(No Model.)

J. L. COX.

INKING DEVICE FOR PRINTING PRESSES.

No. 441,790. Patented Dec. 2, 1890.

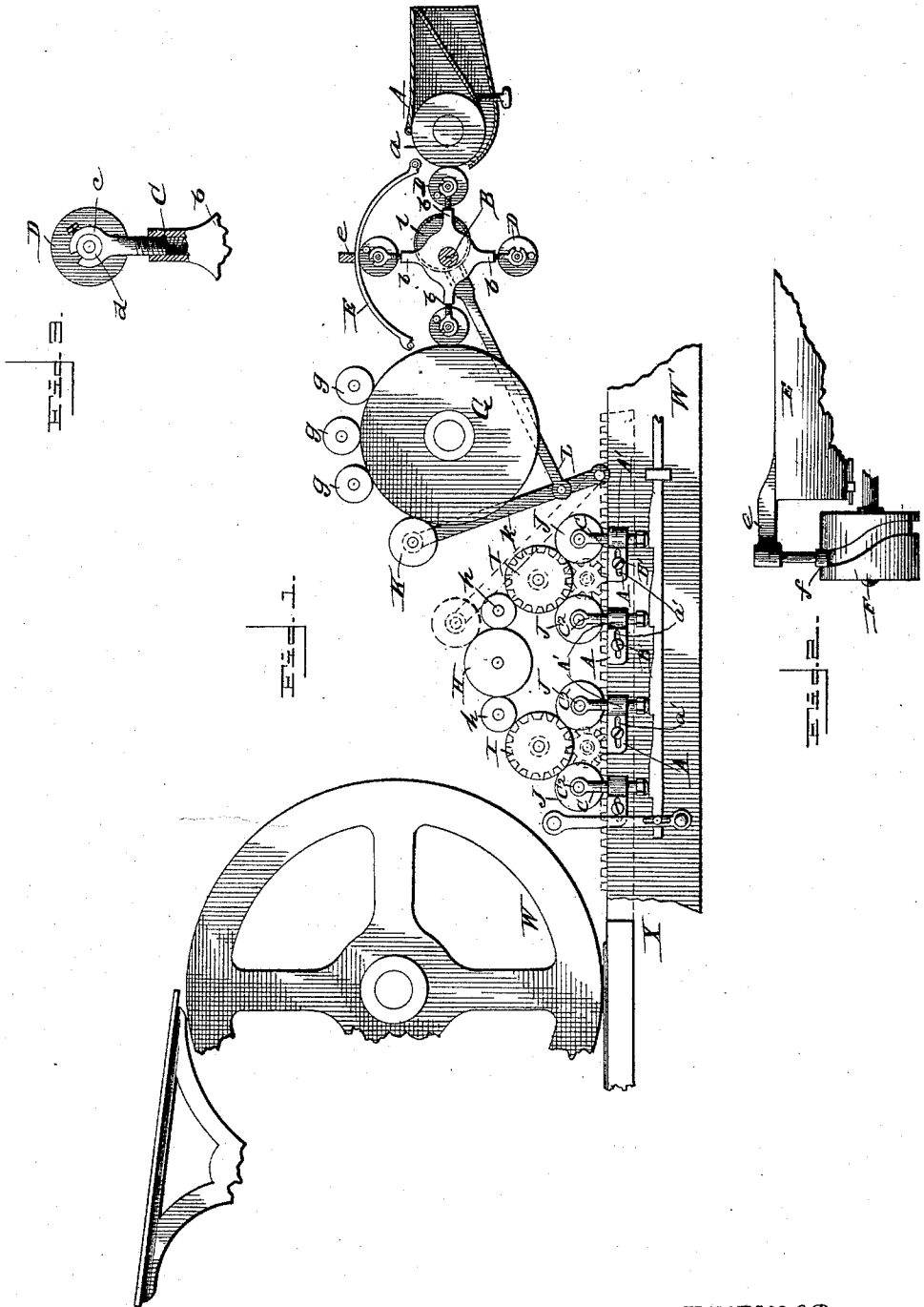

Fig. 3.

Fig. 1.

Fig. 2.

WITNESSES

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INKING DEVICE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 441,790, dated December 2, 1890.

Application filed November 1, 1889. Serial No. 328,953. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. COX, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Inking Devices for Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a diagrammatical side view of my improved inking mechanism for printing-machines, the main frame and other mechanisms being broken away. Figs. 2 and 3 are details.

This invention is an improvement in inking devices of printing-presses; and its objects are to mechanically effect the thorough distribution and dissemination of the ink in passing it from the fountain to the form-rollers, and to provide means whereby the amount of ink taken from the fountain can be regulated without disturbing the fountain-screws or the speed adjustment of the rollers.

The invention consists in a novel combination of an ink-distributing or ductor reel, a distributing-plate and an ink-distributing cylinder, whereby the ink is initially worked and disseminated, and in a peculiar combination and arrangement of form and distributing rollers and mechanism for taking ink from the distributing-cylinder and delivering it to the form-rollers, and in certain novel details of construction and arrangement of parts, hereinafter described and claimed.

Referring to the drawings by letters, A designates an ink-fountain of ordinary construction. Beside the fountain is journaled a shaft B, on the ends of which are mounted four armed spiders *b b*, and in the extremity of each arm of the spiders are secured bolts C C, which have tubular slotted heads *c c*, in which are secured by set-screws or other means sleeves *d d*, which form bearings for the journals of ductor-rollers D D, as shown. By adjusting these bolts the rollers D can be set closer to or farther from shaft B, as is evident; or one or more of the rollers can be removed.

The rollers D and their supporting-spiders and shaft form what I shall hereinafter denominate a "reel" or "ductor-reel." Above the reel is mounted a semi-cylindrical plate E, which may be hinged at one edge so that it can be thrown back, and it is so supported that it can be longitudinally vibrated by means of a cam-grooved gear F on the extremity of shaft B, (see Fig. 2,) the cam-groove of this gear being engaged by a roller *f* on the end of a stud depending from an arm *e*, secured to one end of plate E, as shown, so that while the wheel revolves the plate is longitudinally vibrated. The under surface of plate E is smooth, and is of the same length as the ink-fountain, and has a longitudinal travel or oscillation of about one inch, more or less, as desired. The ductor-reel is designed for the purpose of furnishing a rotary means of abstracting color from the fountain and in turn placing it on the curved distributing-plate and cylinder, and one great object in making a ductor rotary wheel is to enable me to regulate the amount of color supplied to the form-rollers without disturbing the fountain-screws or speed of the parts, and this I accomplish by removing one or more of the ductor-rollers on the reel. This is accomplished by first removing sleeves *d*. Then the journals of the rolls D can be slipped out through the slots in heads *c*. As shown, the reel has four rollers, and should the pressman find that he is carrying too much color he removes one of the ductor-rollers and reduces the shade or color supplied to the form-rollers, making the impression one-fourth lighter, and by taking out two rollers D it will reduce the color one-half, and so on.

G designates an ink-distributing cylinder properly mounted in the press beside the reel, and *g g* are composition rollers running against said cylinders and preferably made to vibrate longitudinally thereupon by any suitable mechanism. The reel stands between cylinder G and fountain A and below plate E and in such position that when revolved its ductor-rollers D are successively brought into contact with the feed-roller *a* in the mouth of the fountain, then against the under surface of plate E, and finally against the periphery of cylinder G during each revolution of the reel.

X designates the reciprocating bed of the press upon which the forms are carried, and W the impression-cylinder, and W′ is a rack carried by the bed to operate the form-rollers.

H designates a distributing-roller journaled in proper bearings above the bed, and I I are similar rollers below and at each side of rollers H but not impinging thereagainst.

h h are small rollers at each side of roll H and supplying ink from roll H to the respective rolls I. Each roll I is driven by gearing from rack *w*, as indicated in the drawings.

J J are form-rollers mounted in suitable bearings on the main frame at each side of each roll I, as shown. The rollers J J are mounted in adjustable supports, as shown; but this does not form part of present invention. The rollers H and I may also be made to vibrate longitudinally by any suitable mechanism, if desired.

K designates a ductor-roller mounted on a vibrator-support *k*, which is hinged to the main frame, so that the ductor K can be alternately thrown into contact with cylinder G and with the roll H, the ductor being shifted at the proper time, as shown, by means of a pitman L, connected to support K and to an eccentric *l* on shaft B.

The operation of the heretofore-described mechanism is substantially as follows: The roller in the fountain A picks up the desired covering of ink, (the amount being regulated by the screws of the fountain,) the ductor-rollers D D (in the bearings of the reel) while revolving come in contact for an instant with the roller of the ink-fountain A, from which they in turn gather up ink, and in further rotating discharges this ink onto the face of the distributing-plate E, which vibrating on guides serves to cut up and partially distribute the raw ink just taken from the fountain. The ductor-rollers D D next come in contact alternately with the distributing-cylinder G. Here the ink is further cut up and distributed by the rapidly-turning periphery of the main distributing-cylinder G and its contact with the small composition vibrators *g g*. This gives a wonderful amount of distribution, as the distributing-cylinder G is made to revolve three times (or more, if desired) for every impression upon the paper. At the proper interval (once for each impression made by the press) the composition ductor-roller K takes ink from the distributing-cylinder G and alternately drops down upon the central vibrating roller H, from whence the color is now conducted to the other rollers by means of the composition intermediates *h h*. Here the ink is again redistributed to a finer state by the motion of the distributers I as they revolve, and which in turn conduct the finely-distributed color to the form-rollers, all in readiness to put the color upon the forms as they pass underneath. The efficiency of the distribution is also greatly enhanced by the peculiar arrangement of the three rollers H and I I and the intermediates in a position over the form-rollers, as described. The color by this arrangement and mechanism is passed down evenly and in equal quantity to both forward and back set of form-rollers, permitting a uniform and even color to be rolled upon the forms by both sets of rollers, which cannot be done by any of the known mechanism in four-roller presses.

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

1. In a printing-press, the combination of the ink-fountain and distributing-rolls with a reel carrying ductor-rollers, said rollers adapted to be removed or replaced as a less or greater supply of ink is required, substantially as described.

2. The combination, with the distributing-rollers and ink-fountain, of a reel carrying removable and adjustable ductor-rolls, whereby the amount of ink supplied from the fountain to the distributing-rollers may be regulated, substantially as and for the purpose set forth.

3. The combination, in a printing-press, of the inking-fountain, the distributing-cylinder, and the ink-distributing plate with the ductor-rollers taking ink from the fountain, supplying it upon said plate, and thence to the distributing-cylinder, substantially as described.

4. The combination of the ink-fountain, the distributing-cylinder, and the ink-distributing plate between the same with the reel-carrying ductor-rollers mounted between said fountain and cylinder, and operating substantially as described.

5. The combination of the ink-fountain, the distributing-cylinder, the longitudinally-reciprocating plate between said fountain and cylinder, and the ductor-rollers, arranged to take ink from the fountain to said plate and thence to the distributing-roll, substantially as described.

6. The combination of the ink-fountain with the ductor-reel having a central shaft, spiders on the ends thereof, provided with adjustable bearings for the journals of the ductor-rollers, and the ductor-rollers mounted in said bearings, all substantially as described.

7. The combination of the fountain, the distributing-cylinder, the curved plate E, and the ductor-reel carrying ductor-rollers and operating substantially as described, with the form and distributing rollers and the ductor-roller mounted in a vibratory support and adapted to supply ink from the cylinder to the distributing-roll, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH L. COX.

Witnesses:
A. E. DOWELL,
P. L. BROOKS.