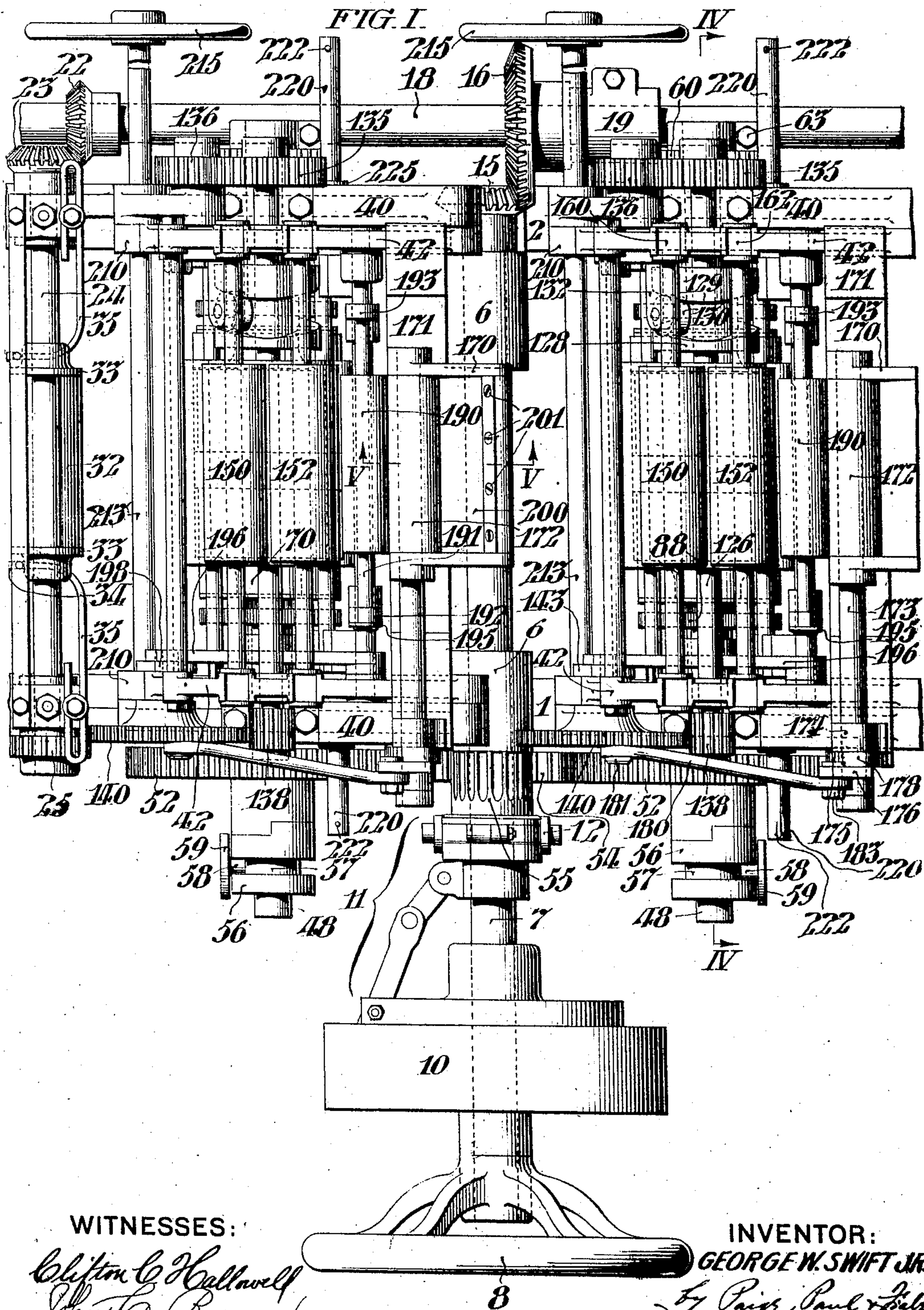


No. 842,265.

PATENTED JAN. 29, 1907

G. W. SWIFT, JR.
PRINTING MECHANISM.
APPLICATION FILED MAY 3, 1905.

4 SHEETS—SHEET 1.



WITNESSES:

Clifton C. Halliwell
John C. Berghner

INVENTOR:

GEORGE W. SWIFT JR.
By Paige, Paul & Bailey
Attys.

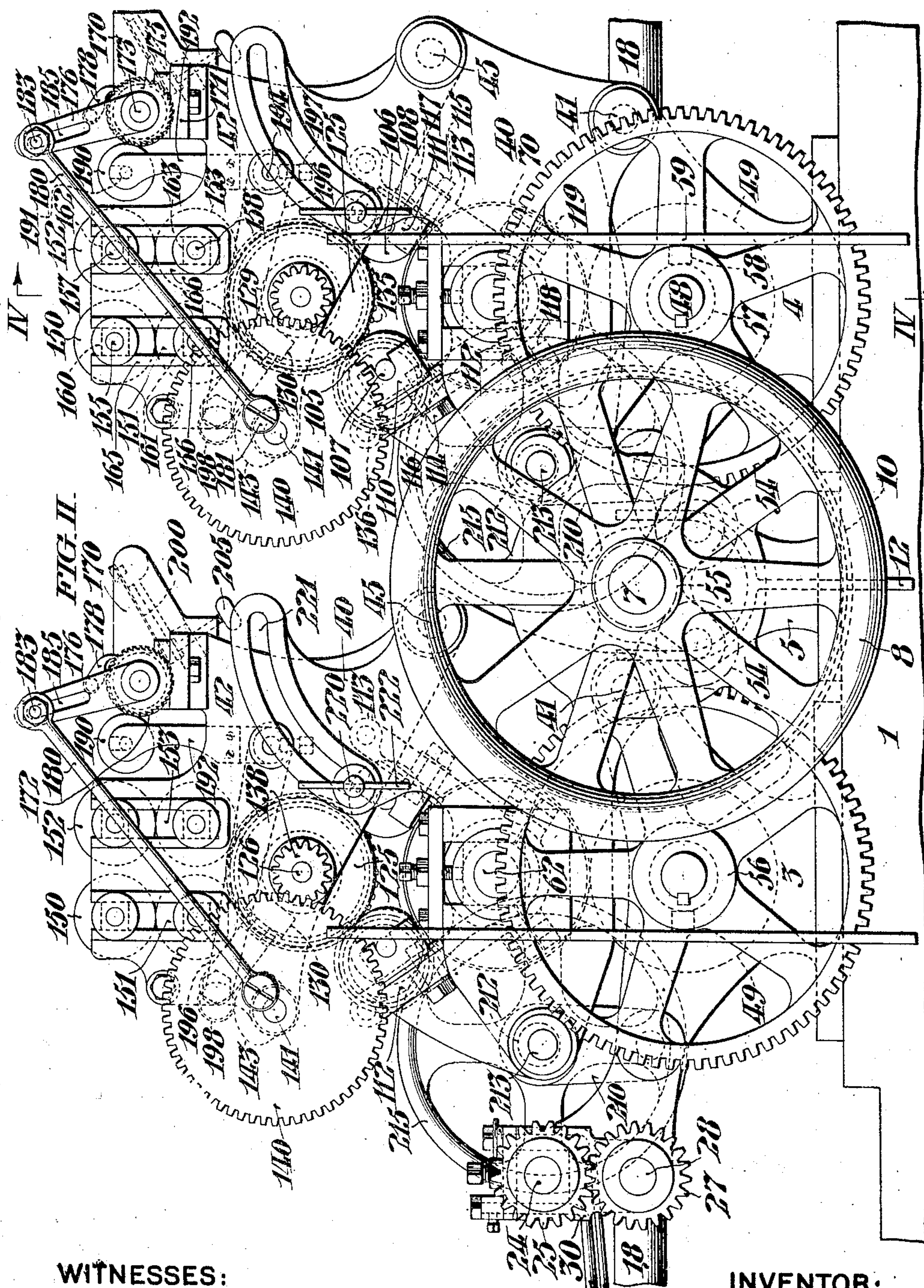
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4. SHEETS—SHEET 2.



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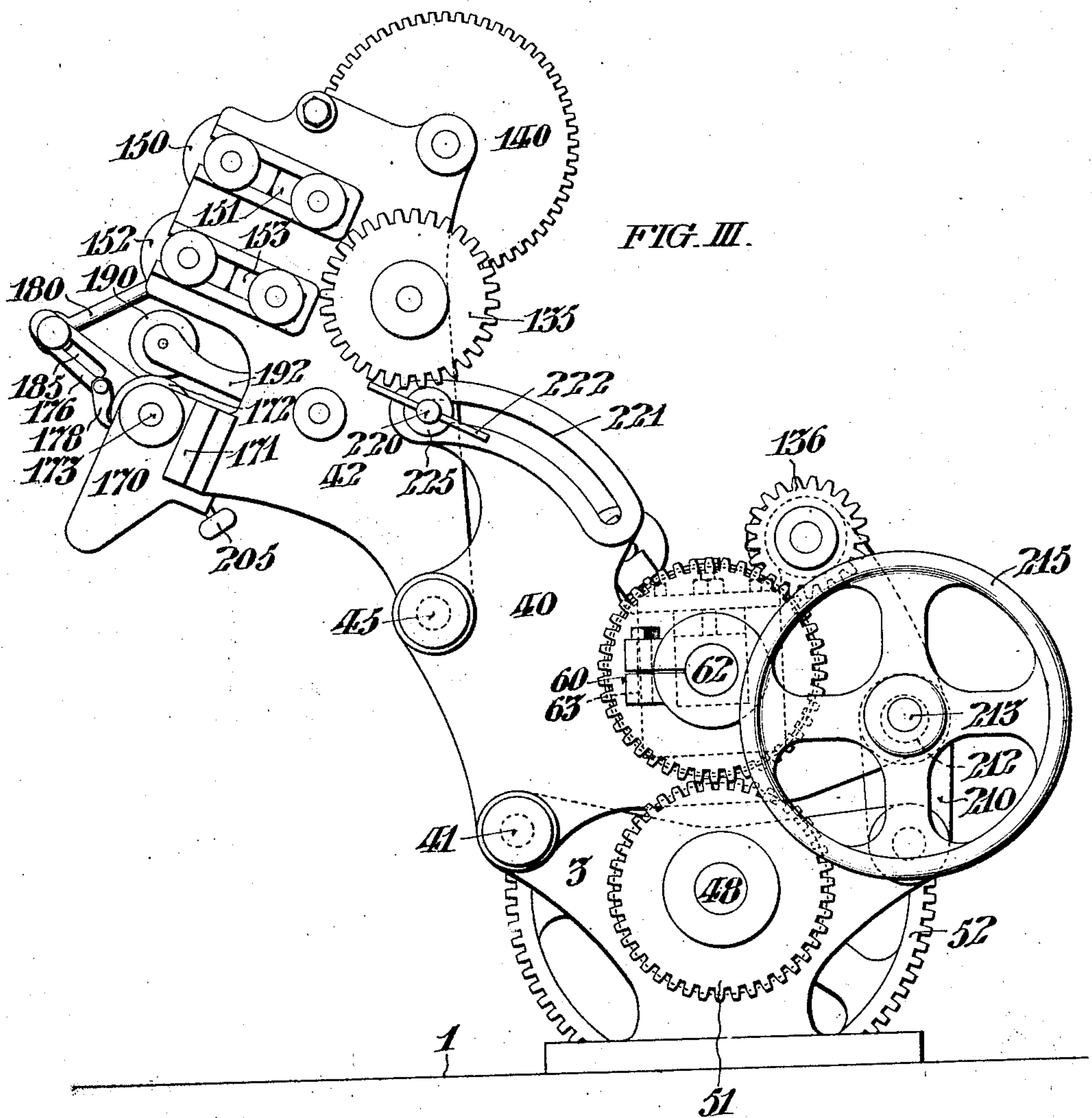
To Paige, Paul & Helen
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4 SHEETS-SHEET 3.



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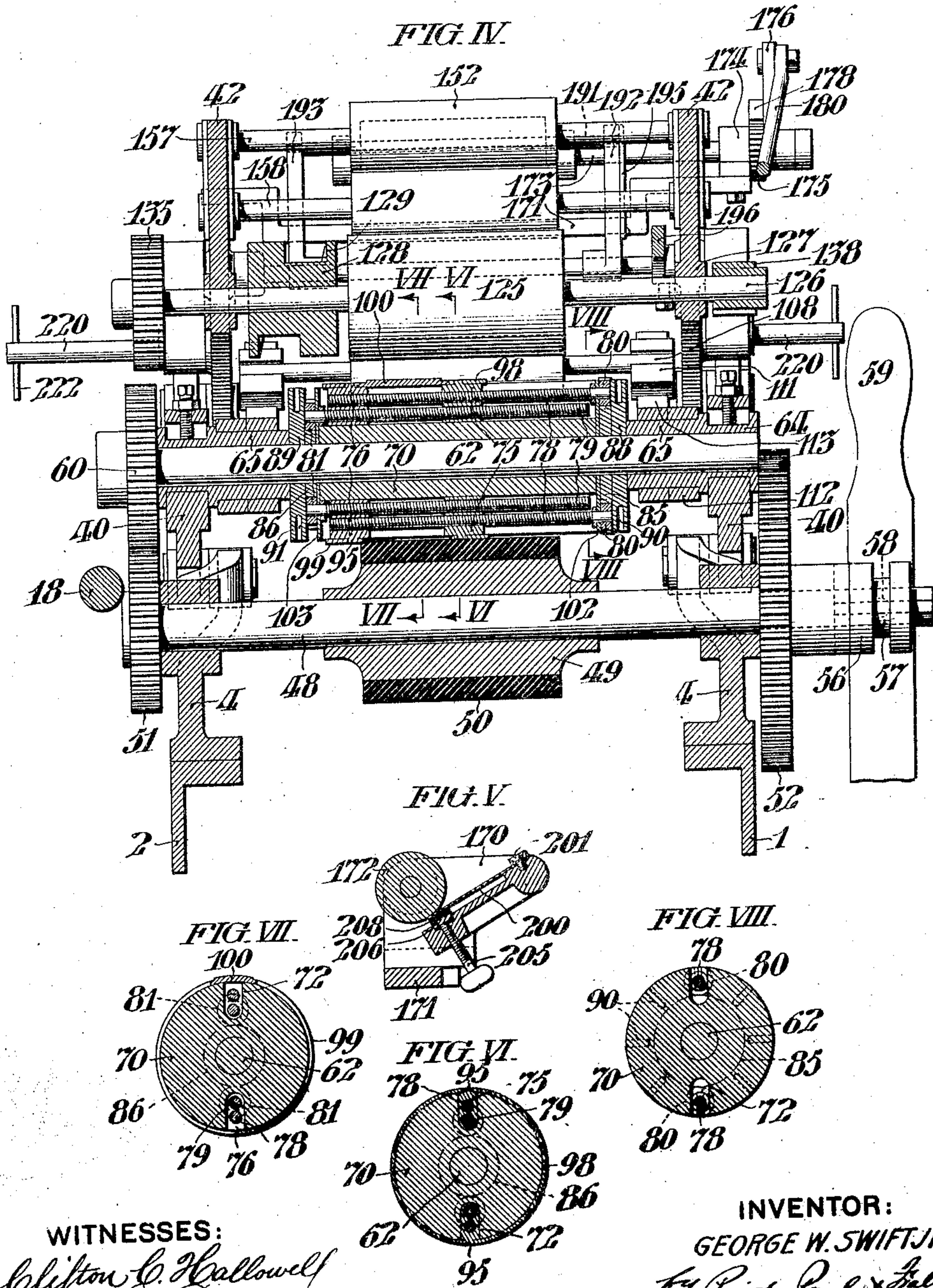
by Raige, Paul & Haley
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No. 842,265.

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G. W. SWIFT, JR.
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APPLICATION FILED MAY 3, 1905.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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

PRINTING MECHANISM.

No. 842,265.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed May 3, 1906. Serial No. 258,615.

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 Mechanism, whereof the following is a specification, reference being had to the accompanying drawings.

My improvements relate to printing mechanism arranged to print a moving web of fabric—for instance, paper—and may be advantageously employed in conjunction with a machine for forming articles such as envelopes.

The form of my invention hereinafter described comprises a type-cylinder having means to adjust and hold removable type in any desired position, an impression-cylinder, means to intermittently separate said type-cylinder from said impression-cylinder, ink-rollers, an ink-distributing roller arranged to reciprocate while rotating, ink-transmitting rollers, an ink-fountain, a fountain-roller, a ductor-roller arranged to carry ink from said fountain-roller to said transmitting-rollers.

My invention also comprehends a plurality of printing mechanisms arranged, as described, to cooperate in definite relation with each other to print with, respectively, different-colored inks upon the same fabric.

My invention also includes means whereby the upper portion of said mechanism may be swung away from its operative position to afford access to the centralized parts.

In the accompanying drawings, Figure I is a plan-view of a convenient embodiment of my invention. Fig. II is an elevational view of that side which is toward the observer with respect to Fig. I. Fig. III is an elevational view of that side which is remote from the observer with respect to Fig. I of one of the printing mechanisms, showing an alternate position. Fig. IV is a transverse vertical sectional view taken on the line IV-IV in Figs. I and II. Fig. V is a fragmentary vertical sectional view of the ink-fountain, taken on the line V-V in Fig. I. Fig. VI is a transverse vertical sectional view through the type-cylinder, taken on the line VI-VI in Fig. IV. Fig. VII is a view similar to Fig. VI, taken on the line VII-VII in Fig. IV. Fig. VIII is a view similar to Fig. VI, taken on the line VIII-VIII in Fig. IV.

In said figures the frames 1 and 2 conveniently support the base-brackets 3 and 4 of the respective counterpart printing mech-

anisms and the bearing-brackets 5, comprising suitable bearings 6 for the driving-shaft 7. Said driving-shaft 7 is provided with the hand-wheel 8 and the pulley 10, which latter is normally loose on said shaft, but arranged to be connected therewith by a well-known form of clutch mechanism 11; conveniently operated by the bifurcated lever 12, and said shaft 7 is also provided with the bevel-pinion 15, arranged to mesh with the bevel-gear 16 on the counter-shaft 18, which is journaled in the bearing-bracket 19.

The counter-shaft 18 is provided with the miter-pinion 22, arranged to mesh with the miter-pinion 23 on the shaft 24, which has the gear 25 arranged to mesh with the gear 27 on the shaft 28. Said shafts 28 and 24 are journaled in the housings 30 in the brackets 3 and are respectively provided with the roller 32 and disks 33, between which the printed web is carried as it passes from the printing mechanism and is guided away between the guide-wires 34 and 35.

As best shown in Figs. I and II, the printing mechanisms are arranged in duplicate, so as to be capable of printing in colors, and are driven by the shaft 7, common to both. Said mechanisms each comprise the side frames 40, pivoted to the respective brackets 3 and 4 at 41, the side frames 42, pivoted to the side frames 40 at 45, and a shaft 48, journaled in the brackets. Said shaft carries the impression-cylinder 49 (which is conveniently covered with resilient material 50) and the gears 51 and 52, the latter being loose thereon and arranged to mesh with the idler 54, which is driven by the gear 55 on the driving-shaft 7. Said gear 52 is arranged to be connected to said shaft 48 by the keyed clutch-collar 56, having the groove 57, engaged by the lug 58 on the hand-lever 59. Said gear 51 is arranged to mesh with the gear 60 on the shaft 62, which is journaled in the adjustable bearing-blocks 64, having sleeves 65; and which carries the type-cylinder 70. Said gear 60 is conveniently split and secured to the shaft 62 by the bolt 63, the loosening of which permits relative rotation of the cylinder 70, whereby the type may be set with respect to the length of the web to be printed. As best shown in Figs. VI, VII, and VIII, said type-cylinder 70 comprises the grooves 72, extending parallel to its axis, in which the blocks 75 and 76 are arranged to travel in threaded engagement with the respective screw-threaded shafts 78 79, hav-

ing the respective pinions 80 and 81 arranged to respectively mesh with the gears 85 and 86, which have the flanges 88 and 89. Said flanges 88 and 89 are provided with apertures 90 and 91, arranged to receive a wrench whereby the gears 85 and 86 may be relatively rotated to shift the blocks 75 and 76, which have the lugs 95, arranged to engage suitable apertures in the respective annular bands 98 and 99, whose adjacent edges are slightly undercut to firmly engage the type-plate 100. Said type-plate 100 may be shifted to any desired position on the type-cylinder or be removed therefrom by said rotation of the gears 85 and 86, which are prevented from longitudinal displacement by the disks 102 and 103.

The inking-rollers 105 and 106 have their shafts 107 and 108 journaled in the bearing-boxes 110 and 111, which are adjustably secured to the brackets 112 and 113 by the bolts 114 and 115, which extend through slots 116 and 117 in said brackets and which are in threaded engagement with said blocks. Said brackets 112 and 113 are adjustably secured to the sleeves 65 by the bolts 118 and 119, respectively.

The distributing-roller 125 is arranged to reciprocate in the direction of its axis in contact with the inking-rollers 105 and 106 and is carried by the shaft 126, which is journaled in the bearings 127 in the frames 42 and which is provided with the cam 128, whose groove 129 is arranged to be engaged by the cam-roller 130, journaled on the stationary bracket 132.

The shaft 126 is conveniently rotated by having its gear 135 in toothed engagement with the idler 136, which meshes with the gear 60, above referred to. Said shaft 126 also comprises the pinion 138, arranged to rotate the gear 140, whose short shaft 141 is journaled in the frame 42 and is provided with the cam 143 adjacent to the inner side of said frame.

Above the distributing-roller 125 are the transmitting-rollers 150, 151, 152, and 153, arranged in pairs and having their respective shafts 155, 156, 157, and 158 journaled in the bearing-boxes 160, 161, 162, and 163. Said boxes 160 and 161 are mounted in the housings 165 in the frame 42, and the boxes 162 and 163 are mounted in the housings 166 in said frame.

The ink-fountain 170 is secured to the cross-piece 171, carried by the frame 42, and is provided with the fountain-roller 172, having its shaft 173 journaled in the side walls of said fountain and in the bearing 174 on said cross-piece 171. Said shaft 173 is provided with the ratchet 175, which is intermittently rotated by the oscillatory lever 176, having the pawl 178 pivotally mounted thereon and arranged to engage said ratchet. Said lever 176 is journaled on the shaft 173 and is con-

nected by the pitman 180 to the stud 181, eccentrically situated on the gear 140. Said pitman 180 is conveniently connected to the lever 176 by the bolt 183, which extends through the slot 185 in said lever and may be adjusted toward or away from the shaft 173 to regulate the extent of movement of said lever.

The ductor-roller 190, which is arranged to take ink from the fountain-roller 172 and deposit it on the transmitting-roller 152, has its shaft 191 journaled in the upwardly-extending levers 192 and 193, which are secured to the rock-shaft 194, and the former of which levers is provided with the spring-catch 195, by which said shaft 191 may be readily inserted or removed, but prevented from accidental displacement. The shaft 194 is arranged to be rocked by the lever 196, which is adjustably secured thereto by the set-screw 197 and which has the cam-roller 198 arranged to engage the cam 143, above referred to.

The ink-fountain 170, as best shown in Fig. V, comprises the flexible metal plate 200, which is secured along its upper edge by the screws 201 and which is arranged to have its lower edge engage the fountain-roller 172 with any desired degree of frictional contact (to regulate the amount of ink delivered to the distributing-roller) by the adjustment of the set-screws 205, which are in threaded engagement with the fountain 170 and are arranged to bear against the cross-piece 206, between which and the plate 200 a resilient washer 208 is inserted.

The type-cylinder 70 may be separated from the impression-cylinder 49 to permit the web to pass freely between them (when it is desired to progress said web without printing it) by oscillating the frames 40, which are connected at the left side with respect to Fig. II to the respective brackets 3 and 4 by the links 210. Said links 210 are pivoted at their lower ends to said brackets and at their upper ends on the eccentrics 212 on the shaft 213, which latter is journaled in the frames 42 and provided with the hand-wheel 215, by which it may be conveniently rotated.

As best shown in Fig. III, the frames 40 may be rocked on the pivots 41 by the rotation of the eccentrics 212, which limit their movement so as to prevent the disengagement of the gears 51 and 60 and which positively shift the type-cylinder away from or into engagement with the impression-cylinder, as the case may be.

As best shown in Fig. III, the frame 42 is arranged to be swung back on its pivot 45 to any desired position to afford access to the centralized parts of the mechanism, and said frame may be locked in said position by the studs 220, which extend through the sectoral slots 221 in the frames 40 and which are in threaded engagement with the frames 42.

Said studs 220 are provided with the handles 222, by which they may be rotated to frictionally engage their collars 225 with the sides of the frames 40.

5 It may be here noted that one or both of said printing mechanisms shown in the drawings may be in or out of action or that the plurality of said mechanisms may be mounted upon the supporting-frames in operative
10 relation to print the web in as many colors as desired.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various
15 modifications may be made therein without departing from the essential features of my invention.

I claim—

1. In a printing device arranged to print a
20 moving web, the combination with an impression-cylinder; of a type-cylinder geared to said impression-cylinder; inking mechanism; means comprising an eccentric arranged to separate said cylinders, whereby the dis-
25 engagement of the gears is prevented; and means arranged to secure the inking mechanism in any desired position with respect to the type-cylinder, substantially as set forth.

2. In a printing device arranged to print a
30 moving web, the combination with supporting-brackets; of an impression-cylinder journaled in said brackets; type-cylinder frames pivoted to said brackets; a type-cylinder journaled in said frames; means arranged to
35 rock said type-cylinder frames to separate said cylinders; inking-mechanism frames pivoted to said type-cylinder frames; inking mechanism carried by said inking-mechanism frames; and means arranged to secure
40 the inking mechanism in any desired position with respect to the type-cylinder, substantially as set forth.

3. In a printing device arranged to print a
45 moving web, the combination with supporting-brackets; of an impression-cylinder journaled in said brackets; type-cylinder frames pivoted to said brackets; a type-cylinder journaled in said frames; inking-mechanism
50 frames pivoted to said type-cylinder frames; inking mechanism carried by said inking-mechanism frames; means arranged to oscillate said type-cylinder frames with respect to
said brackets; and means arranged to secure
55 said inking-mechanism frames in idle position with respect to said type-cylinder frames, substantially as set forth.

4. In a printing device arranged to print a
moving web, the combination with supporting-
60 brackets; of an impression-cylinder having a shaft journaled in said brackets; a gear loosely mounted on said shaft; a clutch-collar carried by said shaft and arranged for axial movement thereon; means arranged to
shift said collar into and out of engagement
65 with said gear; type-cylinder frames pivoted

to said brackets; a type-cylinder journaled in
said frames; inking-mechanism frames pivot-
ed to said type-cylinder frames; inking mech-
anism carried by said inking-mechanism
frames; means arranged to oscillate said
70 type-cylinder frames with respect to said brackets; and means arranged to secure said
inking-mechanism frames in idle position,
with respect to said type-cylinder, substan-
tially as set forth. 75

5. In a printing device arranged to print a
moving web, the combination with a type-
cylinder; of a shaft for said cylinder; bear-
ings for said shaft; brackets adjustably se-
cured to said bearings; bearing-blocks ad-
80 justably secured to said brackets; and inking-
rollers journaled in said blocks, substan-
tially as set forth.

6. In a printing device arranged to print a
moving web, the combination with a type-
85 cylinder; of a shaft for said cylinder; bearings for said shaft; brackets adjustably secured to said bearings; bearing-blocks adjustably se-
cured to said brackets; inking-rollers jour-
naled in said blocks; an impression-cylind-
90 er; means arranged to slightly separate said cylinders; and gearing between said cylinders, arranged to effect their rotation in definite relation to the travel of the web when
separated, substantially as set forth. 95

7. In a printing device, the combination
with an impression-cylinder; of means ar-
ranged to rotate said cylinder; a gear on said
cylinder; a type-cylinder arranged to print a
moving web; a gear on said type-cylinder ar-
100 ranged to mesh with the gear on said impres-
sion-cylinder; means comprising an eccentric
arranged to separate said cylinders, whereby
the disengagement of said gears is prevented;
a pivoted inking mechanism arranged to de-
105 posit ink on the type-cylinder and to be
swung free therefrom; and means arranged to
secure said inking mechanism in any adjust-
ed position, substantially as set forth.

8. In a printing device, the combination
110 with an impression-cylinder; of supporting-
brackets for said cylinder; a type-cylinder
comprising type adjustably arranged to co-
operate with said impression-cylinder to
print a moving web; frames for said impres-
115 sion-cylinder pivoted to said brackets and
comprising a sector; means arranged to os-
cillate said frames with respect to said brack-
ets; inking-mechanism frames for said inking
mechanism pivoted to the type-cylinder
120 frames; a set-screw carried by said inking-
mechanism frames arranged to engage said
sector, to secure the inking mechanism away
from the type-cylinder, substantially as set
forth. 125

9. In a printing device, the combination
with an impression-cylinder; of supporting-
brackets for said cylinder; a type-cylinder;
type-cylinder frames pivoted to said brack-
ets; bearings for said type-cylinder adjust-
130

ably secured in said frames; an eccentric-shaft journaled in said frames; eccentrics on said shaft; links pivoted to said brackets and to said eccentrics, whereby the rotation of said shaft oscillates said frames on the pivots, substantially as set forth.

10. In a printing device, the combination with a driving-shaft; of an impression-cylinder arranged to be rotated by said shaft; a type-cylinder geared to said impression-cylinder, and arranged to print a moving web; means arranged to separate said cylinders sufficiently to prevent the printing of the web, but not to disengage the gears; a roller distinct from the type-cylinder and the impression-cylinder, positively driven by said driving-shaft, disks arranged to cooperate with said roller to engage the edges of the printed web and progress it in definite relation to the rotation of said cylinders, substantially as set forth.

11. In a printing device, the combination with a type-cylinder; of a shaft for said cylinder; bearings for said shaft; brackets adjustably secured to said bearings; inking-rollers journaled in said brackets and arranged to deposit ink on type carried by said cylinder; an impression-cylinder, having a resilient facing; a shaft for said impression-cylinder; a gear loosely mounted on said shaft; a clutch-collar keyed to said shaft, arranged for axial movement; and, means arranged to shift said collar into and out of engagement with said gear, substantially as set forth.

12. In a printing device, the combination with supporting-brackets; of an impression-cylinder journaled in said brackets; frames pivoted to said brackets; a type-cylinder journaled in said frames, arranged to print a moving web; an eccentric-shaft journaled in said frames; eccentrics on said shaft; links connecting said eccentrics with said brackets; means on said shaft whereby it may be rotated to separate said cylinders; a roller arranged to rotate in definite relation to the

rotation of the type-cylinder; and, disks arranged to cooperate with said roller, to carry the web from said cylinder, substantially as set forth.

13. In a printing device, the combination with a plurality of printing mechanisms, arranged in definite relation to each other, to print a moving web of fabric, each comprising supporting-brackets; frames pivoted to said brackets; an impression-cylinder, whose shaft is journaled in said brackets; a type-cylinder whose shaft is journaled in said frames; an eccentric-shaft journaled in said frames; eccentrics on said shaft; links connecting said eccentrics with said brackets, whereby the rotation of said shafts separates said cylinders; a driving-shaft, common to all of said printing mechanisms; gears loosely mounted on the respective impression-cylinder shafts of said printing mechanisms, arranged to be driven in the same direction by said driving-shaft; a clutch-collar arranged to connect said gears to said shaft; and, means arranged to shift said collar, substantially as set forth.

14. In a printing device, the combination with an impression-cylinder; of a shaft for said cylinder; a gear on said shaft; a type-cylinder; type carried by said cylinder; means arranged to adjust said type in an axial direction relatively to the cylinder; a shaft for said type-cylinder; and, a gear adjustably secured on said type-cylinder shaft, arranged to mesh with the gear on said impression-cylinder shaft, whereby said type-cylinder may be rotated with respect to said gear to adjust said type in a circumferential direction, substantially as set forth.

In testimony whereof I have hereunto signed my name, at Bordentown, in the State of New Jersey, this 1st day of May, 1905.

GEORGE W. SWIFT, JR.

Witnesses:

R. H. AARONSON,

JULIA A. MALONE.