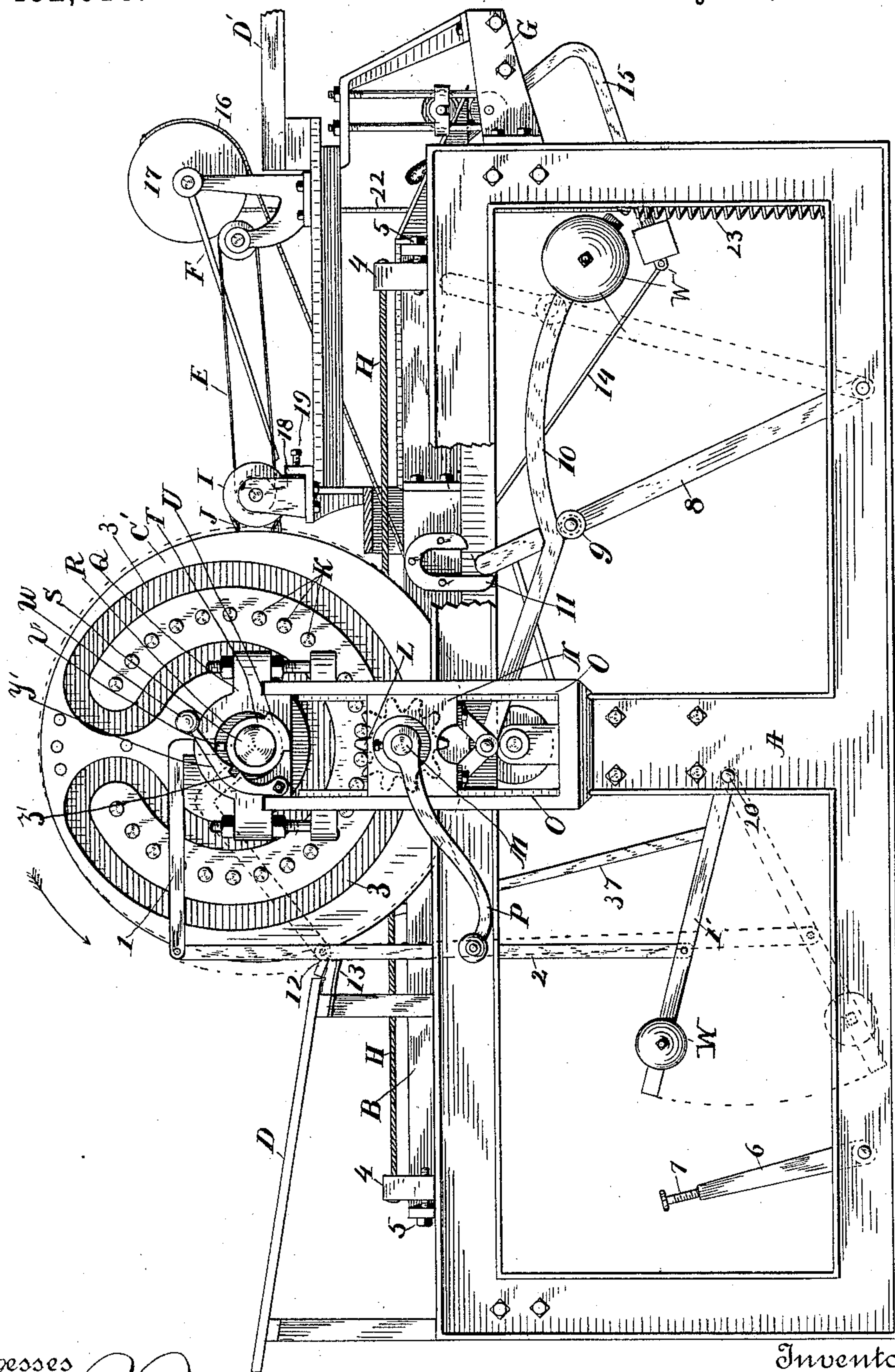


3 Sheets—Sheet 1.

OSCILLATING CYLINDER PRINTING MACHINE.

Patented July 22, 1890.



46

Inventor

Witnesses
Charles P. Buchanan.
Geo. B. Lison.

Peleg S. Dodge:

By His Attorneys

Moulton & Rogers.

(No Model.)

3 Sheets—Sheet 2.

P. S. DODGE.

OSCILLATING CYLINDER PRINTING MACHINE.

No. 432,518.

Patented July 22, 1890.

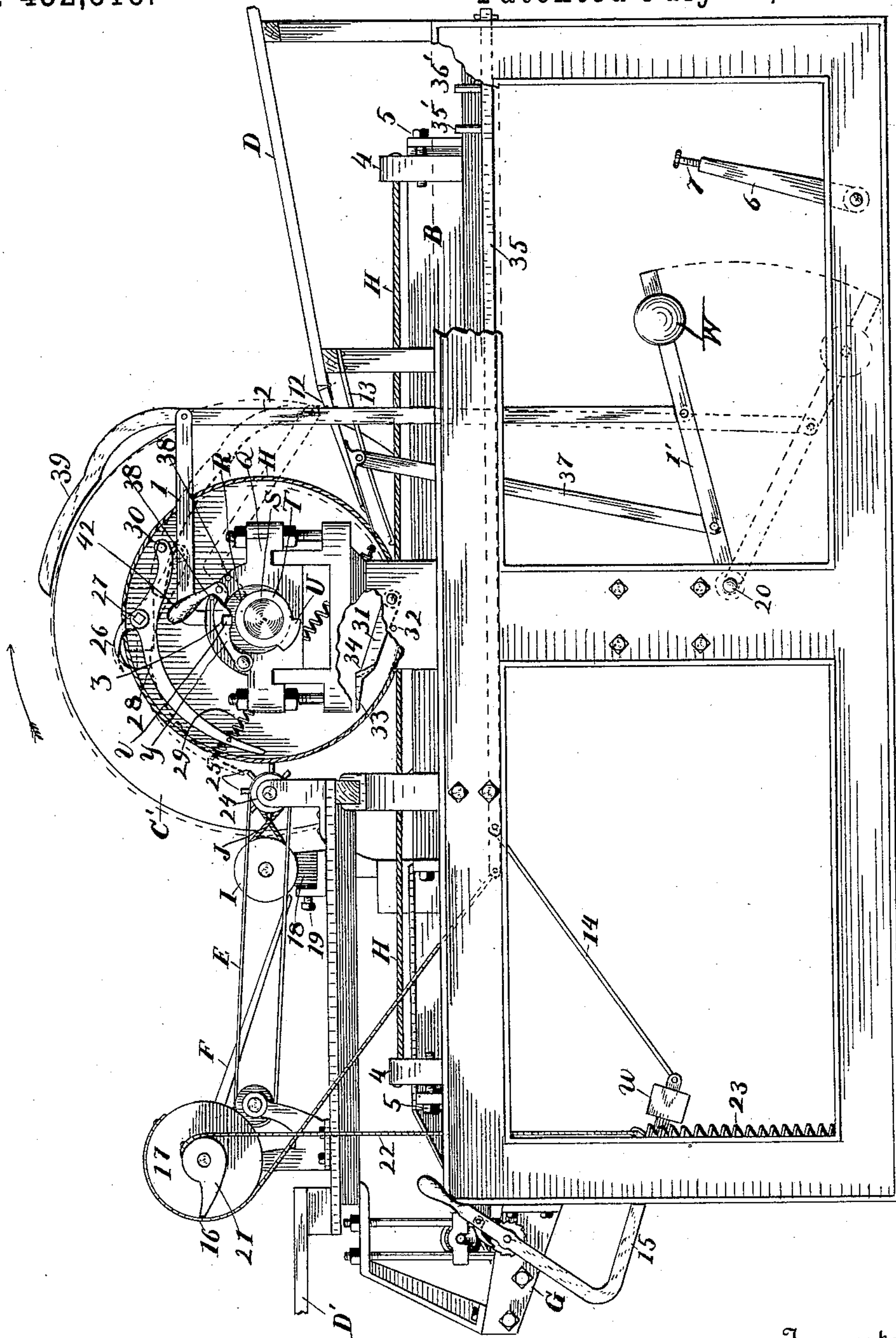


Fig. 2.

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3 Sheets—Sheet 3.

P. S. DODGE.
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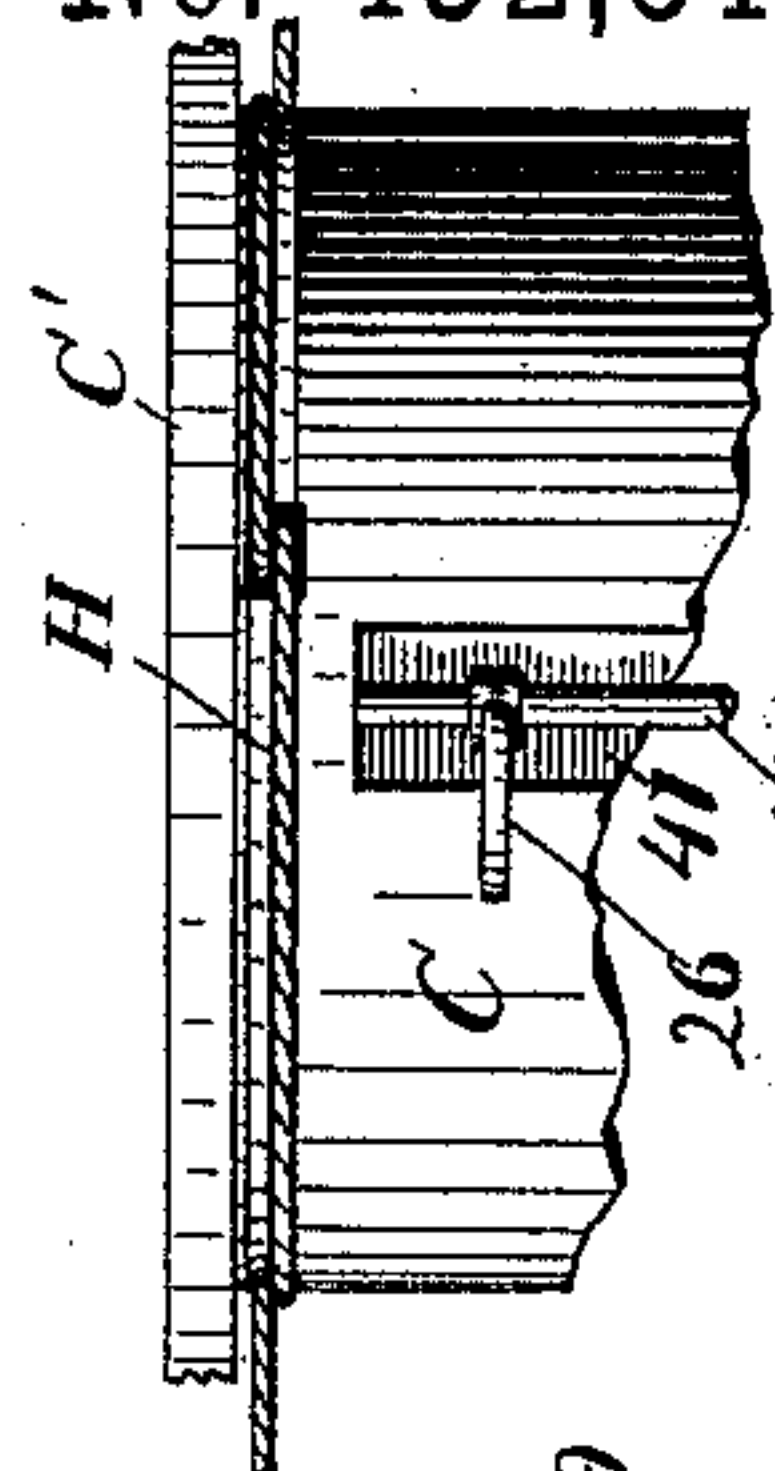


Fig. 5.

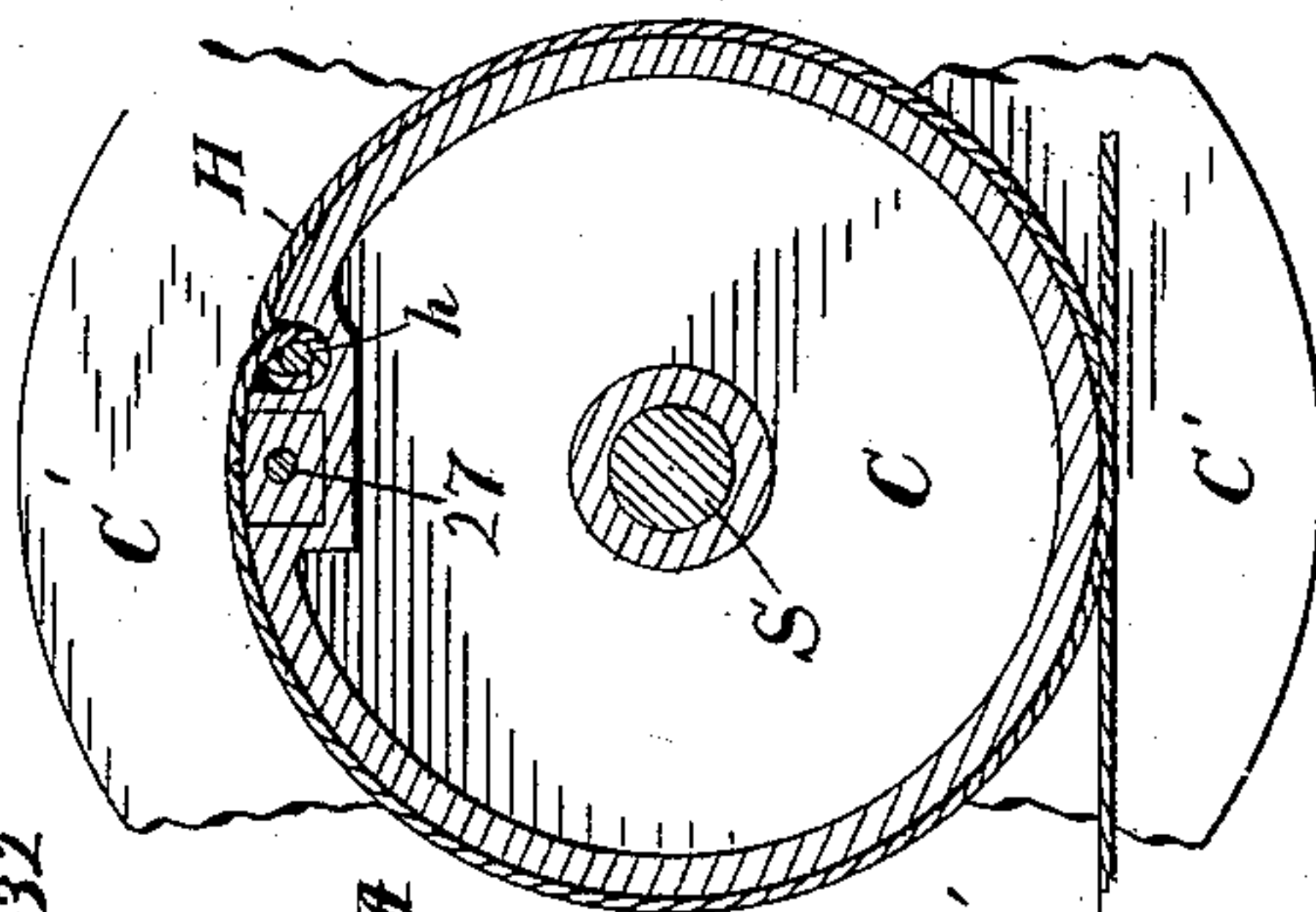


Fig. 4.

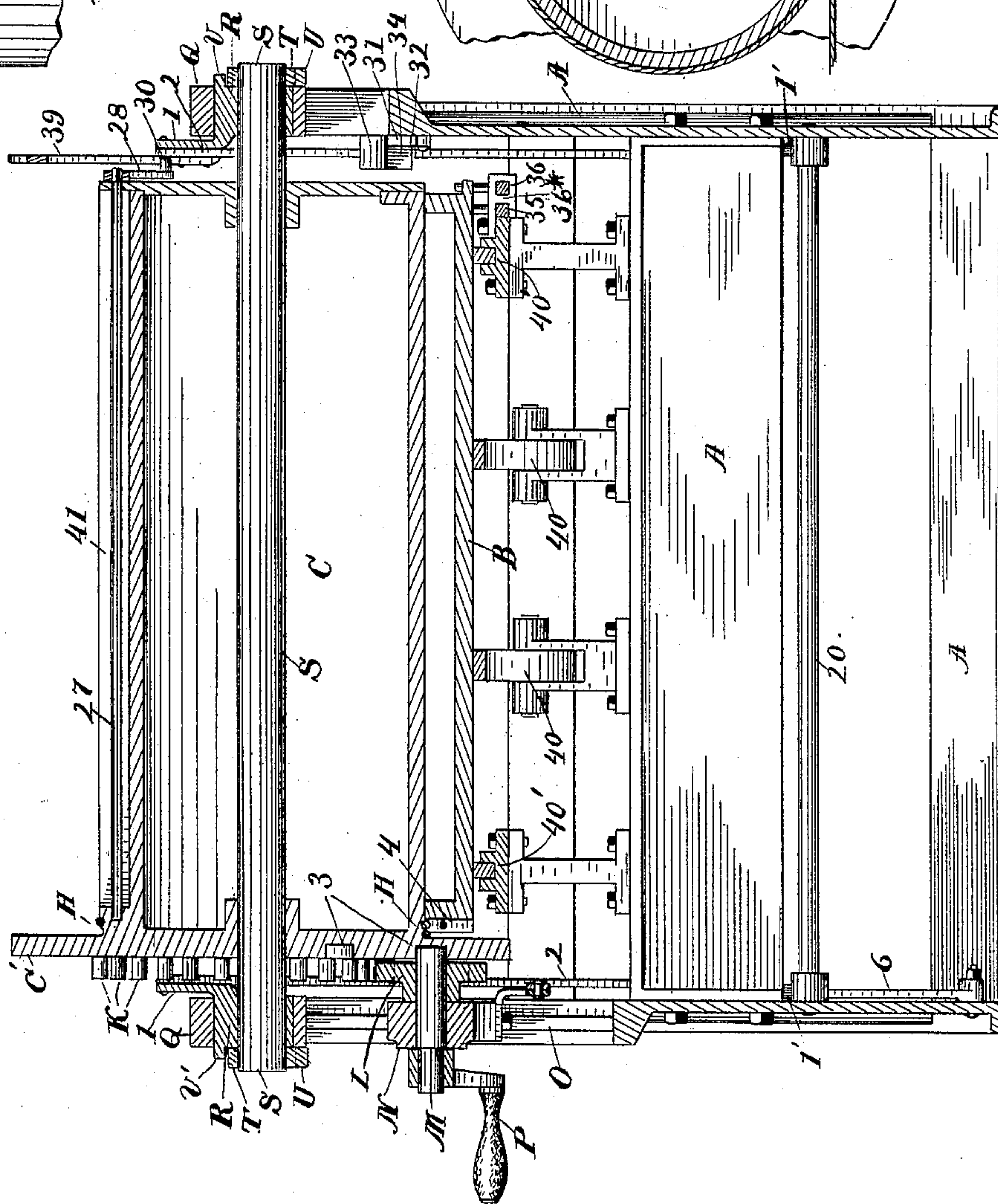


Fig. 3.

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UNITED STATES PATENT OFFICE.

PELEG S. DODGE, OF STANTON, MICHIGAN.

OSCILLATING-CYLINDER PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,518, dated July 22, 1890.

Application filed September 2, 1889. Serial No. 322,801. (No model.)

To all whom it may concern:

Be it known that I, PELEG S. DODGE, a citizen of the United States, residing at Stanton, in the county of Montcalm and State of Michigan, have invented certain new and useful Improvements in Oscillating-Cylinder Printing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a printing-press, and more especially to that class of printing-presses wherein an oscillating impression-cylinder is employed, in combination with a reciprocating type-bed, the latter being reciprocated coincidentally with the oscillation of the former; and the object of my invention is to provide a cheap, simple, and effective printing-press having an oscillating cylinder and reciprocating type-bed actuated, by means of the ordinary crank, by either hand or steam power, the driving-shaft having a continuous forward movement, the sheets being delivered without contact of the freshly-printed matter with any part of its operative mechanism; and it consists in the construction, combination, and arrangement of the parts, hereinafter described, and more particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the driving side of my press with part of the frame broken away; Fig. 2, a side elevation of the opposite or feeding side; Fig. 3, a transverse vertical section on the line X X; Figs. 4 and 5, details showing method of securing cable to cylinder.

A represents the main frame of the machine; B, the type-bed, mounted on usual rolls 40 and ways 40', (shown in Fig. 3,) and C the impression-cylinder.

C' is the head of the impression-cylinder, the face of which is a mangle-wheel having its axis eccentric to the axis of the said cylinder, and provided with pin-cogs K for engaging with pinion L on the driving-shaft M, the end of said shaft being adapted to traverse the mangle-groove 3 for imparting an oscillating

motion to the cylinder by means of a continuous rotary motion of the driving-shaft, to which the hand-crank P is attached. The driving-shaft M is mounted in vertically-movable bearings N, moving in ways O.

The impression-cylinder C is mounted on and rigidly secured to the shaft S, which is journaled in eccentric-sleeves R, and is provided with collars T. The eccentric-sleeves R are journaled in vertically-adjustable bearings Q, and the collars T, secured to shaft S, have lugs U for engaging the pins $v v'$ on the sleeves R and operating said sleeves and the latches $y y'$.

It will be understood that the parts described are paired and arranged at opposite ends of the cylinder for operating simultaneously.

Each of the latches $y y'$ is provided with a notch z or z' , which engages the pin V and keeps the sleeve from rotating, and the latch y' is provided at its free end with a weight w , which weight tends to keep said latch in its lowermost position. To the sleeve R is rigidly secured the arm 1, and to the rock-shaft 20 is also rigidly secured the arm 1'. These two arms are connected by the rods 2 for causing said sleeves, arranged at each end of said shaft S, to operate in unison. The tendency of the weight W, arranged on the arms 1', is to throw the full part of the sleeve to the left, thus lifting the impression-cylinder and throwing it slightly upward and to the right, causing it to occupy the position indicated by the dotted lines in Figs. 1 and 2 for clearing the type bed and engaging the delivery parts on the return-stroke.

D is the platform for the paper; 12, the feed-board hinged to the platform.

E are the delivery-tapes; F, the fly; G, the ink-fountain.

H is a cable, having its opposite ends attached to adjustable posts 4, provided with tension-screws 5 and secured to the respective angles of the type-bed, and is looped tightly around the cylinder for communicating motion therefrom and imparting to the type-bed a synchronal reciprocatory movement.

I is the friction-wheel which drives the tapes and to which motion is intermittently imparted by the head C'.

J is the belt connecting the friction-wheel with the tape-roll 24, having a brush 25.

6 is an arm pivoted to the main frame, and 7 a screw for adjusting the length of said arm.

8 is also an arm pivoted to the frame having a roll 9, journaled thereon, which serves as a fulcrum for the lever 10, which has its inner end pivoted to bearings N, and has the outer arm curved and provided with weight W'.

11 is a U-shaped dog having one arm extended for engaging the end of arm 8, and is secured to the side of the type-bed for shifting the fulcrum 9, and thus forming a variable counter-balance for the movable bearings N.

15 is the lever operating the ink-fountain roll, and is connected by the rod 14 to the sliding bar 36, provided with the post 36', which slides on the frame, and is actuated by the type-bed B striking the said post 36'.

17 is a wheel which actuates the shaft operating the fly F, and is put in motion by the bed B through and by means of the strap 16 and sliding bar 35, having post 35', which is engaged by the bed at the proper moment. The bars 35 and 36 are, as shown in Fig. 3, located side by side and separated by a partition 36*.

18 is the adjustable hanger for the wheel I, and is provided with adjusting-screw 19.

21 is the return-cam for the fly, having actuating-spring 23 and connecting-strap 22.

26 is the gripper, and 27 the gripper-shaft; 28, the lever that operates the grippers; 29, the spring which holds the gripper-lever in position.

30 is a pin arranged at the end of the gripper-lever, and which engages the arm 39 for opening the gripper to release the sheet.

31 is a pivoted arm having lateral projections 33 and 34, having faces adapted to engage the pin 30 for operating the grippers to seize the sheet, and is provided with a stop-pin 32.

37 is a rod connecting the feed-board 12 with the arm 1' for alternately raising and lowering the feed-board.

42 is a lifter for the latch γ for throwing off the impression, and has stop-pins 38 for limiting its movement.

41 is the channel in the periphery of the cylinder containing the gripper-shaft 27.

The general operation of the machine is as follows: Power being applied to the crank P, the shaft M is caused to rotate, and its motion being transmitted by pinion L to pin-cogs K causes the cylinder C to rotate in either direction, and the cylinder C being attached directly to the bed B by cables H the bed is reciprocated coincidentally with the oscillation of the cylinder. By placing the axis of the mangle-wheel eccentric to the axis of the cylinder I obtain an accelerated motion at the

middle of the stroke and a slower motion at the end of the stroke for overcoming the inertia of the reciprocating parts, thus avoiding the necessity for buffers, and by using the long curved lever 10 provided with its shifting fulcrum, I provide a counter-balance for the movable bearing N. In the illustration the position of the parts when at about the middle of the printing-stroke is shown, the impression-cylinder being rotated in the direction indicated by the arrows. The impression or printing stroke of the cylinder is delivered while the end of the shaft M is traversing the outer groove of the mangle and the return or non-printing stroke when it is traversing the inside groove. The sheet having been taken from the feed-board, held by the grippers 26, passed over the types, printed, and occupying a portion of the periphery of the cylinder C is brought to a height sufficient to make it enter upon the brushes 25 at the commencement of the non-printing stroke. Just prior to the end of the printing-stroke of the cylinder the revolution of shaft S brings lug U' into engagement with latch Y', disengages it from the pin V', and the eccentric-sleeves R being now free to turn are carried forward by the lugs U U', engaging with the pins V V', to the end of the stroke, shifting the position of shaft S, and thus shifting the axis of the impression-cylinder obliquely upward and forward to the position indicated by the dotted circular line, when the notch z in the latch γ engages the pin v and holds the cylinder in its new position during the return or non-printing stroke free from the type and in frictional contact with wheel I. The head C', engaging wheel I, sets the revolving brushes and tapes in motion. The brushes engage the tail of the sheet, bringing it upon the tapes, by which it is run backward over the fly F. The arm 39 being in its lower position now engages pin 30 and depressing the lever 28, opens the grippers, relieving the sheet. The tapes, running faster than the cylinder, remove the sheet from beneath the grippers before they close. Near the termination of the return-stroke the type-bed comes in contact with the post 35' and operates the fly, depositing the sheet upon the table D'. During the return-stroke the feed-board is in its lower position. The sheet is fed over the same into the gages 13, resting on the hooks at the end of the gages. During the latter part of the return-stroke the lug U disengages the latch γ and engages the pin v , and restores the cylinder to its former position preparatory to the printing-stroke, re-engaging the latch γ' for holding the cylinder during the printing-stroke. The revolution of the eccentric R by raising the arms 1 1, which have connection with the feed-board, raises the feed-board and brings the edge of the paper nearly in contact with the periphery of the cylinder. Just prior to the termination of the return-stroke the pin 30 strikes

the incline 33 and is forced toward the axis of the cylinder, thus opening the grippers, which pass over the edge of the sheet and seize the same as the pin slips off the incline 34 at the termination of the stroke. At the beginning of the printing-stroke the pin 30 passes under the inclines 33 and 34, lifting the arm 31 off the pin 32, thus permitting the grippers to retain their hold on the paper by the action of the spring 29 during the printing-stroke and until released, as described. Lever 15, operating the fountain-roll, is moved in one direction at the end of the return-stroke by the type-bed coming in contact with the post 36', which slides the bar 36, connected to lever 15 by rod 14, in its bearings, and is restored to its former position by the weight W.

The devices for inking the types are not shown, for the reason that those employed are such as are common to machines of this class.

The pivoted arm 6, having adjusting-screw 7, is employed when it is desired to use the press for taking proofs by adjusting it underneath the lever 1', so that when the lever 1' is depressed it will rest on the top of the screw 7. The cylinder C is raised off the type just enough to accommodate the galley-bottom, and by rotating the cylinder the same as in printing a proof may be taken off.

For securing the cable to the cylinder I provide two parallel grooves extending entirely around the periphery of the cylinder at one end. At a point about opposite the chamber containing the gripper the ridge between the two is cut away, and at that point I arrange a tie-pin *h*, firmly secured below the surface of the periphery and extending across the groove at right angles to it. Having secured one end of the cable to one of the posts on the type-bed, I pass it under and over the cylinder in one of the grooves. At the point where the cable crosses the tie-bar I take a turn of said cable around said tie-bar, causing the cable to pass from one across into the opposite groove, as shown in Fig. 5, and extend it on around the cylinder in that groove, attaching the end to a post at the opposite end of the type-bed, thus forming a permanent means of attaching the cable and preventing it from slipping.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, in a printing-press, of an impression-cylinder provided with a tie-pin arranged below its periphery near one of its ends, a reciprocating type-bed, and a cable secured to the type-bed and looped tightly around the impression-cylinder and tie-pin, as described.

2. An actuating mechanism for oscillating the impression-cylinder and reciprocating the type-bed of a printing-machine, consisting of a frame, as A, a shaft, as M, mounted in a movable bearing, a pinion, as L, a mangle-wheel, as pin-cogs K and head C', having a

groove 3, adapted to the end of shaft M, secured to the impression-cylinder, and a cord or cable, as H, secured to the type-bed and looped tightly around the cylinder, substantially as described.

3. The combination, in a printing-press, of an impression-cylinder and its shaft, with a collar mounted on said shaft and having a lug, an eccentric-sleeve adjacent to said collar and provided with an outwardly-projecting pin, and a latch formed with a notch adapted to receive said pin, all substantially as shown, and for the purposes set forth.

4. The combination, with the cylinder C, provided with its shaft, collars, eccentric-sleeves, and latches, substantially as described, of the wheel I, brush-shaft and brushes, tapes, fly, fly-wheel, and its operating mechanism, substantially as described.

5. In a printing-machine, the combination, with an oscillating impression-cylinder provided with pin-cogs and a groove, whereby a mangle-wheel movement is imparted to said cylinder, a pinion for imparting motion thereto and a shaft adapted to engage said groove and to rotate said pinion, and a vertically-movable bearing provided with a counterbalancing-weight, arranged to operate substantially as described.

6. The combination, with the impression-cylinder C, of the shaft S, provided with collars T, having lug U, eccentric-sleeves R, provided with pins, an arm 1, connecting-rods 2, a pivoted arm 1', provided with a weight, a rock-shaft 20, and latches for engaging said pins, substantially as set forth.

7. In combination with the impression-cylinder C, provided with sheet-grippers and mechanism for opening and closing the same for the reception of the sheet, consisting of a gripper-shaft, as 27, provided with a series of gripping-fingers, as 26, arranged in a chamber arranged in the periphery of said cylinder, an operating-lever, as 28, secured to the end of said shaft and arranged at the end of said cylinder, a spring, as 29, for operating the said lever, an arm, as 39, engaging a pin, as 30, on said lever, an arm, as 31, having faces, as 34 and 35, for engaging said pin 30, and a stop-pin, as 32, for said arm 30, substantially as and for the purpose set forth.

8. In a printing-machine, the combination, with a reciprocating rotary impression-cylinder and a reciprocating type-bed, of a mangle-wheel secured to the end of said cylinder for operating the same having its axis eccentric to the axis of said cylinder, substantially as and for the purposes herein set forth.

9. In combination with the cylinder C and the shaft S, having the collar T, provided with the lug U, and the eccentric-sleeve R, provided with the pins V, the latch *y*, provided with notch *z*, and the lifter 42, provided with stop-pins, substantially as and for the purposes herein set forth.

10. In a printing-press, a feed-board, a board

hinged thereto, a depending rod pivoted at
its upper end to said hinged board, and a
weighted arm 1', to which the lower end of
said rod is pivoted, in combination with an
5 arm 1, a rod 2, connecting said arms 1 and 1',
an eccentric-sleeve, to which said arm 1 is se-
cured, a pin projecting from said eccentric-
sleeve, a collar adjacent to said eccentric-
sleeve and provided with a lug, and a latch

having a notch adapted to receive said pin, ro-
all substantially as shown, and for the pur-
poses set forth.

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

PELEG S. DODGE.

Witnesses:

DENNIS L. ROGERS,

G. W. SHOOK.