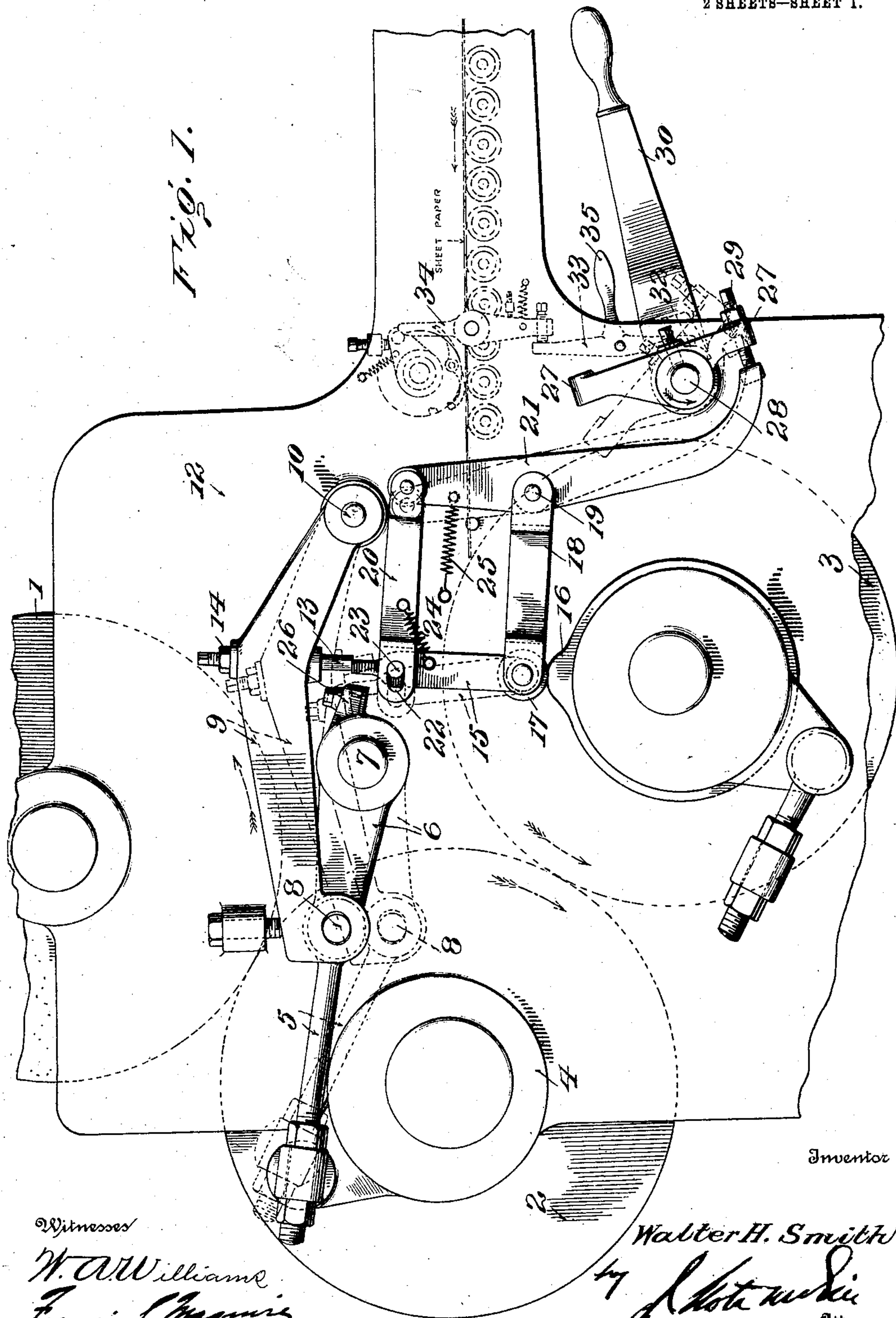


W. H. SMITH.
PRINTING PRESS.
APPLICATION FILED APR. 13, 1909.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

966,256.



Inventor

Witnesses

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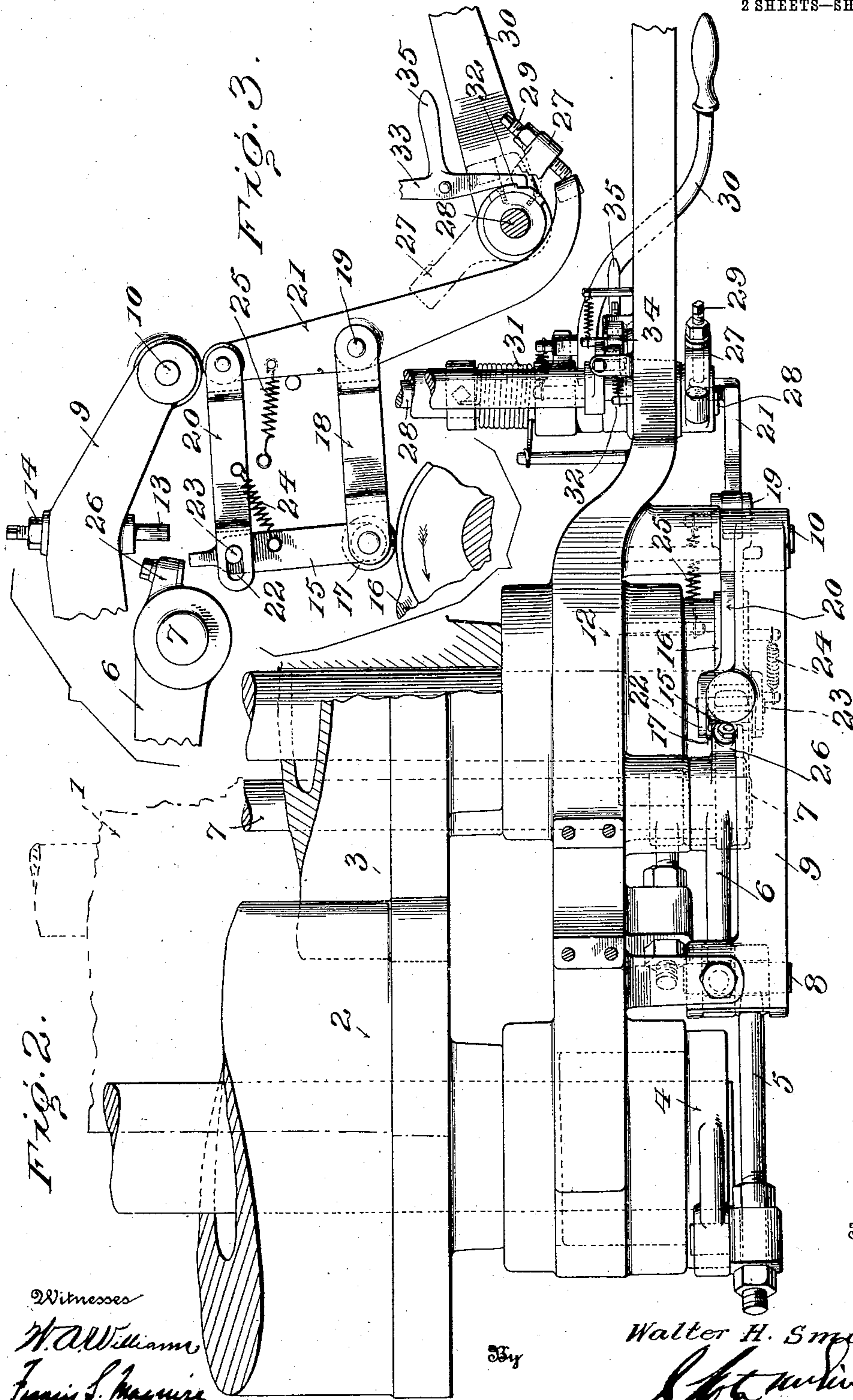
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UNITED STATES PATENT OFFICE.

WALTER H. SMITH, OF NILES, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

PRINTING-PRESS.

966,256.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed April 13, 1909. Serial No. 489,589.

To all whom it may concern:

Be it known that I, WALTER H. SMITH, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of this invention are, first, to avoid double printing, occasioned by imperfect contact between printing couples when the impression is thrown on; second, to provide a simple device designed to occupy either of two positions and to throw off or throw on the impression when shifted from one position to the other; and, third, to avoid the necessity of manually restoring the shifted member of the printing couple.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation showing my improvements applied to a planographic or off-set press, the parts being in the position which they occupy when the impression is thrown on. Fig. 2 is an enlarged plan view of the cylinder shifting means. Fig. 3 is a fragmentary view showing the parts in position to effect the throw off.

Referring to the drawings, 1 designates the plate cylinder; 2 the transfer cylinder; and 3 the impression cylinder. The transfer cylinder is mounted in eccentric bearings, one of which is shown at 4. The shifting of this bearing for throwing off or throwing on the impression is, according to the means shown, effected by two toggle links 5 and 6, the former being adjustably connected to the bearing, and the latter fulcrumed on a shaft 7 common to the links at both sides of the press. To the connecting pivot 8 at the bending or knee point of the toggle is connected one end of a lever 9, which at its other end is fulcrumed on a stud shaft 10 projecting from frame 12 of the press. This lever when moved upwardly will make the toggle and throw on the impression. It is shown as being provided, at a point near its center, with a stud 13 of hardened metal, which stud is on the lower end of a rod adjustably secured to the lever by a nut 14. The stud 13 is circular in gen-

eral outline, but is flattened on the side toward the toggle.

It is the purpose of my invention to provide means, which will be actuated by the press, for moving the toggle engaging lever in one direction to make the toggle, and which means will also break the toggle to effect the throw-off. The means for accomplishing these results may be varied in construction but what is shown is highly advantageous. It embodies a vertically movable bar 15 which is intermittently raised and lowered, preferably by a cam 16 which in the present instance is shown as revoluble with the impression cylinder 3. It is essential that this cam, or its equivalent, should reciprocate bar 15 once in every revolution of the press cylinders when, as in the form shown, such cylinders are all of approximately uniform diameters. This bar at its lower end carries a cam-engaging roller 17, and to such end is connected a link 18 which is pivoted on a stationary stud 19 projecting from frame 12. Near its upper end bar 15 is connected by a second link 20 to a vertically-disposed lever 21, which lever is also fulcrumed on stud 19. This link 20 has a longitudinal slot 22 to receive a pin 23 of bar 15, and this pin is normally held against one end of the slot by a spring 24. To the lever 21, at a point near its upper end, is connected a spring 25, the other end of which is secured to the press frame. This spring normally holds the upper end of lever 21 inwardly.

When bar 15 is in the position shown in full lines, Fig. 1, it will move up and down in direct line with stud 13 but without acting on the latter if the impression is on. If, however, the impression is off, and the upper end of bar 15 is to the left of stud 13, when the raised portion of the cam passes out of engagement with roller 17 the bar 15 will be lowered, and by spring 24 its upper end will be drawn into line with such stud, so that when the bar is again raised it will lift lever 9 and restore the toggle, thereby throwing on the impression. The pin and slot connection, 22—23, permits bar 15 to move into position when cleared of lug 13.

The toggle link 6 is provided, beyond its pivot on stud 7, with a shoulder 26, the face of which is preferably covered with a hardened metal plate. The purpose of this shoulder is to permit the toggle to be broken

by bar 15. By turning lever 21 on its fulcrum, or permitting it to be so turned by its controlling spring 25, the upper end of bar 15 will be forced toward the left and enter
 5 beneath shoulder 26 so that when it is moved upwardly it will turn toggle link 6 on its pivot and break the toggle to throw off the impression. Should bar 15 be in its raised position when shifted by lever 21 to throw-
 10 off the impression its upper end will ride against the end of shoulder 26 until the bar has dropped sufficiently to permit such end to be projected beneath the shoulder by the action of spring 25.

15 It will be seen that the automatic throwing off and throwing on of the impression is effected by a single reciprocating element, and that its position is controlled by the shifting of lever 21. Normally this lever
 20 so stands as to hold bar 15 in line with stud 13 of lever 9 since the impression is ordinarily kept on. This position of the shifting lever is maintained by an agency acting in opposition to spring 25. The latter will
 25 automatically shift bar 15 to effect the throw off when lever 21 is relieved of such agency, which latter is shown in the form of an arm 27 fast on a shaft 28 and carrying a screw 29 for engaging the flanged end of lever 21.
 30 When arm 27 engages lever 21, bar 15 will be positioned to throw-on the impression. The turning of shaft 28, for this purpose, is effected by pressure of the operator on a handle 30. This is the only manual opera-
 35 tion necessary. To effect the throw-off it is necessary to disengage arm 27 from lever 21 so that the latter will be wholly under the control of spring 25. This disengagement may be effected either manually or au-
 40 tomatically. If manually, by simply pulling upwardly on handle 30, but when automatic action is desired the shaft 28 is partly turned by a coiled spring 31 when a should-
 45 ered collar 32 thereof is freed of a retaining lever 33. The latter may be tripped, to release shaft 28, by a tripping device constructed after the manner contemplated by my application for patent Serial No. 433,974, filed May 20, 1908, and conventionally
 50 shown in Fig. 1. If stock is not in position at the proper time, feeler-lever 34 will effect the actuation of the trip-mechanism and the retaining lever 33 will be forced to release shaft 28, so that lever 21 may shift the posi-
 55 tion of bar 15 to effect the throw-off of the impression. To enable the spring-impelled shaft to be tripped by hand, lever 33 is equipped with a handle 35. It will be understood that the actuation of the trip mech-
 60 anism will be brought about automatically by the feeler-lever when there is any interruption in the feed-supply.

The advantages of the present invention are apparent. The actual throwing on, as
 65 well as the throwing off, of the impression

is wholly under the control of the press, that is to say, it is possible to throw on and throw off the cylinders only at a fixed point in the revolutions thereof. Preferably this is when the openings or non-coacting por-
 70 tions of the several cylinders are adjacent to each other.

I claim as my invention:—

1. In a printing press having a printing couple and means for shifting one member
 75 relatively to the other, means connected to such shifting means for moving it in one direction, and a device designed to engage said shifting means for moving it in the op-
 80 posite direction or to engage said second mentioned means for causing it to actuate said shifting means, and means for actuating such device.

2. In a printing press having a printing couple and means for shifting one member
 85 relatively to the other, means connected to such shifting means for moving it in one direction, and a device designed to engage said shifting means to throw-off the impression or to engage said second mentioned means to
 90 throw on the impression, and means for actuating such device.

3. In a printing press having cooperating cylinders, eccentric bearings for one cylin-
 95 der, means for shifting such bearings, a device for actuating said shifting means to throw off the impression, and means also designed to be actuated by said device for moving said shifting means to throw on the im-
 100 pression.

4. In a printing press having cooperating cylinders, eccentric bearings for one cylin-
 105 der, means for shifting such bearings, a device for actuating said shifting means to throw off the impression, means also designed to be actuated by said device for moving said shifting means to throw on the im-
 110 pression, and means operable with the press cylinders for actuating said device.

5. In a printing press having cooperating
 110 cylinders, eccentric bearings for one cylinder, means for shifting such bearings comprising toggle links, a lever connected to said links, a device for moving said lever to make the toggle, means for automatically position-
 115 ing said device to permit it to break the toggle, and means operated by the press for actuating said device.

6. In a printing press having cooperating cylinders, eccentric bearings for one cylin-
 120 der, means for shifting such bearings comprising toggle links, a lever connected to said links, an intermittently operated device for moving said links to break the toggle when in one position and also for moving said le-
 125 ver to make the toggle when in another position, means for positioning said device to permit it to automatically engage said lever, and means for automatically shifting the po-
 130 sition of said device to break the toggle.

7. In a printing press having coöperating cylinders, eccentric bearings for one cylinder, means for shifting such bearings comprising toggle links, a lever connected to said links, a device for moving said links to break the toggle when in one position and also for moving said lever to make the toggle when in another position, means for automatically positioning said device to break the toggle, means for positioning said device to permit it to automatically engage said lever, and means operated by the press for actuating said device to break or make the toggle.

8. In a printing press having a cylinder provided with eccentric bearings, toggle-links for shifting such bearings, a lever connected to such toggle links at the bending or knee point thereof, a reciprocating bar for moving said lever to make the toggle, means carried by one of the links with which said bar is designed to engage for breaking the toggle, means for actuating such bar, and means for changing the position thereof.

9. In a printing press having a cylinder provided with eccentric bearings, toggle links for shifting such bearings, one of said links having a shoulder, a lever connected to said toggle links at the bending or knee-point thereof, a reciprocating bar for engaging said shoulder to break the toggle or engaging said lever to make the toggle, means for shifting the position of said bar, and means for reciprocating the latter.

10. In a printing press having a cylinder provided with eccentric bearings, toggle-links for shifting such bearings, a lever connected to such toggle links for moving them to make the toggle, a reciprocating bar for so acting on said lever or for engaging one of said links to break the toggle, means for automatically moving such bar into position to engage such link, and means for positively moving such bar into position to act on said lever.

11. In a printing press having a cylinder provided with eccentric bearings, toggle-links for shifting such bearings, a lever connected to such toggle links for moving them to make the toggle, a reciprocating bar for so acting on said lever or for engaging one

of said links to break the toggle, a spring-impelled lever, a link connecting said bar to the last mentioned lever, which latter will normally move said bar into position to break the toggle, and means for moving such spring-impelled lever in the opposite direction to position said bar to act on the first mentioned lever to make the toggle.

12. The combination with a press-cylinder having eccentric bearings, of toggle-links connected to such bearings, one link having a shoulder, a lever connected to said links for moving them to make the toggle, said lever having a stud, a reciprocating bar, a constantly-rotating cam for actuating such bar, a spring-impelled lever, a link having a pin and slot connection with said bar and also connected to said spring-impelled lever, and means for moving the latter against the tension of its spring.

13. In a printing press having a cylinder provided with eccentric bearings, toggle-links connected to said bearings, a member connected to said links for moving them to make the toggle, a reciprocating member for engaging one of said links to break the toggle or for engaging said member to make the toggle, a spring-impelled member for normally moving said bar into position to break the toggle, means for normally restraining such member and holding said bar in position to make the toggle, and means for releasing such latter means in the event of any interruption in the feed supply.

14. In a printing press having a printing couple, means for throwing off and throwing on the impression, a device for actuating such means, means for automatically shifting such device to throw off the impression, manually-controlled means for positioning such device to throw on the impression, and means for actuating such device.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WALTER H. SMITH.

Witnesses:

FRANCIS S. MAGUIRE,
JOHN A. MURPHY.