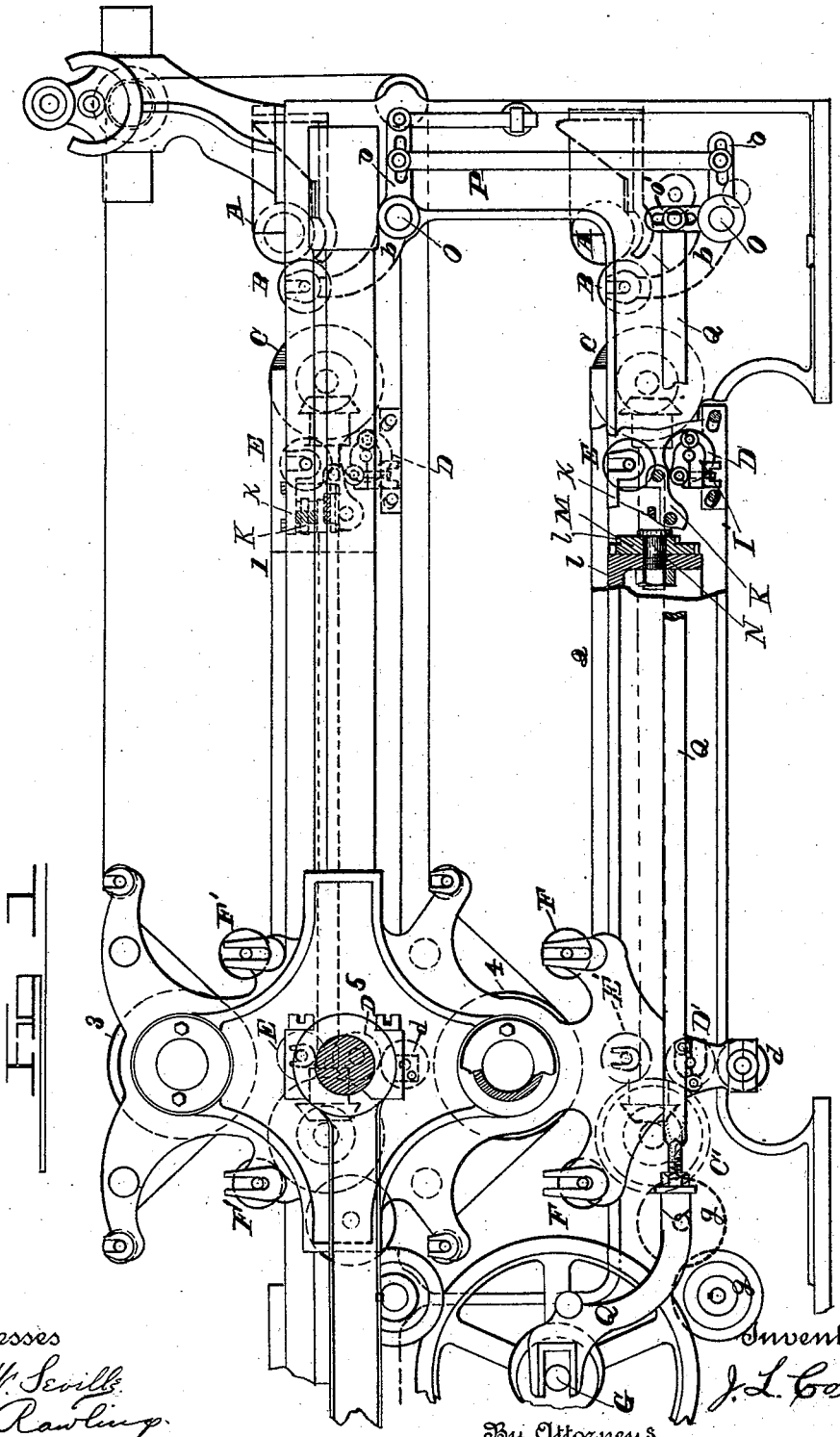
(No Model.) 2 Sheets—Sheet 1.

J. L. COX.

INKING APPARATUS FOR PRINTING PRESSES.

No. 494,096. Patented Mar. 21, 1893.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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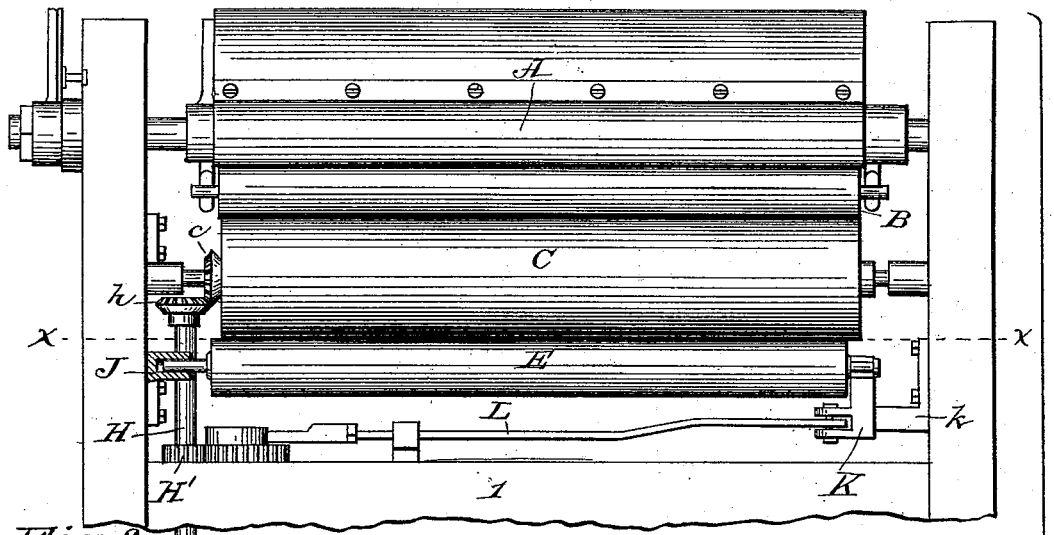


Fig. 2.

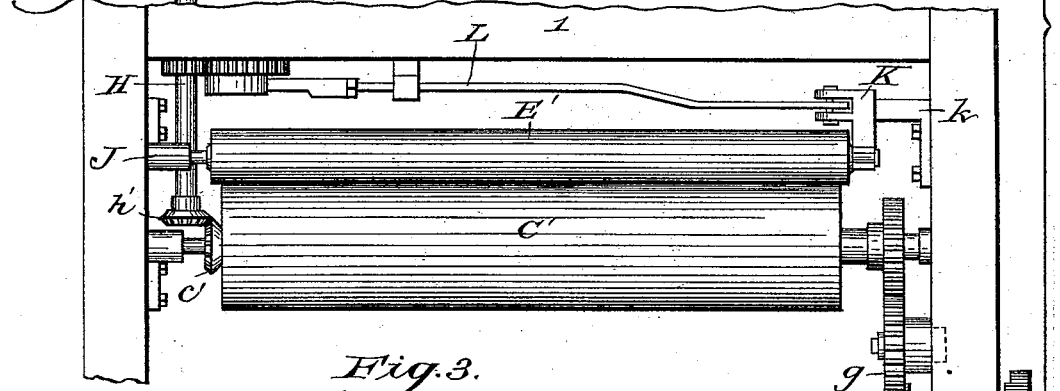


Fig. 3.

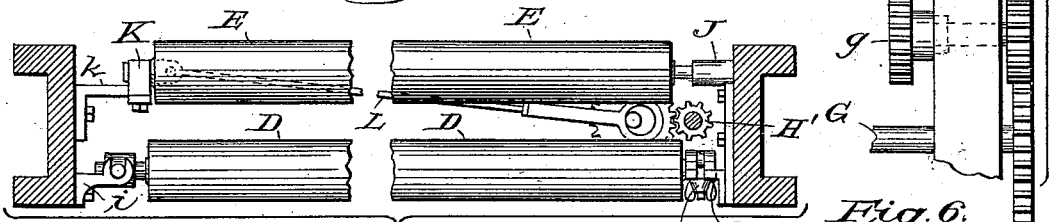
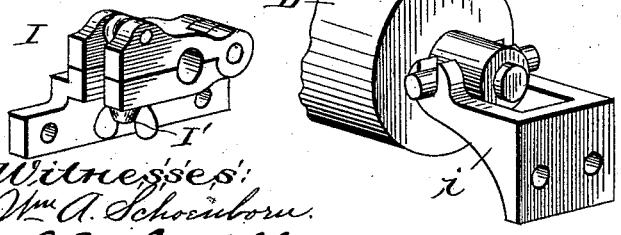
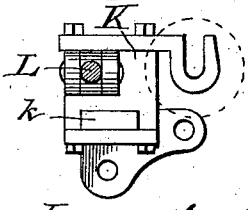


Fig. 4. Fig. 5. Fig. 6.





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UNITED STATES PATENT OFFICE.

JOSEPH L. COX, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE DUPLEX PRINTING PRESS COMPANY, OF SAME PLACE.

INKING APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 494,096, dated March 21, 1893.

Application filed August 12, 1892. Serial No. 442,923. (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 Apparatus 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 and figures of reference marked thereon, which form part of this specification.

This invention is an improvement in inking devices for stationary bed and reciprocating cylinder printing presses, and is especially designed for use with web printing perfecting presses, having one bed horizontally over the other and parallel therewith, such as is shown in my Letters Patent No. 478,503, granted the 5th day of July, 1892.

The objects of this invention are first to supply ink to distributing rolls at each end of the bed, from a single ink fountain; second, to locate this fountain at one end of the bed and exterior to the distributing rolls where it will be readily accessible; third, to transfer ink from one distributing roll to the other by means of a reciprocating transfer roll, preferably suspended from cylinder carriage; but moving beneath the bed. In brief to provide inking devices whereby from a single fountain ink may be intermittently supplied to ink distributing rolls at opposite end of a type bed; and the ink thoroughly disseminated and distributed by proper rolls prior to being taken up by the form rollers, which will ink the forms on both the forward and backward movement of the cylinder, whereby two impressions may be taken from freshly inked type at each reciprocation of the cylinder.

The invention therefore consists in the novel combination of stationary distributer rolls at opposite ends of a type bed, with a reciprocating roll alternately contacting therewith but not contacting with the type forms on the bed, and the same in combination with a single fountain and a ductor for transmitting ink to one of the distributer rolls, and in certain other novel details of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the bed portion of a web perfecting press constructed substantially like that described in my aforementioned patent, and having my improved inking apparatus applied. The press having two type beds, the inking apparatus therein is simply duplicated. Fig. 2 is a top and partly sectional view of a set of inking apparatus detached. Fig. 3 is a detail transverse vertical section of one set of ink rolls. Figs. 4 and 5 are detail views of the bearings of roll D. Fig. 6 is a detail view of journal-box K, and bracket *k*.

Referring to the drawings by letters,—1, 2, designate the upper and lower type beds, arranged one above the other, horizontal and parallel.

3, 4, are the reciprocating cylinders, one for each bed, arranged one over the other, and journaled in reciprocating side-frames or carriage 5, which is mounted in proper guides on the main frame, and reciprocated longitudinally of the beds by any proper mechanism. And W represents the web of paper which is carried between the lower cylinder and bed, and thence up and between the second cylinder and bed being guided by suitable rollers on the frame and carriage as indicated in the drawings, all substantially as set forth in my patent hereinbefore referred to.

A designates an ink fountain secured opposite the outer end of each bed.

C and C′ are ink distributing rolls journaled in proper bearings at opposite ends of each bed, and B is a ductor roll journaled in vibrating arms *b* adapted to alternately contact the fountain roller and roll C to supply ink to the latter.

D, D′ are distributing rollers journaled in proper bearings beside the respective rolls C, C′ to the inner side thereof and below the bed, and E, E′ are vibrator rollers contacting respectively with rolls C, C′ and journaled above rolls D in position to contact with the form rollers F, F′ journaled in proper bearings on carriage 5 at each side of the cylinder as shown.

d represents a transfer roller which is reciprocated between rollers D, D′ and transmits ink from one to the other, rollers *d*, *d*, moving beneath the beds and out of contact therewith.

This is the general arrangement of parts,

and the rolls may be mounted and driven in any suitable manner; and by this arrangement I supply ink from a single fountain to two sets of distributing rolls at opposite ends of a type bed, by means of a single transfer roll moving beneath the bed.

The inking devices, are as shown, operated as follows:—Rolls C′ are driven by trains of gearing *g*, *g*, *g*, from a transverse shaft G which operates the "looper" in my patent above mentioned at one side of the machine. On the opposite end of shaft of roll C′ is a bevel gear *c′* which meshes with a bevel gear *h′* on a shaft H lying at right angles to, and in the same plane as rolls C′ and journaled in proper bearings attached to the main frame or type bed, and on the other end of said shaft is a similar bevel gear *h* meshing with a bevel gear *c* on the end of roll C, so that the rolls C, C′ are similarly speeded.

Rollers D, D′ are journaled at one end in trunnioned boxes *i* attached to the side frames of the press, and at their other end are journaled in hinged boxes I which are locked by hinged screws I′ by loosening which the rollers D, D′ can be let away from rolls C, C′ (desirable when the press is not running) and can also be conveniently removed and replaced. The opposite ends of rollers E and E′ are journaled in boxes J and K the former of which are fixed to the frame but the latter are slidably mounted on brackets *k* fixed to the frame also, so that rollers E, and E′ may be longitudinally vibrated, by means of pitmen L which are connected at one end to boxes K and at the other to eccentric straps *l* on eccentrics *m* formed with gears M and journaled in stub shafts or bolts N, N, fixed to the sides of the type bed or other suitable support, as shown in Fig. 2. The gears M mesh with pinions H′ on shaft H. The shafts O on which vibrator arms *b* are mounted are provided with crank arms *o*, *o*, which are connected by pitmen P, and the lower shaft O has another crank arm *o′* which is connected to the end of a pitman rod Q the forward end of which is connected to, or operated by an eccentric or cam on shaft G, substantially as indicated in Fig. 1.

Operation: The ink is taken first from fountain A by the intermittently reciprocating ductor B which deposits the ink upon the drum C where it is thoroughly disseminated by the rotation and contact of the distributer D, and vibrator E. The form roller F at proper intervals (as the carriage is reciprocated) comes in contact with the drum C upon which it rotates more than a revolution and then returns with each stroke of the carriage passing over the forms of type thereby inking the same sufficiently, and in substantially the manner described in my patent referred to, wherein I show an "ink belt." The transfer roller *d* which may be of wood, as the carriage reciprocates comes in contact and rotates with the composition distributing roller D, and with the return of the carriage returns to the opposite end of press and transfers or delivers its supply of color upon the other distributing roller D′, the rotation of which brings the fresh supply of ink in contact with the various distributing and vibrating rolls at this end of press, from which it is taken off and transferred to the form by the form roller F′ on the opposite side of the cross head from that heretofore described.

The mechanism and operation of inking devices for both upper and lowerbeds are practically the same.

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

1. In a printing press, the combination of a type bed, and ink distributing rolls at each end thereof; with a transfer roller adapted to be reciprocated out of contact with the type to transfer ink from one set of rolls to the other, substantially as specified.

2. The combination of a type bed, and inking rolls at each end thereof, and a transfer roller under the bed and adapted to be shifted so as to alternately contact with an ink roll at opposite ends of the press, substantially as described.

3. In a printing press, the combination of a type bed, and ink distributing rolls at each end thereof; and form inking rollers with a transfer roller adapted to be reciprocated out of contact with the forms to transfer ink from one set of rolls to the other, and an ink fountain supplying ink to only one set of ink distributing rolls, substantially as specified.

4. The combination of a type bed, and inking rolls at each end thereof, and a transfer roller under the bed and adapted to be shifted so as to alternately contact with an ink roll at opposite ends of the press, and a single ink fountain from which ink is directly supplied to but one set of the ink rolls, substantially as and for the purpose set forth.

5. The combination of two separate and independent sets of ink distributing rolls, and a direct ink supply to one of said sets; with a reciprocating transfer roller under the bed adapted to carry ink from one set of ink rolls to the other, substantially as described.

6. In a printing press, the combination of a type bed, and ink distributing rolls at each end thereof, with a transfer roller adapted to be reciprocated to transfer ink from one set of rolls to the other, and a cylinder and form rollers on opposite sides thereof respectively contacting with the ink rolls at opposite sides of the bed, and means for reciprocating said cylinder and form rollers, substantially as specified.

7. The combination of a type bed and inking rolls at each end thereof, and a transfer roller under the bed and adapted to be shifted so as to alternately contact with an ink roll at opposite ends of the press, and a cylinder and form rollers on opposite sides thereof respectively contacting with the ink rolls at opposite sides of the bed, and means for re-

ciprocating said cylinder and form rollers, substantially as described.

8. The combination of the bed and the inking rolls at each end thereof; with the cylinder, the form rollers on opposite sides thereof each adapted to receive ink from one of the opposite sets, and means for reciprocating said cylinder and form rollers, the ink rollers, and the transfer roller adapted to transfer ink from one set of ink rollers to the other, substantially as described.

9. The combination of the stationary type bed, and a set of inking rollers at each end thereof; with a reciprocating cylinder, form rollers at each side thereof respectively receiving ink from the opposite sets of ink rollers, and a reciprocating transfer roller adapted to convey ink from one set of rollers to the other, substantially as and for the purpose specified.

10. The combination of the ink roll, and a longitudinal vibrating roller beside the same, and an eccentric driven by gearing from the roll shaft, and the strap and pitman connected to the eccentric and to one of the journals of the roller for vibrating said roller, substantially as and for the purpose set forth.

11. The combination of the driven ink roll C, the ink distributing roller D, and the vibrating roller E, the sliding box K, and bracket *k*, all constructed and operated substantially as herein specified.

12. The combination of the rolls C, C′, the shaft H, and gearing between said shaft and roll shafts, the ink distributing rollers E, E′, and the eccentric straps, and gearing for operating rollers E, E′, all substantially as and for the purpose specified.

13. The combination of the type bed the driven ink rolls C C′ at opposite ends of the bed, the inking rollers D D′, and the vibrating roller E, a fountain supplying ink to roll C, and a reciprocating roller for transferring ink from roll C to roll C′, substantially as and for the purpose described.

14. The combination of the rolls C, C′ the shaft H, and gearing between said shaft and roll shafts, and the distributing rolls D, D′ and the transfer roller *d*, for carrying ink from roller D to D′, all constructed and arranged to operate substantially as and for the purpose specified.

15. The combination of the rolls C, C′ and shaft H geared thereto; with the vibrating rollers E, E′, the eccentrics driven from shaft H, and the pitman L, and sliding journal boxes K, and journal boxes supporting the other ends of rollers E E′ substantially as and for the purpose described.

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

JOSEPH L. COX.

Witnesses:
STEVEN S. HULBERT,
F. W. DUNNING.