

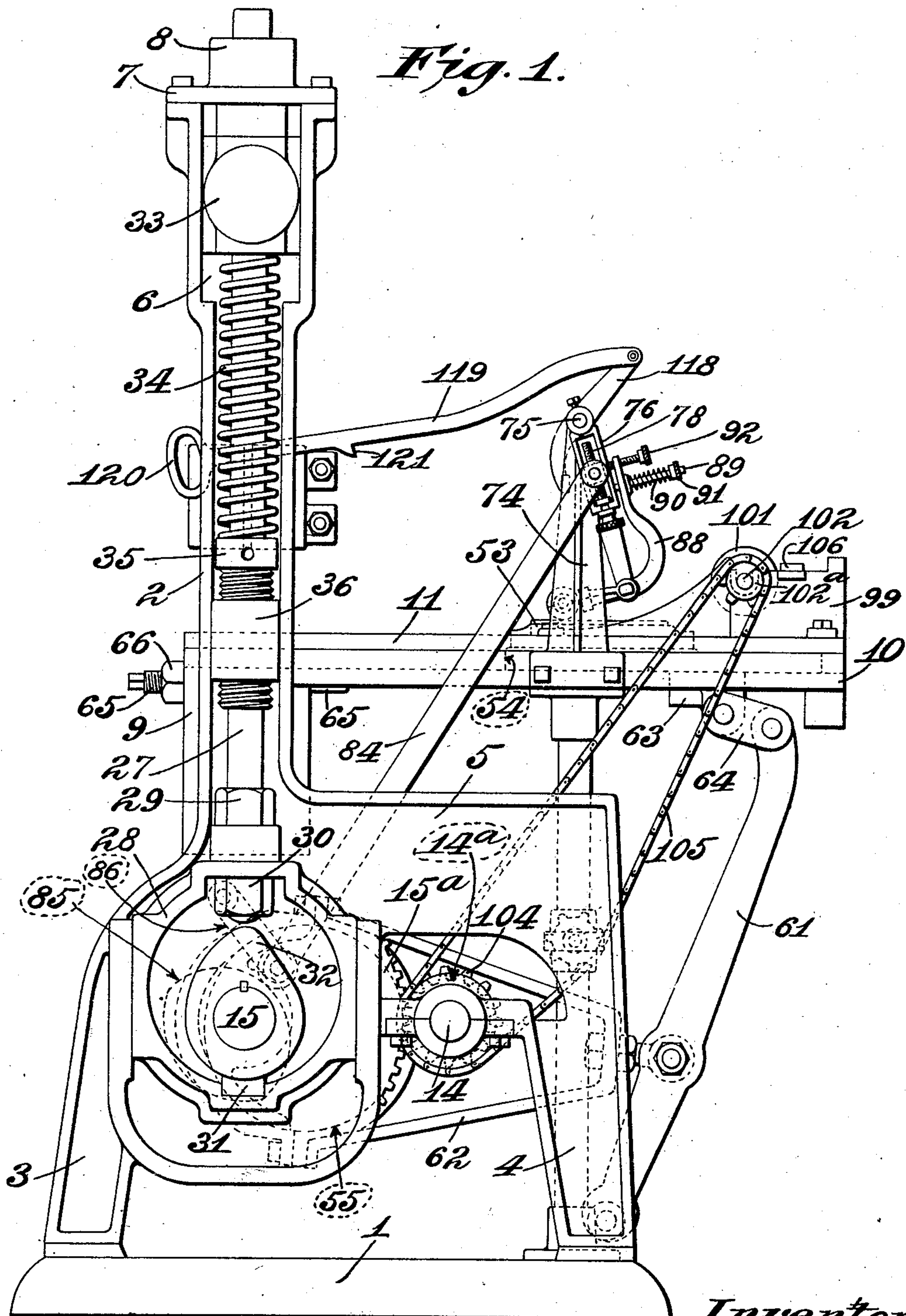
No. 862,110.

PATENTED JULY 30, 1907.

E. B. ROTH.
EMBOSSING AND PRINTING PRESS.

APPLICATION FILED AUG. 10, 1906.

4 SHEETS—SHEET 1.



Witnesses:
E. A. Pennington
J. B. Megown

Inventor:
Edward B. Roth,
By *Carroll A. ...*
Attys.

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4 SHEETS—SHEET 2.

Inventor:
Edward R. Roth,
By ~~Carr~~ *Carr*,
Attys.

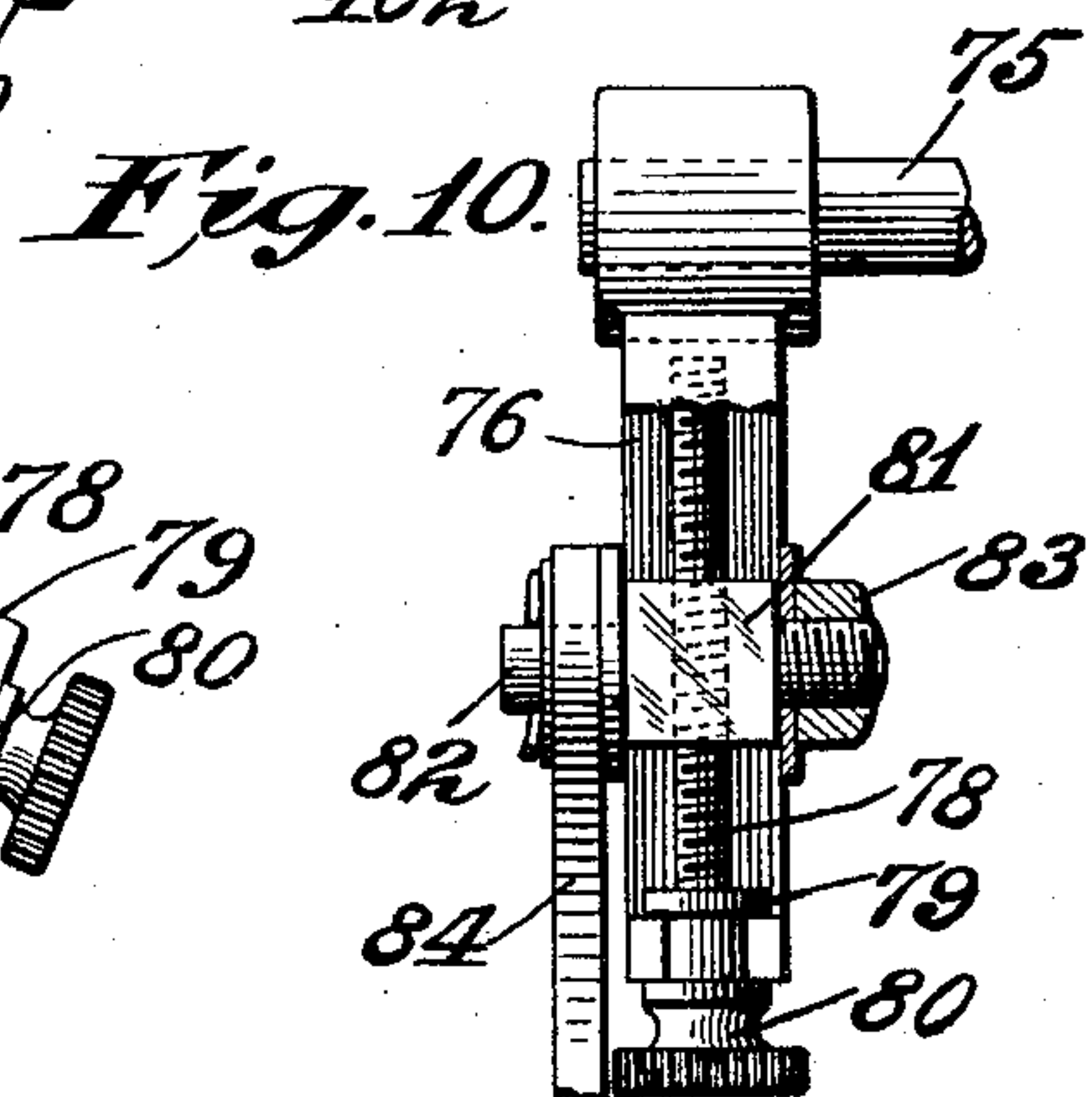
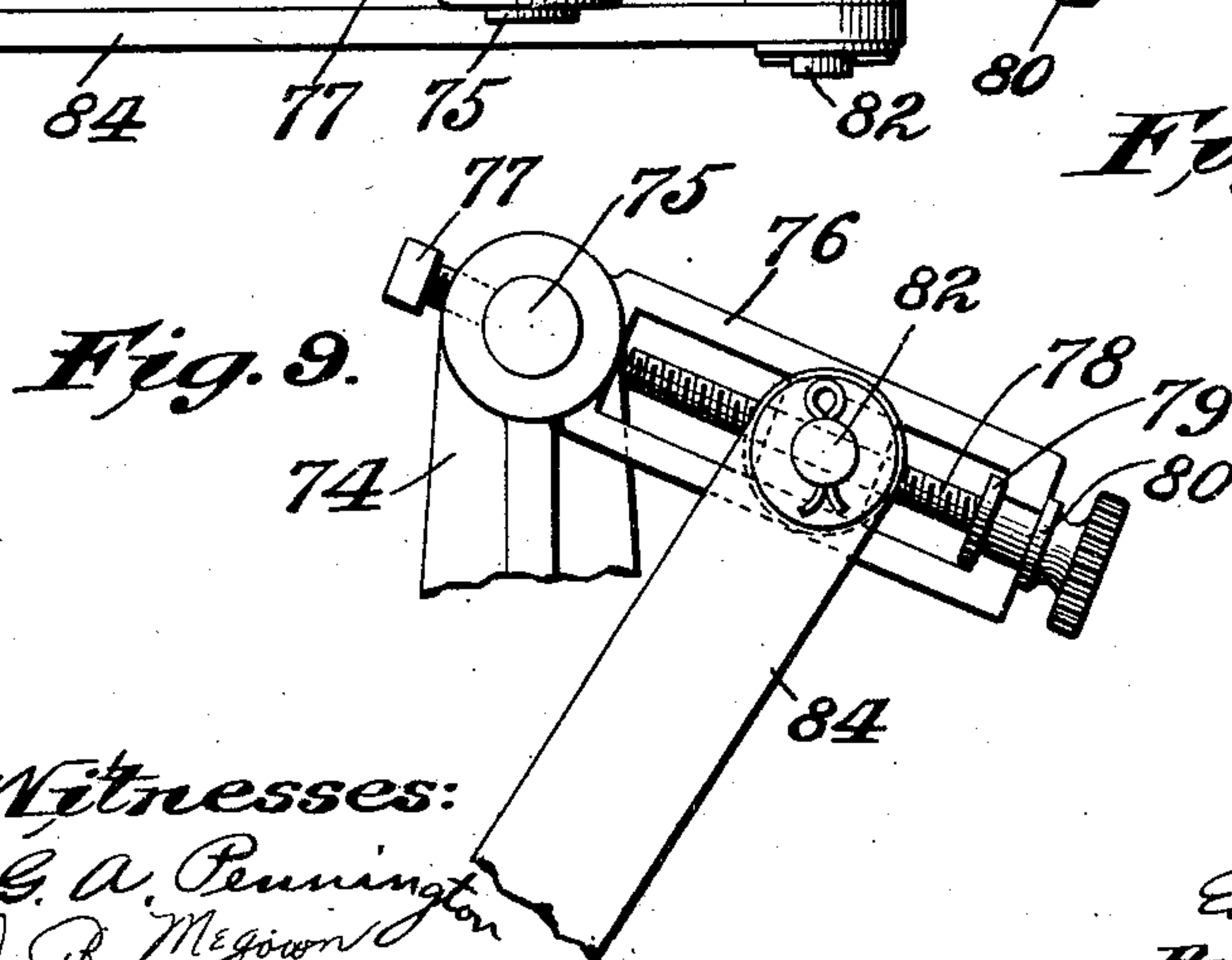
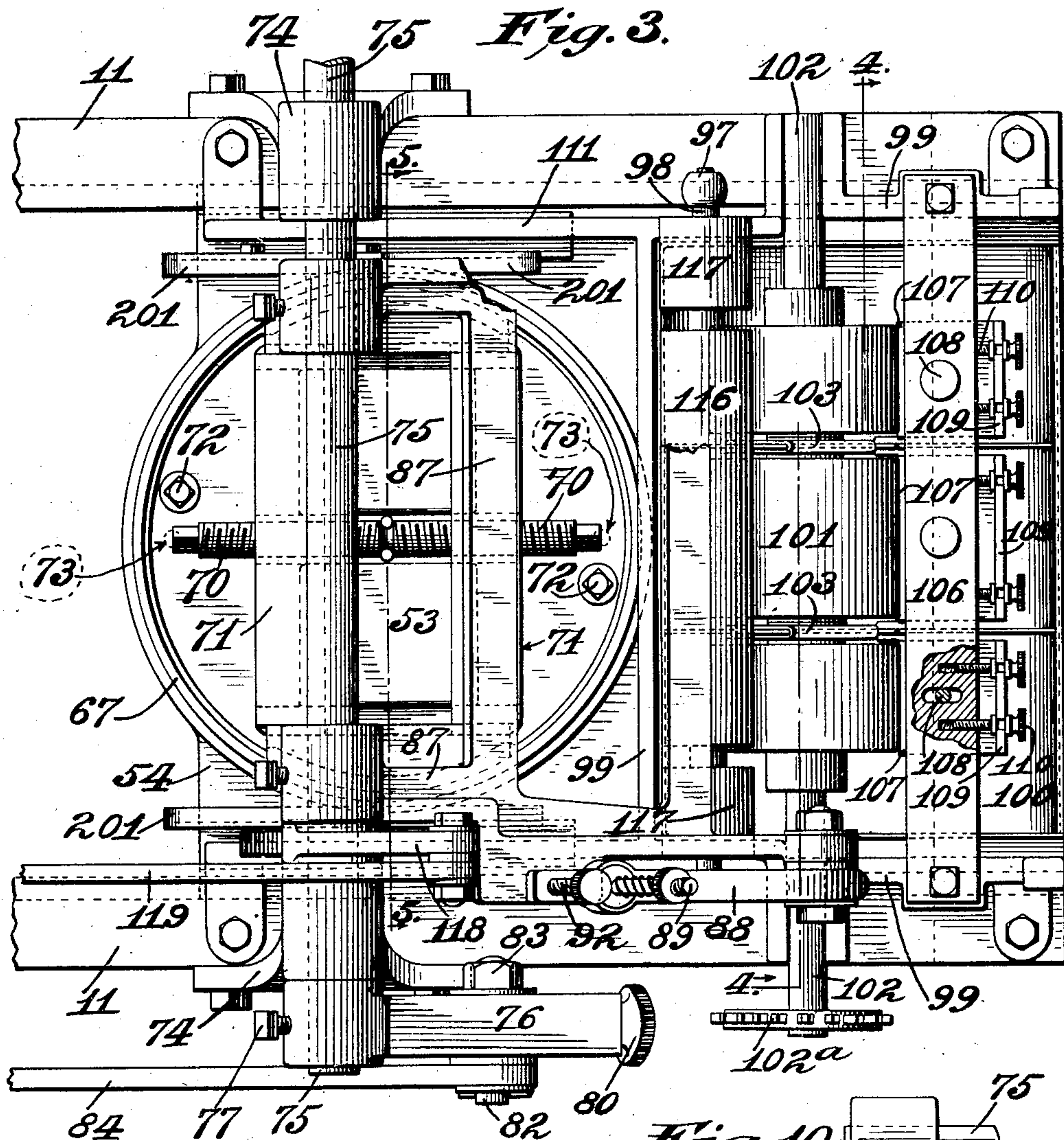
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4 SHEETS—SHEET 3.



Witnesses:

G. A. Pennington
J. B. McGowan

Inventor:
Edward B. Roth,
By *Carroll & Co.*
Attys.

UNITED STATES PATENT OFFICE.

EDWARD B. ROTH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO B. ROTH TOOL COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

EMBOSSING AND PRINTING PRESS.

No. 862,110.

Specification of Letters Patent.

Patented July 30, 1907.

Original application filed March 17, 1905, Serial No. 250,526. Divided and this application filed August 10, 1906.
Serial No. 330,071.

To all whom it may concern:

Be it known that I, EDWARD B. ROTH, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Embossing and Printing Presses, of which the following is a specification.

My invention relates to printing presses and especially to embossing and printing presses, and has for its principal object to secure uniformity in the inking of the die.

My invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a side elevation of so much of the embossing and printing press as relates to the inking thereof; Fig. 2 is a detail vertical view, partly sectional, illustrating the mounting and movement of the ink-roller; Fig. 3 is a detail plan view of the part shown in Fig. 2; Fig. 4 is a vertical sectional view through the ink receptacles and feed rollers on the line 4—4 of Fig. 3; Fig. 5 is a vertical sectional detail on the line 5—5 of Fig. 3; Fig. 6 is a detail perspective view of the separated members of the track which constitutes the guide for the ink-roller; Figs. 7 and 8 are detail views of one of the hangers in which the ink-roller is mounted; Figs. 9 and 10 are detail views of one of the crank arms which operate the arms which carry the ink roller.

This application is a division of another application for patent for embossing and printing presses filed by me March 17, 1905, Serial No. 250,526, to which reference is hereby made for more particular description of the machine to which the improvements herein described relate.

The frame of the machine comprises and rests upon a base 1. From said base rise columns 2, which are similar to each other. Each column comprises a bifurcated bottom portion having converging legs 3, 4 which are joined by a substantially horizontal part 5. From the bottom portion rises a channeled portion 6 which is closed at the top by a plate 7 provided with a bearing 8. A horizontal table 10, comprising parallel members 11, is mounted on the frame and extends rearwardly.

In the lower portion of the columns, bearings are provided for a power shaft 14. Parallel with said power shaft, a main shaft 15 is journaled. A pinion 14^a on said power shaft meshes with a spur gear 15^a on said main shaft.

In the channeled portions of the columns 2, 2 extend pitman rods 27. These rods extend at their upper ends through bearings 8 in the plates 7 which cap the col-

umns. At their lower ends the pitman rods carry cam straps 28, the latter being secured by nuts 29, 30. Bearing blocks 31 are provided on the lower sides of the cam straps where they are engaged by cams. At their sides the cam straps are equipped with bearing surfaces which have sliding engagement with corresponding bearing surfaces on the side walls 23 of the oil chambers, which form, in effect, slideways to guide the cam straps. Toe-cams 32 are mounted on the ends of the main shaft 15 and coöperate with the cam-straps, bearing on the bearing blocks 31.

At their upper ends the pitman rods are connected to opposite ends of a cross-head 33. The ends of the cross-head have sliding bearings in the upper parts of the columns. Compression springs 34 surround the pitman rods 27 and bear at their upper ends against the ends of the cross-head. At their lower ends they rest upon adjustable tubular seats 35 which have screw-threaded engagement with blocks 36 integral with the columns. The springs tend to sustain the cross-head at the upper limit of its movement and hold the cam-straps always in engagement with the toe-cams. Thus, vibration, due to the motion of these parts, is almost wholly avoided.

The embossing die is horizontally reciprocated. It is carried rearwardly to be inked and forwardly to be wiped and for the impression to be made in coöperation with the counter. The die is carried by a chuck 53 mounted on a table 54 which moves in ways in the parallel members 11 of the table 10 above referred to.

The mechanism for reciprocating the table will be first described. Upon the main shaft 15 and about midway between its bearings an eccentric 55 is secured. A lever 61, pivotally mounted on the base 1, is connected with the eccentric strap by means of a skeleton pitman 62. The pitman is rigidly connected to the eccentric strap and is pivotally connected to the lever. At its upper end the lever 61 is pivotally connected to a block 63 on the reciprocating table 54 by means of a link 64 which is pivotally connected to both. Said block 63 is provided with a tapering recess and a wooden block is seated in the bottom of the recess. A stop pin 65 is adjustably mounted in the beam 9 of the frame, with which it has screw-threaded engagement. A set nut 66 is provided to lock the pin in any position of adjustment. The chuck 53 comprises a base having a substantially cylindrical flange 67. Two clamping pieces 68, having rabbeted inner edges are secured in said base at diametrically opposite points by screws 69. Between said clamping pieces the base has a raised portion which has a central groove parallel therewith. In said groove a right-and-left-hand screw 70 is secured. Clamping plates 71

fit over the said raised portion of the base and have their ends rabbeted to fit the rabbeted edges of the clamping pieces 68. These clamping plates have screw-threaded engagement with said right-and-left-hand screw 70 whereby they may be caused to approach or recede from each other. The embossing die is clamped between said clamping plates 71 which are in turn clamped down by the clamping pieces 68. The chuck 53 can be rotated through a small angle so as to set the die in such direction that the direction of movement of the wiping paper shall be across the lines. The chuck is secured to the table by screws 72. Two holes 73 are provided in the reciprocating table, in either of which the screws may be inserted.

The inking mechanism is arranged on the table 10 at the rear thereof so as to ink the die during the rearward portion of its travel. Standards 74 rise at each side of the table from the members 11. At their upper ends said standards have bearings in which a rock shaft 75 is journaled. A slotted crank arm 76 is secured on one end of said rock-shaft by a set screw 77. An adjusting screw 78 extends longitudinally of the slot in said crank arm and is secured against longitudinal movement therein by means of a collar 79 and a head 80. A squared block 81 is slidably mounted in the slot in said arm and has screw-threaded engagement with said adjusting screw whereby it may be adjusted to any position in said slot. On one side the block 81 carries a crank pin 82. On the other side, the block is provided with a screw on which a set nut 83 is mounted. The actuating rod 84 for the ink-roller is pivotally connected to said crank pin 82. At its lower end said rod is provided with a roller which engages a cam 85 on the main shaft 15. The rod is supported at its lower end by a link 86 which is pivotally connected to the frame of the machine. By adjusting the block 81 on the crank arm 76, the point of connection of the actuating rod 84 is adjusted and thus the angle through which the rock shaft is turned may be varied.

A frame 87 is secured to the rock-shaft 75 and is provided with parallel arms. At the ends of the arms angular members 88 are pivotally mounted. Said angular members have upper portions extending substantially parallel with the arms. A pin 89 secured in the arm passes through the angular member. A spring 90, surrounding said pin and bearing at one end upon the nut 91 on the end of said pin and at the other end on said angular member, tends to hold said upper portion of said angular member and said arm in contact.

A screw 92 is adjustably mounted in said angular member to determine the minimum distance between said upper portion of said angular member and said arm. The other end of said angular member is divided into two parts; one part 93 is fixed and the other part 94 is pivoted thereto. The exterior surface of the split portion is tapering. A ring 95 is mounted on such tapering surface to hold the parts together when it is desired to do so. A spherical bearing 96 is formed in the two parts 93, 94, and in such bearing a zonal segment of a sphere or a ball 97 is mounted. This ball is pierced by a cylindrical hole which forms a bearing for the reduced end of the ink-roller-shaft 98.

At the rear end of the table an ink-pan receiver 99 is permanently mounted. Its sides provide bearings for the shaft of the feed-roller. In this receiver the

ink-pans or ink-receptacles are set. These pans may have one, two or more compartments, depending on the colors in which different portions of the impression are to be printed. In the case chosen for illustration the ink-pan 100 has three compartments separated by partitions. The partitions are slotted in a manner corresponding to the bearings in the ink-pan frame 99. A feed roller 101 is used having as many cylindrical sections as there are compartments in the ink-pan mounted on a shaft 102. This is journaled in the ink-pan receiver and the sections depend into the ink-pan. Between the sections shields 103 are mounted on the shaft. These shields are re-bent sheet metal plates which straddle the partitions of the ink-pan and serve to prevent the ink in one compartment being carried into the next compartment through the slot in which the shaft 102 rests. On the other end of the feed-roller-shaft a sprocket 102^a is mounted. This is connected with a sprocket 104 on the power shaft by a sprocket chain 105. Thus, so long as the machine is running the feed roller will be rotated.

To prevent too much ink being carried up by the feed-roller, scrapers are provided. A bar 106 is secured to the ink-pan frame. To this bar as many scrapers 107 are secured by screws 108 as there are compartments in the ink-pan. Each scraper has a flange 109 on its rear edge in which two screws 110 are secured. The screws 110 enter holes in the bar 106. By means of the screws 110 the scrapers can be adjusted transversely and angularly and thus their edges can be adjusted exactly parallel with the sections of the roller. It is desirable to have the scrapers thus independently adjustable because the different colored inks have different consistencies. Hence, the scrapers may be set at different distances from the different sections of the ink-roller. When only one color is being used, of course, it is unnecessary to use a pan with more than one compartment.

Curved tracks 111 extend forwardly from the ink-pan frame to guide the ink-roller. On either side of the die chuck 53 adjustable tracks are arranged. The latter comprises a base plate 112 having a horizontal flange through which screws pass to secure it to the reciprocating table 54. The upper edge of the base plate is inclined and near said edge are arranged slots 113 parallel therewith. A track-carrying plate 114 is secured to the base plate by means of screws passing through said slots. The track-carrying plate has an inclined shoulder 115 having the same inclination as the inclined edge of the base plate and resting upon said inclined edge. Thus, the tread of the track carrying plate will be parallel with the surface of the reciprocating table 54. By this arrangement the track carrying plates 114 can be raised and lowered without affecting the horizontal alinement of their upper surfaces. Upon each of the track carrying plates 114 is mounted a sectional track. The track sections 201 are preferably angle pieces having one flange resting on the track carrying plate and having its other flange secured flatwise to said plate by means of bolts extending through elongated horizontal slots provided therefor in the track carrying plate. By this arrangement, each of the track sections can be adjusted longitudinally of the track-carrying plate independently of the other section, so that a space of any desired

length may be left between the adjacent ends of said sections and such space may be located wherever it is desired. The track sections are comparatively thin plates and the upper edges of their adjacent ends are rounded or beveled off to prevent a jerky motion of the ink-rollers which travel thereon. In practice, the track is adjusted at such an elevation that the ink-roller thereon will just clear the die, but the ends of the track sections are positioned to slightly overlap the edges of the die or to overlap such portions of the die as it is desired not to ink. In consequence of this arrangement, the ink roller travels clear of the edges of the die and then bears downwardly on the top of face of the die and again rises therefrom without inking the opposite edges of the die. This construction not only economizes ink and wiping paper, but produces superior work, because it removes the danger heretofore common of getting the hard gummy ink from the edge of the die onto the face thereof.

The ink roller shaft 98 carries an ink-roller 116 and near its ends guide rollers 117. The guide rollers run on the curved tracks 111 and the track plates and thus hold the ink roller in the position desired. By adjustment of the track-carrying plates 114 the pressure of the ink-roller upon the dies can be regulated and variations in the thickness of the dies may be provided for. The curved tracks 111 serve to guide the ink-roller so that it will properly engage the feed-roller and will run onto the track plates smoothly. The springs 90 hold the ink-roller yieldingly in contact with all the parts the latter engages. The angular members 88 being independently mounted and the ink-roller shaft being mounted in a ball-and-socket bearing, the ink-roller can adjust itself within limits, to any surface with which it engages. This is a matter of much importance as it insures the proper inking of the die although the latter may have been slightly tilted in some way.

An arm 118 is loosely secured to the rock-shaft 75. A rod 119, provided with a handle 120, and a catch 121, is pivotally connected with said arm. By means of this rod the ink-roller and its actuating rod 84 may be raised so that they cannot be actuated by the actuating cam 85, the catch 121 engaging the bottom of the notch in the beam 41 through which the rod extends. The ink-roller is thrown into this position when the counter is being hammered up.

Obviously, my machine is capable of modification within the scope of my invention and, therefore, I do not wish to be limited to the specific construction shown and described.

What I claim as my invention and desire to secure by Letters Patent is:

1. A press comprising an ink-receptacle having a plurality of compartments and partitions therebetween, a feed roller comprising a shaft carrying a like plurality of sections, and shields between said sections and embracing said partitions.

2. An embossing and printing press comprising a frame, a die-carrying member movably mounted in said frame, tracks adjacent to said die-carrying member and comprising separate track sections longitudinally adjustable without affecting their vertical adjustment, and a yieldingly mounted ink roller having members arranged to engage said tracks, and means for pressing said members against

said tracks and moving said ink roller along said tracks, whereby the pressure of said ink roller upon a die in said die-carrying member can be regulated.

3. An embossing and printing press comprising a frame, a die-carrying member movably mounted in said frame, tracks adjacent to said die-carrying member and comprising separate track sections mounted on a vertically adjustable member and longitudinally adjustable independently of each other, a yieldingly mounted ink roller having members arranged to engage said tracks, and means for moving said ink roller along said tracks and for pressing said members against said tracks, whereby the pressure of said ink roller upon a die in said die-carrying member can be regulated.

4. A press comprising a frame, an actuating shaft mounted in said frame, a rock-shaft mounted on said frame, arms fixed on said rock-shaft, members mounted on said arms to have independent pivotal movement, an ink-roller journaled in said members, an actuating rod operatively connected to said actuating shaft to have a stroke of constant length, and means adjustably connecting said actuating rod and said rock-shaft.

5. A press comprising a frame, a rock-shaft mounted on said frame, pivotally mounted independently movable members carried by said rock-shaft, and provided with spherically concave bearings, a spherically convex member in each of said bearings and provided with an internal bearing, a shaft journaled in said internal bearings of said members, and an ink-roller carried by said shaft.

6. An embossing and printing press comprising a frame, an actuating shaft mounted in said frame, a rock shaft mounted on said frame, an ink roller carried by said rock shaft, a longitudinally slotted crank arm mounted on said shaft, an adjusting screw swiveled in the end of said crank arm and extending into said slot, a threaded block on said screw and slidably mounted in said slot, and an actuating rod pivotally connected to said slidable block and operatively connected to said actuating shaft.

7. A press comprising a frame, a rock-shaft mounted on said frame, arms fixed on said rock-shaft, spring pressed members pivotally mounted on said arms and an ink-roller carried by said members said members being independently movable.

8. A press comprising a frame, a rock-shaft mounted on said frame, arms fixed on said rock-shaft, angular members pivotally mounted on said arms, one leg of each member extending substantially parallel with its respective arm, means tending to move said leg toward said arm, adjustable means to limit the distance within which said leg and arm can approach each other, and an ink-roller journaled in the free ends of said angular members.

9. A press comprising a frame, a die-carrying member reciprocatingly mounted therein, a die in said member, an ink-receptacle mounted on said frame, a feed roller in said receptacle, an ink-roller, means to bring said ink-roller into engagement with both said feed-roller and said die, the ends of said roller being connected by spherical bearings to independently movable pivoted supports so as to adjust itself to make contact with said feed-roller and said die throughout their respective widths.

10. A press comprising a frame, a rock-shaft mounted on said frame, independently movable members pivotally supported by said rock shaft, an ink-roller, a shaft therefor, and self-aligning bearings in said members for said shaft.

11. A press comprising a frame, a rock-shaft mounted on said frame, independently movable members pivotally supported by said rock-shaft, a shaft having ball-and-socket bearings in said members, and an ink roller carried by said shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 7th day of August, 1906.

EDWARD B. ROTH.

Witnesses:

J. B. MEGOWN,
G. A. PENNINGTON.