

C. B. COTTRELL.

INKING APPARATUS FOR PRINTING MACHINES.

No. 473,142.

Patented Apr. 19, 1892.

Fig. 1.

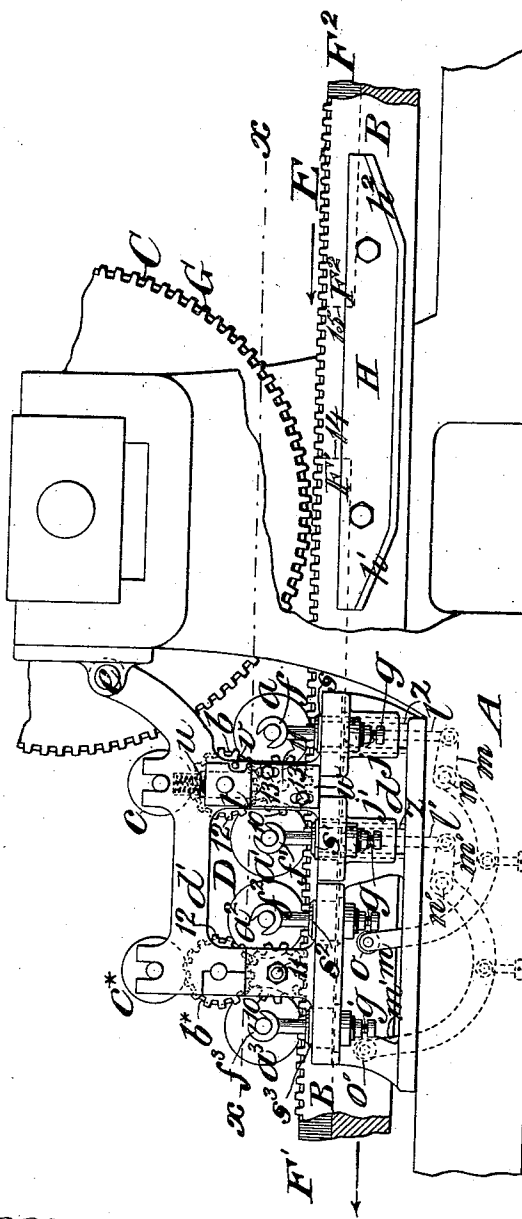
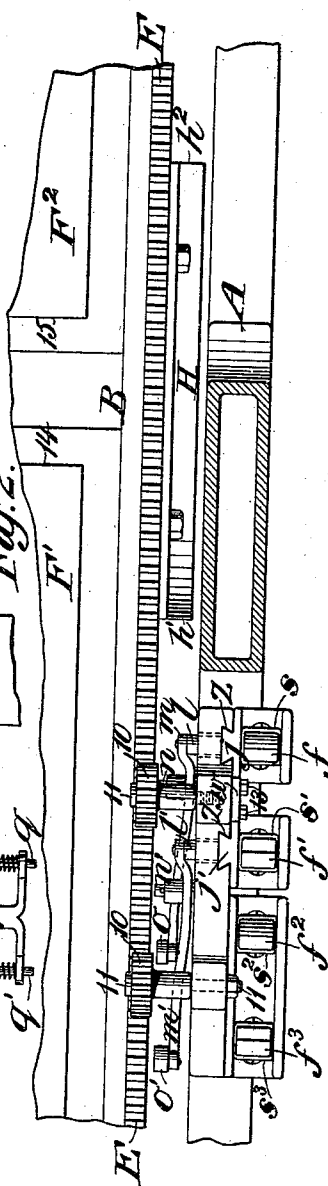


Fig. 2.



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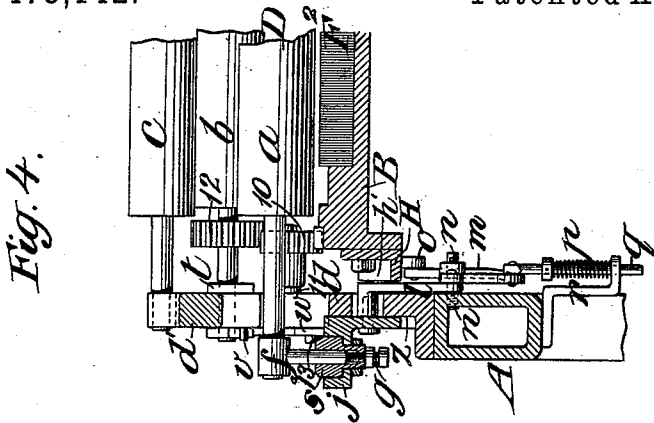


Fig. 7.

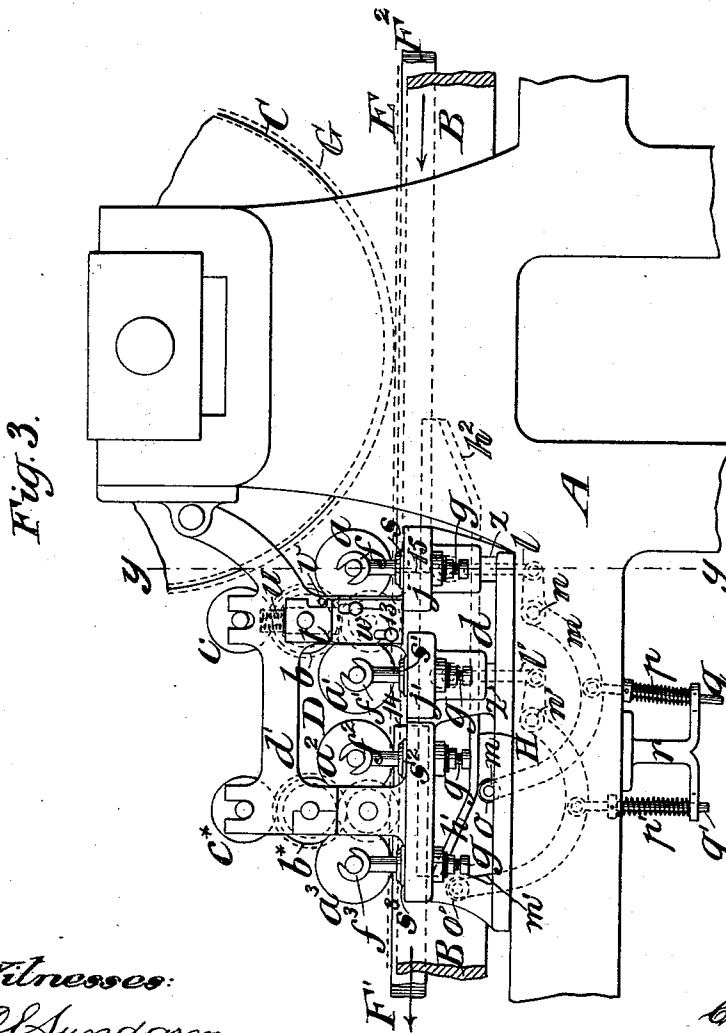
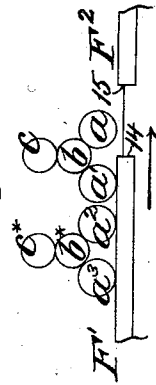


Fig. 6.

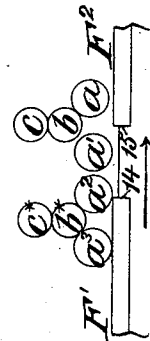
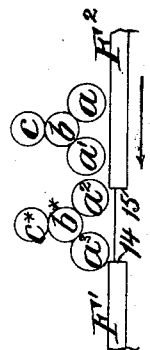


Fig. 5.



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UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF WESTERLY, RHODE ISLAND.

INKING APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 473,142, dated April 19, 1892.

Application filed December 23, 1891. Serial No. 415,964. (No model.)

To all whom it may concern:

Be it known that I, CALVERT B. COTTRELL, of Westerly, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Inking Apparatus for Printing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates principally to what are known as "perfecting printing-machines," in which two forms on one reciprocating bed operate in combination with two impression-cylinders and two sets of inking apparatus, one set for each form. In such machines, owing to its being desirable to reduce the length of the bed as much as practicable, it is common to place the forms thereon as near together as possible. When the forms are so near together and their respective inking apparatuses are correspondingly arranged, a portion of each form runs under some of the ink-rollers of the inking apparatus belonging to the other form. In order to prevent either form from receiving any ink from the said ink-rollers of the inking apparatus belonging to the other form, provision is made in some printing-machines for lifting the said rollers of each form before the other form begins to pass under them and keeping them lifted out of inking contact while the other form is under them. My invention relates to such provision for so lifting the ink-rollers, and consists in the combinations, hereinafter described and claimed, especially suitable for that purpose.

Figure 1 represents a side view of a portion of the side framing and portions of the first-impression cylinder and reciprocating bed of a perfecting printing-machine embodying my invention and a side view of the form-rollers and superposed vibrators and top riders for inking the first form. Fig. 2 represents a horizontal section taken in the line $x x$ of Fig. 1, showing parts of the framing and bed and the lower portion of one of the roller-stands. Fig. 3 is a view corresponding with Fig. 1, but showing the reciprocating bed in a position different from what is shown in Fig. 1. Fig. 4 represents a transverse vertical section taken in the line $y y$ of Fig. 3 and viewed from the right, showing part of one of the side frames of the machine, the roller-

stand, and portions of the rollers, and the mechanism for lifting the latter. Figs. 5, 6, and 7 are diagrams showing different positions of the forms and inking-rollers, which will be hereinafter explained.

A designates the main side framing of the machine; B, the reciprocating bed; F^1 , the first form; F^2 , the second form; C, the first-impression cylinder, and D a double set of ink-rollers for the said form F^1 . The bed B may have its reciprocating movement and the cylinders have their rotary motion imparted to them by the means commonly employed in such machines, the bed being provided with the usual toothed racks F and the cylinders with the spur-gears G, gearing with the said racks in the usual manner, the same racks F being employed as is common to drive the inking apparatus D.

The double set D of ink-rollers for the form F^1 is represented as consisting of two pairs of form-rollers $a a'$ and $a^2 a^3$, a vibrator b or b^* for each pair of form-rollers, and a top rider c or c^* above each vibrator, the said rollers being all arranged in a roller-stand consisting of two side frames $d d'$, arranged upon the main side framing A on opposite sides of the machine, but only one of which is shown in the drawings. Each of these side frames is composed of a lower member or standard d and an upper member d' , the lower member or standard d being fixedly secured to its respective side of the main framing A and the upper member d' resting upon the said lower member or standard d when the parts are in operative relation, but being pivoted to the upper part of the side framing by pivots e in such manner that it may be turned up to raise the vibrators and top riders from the form-rollers to give access to the latter, the said vibrators and top riders having the bearings for their shafts in the upper members d' , and the bearings for the form-rollers being arranged upon the standards d . The bearings $f^2 f^3$ of the pair of form-rollers $a^2 a^3$ farthest from the cylinder are fitted to boxes $s^2 s^3$, secured in the standards d , and adjustable in said boxes by means of set-screws $g g$ in a well-known manner, but otherwise need not be vertically movable. The bearings $f f'$ of the pair of form-rollers $a a'$ next the cylinder are fitted to boxes $s s'$, in which they are

adjustable in the usual manner by set-screws $g\ g$; but these boxes, instead of being secured fixedly in the standards, are carried in bracket-like supports $j\ j'$, fitted to slide freely in vertical guideways z (represented in Fig. 2 as of dovetailed form) on the standard d , and these supports are capable of being raised for the purpose of lifting the rollers $a\ a'$ separately to such positions that they will be out of inking contact with the form which they are not required to ink and of being lowered again to bring the said rollers into positions in which they will have proper inking contact with the form which they are required to ink.

To provide for lifting the said supports $j\ j'$ and the form-rollers $a\ a'$ therein supported, the said supports are connected by links or short rods $l\ l'$ with the shorter arms of levers $m\ m'$, the fixed fulcrum-pins $n\ n'$ of which are secured in the stationary side framing and the longer arms of which are furnished with anti-friction rollers $o\ o'$, to be operated upon by the inclined ends h' of cams H, which are affixed to the reciprocating bed B, there being one such cam and one of each of the levers $m\ m'$ on each side of the machine for lifting the boxes $j\ j'$ on that side, though only one of the said cams H, levers $m\ m'$, and roller-supports $j\ j'$ is shown in the drawings, as only one side of the machine is therein visible. The said cams H have their bottom faces straight to hold up the form-roller supports $j\ j'$ for a sufficient time after they have been lifted. To bring down the roller-carriers $j\ j'$ again after the cams cease to operate on the levers $m\ m'$, the said levers have applied to them springs $p\ p'$, which are coiled around rods $q\ q'$, the upper ends of which are connected with the said levers and the lower ends of which pass through guides in stationary hangers r , which are secured to the side framing A, the said springs abutting between the said hangers and shoulders or collars on the rods $q\ q'$.

It has been hereinbefore mentioned that the vibrators $b\ b^*$ have their shaft-bearings in the upper members $d\ d'$ of the roller-stands. The shaft-bearings for the vibrator b^* belonging to the form-rollers $a^2\ a^3$ may be fixed in the said upper members d' ; but the bearings for the vibrator b belonging to the form-rollers $a\ a'$ consist of boxes t , which are fitted to slide up and down in guides or housings in the said upper members d' . Springs u (shown in dotted outline in Figs. 1 and 3) are applied above the said boxes to press the vibrator properly into contact with its form-rollers. Pins or stops v , secured in the said member d' and entering notches in the said boxes t , while permitting the proper self-adjustment of the said vibrator to the form-rollers, prevent the said vibrator from dropping out when the said upper members are raised up from the standards d . The top riders c are in open bearings in the said upper members d' and rest on the vibrators. Rotary motion is imparted to the vibrators in a well-

known manner from one of the racks E on the bed through gears 10, (see Figs. 1, 2, 3, and 4,) which turn on fixed studs 11, secured in one of the standards d , and which gear with the rack and with gears 12 on the vibrators, the form-rollers being rotated by friction, as usual.

For the purpose of lifting the vibrator b with either of its respective form-rollers a or a' lifting devices w —one on each side of the machine, Figs. 1, 2, 3, and 4—are applied between the roller-supports $j\ j'$ and the boxes t of the said vibrator. These lifting devices consist of plates fitted to slide vertically on the outside of the standards d , the said plates being kept in place by screws 13, passing through slots in the said plate, as shown in Figs. 1 and 2, and screwed into the standard. When the vibrator is lifted by the plates or lifters w , the top rider c is also lifted, as may be understood by reference to Fig. 3, in which the support j of the form-roller a is shown lifted and as lifting its vibrator b .

I will now briefly describe, with reference to Figs. 3, 5, 6, and 7, the operation of lifting the rollers $a\ a'$ clear of the second form F^2 as the bed B and forms complete their movement to the left, first calling attention to Fig. 1, in which they are shown to be moving in that direction and the first form to be still receiving ink from both of the pair of rollers $a\ a'$, which remain depressed to their inking level until, as the inner end 14 of the first form F' passes the form-roller a , the inclined ends h' of the cams H begin to act upon the rollers o of the levers m to lift the supports j and the said roller a and its vibrator b . Before the inner end 15 of the second form has arrived under the bottom of said roller a the cams H have completely lifted the said roller a , as shown in Fig. 3, and by the time the said end 14 of the first form passes the next form-roller a' the ends h' of the cams begin to act on the levers m' to lift the carriers j' and the said roller a' so that when the inner end 15 of the second form F^2 passes under the said roller a' the latter also will be out of inking contact with said form, as shown in Fig. 5, which represents the positions of the two forms at the end of the stroke of the bed to the left. As the bed, returning to the right, takes the second form F^2 clear of the roller a' , as shown in Fig. 6, the cams H pass clear of the rollers o' of the levers m' and allow the said levers to be acted upon by their springs p' to bring the said roller a down to its position for inking the first form F' when the latter arrives under the said roller, and as the bed, continuing its movement to the right, takes the second form F^2 clear of the roller a the cams pass by the rollers o of the levers m and allow the said roller a to be brought down, as shown in Fig. 7, to the position for inking the said form F' when the latter arrives under it.

It will be understood that there will be an inking apparatus the counterpart of that described for inking the second form F^2

and similar levers $m m'$ for lifting the form-rollers. These levers may be operated by the same cams H , which are represented as having the other end h^2 inclined like the end h' , only in the opposite direction, so that they will lift one at a time two of the form-rollers of the said counterpart set to clear the part of the first form F' which passes under them before the bed completes its movement to the right.

It will be understood that by lifting and lowering the rollers $a a'$ of each form separately each needs only to remain raised long enough to keep it clear of the other form; but if both were lifted and lowered together the roller a' farthest from the cylinder would have to remain raised during a portion of the time while its own form is under it, and hence time would be lost by the said roller, which is utilized for inking when the two rollers are raised and lowered separately in proper time, as described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the reciprocating bed of a cylinder printing-machine, of an ink-roller stand containing guideways, two form-rollers, bearings for said rollers, separate supports for the bearings of each of said rollers fitted to slide in said guideways, cams on said bed, and levers interposed between said cams and said sliding supports for separately lifting the supports of each form-roller, substantially as herein set forth.

2. The combination, with the reciprocating bed of a cylinder printing-machine and an ink-roller stand, of a pair of form-rollers and a vibrating roller common thereto, bearings for said form-rollers, and separate supports for the said bearings, with which the latter rollers are movable separately toward and from the bed, bearings for the said vibrating roller, with which the said roller is movable toward and from the bed, and lifters between the said sup-

ports and the last-mentioned bearings for lifting the vibrating roller with one of the form-rollers, substantially as herein set forth.

3. The combination, in a printing-machine, of a roller-stand composed of fixed lower members or standards d and upper members d' , which are hinged to the fixed framing of the machine, a pair of form-rollers $a a'$, each having provided for it in said lower members bearings which are capable of being lifted independently of the bearings of the other one for lifting the roller out of inking contact with the form, a vibrating roller common to both form-rollers of the pair, and bearings for said vibrating roller provided in said upper members and vertically movable therein by the lifting of one of the form-rollers, substantially as herein set forth.

4. The combination, with the upper hinged members d' of the roller-stand, of a vibrating roller and bearings therefor capable of rising and falling within the said members, springs u , applied to said bearings, and stops v on the said members to retain the said bearings when said members d' are lifted, substantially as herein described.

5. The combination, with the longitudinally-reciprocating bed of a cylinder printing-machine, of an ink-roller stand, two form-rollers and a vibrating roller common to both, supports and bearings therein for the form-rollers, with which the said rollers are vertically movable, vertically-movable bearings for said vibrating rollers, cams on the bed, levers between said cams and supports for lifting the latter, springs applied to said levers for depressing the said supports, and lifters between said supports and the bearings for the vibrating rollers, substantially as and for the purpose herein set forth.

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