

No. 862,340.

PATENTED AUG. 6, 1907.

R. D. LAWS.
PRINTING PRESS.

APPLICATION FILED MAY 2, 1907.

2 SHEETS—SHEET 1.

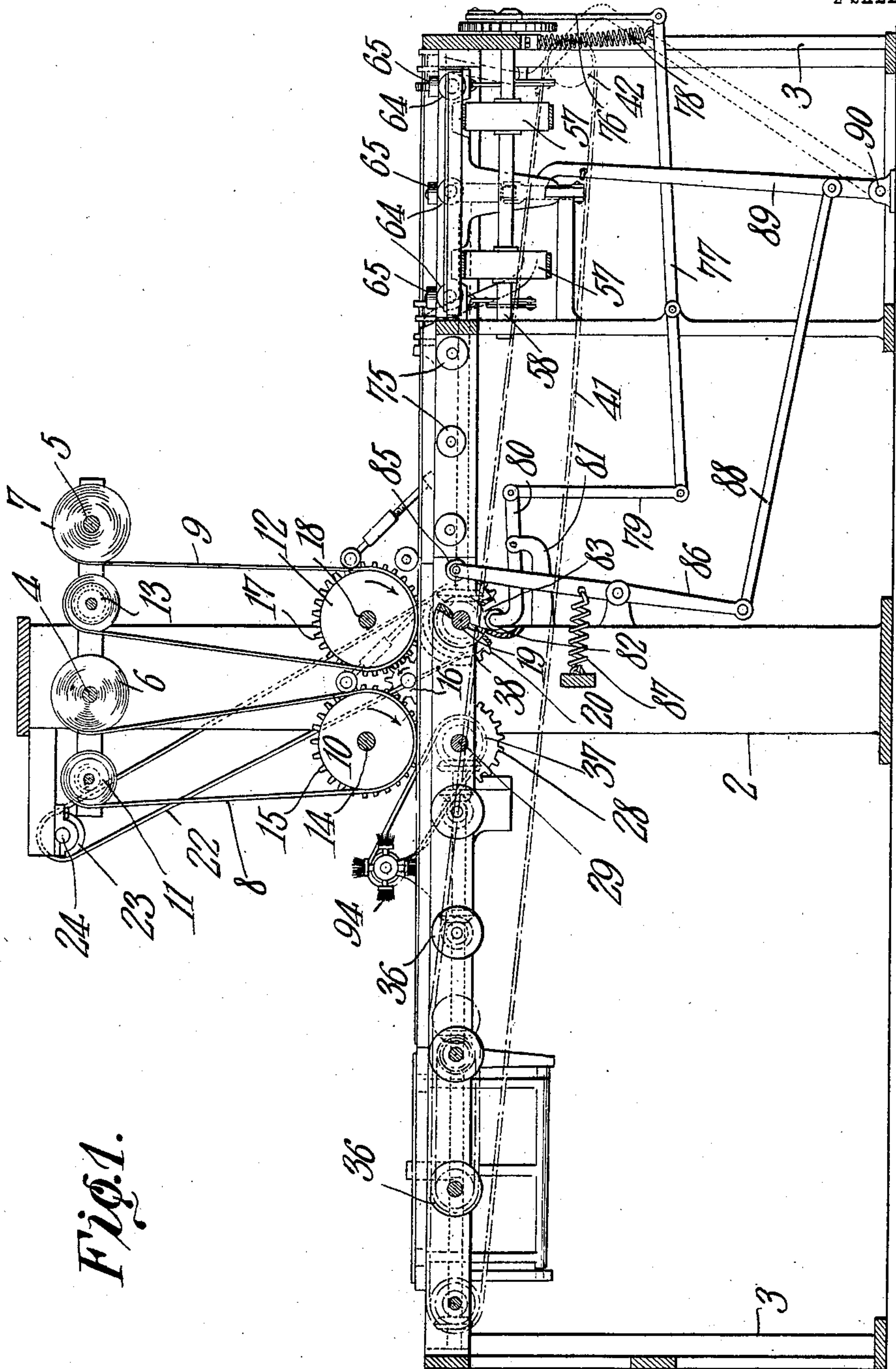


Fig. 1.

WITNESSES:

E. J. Hunt
F. J. Chapman

Romulus Don Laws, INVENTOR.

By *C. A. Snow & Co.*
ATTORNEYS

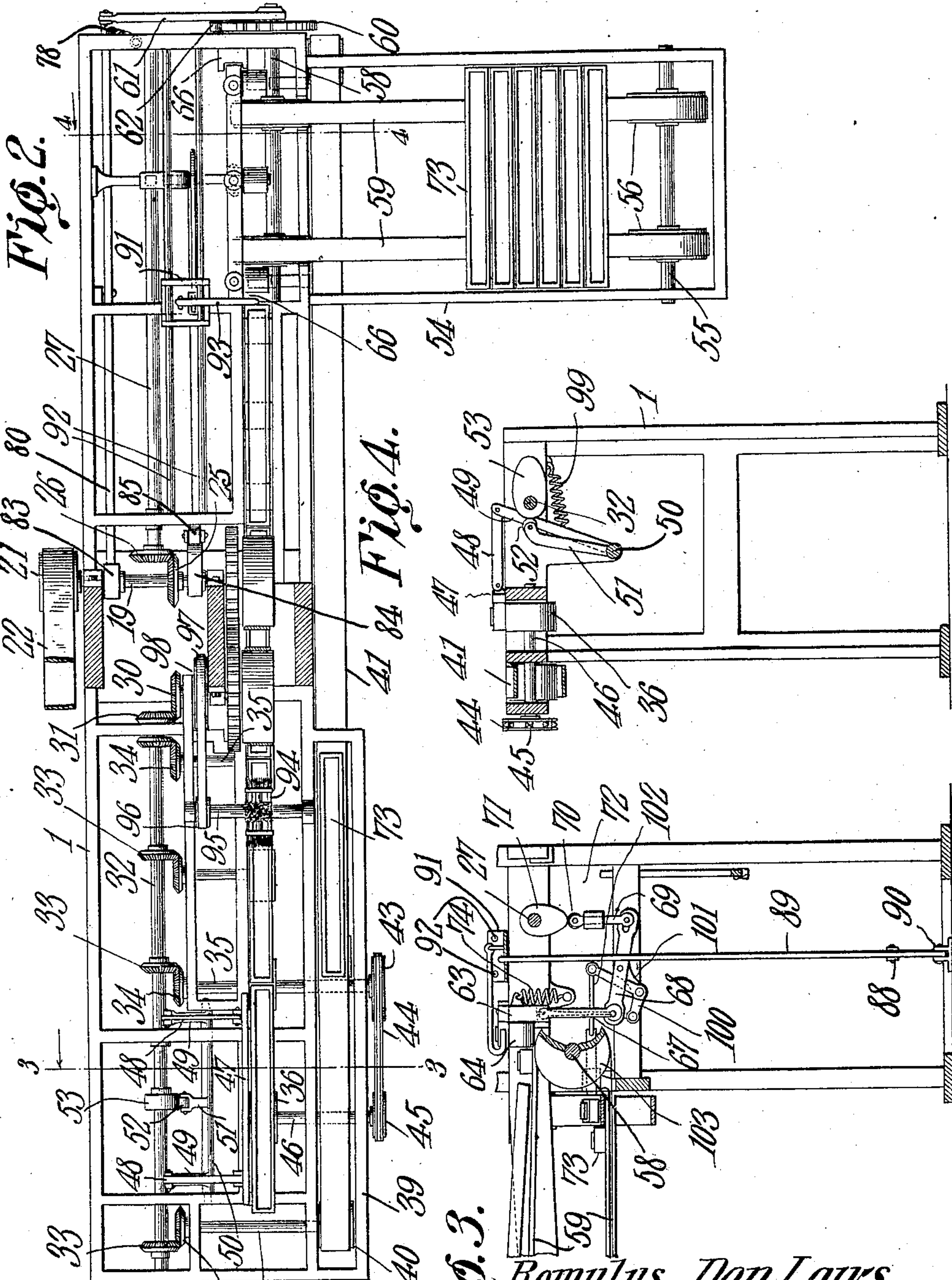
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FIG. 3.

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UNITED STATES PATENT OFFICE.

ROMULUS DON LAWS, OF MORAVIAN FALLS, NORTH CAROLINA.

PRINTING-PRESS.

No. 862,340.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed May 2, 1907. Serial No. 371,442.

To all whom it may concern:

Be it known that I, ROMULUS DON LAWS, a citizen of the United States, residing at Moravian Falls, in the county of Wilkes and State of North Carolina, have invented a new and useful Printing-Press, of which the following is a specification.

This invention has reference to improvements in printing presses, and is designed to print upon webs of paper from galleys automatically fed through the machine into printing relation with the webs of paper and then returned to the first end of the machine to be removed therefrom or again sent through the machine to repeat the printing operation.

The machine is designed primarily for producing mailing slips from mailing galleys but it is equally well adapted for the printing of other characters.

The invention consists essentially of a feeding structure arranged to receive type galleys one after another, and these galleys are automatically fed by this feeding portion of the machine to a runway along which the galleys are moved until they pass under the webs of paper so as to imprint thereon, after which the type in the galleys are subjected to a washing operation whereby the ink is removed and the galleys are then transferred to a return mechanism by which they are again deposited upon a delivery support or belt from which they may be taken by an attendant who is located at the feeding end of the machine and who places the galleys upon the feeding belt.

The invention will be fully understood from the following detailed description taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a longitudinal section through the machine; Fig. 2 is a plan view of the same, with some parts in section; Fig. 3 is a section on the line 4—4 of Fig. 2; and Fig. 4 is a section on the line 3—3 of Fig. 2.

Referring to the drawings, there is shown a bed frame 1 supported about centrally upon standards 2 and at the ends upon legs 3—3. The standards 2 are continued above the bed frame, and upon suitable shafts 4—5 are mounted rolls 6—7 of paper webs 8—9. The web 8 is carried downward over a roller 10 near the bed of the machine and then upward to a drum 11 upon which it is ultimately wound after receiving an impression from the type as will hereinafter appear. The web 9 is carried down over a roller 12 and thence upward and is wound on a drum 13 like the drum 11. The roller 10 is mounted upon a shaft 14, suitably journaled in the framework of the machine, and this shaft 14 carries a gear wheel 15 in mesh with a pinion 16, which latter engages a gear wheel 17 upon a shaft 18 which carries the roller 12. Below the shaft 18 there is another shaft 19 on which is a gear wheel 20 meshing with the gear wheel 17 and driving the same,

and, through the pinion 16, also driving the gear wheel 15. The shaft 19 is continued to one side of the bed frame and there carries a pulley 21 to which power may be applied through a belt 22 coming from a pulley 23 mounted in suitable bearings near the upper portion of one of the standards 2, and this pulley 23 is fast on a shaft 24 to which power may be applied from any suitable source. The shaft 19 carries a bevel pinion 25 meshing with another bevel pinion 26 upon one end of a shaft 27 extending lengthwise through suitable bearings in the bed frame 1 of the machine.

The gear wheel 15 is in mesh with another gear wheel 28 beneath it, and this latter gear wheel is mounted on a shaft 29 which, in turn, carries a bevel pinion 30 meshing with another bevel pinion 31 on the end of a shaft 32 extending lengthwise through and journaled in the bed frame 1. This shaft 32 extends in a direction opposite to that of the shaft 27 and it carries a number of bevel pinions 33 meshing with bevel pinions 34 upon lateral shafts 35. These shafts 35 carry a number of rollers 36 in line with the rollers 10 and 12 and with corresponding rollers 37 and 38 beneath the rollers 10 and 12 and in operative relation thereto. The last shaft 35 toward the end of the machine contains no roller 36 but extends through the side frame into a pocket formed by an extension 39 of the frame at this point, and there this shaft carries a pulley 40 around which there passes a belt 41 extending to an idler pulley 42 at the other end of the machine, but located in a lower horizontal plane for a purpose which will hereinafter appear. The shaft second in number from the end of the machine extends beyond even the frame 39 and there carries a sprocket wheel 43 connected by a sprocket chain 44 to another sprocket wheel 45 upon a shaft 46, located about midway between the two shafts 35 just considered and carrying at its inner end a pulley 36. At this point there extends longitudinally of the frame work for a distance less than the distance between the two shafts 35 just considered, a bar 47 pivotally secured to the ends of two links 48, which links are connected at their other ends to the ends of arms 49 upon a rock-shaft 50 journaled in the framework of the machine and having a short rock-arm 51 terminating in a roller 52 in the path of a cam 53 fast on the shaft 32 at an appropriate place thereon.

Returning, now, to the other end of the machine, there is a side extension 54 of the frame containing near its outer end a shaft 55 on which are located pulleys 56 so spaced as to be near the sides of said frame. In line with these pulleys 56 are other pulleys 57 mounted on a shaft 58 in the main frame of the machine and parallel with the shaft 55, and these pulleys carry two belts 59 arranged to run parallel one with the other. The outer end of the shaft 58 extends beyond the corresponding end of the frame 1 and there carries a ratchet wheel 60

about the axis of which is pivoted an arm 61 carrying a pawl 62 so that when this arm is appropriately rocked the shaft 58 will be turned in a direction to cause the upper portions of the belts 59 to travel step-by-step toward the main frame of the machine. At the delivery end of the belts 59 there is located a bar 63 having on its side face a number of rollers 64 and on its top face other rollers 65. This bar is supported at the ends in guides 66 so that it may be moved in a vertical plane.

A stem 67 extends downward from the bar and is secured at its lower end to one end of a rock-arm 68, suitably journaled in the frame of the machine, and the other end of this rock-arm is fast to a guide rod 69, the upper end of which carries a roller 70 in the path of a cam 71 on the shaft 27. The rod 69 is guided and centered in a bracket 72 fast on the framework of the machine.

The belts 59 are arranged to receive galleys 73 containing type set up to form the addresses for mailing slips, although these galleys may be of other construction and may contain news matter or suitable forms for books. These galleys are placed close together upon the belts 59 and are transferred therefrom to the rollers 64 and against the rollers 65, the bar 63, which together with the rollers 64 and 65 I term the elevator, being at this time in the depressed position, to which position it gravitates and is also assisted in assuming by the spring 74, best seen in Fig. 3. After a galley has been received upon the rollers 64 the elevator 63 is raised until the galley is in line with a number of rollers 75 and also in line with the impression members 10 and 12 carrying the paper webs and with the rollers 36 before described, all these rollers being in one longitudinal plane and the galleys being fed to the machine so that when delivered on the rollers 64 they will also be in this plane. In order to transmit motion to the shaft 58 in the step-by-step manner necessary for the delivery of one galley after another without interference upon the rollers 64, the arm 61 is connected by a link 76 to one end of a lever 77 having that end normally elevated by a spring 78. This lever is pivoted to an appropriate portion of the frame and extends toward the middle of the frame where it is connected by another link 79 to another lever 80 mounted on a bracket 81 and provided with an angle end carrying a roller 82 in the path of a cam 83 fast on the shaft 19. Another cam 84 on this same shaft 19 is arranged to engage a roller 85 on the corresponding end of a lever 86 having a normal tendency toward said cam under the action of a spring 87. The other end of this lever is connected by a link 88 to an upright arm 89 pivoted near the base of the machine, as shown at 90, and having its upper end appropriately bent and in operative relation to a slide 91 mounted to move parallel with the plane of the rollers 64 upon guide rods 92. The slide 91 carries an arm 93 so located as to engage behind the galleys when resting upon the rollers 64 and the elevator is raised.

Now, let be assumed that the paper webs 8 and 9 are properly placed so as to pass down around under the rollers 10 and 12 and then up around the drums 11 and 13, and that the various parts of the machine are properly adjusted and timed in action, the operation is as follows:—The galleys 73 are placed upon the belts 59 until the latter are full. The machine being now started in operation, the cam 83 will, through the link 79,

operate the lever 77 to pull down the arm 61 and so rotate the shaft 58 an appropriate distance to cause a galley 73 to be deposited upon the rollers 64. Now the cam 84 comes in action and, engaging the lever 86, through the link 88 causes the lever 89 to move toward the left as viewed in Figs. 1 and 2. This will move the slide 91, and the arm 93 thereon, engaging behind the galley, will push the same forward off the elevator. As the machine continues to operate, the elevator 63 is depressed into position to receive another galley, which by the continued operation of the machine is deposited thereon through another impulse imparted to the shaft 58 in its proper sequence of time. Again the lever 89 is operated as before and the second galley is pushed forward off the elevator, causing the first galley to move under the impression rollers 10 and 12. These rollers being operated by power applied to the machine through the intermediate shafting and gearing feed the galley forward, while still a third galley is deposited upon the elevator and pushed toward the left off said elevator. The galleys, as will readily be understood, are fed forward one by one in order. The paper webs 8 and 9, or only one if it is not desirable to use two, receive imprints from the type in the galleys, the type having been previously inked by suitable rollers, which, for the sake of clearness, have been omitted from the drawings, and those portions of the webs having imprints thereon are ultimately wound upon the drums 11 and 13. It is sometimes desirable that the imprints be duplicated. In such case the two paper webs 8 and 9 are used; but at other times only one imprint is desired, and in that case only one paper web is used.

After passing the rollers 10 and 12 the type in the galleys are subjected to the action of a rotary brush 94 mounted on a shaft 95, suitably journaled in the framework of the machine and continuously fed by benzine or some other cleaning fluid from a reservoir, not shown, this brush being, if desired, of the fountain type. Upon the shaft 95 is a pulley 96 receiving power through a belt 97 from another pulley 98 mounted upon the shaft 29 before referred to. After having been treated to the washing operation of the brush 94 the galley is pushed on until opposite the bar 47. Now, having reached this position, the rotation of the shaft 32 is so timed that the cam 53 engages the roller 52 on the arm 51 and moves the same against the action of a spring 99 in such manner that through the other arms 49 and the links 48 the bar 47 is moved in a direction to push the galley laterally toward the extension 39 of the frame 1 until it reaches and moves upon the belt 41. The upper portion of this belt is moving toward the other end of the machine and ultimately passes over the lower member of each belt 59 before it reaches the pulley 42. Finally the galley on the belt 41 comes to a position in line with the lower members of the belts 59. Now, as the elevator 63 moves downward it acts through bell-crank levers 100, suitably journaled in brackets 101 in the framework of the machine, as shown in Fig. 3, and these bell-crank levers are each connected by a link 102 to a corresponding slide bar 103 in line with the respective belt 59, it being understood that there is a bar 103 for each belt 59. The operation is so timed that when the galleys 73 have reached a position opposite the belts 59 as they return

toward the pulleys 56 the bars 103 are operated to push these galleys off on to the belts. They are now carried toward the pulleys 56. An attendant standing at this end of the machine has but to place the galleys 5 73 upon the top members of the belts 59 and to remove the returned galleys from the lower members of the belts 59.

It will thus be seen that the operation of the machine is entirely automatic with the exception of placing the galleys upon the belts 59 and removing them therefrom after the printing operation has been performed and these galleys are returned to the operating table.

The transmission from the shaft 35 carrying the sprocket wheel 43 to the shaft 46 should be such that the pulley 36 on the said shaft 46 should run faster than the other pulleys 36, in order to more quickly advance the galley about to be transferred to the belt 41, to give that galley suitable end clearance.

I claim:—

1. In a printing press, a conveyer for receiving galleys, means for moving the same step-by-step, a vertically movable receiving member for the galleys at the delivery end of the conveyer, means for elevating the galley-receiving means, and other means for moving the galleys off the galley-receiving means in the interim between the intermediate feeding movements of the conveyer.

2. In a printing press, a belt conveyer for galleys, a receiving member having an extent of vertical travel and arranged to receive the galleys from the conveyer when in its lowermost position, a step-by-step actuator for the galley conveyer, and an elevating mechanism for the galley-receiving device, the conveyer actuator and galley elevator being timed in operation to act in sequence.

3. In a printing press, a galley conveyer consisting of suitable endless belts, a drive shaft for the same, a pawl-and-ratchet actuating mechanism for the shaft, a cam shaft, a lever and link system between the cam shaft and pawl-and-ratchet actuating mechanism, a vertically mov-

able member at the delivery end of the conveyer, another cam shaft, and a link and lever system between the latter and the elevator timed to operate the same in the interim between the operations of the conveyer.

4. In a printing press, a galley conveyer consisting of suitable endless belts, a drive shaft for the same, a pawl-and-ratchet actuating mechanism for the shaft, a cam shaft, a cam thereon, a lever and link system between the cam and the pawl-and-ratchet actuating mechanism, a vertically movable member at the delivery end of the conveyer, another cam shaft, a cam thereon, a link and lever system between the latter and the elevator timed to operate the same in the interim between the operations of the conveyer, another cam upon the first-named cam shaft, a slide in operative relation to and movable longitudinally with relation to the elevator, and a lever and link system between the last-named cam and the slide.

5. In a printing press, means for moving printing galleys in regular order past an impression surface, a traveling conveyer for returning the galleys after performing the printing operation to the feeding end of the machine, and means for transferring the galleys to the return conveyer comprising a bar movable laterally with relation to the plane of travel of the galleys and a cam timed to operate said bar to push the galleys on to the conveyer.

6. A printing press comprising a feeding member for delivering galleys to the press, a vertically movable member for receiving the galleys and lifting them into the plane of travel, means for moving the galleys from the elevating mechanism toward the point of printing impression, web-carriers in the line of travel of the galleys, a type-cleaning brush located to operate upon the galleys after said galleys have acted upon the web, a return conveyer for the galleys for delivering them to the feeding end of the machine, and means timed in operation to act upon the galleys to move them from the line of travel to the return carrier.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROMULUS DON LAWS.

Witnesses:

ROSE MCNEILL,
L. B. LAWS.