

L. E. MORRISON.
INKING MECHANISM.
APPLICATION FILED JUNE 22, 1909.

1,040,733.

Patented Oct. 8, 1912.

3 SHEETS—SHEET 1.

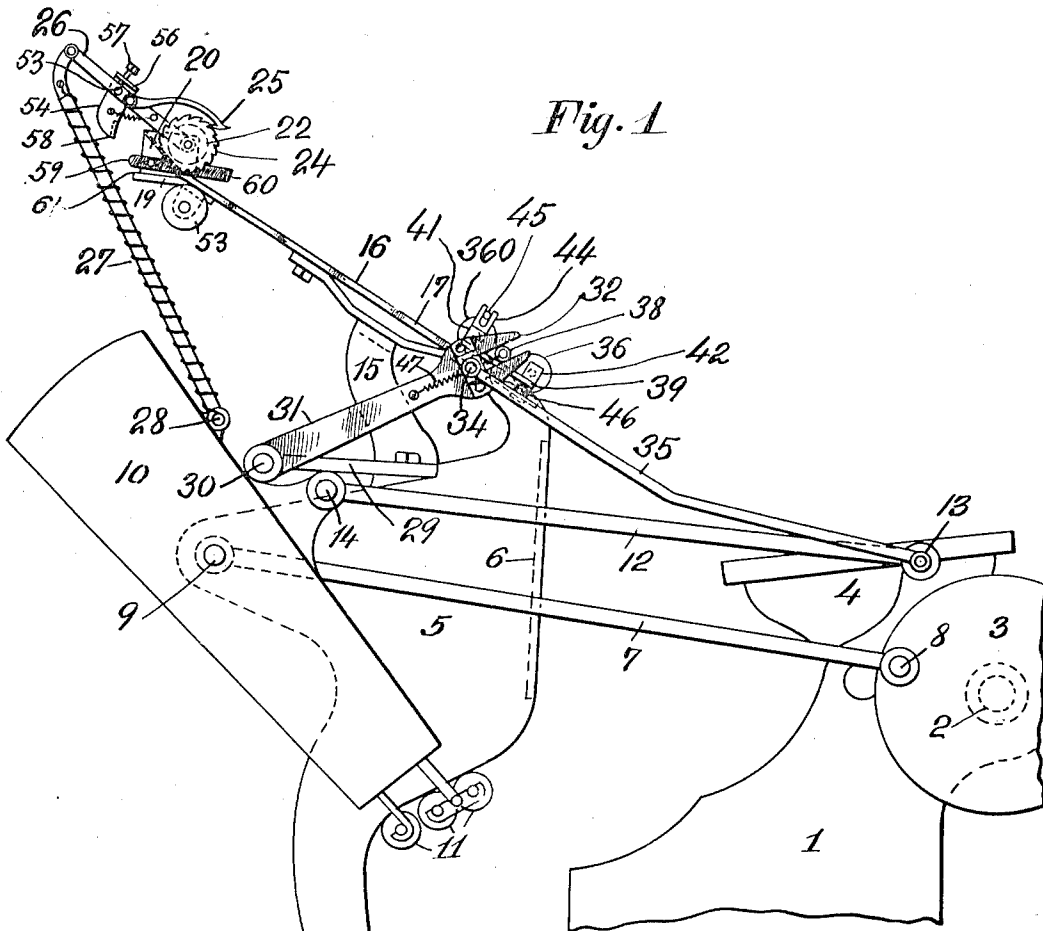


Fig. 1

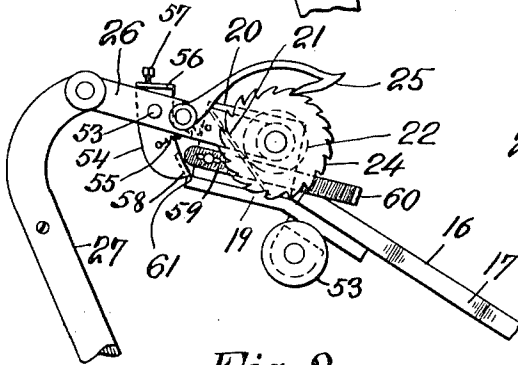


Fig. 2

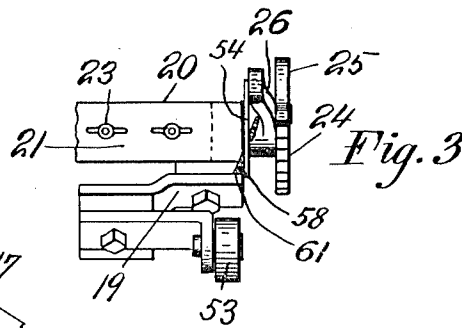


Fig. 3

Witnesses
H. H. Le Ard
M. M. P. L. L. L.

Lewis E. Morrison Inventor
By his Attorney
Ivan E. A. Koringeberg

Patented Oct. 8, 1912.

3 SHEETS-SHEET 2.

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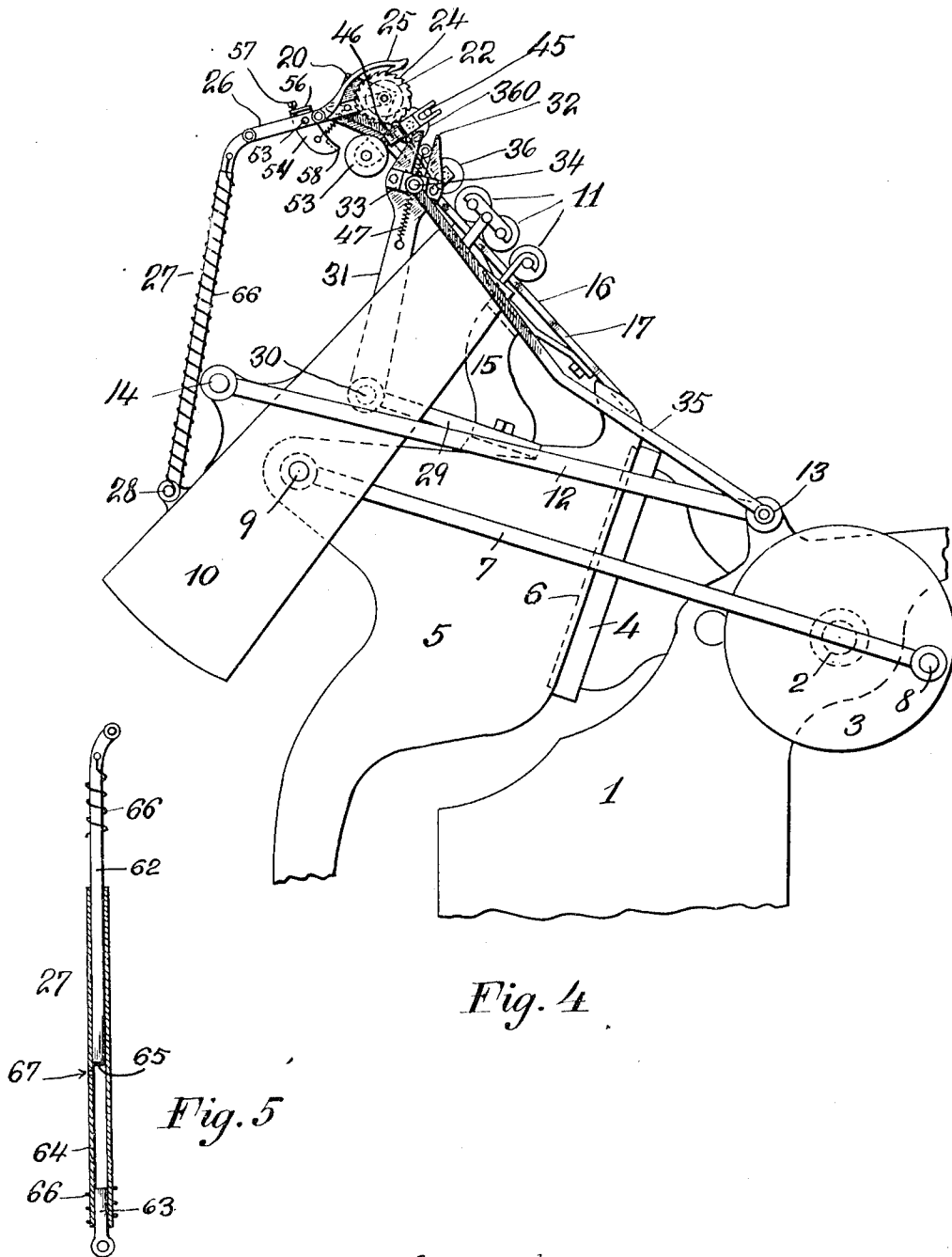


Fig. 4.

Fig. 5

Witnesses
 K. G. Leard
 M. M. Reimann

Lewis E. Morrison Inventor

By his Attorney
 Ivan E. A. Horrigsberg.

Patented Oct. 8, 1912.

3 SHEETS-SHEET 3.

1,040,733.

Fig. 11

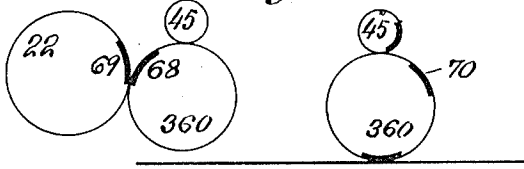


Fig. 12

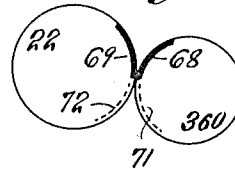


Fig. 13

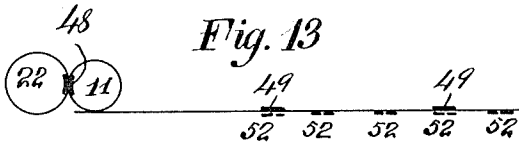


Fig. 14

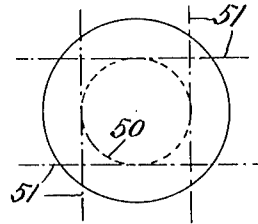


Fig. 8

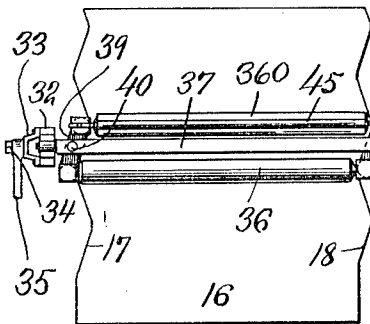


Fig. 9

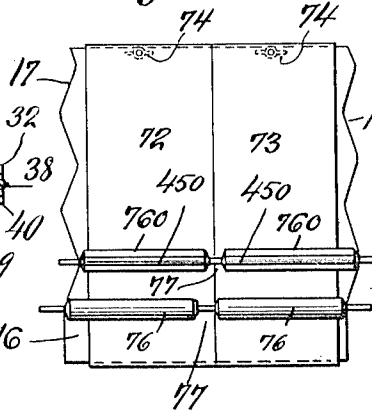
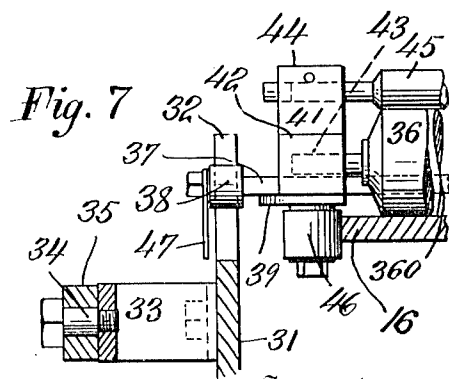
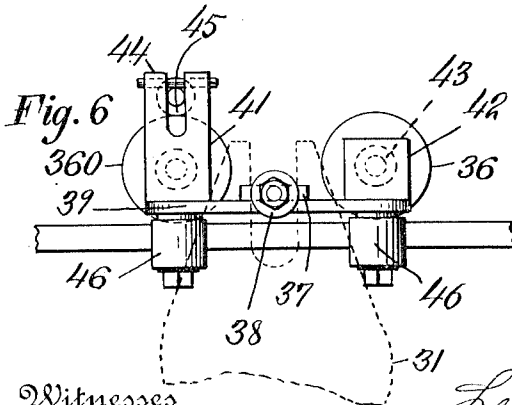
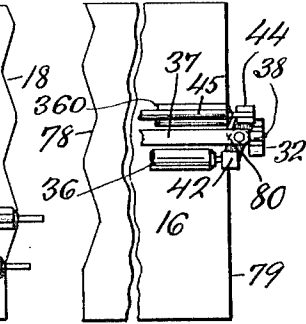


Fig. 10



Witnesses
 H. G. Leard
 M. M. Rimmer

Lewis E. Morrison Inventor
 By his Attorney
 Ivan E. A. Yornigberg

UNITED STATES PATENT OFFICE.

LEWIS E. MORRISON, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF AND
MATTHIAS PLUM, OF NEWARK, NEW JERSEY.

INKING MECHANISM.

1,040,733.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed June 22, 1909. Serial No. 503,652.

To all whom it may concern:

Be it known that I, LEWIS E. MORRISON, a citizen of the United States of America, and a resident of Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Inking Mechanisms, of which the following is a specification.

This invention relates to inking mechanisms for printing presses and has particular reference to improvements in inking devices for use in connection with the ordinary platen press or jobber as this particular kind of press is known in the art.

One of the objects of this invention is to provide an inking device adapted to be attached to a press without materially altering the construction of the latter.

Another object is to provide for an increased efficiency in the distribution of the ink.

Still another object is to provide for printing in more than one color.

Other objects will appear as this specification proceeds.

In the present instance I have shown and described my inking device in connection with a well known type of press the so called Chandler jobber, but this is to be taken in an illustrating sense only and in no wise as intended that this invention can not be used on other type of presses.

As will appear from the following description it is one of the features of this invention that it adapts itself readily to different makes of printing machines.

In the drawings illustrating the invention and accompanying this specification, Figure 1 shows a portion of a platen press equipped with an inking mechanism embodying my invention and with the impression off, Figs. 2 and 3 are detail side and rear views of parts of the fountain roll mechanism, Fig. 4 is a view similar to Fig. 1 but showing the press with the impression on, Fig. 5 is a detail view of a telescoping link, Fig. 6 is a side view of parts of the inking roller carriage, Fig. 7 is a front view of the parts shown in Fig. 6, Fig. 8 is a plan view of the inking plate and rollers, Fig. 9 is a similar view showing the means for inking in two colors, Fig. 10 shows a modification of the construction shown in Fig. 8, Figs. 11 and 12 are diagrams showing the ink distribution, Fig. 13 is a diagram illustrating one of the advantages of this invention and Fig.

14 illustrates one of the disadvantages removed by this invention.

Referring to Figs. 1 and 4 the part designated 1 represents the stationary part of the frame of the press in which is located the crank shaft 2 carrying the crank disk 3. 4 is the platen which in this instance happens to be movable, but for the purpose of this disclosure it makes no difference whether the platen is movable or stationary. 5 represents the movable form carrier and 6 is the form. The form carrier is oscillated in the usual manner by means of the connecting rod 7 pivoted to the crank disk at 8 and to the form carrier at 9. Around the latter pivot swings the usual inking roll frame 10 carrying the form rolls 11. The said frame is operated by means of the link 12 pivoted at 13 to the frame 1, and at 14 to the inking frame 10. 15 is the usual ink plate bracket. The above described parts are all illustrated in diagrammatic form as their construction and operation are well known in the art. Figs. 1 and 4 illustrate the respective positions of the parts when the press is open or closed, which terms usually mean that the impression is off or on.

In place of the usual circular ink plate such as is illustrated in Fig. 14 I have provided a rectangular ink plate 16 the sides of which are provided with corrugated cam surfaces 17 and 18. This ink plate is mounted on the aforesaid brackets 15 as shown and the usual ratchet and pawl mechanism for rotating the circular ink plate is discarded.

At the top of the ink plate and fastened thereto by suitable brackets 19—Figs. 2 and 3—is the fountain 20 provided with the usual inclined bottom 21 which is adjustable by screws 23 toward and away from the fountain roll 22. This is a feature common to most presses and as a matter of fact I use the ink fountain and most of its component parts as I find them on the press. When the screws 23 are loosened the fountain roll takes more ink than when the screws are tightened. The fountain roll is journaled in the ends of the fountain and outside the one end it carries the ratchet wheel 24 operated by the pawl 25 pivoted on the pawl arm 26. The pawl rests by gravity on the wheel and is operated on its arm by the pawl link 27, which is pivoted to the free end of said arm and to the ink frame 10 at the pivot 28. As the press operates

the pawl turns the fountain roll in the usual intermittent manner as is clearly shown.

On the form carrier I fasten on either side a bracket 29 in which is pivoted at 30 two arms 31 the free ends of which are bifurcated as at 32. One of the said arms carries a small bridge 33 in which is pivoted at 34 the one end of a link 35 the other end of which is pivoted at the point 13 on the frame 1. As a matter of fact and practical construction a stud is passed through or into the end of the pivot 13 and the end of the link surrounds the stud.

The forked arms 31 operate the roller carriage which supports and guides the ink distributing rollers 36 and 360. The carriage comprises a bar 37, Figs. 6-8, in the ends of which are fastened friction rollers 38 which rest in the ends 32 of the arms 31. Two short transverse links 39 are pivoted at 40 on the bar 37 and on each of said links are in turn pivoted bearings 41 and 42 provided with sockets 43 for reception of the shaft ends of the distributing rolls. The bearing 41 is provided with a fork 44 in which rests the shaft of a small ink roller 45. The bearings further carry cam rollers 46 adapted to cooperate with the aforesaid cam surfaces on the ink plate as best seen in Fig. 8.

From the drawing and the above description it will be seen that as the form carrier oscillates toward and away from the platen the distributing rollers pass over the ink plate as the latter is oscillated under them. The function of these rollers is to take the ink from the fountain roll and distribute it on the plate from which the form rollers pick it up to ink the form. At the same time the distributing rollers pass over the ink plate they are vibrated by the coaction of the cam rolls 46 on the cams 17 and 18. Fig. 8 clearly shows the positions of the rollers on the ink plate. A spring 47 is fastened on either side to the pivot of the friction rollers 38 and to the arms 31 as seen in Fig. 1 in order to keep the distributing rollers in contact with the plate.

The operation of the parts so far described is seen from Figs. 1 and 4 and it will be noted that the device by reason of the additional vibrating rollers produces a finer distribution of the ink than when only the form rollers are used. I have, however, provided for a still better and finer distribution of the ink by the following means: Fig. 13 illustrates the result when the form roller 11 takes the ink from the fountain roll 22 in the manner now used in the art. It will be seen that the roller 11 abuts the roll 22 at one point 48 on the circumference. As the roller now passes away from the fountain roll the ink is transferred to the plate in strips 49 a distance apart equal to the length of the circumference of the roller 11.

Hence ink accumulates at these points and if the ink plate be of the rotating type the ink will gather quite heavy in a circle as 50 as shown in Fig. 14 where the lines 51 denote the strips of ink put on by the form rollers as the plate rotates. From this it is apparent that the form is being inked unevenly, so that if for instance it consists of a halftone surrounded by type the latter will print much heavier and be liable to blur or smut by reason of the fact that the halftone in the center requires more ink than would ordinarily be used on type. Or in other words, that part of the form inked from the ink gathered in the circle 50 gets too much ink while the other parts of the form get too little.

In the present instance I have provided means for taking the ink from the fountain roll and distributing it about as illustrated in Fig. 13 at the points 52, that is, the ink is put on the plate more frequently hence more evenly. I accomplish this result first by delaying the rotation of the fountain roll 22 until the roller 360 gets up in contact therewith; second by lifting the said roller off the ink plate so that by contact with the fountain roll the said roller will be rotated; third by the use of the roller 45. The means for doing this will now be described.

Pivoted on the pawl arm 26 at 53, Figs. 2-3, is a dog 54 under tension by a spring 55. The dog has a bent over top which overlies the pawl arm and forms a stop 56 through which is passed a set screw 57. As seen in Figs. 1 and 4 this screw is so set as to move the dog around its pivot and away from the fountain roll, and while in this position the dog does not act, but the fountain roll is rotated as usual. If, however, it is desired to obtain a finer ink distribution, then the screw 57 is set as shown in Fig. 2, that is the point 58 of the dog is moved closer toward the fountain roll. On the side of the fountain there is supported in any suitable manner a slide 59 having a lug 60, and the bracket 19 is screwed on to project and form a ledge 61. During the up stroke of the pawl arm from the position shown in Fig. 4 and when the dog is set as just described the end of the dog rides over the ledge 61. On the following down stroke, however, the dog catches on the ledge 61 as shown in Fig. 2. This stops the movement downward of the pawl arm momentarily until the distributing rollers reach the top of the ink plate when the fork 32 hits the lug 60 on the slide 59 which in turn knocks the dog off the ledge 61 and the fountain roll is rotated together with the roller 360. It follows then that when the dog is set to delay the rotation of the fountain roll the arm 26 remains up for a certain length of time, hence the link 27 must be made telescopic so as to accommodate it-

self to the thus lengthened distance between the end of the pawl arm and the pivot 28. To this end the link, Fig. 5, comprises an upper and lower rod 62 and 63. To the latter is fast a sleeve 64 in which the upper rod moves airtight by means of a rubber washer 65. Joining the two rods and outside the sleeve is a compression spring 66.

During the normal operation of the press the link 27 does not expand but acts as if made of one piece by reason of the pull of the spring 66. When, however, the dog is set as described, the rod 62 remains up with the pawl arm 26 and the link assumes the position shown in Fig. 5. In this position the sleeve 64 is pulled far enough down to uncover a small hole 67 through which the sleeve between the ends of the two rods is filled with air. Now, when the dog is knocked off the ledge the spring pulls the rod 62 down suddenly, this compresses the air in the sleeve and a cushion is formed to soften the blow.

The effect of the above operations is illustrated in Fig. 11. There it is seen that the roller 360 obtains ink 68 from the ink 69 on the fountain roll 22 by rotating therewith. Further, as the roller 360 moves away from the fountain roll the ink at 68 is taken up by the roller 45 which then in turn inks up the roller 360 at different points than the one where it originally was inked from the fountain roll. One of these points is indicated at 70. Hence the roller 360 will be inked up all around very fast by the roller 45 and the ink is put on the plate quickly, more frequently and more evenly. It should here be noted that the circumference of the roller 360 is of a length which can not be divided evenly by the length of the circumference of the roller 45. This is important because thereby the roller 45 is prevented from inking up the roller 360 at the same points as the two travel together. As it is the roller 45 puts the ink on the roller 360 at different points on the circumference of the latter, thus cutting up the ink more quickly and evenly.

Of course, even when the fountain roll is not delayed in its rotation, the roller 45 plays the same part with relation to the roller 360. A still further advantage of delaying the rotation of the fountain roll is illustrated in Fig. 12, where it is seen that when the roller 360 comes back to the fountain roll it does not pick up the ink at the same point as before. It comes back to the same point but it is then rotated a further distance and will be inked at 71 from the ink at 72 on the fountain roll. To sum up: By delaying the rotation of the fountain roll and lifting the roller 360 off the plate, the said roller gets inked by contact and rotation with fountain roll, and the roller 45

acts independently to ink up the roller 360 in such a manner that the ink on the latter is all the time advanced on its circumference so to speak. Further, when the roller 360 comes back to the fountain roll it receives ink at a different point each time. The result is a very fine ink distribution on the plate resulting in a high grade of work and a saving in ink.

It remains to describe the mechanism for lifting the roller off the plate.

By referring to the first four figures it will be seen that on one of the brackets 19 at the top of the plate there is supported in any suitable manner a cam in form of a roll 53, so located, that when the roller 360 is at the top of the plate 16, Fig. 4, its cam roll 46 rides up on the said roll 53 thus lifting the roller 360 off the plate.

When it is desired to print in two colors I provide two thin plates 72 and 73 which are laid over the plate 16 as seen in Fig. 9 and held by thumb screws 74 or in any other way; and instead of the rollers 36, 360 and 45 as in Fig. 8 I use rollers 76, 760 and 450 having their inking surfaces cut away in the center as at 77. These rollers otherwise operate as above set forth for the others. Thus I am able to print, say, two jobs of envelopes side by side on the form one in a different color from the other. In such case any means may be used in the fountain to keep the two different colors of ink apart.

In Fig. 10 I have shown an ink plate having only one cam edge 78 while the other 79 is straight. In this instance the link 39 on the one side carries only a single cam or in this case a guide roll 80, while the vibrations are caused on the other edge 78 as above set forth.

The foregoing description is thought to fully set forth the construction and operation of this invention.

It will be seen that no material change is made in the press proper, but that means have been provided for obtaining a thorough cutting up and distribution of the ink.

The roller 360 is properly speaking a ductor roll and is so termed in some of the claims.

I claim of course all such changes in the invention as may be said to properly come within its legitimate and intended scope.

I claim:

1. The combination of a fountain roll, a pawl and ratchet mechanism for rotating the same, and oscillating pawl bearing arm, a dog mounted on the said arm and normally inactive and means whereby when the said dog becomes active the moment of rotation of the said fountain roll is delayed at will.

2. The combination of a fountain roll, a device for intermittently rotating the same, mechanism for suspending the action of the said device, an ink plate, vibrating dis-

tributing rollers, oscillating means for moving the said rollers on the said plate and means for actuating the said device and for lifting one of the said rollers off the said plate.

3. In an inking attachment for printing machines, a non-rotating ink plate, a plurality of stationary ink plates supported thereon for inking in more than one color, inking rollers and means carried by the latter and cooperating with the sides of the said first ink plate to vibrate the said rollers over the said other ink plates.

4. The combination of an ink plate having serrated sides, other ink plates supported thereon, inking rollers and means carried by the said rollers and cooperating with the sides of the said first ink plate for vibrating the rollers on the said other ink plates, one roller being moved in a direction opposite to that of an adjacent roller.

5. The combination of a fountain roll, a device for intermittently rotating the same, mechanism for suspending the action of the said device, an ink plate, ink rollers, a separate movable member in the path of the said rollers, and means for causing the latter to actuate the said devices when the said rollers contact with the said movable member.

6. The combination of a fountain roll, mechanism for rotating the same, a telescopic member for actuating said mechanism and means for creating an air cushion within the said telescopic member to cushion the stroke thereof.

7. The combination of a plurality of ink plates, supporting means therefor, oscillating arms, pivoted bearings in said arms, ink

rollers having separate inking surfaces for cooperation with the said ink plates and journaled in the said bearings and means carried by the latter and coacting with the said supporting means for vibrating the said rollers, one roller in a direction opposite to the other roller.

8. An inking attachment for printing machines having a movable form member comprising an ink plate having serrated sides secured to said member, oscillating arms pivoted on said member, a connection between the free ends of the said arms and the frame of the press, inking rollers adapted to travel on said ink plate, pivoted bearings for said rollers, a link connecting said bearings, a roller in said link and adapted to be embraced by the forked ends of the said oscillating arms.

9. An inking attachment for printing presses having a movable form member comprising an ink plate fast to said member, inking rollers, operating connections for the same, an ink fountain, a fountain roll, a ratchet and pawl mechanism for driving the latter, a telescopic connection consisting of two members, one of which is pivoted on the shaft of the said fountain roll, the other member being pivoted to the aforesaid operating connections and a spring for forcing the said two members together.

Signed at Newark, N. J., this 16 day of 70 June, 1909.

LEWIS E. MORRISON.

Witnesses:

CHAS. E. DANIEL,
IVAN KONIGSBERG.