

No. 714,944.

Patented Dec. 2, 1902.

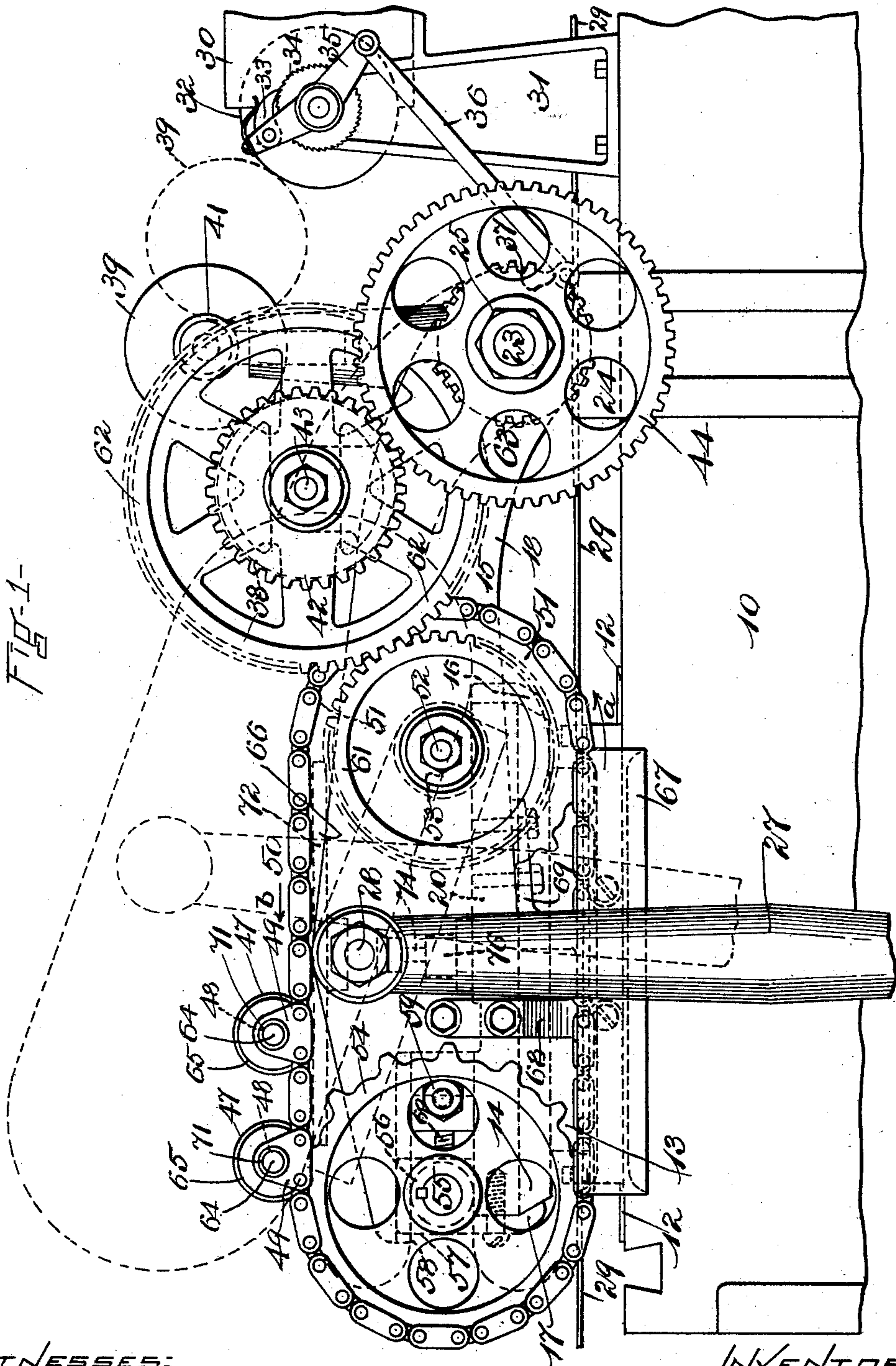
G. H. PIERCE.

INKING DEVICE FOR PRINTING PRESSES.

(Application filed June 20, 1902.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

Louis A. Jones.  
Franklin C. Low.

INVENTOR:

George H. Pierce,  
by his Attorney, *Walter S. Gooding.*

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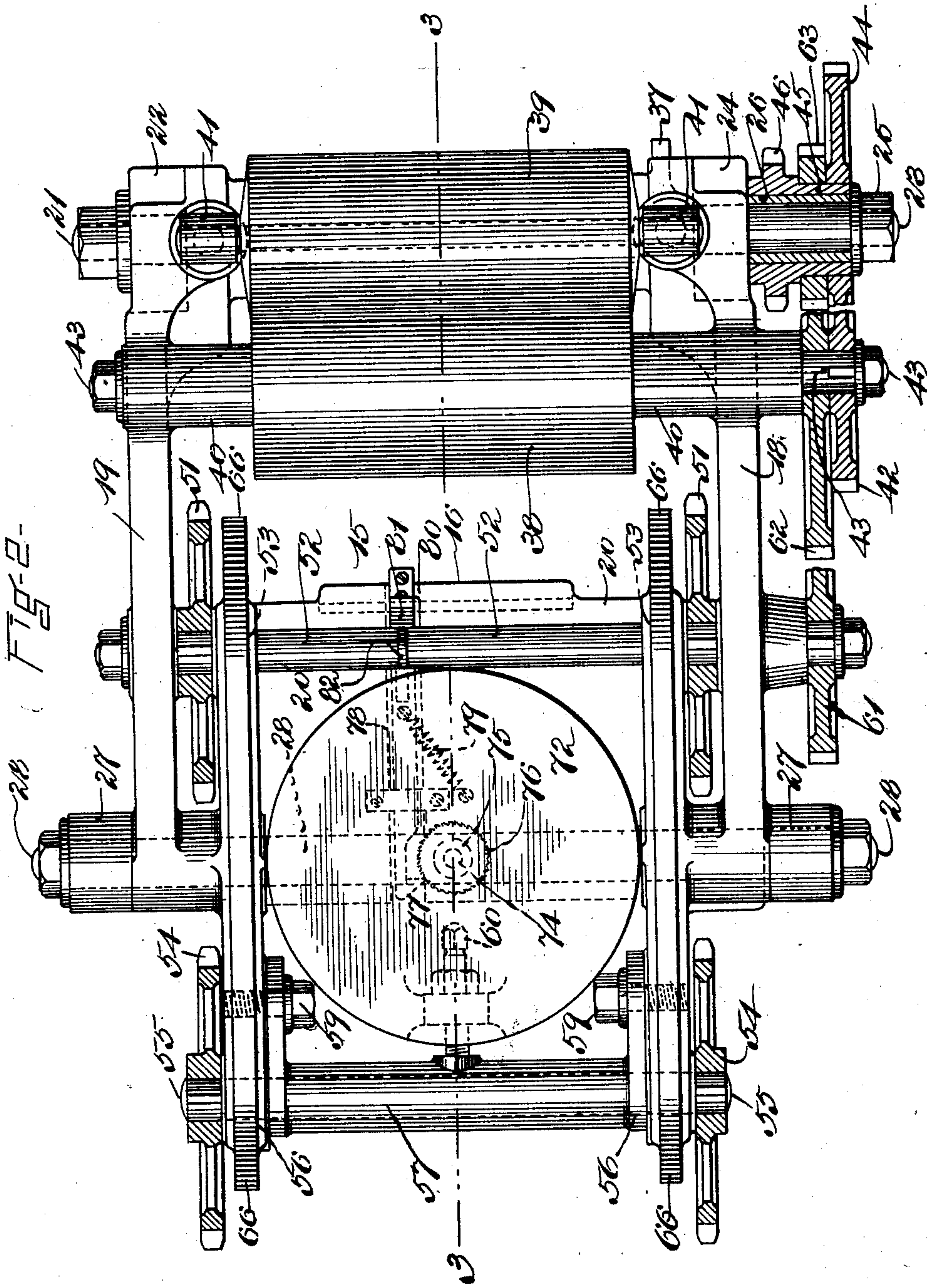
**G. H. PIERCE.**

**INKING DEVICE FOR PRINTING PRESSES.**

(Application filed June 20, 1902.)

(No Model.)

**4 Sheets—Sheet 2.**



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4 Sheets—Sheet 3.

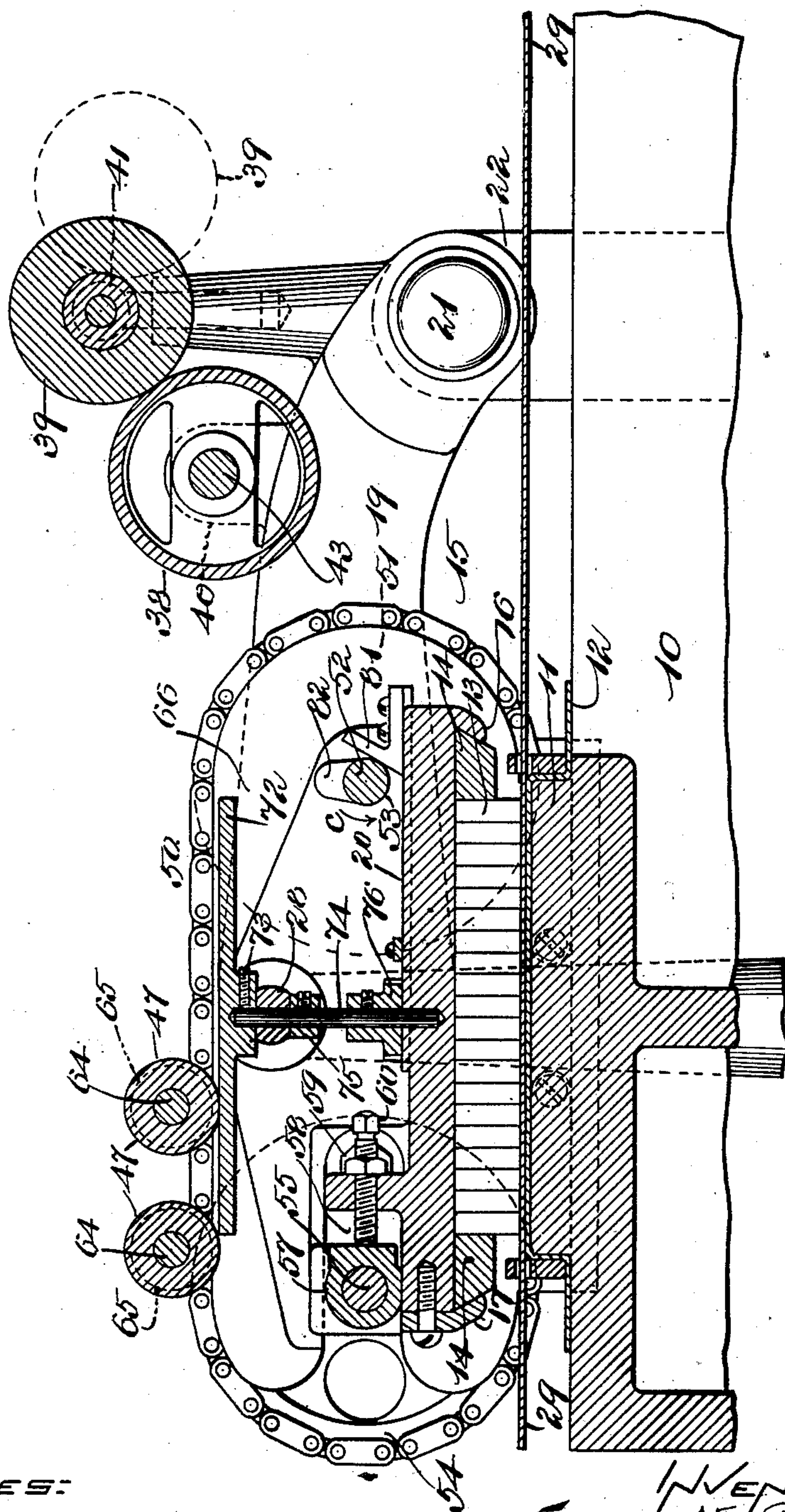


FIG-3-

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4 Sheets—Sheet 4.

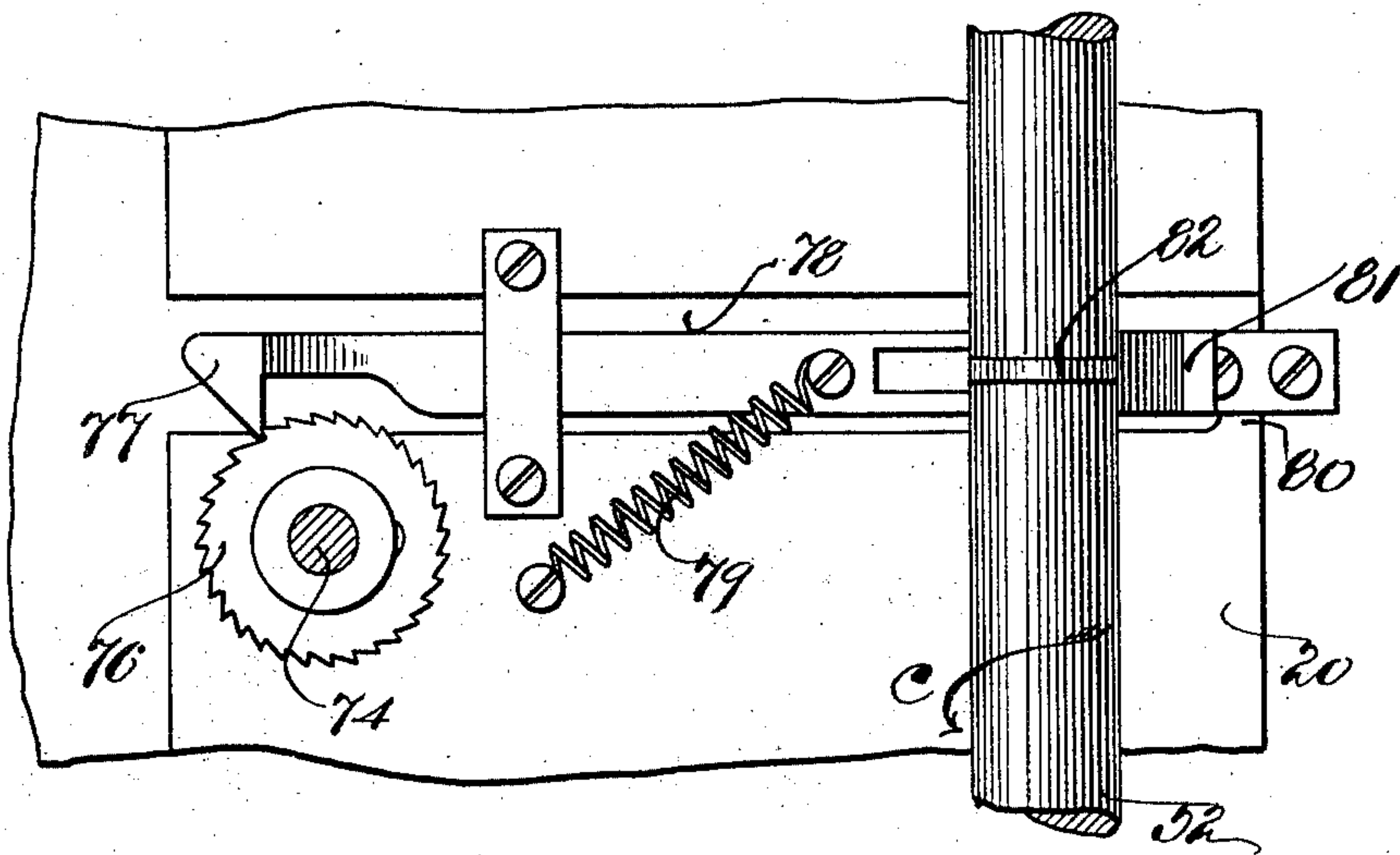


Fig-5-

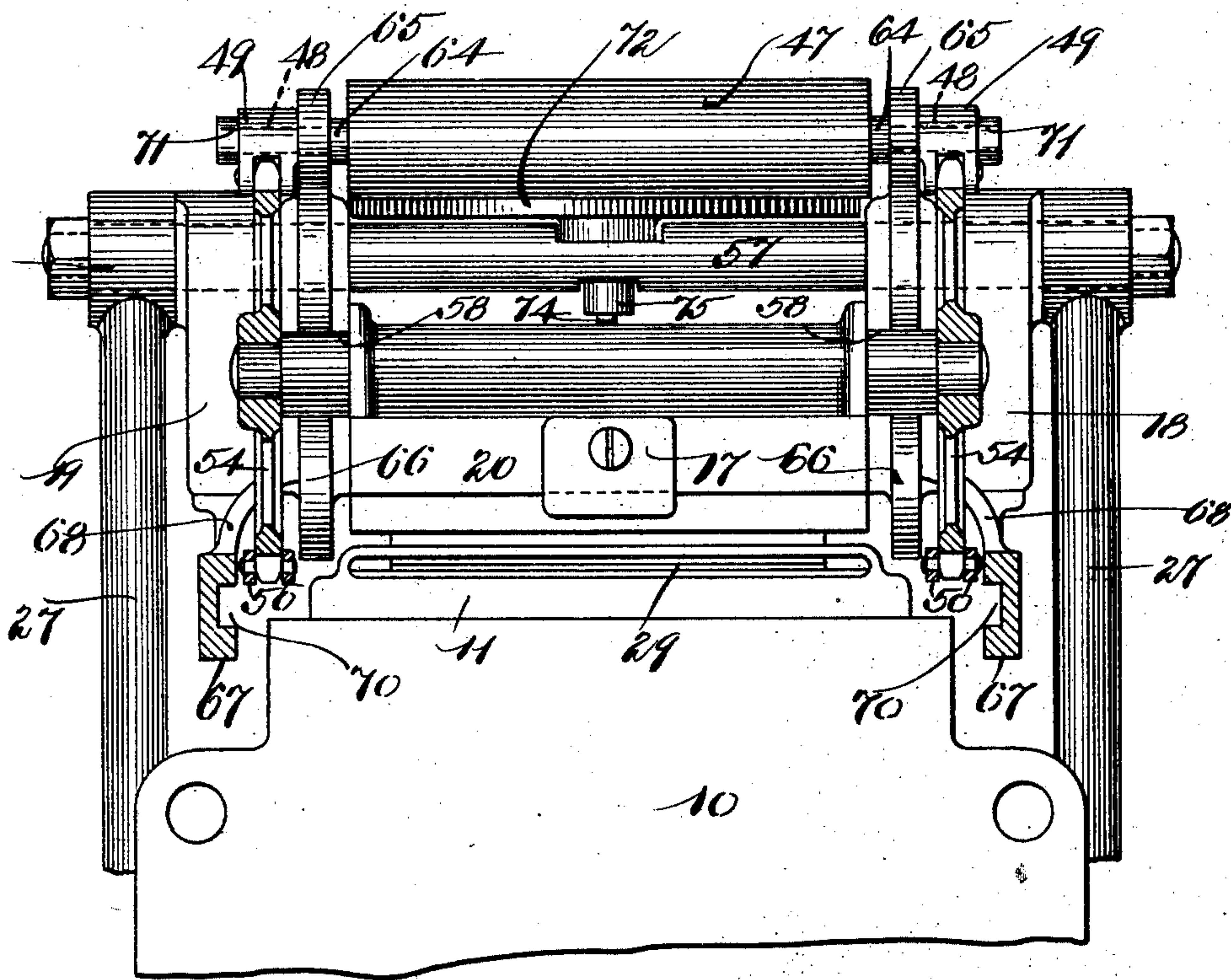


Fig-4-

WITNESSES:

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Franklin O. Low

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# UNITED STATES PATENT OFFICE.

GEORGE H. PIERCE, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO NEW ERA MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

## INKING DEVICE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 714,944, dated December 2, 1902.

Application filed June 20, 1902. Serial No. 112,448. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. PIERCE, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Ink-Distributing Mechanism for Printing-Presses, (Case B,) of which the following is a specification.

This invention relates to printing-presses, and particularly to that class of printing-presses in which the printing is done upon a continuous strip or web of paper, the same being afterward cut or punched to form tickets.

The invention is an improvement upon the machine for which I have made application for Letters Patent of the United States, Serial No. 88,500, the improvement consisting, mainly, in adding to the mechanism shown and described in said application an ink-distributing plate journaled upon the pivoted form-carrier and provided with mechanism to impart an intermittent rotary motion thereto, said ink-distribution plate being so located as to engage the ink-carrier rolls carried by the endless sprocket-chain at a point between the ink-distribution roll and the type.

The object of the invention is to render the distribution of the ink more complete than in the form shown and described in the application hereinbefore referred to.

The invention consists in a printing-press of a bed, a form-carrier, a pivot for said form-carrier, mechanism to rock said form-carrier upon its pivot, type carried by said form-carrier, an intermittently-rotated ink-distribution plate journaled upon said form-carrier, and improved mechanism for transferring ink from the ink-fountain and distribution-rolls to the face of the type, by which mechanism the ink-carrier rolls are carried from the ink-distribution rolls across the face of said ink-distribution plate around the type, passing across the face of the type once in their path of motion and then returning to the ink-distribution roll, the direction of motion of said rolls being continuously forward in the same general direction in a curvilinear path of motion, the advantage resulting in capacity for higher speed than in a machine where the ink-carrier rolls are pro-

vided with a reciprocatory motion, for the reason that in a reciprocatory motion the carrier-rolls necessarily stop at each end of their motion, and the momentum and inertia at each end of the throw have to be overcome, and, further, a very fine distribution of the ink is obtained by means of the intermittently-rotated distribution-plate.

The invention further consists in a form-carrier, type carried by said form-carrier, an ink-carrier roll, an ink-distribution plate journaled upon said form-carrier, mechanism to carry said ink-carrier roll in a curvilinear path entirely around said type, and mechanism to impart an intermittent rotary motion to said ink-distribution plate.

The invention still further consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a side elevation of my improved ink-distributing mechanism. Fig. 2 is a plan view, partly in section, of the same, the ink-fountain and connecting mechanism being left off in said view. Fig. 3 is a central longitudinal section taken on line 3 3 of Fig. 2. Fig. 4 is a detail end elevation, partly in section, taken from the left of Fig. 1. Fig. 5 is an enlarged detail plan of the mechanism by which the ink-distribution plate is rotated, the vertical ink-distribution-plate shaft being shown in section and the cam-shaft broken away to save space in the drawings.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is the bed-frame of a printing-press of any desirable construction. 11 is a raised portion thereon covered by a pad 12. The type 13 are secured to a chase 14, having two sides dovetailed and being held against the under side of the form-carrier 15 by a dovetailed projection 16 on one side and by a dovetailed clamp 17 on the side opposite thereto, said clamp being removed in order to insert or remove the chase from the form-carrier when it is desired to change the type.

The form-carrier 15 consists of two side arms 18 19, joined together by a base-plate



20. The side arm 19 is pivoted upon a stud 21, fast to an ear 22 upon the bed-frame 10. The side arm 18 is pivoted upon a stud 23, said stud being fast to an ear 24 upon the bed-frame 10 by means of a nut 25, which bears against a sleeve 26, encircling said stud 23. At each side of the form-carrier 15 is a connecting-rod 27, the lower end of which may be raised and lowered by a crank-pin or any other appropriate mechanism, thus raising and lowering the form-carrier 15, said connecting-rods being pivotally attached to each side of said form-carrier by a stationary cross-shaft 28.

15 The paper 29 is fed intermittently by any suitable mechanism across the face of the pad 12 and below the base-plate 20 of the form-carrier and the type 13, secured to said form-carrier, as hereinbefore set forth. The ink is contained in a fountain 30, supported upon brackets 31, fast to the bed-frame of the machine. The ink-fountain roll 32 rotates in bearings in said ink-fountain and is rotated by a pawl 33, ratchet 34, and pawl-lever 35, said pawl-lever 35 being connected by a link 36 to an arm 37 upon the form-carrier 15.

Two ink-distribution rolls 38 and 39 are journaled to rotate in bearings 40 and 41, respectively, upon the form-carrier frame. The ink-distribution roll 39 rotates by frictional contact with the ink-distribution roll 38, said ink-distribution roll 38 being rotated by a gear 42, fast to the ink-distribution-roll shaft 43 and meshing into a gear 44, fast to the hub 45 upon the sprocket-gear 46. The sprocket-gear 46 may be rotated by a chain connected with a sprocket-gear upon a driving-shaft. The ink-carrier rolls 47 47 rotate in bearings 48, formed in the links 49 49 of the sprocket-chains 50 50. Each of the sprocket-chains 50 is driven by a sprocket-gear 51, fast to a shaft 52, which rotates in bearings 53 in the form-carrier arms 18 and 19. Each of the sprocket-chains 50 passes from the sprocket-gear 51 around a sprocket-gear 54, said gears 54 being idlers and fast to a shaft 55, which rotates in a bearing 56, formed in the adjustable frame 57. Said adjustable frame is formed to slide in slots 58, formed in the arms 18 and 19 of the form-carrier 15 and is clamped thereto by clamp-screws 59, being adjusted by means of an adjusting-screw 60, the object of this adjustment being to keep the sprocket-chains 50 50 tight, so that the rolls will not sag as they are being carried from the ink-distribution roll 38 across the upper face of the ink-distribution plate 72, around the type, across the face thereof, and back to the ink-distribution roll 38. The ink-carrier rolls are each fast to a shaft 64 64 and are rotated by friction-rolls 65 65, fast to said shafts 64 and bearing upon flanges 66 66, formed upon the carrier-arms 18 and 19 and acting as an open cam-path to rotate the friction-rolls 65 and the ink-carrier rolls 47 as they are being carried from the ink-distribution roll across the upper face of the ink-distribution plate 72,

around the type, and back to said ink-distribution roll.

The shaft 52 is rotated by a gear 61, which is keyed thereto and meshes into a gear 62, which turns loosely upon the shaft 43 and meshes into the gear 63, fast to the hub 45 upon the sprocket-gear 46.

The horizontal ink-distribution plate 72, Figs. 2 and 3, is fastened by means of a set-screw 73 to a vertical shaft 74, journaled at the upper end thereof in the stationary cross-shaft 28 and in the lower end in the base-plate 20 of the form-carrier. A collar 75, fast to the shaft 74, bears against the under side of the cross-shaft 28 and prevents said shaft from moving upwardly. An intermittent rotary motion is imparted to the shaft 74 by a ratchet 76 and pawl 77. The pawl 77 is arranged to slide in ways 78, formed in the base-plate 20. A spiral tension-spring 79 acts to hold the toothed end of the pawl at the left of Fig. 5 against the ratchet 76 and the right-hand end of the pawl-slide against a projection 80 on the base-plate 20. Upon the upper side of the pawl-slide 77 is fastened a plate 81, which is held by the spring 79 against a cam 82, fast to the shaft 52. As the shaft 52 is rotated in the direction of the arrow *c*, Figs. 3 and 5, the pawl-slide 77 will be reciprocated toward the right and left, Fig. 5, and impart an intermittent rotary motion to the ratchet 76 and also to the distribution-plate 72.

In order to guide the ink-carrier rolls 47 47 with precision across the face of the type and to prevent the sprocket-chain 50 from sagging, I provide upon each side of the form-carrier a plate 67. Said plates are attached by ears 68 69 to the form-carrier 15, each of said plates being provided with a groove 70 upon the inner face thereof, which receives a roll 71 upon the end of the ink-carrier shafts 64 64. It will thus be evident that as the ink-carrier rolls are carried by the chain 50 across the face of the type they will be held firmly in contact with said type by the rolls 71 and the plates 67, in the grooves 70 of which said rolls 71 travel as the ink-carrier rolls are passing across the face of the type.

It is evident that while I prefer to hold the ink-carrier rolls against the face of the type by extending the shaft 64 and placing a roll thereon the same purpose may be attained by projections upon the chain 50, with rolls journaled upon said projections.

The operation of the mechanism hereinbefore described is as follows: The paper 29 having been fed into position across the upper face of the pad 12, the form-carrier is brought down to the position shown in Fig. 1 by the connecting-rods 27, thus forming an impression upon the paper. When the form-carrier is raised by the rods 27 to such a position that the ink-distribution roll 39 will assume the position shown in dotted lines, Fig. 1, thus contacting with the ink-fountain roll 32, the ink-carrier rolls pass across the face of the type in the direction of the arrow *a*, Fig. 1, being carried by



the sprocket-chains 50 50. After leaving the face of the type the carrier-rolls are carried by the chains 50 upwardly around the center of the sprocket gear-shaft 52 into contact with the ink-distribution roll 38, thence in the direction of the arrow *b*, Fig. 1, across the upper face of the intermittently-rotated distribution-plate 72 and around the center of the sprocket gear-shaft 55, downwardly and across the face of the type again to the ink-distribution roll, being carried continuously in the same general direction in a curvilinear path by the sprocket-chains 50 50.

The gearing hereinbefore described is so proportioned that the speed of the ink-distribution roll 38 is greater than the speed at which the carrier-rolls are moved, the object being to make sure of applying a sufficient quantity of ink to said carrier-rolls when they come in contact with said distribution-roll and to give the same a full rotation during the time they are in contact with said roll.

It will be seen that as the shaft 52 is constantly rotated the cam 82 will impart a constant reciprocatory motion to the pawl-slide 77, thus through the ratchet 76 imparting an intermittent rotary motion to the ink-distribution plate 72, so that each time the ink-carrier rolls pass over the upper surface of said ink-distribution plate the relative position of the surface of the plate to the ink-carrier rolls will have been changed, said ink-distribution plate rotating in a horizontal plane when in the position shown in Fig. 3.

It is evident that an endless band with bearings attached thereto for the carrier-rolls might be substituted in place of the chains 50 without departing from the spirit of my invention and also that a single distribution-roll could be used in place of the two rolls 38 and 39.

It will be seen that as the gears 44, 46, and 63 are all located upon the stud 23 and that stud being the pivotal center of the form-carrier when the form-carrier is raised and lowered, as hereinbefore set forth, the action of the gears will not be interfered with, the gears 62 and 42 revolving about the center of the stud 23 and also around the peripheries of the gears 63 and 44, with which they are respectively in mesh.

Having thus described my invention, what I claim, and desire by Letters Patent to secure, is—

1. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, and mechanism to rotate said gearing and carry said ink-carrier roll across the face of said plate and across the face of said type.

2. In a printing-press, a bed, a form-carrier,

a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotatory motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll across the face of said plate and across the face of said type.

3. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by said form-carrier, an ink-distribution roll journaled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll from said ink-distribution roll across the face of said ink-distributing plate, around said type, across the face thereof, and back to said ink-distribution roll in a curvilinear path.

4. In a printing-press, a bed, a form-carrier, type carried by said form-carrier, mechanism to move said form-carrier toward and away from said bed, an ink-distribution roll journaled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll from said ink-distribution roll across the face of said plate and across the face of said type in one direction and thence to return said ink-carrier roll to said ink-distribution roll without contacting with said type.

5. In a printing-press, a bed, a form-carrier, type carried by said form-carrier, mechanism to move said form-carrier toward and away from said bed, an ink-distribution roll journaled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll across the face of said plate, entirely around said type and back to said ink-distribution roll in a continuous path.

6. In a printing-press, a bed, a form-carrier, type carried by said form-carrier, mechanism to move said form-carrier toward and away from said bed, an ink-distribution roll jour-



naled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, 5 a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll in a continuous 10 curvilinear path from said ink-distribution roll across the face of said plate, around said type, and back to said ink-distribution roll.

7. In a printing-press, a bed, a form-carrier, type carried by said form-carrier, mechanism 15 to move said form-carrier toward and away from said bed, an ink-distribution roll journaled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, 20 a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and mechanism to rotate said gearing and carry said ink-carrier roll in a curvilinear path 25 around said type.

8. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by said 30 form-carrier, an ink-distribution roll journaled upon said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled on said endless chain, a rotatory ink-distributing plate journaled upon 35 said form-carrier, mechanism to impart an intermittent rotary motion to said plate, mechanism to rotate said gearing and carry said ink-carrier roll from said ink-distribution roll 40 across the face of said distribution-plate, around said type, across the face of said type, and back to said ink-distribution roll in a curvilinear path, and an ink-fountain roll supported upon stationary bearings and making 45 contact with said ink-distribution roll when said form-carrier is raised.

9. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by said 50 form-carrier, two sprocket-gears, an endless chain connecting said gears, an ink-carrier roll journaled upon said endless chain, an ink-distribution roll journaled upon said form-carrier, a rotatory ink-distribution plate 55 journaled upon said form-carrier, mechanism to impart an intermittent rotary motion to said plate, and a train of gearing operatively connected to rotate one of said sprocket-gears,

the primary member of said train of gearing being arranged to rotate around the pivotal 60 center of said form-carrier.

10. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by 65 said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said form-carrier, mechanism to impart an inter- 70 mittent rotary motion to said plate, mechanism to rotate said gearing and carry said ink-carrier roll across the face of said distribution-plate and across the face of said type, and means to guide said ink-carrier roll and 75 hold the same in contact with said type as it is passing across the face thereof.

11. In a printing-press, a bed, a form-carrier, a pivot therefor, mechanism to rock said form-carrier upon its pivot, type carried by 80 said form-carrier, an endless chain and gearing operatively connected thereto supported upon said form-carrier, an ink-carrier roll journaled upon said endless chain, a rotatory ink-distributing plate journaled upon said 85 form-carrier, mechanism to impart an intermittent rotary motion to said plate, mechanism to rotate said gearing and carry said ink-carrier roll across the face of said distribution-plate and across the face of said type, 90 and a plate provided with a groove engaging said ink-carrier-roll shaft and holding said ink-carrier roll in contact with the face of the type as it travels thereacross.

12. In a printing-press, a form-carrier, type 95 carried by said form-carrier, two sprocket-gears, an endless chain connecting said gears, an ink-carrier roll, a shaft fast thereto journaled upon said endless chain, a rotatory ink-distribution plate journaled upon said form- 100 carrier, mechanism to impart an intermittent rotary motion to said plate, mechanism to rotate said gears and carry said ink-carrier roll across the face of said ink-distribution plate and across the face of said type, and a plate 105 provided with a groove, engaging said ink-carrier-roll shaft and holding said ink-carrier roll in contact with the face of the type as it travels thereacross.

In testimony whereof I have hereunto set 110 my hand in presence of two subscribing witnesses.

GEORGE H. PIERCE.

Witnesses:

CHARLES S. GOODING,  
ANNIE J. DAILEY.