

No. 759,936.

PATENTED MAY 17, 1904.

G. W. SWIFT, JR.
PRINTING MACHINE.

APPLICATION FILED MAY 29, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

FIG. I.

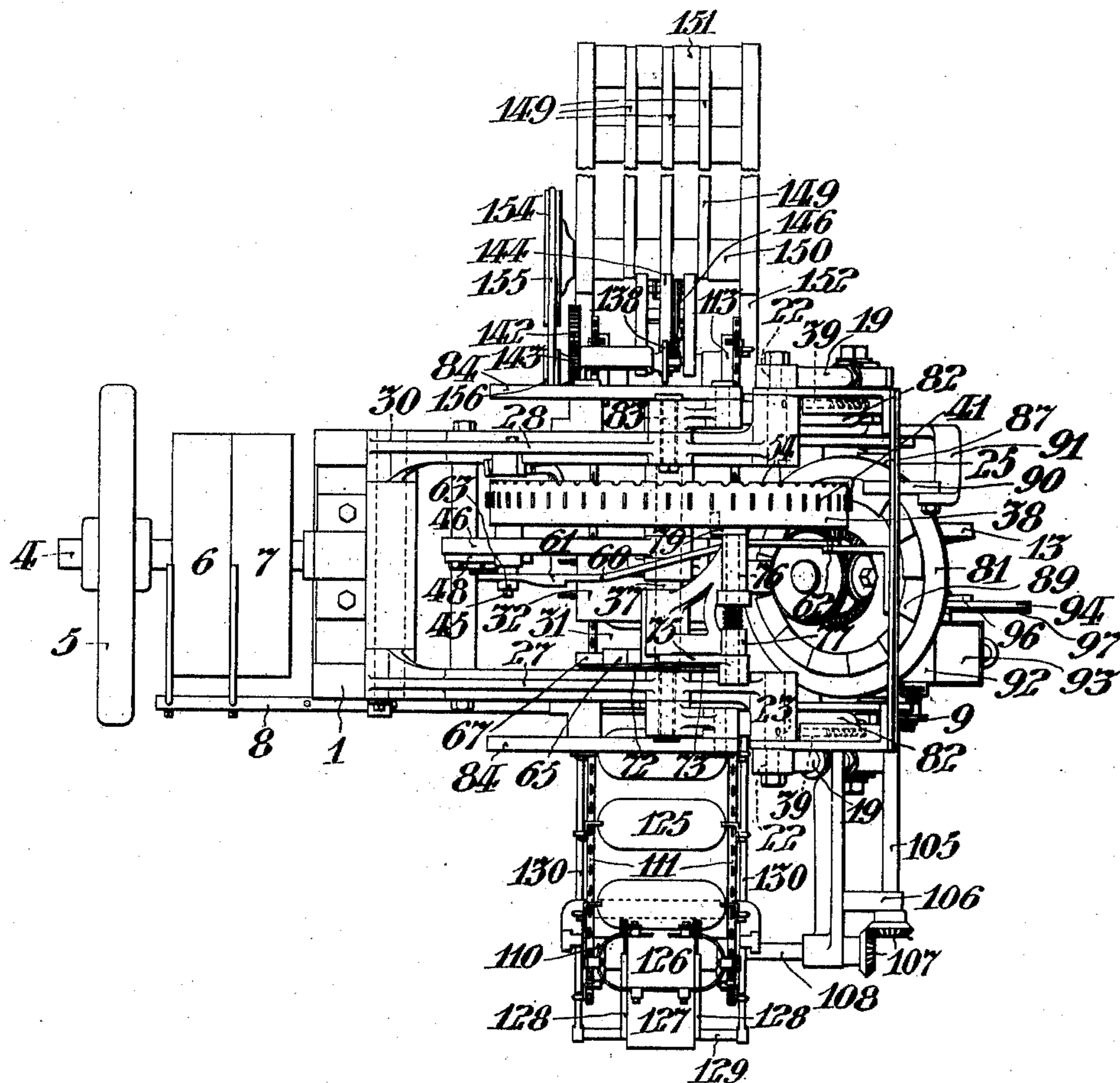
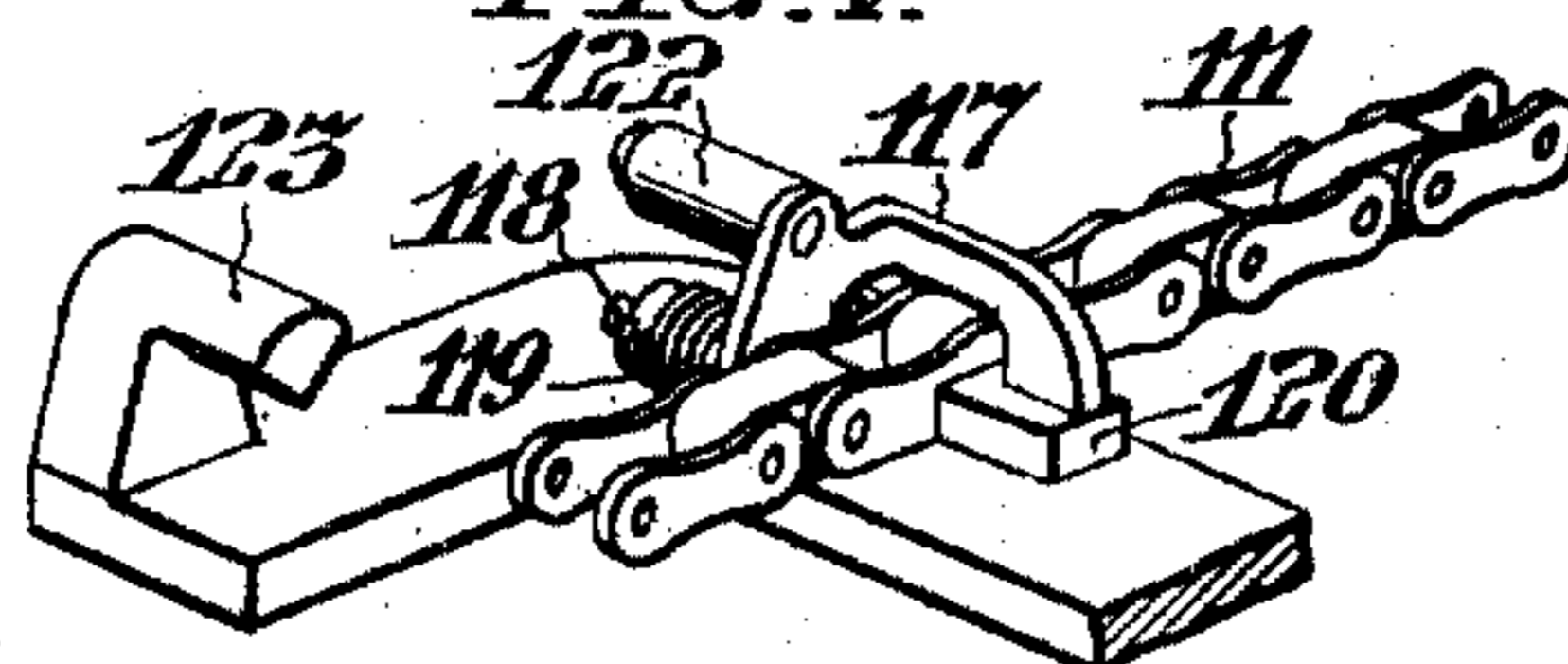


FIG. V.



WITNESSES:

Clifton C. Hollowell
John C. Bergner.

INVENTOR:

GEORGE W. SWIFT, JR.,

By Arthur E. Paige
Att.

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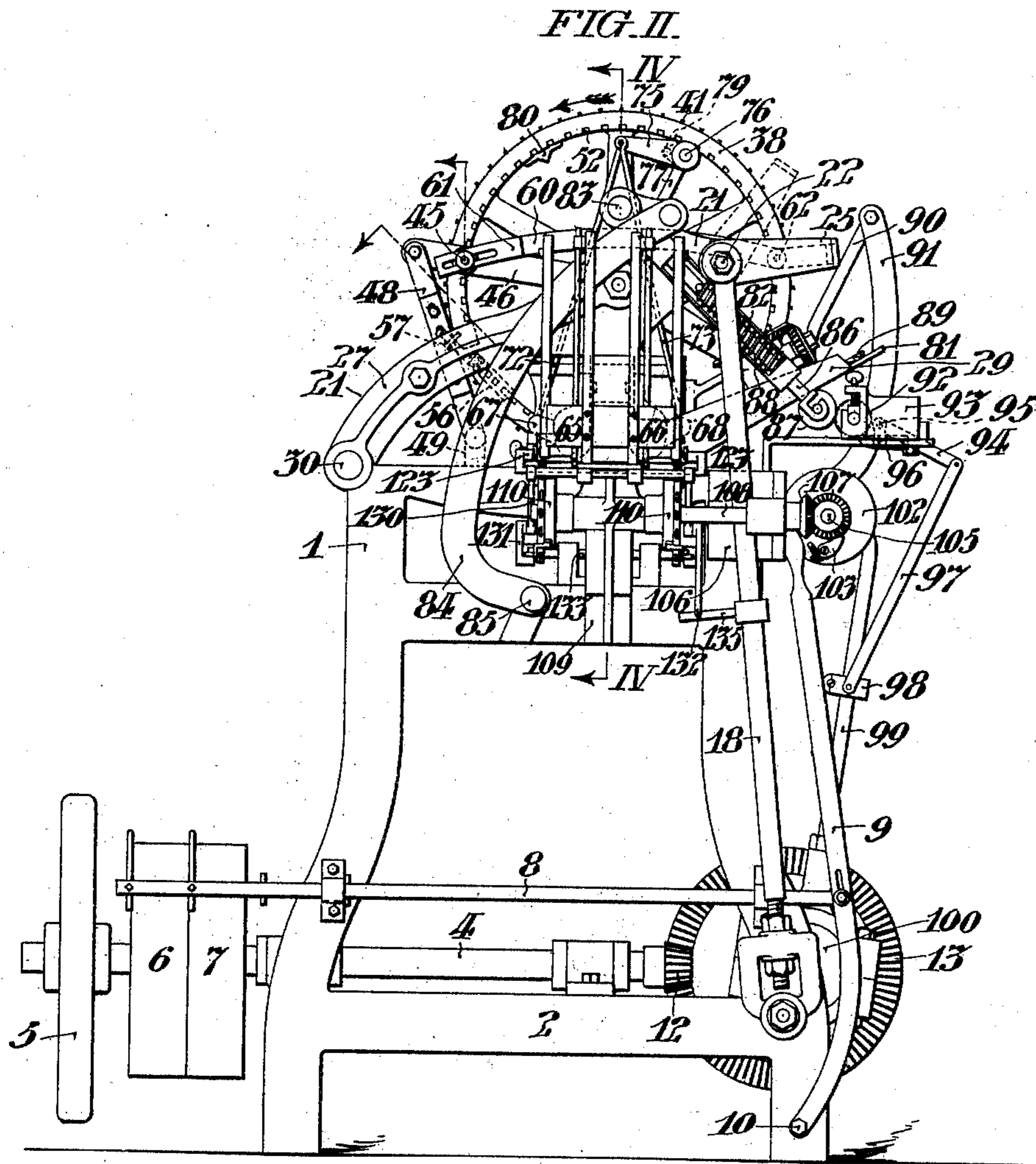
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4 SHEETS—SHEET 2.



WITNESSES:

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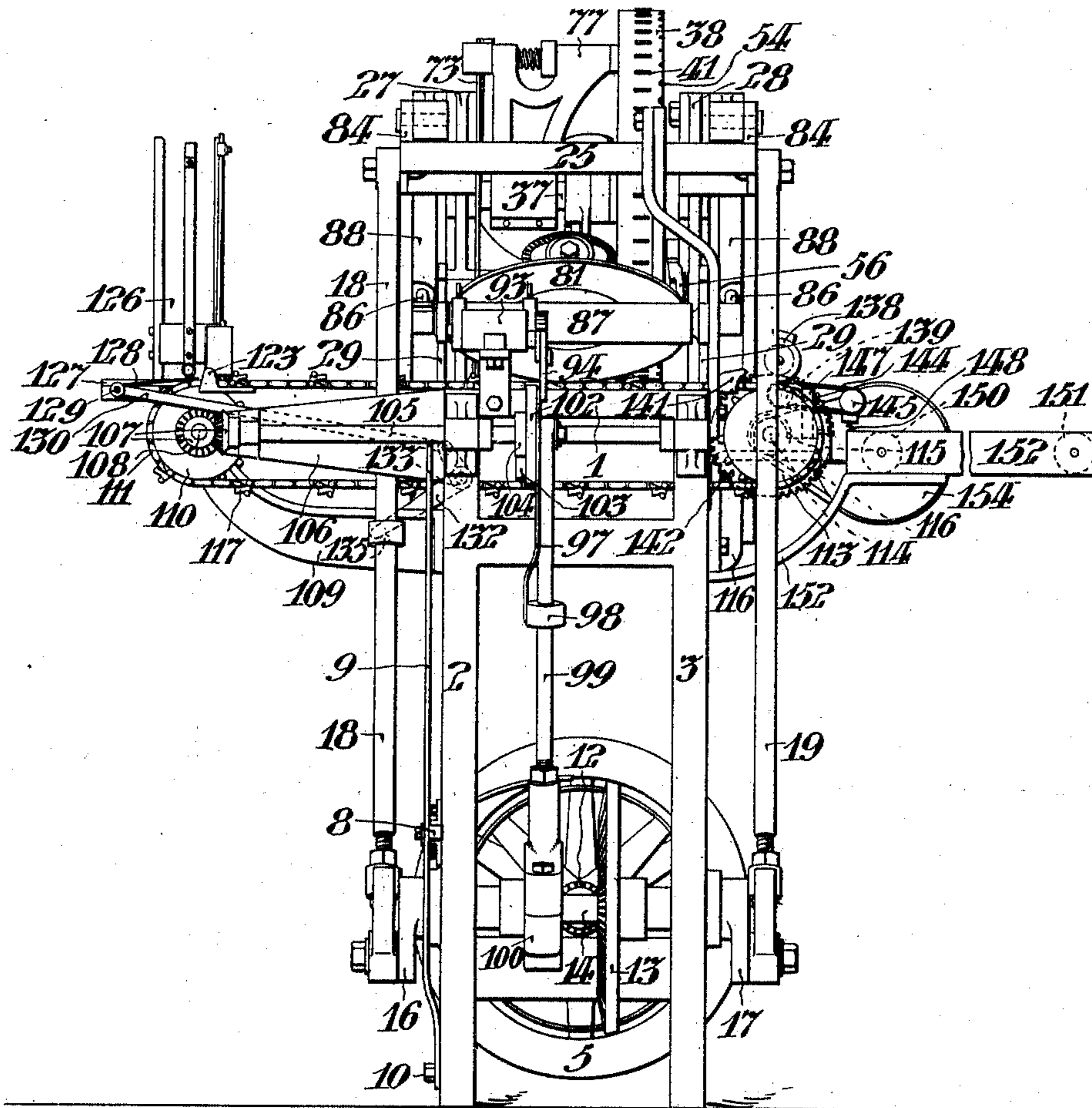
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4 SHEETS—SHEET 3.

FIG. III.



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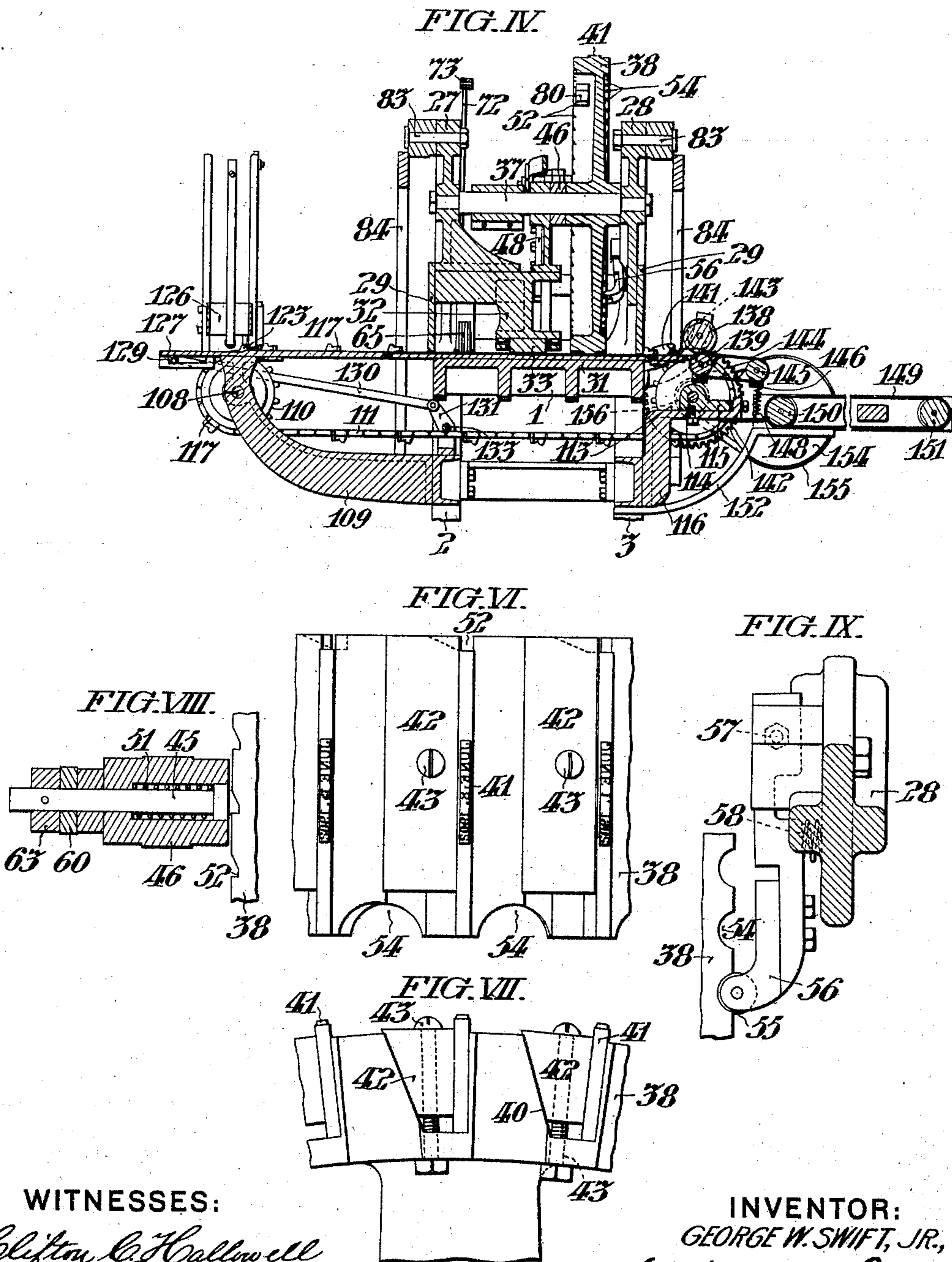
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NO MODEL.

4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE W. SWIFT, JR., OF BORDENTOWN, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 759,936, dated May 17, 1904.

Application filed May 29, 1902. Serial No. 109,436. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SWIFT, JR., of Bordentown, in the State of New Jersey, have invented certain new and useful Improvements in Printing-Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My improvements relate particularly to machines for printing series of envelops with successively different dates and numbers.

As hereinafter described, my improvements are comprised in a printing-machine wherein the blanks are progressed over the platen by means of a belt conveyer intermittently actuated in definite relation with the oscillation of a bed-frame, which latter is provided with imprinting devices and means to automatically vary the same during the intervals between successive imprints.

My invention comprehends the various novel features of construction and arrangement hereinafter specified.

In the accompanying drawings, Figure I is a plan view of a printing-machine conveniently embodying my invention. Fig. II is a front elevation of said machine. Fig. III is an elevation of the right-hand side of said machine, as shown in Figs. I and II. Fig. IV is a fragmentary sectional view of said machine, taken on the line IV-IV in Fig. II. Fig. V is a fragmentary perspective view of the belt conveyer for feeding the blanks in definite relation to the printing mechanism. Fig. VI is a fragmentary plan view of the periphery of the printing-drum. Fig. VII is a side view of the parts shown in Fig. VI. Fig. VIII is a sectional detail view of the mechanism for intermittently pawling said printing-drum. Fig. IX is a sectional detail view of the detent mechanism which engages said printing-drum.

In said figures, 1 is the stationary main frame comprising the vertical standards 2 3. The main driving-shaft 4 is mounted to rotate in said frame 1 and is provided with the hand-wheel 5 and tight and loose pulleys 6 and 7. The belt-shifter 8 is mounted to slide upon said standard 2 in operative relation with said tight and loose pulleys and is provided with the operating-lever 9, fulcrumed at 10 upon said standard 2. The inner extremity of said

shaft 4 is provided with the bevel-pinion 12, engaged with the bevel-gear 13, fixed upon the counter-shaft 14, which latter is mounted to rotate in said standards 2 and 3, and is provided at its outer extremities with the cranks 16 and 17, respectively connected by the rods 18 and 19 with the bed-frame 21. Said rods are pivoted upon the studs 22 in eccentric relation with the trunnions 23 of the yoke 25, which trunnions are journaled in the free extremities of the arms 27 and 28 of said bed-frame 21. Said bed-frame 21 being pivoted at 30 upon the stationary frame 1 is arranged to be vertically oscillated thereon by the rods 18 and 19, above described. Said movement of oscillation may, however, be varied by manipulation of the yoke 25, as hereinafter described. Said bed-frame 21 is opposed to the platen 31, fixed in the top of the frame 1, and carries a plurality of printing devices, as follows: The chase 32 is in fixed relation with said bed-frame 21 and is provided with movable type 33, secured in removable relation therewith—for instance, by the ordinary furniture and quoins. (Indicated in section in Fig. IV.) The side arms 27 and 28 of said bed-frame 21 are connected by the stationary shaft 37, upon which is loosely mounted the printing-drum 38, which is provided with fifty-two peripheral recesses 40, in which are mounted groups of movable types or slugs 41. The wedge-blocks 42 are seated in said recesses 40 and provided with means, such as the bolts 43, adjustable to clamp said slugs 41 in the drum. Said drum 38 may be automatically rotated to successively present the type groups 41 at the printing-point in opposition to the platen 31 by the pawl 45, which is mounted in the lever 46. Said lever 46 is loosely mounted upon the shaft 37, adjoining the drum 38, as shown in Fig. IV, and is pivotally connected at its free extremity by the link 48 with the stationary lug 49, projecting from the top of the frame 1, as shown in Fig. II. Said pawl 45, being provided with the spring 51, (shown in Fig. VIII,) is normally presented for successive engagement with the ratchet-teeth 52 in the side face of the drum 38. The teeth 52 correspond in number with the type groups 41 upon the periphery of said drum, and it is to be understood that the arrangement above described is

such that during the upward movement of the bed-frame 21 the drum 38 is rotated by the movement of said lever 46 the extent of one space between the adjoining type groups 41 on the periphery of the drum. On the side face of said drum 38 opposite to the ratchet-teeth 52 are detent-notches 54, corresponding in number to said ratchet-teeth 52 and type groups 41, and the arrangement is such that at the upper limit of the oscillatory movement of said bed-frame 21 and consequent rotary movement of said drum 38 the roller 55, carried by the detent-lever 56, engages in one of said notches 54 and prevents reverse rotation of said drum during the downward movement of the bed-frame 21. As best shown in Fig. IX, said detent-lever 56 is fulcrumed at 57 on the arm 28 of the bed-frame 21 and is provided with the spring 68, which thrusts said lever toward the drum 38.

The mechanism above described is normally so related as to shift the drum 38 one fifty-second of a revolution at each oscillation of the bed-frame 21, and thus cause said drum to make fifty-two successively different imprints with the respective type groups 41. However, I find it desirable to provide means whereby the operator may at will so vary the movement of the bed 21 as to permit it to oscillate idly without effecting the rotation of the drum 38 or imprinting from the latter. Therefore I connect the rods 18 and 19 with said bed 21 by means of the eccentric trunnions 23, which are so arranged that when the yoke 25 connecting them is upturned to the dotted position indicated in Fig. II the bed-frame 21 is upheld from the platen 31. The bar 60, provided with the wedge 61, being pivoted at 62 upon said yoke 25 and mounted to slide upon the stem of the pawl 45, the aforesaid upward movement of the yoke 25 thrusts said wedge against the collar 63, fixed upon the stem of said pawl 45, and thereby withdraws and withholds the latter from engagement with the drum 38, so that while the yoke 25 is maintained in its abnormal uplifted position by the spring-detents 39 the drum 38 is not rotated and neither it or the other printing devices can operate while the yoke is so held. In addition to the chase 32 and drum 38 said bed-frame 21 carries two auxiliary printing devices 65 and 66, each comprising a series of type-disks, each of said disks being provided with the characters "1" to "9" and "0," arranged *seriatim* on its periphery. Said printing devices also comprise internal mechanism of any convenient form, terminating in the exterior levers 67 and 68, and so arranged that the characters on the respective disks are presented in alignment at the bottom thereof in opposition to the platen 31, and the whole number represented by the adjoining characters at the printing-point is increased one unit by each depression of said levers 67 and 68. Said levers 67 and 68 are respectively connected by

the rods 72 73 with the arm 75 on the rock-shaft 76, mounted in bearings in the bracket 77 in fixed relation with the bed-frame 21. The opposite extremity of said shaft 76 is provided with the crank-lever 79, which is 70 countered and shifted by the cam 80, fixed upon the inner periphery of the drum 38, the arrangement being such that said lever 75, rods 72 73, and levers 67 68 are depressed, and the respective printing devices 65 and 66 75 automatically reset upon the completion of each revolution of the drum 38. Said bed-frame 21 carries the inking-disk 81 between the parallel guides 29, which project from said frame in rigid relation with the respective 80 arms 27 and 28 thereof. The roller-frame 82 is fulcrumed at 83 upon said bed-frame and pivotally connected by the links 84 with the studs 85, projecting from the stationary frame 1. The saddles 86 are provided at their outer 85 extremities with bearings for the trunnions of the inking-roller 87 and (being mounted to reciprocate in the roller-frame 82 and provided with springs 88) cause said roller 87 to traverse the inking-disk 81 and all the 90 type-faces at the printing position, including those of the drum 38, chase 32, and auxiliary printing devices 65 and 66, while the bed 21 oscillates, as above described. Said inking-disk 81 is partially rotated each time the 95 bed-frame is uplifted by the engagement of the circular rack 89 on said disk with the pawl 90, pivoted upon the bracket 91, projecting from the stationary frame-standard 3. As shown in Fig. II, the inking-roller 87 100 encounters the fountain-roller 92 when the bed-frame 21 is lowered, and the ink thus received is transferred to the disk 81 and distributed by the rotation of the latter. Said fountain-roller 92 is mounted for rotation in the ink- 105 fountain 93 and is intermittently rotated therein by the oscillation of the lever 94, which is pivoted at 95 upon the side of the fountain 93 and provided at its inner extremity with the pivoted pawl 96. (Best shown in Fig. II.) 110 Said lever 94 is operated by the link 97, which pivotally connects it with the collar 98 upon the vertically-reciprocatory connecting-rod 99, which latter is operatively connected at its lower extremity with the eccentric 100 on the 115 counter-shaft 14. Said connecting-rod 99 and eccentric 100 serve to actuate the blank-feeding mechanism, which is arranged as follows: The upper extremity of the rod 99 is pivotally connected with the pawl-disk 102, which 120 carries the spring-pressed pawl 103 in operative relation with the ratchet 104, so as to intermittently rotate the shaft 105, upon which said ratchet is fixed. Said shaft 105 is mounted in the bearing-bracket 106, projecting from 125 the stationary frame-standard 2, and the outer extremity of said shaft is connected by the miter-gears 107 with the shaft 108, which latter is mounted to rotate in the brackets 109, projecting from said frame-standard 2. Said 130

shaft 108 is provided with two sprocket-wheels 110, supporting chain belts 111, which extend across the platen 31 and are supported upon the opposite side thereof by the sprocket-wheels 113. Said wheels 113 are mounted upon the shaft 114 in the adjustable bearing 115 upon the bracket 116, projecting from the frame-standard 3. As best shown in Fig. IV, said chains 111 are provided with respectively opposite spring-clips 117, one of which is shown in detail in Fig. V. Each of said clips 117 is pivoted upon a stud 118, projecting from the side of its supporting-chain, and is normally pressed by the spring 119 against an abutment 120, projecting from said chain. However, each of said clips 117 is provided with a roller-arm 122, which in its traverse beneath the cam 123 uplifts the clip 117 from said abutment 120 to grip a blank 125, and thereafter intermittently progress the same across the platen 31 to be printed.

A supply of the blanks 125 is conveniently maintained in the magazine 126, mounted upon the table 127, supported by the bracket 109. Said blanks are delivered singly from the bottom of said magazine by the spring-fingers 128, which successively deliver the blanks 125 in proper position to be engaged by the successive pairs of clips 117 as the latter are uplifted by the cams 123. Said fingers 128 are carried by the cross-bar 129, which is mounted for reciprocation in slideways in the table 127 and is reciprocated by the links 130, which extend to the levers 131 and 132, fixed upon the rock-shaft 133. As best shown in Figs. II and III, the lever 132 is in operative engagement with the tappet 135, fixed upon the vertical reciprocatory connecting-rod 18, hereinbefore described. The blanks 125, retained by said spring-fingers 128, are intermittently progressed across the table 127 and platen 31 and are imprinted on the latter by the auxiliary printing devices 65 and 66 by the type 33 in the chase 32 and by the successively different type groups upon the printing-drum 38. The printed blanks are presented by the clips 117 between the opposed gripping-rollers 138 139 and are contemporaneously released by the traverse of the clips 117 beneath the stationary cams 141, which are mounted upon the right-hand side of the platen 31, as shown in Fig. IV.

As shown in Figs. I and IV, the shaft 114, provided with the sprocket-wheels 113, is also provided with the gear-wheel 142, which engages the gear-wheel 143 upon the gripping-roller 138 and positively rotates the latter. The gripping-roller 139, opposed to said roller 138, is connected by the belts 144 with the idle roller 145, and said rollers 139 and 145 are mounted in the frame 146, which is pivoted upon the standard 147 and provided with the spring 148, (shown in Fig. IV,) so that said roller 139 is upheld with said belts 144 in frictional engagement with the gripping-roller

138. Said belts 144 serve to deliver the printed blanks 125 upon the conveyer-belts 149, which latter are supported by the rollers 150 and 151, mounted to rotate in bearings in the brackets 152, projecting from the stationary frame-standard 3. Said roller 150 is provided with the band-wheel 154, connected by the driving-belt 155 with the driving-wheel 156, mounted upon the outer extremity of the shaft 114. The arrangement above described is such that the printed blanks are discharged by the belts 144 and 149 in the consecutive order in which they are printed.

The above-described arrangement of the various printing devices is particularly adapted for printing series of weekly-contribution envelops for a plurality of subscribers designated by numbers—that is to say, a series of fifty-two of said blanks may be respectively printed with consecutively different dates from said type-wheel 38, and by the auxiliary printing devices 65 and 66 each of said blanks will be contemporaneously printed in two places with a designating number common to the entire series of fifty-two. The movable type 33 in the chase 32 is utilized to imprint said envelops with a title or any other data desired. Upon the completion of each revolution of said drum said auxiliary printing devices 65 and 66 will be shifted to print a succeeding series of fifty-two blanks with a common designating number different from that of the preceding series. However, I do not desire to limit myself to the precise construction and arrangement which I have described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim—

1. In a printing-machine, the combination with a stationary platen; of an oscillatory bed-frame; driving mechanism; connections between said mechanism and said frame arranged to oscillate said frame relatively to said platen; a printing-drum carried by said bed-frame; means to automatically rotate said drum step by step and to intermittently lock the same; and, means to adjust said connections between the driving mechanism and bed-frame, without stopping the driving mechanism, so as to render said drum inoperative and to throw out the automatic rotating means, substantially as set forth.

2. In a printing-machine, the combination with a stationary main frame; of a bed-frame arranged to oscillate thereon; a platen on said stationary frame; a printing-drum carried by said bed-frame; a chase carried by said bed-frame; an auxiliary printing device carried by said bed-frame; means to raise and lower said bed-frame with respect to said platen and thereby contemporaneously print from said drum said chase and said auxiliary printing device; means to automatically rotate said

frame step by step during each oscillation of said bed-frame; and means to automatically lock said drum in adjusted position, substantially as set forth.

5 3. In a printing-machine, the combination with a stationary main frame carrying a platen; of a bed-frame mounted to oscillate on said main frame; a printing-drum and a number-printing device carried by said bed-frame;
10 means to raise and lower said bed-frame; means to rotate said drum step by step at each oscillation of the bed-frame; and, means on said drum to automatically change the number printed by said device at the completion
15 of each revolution of said drum, substantially as set forth.

4. In a printing-machine, the combination with a stationary main frame; of a platen supported by said main frame; means to supply
20 blanks thereto; an oscillatory bed-frame pivoted to said stationary frame; a rotatable type-drum, a number-printing device, and a relatively stationary chase, all carried in said bed-frame; means to oscillate said bed-frame;
25 means to rotate said drum step by step as the bed-frame oscillates; and, means to automatically change the number printed by said device at each complete revolution of said drum, substantially as set forth.

30 5. In a printing-machine, the combination with a stationary main frame; of a magazine for blanks supported by said frame; a platen in said frame; a belt conveyer arranged to carry blanks from said magazine across said
35 platen; feeding mechanism arranged to successively deliver blanks from said magazine to said conveyer; a rotary drum provided with a series of type on its periphery; an oscillatory bed-frame carrying said drum; means to
40 intermittently rotate said drum to successively present its type at the printing-point; means to oscillate said frame to imprint said blanks from said drum; and means to intermittently progress said conveyer, substantially as set
45 forth.

6. In a printing-machine, the combination with a stationary frame; of a platen in said frame and means to supply blanks thereto; a rotary drum opposed to said platen; a series
50 of date-type arranged at intervals on the periphery of said drum; means to raise and lower said drum; means to automatically rotate said drum to successively present its date-type at the printing-point; an auxiliary number-printing device; and means to automatically change
55 the number printed by said device, at each revolution of said drum, substantially as set forth.

7. In a printing-machine, the combination
60 with a stationary frame; of a platen on said frame; a rotary drum opposed to said platen; a series of type on the periphery of said drum; a series of ratchet-teeth in said drum corresponding to said series of type; a series of de-
65 tent-notches in said drum corresponding to

said type; means to raise and lower said drum to imprint with the type thereon; means to rotate said drum and successively present its different type at the printing-point; said means comprising a pawl and a link connecting said
70 pawl with said frame; said pawl being arranged to engage one of the ratchet-teeth in said drum and rotate the latter while it is raised; and, means to render said pawl inoperative at the will of the operator, substan-
75 tially as set forth.

8. In a printing-machine, the combination with a stationary main frame; of a bed-frame arranged to oscillate thereon; a platen on said stationary frame; a belt conveyer provided
80 with blank clips arranged to traverse said platen; means to intermittently actuate said bed-frame, and said conveyer in definite relation; a pair of feed-rolls arranged to receive the printed blanks; and a belt conveyer actu-
85 ated by one of said rolls, to discharge the printed blanks, substantially as set forth.

9. In a printing-machine, the combination with a stationary main frame; of a bed-frame arranged to oscillate thereon; a rotary print-
90 ing-drum carried by said bed-frame; a platen on said stationary frame; means to oscillate said bed-frame to print from said drum upon said platen; means to rotatively shift said drum at each oscillation of said bed-frame; and
95 means to both vary the movement of said bed-frame, and render said shifting mechanism inoperative, and thereby permit said bed-frame to oscillate without printing from said drum or rotating the latter, substantially as set
100 forth.

10. In a printing-machine, the combination with a stationary main frame; of a bed-frame arranged to oscillate thereon; a printing-drum carried by said bed-frame and provided upon
105 its periphery with a series of groups of type; means to oscillate said bed-frame, comprising a rotary shaft, a crank on said shaft, and a connecting-rod extending from said crank to said bed-frame; a yoke provided with an eccentric-
110 trunnion between said connecting-rod and said bed-frame, whose rotary position variably determines the relative position of said connecting-rod and bed-frame; a pawl normally arranged to partially rotate said drum during
115 each oscillation of said bed-frame; and a wedge-bar operatively connecting said yoke and said pawl; whereby, said yoke may be shifted to simultaneously render said pawl inoperative and to permit said bed-frame to oscillate with-
120 out printing from said drum, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 27th day of May, 1902.

GEORGE W. SWIFT, JR.

Witnesses:

ARTHUR E. PAIGE,
MILDRED BARNHART.