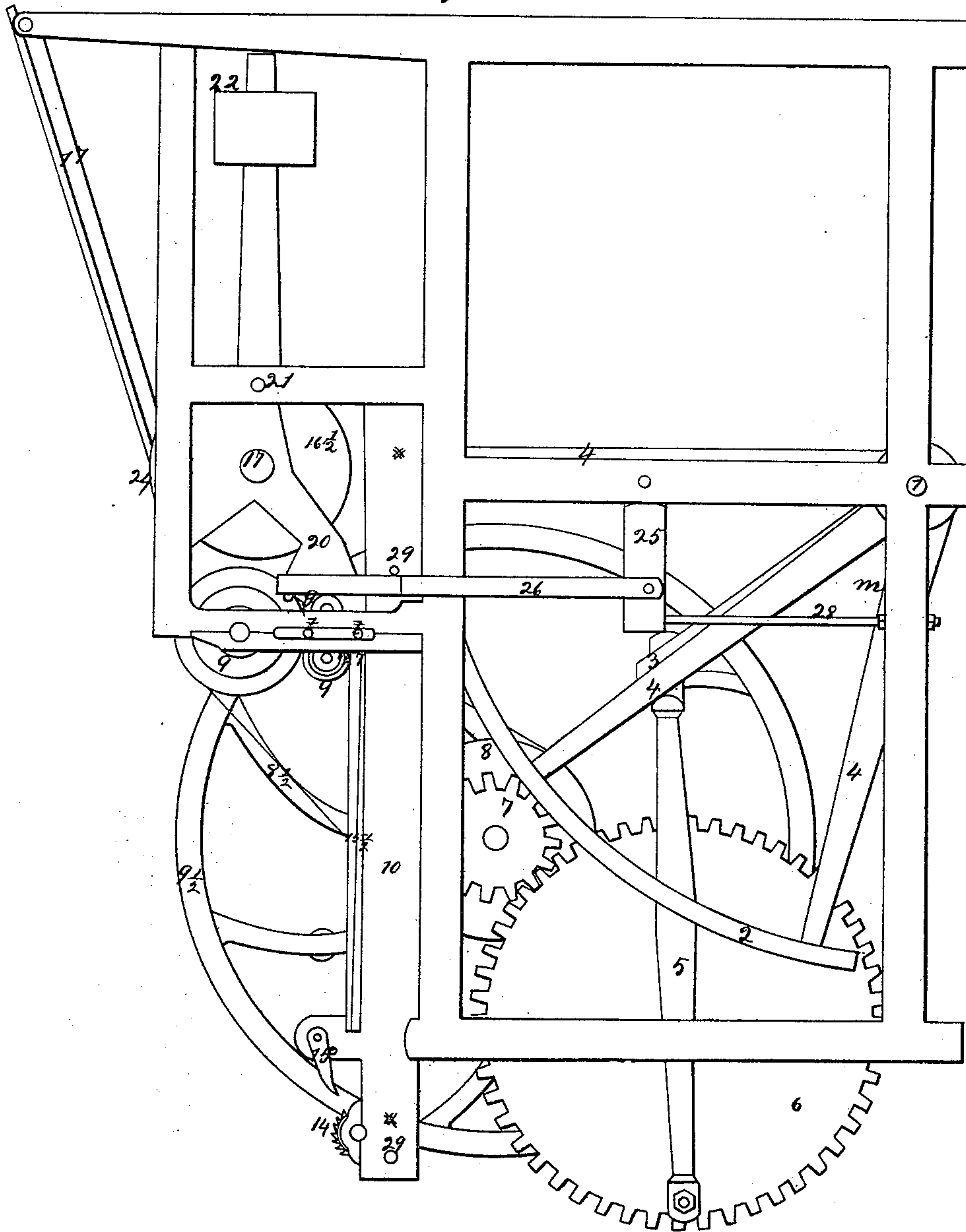


L. T. GUERNSEY.
PRINTING PRESS.

No. 9,342.

Patented Oct. 19, 1852.

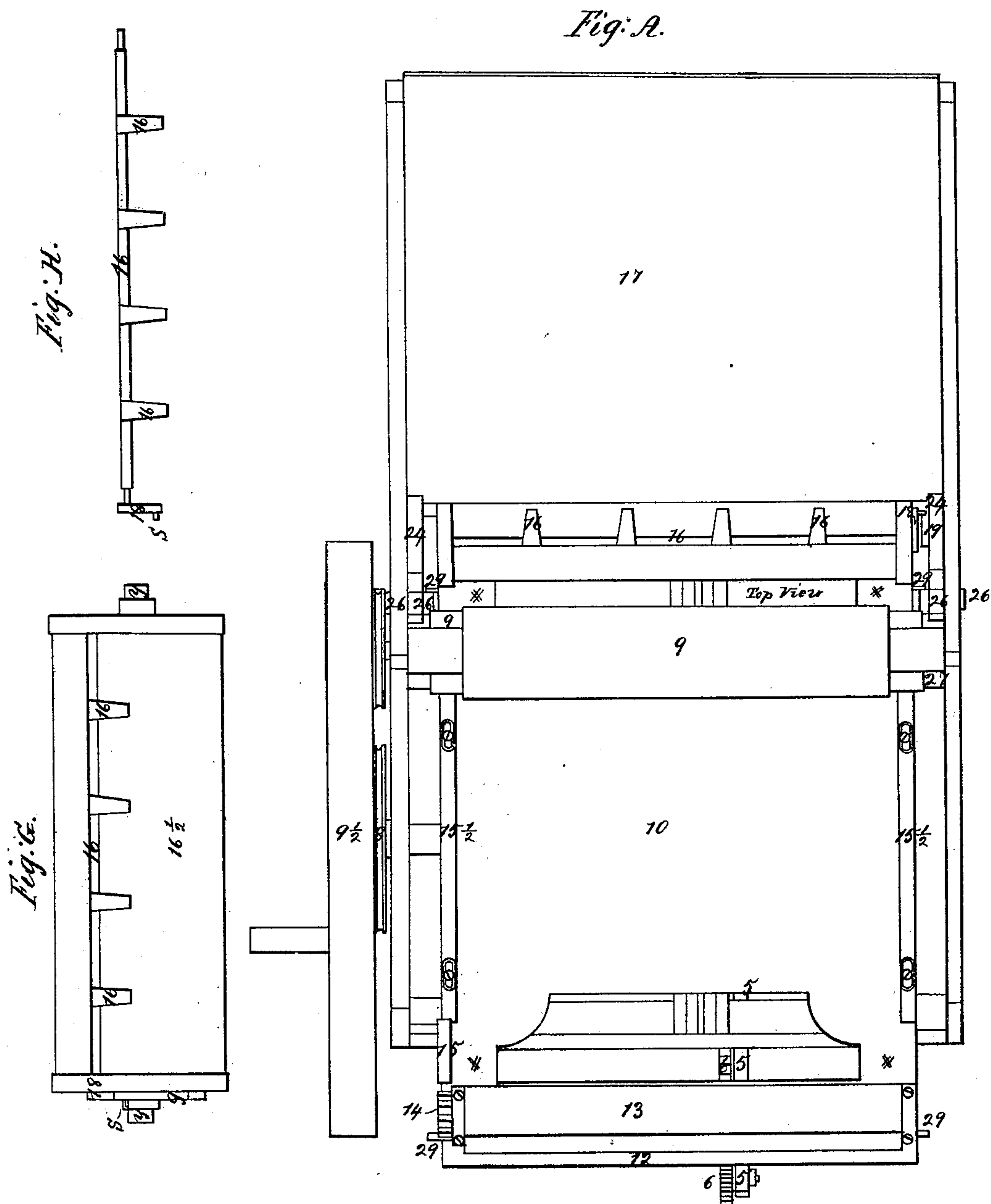
Fig. A.



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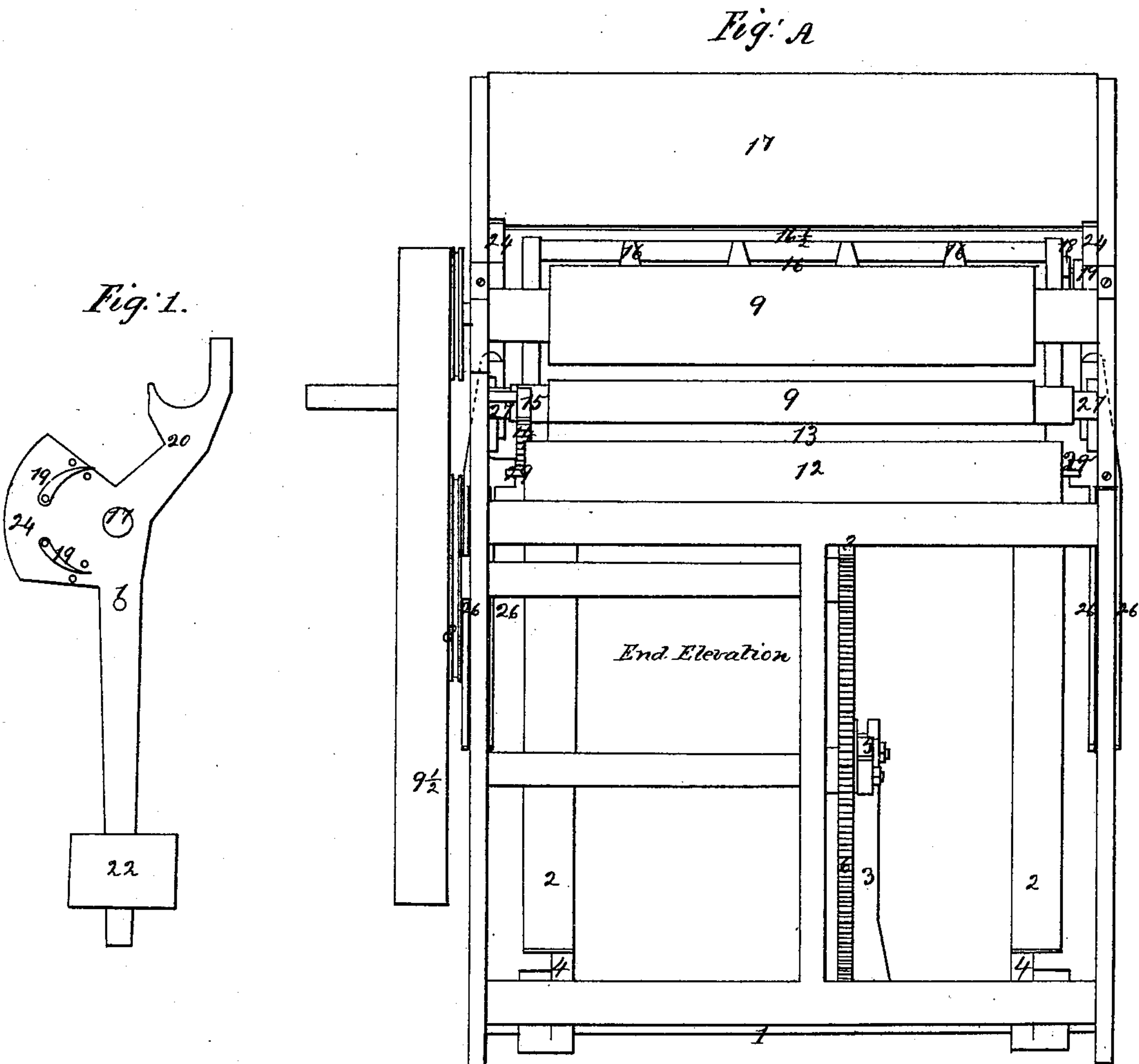
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Fig. D.

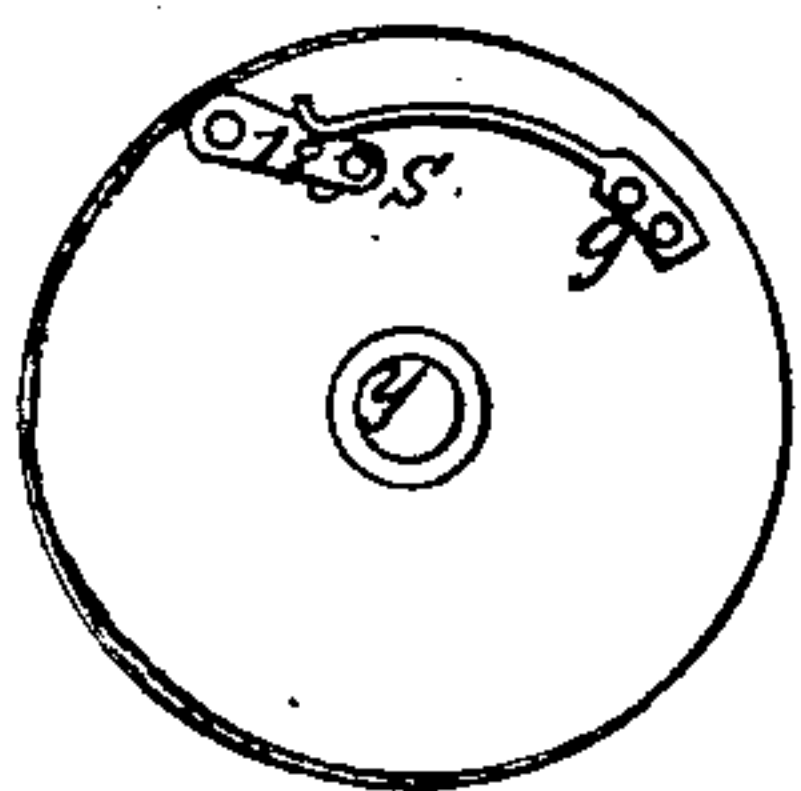
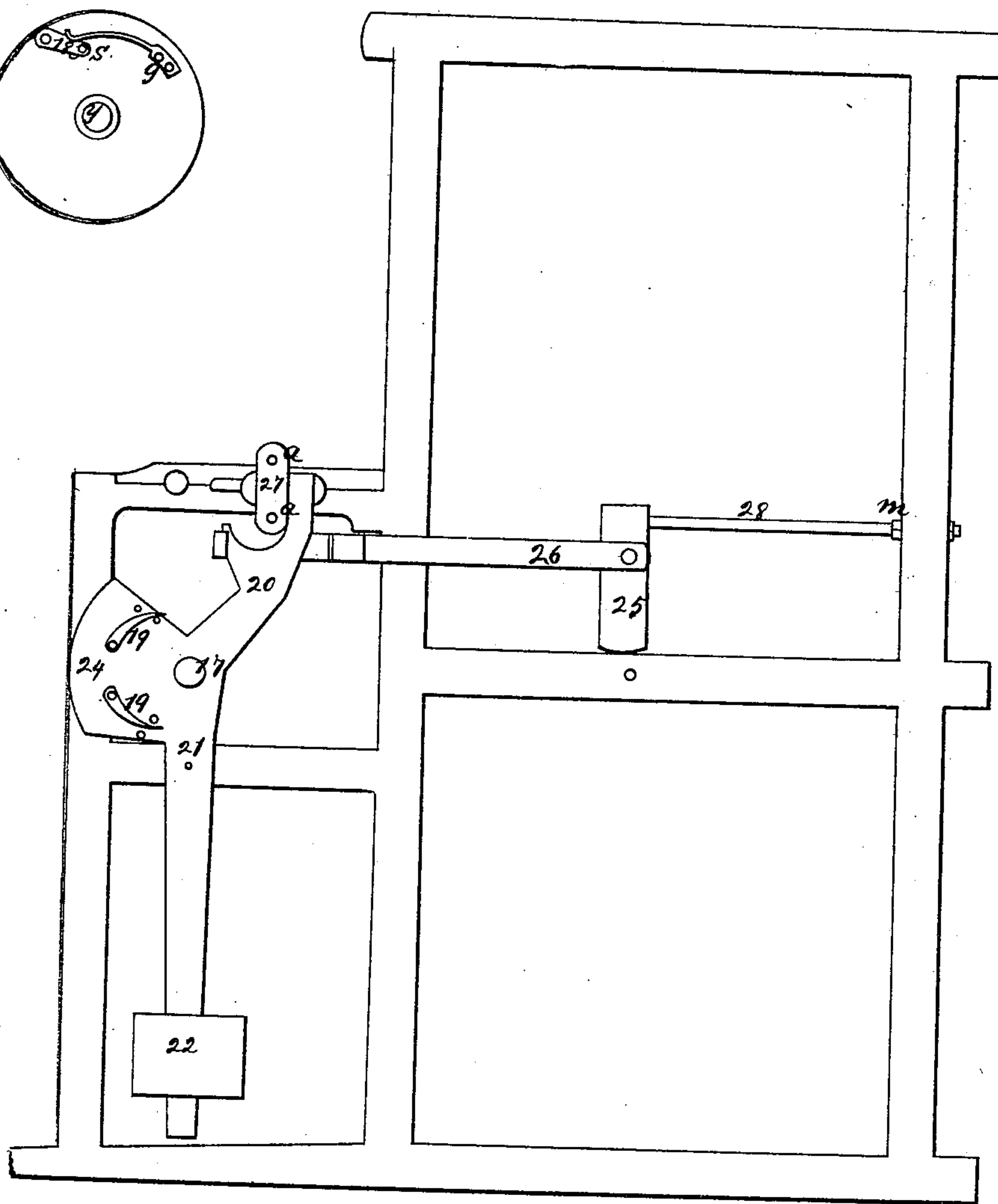


Fig. E.



UNITED STATES PATENT OFFICE.

LUCIUS T. GUERNSEY, OF MONTPELIER, VERMONT.

PRINTING-PRESS.

Specification of Letters Patent No. 9,342, dated October 19, 1852.

To all whom it may concern:

Be it known that I, LUCIUS T. GUERNSEY, of Montpelier, in the county of Washington and State of Vermont, have invented a new and Improved Printing-Press; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Description.—I construct a frame, substantially as shown in the accompanying drawings, the shape and relation of the parts of which are arranged to receive the various parts and pieces of the machinery hereinafter described. I make no claim to any peculiarity in the frame, although the insertion of a longitudinal rail, extending from end to end of the frame, at the top of the main portion of the frame, to serve a purpose hereinafter named, (for rail see Figure C, in drawing,) is peculiar. Crosswise of the frame, from the lower longitudinal pieces of the frame, at a point one side of the center thereof, I pass a strong shaft or arbor, (Fig. A, No. 1,) on either end of which, and within the frame, is placed a segment, or section of a circle, (Fig. A, No. 2, 2, 4, 4, 4, 4, 4, 4.) Midway between the segments a limb or arm (A, 3) rises; the upper end of which arm receives one end of a pitman (A, 5,) which pitman, at its other end, attaches to a wheel (A, 6,) arm, sweep, or other means by which the crank motion or principle, is applied to rock the segments (A, 2, 2, 4, 4, 4, 4, 4, 4,) backward and forward.

The wheel (A, 6) is moved by the pinion (A, 7,) the arbor of which pinion, at its other end from the pinion, receives the pulley (A, 8,) which pulley receives a belt, (A, 8½,) which belt then passes to a pulley on the largest of the three rollers, (A, 9, 9, 9;) also, connected with the pulley (A, 8) in its location on the arbor named, is the balance wheel, (A, 9½,) the place of applying the motive power to the machine.

The rail, (Fig. C,) lies lengthwise of the frame, under the type bed (A, 10;) the trucks (A, 11, and B, 11, 11,) run their grooved places on the upper edge of the rail (Fig. C,) to give direction and accuracy to the horizontal movement of the type bed (A, 10) when the type bed is forced back

and forth. The corners of type bed (A, 10 and B, 10) project beyond the square shaped, flat portion thereof, and are marked thus in Fig. A, #, #, #, # and in Fig. B, thus, #, #, #, # also. The extensions and the flat square portion are all one piece of casting. Two of these four extensions reach under the impression cylinder and rest on the segments (A, 2, 2,) when the type bed is in the position shown by Fig. A. The other two extensions sustain the ink trough at their outer ends, (A, 12 and B, 12) if the trough is made entirely a separate piece; or, they form a part of the ink trough (the ends) if the trough is not a separate piece.

The ink fountain (A, 12 and B, 12) is a trough, with a roller (A, 13) lying in it. On one end of the roller (A, 13) and outside of the trough, is a ratchet wheel (A, 14) which wheel receives a hitching motion from the dog (A, 15) when the type bed (A, 10) moves back and forth.

I work out four bevel pieces exactly alike, say 30 inches long, one inch wide and half an inch thick at one end, tapering to one fourth of an inch at the other. I place one of these bevel pieces on the top of another with their tapering edges together, placing the thickest end of one on and above the thinnest end of the other, so that when thus united they form a shape, in respect to width and height, uniform and equal from end to end (see Fig. F, 15½). Two of these bevel pieces, so arranged, make a pair; the other two another pair. On each side of type bed (A, 10) I place one pair of these bevels (Fig. F.). Near each end of each pair I cut long mortises, say one inch long by one fourth inch wide. Through these mortises I pass screws which terminate in type bed (A, 10 F, 10) on which these pairs of bevels rest, which screws hold the bevels firmly in their place. And when it is desirable to lessen or increase the amount of elevation of the bevels above the flat portion of the type bed, I loosen the screws and slide the bevel pieces, one of them one way, longitudinally of the type bed, and the other the other way, sliding them in this relative manner, one way, increases their united height above the flat portion of the type bed; reversing this process decreases that height or elevation. When the position is satisfactorily adjusted, the screws are lightened and the object of adapting the bearers to receive any required amount of the pres-

sure from the impression cylinder is obtained. This arrangement of bevels I call accommodation bearers.

The impression cylinder, (A, 16 and Fig. G,) inserts its bearings (G, y , y ,) into the balance beams (A, 20, E, 20 and Fig. I,) at a point marked on the balance beams in this way \oplus , and is attached to the type bed, (A, 10, B, 10 and Fig. F,) by means of cogs, straps, cords or chains, or any other means by which the impression cylinder (A, 16 $\frac{1}{2}$ and Fig. G,) shall receive a rotary or reverse rotary motion from and by the horizontal movement of the type bed (A, 10, B, 10, and Fig. F.).

The largest of the three rollers in the inking pile, (A, 9, 9, 9,) is the distributing drum; the two smaller of this series are the "composition rollers," so called, being the article in common use to communicate ink to type, which last named rollers, at each revolution of the type bed, (A, 10) receive a quantity of ink by coming in contact with fountain roller (A, 13.) When the type bed has been passed under the impression cylinder, and is on its return to position shown A, 10, the two composition rollers rise up against the distributing drum (largest in A, 9, 9, 9,) and distribute the ink over their several surfaces, by rotating together, and acting upon each other. The composition rollers are then adjusted by the balance beam, G means herein elsewhere described, to the proper place to touch the face of the type on the type bed (A, 10.) when the type bed is advancing to receive another impression, from the cylinder (A, 16 $\frac{1}{2}$).

A, 16, G, 16 and Fig. H, is a rod or arbor lying in a groove, lengthwise of the impression cylinder (A, 16 $\frac{1}{2}$, and G,) each end of which passes under bands on the end of cylinder, (A, 16 $\frac{1}{2}$ and Fig. G.). One end of this rod or arbor passes beyond the end of the cylinder sufficiently to receive and fasten the tumbler, (D, 18, G, 18, H. 18). This arbor, tumbler, pin or cam D, s , G, s , H, s ,) together with the prongs (D, 16, G, 16, H, 16,) is called the jaw, which grasps the paper from the paper board (A, 17.) This jaw is opened at the proper place for catching the paper by an arrangement shown in Figs. E, and I.

D, 18, E, 18 and H, 18 is a tumbler placed on the end of rod of jaw above described, and is capable of a rocking motion, and does rock so as to turn the arbor and raise the prongs (A, 16, 16, 16, G, 16, 16, 16) when the pin, (D, s , G, s , H, s ,) rides over the dogs (E, 19, 19, I, 19, 19,). On the upper portion of the tumbler is placed a spring (D, g and G, g ,) to press the tumbler down so as to close the jaw-prongs down to the cylinder (A, 16 $\frac{1}{2}$, and G, 16 $\frac{1}{2}$). The pin or cam (D, s ; G, s ; H, s ,) when the cylinder (A, 16 $\frac{1}{2}$ and G, 16 $\frac{1}{2}$) revolves one way, rides

over one of the dogs (E, 19, 19 I, 19, 19) and drops, closing the prongs of the jaw (A, 16, 16, 16, and G, 16, 16, 16) on the paper on paper board (A, 17.) Then the pin or cam (D, s , G, s , H, s ,) passes the under side of one of the dogs (E, 19, 19) when the cylinder receives its motion, thus allowing the jaw-prongs to draw the paper around with the cylinder preparatory to giving it an impression upon the type on type bed. At the proper place, the same process is repeated by the pin or cam over the other dog (E, 19, 19, and I, 19, 19) to open the jaw to discharge the printed sheet.

The balance beams (A, 20, E, 20, I, 20) are hung on pivots to the frame near the point marked 21, 21 in Figs. A, and E, with weights on one end of each, (A, 22, E 22,) sufficiently heavy to balance up the impression cylinder (A, 16 $\frac{1}{2}$) and the composition rollers (smaller two of A, 9, 9, 9) when allowed to do so by the apparatus hereinafter described.

In that section of the balance beams (A, 20, E, 20, I, 20) where the arbor of the impression cylinder (A, 16 $\frac{1}{2}$, G, 16 $\frac{1}{2}$) passes through them, (A, \oplus , I, \oplus ,) there is a semi-circular elevation (A, 24, E, 24, I, 24,) which serves as a place on which to pin the dogs, (E, 19, 19, I, 19, 19,), and also to form a resting place for the lower edge of the paper board (A, 17.).

A projection, (A, 25, E 25,) passes out sidewise from a post in the frame, which projections, one on each side of the machine, are inserted into the said posts by mortise and tenon and confined by a pin or bolt. The mortise is longer than the breadth of the tenon, for the purpose of allowing the projections to turn on the pins a little, that one end of the projections may be moved slightly up and down. To these projections are pinned the lower end of the upright shackle bars (A, 26, E, 26,) one on each side of the machine. The upper end of each shackle bar hooks into a notch in the balance beams (A, 20, E, 20,). These hooked extremities of the shackle-bars are to be forced backward and forward so as to be in and out of the notch alternately as the horizontal movement of the type bed (A, 10) moves back and forth. Then the hooks on shackle bars are in the notch, the ends of the balance beams opposite to the ends on which the weights (E 22) are placed, are allowed to rise a little, carrying upward the impression cylinder (A, 16 $\frac{1}{2}$) sufficiently to clear it from the form of types. When the hooks on the shackle bars are forced out of the notch in the balance beams, this end of the balance beams is forced downward, carrying with them the impression cylinder to the point required to bring it in contact with the type. The same end of the balance beams insert their extremities into a sliding

block (E, 27—the reverse side seen in the knobs which protrude through a post of frame in A, at the elevated termination of the dotted lines marked *t, t*). These knobs
 5 are part and parcel of the sliding blocks (E, 27) and have play to move up and down in the mortises through the posts near the termination of the dotted lines in A, *t, t*, and are moved up and down by and with the up
 10 and down movement of the balance beams, as above described.

The bearings of the two small rollers of the series A, 9, 9, 9, are inserted into the round holes in the sliding blocks at the up-
 15 per end of dotted lines marked *a, a* Fig. E, one on each side of the machine, and rise and fall to and from the type on type bed (A, 10) the same as does the impression cylinder (A, 16½ as above described). The ob-
 20 ject of the rise of impression cylinder is to clear the type on type bed (A, 10) when it comes back to the position shown in Fig. A, after an impression has been given. The object of the fall of the impression cylin-
 25 der is, to come in contact with the type at the proper moment for giving an impression. The object of the rise of the two small composition rollers of the series (A, 9, 9, 9,) is to bring them in contact with the
 30 largest of the series A, 9, 9, 9, so that the three may rotate together to distribute the ink before the two smaller act upon the type. The object of the fall of these two smallest rollers of the series A, 9, 9, 9, is to
 35 adjust them to the type on type bed A, 10, when it passes under them; and also, to enable them to communicate with fountain roller (A, 13,) at the same time, (*i. e.* when type bed runs under the cylinder,) for the
 40 purpose of receiving a new supply of ink for the next impression.

The upright rods (A, 28 and E, 28,) one on each side of the machine, are made fast and immovable at the upper end in projec-
 45 tion A, 25, and E, 25, which projection is capable of a slight up and down rocking motion by means of a loose mortise into which it inserts its tenons in the post of the frame; the lower end of the rods pass
 50 through an amply large hole in the bottom longitudinal rail or side piece of the frame, at a point indicated by dotted line marked *m*. On each of these rods, (one on each side of the machine) a long thread or screw
 55 is cut, and two nuts to each rod are placed upon the thread or screw, one nut on the upper, and the other on the under side of said side piece or rail of the frame; so that
 60 when both nuts are turned one way the rod would be drawn downward and held steadily at any desired point, and when the nuts were turned the opposite way the rods

would be forced upward and retained at any point desired. The object of all this is to pull down or raise up one end of the pro- 65
 jection A, 25, E, 25, thus pulling down or raising up the shackle bars A, 26, E, 26, thus elevating or depressing that end of the balance beams (A, 20 and E, 20) on which the shackle bars (A, 26 and E, 26) hook 70
 thus elevating or depressing the impression cylinder so that it may be adjusted to give any required amount of pressure upon the type form on type bed (A, 10.) This de-
 75 scribed operation is technically called "altering the impression," and may be used once a day or once in ten years, according to circumstances, and is not an effect produced by the operation of the machine: it is done
 80 by hand with a winch.

Fig. B, 29, 29, 29, 29 are projections from the sides of the type bed (A, 10) near the four corners thereof, one projection to each corner, in location near # # # # in Fig. A. The two projections which are lo- 85
 cated on that end of the type bed (A, 10) which is nearest the ink fountain (A, 12, B, 12) come in contact with the shackle bars (A, 26, E, 26) when the type bed is passed forward under the impression cyl- 90
 nder (A, 16½) and thus force the upper end of the shackle bars (A, 26, E, 26) which hook on the balance beams (A, 20, E, 20) so that the hooks drop down and are re-
 95 ceived into the notches in the balance beams, thus allowing the weights (A, 22, E, 22) to poise up the impression cylinder (A, 16½) and the composition rollers (two smallest of series A, 9, 9, 9.) The other two pro-
 100 jections (B, 29, 29, 29, 29) on that end of type bed which is farthest from the ink fountain (A, 12, B, 12) come in contact with the shackle bars (A, 26, E, 26) when the type bed returns to the position shown
 105 in Fig. A, and force their hooks forward and over the inclined plane of the balance beams, thus forcing down the impression cylinder (A, 16½) and the composition rollers (A, 9, 9,) in a position to ink and
 110 impress the type again, which all constitutes one full revolution of the machine.

What I claim as my invention, and on which I desire to secure Letters Patent, is—

The combination of a reciprocating type bed with an impression cylinder which has 115
 the half-rotary (or reciprocating rotary) movement and also a movement to and from the type bed, as herein set forth and described.

LUCIUS T. GUERNSEY.

In presence of—

FERRAND F. MERRILL,
 JULIA W. HOWES.