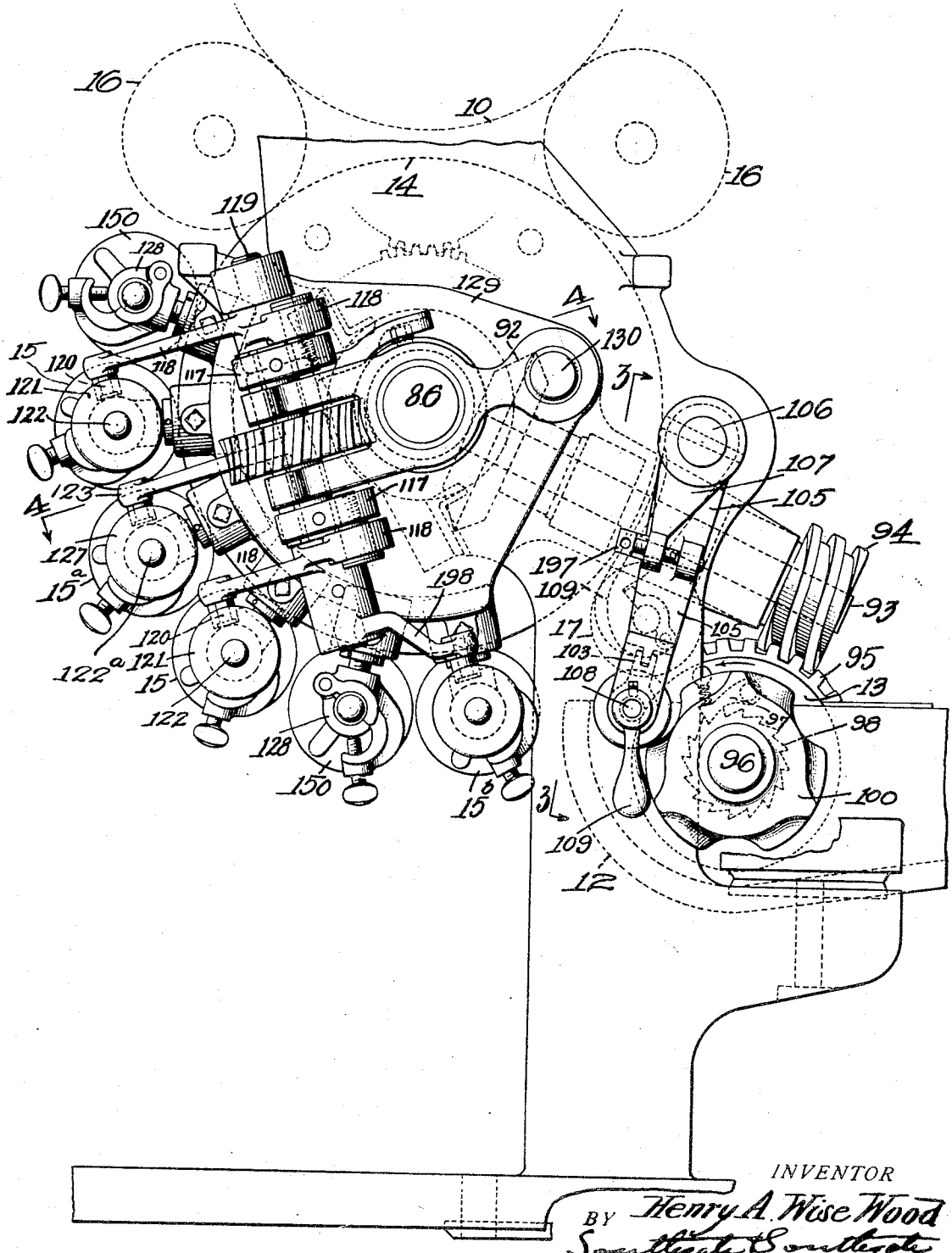
May 31, 1932. H. A. W. WOOD 1,861,073

INKING MECHANISM FOR PRINTING PRESSES

Filed Aug. 4, 1923 3 Sheets-Sheet 1

Fig. 1.



INVENTOR

BY Henry A. Wise Wood

Scully & Scully

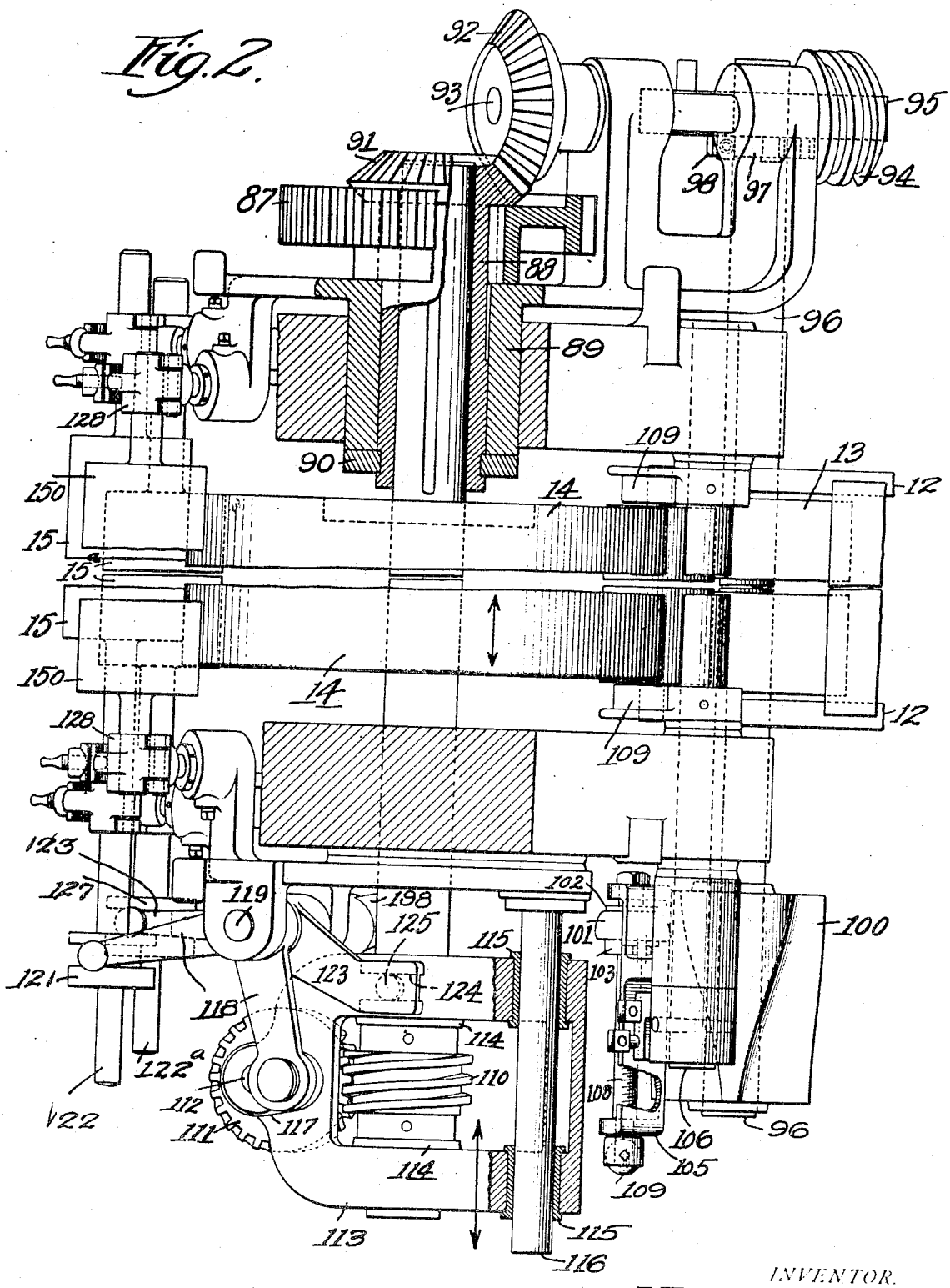
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Fig. 2.



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INKING MECHANISM FOR PRINTING PRESSES

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Fig. 3.

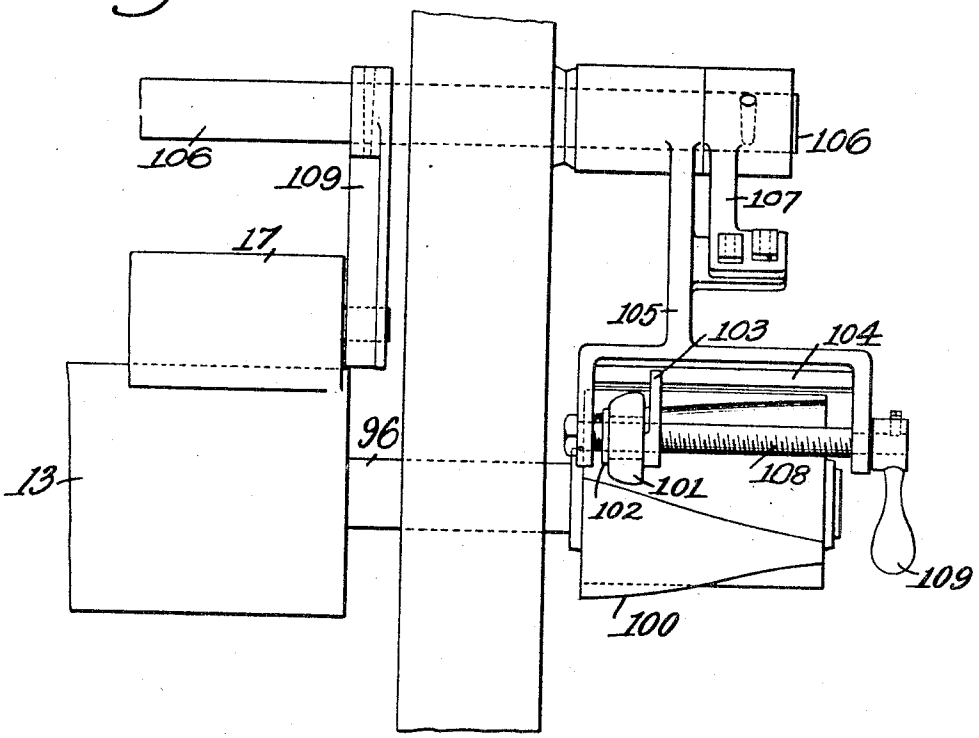
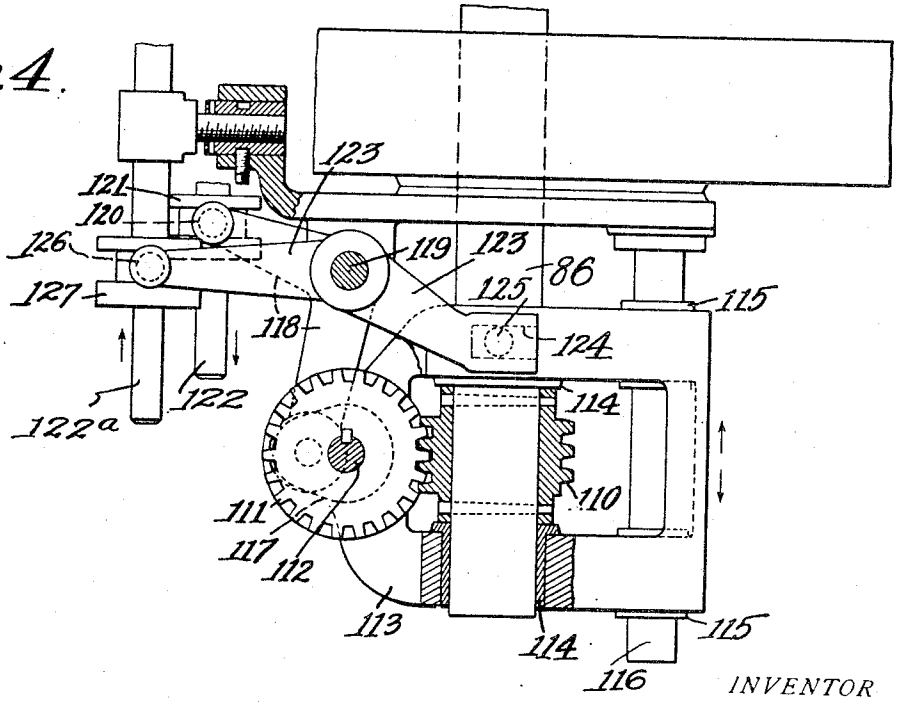


Fig. 4.



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Patented May 31, 1932

1,861,073

UNITED STATES PATENT OFFICE

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO WOOD NEWSPAPER MACHINERY CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA

INKING MECHANISM FOR PRINTING PRESSES

Application filed August 4, 1923. Serial No. 655,777.

This invention relates especially to the supply and distribution of ink on the ink cylinder of an inking mechanism but is capable of use for distributing any kind of liquid or paste.

The principal objects of the invention are to provide effective means for regulating the amount of ink applied to the ink cylinder and for distributing it thereon. The invention involves means for reciprocating certain of the distributing rolls on the surface of the ink cylinder for insuring alternate motion of adjacent ones, the reciprocation of the ink cylinder itself to improve the ink distribution, and the employment of distributing rolls in fixed bearings co-operating with the moving cylinder and alternating with the vibrating rolls, also means for operating the ductor roll capable of being adjusted so as to regulate the dwell of the ductor roll on the fountain roll and ink cylinder alternately and thus more thoroughly distribute the ink on the former before it is applied to the ink cylinder and to provide several improvements in the mechanism for accomplishing these results.

Other features and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is an end view of an inking device set up on a printing press frame showing a preferred embodiment of this invention;

Fig. 2 is a plan of the same with parts shown in section on the center of the ink cylinder shaft;

Fig. 3 is an end view of a portion of this mechanism, looking in the direction of the arrows 3—3 in Fig. 1; and

Fig. 4 is a sectional view on the line 4—4 of Fig. 1.

I have shown the invention as applied to the frame of a printing press and indicated the plate cylinder 10, the ink cylinder 14, form rolls 16 and distributing rolls 15, etc. Also the ink fountain 12 is illustrated having therein the ink or fountain roll 13 from which the ink is applied to the ink cylinder by the ductor roll 17.

On the shaft 86 of the ink cylinder 14 is a gear 87 or other device through which power is transmitted to this shaft from a motor or some part of a press. This shaft is provided on the end with a bushing 88 resting in a bearing 89 on the frame. The shaft 86 and bushing 88 are slidably keyed with respect to each other so that the shaft can reciprocate in the bushing. The bushing is held from reciprocation in the bearing by a collar 90 on one end and the hub of the gear 87 on the other. It will be seen therefore that, although the shaft 86 may move back and forth, the bushing 88 rotates with it positively.

On the end of this bushing, preferably integral therewith, is a bevel gear 91 meshing with a bevel gear 92 on an inclined shaft 93 supported in suitable bearings and provided with a worm 94 thereon. This worm meshes with a worm gear 95 free on the shaft 96 of the fountain ink roll 13. On the gear 95 is a pawl 97 adapted to be forced by a spring into contact with a ratchet wheel 98 keyed on the shaft 96 so that the motion of the worm wheel 95 normally is transmitted to the shaft 96 positively as if they were keyed together but the operator can turn the shaft 96 forward independently of the operation of the worm wheel 95. Fixedly mounted on the shaft 96 is the ductor cam 100. This cam rotates positively with the shaft 96. It is provided with a series of cam surfaces which are wider at one end than at the other. Three sets of such surfaces are illustrated. This cam acts upon a roll 101 mounted on a bushing 102 which is screw threaded internally and has an arm 103 projecting therefrom and provided with a notch adapted to engage a straight guide 104 mounted on an arm 105 loosely pivoted on a shaft 106. This arm 105 terminates in a fork which supports an adjusting screw 108 having a handle 109 for turning the screw and moving the roll 101 along the screw and the arm 103 along the guide 104. By spinning this handle 109 around the position of the roll on the cam 100 is changed.

When the roll is in the position shown in Fig. 3, the part of the cam which it engages is of such a nature as to allow this roll to be retracted to its extreme position toward the

shaft 96 only a very short period of time three times per revolution. When the roll 101 is at the other end of the screw 108 this roll is at said extreme position through a large part of the revolution of the shaft 96 and is lifted from that position briefly three times per revolution. Keyed to the shaft 106 is another arm 107. Connecting the two arms 107 and 105 is an adjusting screw 197. This screw can be adjusted so as to regulate the location of the arm 105 on the shaft 106. It provides positive connection of that arm with the shaft although it is loosely mounted thereon at its hub. Also keyed on the shaft 106 are two arms 109 which support the ductor roll 17. Therefore as the roll 101 moves out and in due to the operation of the arm 107, the ductor roll 17 necessarily moves with it. The object of this is to enable the operator to regulate the time during which the ductor roll will remain in contact with the fountain roll 13 and incidentally the time which it will remain in contact with the ink cylinder at the other end of its stroke. In this way the distribution of the ink on the ductor roll from the fountain roll before it touches the ink cylinder is regulated and better printing results secured.

On the opposite end of the shaft 86 is a worm 110 meshing with a worm wheel 111 on an inclined shaft 112 located in bearings on a yoke 113. This yoke is connected with the shaft 86 by two collars 114 so as to slide therewith. It is also provided with bearings 115 on a stationary rod 116 for guiding this yoke to move longitudinally with the shaft 86.

On the opposite ends of the shaft 112 are two crank arms 117 each pivoted to a bell-crank 118, the bell-cranks being freely supported on a shaft 119. The rotation of the shaft 112 therefore vibrates the two bell-cranks 118 simultaneously. Each of these bell-cranks is provided with a pin 120 having a roll engaging a grooved collar 121, each fixed on one of two longitudinal shafts 122. These two shafts carry two of the distributing rolls 15.

Another result of the rotation of the shaft 112 is the reciprocation of the yoke 113. As the two bell-cranks 118 are pivoted on a shaft 119 mounted in fixed bearings, the only way in which the cranks 117 can rotate around a complete circle is to cause motion of this yoke 113 on which the shaft 112 is mounted. The bell-cranks can swing about the pivot 119 but their ends cannot move toward and from it so the shaft 112 has to move to allow this operation to take place. This therefore slides the yoke, the shaft 112 and the worm gears 110 and 111 back and forth. As the worm wheel 110 is positively fixed on the shaft 86 this shaft slides also through the bushing 88 and it takes with it the ink cylinder 14. Therefore this ink cylinder reciprocates and as has been demonstrated above, two of the distributing rolls 15 reciprocate also but in the opposite direction to the motion of the ink cylinder half of the time. They move in one direction while the cylinder is moving from central position to the end of the stroke and back to the center. Also pivoted on the shaft 119 is a bell-crank 123 having two arms. One of them is provided with parallel guiding surfaces 124 straddling a stud 125 on the yoke 113. Therefore this bell-crank oscillates as the yoke slides. The other arm of the bell-crank 123 is provided with a pin 126 carrying a roll engaging in a collar 127 on one of the other ink distributing roll shafts 122^a. It causes this roll 15^a on the shaft 122^a to reciprocate in a direction contrary all the time to the direction of motion of the cylinder 14.

Another distributing roll 15^b is operated by an arm 198 on the hub of one bell-crank 118. It projects in a direction substantially opposite to the other operating arms 118 so as to move its roll contrary to the motion of the rolls 15.

I have also shown two other ink distributing rolls 150 mounted in bearings 128 adjustably fixed in position. The parts just described are mounted on a distributing roll plate 129 centered on the shaft 86 and held by a pin 130 in stationary position. Therefore these two rolls 150 cannot vibrate or change their positions. They distribute the ink on the ink cylinder by the vibratory motion of the latter.

It will be seen therefore that for the purpose of fully distributing the ink on the ductor roll, I have provided readily adjustable means by which the interval of contact of this roll with the fountain roll can be regulated, and also the length of contact of the ductor roll with the ink cylinder, and in order to thoroughly distribute the ink on the cylinder I have provided for its longitudinal vibration and supplied it with four sets of distributing rolls, three sets reciprocating in different directions or timed differently with the fourth set mounted in stationary bearings but of course free to rotate in contact with the ink cylinder.

Although I have illustrated and described only a single form of this invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction and the specific combinations of parts herein shown and described, but what I do claim is:—

1. In an inking device, the combination with a fountain roll and vibratory ductor roll, of a cam rotatable with the fountain roll, a cam roll connected with the ductor roll to move it and contacting with the cam, said cam having a plurality of controlling

surfaces thereon each wider at one end than at the other, and means for adjusting the cam roll along the cam to regulate the duration of contact of the ductor roll with the fountain roll.

2. In an inking device, the combination with a fountain roll and vibratory ductor roll, of a cam rotatable with the fountain roll, a cam roll connected with the ductor roll to move it and contacting with the cam, said cam having a plurality of controlling surfaces thereon each wider at one end than at the other, a screw on which the cam roll is mounted, a screw threaded bearing supporting the cam roll on the screw, and means for holding the bearing against turning, whereby the rotation of the screw will adjust the cam roll along the cam and regulate the duration of contact of the ductor roll with the fountain roll.

3. In an inking device, the combination with a fountain roll, vibratory ductor roll and ink cylinder, of a cam fixed to and rotatable with the fountain roll, a cam roll movable with the ductor roll and adapted to contact with the cam, a shaft having arms thereon on which the ductor roll is mounted, an arm loose on said shaft, a cam roll mounted on the last named arm, an additional arm fixed on the ductor roll shaft, and means for adjustably connecting the last two arms to positively connect the cam roll arm with the shaft and cause it to move the ductor roll with it.

4. In an inking device, the combination with a reciprocable ink cylinder shaft and an ink cylinder fixed thereon, of a bushing in which said shaft is mounted slidably keyed thereto, a fountain roll, means for transmitting power from said shaft through the bushing to the fountain roll for operating it, and means controlled by the rotation of the ink cylinder shaft for reciprocating the ink cylinder.

5. In an inking mechanism, the combination with an ink cylinder, of a longitudinally slidable shaft on which the ink cylinder is fixed, means for transmitting power to the ink cylinder shaft, a worm on said shaft, a worm wheel meshing with the worm, a shaft on which the worm wheel is mounted operated by the ink cylinder shaft and having a crank thereon, a link pivoted to said crank and also pivoted on a stationary part of the machine, whereby the rotation of the crank will cause the worm wheel, worm and cylinder shaft to reciprocate in the direction of the axis of the latter, an ink distributing roll contacting with the ink cylinder, and means connected with said link for reciprocating said roll along its own axis.

6. In an inking mechanism, the combination with an ink cylinder, of a longitudinally slidable shaft on which the ink cylinder is fixed, a shaft operated by the ink cylinder shaft and having a crank thereon, a link pivoted to said crank and also pivoted on a stationary part of the machine, whereby the rotation of the crank will cause the cylinder shaft to reciprocate in the direction of its axis, an ink distributing roll contacting with the ink cylinder, and means connected with said link for reciprocating said roll along its own axis.

7. In an inking mechanism, the combination with an ink cylinder, of a longitudinally slidable shaft on which the ink cylinder is fixed, a reciprocable yoke connected with said shaft, a shaft on the yoke having a crank thereon, means for restricting the operation of the crank whereby the rotation of the crank will cause the yoke and cylinder shaft to reciprocate, a guide for guiding the yoke to move in a direction parallel with the axis of the ink cylinder shaft an ink distributing roll contacting with the ink cylinder and means connected with said crank for reciprocating said roll along its own axis.

8. In an inking mechanism, the combination with an ink cylinder, of a longitudinally slidable shaft on which the ink cylinder is fixed, a yoke, a shaft mounted on the yoke and having a crank thereon, a link pivoted to said crank at one end and pivoted at the other end on a stationary part of the machine, whereby the rotation of the crank will cause the yoke to reciprocate, a guide for guiding the yoke to move in a direction parallel with the axis of the ink cylinder shaft, a lever connected with said yoke to be oscillated thereby as the yoke reciprocates, an ink distributing roll in contact with said cylinder and means connected with said lever for reciprocating said roll.

9. In an inking mechanism, the combination with an ink cylinder, of a longitudinally slidable shaft on which the ink cylinder is fixed, a reciprocable yoke connected with the shaft to move therewith, means whereby the rotation of the shaft will reciprocate the yoke, an ink distributing roll contacting with the ink cylinder, means connected with said yoke for reciprocating said roll along its own axis, a lever pivotally mounted and connected to be oscillated as the yoke reciprocates, a second ink distributing roll, and means connected with said lever for reciprocating the second roll part of time in the direction opposite to the direction of motion of the ink cylinder.

10. In an inking mechanism, the combination of an ink cylinder, a shaft on which it is mounted, means for reciprocating said cylinder, a plurality of sets of ink distributing rolls around the cylinder, means connected with said shaft for reciprocating two sets of said rolls in one direction but at different intervals, with respect to another set and means for supporting others of said ink distributing rolls in fixed position but in a condition

free to rotate by contact with the ink cylinder.

11. In an inking mechanism, the combination of an ink cylinder, a shaft on which it is mounted, means for reciprocating said cylinder, a series of ink distributing rolls around the cylinder in contact with it, means connected with said shaft for reciprocating some of said rolls, and means for supporting others of said ink distributing rolls in fixed position but in a condition free to rotate by contact with the ink cylinder.

12. In an inking mechanism, the combination with a reciprocable ink cylinder, and a plurality of distributing rolls in contact therewith, of means for reciprocating said cylinder, and means for reciprocating three of said rolls in three different ways, and means for holding another of said rolls in stationary position.

In testimony whereof I have hereunto affixed my signature.

HENRY A. WISE WOOD.