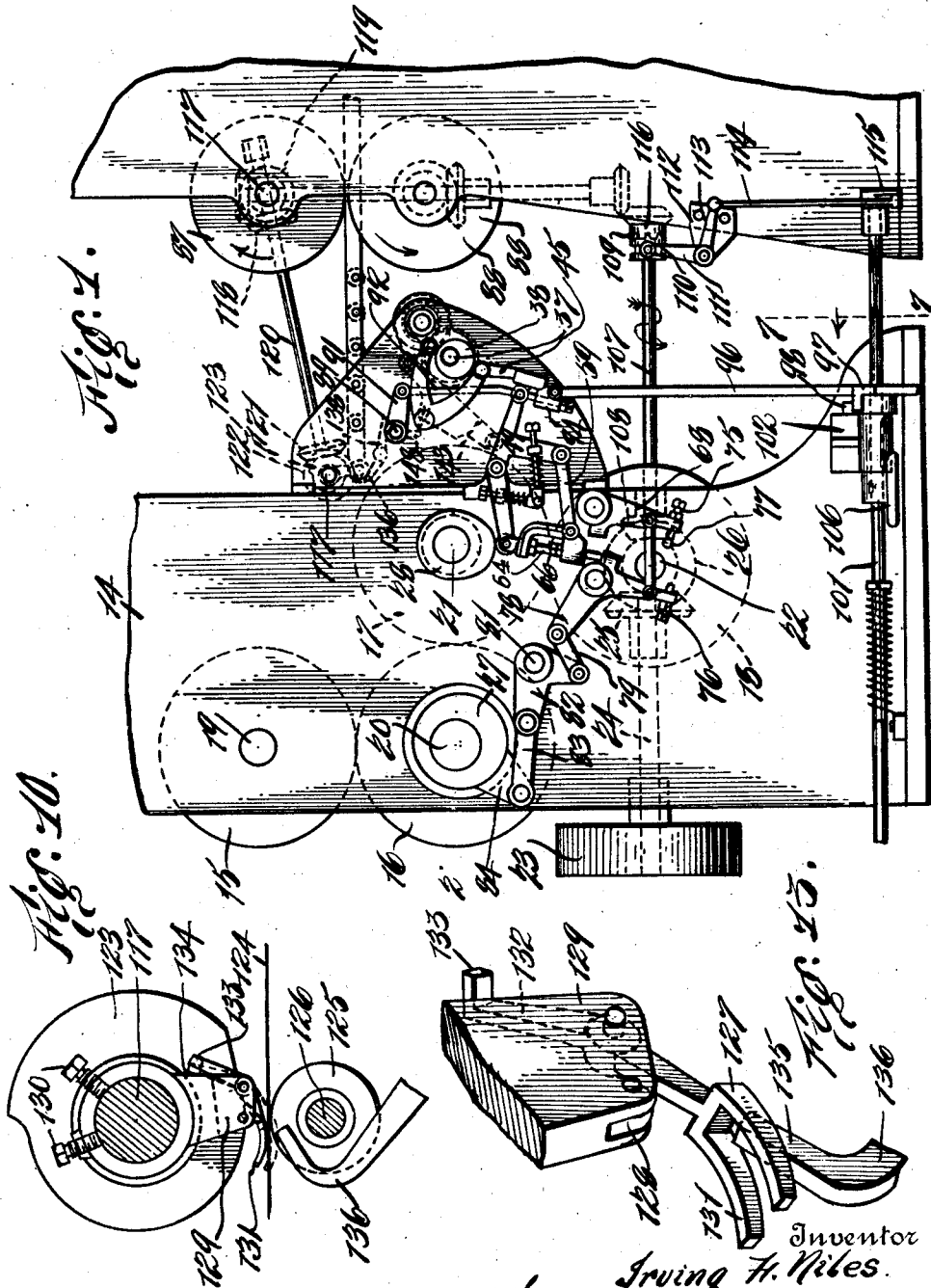


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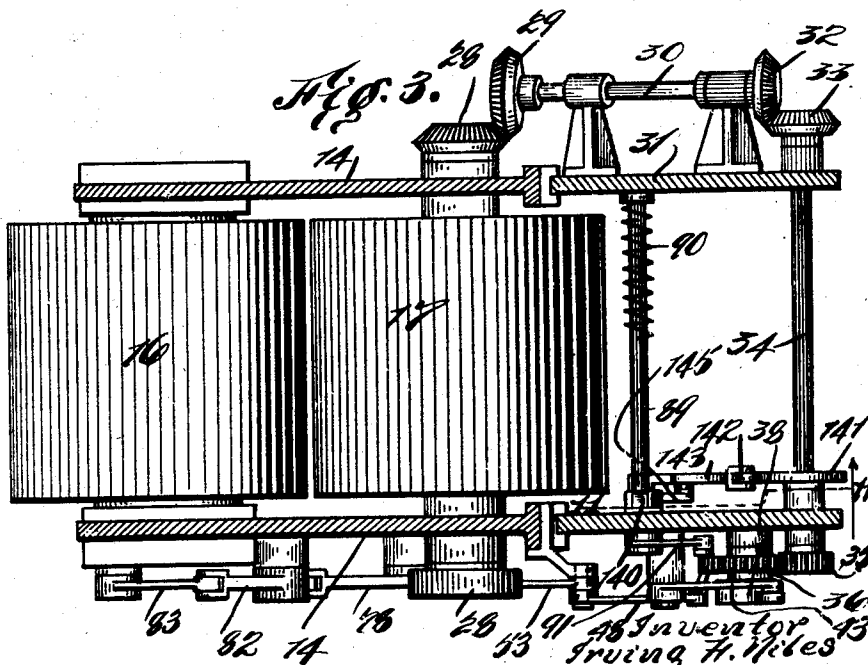
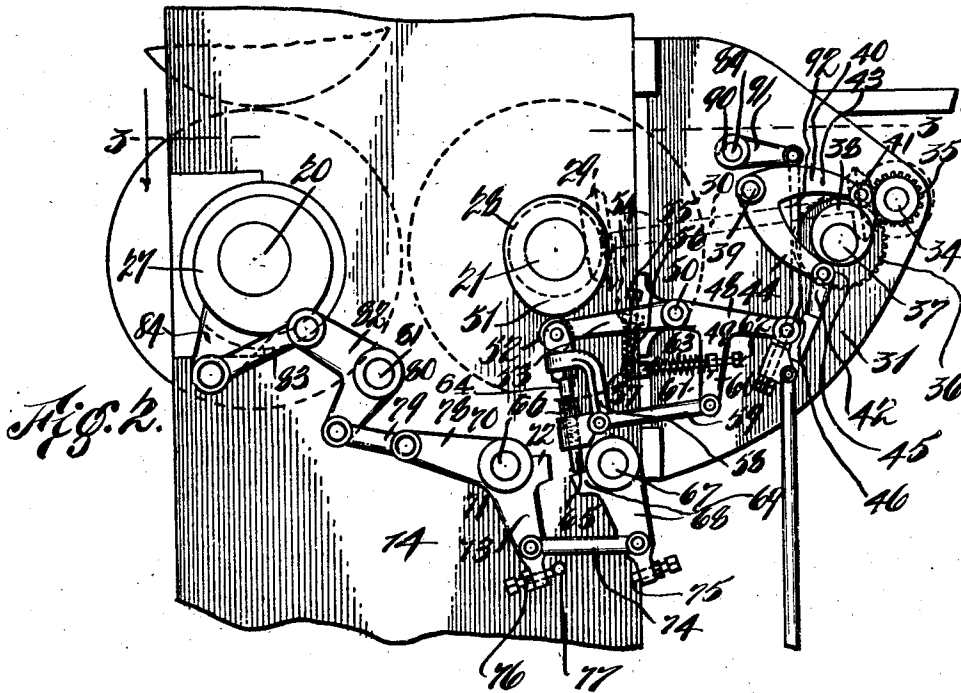
Patented Oct. 19, 1920.
4 SHEETS—SHEET 1.



Inventor
Irving H. Niles.
By his Attorney
Philip Leitch

1,355,844.

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 4 SHEETS—SHEET 2.



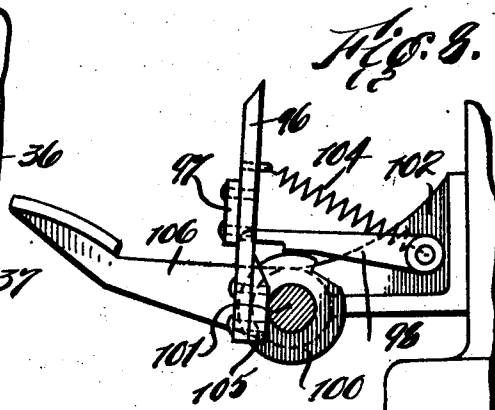
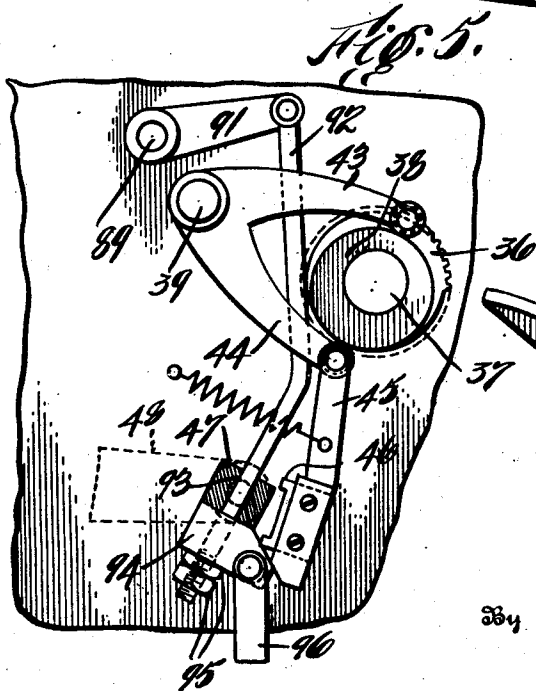
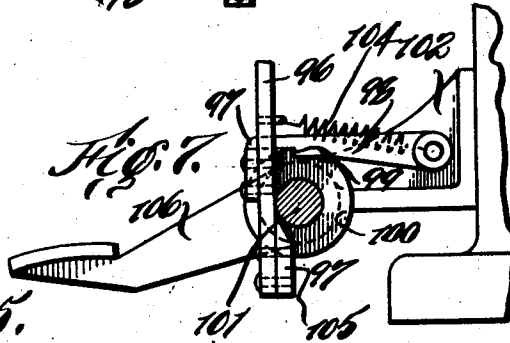
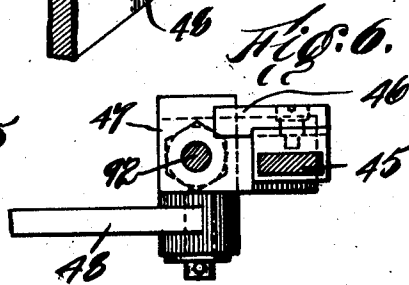
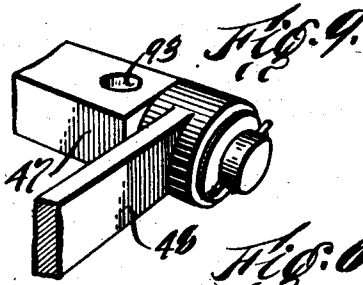
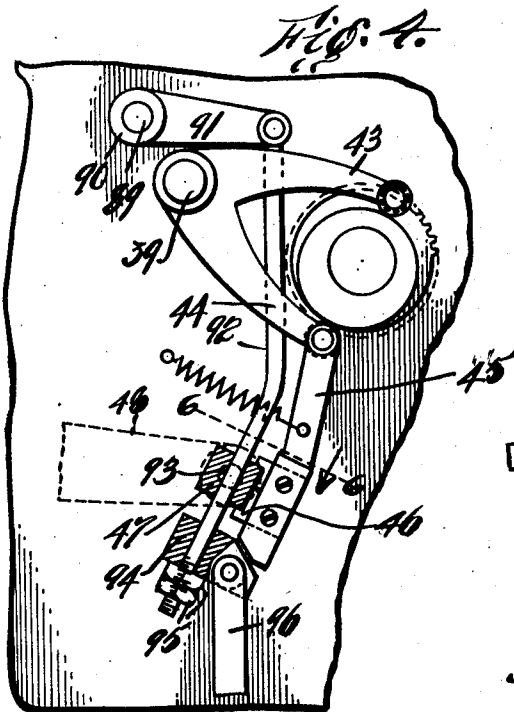
Inventor
 Irving H. Niles

By his Attorney
 Philip B. Beck

1,355,844.

Patented Oct. 19, 1920.

4 SHEETS—SHEET 3.



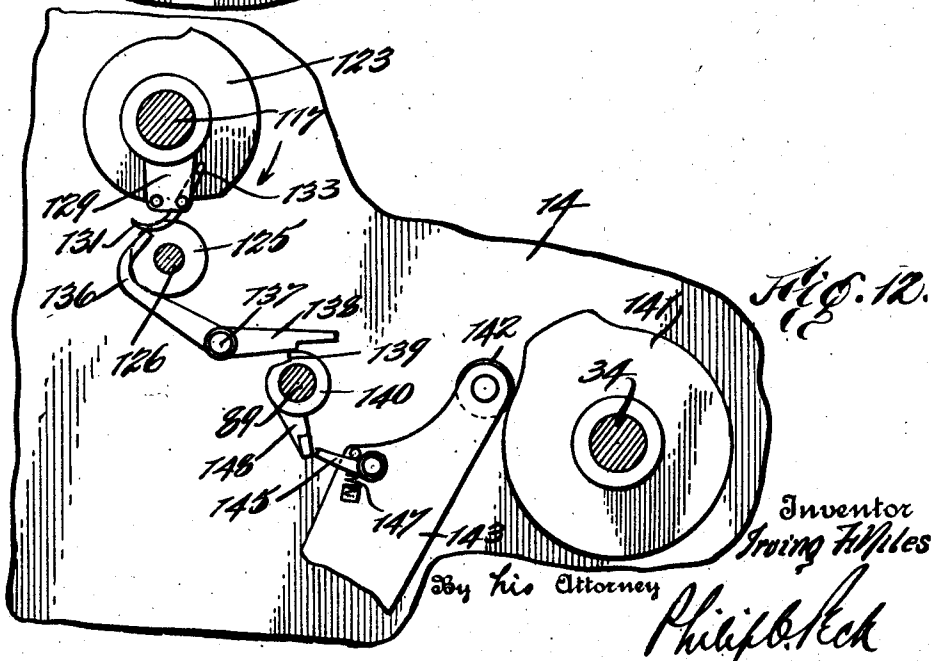
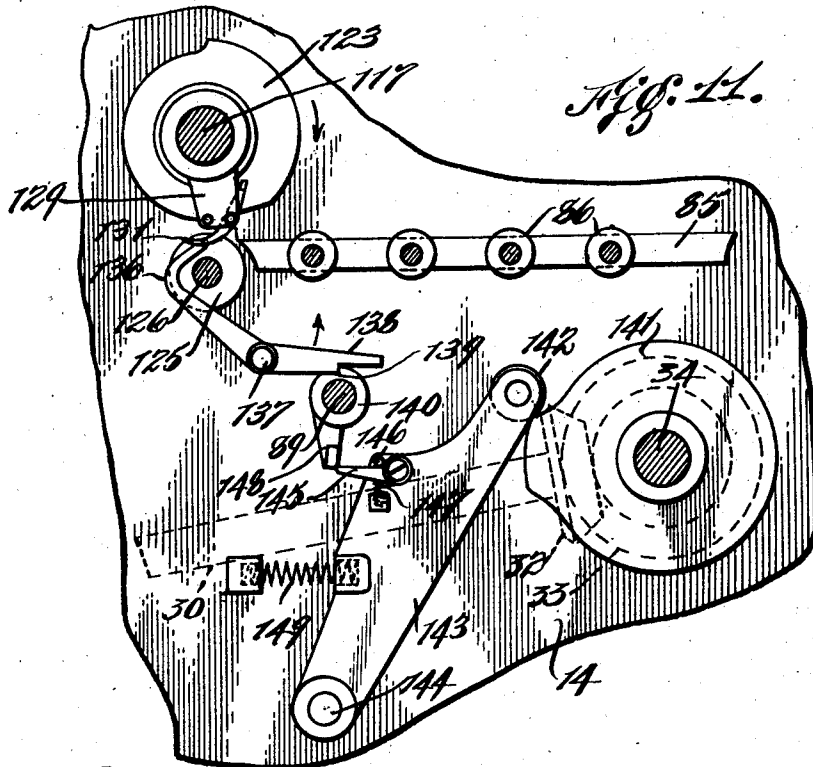
Inventor
 Irving H. Niles

By His Attorney
 Philip Beck

I. F. NILES.
 PRINTING PRESS.
 APPLICATION FILED JUNE 25, 1917.

1,355,844.

Patented Oct. 19, 1920.
 4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

IRVING F. NILES, OF LAKEWOOD, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRINTING-PRESS.

1,355,844.

Specification of Letters Patent.

Patented Oct. 19, 1920.

Application filed June 25, 1917. Serial No. 176,695.

To all whom it may concern:

Be it known that I, IRVING F. NILES, a citizen of the United States, and a resident of Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, reference being made to the accompanying drawings, forming a part thereof.

My invention relates to printing-presses, and the invention is embodied in a rotary press in which there are improved devices for separating the printing or other coacting members alternately during the successive cycles of operation of the press, such alternate throw-off and throw-on mechanism being actuated automatically during the operation of the press, and such devices are combined with means for automatically throwing-off the impression in case of failure of feed of the stock or other impression-receiving material to the press.

My improvements are particularly advantageous when used in printing-machines built for use for color work on cardboard where it becomes desirable and essential to the proper operation of the press to run "slip" sheets between each printed sheet to prevent the colors from off-setting, the pile of stock that is being fed consisting of alternate sheets of cardboard and of waste or "slip" sheets, such sheets being customarily of thin paper. In such printing-presses it is necessary to throw-off the impression for each revolution without stopping the press in order to avoid printing on such alternate "slip" sheets, and I have combined with my improvements in such printing-presses automatic devices for throwing off the impression and stopping the feed in case of the absence of a sheet on the feed table.

The accompanying drawings show the embodiment of my invention in a three cylinder "off-set" press, the same serving to fully explain the invention, which is not restricted, however, to any particular form of rotary presses, since my invention is, of course equally applicable to a two cylinder press.

In the accompanying drawings, Figure 1 is a side elevation illustrating the throw-out mechanism as applied to an "off-set" press;

Fig. 2 is an enlarged fragmentary side elevation illustrating the throw-out mechanism in another position;

Fig. 3 is a sectional plan view the section being taken on a line 3—3 in Fig. 2;

Fig. 4 is an enlarged detail view partly in section, illustrating the releasable connection between the elements for alternately moving the transfer-cylinder in and out of engagement with the impression cylinder;

Fig. 5 is a similar view illustrating the mechanism for temporarily disconnecting the transfer-cylinder shifting elements in the event of the failure of a sheet to feed;

Fig. 6 is an enlarged detail sectional plan view, the section being taken on a line 6—6 in Fig. 4;

Fig. 7 is an enlarged sectional view, the section being taken on a line 7—7 in Fig. 1 illustrating the latch mechanism to lock the clutch shifting spring actuated shaft;

Fig. 8 is a view similar to Fig. 7 illustrating the latch as released by the action of the mechanism illustrated in Fig. 5;

Fig. 9 is a perspective view of the outer end of the lever arm which actuated the element for alternately operating the toggle which shifts the transfer-cylinder, and also the block carried thereby;

Fig. 10 is an enlarged detail view of one form of latch throwing off mechanism to move the transfer-cylinder off impression should a sheet fail to feed;

Fig. 11 is an enlarged sectional view, the section being taken on a line 11—11 of Fig. 3 showing the latch restoring mechanism, the latch being held in its locked position;

Fig. 12 is a view similar to Fig. 11, the latch being shown in its released position; and

Fig. 13 is an enlarged perspective view of the sheet-detector which throws off the latch should a sheet fail to feed.

Similar numerals refer to similar parts throughout the several figures.

Referring more particularly to Fig. 1, the frame 14 supports the bearings for the form-cylinder 15, the transfer-cylinder 16, the impression-cylinder 17, and the delivery-cylinder 18, said cylinders being mounted on the shafts 19, 20, 21 and 22 respectively. The cylinders are so constructed and arranged in the frame 14 that the transfer-cylinder 16 forming the printing couple with the impression-cylinder 17, receives its design from the form-cylinder 15. The respective cylinders have each fastened there-

to suitable gears whose pitch-diameters coincide with the peripheries of the respective cylinders. These gears intermesh and form the driving mechanism to secure the proper rotation for the cylinders and for their associated devices. The power is derived from any suitable source through the pulley 23 mounted on the drive-shaft 24 through the bevel-gears 25 and 26 respectively mounted on the shaft 24 and delivery-cylinder shaft 22. Since these are common forms of printing-press construction and are well known in the art, they are not shown in detail in the drawings.

The mechanism which I have devised in the present embodiment for throwing-off the impression during one cycle of operation and restoring the impression for the next cycle or revolution of the press, and alternately thereafter during the rotation of the press is shown and described as follows: The transfer-cylinder 16 is moved from and into printing relation with the impression-cylinder 17 by having its shaft 20 mounted at both ends in the eccentric bearings 27 (only one being shown). The impression-cylinder shaft 21 carries the miter-gear 28 meshing with the miter-gear 29 mounted on the shaft 30 journaled in the brackets 31 secured to the frame 14. The shaft 30 through the miter-gears 32 and 33 drives the shaft 34 so that the latter makes one revolution to each revolution of the impression-cylinder 17. The shaft 34 carries the pinion 35 meshing with the gear 36 of twice the diameter of the pinion 35, which gear 36 is mounted on the stub-shaft 37 fastened to the frame 14; the shaft 37 also carries the cam 38 which, through the gear 36, makes a single revolution to two revolutions of the impression-cylinder 17. Pivottally mounted on the stud 39 in the frame 14 is the forked lever 40 adapted to be oscillated by the cam 38 coacting with the rollers 41 and 42 carried on the upper and lower arms 43 and 44 respectively of the lever 40. To the lever arm 44 is pivottally secured the rod 45 which carries near its lower end the U-shaped block 46 adapted to engage with the rectangular block 47 secured to the end of the arm 48 of the bell-crank lever 49 pivottally secured to the stud 50 in the frame 14, as shown in Figs. 1 and 2. The oscillation of the lever 40 by the cam 38 raises and lowers the arm 48 which operates to shift the position of automatic throw-off and throw-on mechanism which I will now describe, such mechanism operating to throw off impression on one revolution of the impression cylinder 17 and to restore the impression for the next revolution.

The impression-cylinder shaft 21 carries the cam 51 which engages the roller 52 on the arm 53 pivoted on the stud 50 in the frame 14. The bracket 54 on the arm 53

slidably carries the rod 55 about which is coiled the spring 56 which serves to keep the roller 52 in engagement with the periphery of the cam 51. The lower end of the rod 56 is pivottally secured to the frame 14 by the pin 57. The arm 53 also carries the depending bracket 58 which is pivottally connected by the link 59 to the depending arm 60 projecting downwardly from the arm 48. The arm 60 carries the bracket 61 through which the rod 62 passes, and its inner end is pivottally secured to the pin 57. The spring 63 coiled about the rod 62 serves to normally hold the arm 48 in its upward position. The bracket 58 slidably supports the rod 64 with its lower end 65 projecting below the bracket 58, the length of which end 65 may be regulated by adjusting nuts 66. The cam 38 through the forked lever 40 acts to shift the above-mentioned parts connected to the bell-crank lever 49 alternately from the position shown in Fig. 1 to that shown in Fig. 2 to secure the alternate throw-off and throw-on of the impression through the movement of the transfer-cylinder 16 in its eccentric bearings 27. Pivottally secured to the stud 67 is the depending arm 68 carrying the shoulder 69 faced with a hardened plate and adapted to be engaged by the end 65 of the rod 64 as shown in Fig. 2. Adjacent to the stud 67 is the stud 70 upon which is pivottally mounted the bell-crank lever 71 which carries the shoulder 72 of similar construction and function as the shoulder 69, Fig. 1 showing the shoulder 72 engaged by the rod-end 65. The lower arm 73 of the lever 71 is connected by the link 74 to the arm 68. The arms 68 and 73 carry adjustable pins 75 and 76 respectively adapted to engage with the stop-pin 77 to limit the movement of the arms 68 and 73 respectively as shown in Figs. 1 and 2. It will be noted that the arms 68 and 73 as they are rocked on their respective studs 67 and 70 are maintained in substantial parallelism by the link 74. The arm 78 of the lever 71 forms with the link 79 a toggle connection with the bell-crank lever 80 pivottally mounted to the stud 81 in the frame 14, and the arm 82 of the lever 80 forms with the link 83 a toggle connection with the arm 84 secured to the eccentric bearings 27 which arm 84 projects from the flanges outside the frame 14 and on one side thereof. By means of this compound toggle connection the impression is thrown off as shown in Fig. 2 when the rod end 65 is shifted to the right and pressed down on the shoulder 69 by the cam 51 which causes the arm 68 to swing to the right; the impression is thrown on when the forked lever 40 shifts its associated devices to the left as shown in Fig. 1, whereby the rod-end 65 is swung to the left and pressed down on the shoulder 72 by the action of the cam 51 to swing the arm 73 to the left to

move the eccentric bearings 27 to the left to bring the transfer-cylinder 16 back into printing relation. It is obvious that as the cam 38 makes a single revolution while the impression-cylinder 17 makes two revolutions the actual throwing-off and throwing-on of the impression automatically occurs in alternate succession without interfering in any way with the running of the press.

In order that the foregoing mechanism may be actuated for automatically throwing-off the impression and also for stopping the feed in case of the failure of the feed of a sheet to the press, I have devised the following mechanism: 85 is the feed table in which suitable rollers 86 are transversely journaled for advancing the separate sheets to the press from the feed rolls 87 and 88 which are driven in the direction of the arrows as shown in Fig. 1 by devices that will be hereafter described. Extending transversely in the frame 14, as shown in Fig. 3 is the spring-impelled throw-off shaft 89 which is oscillated by the spring 90. The shaft 89 carries the arm 91 from which depends the rod 92. This rod 92 passes freely through the clearance hole 93 formed in the rectangular block 47, and carries beneath the block 47 another block 94 which is adjusted on the end of the rod 92 by lock nuts 95. The block 94 and the end 95 of the rod 45 are both beveled to have a sliding coaction with each other whereby the raising of the rod 92 will force the block 46 out of engagement with the block 47 as shown in Fig. 5; simultaneously with this disengagement, the block 94 will lift the bell-crank lever 49 thereby shifting the position of the throw-off and throw-on mechanism heretofore described to throw the transfer-cylinder 16 off impression as shown in Fig. 2. Such throw-off may take place at any point in the cycle of operations of the press without injury, owing to the disconnection of the blocks 46 and 47 by any upward movement of the rod 92.

Pivotaly secured to the block 94 is the rod 96 which carries the lug 97 which, when lifted, raises the pawl 98 from engagement with the notch 99 cut in the sleeve 100 secured to the spring-impelled rock-shaft 101 journaled in the brackets 102 and 102 to the lower part of the frame 14. The spring 104 serves to hold the rod 96 against the shaft 101 as shown in Fig. 7, so that the end of the pawl 98 engages the top of the lug 97. The beveled block 105 secured to the end of the rod 96 acts to swing the rod outwardly and away from the shaft 101. As the rod 96 is raised so that the pawl 98 may be free from the lug 97 it is placed in a position to be reset by the foot-lever 106 which acts to throw in the clutch mechanism for operating the feed rolls 87 and 88 which clutch-mechanism will now be described.

The shaft 107 is rotated in the direction of the arrow shown in Fig. 1 by the miter-gear 108 which meshes with the gear 26 mounted on the shaft 22. The shaft 107 has slidably secured thereto the clutch-member 109 which is operatively connected to the clutch yoke 110 mounted on the bell-crank lever 111 pivotally secured to the bracket 112. The arm 113 of the lever 111 is connected by the link 114 to the arm 115 mounted on the end of the spring-impelled rock-shaft 101 as shown in Fig. 1. The clutch member 116 is adapted to coact with the clutch 109 and through the diagrammatic gearing and shaft connections shown in dotted lines in Fig. 1 imparts rotation to the feed rolls 87 and 88 in the directions indicated by the arrows. It is obvious that when the rock-shaft 101 is released as shown in Fig. 8, the clutch members 109 and 116 are separated thereby simultaneously stopping the feed with the throwing-off of the impression upon the failure of the feed of a sheet to the press.

The sheet-detector mechanism for operating the latching devices which release the throw-out shaft 89 to allow same to rock in a counter-clockwise direction to throw off the impression and stop the feed of sheets is as follows: 117 designates the upper feed-roll shaft which may be actuated by any suitable means either constantly or intermittently, and in the present instance receives its rotation from the shaft of the feed-roll 87 through miter-gears 118 and 119, the shaft 120 and the miter-gears 121 and 122, the gear 122 being mounted on the shaft 117 as shown in Fig. 1. 123 is the upper feed roll affixed to the shaft 117 and adapted to rotate in the direction of the arrows shown in Figs. 11 and 12 to feed in the sheets 124 between the roll 123 and the lower feed-roll 125 mounted on the shaft 126. Referring to Fig. 10, 127 is the fork-shaped trip-lever journaled in the recess 128 formed in the lower end of the carrier 129 adjustably secured to the shaft 117 by the set-screws 130. The lower end 131 of the lever 127 is fork-shaped as shown in Fig. 13, and the upper end 132 carries at its end the transverse lug 133 which is adapted to contact with the face 134 of the carrier 129 thereby limiting the downward movement of the forked end 131. When a sheet 124 is present between the rolls 123 and 125 as shown in Fig. 10, the trip-lever 127 is held in the position shown in full lines by the interposition of the sheet, the forked end 131 resting on such sheet. If, however, the sheet is not present at the time the feed-rolls 123 and 125 begin their next revolution, the forked end 131 will drop into the position shown in Fig. 13 and engage the hook-end 135 of the latch-lever 136 pivoted to the stud 137, the latch 138 engaging the

notch 139 cut in the upper part of the sleeve 140 mounted on the shaft 89. When the shaft 117 rotates in a clock-wise direction, the latch 138 is released through the forked end 131 depressing the hook-end 135 of the latch-lever 136 as shown in Fig. 12. This release of the latch 138 causes the spring-impelled shaft 89 to rock in a counterclockwise direction which simultaneously trips the throw-off mechanism and stops the feed as has been hereinbefore described, all controlled by the stock.

To reset the latch 138 in locking engagement with the notch 139 I have devised the following mechanism, shown more particularly in Figs. 11 and 12: Mounted on the cam-shaft 34 is the cam 141 adapted to engage with the cam-roller 142 carried on the end of the rock-arm 143 pivoted to the stud 144 secured to the frame 14. Pivotaly secured to the arm 143 is the finger 145 which is yieldingly held against the stop-pin 146 by the coil spring 147. The end of the finger 145 is adapted to engage the lower end of the lever 148 secured to the shaft 89 so that when the cam 141 forces the rock-arm 143 to the left, when the latch 138 is released as shown in Fig. 12, the finger end 145 will engage the lever 148 and reset the latch. When the latch 138 is set as shown in Fig. 11, the finger 145 will contact with the lever 148 during each cycle of operation, but the angle of contact is such that the yielding finger 145 will slip off the end of the lever 148 and pass beneath such lever for the remainder of its reciprocation toward the left due to the engagement of the cam 141 with the rock-arm 143. The coil spring 149 serves to maintain the cam-roller 142 in engagement with the cam 141. When the latch 138 is released at any given time due to the absence of a sheet such action takes places when the cam-roller 142 of the rock-arm 143 is on the low part of the cam 141 which makes one revolution to each revolution of the impression-cylinder 17.

The advantages of my improved printing-press are apparent. During the normal operation of the press and feeding mechanism the impression is alternately thrown-off and thrown-on automatically so as to print only on alternate successive sheets that are being fed to the press. Should there occur a failure in the feed of the successive sheets automatic devices controlled by the stock simultaneously throw off the impression and stop the feed, and I have also embodied automatic latch-restoring mechanism actuated by the press when the sheets are again properly advanced on the feed-table to be fed to the press.

I claim as my invention:

1. In a printing-press having coacting members to form a printing couple, means

for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles of operation of the press, and automatic means for interrupting the operation of the impression throw-on means in either cycle of operation.

2. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles of operation of the press, and automatic means for interrupting the operation of the impression throw-on means at a predetermined point in either cycle of operation.

3. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and automatic means for actuating said throw-off means during either cycle of operation of the press.

4. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and automatic means for actuating said throw-off means at a predetermined point in either cycle of operation of the press.

5. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for actuating said throw-off means during either cycle of operation of the press.

6. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for actuating said throw-off means at a predetermined point in either cycle of operation of the press.

7. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means for actuating said throw-off means during either cycle of operation of the press.

eration of the press and disconnecting said stock-feeding means.

8. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means for actuating said throw-off means at a predetermined point in either cycle of operation of the press and disconnecting said stock-feeding means.

9. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means for actuating said throw-off means during either cycle of operation of the press and disconnecting said stock-feeding means.

10. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means for actuating said throw-off means at a predetermined point in either cycle of operation of the press and disconnecting said stock-feeding means.

11. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for actuating said throw-off means during either cycle of operation of the press and disconnecting said stock-feeding means.

12. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said throw-on and said throw-off means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for actuating said throw-off means at a predetermined point in either cycle of operation of the press and disconnecting said stock-feeding means.

13. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off the impression and in another position to throw on the impression, said shiftable means acting automatically in alternate cycles in the normal operation of the press, and auto-

matic means for placing said throw-off means in operative position in either cycle of operation.

14. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off the impression and in another position to throw on the impression, said shiftable means acting automatically in alternate cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position at a predetermined point in either cycle of operation.

15. In a printing-press having coöperating cylinders, eccentric bearings for one cylinder, means for shifting such bearings to throw off the impression and to throw on the impression, said shifting means operating alternately during successive cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position at a predetermined point in either cycle of operation.

16. In a printing-press having coöperating cylinders, eccentric bearings for one cylinder, means for shifting such bearings to throw off the impression and to throw on the impression, said shifting means operating automatically and alternately during successive cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position at a predetermined point in either cycle of operation.

17. In a printing-press having a printing-couple, means for throwing off and throwing on impression, an automatic device for actuating said means, such device acting alternately during successive cycles in the normal operation of the press, and automatic means for interrupting the operation of the impression throw-on means during either cycle of operation.

18. In a printing-press having a printing-couple, means for throwing off and throwing on impression, an automatic device for actuating said means, such device acting alternately during successive cycles in the normal operation of the press, and automatic means for interrupting the operation of the impression throw-on means at a predetermined point in either cycle of operation.

19. In a printing-press having a printing-couple, means for throwing off and throwing on impression, an automatic device for actuating said means, such device acting alternately during successive cycles in the normal operation of the press, and automatic means, controlled by the stock, for interrupting the operation of the impression throw-on means during either cycle of operation.

20. In a printing-press having a printing couple, means for feeding stock to said press, means for throwing off and throwing

on the impression, both said means acting automatically and alternately during successive cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position in either cycle of operation of the press and disconnecting said stock-feeding means.

21. In a printing-press having a printing couple, means for feeding stock to said press, means for throwing off and turning on the impression, both said means acting automatically and alternately during successive cycles in the normal operation of the press, and automatic means, controlled by the stock, for placing said throw-off means in operative position in either cycle of operation of the press and disconnecting said stock-feeding means.

22. In a printing-press having a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression, both said means acting automatically and alternately during successive cycles in the normal operation of the press, and automatic means, controlled by the stock, for simultaneously placing said throw-off means in operative position in either cycle of operation of the press and disconnecting said stock-feeding means.

23. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off impression and in another position to throw on impression, said means automatically shifting its position in alternate cycles in the normal operation, and separate means for actuating said shiftable means for automatically throwing off the impression during either cycle of operation of the press.

24. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off impression and in another position to throw on impression, said means automatically shifting its position in alternate cycles in the normal operation, and separate means for actuating said shiftable means for automatically throwing off the impression at a predetermined time in the cycle of operation of the press.

25. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off impression and in another position to throw on impression, said means automatically shifting its position in alternate cycles in the normal operation of the press, and separate means, controlled by the stock, for actuating said shiftable means for throwing off the impression at a predetermined time in the cycle of operation of the press.

26. In a printing-press having coacting members to form a printing couple, means adapted in one position to throw off impression and in another position to throw

on impression, said means automatically shifting its position in alternate cycles in the normal operation of the press, and separate means, controlled by any interruption in the feed supply, for actuating said shiftable means for throwing off the impression at a predetermined time in the cycle of operation of the press.

27. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means adapted in one position to throw off impression and in another position to throw on impression, said means automatically shifting its position in alternate cycles in the normal operation of the press, and separate means for actuating said shiftable means for throwing off the impression at a predetermined time in the cycle of operation of the press and disconnecting the stock feeding means.

28. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means adapted in one position to throw off impression and in another position to throw on impression, said means automatically shifting its position in alternate cycles in the normal operation of the press, and separate means, controlled by any interruption in the feed supply, for actuating said shiftable means for throwing off the impression at a predetermined time in the cycle of operation of the press and disconnecting the stock feeding means.

29. In a printing-press having coacting members to form a printing couple, means for throwing off and throwing on the impression, said means acting alternately in successive cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position at a predetermined point in any cycle of operation.

30. In a printing-press having coacting members to form a printing couple, means for automatically throwing off and throwing on the impression, said means acting alternately in successive cycles in the normal operation of the press, and automatic means for placing said throw-off means in operative position at a predetermined point in any cycle of operation.

31. In a printing-press having coacting members to form a printing couple, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, and means, controlled by any interruption in the feed-supply, for placing said throw-off means in operative position at a predetermined point in any cycle of operation.

32. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for

throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, and means for placing said throw-off means in operative position at a predetermined point in any cycle of operation and disconnecting the stock feeding means.

33. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, and means, controlled by any interruption in the feed-supply, for placing said throw-off means in operative position at a predetermined point in any cycle of operation and disconnecting the stock feeding means.

34. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, and means for simultaneously placing said throw-off means in operative position at a predetermined point in any cycle of operation and disconnecting the stock feeding means.

35. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, and means, controlled by any interruption in the feed-supply, for simultaneously placing said throw-off means in operative position at a predetermined point in any cycle of operation and disconnecting the stock feeding means.

36. In a printing-press having coacting members to form a printing couple, means for throwing on the impression, means for throwing off the impression, both said means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for interrupting the operation of the impression throw-on means in either cycle of operation.

37. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, and means for interrupting the operation of the impression throw-on means in either cycle of operation and disconnecting said stock-feeding means.

38. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last

mentioned means acting alternately in successive cycles in the normal operation of the press, and means for simultaneously interrupting the operation of the impression throw-on means in either cycle of operation and disconnecting said stock-feeding means.

39. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for interrupting the operation of the impression throw-on means in either cycle of operation and disconnecting said stock-feeding means.

40. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, and means, controlled by the stock, for simultaneously interrupting the operation of the impression throw-on means in either cycle of operation and disconnecting said stock-feeding means.

41. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, a latch mechanism for controlling the operation of the throw-off means and disconnecting said stock-feeding means, operable when the stock fails to feed, and automatic means for resetting said latch mechanism when the stock is again properly fed to the press.

42. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, a latch mechanism, actuated by the failure of stock-feed, for interrupting the operation of the impression throw-on means in either cycle of operation and disconnecting said stock-feeding means, and automatic means for resetting said latch mechanism when the stock is again properly fed to the press.

43. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in suc-

cessive cycles in the normal operation of the press, a latch mechanism, actuated by the failure of stock-feed, for simultaneously interrupting the operation and disconnecting said stock-feeding means, and automatic means for resetting said latch mechanism when the stock is again properly fed to the press.

44. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, a latch mechanism, actuated by the failure of the stock-feed, for throwing off the impression during either cycle of operation and disconnecting said stock-feeding means, and automatic means for resetting said latch mechanism when released, operable through the continued movement of the press.

45. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing on the impression, means for throwing off the impression, said two last mentioned means acting alternately in successive cycles in the normal operation of the press, a latch mechanism, actuated by the failure of the stock-feed, for simultaneously

throwing off the impression during either cycle of operation and disconnecting said stock-feeding means, and automatic means for resetting said latch mechanism when released, operable through the continued movement of the press.

46. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, a latch mechanism, controlled by any interruption in the feed-supply, for tripping the impression during either cycle of operation and disconnecting the stock feeding means, and automatic means for resetting said latch mechanism when released.

47. In a printing-press having coacting members to form a printing couple, means for feeding stock to said press, means for throwing off and throwing on the impression alternately in successive cycles in the normal operation of the press, a latch mechanism, controlled by any interruption in the feed-supply, for simultaneously tripping the impression during either cycle of operation and disconnecting the stock feeding means, and automatic means for resetting said latch mechanism when released.

IRVING F. NILES.