C. M. MEAD.

FLAT BED MULTIPLE PRINTING PRESS.

APPLICATION FILED JUNE 14, 1915. RENEWED JULY 16, 1917.

1,238,424.

Patented Aug. 28, 1917.

9 SHEETS—SHEET 1.

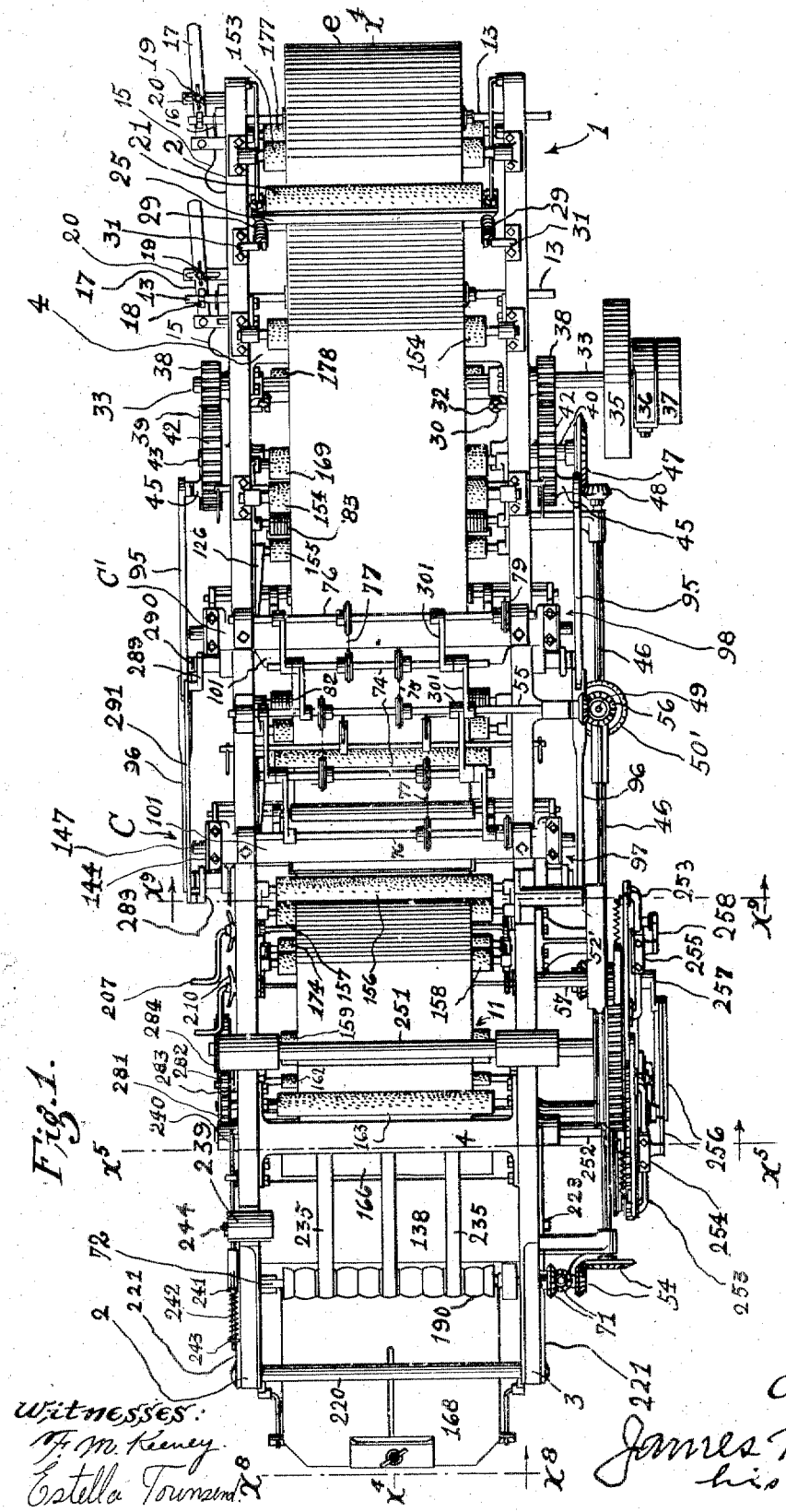

Fig. 1.

Witnesses:
F. M. Keney.
Estella Townsend.

Inventor:
Charles M. Mead.
by
James R. Townsend
his atty.

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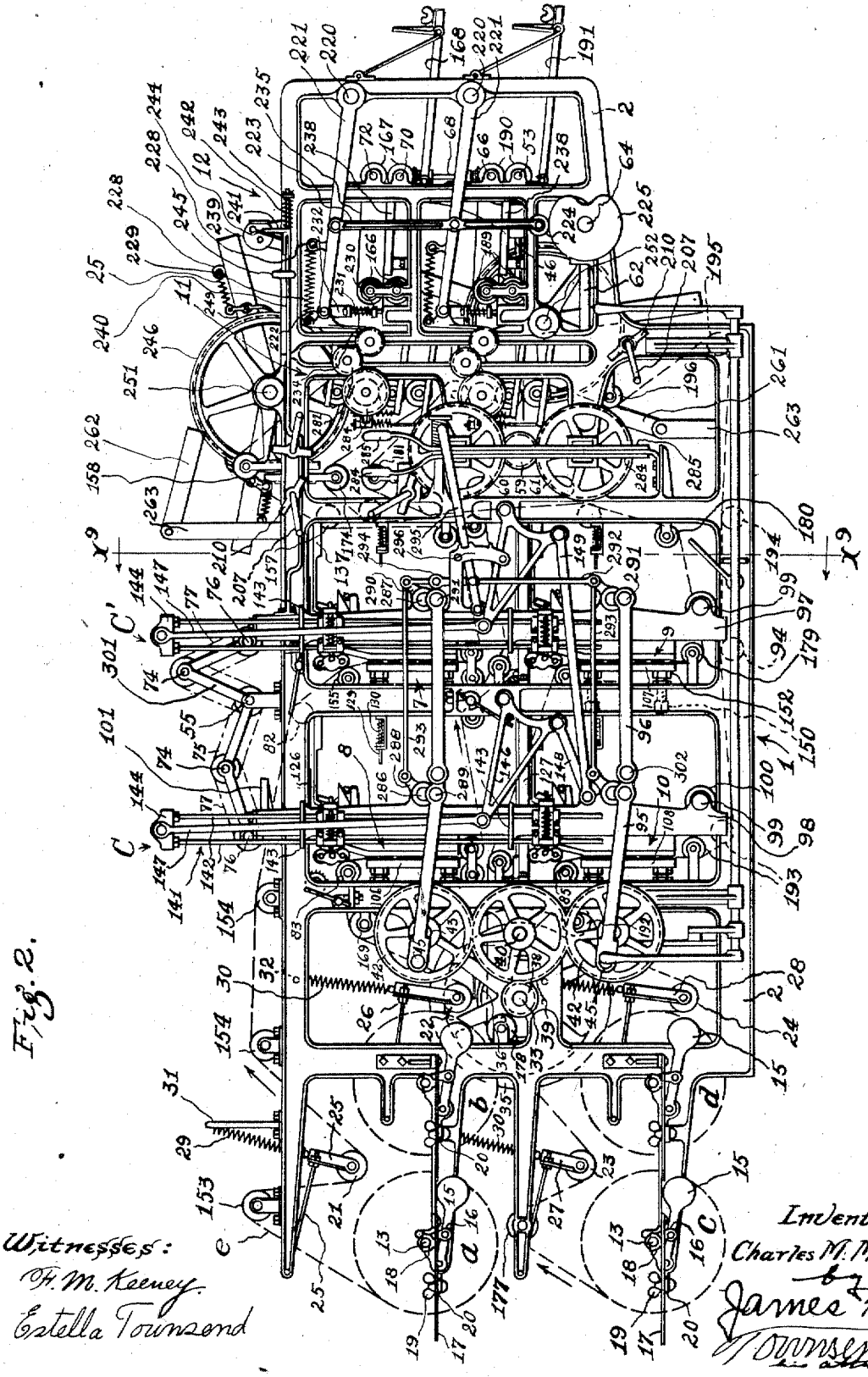

Fig. 2.

Witnesses:
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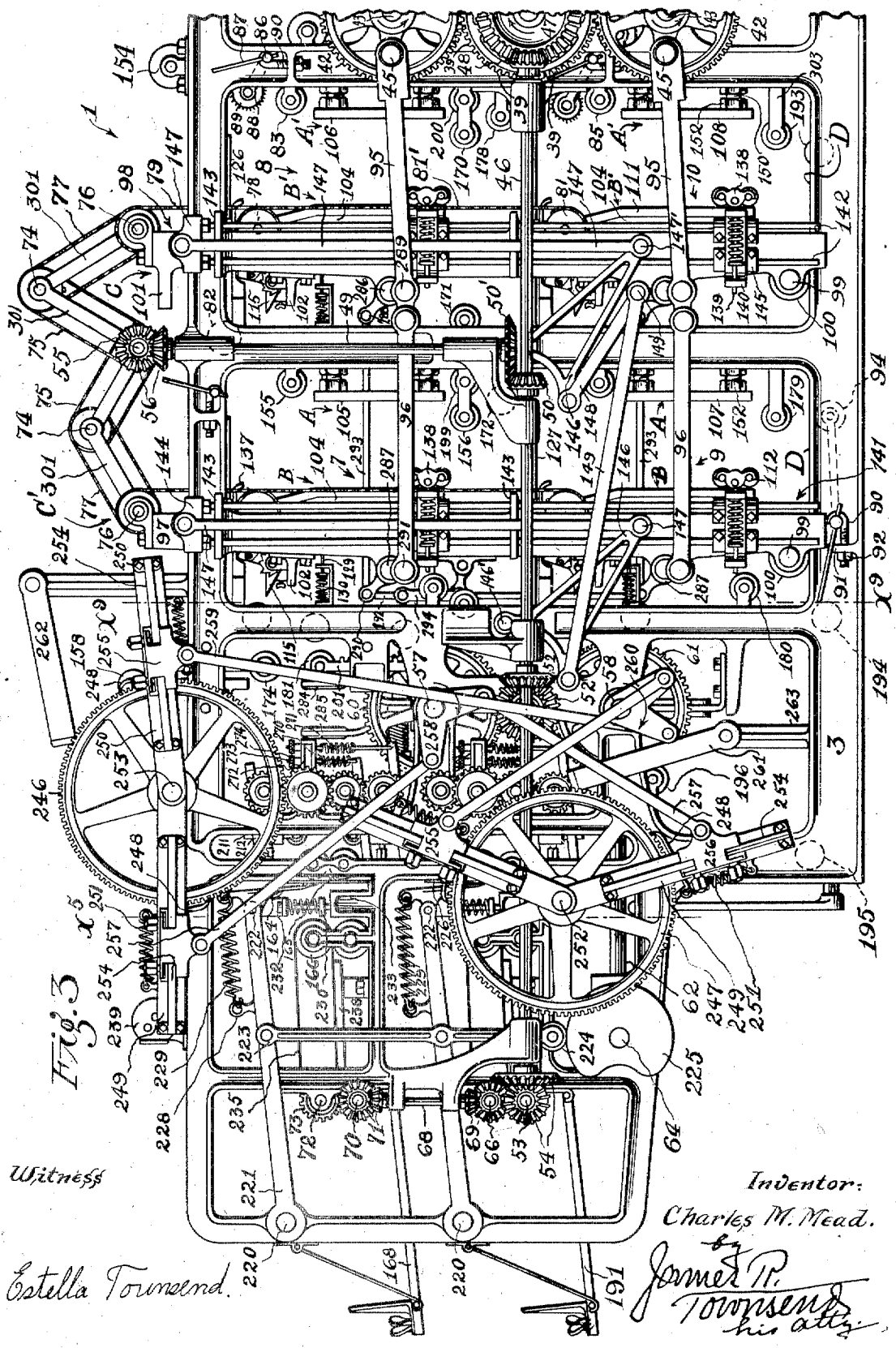

Fig. 3

Witness

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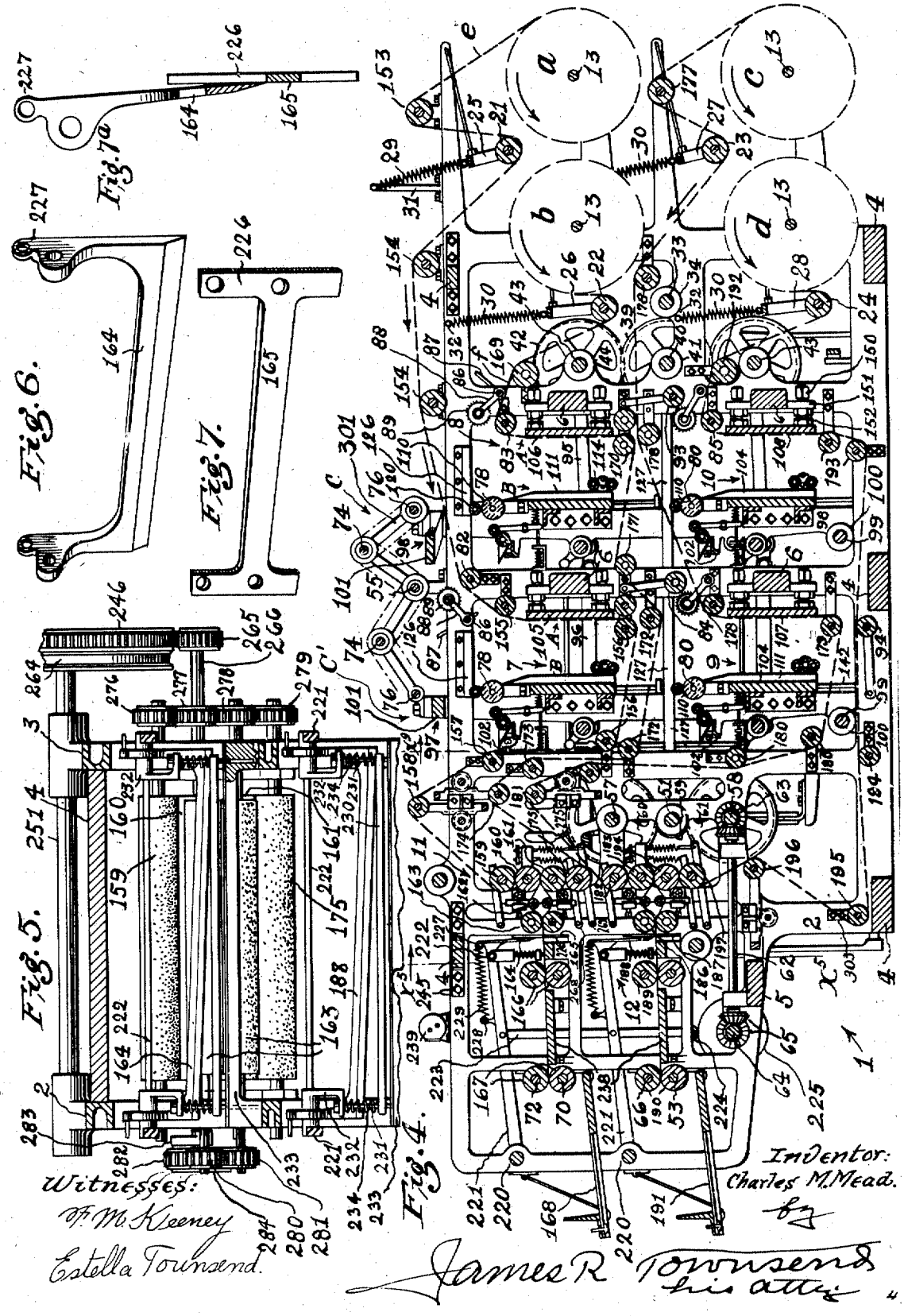

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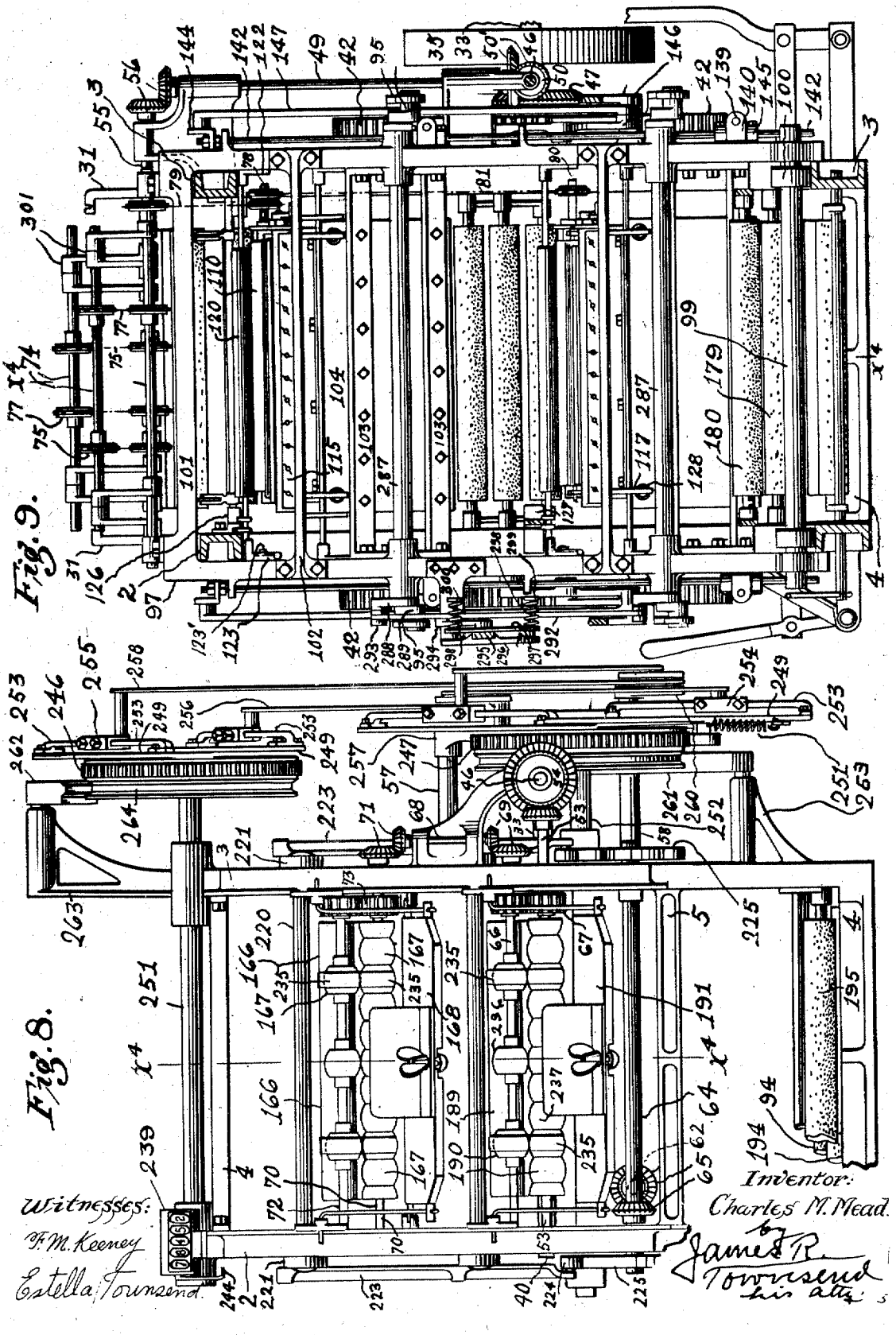

Fig. 9.

Fig. 8.

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9 SHEETS—SHEET 6.

Fig. 10

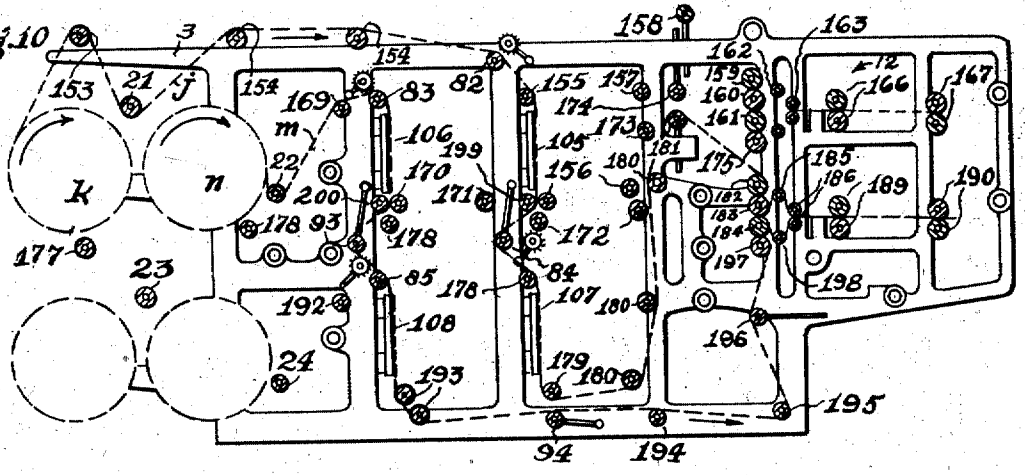


Fig. 11.

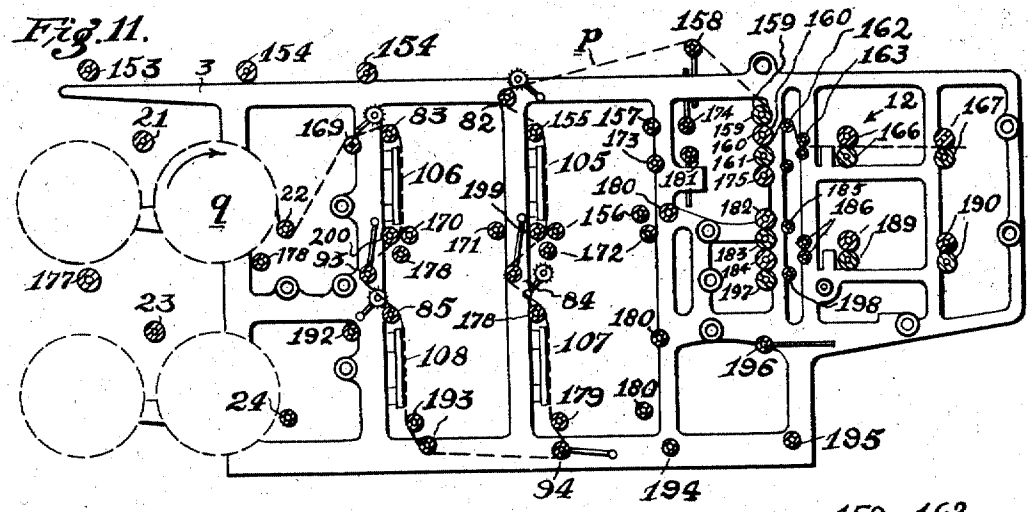
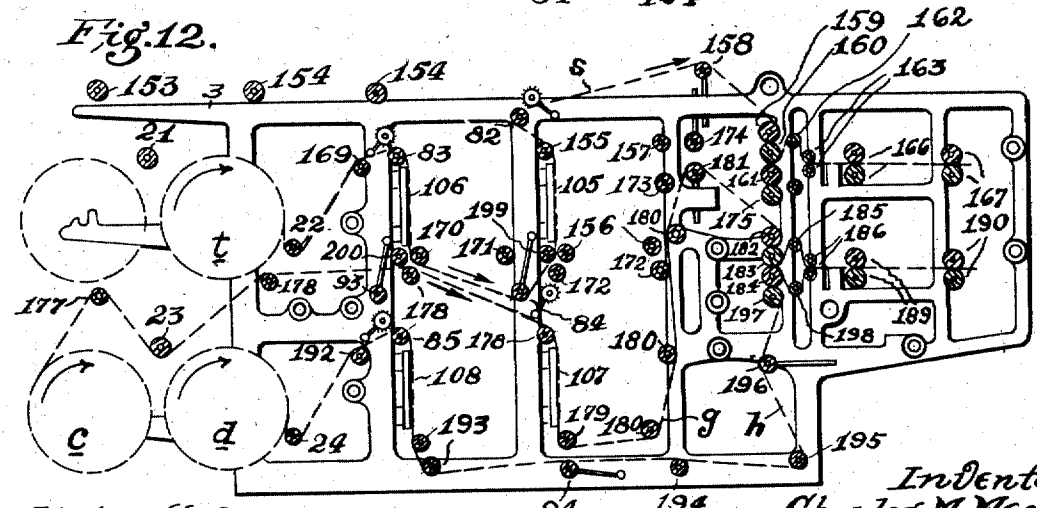


Fig. 12.



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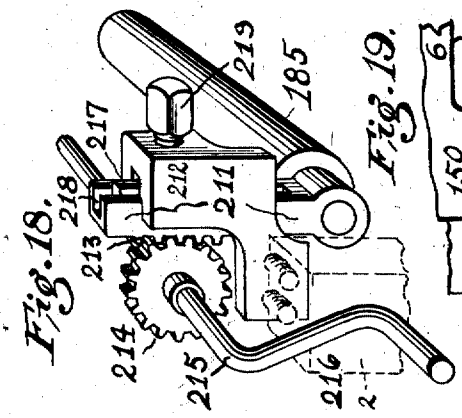

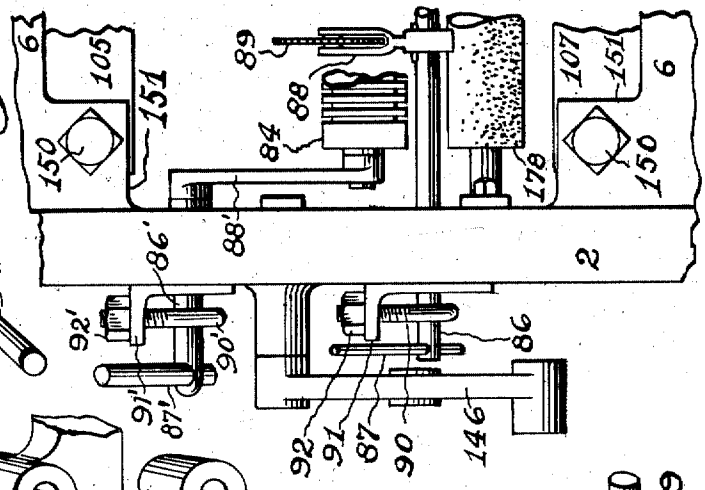

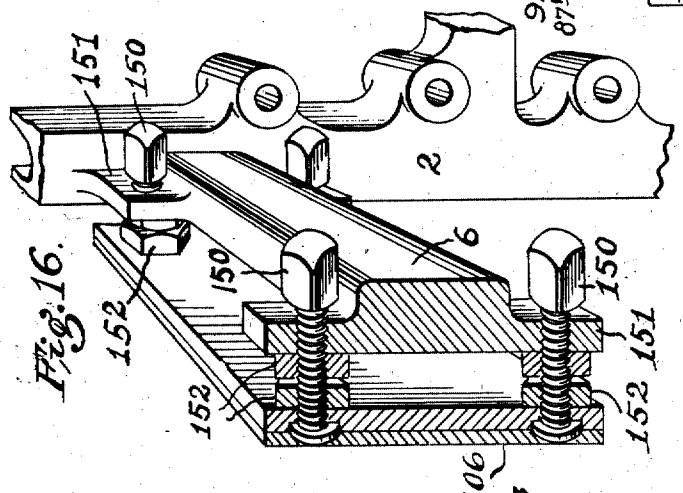

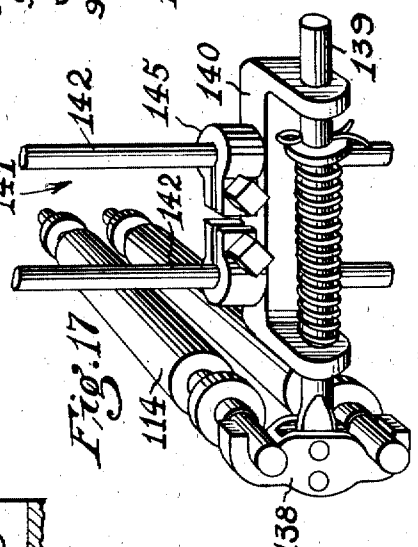

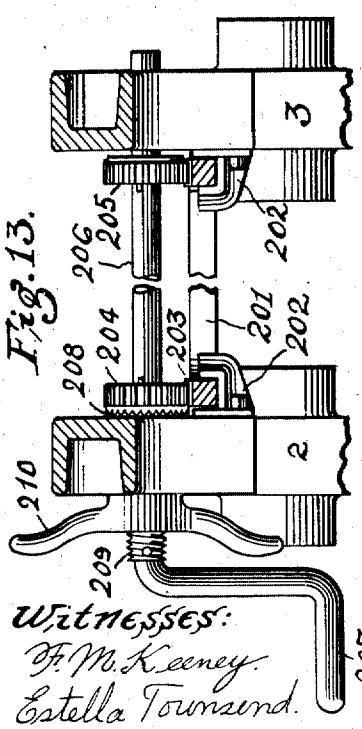

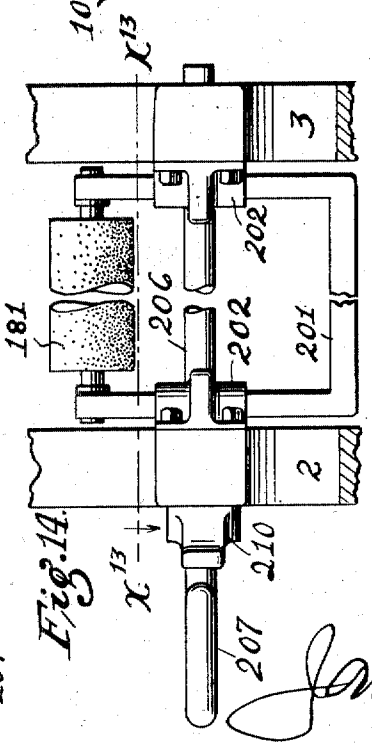

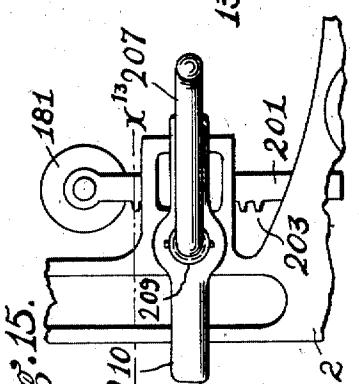

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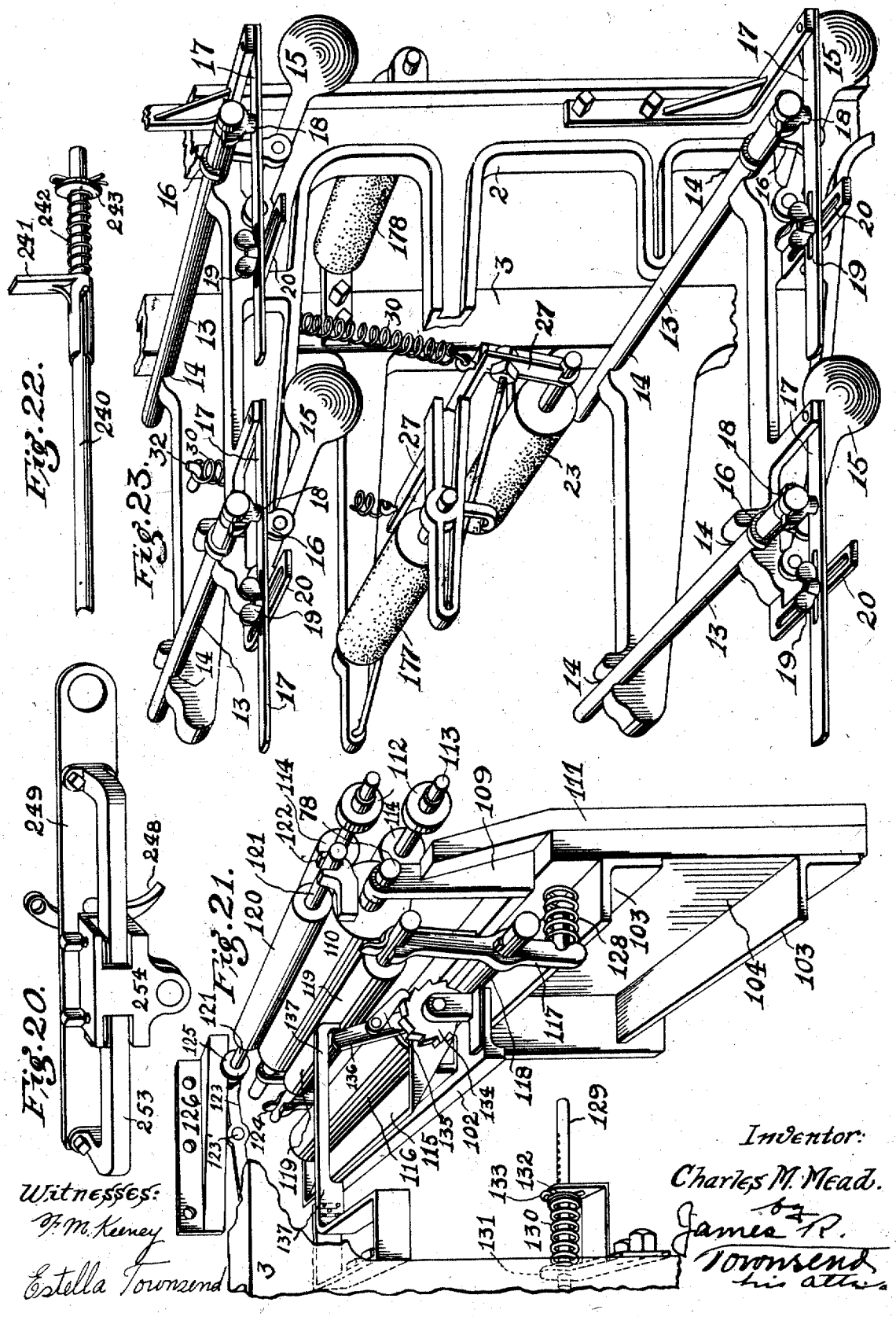

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9 SHEETS—SHEET 9.

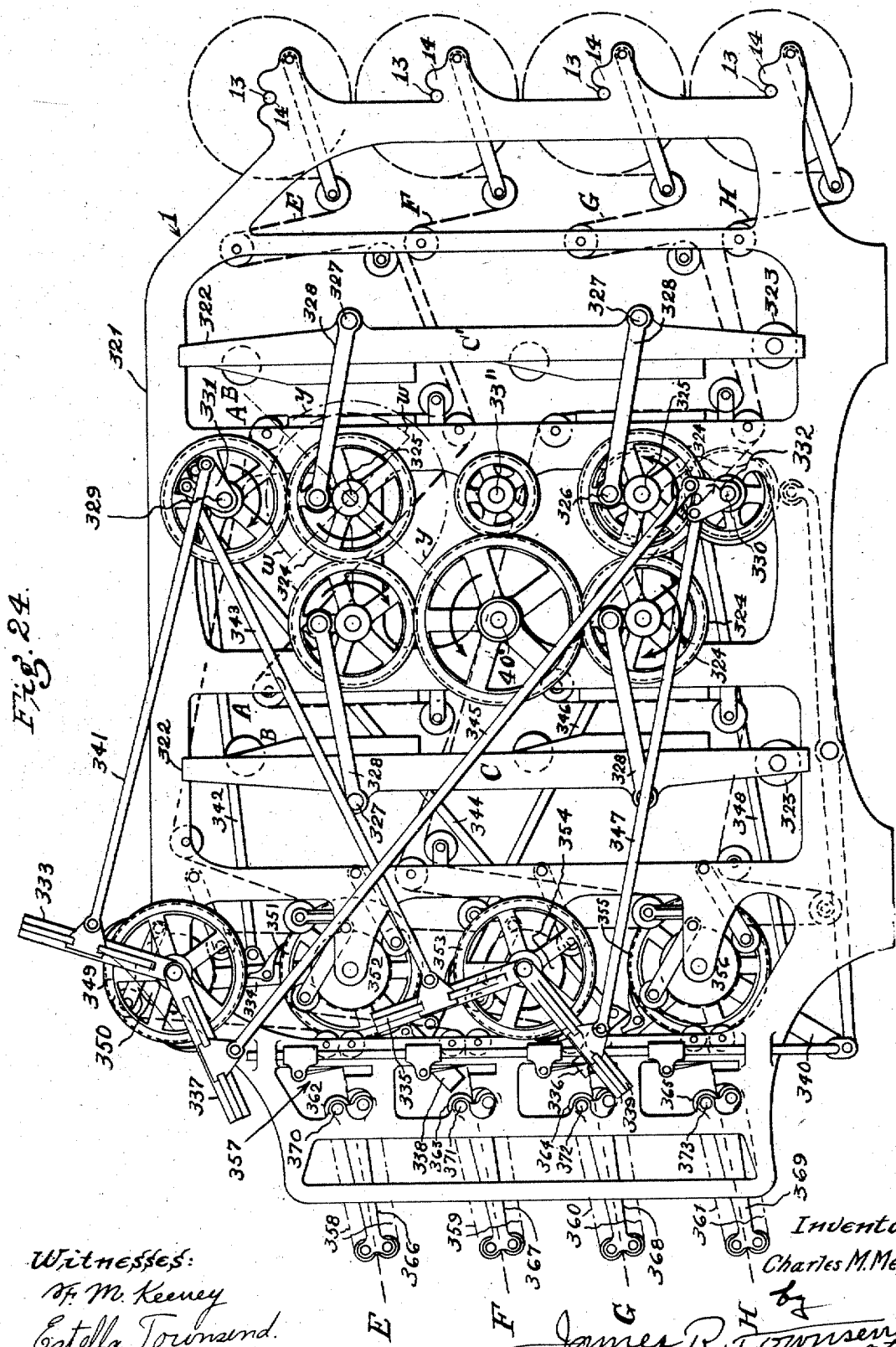

Fig. 24.

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UNITED STATES PATENT OFFICE.

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FLAT-BED MULTIPLE PRINTING-PRESS.

1,238,424. Specification of Letters Patent. Patented Aug. 28, 1917.

Application filed June 14, 1915, Serial No. 34,105. Renewed July 16, 1917. Serial No. 180,957.

To all whom it may concern:

Be it known that I, CHARLES M. MEAD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Flat-Bed Multiple Printing-Press, of which the following is a specification.

This invention has relation to a new and novel press for printing upon a continuous web or a plurality of webs, printing one or more webs with a single or a plurality of colors, printing the web on opposite sides, and cutting the web or webs into sheets.

The invention comprehends advantageous features for feeding the web to the imprinting mechanism, for counting the impressions, for perforating the web, for adjusting the web to print in two or more colors, for printing duplicates, for perfect adjustment to print different jobs simultaneously, of different size and make-up, and for taking the web or webs from rolls and delivering the printed impressions in separate sheets in predetermined order, all of which features are embodied in a compact mechanism which automatically operates in a continuous manner.

The invention further comprehends new and novel features for cutting the web, for tensioning the web between the paper roll and the type-bed impression mechanism, for distributing the ink, for registering the impressions from successive forms and platens in multi-color work, for producing and releasing the impressions and for making perforations in the printed web to register with the forms.

The invention is regarded as broadly new and pioneer in the direct straight line reciprocating motion of the operating parts for producing the impressions, the clamping of the web while the cutting mechanism is operative, the double throw of the ratchet feed wheels, the means for alinement of the delivery belts, the means for simultaneously releasing the impression mechanism, and the means for equalizing the stress and strains throughout a plurality of forms.

The novel features and their advantages are more fully developed in the subjoined detail description.

I shall herein set forth a particular embodiment of this invention which is of quadruple construction having four type beds and four platens. The invention is adapted to a variety of work, and its features are applicable in constructing multiple type beds and platen presses of greater capacity than the embodiment shown. It is understood that parts may be changed in arrangement and connection without departing from the invention, therefore no limitation is made to the precise construction shown.

Objects of the invention are to provide a flat bed quadruple printing press which will meet a wide demand, being endless in its variety and combination of work, cheap to operate, great in speed and simple in construction, employing no curved plates, doing all the printing from type, printing two colors on both sides of the sheet at once, printing two colors on two sheets at the same time, printing four different jobs at once on different colored paper in different colored ink and different in size and make-up.

The press is particularly adapted for the rapid printing of laundry lists, bread wrappers, butter wrappers and dodgers, all of which different jobs can be printed at the same time.

An object is to print four jobs at once on paper taken from rolls with no stops and everything automatic.

An object is to provide a press doing a maximized variety of work in minimized time and with a minimized number and complications of parts.

The accompanying drawings which are more or less diagrammatic in character illustrate the invention.

Figure 1 is a plan of a printing press incorporating the principles of this invention. The type beds are retracted to fully open position.

Fig. 2 is a front elevation of the press with the type beds advanced to printing position.

Fig. 3 is an enlarged fragmental rear elevation of the press with the type beds retracted as in Fig. 1.

Fig. 4 is a vertical mid-section of the press with its parts in the position shown in Fig. 3. Line x^4, Figs. 1, 8 and 9 indicates the line of section.

Fig. 5 is a fragmental sectional detail of the web cutting mechanism the section be-

ing taken generally on line x^5, Figs. 1 and 4.

Fig. 6 is a perspective detail of a movable cutter blade.

Fig. 7 is a perspective detail of a fixed cutter blade.

Fig. 7^a is a sectional elevation of the cutter parts assembled.

Fig. 8 is a fragmental elevation from line x^8, Fig. 1, of mechanism prominent from the delivery end of the press, parts forward of the ratchet mechanism being omitted.

Fig. 9 is a vertical section taken generally on line x^9 Figs. 1, 3 and 4 looking forward in the direction indicated by the arrow.

Fig. 10 is an elevational diagram showing webs threaded to print two sheets in two colors each.

Fig. 11 is an elevational diagram showing a web threaded to print one sheet on two sides and with two colors on a side.

Fig. 12 is an elevational diagram showing a web threaded to print one sheet on both sides and two duplicate sheets on one side of each.

Figs. 13, 14 and 15 are fragmental details illustrating the construction of one of the web-adjusting roller mechanisms; Figs. 14 and 15 being elevations at right angles to each other and Fig. 13 being a plan section on line x^{13}, Figs. 14 and 15.

Fig. 16 is a fragmental perspective detail of platen adjusting means.

Fig. 17 is a fragmental perspective detail of the mounting for the form distributing ink rollers.

Fig. 18 is a perspective detail of the adjusting means for a supplemental web adjusting roller.

Fig. 19 is a fragmental detail showing the mounting of a roller to adjust the web between the platens and the means for adjusting the perforators.

Fig. 20 is a fragmental perspective detail of the adjusting means for varying the stroke of a ratchet wheel which actuates the feed rollers.

Fig. 21 is a fragmental perspective detail of the ink supplying and distributing mechanism.

Fig. 22 is a fragmental perspective detail of the means for actuating the counting device.

Fig. 23 is a fragmental perspective detail showing the web tensioning devices and adjustment for the paper rolls.

Fig. 24 is a somewhat diagrammatic side elevation of a press in accordance with this invention in a simplified, compact, direct acting construction, in which the type beds are simultaneously operated toward each other by mechanism located close together.

Arrows of direction in the several views indicate the movement of the web.

I will first describe the press illustrated in Figs. 1–23, it being understood that the parts described, may, where applicable to Fig. 24 be understood as being so applied as required. In some instances a part in Fig. 24 similar to a part shown in the other views is indicated by the same numeral with an exponent.

The press frame 1, having side frames 2, 3, and lateral braces 4, 5, 6, supports the various operative parts and devices including the web roll mechanisms, perforating mechanisms, and web adjusting mechanisms hereinafter described; and also impression devices 7, 8, 9, 10, web drawing mechanisms 11, and web severing mechanism 12.

The impression devices comprise two sets A, A′ of platens fixed to the frame 1 of the press and two sets B, B′ of type beds mounted respectively on carriages C, C′.

In the form shown in Figs. 1–23 the platens all face in one direction and the type beds face in the other direction and are opposed to their respective platens; one set of platens being arranged between the carriages.

In the form shown in Fig. 24 both sets of platens are arranged between the type-beds and their carriages.

The carriages in addition to carrying the type beds also carry the inking mechanism omitted from Fig. 24 and hereinafter described for inking the type in a well-known manner during the operation of the press.

Each web roll mechanism consists of a roll arbor 13 mounted in open bearings 14, a weighted lever 15 pivoted to the press frame, and a brake arm 16 pivoted on the weighted lever and engaging the roll arbor. The brake serves as a retarding means for the roll and a tensioning means for its respective web prior to and during the operation of the impression mechanism. Lateral adjustment of the roll arbor is secured by a pivoted lever 17 having a swivel yoke 18 engaging with the arbor and a clamp 19 to secure the lever to bar 20 when adjusted.

Additional tensioning means for the respective webs prior to receiving the impressions, comprise take-up rollers 21, 22, 23, 24, mounted respectively on pivoted frames 25, 26, 27, 28, which are yieldingly supported by coiled springs 29, 30, respectively connecting the roller frames to lugs 31, 32 projecting from the press frame.

The carriages C, C′ and the mechanism carried thereby together with the web-drawing mechanism and the web-severing mechanism are all actuated from a common source of power, and the shafts are journaled in bearings on the frame 1.

The power shaft 33 extends across the frame and is mounted in journals 34 on frame 1, and it carries on one side of the frame a momentum or balance wheel 35, and fast and loose pulleys 36, 37 respectively.

Said power shaft is provided on opposite sides of the frame 1 with pinions 38 driving a train of gear wheels and connecting and countershafts as follows.

The driving pinions 38 mesh with gear wheels 39 on connecting shaft 40 journaled in bearings 41. Gear wheels 39 actuate crank gear wheels 42, on shafts 43, journaled in bearings 44, thereby actuating wrist-pins 45. Cross-shaft 40 actuates line shaft 46 through transmitting bevel gear wheels 47, 48. Line shaft 46 actuates vertical inking drive mechanism shaft 49 through speed reducing bevel gear wheels 50, 50′ and also actuates cross shaft 51 through miter gear wheels 52, and delivery roller shaft 53 through speed increasing bevel gear wheels 54.

Vertical drive shaft 49 actuates sprocket drive shaft 55 through speed reducing bevel gear wheels 56. Cross shaft 51 actuates upper and lower double crank shafts 57, 58 through pinion 59 and spur wheels 60, 61; and also actuates shaft 62 through miter gears 63; and shaft 62 actuates cam shaft 64 through miter gears 65. Lower delivery roller shaft 53 actuates its companion shaft 66 through spur gears 67. Companion shaft 66 actuates upright shaft 68 through bevel gear-wheels 69. Upright shaft 68 actuates upper delivery shaft 70 through bevel gears 71. Shaft 70 actuates the upper companion shaft 72 through spur gears 73. Sprocket drive shaft 55 actuates link carried sprocket shafts 74 through sprocket and chain connections 75. Shafts 74 actuate shafts 76 through sprocket and chain connections 77. Shafts 76 actuate upper master ink roller shafts 78 through sprocket and chain connections 79. Shafts 78 actuate shafts 80 through sprocket and chain connections 81, 81′, the shafts enumerated maintaining a continuous motion during the operation of the line shaft 46 to actuate the various reciprocating and intermittently revolving parts as will be hereinafter described, and are journaled in bearings on the carriages or carrier frames; the wheels of the sprocket and chain connections being carried by said shafts on said carriages C, C′.

The form carriers are constructed as carriages running on the frame or on tracks carried by the frame and being and moving in perfect parallelism to the platens at all times when in operation, and this enables the printer to secure perfect alinement in printing two or more jobs at the same time from flat beds, and enables him to do so in a convenient and time-saving manner.

Perforating mechanisms are provided, respectively comprising an annular grooved roller as 82, 83, 84 or 85 over which the web to be perforated is passed, and other operative parts; there being a rock-shaft 86 having a handle 87 and provided with radial arms 88 clamped in desired position and carrying toothed perforating disks 89 that, when in perforating position, engage with the grooved roller; and means for clamping the shaft 86 in an operative position. The means for holding the rock-shaft 86 in position consists of a clamp 90 engaging the shaft and extending through bracket 91, and provided with a clamp nut 92.

The perforating roller 84 and rollers 93, 94 are designed to serve as web-adjusting rollers and for this purpose each has an adjusting mechanism 86′, 87′, 88′, 90′, 91′ and 92′, similar to the adjusting means for the perforators. The rollers 84, 93, 94 provide an adjustment for the webs between consecutive platens, and the impression from one type-form and platen may be made to register with the impression from another type-form and platen as will be understood by reference to Figs. 10, 11, 12.

Eccentric wrist-pins 45, pitmen 95 and connecting rods 96 are arranged and connected to impart a reciprocating motion to the carriages C and C′ which comprise form carriers 97, 98 that extend transversely of, and move longitudinally on the press-frame, shafts 99 respectively journaled in form carriers 97, 98, and wheels 100 which travel on tracks D formed on side frames 2, 3, thus allowing reciprocation of the form carriers.

The form carriers may differ in construction, but are practically duplicates, and are each provided with a top brace 101, ink fountain braces 102; and type-bed braces 103; the braces 103 having secured thereto the type-beds 104. Each type-bed has opposed thereto one of the platens 105, 106, 107, 108, which are mounted on the lateral press-frame braces 6, and comprise, with the type-bed, an impression mechanism.

The four impression mechanisms are similar in construction. A description of one impression mechanism follows:

An impression mechanism has a type-bed 104 to which is secured a support 109 carrying one of said shafts 78, on which is mounted a master inking roller 110. The type-bed has projecting sides 111 forming tracks for wheels 112 on shafts 113 of the form inking rollers 114. Brace 102 carries ink fountain 115 having journaled in the walls thereof a delivery roller 116 forming a side of the fountain. Swing-arms 117 on rock-shaft 118 carry a transmitting ink roller 119. A spreading roller 120 is in constant contact with the master roller 110 and is rotated thereby, the spreading roller having shaft 121 mounted in fixed bearings 122 secured to a leg of the form-carrier and bearing 123 pivoted to the opposite leg of the form-carrier. Bearing 123 is pivoted to the frame by pivot 123′ and may be turned down for removal of the spreading roller.

Transmitting roller 119 is rotatively and

detachably secured in arms 117 by springs 124. Shaft 121 is provided with collars 125 between which extend guides 126 secured to the press-frame and obliquely disposed to impart a lateral movement to the spreading roller coincident with its rotary motion and the reciprocating movement of the form carrier. Similar guides 127 perform a similar function.

Springs 128 interposed between swing arms 117 and the type-bed normally hold roller 119 in contact with the master ink roller. As the form carriers approach the end of their rearward stroke, plungers 129 strike arms 117 in opposition to springs 128, and thereby force the transmitting roller against the delivery roller 119; the yielding stops 129 being extended by springs 130 disposed between supports 131 and collars 132 actuate swing arms 117 to yieldingly press roller 119 into contact with delivery roller 116. The collars 132 are adjusted by cotter pins 133 in said rods. Roller 116 is actuated by ratchet 134 and pawl 135 pivoted to levers 136 which alternately contact with opposite ends of the tappet arm 137 fixed to frame 3, and is thereby actuated to turn roller 116 a part of a revolution. The ink is taken from the master roller to the form (not shown) by rollers 114 which are mounted in rockers 138 pivoted to spring-actuated rods 139, the rollers 114 taking their motion from the tracks 111 while inking the forms, and from the master roller while in contact therewith. Rods 139 slide in bracket supports 140 which form a part of vertically-reciprocating frames 141; said frames 141 consisting of parallel rods 142 sliding in guides 143 on the form carriers, rods 142 being connected by top plates 144 and supports 140. Clamps 145 hold supports 140 in the desired position.

Triangular oscillating links 146 are pivoted at one angle by pivots 146′ to the side frames 2, 3. A lower angle of said link is connected through pivot 147′ to connecting rods 147 that are pivotally connected at their upper ends to top plates or brackets 144 fastened to the upper part of the reciprocating frames 141. Connecting rods 148 and 149 are co-axially pivoted to the form-carrier 98, their opposite ends being pivoted respectively to pivots 148′, 149′ of the oscillating links, and convert the horizontal reciprocal movement of the form-carrier into the vertical reciprocating movement of the frame 141.

As the carriers 98, 97 are operated to move the type-beds into the imprinting position, the rods 148, 149 will actuate through oscillating links 146 the connecting rods 147, thereby moving the reciprocating frames 141 upward, and causing the rollers 114 to engage with the master ink-rollers 110. As the carriers 98, 97 move in the opposite direction the inking rollers 114 will be moved over the type.

A means for adjusting the platens to secure a perfect impression (see Fig. 16) consists of threaded bolts 150 swiveled to the platens and extending through correspondingly threaded lugs 151 on braces 6. Lock nuts 152 on the bolts hold the platens in the adjusted position.

For determining the paths of the webs through the press, various rollers are provided, certain of the rollers serving as a guiding means for the webs, others to take up the slack, to coöperate with the perforators, to draw and advance the webs in accordance with the impressions, to adjust the webs between successive impressions and secure registration in color work, to adjust the webs in accordance with the severing mechanism, and to deliver the severed sheets upon trays for convenient removal.

The threading of the press for printing simultaneously four different webs with the same or different impressions, illustrated in Fig. 4, is as follows:—

The web *e* is taken from a paper roll *a* and threaded consecutively over guide roller 153, under take-up roller 21, over guide rollers 154, thence over perforating roller 82, thence over guide-roller 155, thence over platen 105, thence under guide rollers 156, over guide rollers 157, thence over adjusting roller 158, thence between web-drawing rollers 159, 160, thence between web-drawing rollers 160, 161, thence over a second adjusting roller 162, thence between feed rollers 163, thence between the shearing blades 164, 165 of the severing mechanism 12, thence between delivery rollers 166, 167, thence to the delivery tray 168.

The web *f* is taken from a paper roll *b* and threaded consecutively under take-up roller 22 over guide roller 169, thence over perforating roller 83, thence over platen 106, thence under guide roller 170, over guide roller 171 under guide rollers 172, over guide rollers 173, thence over adjusting roller 174, thence between web-drawing rollers 175, 161, thence between web-drawing rollers 160, 161, thence under a secondary adjusting roller 176, thence between feed-rollers 163, thence through the severing mechanism 12, thence to the delivery rollers 166, 167, and thence to tray 168.

The web *g* is taken from a paper roll *c*, and threaded consecutively over guide roller 177, under take-up roller 23, over guide rollers 178, thence over platen 107, thence under guide roller 179, over guide rollers 180, thence over adjusting roller 181, thence between web-drawing rollers 182, 183, thence between web-drawing rollers 183, 184, thence over a secondary adjusting roller 185, thence between feed rollers 186, thence between the shearing blades 187, 188 of the web-severing

mechanism 12, thence between delivery rollers 189, 190, and thence to the delivery tray 191.

The web *h* is taken from a paper roll *d* and threaded consecutively under take-up roller 24, over guide roller 192, thence over perforating roller 85, thence over platen 108, thence under guide rollers 193, over adjusting roller 94, thence over guide roller 194, under guide roller 195, thence over adjusting roller 196, thence between web-drawing rollers 197, 184, thence between web-drawing rollers 183, 184, thence under a secondary adjusting roller 198, thence between feed rollers 186, thence through the severing mechanism 12, thence between rollers 189, 190, and thence to tray 191.

The threading of the webs to print two series of sheets in two colors each is shown in Fig. 10 and is described as follows:

The web *j* is taken from the paper roll *k* and is threaded consecutively over guide-rollers 153, under take-roller 21, over guide rollers 154, perforating roller 82, guide roller 155, platen 105, thence under guide roller 199, thence over the adjusting roller 84, thence over guide roller 178, platen 107, thence under guide roller 179, over guide rollers 180, adjusting roller 181, thence between web-drawing rollers 182, 183, thence between web-drawing rollers 183, 184, thence over adjusting roller 185, thence between feed rollers 186, to the web-severing mechanism 12.

The web *m* is taken from a paper roll *n* and is threaded consecutively under take-up roller 22, over guide roller 169, perforating roller 83, thence over platen 106, thence under guide roller 200, thence over adjusting roller 93, thence over roller 85, thence over platen 108, thence under guide rollers 193, over adjusting roller 94, over guide roller 194 under roller 195, over adjusting roller 196, thence between web-drawing rollers 197, 184, thence between rollers 183, 184, under adjusting rollers 198, thence between feed rollers 186, thence to the severing mechanism 12.

The threading of the web to print each side in two colors is shown in Fig. 11, and is described as follows:

The web *p* is taken from the roll *q* and is threaded consecutively under take-up roller 22, over guide roller 169, perforating roller 83, platen 106 under guide roller 200, over adjusting roller 93, over perforating roller 85, platen 108 under guide rollers 193, thence under adjusting roller 94, over guide roller 179, thence over platen 107, thence over guide roller 178, thence over adjusting roller 84, thence over guide roller 199, thence over platen 105, thence over rollers 155, 82, thence over adjusting roller 158, thence between web-drawing rollers 159, 160, thence between web-drawing rollers 160, 161, over adjusting roller 162, thence between feed rollers 163 to the severing mechanism 12.

The threading of the webs to print one series of sheets on each side and to print simultaneously therewith two additional series of sheets is shown in Fig. 12 and is described as follows:

The web *s* is taken from a paper roll *t* and is threaded consecutively under take-up roller 22, over guide roller 169, perforating roller 83, thence over platen 106, thence under guide roller 170, thence under adjusting roller 84, thence under guide roller 199, thence over platen 105, thence over rollers 155, 82, adjusting roller 158, thence between web-drawing rollers 159, 160, 161, adjusting roller 162, thence between feed rollers 163 to the severing mechanism 12.

Webs *g*, *h*, from paper rolls *c*, *d*, respectively, are threaded as before described and shown in Fig. 4.

The press is adaptable to combinations of threadings other than described.

The adjustment means for the webs before they reach the feed rollers are practically duplicates, hence one adjusting mechanism as shown in Figs. 13, 14, 15 will be described. Web adjusting roller 181 is carried by a U-frame 201 which slides in the guides 202 on frames 2, 3, the frame 201 having racks 203 engaged by spur wheels 204, 205. A shaft 206 is journaled in the press frame and has an operating handle 207. Spur-gears 204, 205 are fixed to the shaft 206 in opposed relation to guides 202, the gear 204 being radially corrugated to engage with a correspondingly corrugated plate 208 fixed to frame 1. A threaded sleeve 209 is riveted or otherwise fixed to shaft 206, and a locking member 210 formed as a winged nut is correspondingly threaded and is screwed thereon and when rotated in one direction will move the shaft 206 and the gear 204 axially to cause the corrugations to interlock with plate 208; thus locking the shaft to the frame 2 and holding the U-frame 201 and the web adjusting roller in fixed relation to the frame 2.

When locking member 210 is rotated in the other direction, the shaft 206 may be rotated to adjust the frame 201 and roller 181 carried thereby, thus to adjust the web to practically bring the printed surface into proper relation to the severing or cutting mechanism.

When the web-adjusting roller 181 has been adjusted an additional or fine adjustment of the web may be made by raising or lowering the secondary web-adjusting roller 185 which is carried by brackets 211. This may be made as a final adjustment of the web between the paper roll and the web-drawing rollers.

Hangers 211 slide in guides 212 fixed to the side frames 2, 3, and have racks 213, the

hangers being actuated by spur-gears 214 mounted on shafts 215 and engaging the racks 213. The shafts are rotated by handles 216 and securing means for the roller consists of shoes 217 engaging the hangers in grooves 218, and thrust-screws 219 bearing against the shoes. The rollers 181 and 185 with their mechanism gives a double and accurate adjustment to bring the web into correct relation to the cutter, so that the cutter will sever the web in accordance with the impressions on the web.

From the feed rollers 163, 186 which pull the web or webs in unison, the webs are fed between fixed shearing blades 165, 187 on the press frame and movable shearing blades 164, 188.

Pivotal shafts 220 journaled in the press-frames, side levers 221 and pivot rods 222 on which the shearing blades 164, 188 are pivotally mounted from rectangular frames that are actuated in unison by cam rods 223 which are provided at their free ends with rollers 224 operated by cam wheels 225 on shaft 64.

The gear transmission is such that the shaft 64 rotates in unison with and at the same speed as crank shafts 43 which give movement to the form-carriers and their respective type-beds, and the movable shearing blades are operated thereby to sever the web at the proper time.

Adjacent the fixed shearing blades are guides 226 against which the ends of the edges of the movable blades are yieldingly held by action of the springs 229; said movable blades having arms 227 and the side levers 221 having lugs 228 with springs 229 connecting said lugs and arms to thus hold the cutting edges of the movable shearing blades in position to coöperate with the edges of the fixed cutting blades respectively.

The means for holding the webs taut while being cut comprises presser bars 230, each having guide pins 231 fixed thereto, one at each end, said pins extending upward into stirrups 232, which swing upon the rods 222. The guide pins 231 extend downwardly into guiding sockets in the press-frame. Tables 233 extend beneath said presser bars, which bars are pressed yieldingly thereon by springs 234 interposed between the stirrups and the presser bars. The stirrups 232 lift the presser bars when the movable shearing blades are in their uppermost position.

At the end of the web each sheet is supported while being cut and is then delivered by belts 235 riding upon rollers 166, 167, 189, 190. The rollers 167, 190 are formed with crowned surfaces 236, 237 to keep the belts in alinement. Tables 238, between the delivery rollers, support the delivery belts.

The sheets are delivered successively as cut upon the delivery trays 168, 191, which are removably mounted upon the press-frame. A counter 239 actuated by the rod 240 registers the number of sheets printed. The trip 241 slides on the counter-actuating rod 240 and is actuated by a spring 242 interposed between trip 241 and washer 243, and thereby strikes the counter-lever 244 a yielding blow. Counter-actuating rod 240 is secured at one end to form-carrier 97 and extends through a guide 245 on the press-frame and reciprocates with the form-carrier, thus actuating the counter at each impression.

It is sometimes desirable to draw out for each impression a length of web much greater than is required at other times, and the press is provided with means for drawing out a maximum length. For this purpose a double-acting ratchet mechanism including two duplicate ratchet wheels 246, 247, operate duplicate sets of web-drawing mechanism 11 and feed-rollers 163; said ratchet mechanism imparting intermittent rotary motion thereto. The ratchet wheels are engaged by pawls 248 pivoted upon ratchet-levers 249, 250; said pawls being actuated by springs 251.

The ratchet levers are pivoted to the shafts 252, 253 respectively, of wheels 247, 246. One ratchet mechanism is designed to give a primary stroke and the other a supplementary stroke to drive the web-drawing rollers. Levers 249, 250 are provided with guides 254 to which clamp plates 255, 256 are clamped. Connecting rods 257 are pivotally connected to clamp plates 256 and to crank 258 on shaft 57. Connecting rods 259 are pivotally connected to clamps 255 and to crank 260 on shaft 58.

The primary stroke given the ratchet wheels by crank 258 may be varied by securing the clamp-plates 256 in various positions upon guides 254 and increasing the stroke as the ratchet wheel shafts are approached. The intermittent revolution of the ratchet wheels thereby given may be supplemented by the crank 260 and clamp plates 255 which are adjusted in like manner. Normally the strokes of the two sets of ratchet levers overlap, causing an intermittent movement of the ratchet wheels and actuating the web-drawing rollers which in turn advance the webs the required amount between successive impressions.

Cranks 258, 260 rotate in unison and are set to actuate the ratchet wheels 246, 247 during 280° of a revolution of the wrist pins 45.

Crank 258 begins the operative stroke of ratchet levers 249 when the wrist-pins 45 have moved 40° from the imprinting position.

Crank 260 ends the operative stroke of ratchet levers 250 when wrist-pins 45 have

moved 320° from the imprinting position. Each crank is moving the ratchet levers on the return stroke while the wrist-pins 45 are at the imprinting position. Therefore, it may be seen that the web-drawing rollers are inactive during 40° of movement of the wrist-pins 45 on each side of the imprinting position.

It is thus seen that the rotation of the ratchet wheels may be extended over more than one-half of a revolution; that the feed will start slowly; will be gradually accelerated and then reduced until again stationary, and the feed rollers and ratchet wheels will have a minimum of momentum when released by the actuating levers.

As a further means for positive and accurate feed each ratchet wheel is retarded and held by weighted friction pawls 261, 262; said pawls being pivoted to bracket supports 263, and engaging the grooved rims 264 of the ratchet wheels; thereby serving as friction brakes and catches for determining intermittent advancement of the web.

Referring to Figs. 1, 2, 3, 4 and 5, one set of feed rollers will be described. The ratchet wheel 246 meshes with a pinion 265 on shaft 266 of web-drawing roller 160; said shaft 266 being journaled in the press-frame, thereby positively rotating roller 160. Roller 159 is mounted in swinging bearings 267 and has a gravity contact with roller 160. Rollers 161, 175 are mounted respectively in swinging bearings 268, 269, and are held in yielding contact with roller 160 by springs 270, 271.

The press frame extensions 272 carry sliding bolts 273 adjusted by knurled nuts 274, and the swinging bearings 268, 269, have pivoted thereto links 275; the springs 270, 271 being connected to adjusting bolts 273 and links 275. Web-drawing rollers 159, 160, 161, 175 are driven in unison by gear-wheels 276, 277, 278, 279 mounted on their respective shafts.

Motion is transmitted from shaft 266 to feed rollers 163 as follows:

Rollers 163 are actuated by pinions 280, 281 mounted on their respective shafts. Pinion 280 is driven by an idler pinion 282 carried by a swinging bracket 283, pivoted to shaft 266 and meshing with a spur wheel 284 on shaft 266. In like manner the lower ratchet-wheel 247 actuates a similar set of web-drawing and feed rollers.

Shafts 57, 58 may be thrown into gear, by clutches, not shown, controlled by clutch-levers 284, 285 respectively, and therefore, said shafts and their cranks 258, 260 may be independently or jointly actuated to operate the ratchet-wheels which thereby intermittently draw the webs during each reciprocating movement of the impression mechanism.

The rock-shafts 286 journaled in form-carrier 98, and rock-shafts 287 journaled in form-carrier 97 are normally inactive. Rock-shafts 286 have arms 288 and cranks 289, said cranks 289 serving as pivot connections for pitmen 95. Rock-shafts 287 have arms 290 and cranks 291, said cranks 291 serving as pivots for connecting rods 96. The rock arms 288, 290 are connected by links 292, 293 which operate the shaft in unison. The vertically extending link 292 has pivoted thereto a link 294, the opposite end of link 294 being pivoted to lever 295 which in turn is pivoted to the form-carrier 97.

A notched sector frame 296 extends from the form-carrier and engages and holds lever 295 in operative and inoperative positions. Shifting the lever 295 will change the position of the eccentric cranks 289, 291, with reference to the form-carriers sufficiently to prevent the type-beds in their reciprocating movement from carrying the type against the platens or the web that may be extended over the same. Lever 295 is held in engagement with sector frame 296 by a plate 297 which in turn is yieldingly held in position by springs 298 interposed between the plate 297 and the heads 289 of supporting bolts 300 which are fixed to the sector frame and pass through the plate.

To transmit motion from shaft 55 to shafts 76 intermediate sprocket shafts 74 are employed and are intermediately supported by radius links 301, which are pivoted to the shafts and maintain a constant distance between the various sprocket-wheels carried by the shafts 55, 74, 76, the shafts 74 having an arcuate path of movement in accordance with the reciprocating movement of the form-carriers.

I thus provide a printing press with sprocket chains and sprocket wheels to receive power from the main driving shaft and to carry power to the master ink rollers. The links, the shafts and the sprocket wheels and chains thereon constitute a jointed motion device adapted to contract and elongate at the forward and backward movement of the type bearing carriages, and thus the master rollers are kept turning uniformly with the speed of the machine.

The speed of rotation for the inking devices is preferably reduced and the speed of rotation of the delivery rollers which take the severed sheets from the cutter is increased by suitable transmission gearing. The rotation of the cams operating the shearing blades are timed in accordance with the rotation of the gear-wheels which actuate the form-carriers carrying the type-beds so that the shearing blades shall sever the webs at the instant of impression.

From the foregoing it may be seen that each web as it leaves the rolls is subjected to suitable tensioning from the tensioning devices, and that various adjustments are provided to effect the proper registration of the impressions, the accurate alinement of the perforation devices, and the cutting and final disposition of the printed web into piles of sheets on the delivery trays.

Adjustment of each operative device may be effected without disturbing the other adjusting devices and the press when once put in operation will automatically continue to perform its several functions so long as the power shaft is driven and the paper rolls are not exhausted.

In order that each form-carrier may operate its type-beds with distinct and positive pressure contact at the instant of impression the parts are so arranged that the axes of the cranks 289, 291 lie in horizontal planes that are lower than the planes, respectively, in which the actuating crank pins 45 on the driving wheels 42 lie; and the pitmen 95 have pivot connections 302 respectively with connecting rods 96. This arrangement will cause the thrust and stresses at the moment of impression to be distributed equally among the four type-beds and their opposed platens, and prevents distortion of the web or webs, an especial advantage in multicolor work, where adjustment is desired between successive platens.

All rollers which determine the paths of the webs and are not adjustable as hereinbefore mentioned, have bearing supports 303 adapted to be bolted in desired positions on the press-frame.

By reason of the horizontal and parallel movements of the form carriers or carriages and the vertical movement of the ink rollers thereon, maximum speed for flat deck printing presses is made possible; the action being direct instead of circular and the paths of the moving parts thus being minimized; and furthermore, the deflection of the inking rollers from a straight path relative to the carrier is minimized and the necessity of long springs to accommodate such deflection is done away with.

I have therefore produced a new machine comprising a printing press frame, a carriage or a multiple of carriages moving perfectly parallel to the platens and carrying a multiple of type beds, distributing rollers, vibrators, master rollers, ink fountains and ink carrying rollers, and thus secure a higher speed of operation.

In the compact-simplified form shown somewhat diagrammatically in Fig. 24, the sides of press-frame 321, are longitudinally contracted and the type-form carriers 322 reciprocate upon the frame 321 in opposite directions; the movement of the form-carriers being toward each other as they approach the printing position. The form-carriers are provided with trunnion wheels 323 which travel upon the press-frame 321. A train of gear wheels actuates various shafts in unison for operating the various reciprocating and intermittently rotating operative parts of the printing press. Gear wheels 324 on shafts 325 are provided with wrist-pins 326. The form carriers have journaled therein shafts 327, and pitmen 328 connect the wrist-pins 326 and shafts 327, the arrangement being such that the form-carriers are brought simultaneously into the printing position, and the draft and strains upon the press-frame incident to the pressure of the type-forms against the platens, are equalized.

Shafts 329, 330 rotate in unison with shafts 325 and are provided with cranks 331, 332 respectively. Cranks 331 actuate swinging ratchet arms 333. 334, 335, 336, and cranks 332 actuate swinging ratchet arms 337, 338, 339, 340.

Cranks 331, comprising a double throw crank on each end of the shaft 329 are set to actuate the ratchet arms 333, 334, 335, 336 through connecting rods 341, 342, 343, 344, respectively, while the wrist-pins 326 are approaching the printing position and are revolving through the arm *ww*. Cranks 332 consisting of double throw cranks on opposite ends of shaft 330, are set to actuate the ratchet arms 337, 338, 339, 340, through connecting rods 345, 346, 347, 348 respectively, while the wrist-pins are revolving through the arc *yy*. Ratchet arms 333, 337 actuate ratchet wheel 349 which in turn drives the web drawing roller 350. Ratchet arms 334, 338 actuate ratchet wheel 351, which in turn drives the web drawing roller 352. Ratchet arms 335, 339 actuate ratchet wheel 353, which in turn drives the web drawing roller 354. Ratchet arms 336, 340 actuate ratchet wheel 355 which in turn drives the web drawing roller 356. The cranks 331, 332 are set so that the web drawing rollers 350, 352, 354, 356 are inactive at the moment of impression.

The webs E, F, G, H, indicated by dash lines, are cut into sheets by the severing mechanism 357 and pass therefrom respectively, between delivery belts 358, 359, 360, 361, which are driven by delivery rollers 362, 363, 364, 365.

Each of the four sets of delivery belts and rollers are mounted on one of the swinging frames 366, 367, 368, 369. The swinging frames being pivoted respectively to the shafts 370, 371, 372, 373, the delivery of the sheets from the four webs may be made separately or they may be combined to pile the sheets in a single stack.

In this construction the press-frame may be made much heavier at the center as the

pull against the platens is toward the center of the machine, and the number of web guiding rollers required is minimized.

I claim:

1. In a flat bed multiple printing press, a press frame, a plurality of pairs of platens attached to the press frame, a form carrier for each pair of platens and running on the press frame, a type bed for each platen rigidly connected to said form carriers in opposed relation to the platens, means for reciprocating the form carriers to and from the platens, and means for passing a web or sheet between each platen and its opposed type-bed; said latter means including bearings carried by the frame, a roll arbor mounted in the bearings, a weighted lever pivoted to the frame, and a brake arm pivoted to the weighted lever and engaging the roll arbor.

2. In a flat bed multiple printing press having a plurality of pairs of type beds, parallel form carriers one for each pair of type beds, and platens arranged in parallelism with the carriers to coöperate with said type beds to print simultaneously, means for drawing a web between the type beds and platens with an intermittent motion, said means including a take up roller mounted on a pivoted frame supported by springs, and means in timed relation to the carriers for cutting the printed portion of the web into sheets at the instant of impression.

3. In a flat bed web press embracing a frame and a platen mounted vertically in the frame, means for varying the advancement of a web in accordance with the size of a type-form, said means including a roll arbor adjustably mounted in the frame, an adjustable spring-actuated take-up roller in the frame near the roll arbor, a guide roller above the platen, adjustable perforating mechanism coöperating with the guide roller, a second guide roller below the platen, and an adjusting roller, three coacting drawing rollers, and a second adjusting roller on the opposite side of the second guide roller from the platen, all operatively mounted and timed.

4. In a web multiple type-bed printing press the combination with a press frame, of two reciprocating parallel form carriers, each carrying a plurality of type-beds, a plurality of parallel platens mounted on the press frame in opposed relation to the type-beds, and tracks, crank shafts, pitmen, and connecting rods operating in unison to reciprocate the form carriers in parallelism to the platens to print simultaneously.

5. In a web printing machine the combination with a press frame, of tracks, a series of parallel form carriers extending transversely of the press frame, a plurality of parallel type-beds mounted on each form carrier, a plurality of platens mounted on the press frame in opposed relation to the type-beds, means for moving the form carriers in parallelism on said tracks, and means for advancing a web between said platens and their opposed type-beds, said means including three drawing rollers mounted in a train so that the web passes between the first and second rollers and then between the second and third rollers.

6. In a web printing machine the combination with a press frame, of a series of reciprocating parallel vertical form carriers, means for reciprocating said form carriers in unison, parallel vertical type beds and platens arranged to print simultaneously, carried respectively by the form carriers and the press frame, means for passing a paper web between said platens and type beds, and a series of rollers for the web, said rollers being adjustable to register the successive impressions, said series of rollers including take-up rollers mounted on pivoted frames supported by coiled springs.

7. A web multiple printing press having a press frame, form carriers movable relative to the press frame, type-beds rigidly secured to the form carriers, platens secured to the press frame in opposed relation to the type-beds, cranks and connecting rods for reciprocating the form carriers and type beds toward the platens; and means for separately adjusting each platen in relation to the opposed type-bed in combination with shafts extending transversely of and journaled to the form carriers; levers fixed to said shafts; eccentric crank pins on said shafts, the said crank-pins having pivotal connection with said cranks and connecting rods; links connecting said levers; and means for operating the links to throw the form carriers and type-beds in a non-printing position without change of adjustment of the platens.

8. In a web multiple printing press, the combination with a press frame; of vertical form carriers reciprocating horizontally; vertical type beds rigidly fixed to the form carriers; a master ink roller above each type bed; an ink fountain adjacent to each master ink roller; a transmitting ink roller for delivering ink from each fountain to the master roller; means for rotating the master ink rollers; vertically reciprocating ink roller frames on each leg of the form carriers; vertically moving distributing rollers to take the ink from the master ink rollers to the forms, said distributing rollers being carried by said ink roller frames; cranks pivoted to the press frame; and connecting rods pivoted to the cranks and to the form carriers and roller frames, the said cranks transforming the horizontal reciprocating motion of the roller frames.

9. In a web multiple printing press, the combination with a press frame; form car-

riers reciprocating longitudinally relative to the press frame; ink fountains mounted on the reciprocating form carriers; a master ink roller adjacent to each fountain; a rock shaft supported between each ink fountain and the adjacent master roller; arms extending from the rock shaft; a transmitting ink roller supported by each rock-shaft; a vertical type-bed below each master roller; springs interposed between each type-bed and the rock shaft arms and normally holding the transmitting ink roller in engagement with the master roller; of actuating means to move the transmitting ink roller to the ink fountain, said means comprising brackets, each having a forward and a rear extension; plungers movable through said extensions and acting upon said rock shaft arms; collars on said plungers; and springs interposed between the rear bracket extensions and said collars.

10. In a flat bed web press, a frame, a form carrier mounted vertically in the frame, means for reciprocating the form carrier horizontally, two independent forms on the form carrier, an independent inking mechanism for each form, an independent platen for each form, and means for feeding one web over one platen and another web over the other platen.

11. In a flat bed web press, a frame, a form carrier mounted vertically in the frame, means for reciprocating the form carrier horizontally, two independent forms on the form carrier, an independent inking mechanism for each form, an independent platen for each form and means for feeding a web over said forms so as to print two colors on each section of the web.

12. The combination with a press frame; of vertical reciprocating form carriages mounted on the press frame; vertical type beds carried by the vertical form carriages; and two independent ink distributing devices carried by each of the form carriages.

13. The combination with a press frame; of rotative elements mounted thereon; reciprocating form carriages actuated by the rotative elements and mounted on the press frame; and two independent ink distributing devices carried by each of the form carriages, a part of the ink distributing devices being actuated by the rotative elements; and the remaining part of the ink distributing devices being actuated by the reciprocation of the form carriages.

14. The combination with a press frame and impression devices carried by the press frame; of extensions on the press frame; paper roll arbors trunnioned on said extensions, said arbors supporting paper rolls; weighted levers pivoted to the press frame extensions; retard levers pivoted to the weighted levers and gripping the roll arbors; means for intermittently drawing webs between the impression devices, said means including three friction rollers, the first and third contacting with the second; and take-up means for tensioning the webs prior to receiving impressions thereon.

15. In a printing press a press frame; roll arbors adjustably trunnioned thereon and carrying paper rolls; retards for the roll arbors carried by the frame; impression devices; means for intermittently drawing webs from the rolls and between the impression devices; swing frames pivoted to the press frame; take-up rollers carried by the swing frames engaging with the webs; lugs on the press frame; and tension springs connecting the lugs and the swing frames, the said springs and swing frames controlled thereby causing the yielding pressure of the take-up rollers against the webs.

16. In a printing press, the combination with a press-frame; form carriers transversely disposed thereon; type-beds carried by the form carriers; platens carried by the press frame in opposed relation to the type-beds; rotating operative shafts journaled in the press frame; gear wheels on said shafts rotating in unison and wrist-pins on the gear wheels; of shafts carried by the form carriers; cranks on the last-named shafts normally stationary, but so disposed that the plane of their axes shall be below the plane of the axes of the wrist-pins at the instant of impression; pitmen connecting the wrist-pins with the cranks of one form carrier and extending beyond the crank connections; and connecting rods having pivotal connection with the pitmen extensions and the cranks of the remaining form carriers.

17. In a web multiple type-bed printing press, the combination with a press frame; of a plurality of flat bed form carriages vertically disposed relative to the press frame; a shaft rotatively mounted in each form carriage, rollers on said shaft riding on the press frame; means for reciprocating said form carriers; flat type-beds disposed on said form carriers; two independent flat platens for each carriage on the press frame in opposed relation to said type-beds; and means for intermittently drawing a web between said type-beds and platens.

18. In a web multiple type-bed printing press, the combination with a press frame; of a plurality of vertical, flat type-beds mounted on a single vertical horizontally reciprocating carrier and their opposed independent platens arranged to print simultaneously; means for intermittently advancing a web between successive type-beds and their opposed platens; means for severing the printed web into sheets; adjusting means for varying the length of the web between successive type-beds and their opposed platens; adjusting means for varying

the length of the web between the type-beds and platens and the web-advancing means; and supplementary adjusting means for varying the length of the web between the web-advancing means and the web-severing means.

19. In a web multiple type-bed printing-press, the combination with a press frame; of two vertical parallel form carriages horizontally movably mounted on said press frame; a plurality of type-beds on each form carriage; a plurality of independent platens one for each type-bed fixed to the press frame in opposed relation to the type-beds; two sets of crank shafts; pitmen; and connecting rods operating in unison to reciprocate the form carriages, said sets of crank shafts, pitmen and connecting rods maintaining the parallelism of the movable form carriages; and means for advancing a web between the type-beds and platens.

20. In a printing press, the combination with a press frame; form carriers transversely disposed thereon; type-beds carried by the form carriers; platens carried by the press frame in opposed relation to the type-beds; rotating operative shafts journaled in the press frame; gear wheels on said shafts rotating in unison and wrist-pins on the gear wheels; of shafts carried by the form carriers; cranks on the last-named shafts normally stationary, but so disposed that the plane of their axes shall be below the plane of the axes of the wrist-pins at the instant of impression; and pitmen and rods connecting the wrist-pins and cranks, said connections reciprocating the form carriers and operating to equalize the pressure of the several type-beds against their opposed platens at the instant of impression.

21. The combination with a press-frame, platens fixed thereto, reciprocating form-carriers moving alternately from printing to non-printing position, type beds fixed to the reciprocating form-carriers, vertical reciprocating frames disposed on the form-carriers, oscillating links pivoted to the press-frame, and rods connecting the oscillating links respectively with the vertically disposed frames and one of the form-carriers; of form inking rollers carried by the vertical reciprocating frames over the type-beds, independently and continuously rotating master ink rollers disposed above said type-beds and intermittently engaging wth the form inking rollers, ink fountains adjacent to said master rollers, delivery rollers closing the inner sides of the ink fountains, ratchet wheels rotating with said delivery rollers, shafts common to the delivery rollers and ratchet-wheels, pawl levers fulcrumed on said shafts, pawls on the pawl levers to engage the ratchets and turn the delivery rollers, tappet arms on the press frame alternately moving the pawl-levers in opposite directions, rock-shafts mounted on the form-carriers, arms on the rock shafts, transmitting ink rollers carried by the rock-shaft arms, springs bearing against the rock-shaft arms to normally hold the transmitting rollers in contact with the master rollers, brackets on the press-frame, plungers sliding therein, springs holding the plungers in yielding engagement with the rock-shaft arms and forcing the transmitting rollers into contact with the fountain delivery rollers as the form-carriers approach the non-printing position, ink-spreading rollers superposed above the master rollers and in constant contact therewith, shafts carrying the ink-spreading rollers and journaled in bearings on the form-carriers, collars on the ink-spreading roller shafts, and obliquely disposed guides fixed to the press-frame and extending between said collars, said guides causing a lateral movement of the spreading rollers during the reciprocation of the form-carriers.

22. A printing press comprising a vertical carriage; a plurality of perpendicular type beds on the carriage, one above another; a plurality of perpendicular independent platens in parallelism therewith, one for each type bed; and parallel motion means to simultaneously cause relative movement in parallelism between said type beds and the respective platens.

23. A printing press comprising a vertical carriage; a plurality of perpendicular type beds on the carriage, one above another; a plurality of perpendicular independent platens in parallelism therewith, one for each type bed; independent inking rollers for the type beds respectively; means to cause relative movement in parallelism between said type beds and their respective platens; and means to operate the inking rollers vertically.

24. A printing press frame; vertical independent platens thereon; one or more vertical carriages moving parallel to the platens, each carrying a multiple of type beds, independent distributing rollers, a set for each type bed, vibrators, master rollers, ink fountains, and ink carrying rollers in combination to constitute a printing press.

25. In a printing press the combination with a press frame and carriages mounted in parallelism with each other; of platens mounted on the press frame; type beds mounted on the carriages in parallelism with the platens; master inking rollers on the carriages; a shaft journaled to the press frame; means to rotate the shaft; sprocket wheels on said shaft; radius links co-axial with the shaft; shafts journaled on the carriages; radius links journaled on the shafts that are journaled on the carriages; intermediate sprocket shafts carried by the

radius links; sprocket wheels on said shafts; sprocket chains driven by said sprocket; and sprocket chains and wheels connecting the shafts which are mounted on the carriages with the master inking rollers to rotate the same.

26. In a printing press, a frame, independent vertical platens mounted thereon, vertical movable form-carriages having a plurality of forms one for each platen cooperating with the platens, and two sets of shafts, wheels, wrist-pins, pitmen and connecting rods to reciprocate the form-carriages whereby perfect alinement of the form-carriages with the platens may be obtained.

27. A printing press having a driving shaft, type-bearing carriages, and master ink rollers, and provided with sprocket chains and sprocket wheels to carry power transmitted from the driving shaft to the master ink rollers, the same being constructed as a jointed motion device to contract and elongate the forward and backward movements of the type-bearing carriages.

28. In a printing press, the combination with a press-frame, of vertical form-carriages reciprocating upon the press-frame, independent platens arranged upon the press frame, a plurality of type-beds upon each of the form-carriages in opposed relation to the platens and paper feeding and piling devices at the ends of the press-frame.

29. In a printing press a printing frame; platens fixed to said frame; vertical carriages movable on said frame in parallelism to said platens; type beds on said carriages; inking rollers mounted on said carriages; links connected together, to said frame and to the carriages respectively; sprocket wheels and chains carried by said links; and means carried by the carriages and operated by said sprocket chains to operate the inking rollers.

30. In a flat bed web press, two vertical horizontally moving form carriers; two independent forms on each carrier; an independent inking mechanism for each form; an independent platen for each form; means for passing a web between the platens and forms; and means for moving the forms simultaneously to and from the platens.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 5th day of June, 1915.

CHARLES M. MEAD.

Correction in Letters Patent No. 1,238,424.

It is hereby certified that Letters Patent No. 1,238,424, granted August 28, 1917, upon the application of Charles M. Mead, of Los Angeles, California, for an improvement in "Flat-Bed Multiple Printing-Presses," were erroneously issued to The Mead Press, a corporation of California, whereas said Letters Patent should have been issued to *the inventor, said Mead*, he being sole owner of said invention, as shown by the records of assignments in this office; and the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of November, A. D., 1917.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.

Cl. 101—199.