

(No Model.)

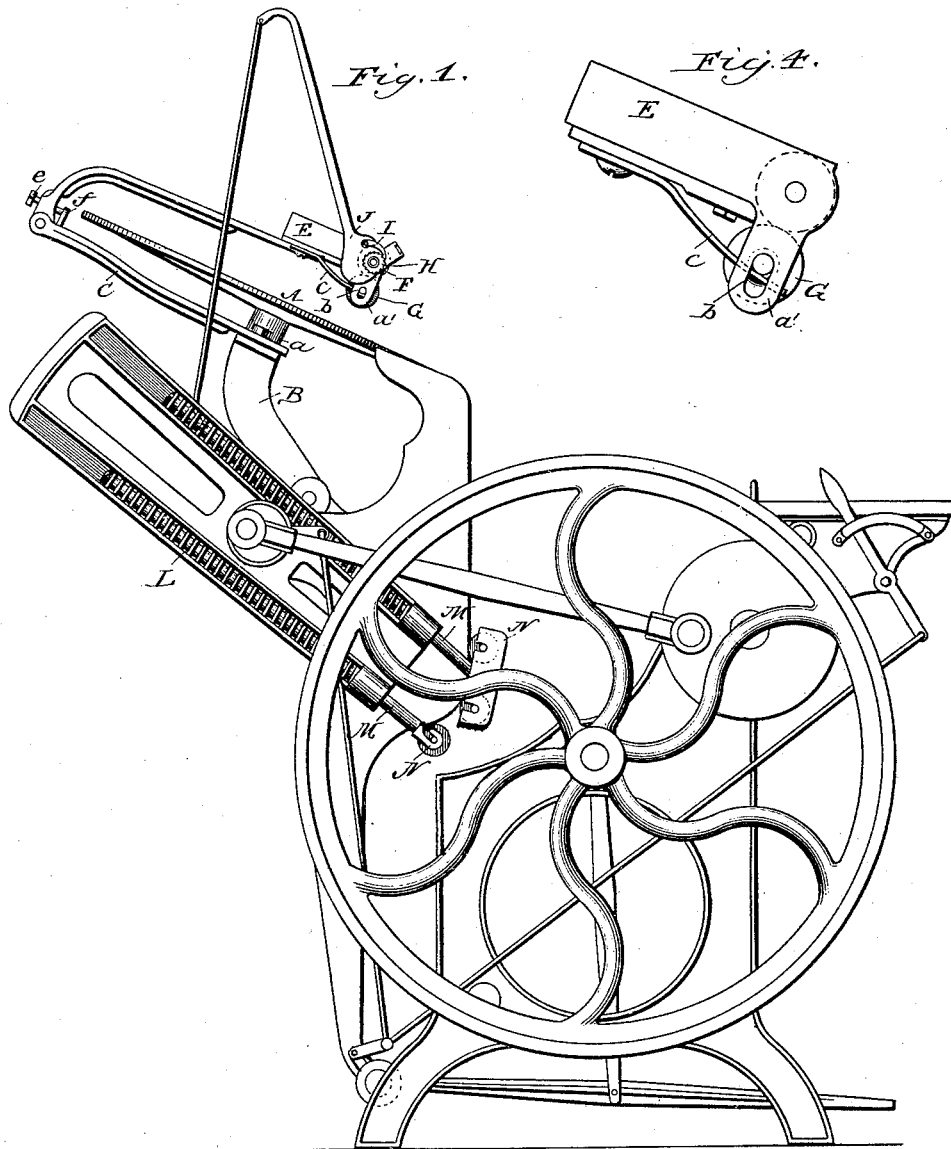
2 Sheets—Sheet 1.

H. F. BECHMAN.

INKING DEVICE FOR PRINTING MACHINES.

No. 345,760.

Patented July 20, 1886.



Witnesses.

Will. Posner
Will. R. Puschman

Inventor.

Henry F. Bechman
By, Jno. G. Elliott
Atty.

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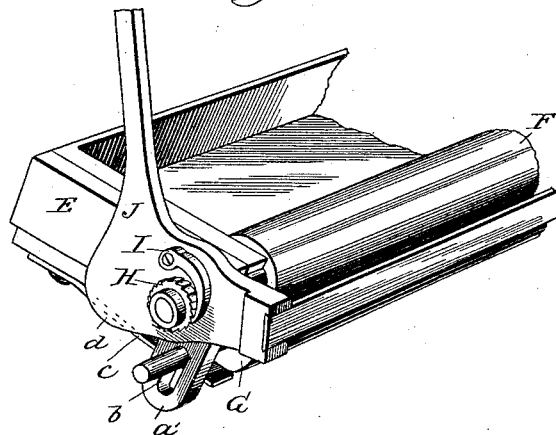
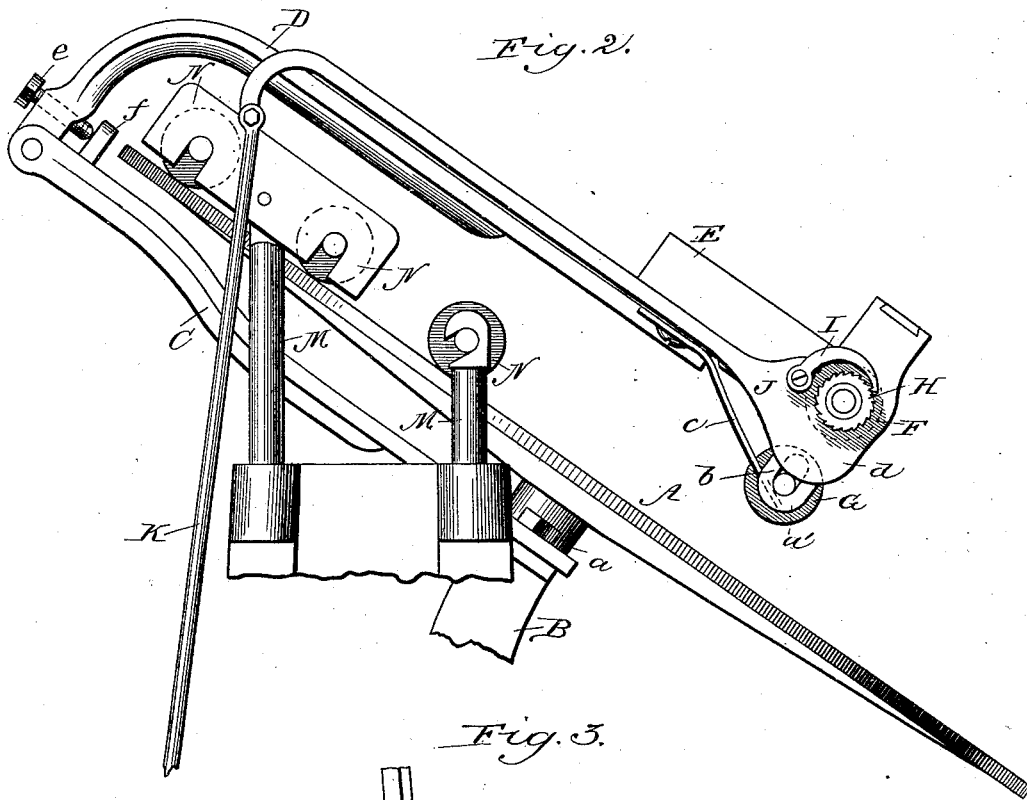
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INKING DEVICE FOR PRINTING MACHINES.

No. 345,760.

Patented July 20, 1886.



Witnesses.

Will. Rossiter
Thos. P. Gwynne & Co.

Inventor.

Henry F. Beckman
By Jno. G. Elliott
Atty.

UNITED STATES PATENT OFFICE.

HENRY F. BECHMAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SCHNIEDE-
WEND & LEE COMPANY, OF SAME PLACE.

INKING DEVICE FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 345,760, dated July 20, 1886.

Application filed March 23, 1886. Serial No. 196,207. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. BECHMAN, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Inking Devices for Printing-Machines, of which the following is a specification.

This invention relates to improvements in inking devices for printing-machines in which a roller communicating with an ink-well is employed to transfer the ink therefrom to the type-inking rollers.

Prior to my invention a single roller has been suspended above the inking-disk in an approximately rigid frame, as against a vertical strain, or, rather, a strain perpendicular to the inking-disk, but adjustable in a plane parallel to said disk. The normal position of this roller is in a plane sufficiently elevated above the inking-disk to permit the passage between it and the disk of the type-inking roller, but which latter necessarily comes in contact with and slightly lifts or elevates the said roller in order to receive a supply of ink from the said roller, to which it is fed from an ink-well, of which the said roller forms a part. In this prior construction no means are employed for permitting the elevation of the fountain-roller, in the act of transferring the ink therefrom to the inking-rollers, to avoid the racking and strain of its supporting-frame, except the enlargement or elongation of all the holes through which the various supporting-rods of the frame carrying the said fountain-roller work, and such a construction is obviously objectionable, for the reason that the fountain-roller cannot be maintained at all times in a line coincident with the type-inking rollers which strike against it, and the consequence of this objectionable feature, as demonstrated by the practical operation of the machine, especially in working heavy inks, is to produce decided marks across the work at various angles, due to the uneven inking of the type-inking-rollers and the varying quantities of ink supplied to said rollers; but this latter objection is in a great measure due to the fact that there is not sufficient diffusing or spreading of the ink on the

inking-disk, because of the excess and abruptness of the supply to the type-inking rollers, which are designed to spread and diffuse the ink on the said disk. Nor does the foregoing construction tend in any manner to promote the stability of such a device, but rather the contrary, for the constant racking and strain to which all the joints thereof are constantly subjected in operation would soon render them so weak and worn as to make the device practically useless.

The prime object of this invention is to combine with a printing-press an automatic inking device for supplying the inking-disk at regular intervals through the medium of the type-inking rollers, whereby the type may be evenly and uniformly inked and the streaking of the printed matter avoided.

Another object is to provide a secondary distributing-roller between the ink-well roller and the type-inking rollers, automatically actuated to be brought into contact alternately with the ink-well roller and the type-rollers, whereby ink supplied to the well-roller may be transferred to and distributed upon the inking-disk by means of the type-rollers during their passage across said disk, and while the well-roller is receiving a fresh supply of ink.

Further objects are to provide means for automatically withdrawing the transfer-roller from contact with the ink-well roller while being acted upon by the type-rollers, whereby the well-roller may be actuated independent of said transfer-roller or the type-rollers and the uniform and accurate supply of ink to the disk regulated and determined; to provide means for maintaining the transfer-roller free from contact with the well-roller while being acted upon by the type-rollers, whereby strain and friction on the bearings of the well-roller are avoided; to provide a supporting-bracket for the well and transfer rollers, whereby their relative positions will remain unchanged while the latter is being acted upon by the type-rollers, although capable of a vertical movement, while at the same time they are held rigidly as against any lateral or horizontal strain, or a strain that would tend to deflect the said rollers from alignment with the type-

rollers; to provide means for automatically and simultaneously withdrawing the transfer-roller from contact with the well-roller and rotating the well-roller, whereby while the well-roller is receiving a fresh supply of ink from the well the transfer-roller will be transferring the ink previously supplied thereto; and, finally, to provide certain details of construction in the carrying out of my invention, hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of an ordinary printing-press with a device embodying my invention applied thereto; Fig. 2, an enlarged detail side elevation of an inking device embodying my invention; Fig. 3, a detail perspective of one end of the well and transfer rollers, together with a portion of the ink-well and supporting-brackets; Fig. 4, a detail end view of the ink-well.

Similar letters of reference indicate the same parts in the several figures of the drawings.

Referring by letter to the accompanying drawings, A indicates the inking-disk common to all printing-presses, having the usual intermittent rotary movement upon its axial pivot and supported in any well-known and convenient manner upon a suitable bracket or casting, B, rigidly secured to a stationary portion of the press-frame; also secured to this bracket and beneath the disk is a bifurcated arm or support, C, made adjustable on said bracket by means of a bolt, *a*, passing through elongated slots in the ends thereof. This arm or support C extends rearwardly in substantially the same plane as the disk, and at an angle corresponding therewith, with its rear end projecting slightly beyond the periphery of the disk, to which is hinged on a horizontal pivot another arm or bracket, D, which preferably curves upward from its hinge on the arc of a circle and toward the forward end of the disk, which curved portion, however, is only sufficient to give the desired elevation to the supporting-arm of the bracket, which extends forward in a straight and approximately parallel line with the plane of the face of the inking-disk, which arm may, if desired, be bifurcated at its forward end, in order to form a broader and more steady support for the parts hereinafter described; or it may be provided with a suitable transverse bar or head-block for furnishing the necessary bearings or supports. Secured to the forward end of this bracket D is an ink-well, E, the end walls of which are extended to form bearings or supports for the ink-well roller F and the transfer roller G, extending laterally across the press, but longitudinally with the ink-well, the former roller constituting a portion or all of the forward wall of the ink-well, as desired, and against which the ink contained in said well is therefore at all times in contact, for the forward end of the said well is in a plane somewhat below the rear end thereof, thus making the bottom incline downwardly toward the for-

ward end. This ink-well is of the usual construction, and has a portion of the bottom thereof abutting against the said roller made adjustable, in order to regulate the quantity of ink supplied thereto; but as this is an old and well-known construction I do not deem it necessary to illustrate the same in detail in connection with my application. On one end of the shaft of the said roller F is rigidly secured a toothed or ratchet wheel, H, beyond the supporting end wall of the ink-well, with which ratchet engages a pawl, I, pivotally secured to a cam-lever, J, loosely journaled on the shaft of the roller F, between the ratchet H and the end wall of the ink-well. This cam-lever projects rearwardly from its pivoting-fulcrum, and has pivotally secured to the free end thereof a rod, K, connecting said arm with the oscillating spring-roller carriage L, common to all printing-presses, as usual, having spring-rods M, in the upper free ends of which are suitably and removably journaled the type-inking rollers N N, which are actuated by the oscillating carriage and operate in the manner usual to such devices. The rod K being attached to the rear side and below the center of the oscillating roller-carriage, is necessarily elevated at each oscillation thereof, carrying with it the free end of the cam-lever J, which in turn causes the pawl I, attached thereto, to travel a corresponding distance around the toothed wheel H, on which the teeth are cut, so that the pawl has no effect in traversing the face thereof in this direction; but immediately the lever J begins to descend the pawl engages a tooth of the ratchet, and thereby causes a partial revolution of the ink-well roller, to the shaft of which the said ratchet is secured, and consequently exposing another segment of the surface thereof supplied with a fresh coating of ink, and upon which the transfer-roller is soon to act. This transfer-roller G, before mentioned, is journaled in suitable depending projections, *a*, of the end walls of the ink-well below the roller F, the shaft of which said roller projects through an elongated slot, *b*, provided in said projection, of a length sufficient to permit the said roller, when elevated to the limit of its upward adjustment, to come in contact with the well-roller F, in which position it is normally held by the action of a keeping-spring, *c*, rigidly secured at one end to the under side of the ink-well, and having its free end bearing against the under side of the shaft of the said transfer-roller. As just described, the transfer-roller is held normally in contact with the well-roller by the said keeping-spring; but by reason of the elongated slots in which the shaft thereof is journaled this roller is free to be withdrawn from contact with the said ink-roller, provided sufficient power be applied to overcome the tension of the keeping spring, and this is accomplished by means of a cam or eccentric projection, *d*, formed on the pivoted end of the lever J, below the pivot thereof, which cam is adapted and arranged to come in contact with the end of

the shaft of the transfer-roller projecting beyond the end wall of the ink-well when the said lever J is depressed, and just before the said lever has completed its downward stroke, as illustrated in Fig. 3. By this construction it will be seen that the transfer-roller will be held in contact with the well-roller during the greater part of the revolution thereof, thereby producing a corresponding revolution of the said roller and transferring to the roller the ink supplied thereto simultaneously from the ink-well.

Between the transfer-roller, when in its normal position, and the inking-disk A' there is designed to be sufficient space for the type-inking rollers N N to freely pass; but when the transfer-roller is depressed and free from contact with the well-roller the said type-rollers will come into contact with and receive a supply of ink from the transfer-roller during their passage back and forth across the face of the inking-disk, to which they in turn transfer the ink and diffuse and spread it over the surface thereof in a most thorough and effectual manner and in a condition to promote the best possible results.

The amount of surface of the transfer-roller which comes in contact with the type-inking rollers may be easily regulated and adjusted by means of the set screw e, working through the rear end of the bracket D, just above the hinge or pivot thereof, and bearing against a lug or boss, f, cast with or otherwise rigidly secured to the arm C, and such an adjustable connection also permits the elevation of the bracket D on its hinge, carrying with it the ink-well and rollers attached thereto, clear out of the way, if desired, or the said bracket may be adjusted just sufficiently high so that the transfer-roller will not come in contact with the type-inking roller. This hinge-connection also permits a slight lifting or elevation of the head of the bracket when the type-rollers come in contact with the transfer-roller, which is essential to prevent injury to and unnecessary wear of any of these rollers; but while this hinge-connection permits a vertical movement it is rigid as against any lateral or horizontal movement of the bracket, and maintains the transfer-roller in true and exact alignment with the type-rollers at all times.

By the employment of my invention it is obvious that all loose joints between the working parts are avoided and the stability and durability of the device promoted to the maximum degree; so, also, may the quantity of ink supplied to the type-rollers be accurately regulated and determined by regulating the throw of the cam-lever, and the ink supplied to the type-rollers more effectually and evenly distributed than by any of the devices heretofore constructed, for the transfer-roller is free to revolve in its bearings in either direction when actuated, and as a result more effectually distributes the ink than could possibly obtain by bringing the type-rollers in direct

contact with the well-roller in the prior construction.

I do not desire to limit myself to the exact construction herein shown and described for carrying out my invention, for various other mechanical means might be employed and effect the same result without materially departing from the spirit of my invention.

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

1. In an inking device for printing-presses, an adjustable and vertically yielding transfer-roller between the ink-well roller and the type-inking rollers, substantially as described.

2. In an inking device for printing-presses, the type-inking rollers and the ink-well roller, in combination with a transfer-roller normally in contact with the said ink-well roller, a cam and lever for withdrawing the said transfer-roller from contact therewith, and means for actuating said lever, whereby when the transfer-roller is actuated by the type-rollers it will be free to rotate in any direction, substantially as and for the purpose described.

3. In an inking device for printing-presses, the type-inking rollers and the ink-well roller, and a transfer-roller between said type and well rollers, but normally in contact with the said well-roller, in combination with a cam-lever pivoted on the shaft of the well-roller, a cam on the end of said lever adapted and arranged to come in contact with the end of the shaft of said transfer-roller when the lever is depressed, and means for actuating said lever, substantially as described.

4. In an inking device for printing-presses, the oscillating roller-carriage, the type-rollers adjustably secured thereto, the ink-well roller, and a transfer-roller between said type and well rollers, in combination with a cam-lever for depressing the transfer-roller, a pawl-and-ratchet connection between the said lever and the well-roller, and a rod-connection between said lever and the oscillating roller-carriage, substantially as described.

5. In an inking device for printing-presses, the overhanging hinged bracket, the ink-well secured thereto, and the ink-well roller journaled in the ends of said well, in combination with a transfer-roller below said well-roller, the slotted bearings thereof, and a keeping-spring for maintaining said transfer-roller in an elevated position and normally in contact with the well-roller, substantially as described.

6. In an inking device for printing-presses, the stationary supporting-arm C, and a lug, f, thereon, in combination with the overhanging bracket D, a hinge-connection between said arm and bracket, and an adjusting-screw, e, working through said bracket and impinging against the lug f, substantially as described.

7. In an inking device for printing-presses, the adjustable overhanging hinged bracket and the ink-well secured thereto, the ink-well and transfer rollers journaled thereto, in combination with the cam-lever loosely journaled

on the well-roller shaft, adapted and arranged to depress the transfer-roller, a pawl-and-ratchet connection between the said lever and the ink-well roller, and means for actuating the lever, substantially as described.

8. In an inking device for printing-presses, the overhanging arm or bracket supporting the ink-well, the ink-well roller journaled therein, and the vertically-adjustable transfer-roller journaled in said well below the ink-well roller, in combination with a horizontal hinge-connection between said bracket and a stationary portion of the press-frame, whereby the said bracket may have a vertical movement during contact between the type and transfer rollers, while at the same time held rigid against a lateral strain, substantially as described.

9. In an inking device for printing-presses,

the overhanging arm or bracket supporting the ink-well, the ink-well roller journaled therein, and the vertically-adjustable transfer-roller journaled in said well below the ink-well roller, in combination with a horizontal hinge-connection between the said bracket and a stationary portion of the press-frame, a cam-lever for adjusting said transfer-roller, and means for actuating said cam-lever, whereby the said transfer-roller may be held free from contact with the ink-well roller while being acted upon by the type rollers, and at the same time capable of a vertical movement, substantially as described.

HENRY F. BECHMAN.

In presence of—

W. W. ELLIOTT,

WILL R. OMOHUNDRO.