

June 16, 1925.

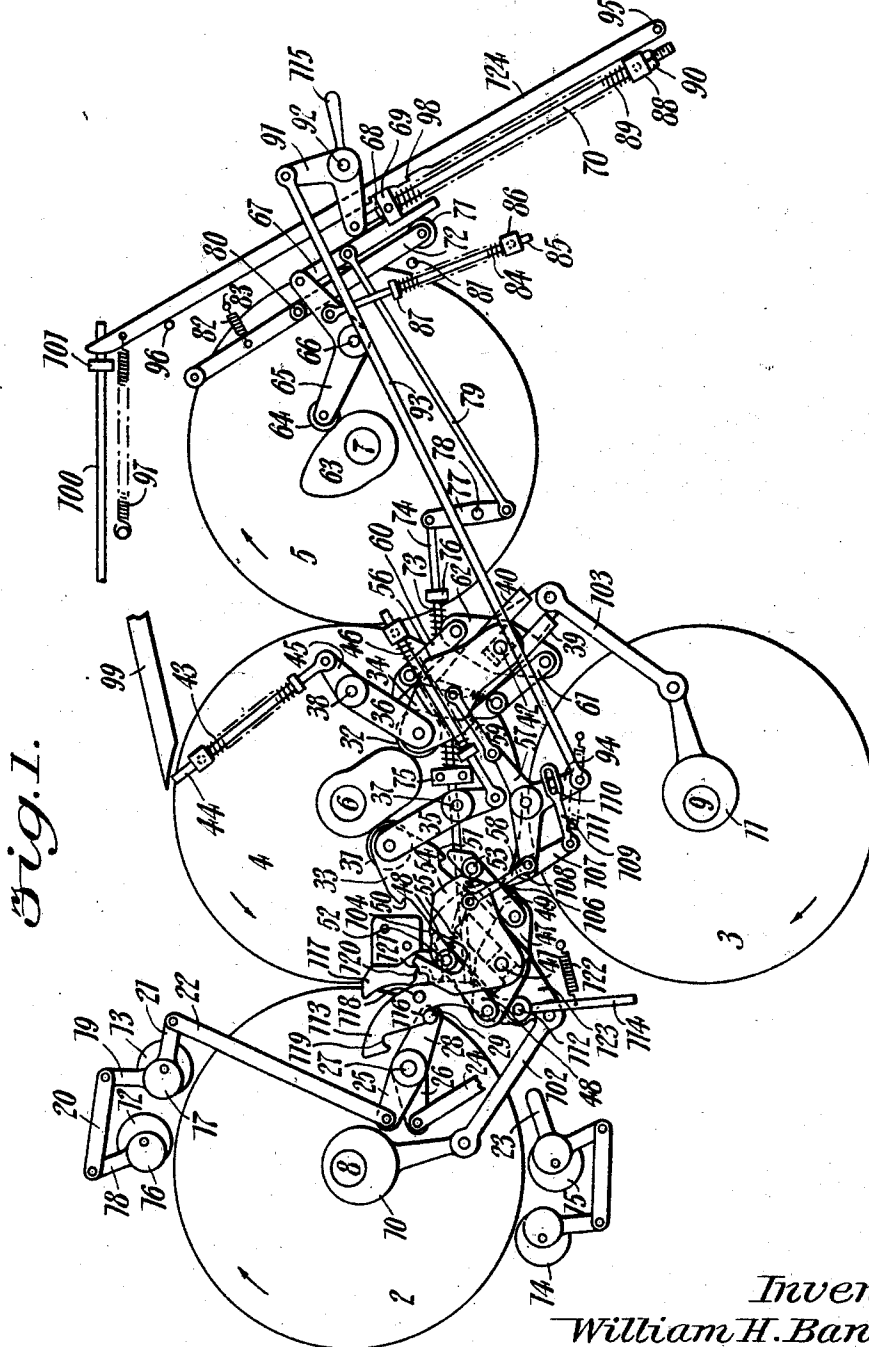
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W. H. BANZETT

PRINTING PRESS TRIPPING MECHANISM

Filed Sept. 11, 1923

3 Sheets-Sheet 1



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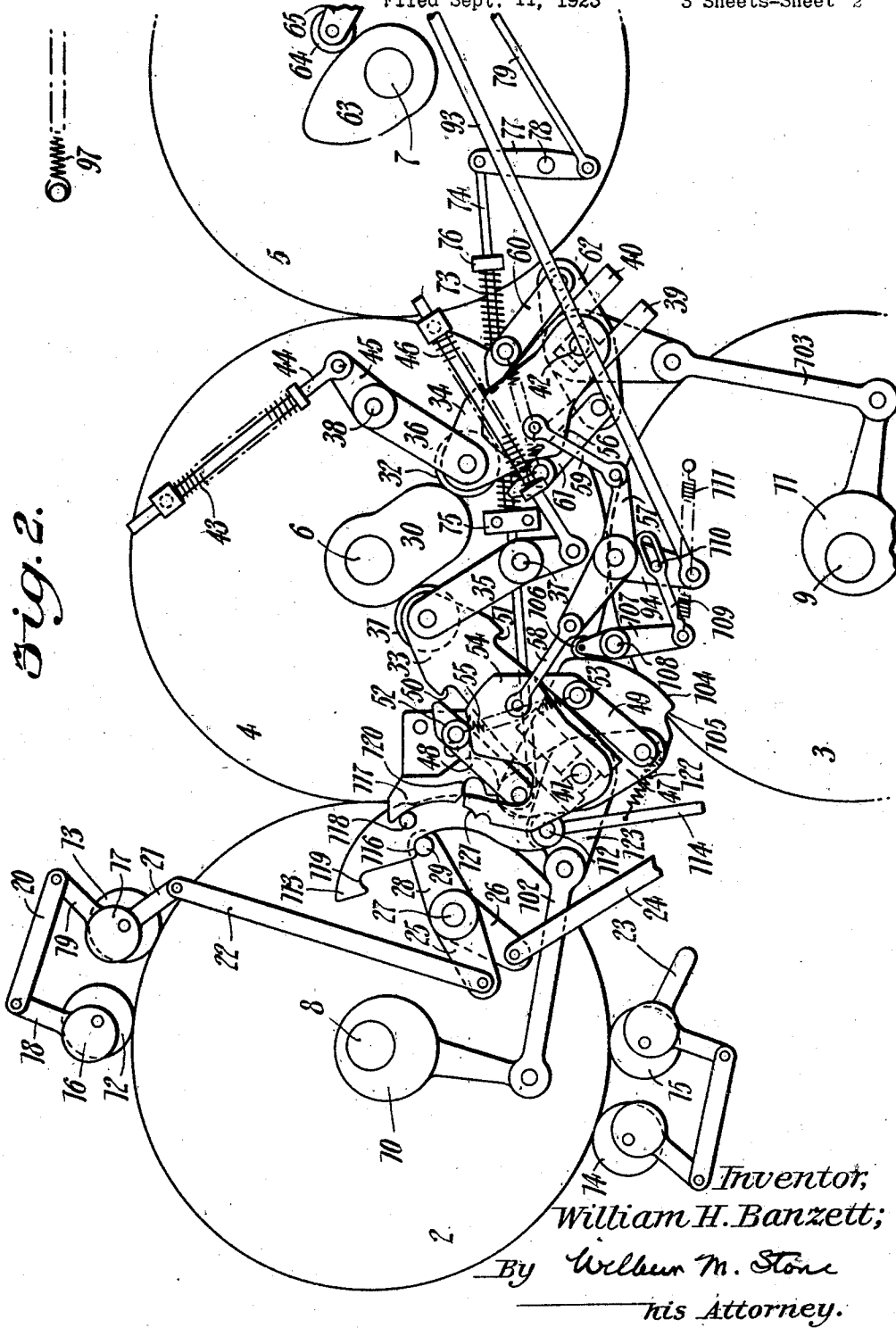
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3 Sheets-Sheet 2



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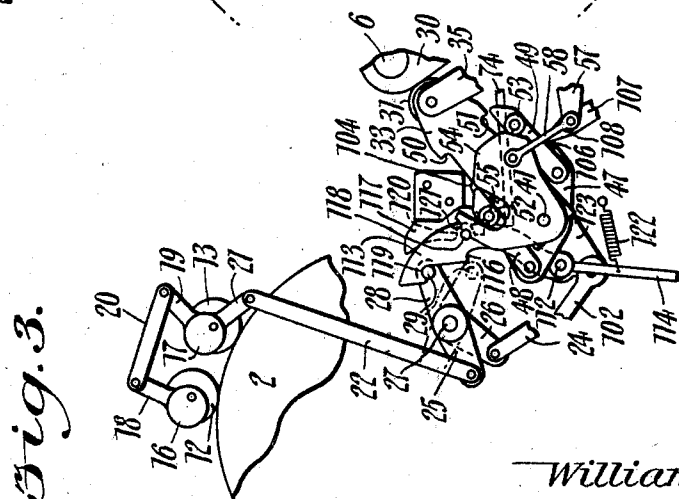
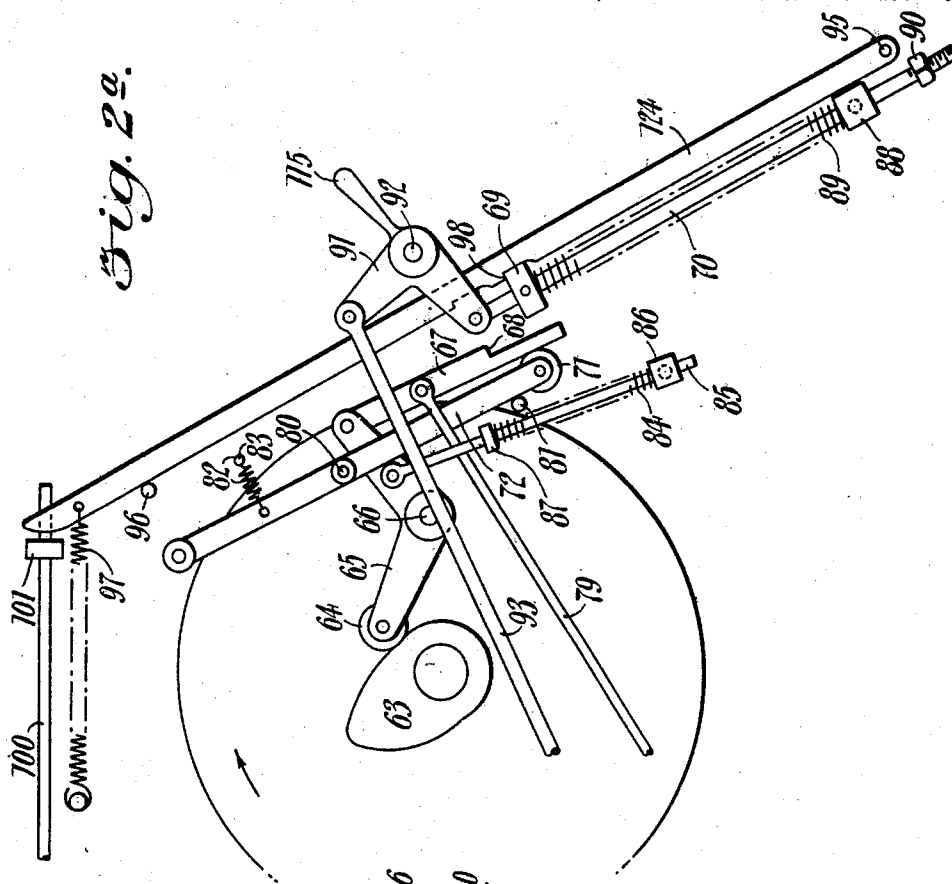
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PRINTING PRESS TRIPPING MECHANISM

Filed Sept. 11, 1923

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

WILLIAM H. BANZETT, OF BERGENFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN LITHOGRAPHIC COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PRINTING-PRESS-TRIPPING MECHANISM.

Application filed September 11, 1923. Serial No. 662,043.

To all whom it may concern:

Be it known that I, WILLIAM H. BANZETT, a citizen of the United States, and a resident of Bergenfield, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Printing-Press-Tripping Mechanisms, of which the following is a specification.

This invention relates to printing press tripping mechanisms, and has for its object to provide a mechanism of the class specified having features of control prompt in response and highly dependable in operation. With these objects in view and others which will appear later herein, my improved mechanism comprises features illustrated in their preferred embodiment in the drawings accompanying this specification, wherein:—

Figure 1 is a side elevation of so much of a printing press as will suffice to show my improvements. Fig. 2 is a side elevation of a portion of what is shown in Fig. 1, with the parts in different relative positions to those shown in Fig. 1. Fig. 2^a is a side elevation of other features shown in Fig. 1, the relative positions of the parts corresponding with the showing of Fig. 2. Fig. 3 is a fragmentary side elevation corresponding with a portion of Fig. 1 but showing the parts in different relative positions. The scale of Figs. 1 and 3 is the same and the scale of Figs. 2 and 2^a is the same but larger than that of Figs. 1 and 3. The drawings are more or less diagrammatic, all framing of the machine being omitted.

The type of press to which I have chosen to apply my improvements is the well-known two-color direct rotary press, wherein form cylinders 2 and 3 may be planographic. These cylinders are inked and dampened by known means, and print against sheets fed onto impression cylinder 4 against said inked cylinders. Cylinder 5 is provided for receiving the sheets in succession after they have been printed upon by cylinders 2, 3. Preferably all four cylinders are the same size.

Devices for throwing design cylinders on and off pressure in sequence have long been known in the art, but the present improvements are particularly efficient in operation and adaptability to the various requirements of such mechanism.

Cylinders 4 and 5 are carried by shafts 6

and 7, respectively, having fixed axes. Form cylinders 2 and 3 are carried by shafts 8 and 9 mounted in eccentrics 10, 11, respectively, whereby said shafts and cylinders may be moved into and out of coacting relation with impression cylinder 4.

Each of cylinders 2 and 3 is provided with inking and dampening means, for convenience shown only in connection with cylinder 2, the inking mechanism for cylinder 3 being in all respects similar to that shown for cylinder 2. Said inking mechanism for cylinder 2 is shown conventionally as ink rollers 12, 13 above, and water or dampening rolls 14, 15 below, eccentrically mounted for movement into and out of coacting relation with said cylinder. Eccentrics 16, 17 of rolls 12, 13 have their arms 18, 19, respectively, connected by link 20, and eccentric 17 is provided with arm 21 connected by link 22 with means for oscillating said eccentrics in unison. Water rolls 14, 15 have similar eccentrics similarly mounted and are preferably operated by hand lever 23. Form cylinder 3 is similarly equipped with ink and water rolls, omitted in the interest of clarity, the ink rolls of which are similarly operated through link 24. Said links 22 and 24 are pivotally connected with arms 25, 26, respectively, fixed to rock shaft 27, as is also arm 28. Said arm 28 has pin 29 for engagement with means for rocking said arms at predetermined time and which means will be described later herein.

Cam 30, fixed to impression cylinder shaft 6, engages successively, rolls 31, 32 pivotally mounted in the upper ends of trip blocks 33, 34, respectively. The upper ends of said blocks are guided and said rolls are constrained to engagement with said cam by levers 35, 36, respectively, oscillatable about fixed axes at 37, 38. The free ends of said levers are pivotally connected with said trip blocks coaxially with said rolls, respectively. Roll 32 is urged to engagement with cam 30 by spring 43 on rod 44, said rod being pivoted to ear 45 of lever 36. Roll 31 is similarly urged toward said cam by spring 46. The lower ends of trip blocks 33, 34 are provided with feet, as 39, 40, of block 34, between which are engaged swivel blocks pivoted on fixed studs 41, 42, respectively. Pivoted on stud 41 is rocking yoke 47, having pivoted at opposite ends thereof, respec-

tively, pawls 48, 49. Said pawls are adapted for engagement, one at a time, with opposite ears 50, 51, respectively, of trip block 33 as that block is reciprocated by cam 30. Said pawls carry rolls 52, 53, respectively, for engagement with opposite faces, respectively, of cam 54 oscillatably mounted on stud 41, and said rolls are urged to engage said cam by pull spring 55 connecting said pawls. Thus far the described appurtenances of trip block 33 are the same as those for trip block 34, and the foregoing description of one will serve for both.

Cams 54, 56 are connected with opposite arms of rocker 57 by links 58, 59, respectively, so that when said rocker is oscillated in anti-clockwise direction to the position of Fig. 1, said cams will be moved in clockwise direction to engage the rolls of pawls 49, 60 and move those pawls to the right, out of engaging relations with the trip blocks, respectively. Also this movement of cams 54, 56 permits opposite pawls 48, 61 to be engaged by said trip blocks, as those trip blocks are forced downwardly in succession by cam 30, whereby rocking yokes 47, 62 are swung in anti-clockwise direction and, by their connections with the eccentrics of cylinders 2, 3, throw those cylinders off pressure, away from impression cylinder 4. see Fig. 1.

On the other hand, if rocker 57 is now oscillated in clockwise direction, cams 54, 56 will be oscillated in anti-clockwise direction, thereby permitting pawls 49, 60 to swing into engaging positions with their respective trip blocks, and forcing pawls 48, 61 to their inoperative positions, Fig. 2. Then, upon the rotation of cam 30, trip blocks 33, 34 will successively engage pawls 48, 61 and, through the described connections, oscillate the eccentrics of cylinders 2, 3 and throw those cylinders on pressure, against impression cylinder 4. It will be noted that, as shown in Fig. 2, when cylinders 2, 3 are on pressure, the crank members of yokes 47, 62 and their links 102, 103, respectively, which connect them with the cylinder eccentrics, are in locked toggle relation, the yoke axis and the two pivot connections of the link being in one line. Said cylinder eccentrics are thereby locked and the several cylinders maintained in operative relation, against any tendency to displacement.

Also, when said cylinders are off pressure, locking means are provided for maintaining cylinder 2 particularly, in its off pressure relation to cylinder 4. This device is as follows: Fixed to yoke 47 is cam 104, best seen in Fig. 2, and the major portion of the operative face of which is concentric with stud 41 on which said yoke swings. The lower portion of said cam has lock notch 105 for the reception of roll 106 mounted in the upper end of lever 107. Said lever is

pivotaly mounted on fixed stud 108 and has its lower end connected by link 109 with pin 110 on the downreaching arm of rocker 57. Said link has a loose connection with said pin, which permits roll 106 to be urged into engagement with lock notch 105 of cam 104, under the influence of pull spring 111, when the parts are in the position of Fig. 1, thereby holding cam 104 and yoke 47 against displacement. When rocker 57 starts to move in clockwise direction, roll 106 is lifted from locking engagement with the notch in cam 104 and that cam and yoke 47 are free to swing about stud 41. This locking device is preferably omitted from yoke 62 as the weight of cylinder 3 is sufficient to hold it in off pressure position.

For actuating rocker 57 in clockwise direction, to throw cylinders 2, 3 on pressure, the following described mechanism is provided: To some convenient shaft, rotating synchronously with the cylinder shafts, as for instance, shaft 7, is fixed cam 63 in operative contact with roll 64 of bell crank 65 pivoted at 66, said pivot having a fixed axis. One arm of said bell crank has pivotally attached thereto latch 67 having notch 68 thereof adapted for engagement with collar 69 of thrust rod 70. Roll 64 is urged to engage cam 63 by spring 84 about spring rod 85 and which rod is pivotally attached at one end thereof to bell crank 65 and the other end thereof slides in fixed block 86. Said spring 84 abuts between block 86 and collar 87 fixed to rod 85. When the press is running idle, latch 67 is swung to the left against roll 71 in the lower end of hand lever 72 and is constantly urged in that direction by spring 73 about rod 74, abutting between fixed block 75 and block 76 fixed to said rod. Rod 74 is pivoted at its right hand end to rock arm 77 turning on fixed pin 78, and the other end of said rock arm is connected by link 79 with latch 67. Hand lever 72 turns on fixed pivot 80 and is urged toward stop pin 81 by pull spring 82 connecting the upper portion of said lever with fixed pin 83. Latch 67 is then free to move up and down under the influence of cam 63, without engaging collar 69.

Thrust rod 70, to which said collar is fixed, is guided at its lower end by fixed block 88 and spring 89 abuts between said block and collar 69 for urging said rod upwardly. Upward movement of said rod is adjustably limited by nut 90, near the lower end thereof, engaging fixed block 88. The upper end of said rod is pivoted to one arm of bell crank 91 turning on fixed pivot 92. The other arm of said bell crank is connected by link 93 with depending arm 94 or rocker 57. Adjacent collar 69 of thrust rod 70 is latch bar 124 pivoted at its lower end on fixed pivot 95. The upper end of said latch bar is urged toward said collar and stop

Pin 96 by pull spring 97. Said latch bar is provided with latch notch 98, adapted for engaging collar 69 and retaining said collar in its lower position, Fig. 2^a, when said collar is depressed by latch 67. For thus setting collar 69 under latch notch 98, hand lever 72 is swung in anti-clockwise direction, whereby its roll 71 swings latch 67 to the right, and as cam 63 swings bell crank 65 in clockwise direction, notch 68 of latch 67 engages collar 69 and forces it downwardly to engagement with latch notch 98, whereby said collar is locked in its lower position. This forcing of said collar downwardly swings bell crank 91 in anti-clockwise direction and through link 93 turns rocker 57 in clockwise direction from the position of Fig. 1 to that of Fig. 2, as already described. Said collar 69 is released from latch notch 98 automatically, for throwing form cylinders 2, 3 off pressure, when no sheet is fed from board 99 to the impression cylinder, by known means, not shown, but acting upon feeder trip rod 100, to thrust that rod to the right a sufficient distance for causing its collar 101 to engage and swing the upper end of latch bar 124 far enough to release collar 69. Thereupon spring 89 forces rod 70 upwardly and, through the described connections, rocker 57 is shifted to swing cam 54, 56 which govern the trip block pawls. Bell crank 91 may also be provided with handle 115 for swinging said crank to throw cylinders 2, 3 on pressure when desired without regard to timing by cam 63.

For actuating arms 25, 26, 28 for lifting the ink rolls away from cylinders 2 and 3, the following means are provided: Fixed on pivot 112 in the crank member 123 of yoke 47 is throw-back latch 113, which is constantly urged to the left by pull spring 122, and which may be swung to the right by means of handle 114 also fixed to pivot 112. When cylinders 2 and 3 are on pressure and ink rolls, as 12, 13, in contact with cylinder 2, Fig. 2, the right hand end of arm 28 is up and its pin 29 is engaged by hook 116 of latch 113. For holding said latch to its duty in engagement with pin 29, fixed cam 117 is provided. The left hand curved face of said cam engages pin 118 of latch 113 and, as said latch moves downwardly to the position of Fig. 1, pin 118 follows said cam face, and hook 116 in engagement with pin 29 swings arms 25, 26, 28 in clockwise direction thereby lifting the ink rolls free of the cylinders simultaneously with the separating of the cylinders. If now it is desired to ink up cylinders 2, 3 while they are off pressure, handle 114 is swung to the left, Fig. 3, whereby throw-back latch 113 is swung to the right, free of pin 29. Cam 117 is provided with pocket 120 at its lower end for the reception of pin 118 of latch 113 when the latch is thrown

to the right as just described. Said pin 29, which preferably projects from arm 28 sufficiently to serve as a handle, is then pushed upwardly thereby rocking arm 28 to bring rolls 12, 13, for instance, into contact with cylinder 2, Fig. 3. Hook 119 at the upper end of latch 113 may serve as a limiting stop for pin handle 29. When the cylinders are sufficiently inked handle 29 is pressed down to lift said ink rolls free of the cylinder. After cylinders 2, 3 are thrown on pressure said ink rolls may again be brought into engagement with their respective cylinders by moving handle 29 upwardly to the position of Fig. 2. While latch 113 is normally urged to the left by spring 122, to insure the exit of its pin 118 from pocket 120 under cam 117, before said latch is moved upwardly with the swing of yoke 47 from the position of Fig. 3 to that of Fig. 2, cam 54 is provided at its left hand portion with horn 121 adapted for engaging said pin 118 and pushing it to the left ready to rise along the face of cam 117.

To prevent the operation of latch 67 in case arm 28 has not been moved to its lower position, shown in dotted lines in Fig. 3, the left hand end of rod 74 abuts against throw-back latch 113 when that latch is swung to the right, Fig. 3, and the pressure of pin 29 in hook 119 of said latch will lock said latch and rod 74 against movement to the left until arm 28 is swung down to move said pin free of hook 119.

I claim:

1. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of a rocking yoke, pawls pivotally mounted in opposite ends respectively of said yoke, a trip block mounted for reciprocation between said pawls and having means for engaging said pawls for rocking said yoke, a movable cam in coacting relation with said pawls, said cam being adapted for governing the operative relation of said pawls and trip block, means for urging said pawls to engagement with said cam and trip block, means for reciprocating said trip block, means operatively connecting said yoke and said eccentric bearings, and means for actuating said cam.

2. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of a rocking yoke, pawls pivotally mounted in opposite ends respectively of said yoke, a trip block mounted for reciprocation between said pawls and having means for engaging said pawls for rocking said yoke, an oscillatable cam in coacting relation with said pawls, said cam being adapted for releasing said pawls one at a time for en-

gagement by said trip block, means for urging said pawls to engagement with said cam and trip block, means for reciprocating said trip block, means operatively connecting said yoke and said eccentric bearings, and means for oscillating said cam.

3. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of a rocking yoke, means for actuating said yoke including an oscillatable cam, means operatively connecting said yoke and said eccentric bearings, means for oscillating said cam, an ink roll mounted in eccentric bearings for movement toward and from the form cylinder, a throw-back latch pivotally mounted on said rocking yoke, means operatively connecting said ink roll and latch for moving said roll away from said form cylinder, means carried by said oscillatable cam for throwing said latch into operative relation with said ink roll connecting means, a fixed cam for maintaining said latch in operative relation with said ink roll connecting means, and means on said latch for engagement with said fixed cam and with said oscillatable cam.

4. In tripping mechanism for a printing press in which two form cylinders are mounted in eccentric bearings for movement respectively toward and from an impression cylinder, the combination of independent means for actuating the eccentric bearings of each form cylinder, a rocker operatively connected with both of the eccentric bearings actuating means, means including a rocking yoke for locking the eccentric bearings of one of said cylinders for holding said cylinder on pressure, and means actuated by said rocker for releasing said eccentric bearing locking means.

5. In tripping mechanism for a printing press in which two form cylinders are mounted in eccentric bearings for movement respectively toward and from an impression cylinder, the combination of independent means including a rocking yoke for actuating the eccentric bearings of each form cylinder, a rocker operatively connected with both of the eccentric bearing actuating means, automatic means timed with said cylinders for actuating said rocker for throwing said cylinders on pressure, and hand actuated means for operatively connecting said automatic means with said cylinder throwing means.

6. In tripping mechanism for a printing press in which two form cylinders are mounted in eccentric bearings for movement respectively toward and from an impression cylinder, the combination of independent means for actuating the eccentric bearings of each form cylinder, a rocker operatively connected with both of the ec-

centric bearing actuating means, automatic means timed with said cylinders for actuating said rocker for throwing said cylinders on pressure, hand actuated means for operatively connecting said automatic means with said cylinder throwing means, and hand means for actuating said rocker, independent of said automatic timed means.

7. In tripping mechanism for a printing press in which two form cylinders are mounted in eccentric bearings for movement respectively toward and from an impression cylinder, means for independently actuating the eccentric bearings of each of said form cylinders including in combination a rocking yoke, pawls pivotally mounted in opposite ends respectively of said yoke, a trip block mounted for reciprocation between said pawls and having means for engaging said pawls for rocking said yoke, a movable cam in coacting relation with said pawls, said cam being adapted for governing the operative relation of said pawls and trip block, means for urging said pawls to engagement with said cam and trip block, means operatively connecting each of said yokes with each form cylinder eccentric bearings respectively, means for successively actuating said trip blocks, a rocker operatively connected with said movable cams, automatic means timed with said cylinders for actuating said rocker for throwing said cylinders on pressure, and hand actuated means for operatively connecting said automatic means with said cylinder throwing means.

8. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, means operatively connecting said rocker and said thrust rod, and means timed with the form cylinder for causing said thrust rod to engage said latch bar latch.

9. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, means operatively connecting said rocker and said thrust rod, means timed with the form cylinder for causing said thrust rod to engage said latch bar

latch, and hand actuated means for moving the previously recited means into operative position.

10. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means including a rocking yoke for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar a thrust rod having means for engagement with said latch bar latch, a bell crank one arm of which is operatively connected with said rocker and the other arm with said thrust rod, a second bell crank, means timed with the form cylinder for rocking said second bell crank, and a latch pivoted to one arm of said second bell crank, said second bell crank latch being adapted for moving said thrust rod into engagement with said latch bar.

11. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means including a rocking yoke for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, a bell crank one arm of which is operatively connected with said rocker and the other arm with said thrust rod, a second bell crank, means timed with the form cylinder for rocking said second bell crank, a latch pivoted to one arm of said second bell crank, said second bell crank latch being adapted for moving said thrust rod into engagement with said latch bar, and hand actuated means for swinging said second bell crank latch into engaging relation with said latch bar.

12. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, means operatively connecting said rocker and said thrust rod, means timed with the form cylinder for causing said thrust rod to engage said latch bar latch, and means for releasing said latch bar from engagement with said thrust rod.

13. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward

and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, means operatively connecting said rocker and said thrust rod, means timed with the form cylinder for causing said thrust rod to engage said latch bar latch, hand actuated means for moving the previously recited means into operative position, and means for releasing said latch bar from engagement with said thrust rod.

14. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocker operatively connected with the eccentric bearing actuating means, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, means operatively connecting said rocker and said thrust rod, means timed with the form cylinder for causing said thrust rod to engage said latch bar latch, and means governed by the absence of a sheet on the impression cylinder for releasing said latch bar from engagement with said thrust rod.

15. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rocking yoke operatively connected with the eccentric bearing actuating means, a throw-back latch pivoted to said rocking yoke, an oscillatable latch bar, a latch on said latch bar, a thrust rod having means for engagement with said latch bar latch, a rocker operatively connected with the eccentric bearing actuating means, a bell crank one arm of which is operatively connected with said rocker and the other arm with said thrust rod, a second bell crank, means timed with the form cylinder for rocking said second bell crank, a latch pivoted to one arm of said second bell crank, said second bell crank latch being adapted for moving said thrust rod into engagement with said latch bar, and means governed by the presence of the throw-back latch in inoperative position for holding said second bell crank latch out of engaging relation with said thrust rod.

16. In tripping mechanism for a printing press in which a form cylinder is mounted in eccentric bearings for movement toward and from an impression cylinder, the combination of means for actuating the eccentric bearings of said form cylinder, a rock-

ing yoke operatively connected with the eccentric bearings actuating means, a throw-back latch pivoted to said rocking yoke, an oscillatable latch bar, a latch on said latch
5 bar, a thrust rod having means for engagement with said latch bar latch, a rocker operatively connected with the eccentric bearing actuating means, a bell crank one arm of which
10 is operatively connected with said rocker and the other arm with said thrust rod, a second bell crank, means timed with the form cylinder for rocking said second bell crank, a latch pivoted to one arm of said second bell crank, said second bell crank latch being

adapted for moving said thrust rod into engagement with said latch bar, hand actuated
15 means for swinging said second bell crank latch into engaging relation with said thrust rod, means governed by the presence of the throw-back latch in inoperative position for
20 holding said second bell crank latch out of engaging relation with said thrust rod, and means for releasing said latch bar from engagement with said thrust rod.

In witness whereof, I hereby affix my signature this 7th day of September, 1923.

WILLIAM H. BANZETT.