

No. 693,044.

Patented Feb. 11, 1902.

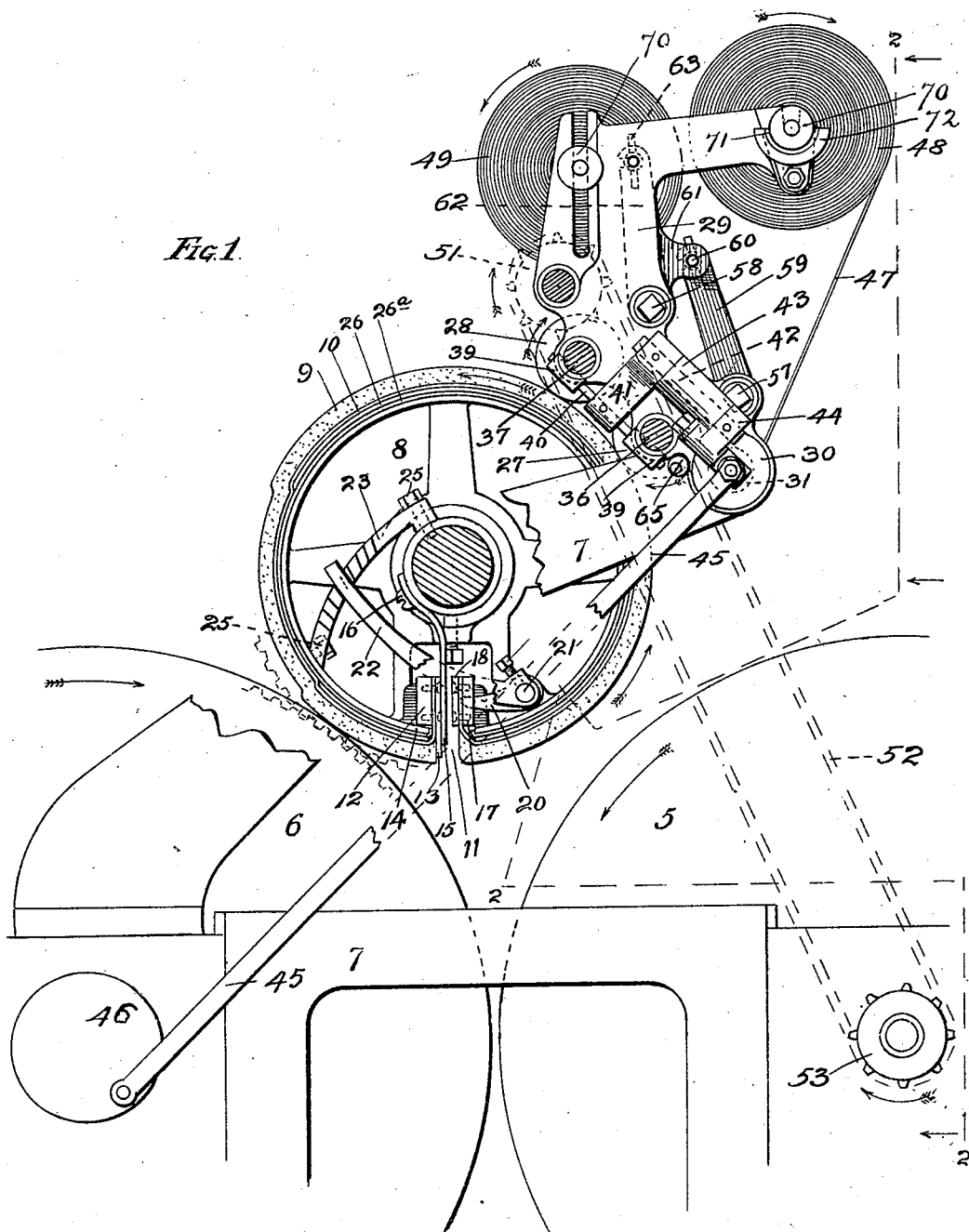
R. MIEHLE.

OFFSET MECHANISM FOR PRINTING PRESSES.

(Application filed June 24, 1901.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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H.W. Munday

Robert Miehle INVENTOR

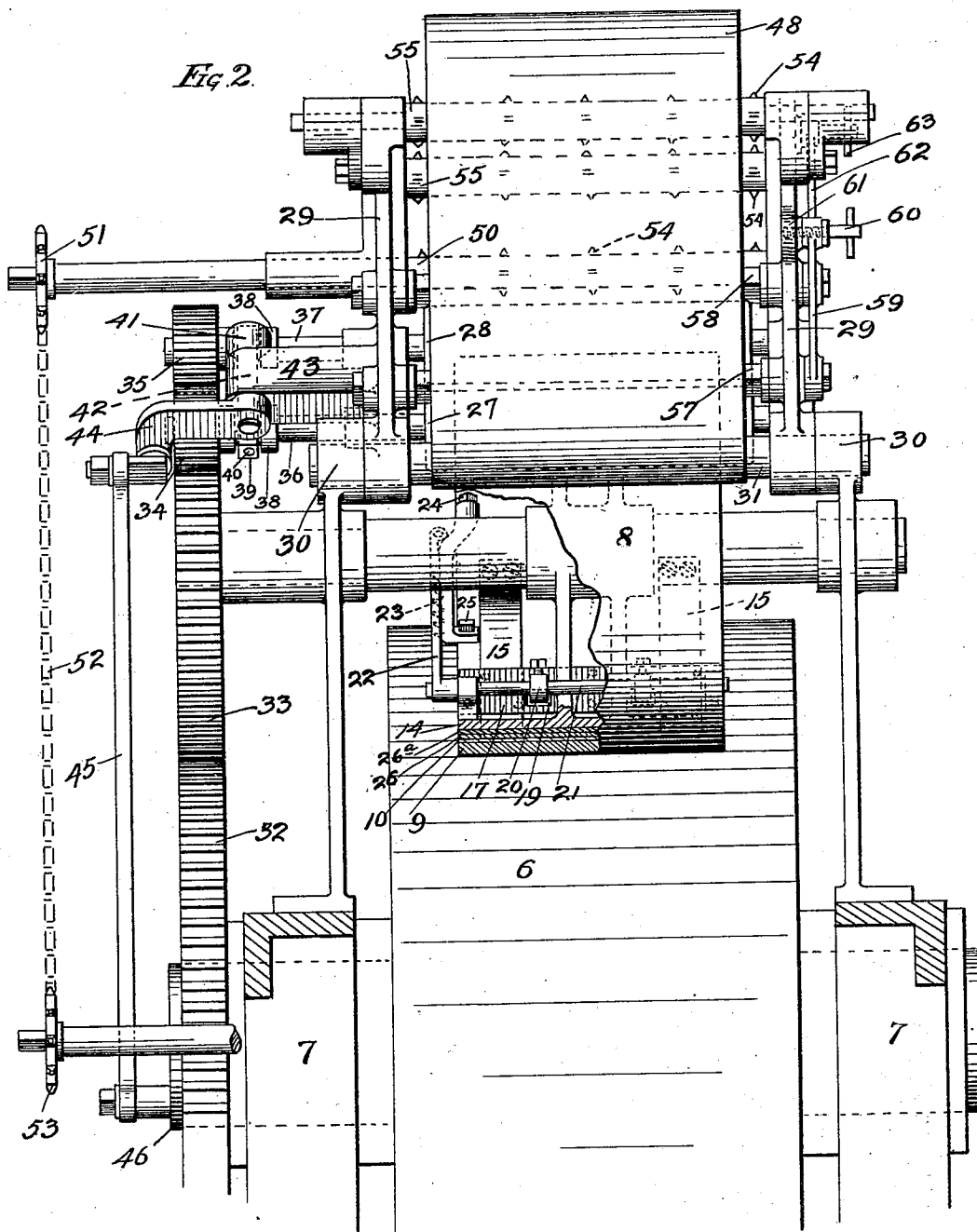
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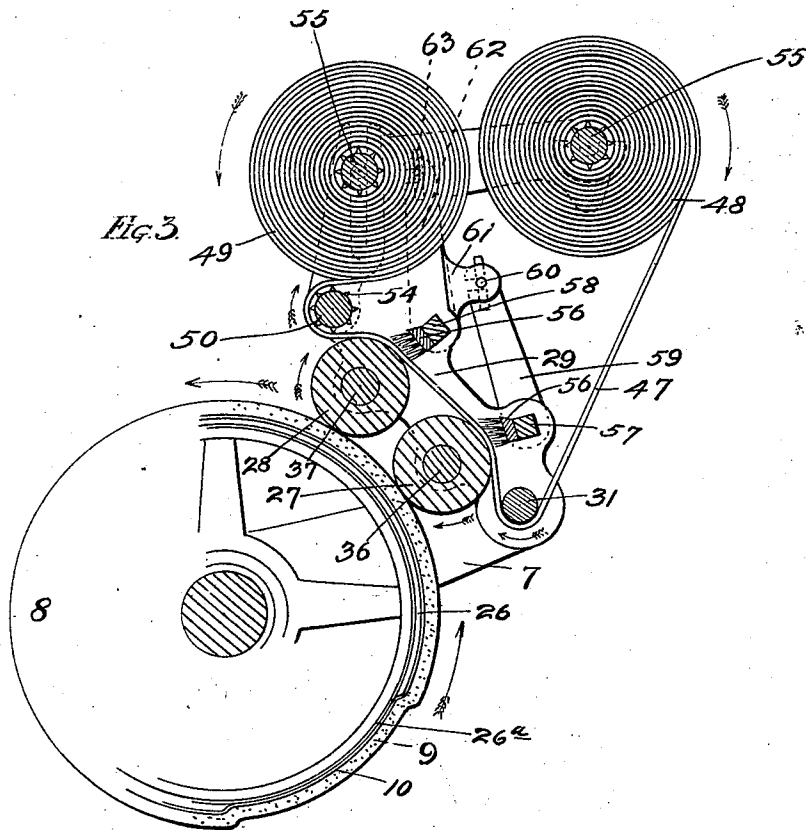
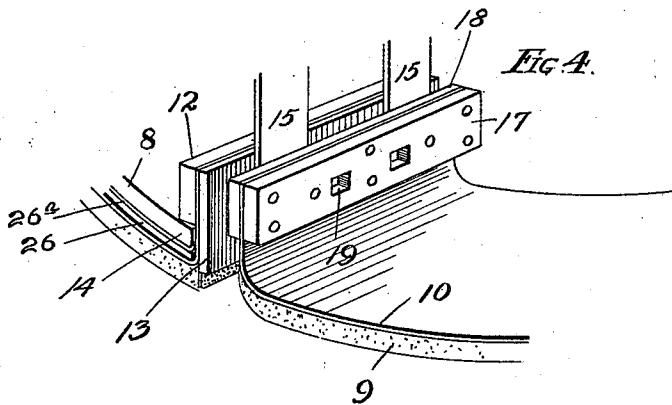
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4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

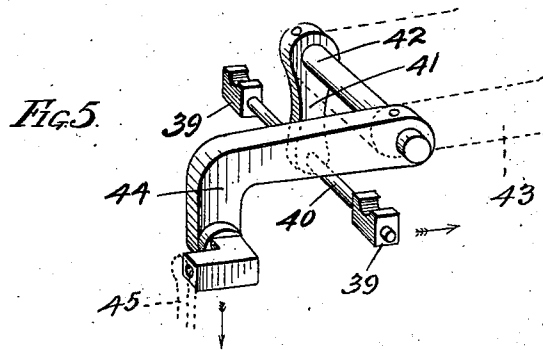
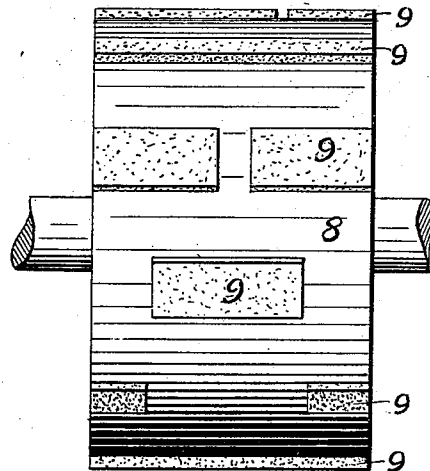


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS.

OFFSET MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 693,044, dated February 11, 1902.

Application filed June 24, 1901. Serial No. 65,760. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Offset Mechanism for Printing-Presses, of which the following is a specification.

This invention relates to the construction of devices for preventing offset, devised more especially for use in perfecting-presses employing a plurality of flat forms, against which the sheet is successively impressed by a corresponding number of impression-cylinders, which descend into contact with the forms when making one revolution and rise out of contact therewith, so as to clear the forms, when making another.

The invention is well adapted to be used in web-perfecting presses also, and embodies features which are improvements upon the construction shown in my previous applications, Serial No. 1,055, filed January 11, 1900, and Serial No. 60,076, filed May 13, 1901, in respects hereinafter pointed out, and will be fully understood from the accompanying drawings and the description thereof given below.

In the said drawings, Figure 1 is a vertical longitudinal section of that portion of a press containing my improved offset mechanism. Fig. 2 is a cross-vertical section on the line 2 2 of Fig. 1. Fig. 3 is a detail longitudinal vertical section of the offset mechanism. Fig. 4 is a detail perspective showing the manner of securing the composition covering to its roll. Fig. 5 is a detail perspective of a portion of the mechanism, and Fig. 6 is an elevation of a modified construction of the composition roller.

In said drawings, 5 represents the first impression-cylinder, 6 the second impression-cylinder, and 7 portions of the frame of a printing-press. Arranged in proximity to cylinder 6, so that it may contact therewith, is a cylinder or roller 8, supported upon a shaft journaled in the frame 7 and making two revolutions to one of the impression-cylinder, but having a surface speed uniform with that of the cylinder 6. The acting surface of this roller is composed of composition 9, having an affinity for ink, attached to a backing or reinforce 10, of cloth or suitable

material, and this reinforcing may serve as the means of removably attaching the composition to the roller, its ends being passed inward through the peripheral opening 11 in the roller and secured as now to be described.

At one end of the reinforce a retainer-bar 12 and a clamping-plate 13 are secured by screws passing through the plate and reinforce into the bar, as plainly indicated at Fig. 1. When applied to the roller, the bar is pushed under the periphery 14 of the roller at its edge adjacent to the opening 11, as shown at Figs. 1 and 4, and serves to hold the end of the composition and reinforce against the strain put upon the other end thereof by the tightening devices employed therewith. Springs 15, attached to the hub of the roller by screws 16, extend outward and bear against plate 13, and thereby serve to hold the retainer-bar securely in position and engaged with the periphery 14. To the other end of the reinforce are attached bars 17 and 18, secured together by screws and clamping the reinforce between them. In the bar 17 on the inner side of the reinforce are openings 19, adapted to receive the points of arms 20, secured on a rock-shaft 21, extending longitudinally of the roller and operated by a crank 22, applied to its end. The end of this crank is adapted to engage a rack 23, which is held at one end by a screw 24, entering the periphery, and at the other end by a screw 25, entering the hub of the roller. With this construction the turning of the shaft causes a drawing action on the reinforce, and consequently when the covering is applied the crank is pushed toward the shaft of the roller as far as may be necessary to properly tighten the reinforce and then is sprung into engagement with the rack, which acts to securely hold the crank in its adjusted position.

The composition does not always need to bear throughout its whole surface on the impression-cylinder, because the whole of the tympan-surface of the cylinder is not always charged with ink from the printed sheets. Sometimes also it is not desirable to remove the offset at all from portions of the tympan-surface which contact with and receive the offset from portions of the sheet that are heavily inked and generally known as "solids," and to avoid contact between such heavily-inked

portions of the tympan and the composition roller and also between such portions of the tympan as are not inked at all by the sheets and the composition roller I arrange the latter at such distance from cylinder 6 as will normally prevent any contact whatever between them unless the composition or some portion of it is raised above its normal level. This may be done in various ways, and I have shown one way, which consists in inserting a filling, consisting of one or more thicknesses of paper 26, between the periphery of the roller and the reinforce or between a covering-strip of paper 26^a, with which the roller may be covered, and the reinforce. The raised portions have more thicknesses of filling than the parts which are not raised, and the additional thicknesses are placed under such portions only as it is desired to raise to carry the composition against the impression-surface, the remainder of the composition being left at its normal level, so that it is unaffected by wear.

The features described in the last three paragraphs are intended to be used when the entire surface of the roller 8 is covered by the composition and reinforce; but it is not always necessary to cover the entire roller, and my invention contemplates the use of the composition in sections or detached parts, as seen at Fig. 6. These may be secured to a reinforce, if desired, or they may be glued or otherwise attached in their proper locations directly to roller 8 or to its paper covering 26^a. Of course these detached sections of the composition are made high enough to bring about contact by them with the impression-surface carrying the offset and with the offset-transfer rolls described in the next paragraph.

The ink taken up by the composition roller is removed from it by two plain-surfaced metal offset-transfer rollers 27 and 28, rolling in contact with the raised surfaces of the composition roller and having their journals provided with bearings in side frames 29, supported from the main frame upon the journal 30 of a guide 31, hereinafter mentioned. The transfer-rollers are driven from the impression-cylinder by a train of gearing 32, 33, 34, and 35. Of these the first is on the shaft of the impression-cylinder, the second on that of the composition roller, and the other two on the shafts 36 and 37 of the offset-transfer rolls 27 and 28. In order that they may act more efficiently in removing the offset from the composition roller and also be themselves more perfectly cleaned by the offset-web, hereinafter described, I give the rolls 27 and 28 a lengthwise movement by means shown more especially at Figs. 1 and 5 and constructed as follows: Annularly-grooved collars 38 are secured one on each shaft of the rolls, and in the grooves of the two collars I arrange blocks 39, secured together by a cross-bar 40. This cross-bar passes through the lower end of an arm 41 on one end of a rock-

shaft 42, journaled in a bracket 43, projecting from one of the side frames 29. To the other end of the shaft 42 is secured a crank-arm 44, receiving power and motion from the journal of cylinder 6 by the connecting-rod 45 and crank-disk 46 on the cylinder-journal. By this mechanism a short endwise movement is imparted to the offset-transfer rolls at each revolution of the impression-cylinder.

The offset-transfer rolls 27 and 28 are cleaned of their ink by a continuous web of cloth 47, of which the supply-roll is shown at 48 and the wind-up roll at 49. The web passes from roll 48 under the guide 31, thence over the transfer-rolls, and thence around a guide-roller 50, by which it is guided on the wind-up roll. The guides 31 and 50 are both so located as to depress the web below the crowns of the rolls, so that the web is made to act as a wiper, and thus effectually clean the rolls. Both the supply and wind-up rolls 48 and 49 are supported in open-top bearings, so that they can be changed from one bearing to the other, and the bearing of the wind-up roll is slotted vertically, as seen at Fig. 1, to permit the increase in diameter as the winding proceeds. The wind-up roll is practically supported upon roller 50, and as this roller is the actuating means by which the web is moved it is provided with a sprocket-wheel 51, driven by the chain 52 and sprocket-wheel 53 on the journal of cylinder 5, and in order to avoid any slipping of the web I arm the surface of that roller with short sharp pins or points 54, as plainly shown at Figs. 2 and 3. It is also desirable that the cores 55 of the wind-up and supply rolls be similarly armed with points 54, as shown, to insure the turning of the core with the web 48, notwithstanding the friction created between disk 70 on the core and the leather lining 71 of bearing 72.

I also prefer to employ with the offset-transfer rolls and web means for maintaining a yielding pressure on the web as it moves over the rolls in order to insure constant contact and wiping action by the web while the press is in action, as I thus prevent any failure in the wiping which might occur if the proper tension were not maintained on the web or if portions of it were unevenly stretched. These pressure devices are best made of brushes 56, arranged longitudinally above the rolls, so that one may bear on the web on each roll. The brushes are secured to shafts 57 and 58, supported in the frames 29, and each shaft is provided with a controlling-arm, that of shaft 57 being shown at 59 and locked in position by clamping set-screw 60 in bracket 61 and that of shaft 58 being shown at 62 and locked in position by a similar set-screw 63 in side frame 29.

During operation the brushes are in the position shown; but when it is desired to thread the web between the guide and transfer rolls preparatory to starting the web the brushes are released from their holding-screws and

their controlling-arms are turned backward, so as to carry the brushes away from the rolls.

The upper frames 29 are supported while the press is in operation—as, for instance, by the pin 65—but may be turned back to uncover the composition roller whenever necessary. The wiper-web is moved in the direction indicated by arrows and in a direction opposite to the surface movement of the transfer-rolls.

While I have mentioned “composition,” meaning thereby ordinary printers’ composition, as proper material to be used on roller 8 as a means of removing the offset from the impression-cylinder, it will be understood that I use the term as indicative of a class of materials which may be used and not as limiting me to that material, because, obviously, other materials having an affinity for and ability to remove the ink can be used in place of the composition, and wherever through the description and claims the composition roller is mentioned it will be understood that such designation, unless the context prevents, includes the roller; whether it is completely or only partially covered with the composition and also when it is covered with other material which may be equivalent to the composition; nor do I wish to be limited to the use of points or pins 54 on the web rollers and cores, as obviously other means creating friction with the web may be used instead.

I claim—

1. The combination of the impression-cylinder and a composition-covered roller for removing the offset from the cylinder, the same being relatively located so as to normally prevent contact between them, but sufficiently close so that contact can be obtained by raising or projecting the composition surface of the roller, and means for raising the surface of such roller, substantially as specified.

2. The combination of the impression-cylinder and a composition-covered roller for removing the offset from the cylinder, the same being relatively arranged so as to normally prevent contact between them, and a filling for the composition roller whereby portions of the composition covering thereof are raised so as to bring them into contact with the impression-cylinder, substantially as specified.

3. The combination with the slotted roller 8, of a composition covering and its reinforce, one end of the reinforce being made fast to the roll, and the other end being inserted in the slot thereof with tightening means consisting of a rock-shaft journaled in the roller-arms on said shaft adapted to engage the free end of the reinforce, a crank for operating the shaft and means for locking the crank, substantially as specified.

4. The combination with the slotted roller 8 of a composition covering and its reinforce, one end of the reinforce being provided with a retainer 12 adapted to set under and engage the periphery at the slot, means for holding the retainer in engagement, and means for

holding the other end of the reinforce, substantially as specified.

5. The combination with the slotted roller 8 of a composition covering and its reinforce, one end of the reinforce being provided with a retainer 12 adapted to set under and engage the periphery at the slot, means for holding the retainer in engagement, and means acting on the other end of the reinforce and serving both to draw the covering tightly around the roller and to secure it in its tightened condition, substantially as specified.

6. The combination with the slotted roller 8, of a composition covering and its reinforce, one end of the reinforce being made fast to the roller within the slot, and the other end being passed into the slot; with tightening means consisting of a bar attached to the free end of the reinforce, a rock-shaft journaled in the roller having arms engaging said bar, a crank for operating the shaft and a rack adapted to engage and lock said crank and permitting a range of adjustment in the positioning of the crank, substantially as specified.

7. The combination with impression-cylinder, of a composition roller for removing offset from the cylinder, hard-surfaced rollers for transferring the offset from the composition roller to the wiper-web, a wiper-web acting on said transfer-rollers and devices arranged to press the web yieldingly against the transfer-rollers, substantially as specified.

8. The combination with impression-cylinder, of a composition roller for removing offset from the cylinder, hard-surfaced rollers for transferring the offset from the composition roller to the wiper-web, a wiper-web acting on said transfer-rollers, means for guiding the wiper-web past said transfer-rollers and devices for yieldingly pressing the web against the transfer-rollers, and guides for holding the web down on the rollers, substantially as specified.

9. The combination with impression-cylinder, of a composition roller for removing offset from the cylinder, hard-surfaced rollers for transferring the offset from the composition roller to the wiper-web, a wiper-web acting on said transfer-rollers and means for imparting endwise movement to said transfer-rollers, substantially as specified.

10. The combination with impression-cylinder, of a composition roller for removing offset from the cylinder, hard-surfaced rollers for transferring the offset from the composition roller to the wiper-web, a wiper-web acting on said transfer-rollers, means for drawing the web down on the transfer-rollers, and means for imparting an endwise movement to the rollers, substantially as specified.

11. The combination with the impression-cylinder, of a roller covered with composition for removing offset from the cylinder, said roller having those portions of the composition which it is necessary should contact with the cylinder raised above the non-acting portions thereof, substantially as specified.

12. The combination with the impression-cylinder receiving offset from the printed matter of a composition roller for removing such offset, said roller having the acting portions raised above the non-acting portions so that only the former contact with the cylinder, substantially as specified.
13. The combination with an impression-cylinder receiving offset from the printed matter of a composition roller for removing such offset, said roller having the portions of its surface which it is desirable should contact with the cylinder to remove offset raised above the other portions of its surface, substantially as specified.
14. The combination with an impression-cylinder receiving offset from the printed matter, of a roller having portions only of its surface adapted to contact with the cylinder-surface, substantially as specified.
15. The combination with an impression-cylinder adapted to receive offset, of a roll having a surface susceptible to change and which is arranged to remove offset from pre-

determined portions of the surface of the impression-cylinder.

16. The combination with an impression-surface adapted to receive offset; of a transfer-roll and means for causing any desired predetermined portions of the surface of the transfer-roll to remove offset from corresponding contacting portions of the impression-surface.

17. The combination of an impression-surface to receive offset, with means for removing ordinary offset therefrom but leaving "solid" offset thereon.

18. The combination of an impression-cylinder a roll, and a roller contacting therewith to remove offset therefrom, with a wiper-web and brushes mounted on adjustable rocking arms and adapted to yieldingly press the web against the transfer-roll.

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Witnesses:

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H. M. MUNDAY.