the said cam-bar is slotted to embrace and reciprocate upon a guiding-bearer, G, supported by the crank-shaft 1. This shaft 1 carries cams 2 and 3, one upon each side of the stock F of the cam-bar 4, which cams respectively bear upon friction-rolls 40 41, carried by said stock F. The catch-lever C carries another stud, 13, which co-operates with a hooked locking-arm, 14, that is pivoted to the framework, and operated by means of the coupling-bar 7 through a rod, 15, pivoted at one end to the arm 14 and at the other to the bar 7. This rock-shaft 9 may be moved by a hand-lever, 16, keyed to its outer end. Upon moving this lever to the left the shaft 9 is rocked and causes the cam 10 to lift the bar 7 and connecting-rod 15, thus lifting the cam-bar 4 from off the stud 5 and raising the arm 14 so that its hooked end grasps the stud 13. The lever C, then engaged with the cylinder, is thus coupled to the arm 14, and the actuating cam-bar 4 is uncoupled from the arm E of the lever C, as in Fig. 3, thereby locking the lever and cylinder stationary and leaving the crank-shaft 1, the cams 2 3, bar 4, and the type-bed free to continue the movements to distribute the ink, or for other purposes, as long as is desired, as in inking up.

When it is desired to have the cylinder co-operate with each forward run of the type-bed, the hand-lever 16 is moved to the right, as in Fig. 1, which causes the cam 10 to draw the hooked arm 14 out of engagement with the stud 13 and the cam-bar 4 down until its hooked end engages with the stud 5. The catch-lever C is thus unlocked from the frame and is free to move, and, being coupled to the cam-bar 4, will be vibrated through the reciprocation of the bar 4 by means of the cams 2 3, to cause the impression-cylinder to co-operate with the bed at each forward stroke of the latter, as in single inking.

To provide for double inking, by causing the impression-cylinder to co-operate with the bed at its alternate forward runs an automatic means for properly rocking the shaft 9, and thus coupling and uncoupling the catch-lever C at proper intervals, is provided as follows: The rock-shaft 9 is provided with a lever-clutch, 22, which turns loosely on the shaft, and said lever-clutch is connected by a rod, 21, with a crank-pin, 20, carried by a wheel, 18, on shaft 19, which wheel gears with a pinion, 17, of half its size on the crank-shaft 1, said lever-clutch thus being rocked once back and forth at each second revolution of the shaft 1. The companion clutch 23 slides on the shaft 9 and its feather 24, and when coupled with them the clutch 22 will impart to the

shaft 9 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 through the coupling-bar 7 and connecting-rod 15, as hereinbefore described with reference to the hand-lever 16.

The recesses in the cam-bar 4 and arm 14 are of such a depth that during the operation of changing the one does not let go of the lever C until after the other has grasped it, thus keeping the lever always under control.

As the wheel 18 makes but one revolution to two complete runs of the type-bed, it follows that the impression-cylinder will co-operate with each alternate run of the bed and remain stationary during the intermediate runs, thus causing the form to be inked twice to each impression.

To connect and disconnect the clutches 22 and 23, the latter is moved back and forth by means of a rod, 25, which carries a forked arm, 26, that enters into a groove in the clutch. This rod 25 extends outward through the framework and has a half-circle guard, 27, on its outer end outside of the hand-lever 16, and this guard serves to hold the hand-lever 16 in both its right-hand and left-hand positions by means of the locking-screws 28 29, the points of which enter a hole in the lever.

When it is desired to make the cylinder co-operative with the alternate forward runs of the bed, the rod 25 is pulled outward, thus first drawing the point of the locking-screw out of the hand-lever 16, which is thus set free, and next draws the sliding clutch 23 into working contact with the rocking clutch 22, as in Fig. 5, by which the catch-lever C will bring the cylinder in and out of operation with the alternate runs of the bed, as has been described.

It is only while the bed is making its return run that the cam-bar 4 can be connected to and disconnected from the catch-lever C, and to prevent this being done at the wrong time when changing by the hand-lever 16, a governing device for controlling the movements of the hand-lever is provided. This is constructed as follows: A disk, I, is secured to the outer end of the shaft 19, and it has two sharp-pointed curved guards, 31 and 32, secured in a circle to its face with a certain interval, as 33 or 34, between each of them. These guards co-operate with a bar, 35, one end of which is jointed to the hand-lever 16, while the opposite end is forked and embraces the shaft 19, and it has a lozenge-shaped stop-piece, 36, fixed on its side next to the curved guards 31 32 in such a position that when the hand-lever 16 is turned to its right-hand position the piece 36 will be outside the path of the guards, and when the lever is in its left-hand position the piece 36 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 and disconnect the cam-bar 4 from the catch-lever C, except at such times as when a space, 33 or 34, between the curved guards is in front of the piece 36,

and the curved guards are so placed that one of the spaces 33 or 34 is in front of the piece 36 only when the bed is making its backward run. If by chance the hand-lever should be left in a midway position with the cam-bar 4, and the recessed arm 14 both grasping the catch-lever C, the curved guards 31 or 32 would strike the piece 36 on the bar 35 and complete either the engagement or disengagement of the catch-lever C. By this simple mechanism a movement of the hand-lever 16 to the right will cause the coupling-bar 7 to hold the cam-bar 4 coupled with the catch-lever C, and hence the cylinder and bed will co-operate at each forward run of the latter. By moving the hand-lever to the left the coupling-bar will disengage the cam-bar 4 from the catch-lever C, and hence no movement of the cylinder will occur. By sliding the rod 25 outward the shaft 9 is clutched to the lever 22, and receives a rocking motion, properly timed by means of the proportion of the wheels 17 18 to cause the coupling-bar 7 to couple and uncouple the cam-bar and catch-lever at proper times, and thus engage the cylinder-wheel and bed-rack at alternate forward runs of the bed, in the latter adjustment the guard 27 being removed so as to leave the hand-lever 16 free to oscillate back and forth.

The fly-lever 90 and its locking-lever 91 and the cam 92 are illustrated herein simply to show their relation to the other mechanisms.

What is claimed is—

1. The combination, with the catch-lever for arresting and starting the cylinder and its wheel and its jointed actuating cam-bar, of the coupling-bar pivotally connected thereto for connecting and disconnecting said catch-lever and cam-bar, substantially as described.

2. The combination, with the catch-lever for arresting and starting the cylinder and its wheel and its jointed actuating cam-bar, of the coupling-bar for connecting and disconnecting said catch-lever and cam-bar, and the locking-arm connected with and operated by said coupling-bar for securing the stationary position of the cylinder and its wheel, substantially as described.

3. The combination, with the cylinder, its stud 6, the catch-lever C, its stud 5, and the reciprocating cam-bar 4, having a jointed hooked end, of the coupling-bar 7, pivotally connected thereto, and cam 10, substantially as described.

4. The combination, with the cylinder, its stud 6, the catch-lever C, its studs 5 and 13, and the reciprocating cam-bar 4, having a

jointed hooked end, of the coupling-bar 7 and locking-arm 14, connected thereto, substantially as described.

5. The combination, with the cylinder, its catch-lever, the cam-bar, its actuating-cam, and the coupling-bar, of the wheels 17 18, crank-rod 21, and lever-clutch 22 on the shaft of the coupling-bar, substantially as described.

6. The combination, with the cylinder and its catch-lever, the cam-bar, its actuating-cam, and the coupling-bar, of the wheels 17 18, crank-rod 21, lever-clutch 22, shaft 9, and sliding clutch 23, substantially as described.

7. The combination, with the cylinder, its catch-lever, the jointed actuating cam-bar, and the coupling-bar, of the cam 10, for operating the same, and hand-lever 16, for operating said cam, substantially as described.

8. The combination, with the cylinder, its catch-lever, the jointed actuating cam-bar, the coupling-bar, its operating-cam, and hand-lever, of the adjustable guard 27 and locking-screws, substantially as described.

9. The combination, with the catch-lever, the cam-bar for rocking said lever, and the coupling-bar for connecting and disconnecting said catch-lever and cam-bar, of a governing device consisting of rotating guards 31 32, and a bar provided with a stop-piece, 36, operating to control the movements of said coupling-bar, substantially as described.

10. The governing device for controlling the movements of the hand-lever, the same consisting of rotating guards 31 32 and a bar connected with the hand-lever and provided with a stop-piece, 36, substantially as described.

11. The combination, with the catch-lever, its operating cam-bar, and the coupling-bar, of the stud Y, supporting said catch-lever and sleeved around the shaft 9, and the latter supporting said coupling-bar, substantially as described.

12. The combination, with the catch-lever, its studs 5 and 13, of the cam-bar, coupling-bar, and locking-arm, all connected together and operated simultaneously to couple or uncouple the catch-lever and cam-bar and to unlock or lock the locking-arm and catch-lever, substantially as described.

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

STEPHEN D. TUCKER.

Witnesses:

CHAS. W. CARPENTER,  
A. S. BURLINGHAM.