

No. 891,165.

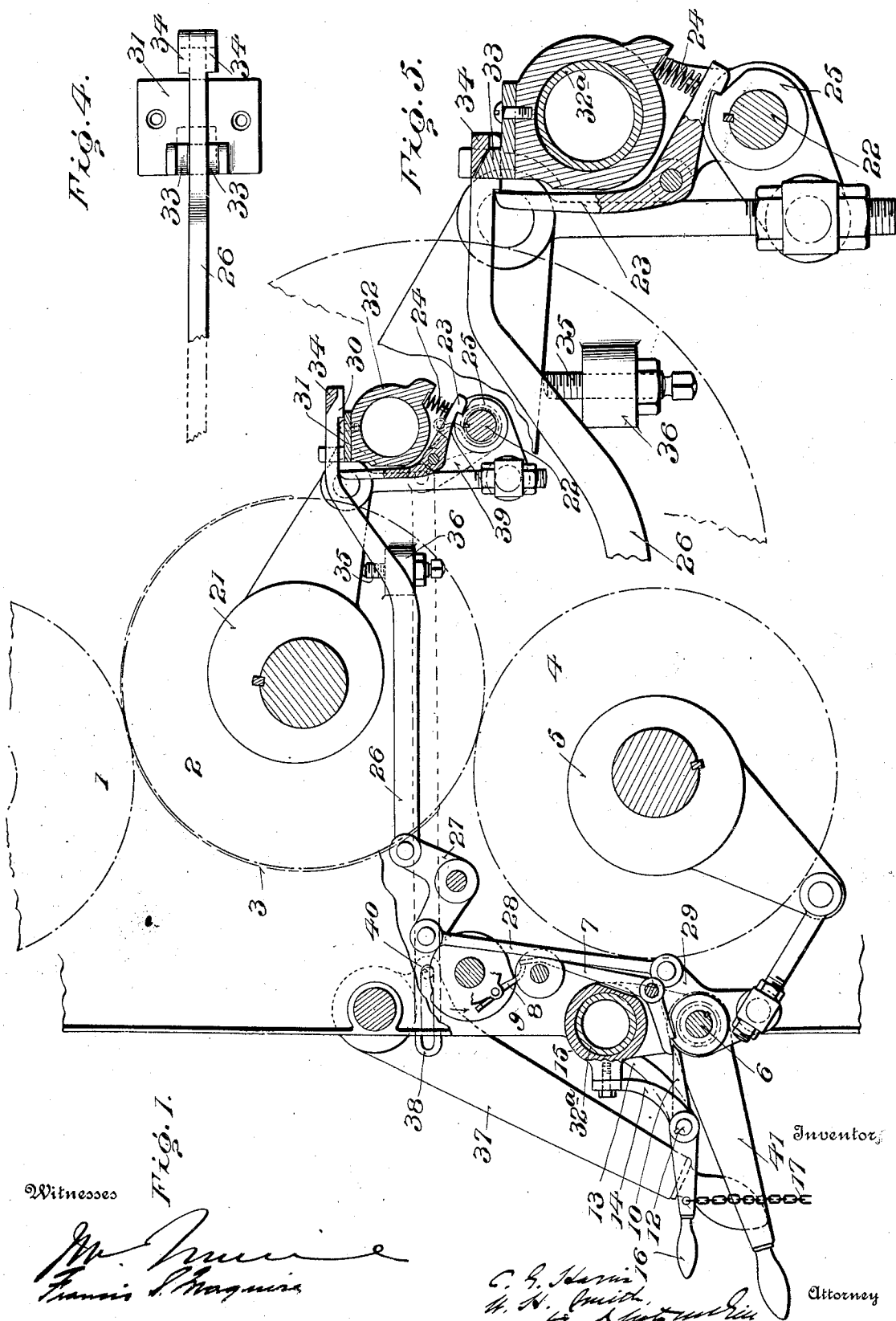
PATENTED JUNE 16, 1908.

C. G. HARRIS & W. H. SMITH.

PRINTING PRESS.

APPLICATION FILED JAN. 3, 1907.

3 SHEETS—SHEET 1.

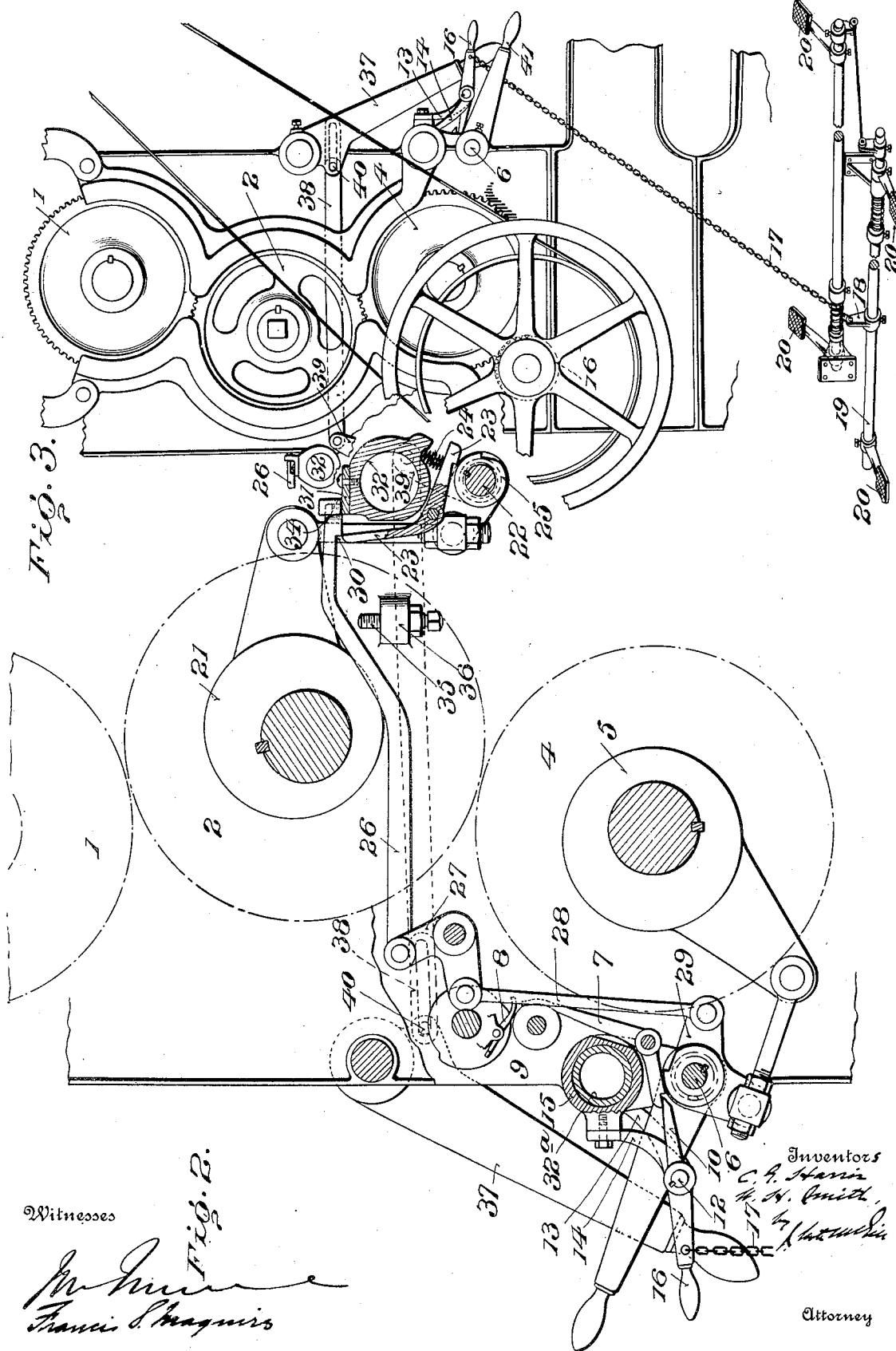


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3 SHEETS—SHEET 2.



Witnesses

Francis S. Haguiris

Fig. 2.

Inventors

C. G. Harris

W. H. Smith

J. H. Smith

Attorney

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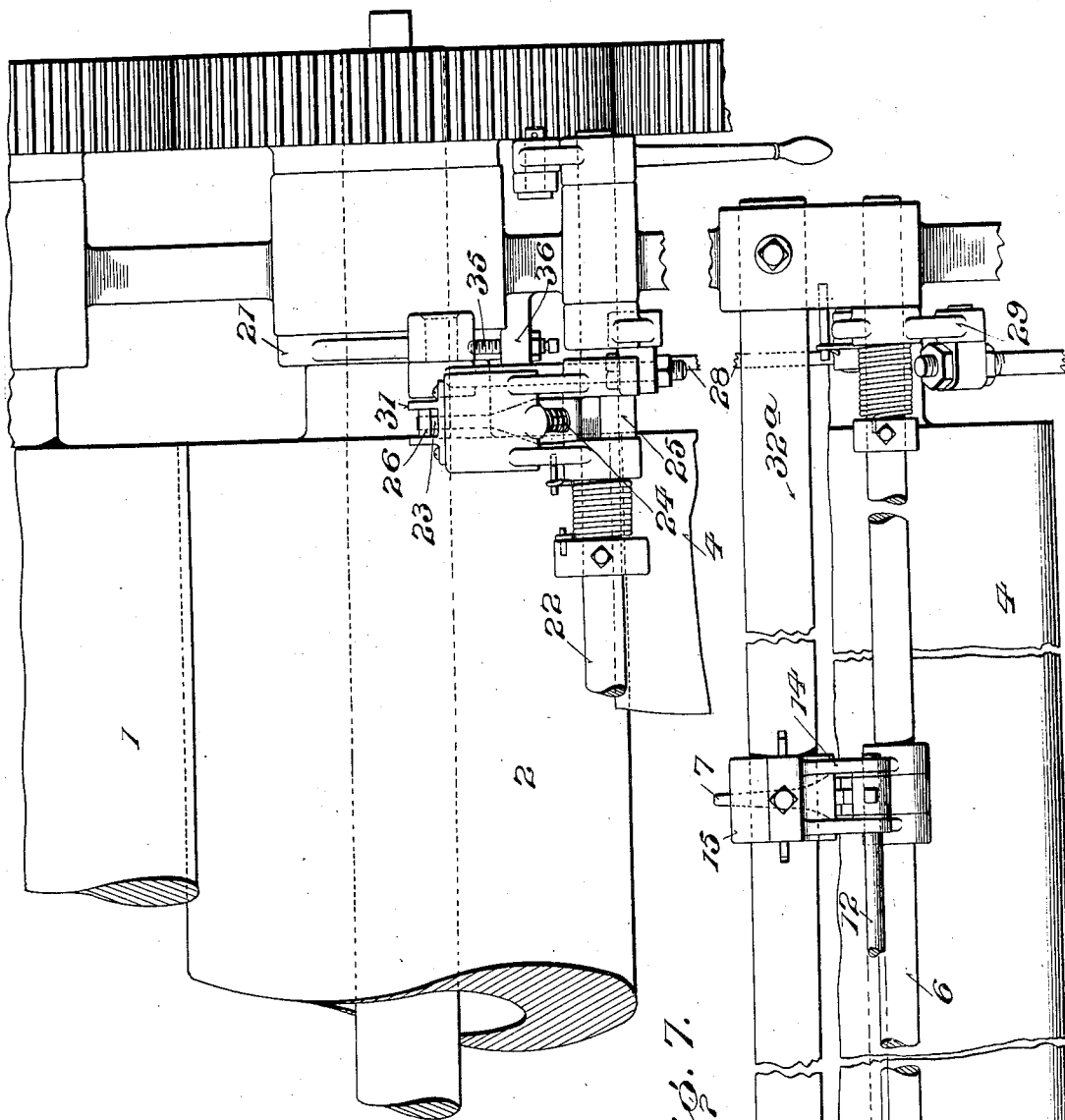


Fig. 6.

Fig. 7.

Witnesses

John S. Harris
Wm. H. Smith

C. G. Harris
W. H. Smith
J. H. Smith Attorney

UNITED STATES PATENT OFFICE.

CHARLES GRANT HARRIS AND WALTER HAROLD SMITH, OF NILES, OHIO, ASSIGNORS TO THE
HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

PRINTING-PRESS.

No. 891,165.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed January 3, 1907. Serial No. 350,671.

To all whom it may concern:

Be it known that we, CHARLES G. HARRIS and WALTER H. SMITH, both of Niles, in the county of Trumbull and State of Ohio, have
5 invented certain new and useful Improvements in Printing-Presses; and we 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
10 it appertains to make and use the same.

This invention relates to that class of printing presses employing a transfer-surface for imparting to the stock the design received from an inked form.

15 The primary object of this invention is to enable the transfer-member to be thrown out of printing relation to the form-member subsequent to and in consequence of the impression-member being moved out of printing relation to the transfer-member.
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A further object is to enable the shifting of the two members to be effected automatically in the event of any interruption in the feed-supply; or manually at any time. And
25 a further object is to enable the transfer-member to be restored to printing relation to the form-member while the impression-member remains out of printing relation to the transfer-member; and also to allow the
30 transfer-member to be again thrown out of printing relation to the form-member before the impression-member is thrown on. And a further object is to avoid all rubbing or injurious frictional engagement between the
35 transfer-cylinder and the impression-cylinder in throwing off and on.

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

40 In the accompanying drawings, Figure 1 is a side elevation, partly in section, with the several cylinders in printing relation to each other. Fig. 2 is a similar view with the impression-cylinder and the transfer-cylinder
45 thrown off. Fig. 3 is a side view, with certain parts diagrammatically illustrated. Fig. 4 is an enlarged detail view. Fig. 5 is an enlarged view, with parts in section, of the trip and its adjuncts. Fig. 6 is an elevation of the trip of the transfer-cylinder, portions of such cylinder and the form-cylinder being broken away. Fig. 7 is a front view of the trip of the impression-cylinder showing the throw-off shaft for the latter and a por-
50 tion of such cylinder.
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Referring to the drawings, 1 designates the form-carrying cylinder; 2 the transfer-cylinder having the usual rubber blanket 3; and 4 the impression-cylinder. The latter is mounted in eccentric bearings 5 after the
60 manner indicated by Letters Patent of the United States No. 577,405, such bearings being connected to a spring-actuated shaft 6 normally restrained by a trip 7 which is automatically released by a trip-arm 8 in the
65 event of stock not being in position to prevent such trip-arm engaging the trip 7, as clearly pointed out in Letters Patent No. 676,241. The feed-rolls are conventionally indicated at 9 and are intended to impart to
70 the stock an accelerated movement greater than the face speed of the impression-cylinder, as covered by Letters Patent of the United States No. 577,299. The trip-arm 8 is carried by the upper feed-rolls.
75

Beneath the toe of trip 7 lies an arm 10 of a shaft 12 supported at one side of the press by a bracket 13 and at its inner end by an arm 14 secured to a collar 15 of a bracket to which the trip 7 is fulcrumed. By means of
80 a handle 16 the shaft 12 may be manually turned to disengage the trip from shaft 6 and effect the throw-off of the impression-cylinder. By connecting handle 16 by a cord or chain 17 to a crank 18 of a shaft 19, located
85 at the base of the press, the trip may be released by foot-pressure on foot-treadle 20 of shaft 19, thus enabling an attendant to operate the throw-off from either side of the machine. It will be understood that this
90 may be accomplished by means different from what is shown and described, and also that the shaft 19 is duplicated on the other side of the press, both shafts being connected to act in unison.
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It is contemplated by our invention that the transfer-cylinder shall be thrown out of printing relation to the form-cylinder when the impression-cylinder is thrown out of its normal position relative to the transfer-
100 cylinder. This may be accomplished in several ways, but the means shown will serve as an illustration, the invention not being confined to any particular mechanism for accomplishing the desired result. According
105 to the means shown, the transfer-cylinder, like the impression-cylinder, is mounted in eccentric bearings 21 connected to a spring-actuated shaft 22 normally restrained by a trip 23 similar to the trip 7; but while the
110

latter is located about in line with the transverse center of the cylinders the former is preferably adjacent to one end of the transfer-cylinder, as shown in Fig. 6. This trip 23 is normally held by a spring 24 in engagement with a shouldered collar 25 on shaft 22, and is automatically released by a trip-arm 26 extended forward of the axis of the transfer-cylinder and connected to a bell-crank 27, which latter is connected by a rod 28 to a bell-crank 29 on the spring-actuated shaft 6. The eccentric-bearings of the impression-cylinder are connected to shaft 6 through this bell-crank 29. The trip-arm 26 will disengage trip 23 when pulled forward by the partial turning of shaft 6, and this is intended to occur as the lower or impression-cylinder has dropped almost the full distance. For this purpose the rear end of trip-arm 26 is carried above the trip, and formed on its underside with a shoulder 30, which rests on a flat plate 31 mounted on a casting 32 supported by tie rod 32^a, said plate having opposite inclines 33 whereon the beveled laterals 34 of said arm ride upwardly to disengage shoulder 30 from the trip after the latter has been turned on its pivot. The eccentric-bearings of the impression-cylinder will have turned almost their full limit before the trip-arm 26 releases trip 23 and permits the lowering of the transfer-cylinder by the upward movement of the arms of its eccentric bearing. (See Fig. 2.) In their normal positions the arms of these bearings rest against stops 35 for holding them and the transfer-cylinder rigid while the impression is being made on the paper. These stops are shown in the form of adjustable screws working in lugs 36 on the main frame.

The transfer-cylinder is restored to its normal position by the upward movement of a handle or lever 37 acting on a link 38 connected to an arm 39 fast on shaft 22, the turning of which latter replaces the collar 25 in engagement with trip 23. The handle 37 carries a pin 40 projecting into a slot of said link, so that when not in use the handle will hang out of the way, and when the transfer-cylinder is thrown off link 38 is free to move lengthwise without affecting said handle. If, after restoring the transfer-cylinder in printing relation with the form-cylinder, as for working-up the ink or water, it be desired to again throw off such cylinder before the impression-cylinder is thrown on, the operator moves downwardly a short distance a handle 41 on shaft 6, sufficient to throw the shoulder 30 of trip-arm 26 immediately in rear of trip 23, (see Fig. 5) and then reverses the movement of said handle, causing the disengagement of the trip and the re-lowering of the transfer-cylinder.

To throw both cylinders into their normal positions, shaft 22 is first turned, by handle 37 acting on link 38, until held by trip 23,

and then shaft 6 is turned, by handle 41, until retained by trip 7.

By the described arrangement it is impossible to throw-off the impression-cylinder without also throwing off the transfer-cylinder. The axes of the several cylinders are out of line, and the arrangement of the eccentric bearings is such that the impression-cylinder in being thrown-off moves downwardly and slightly forward away from the transfer-cylinder, which in turn moves downwardly and slightly rearward with respect to the form-cylinder. By thus moving both cylinders in opposite directions, and each away from the plane of the axis of the other, all rubbing or injurious frictional engagement is avoided. We regard it as highly essential to a successful machine that the impression-cylinder should be almost or entirely in its lowermost position before the transfer-cylinder starts to move out of printing relation to the form-cylinder.

According to the present invention, both the impression-cylinder and the transfer-cylinder are mounted at their ends in eccentric bearings, connected to, and designed to be operated by, their spring actuated shafts after the manner of actuating the impression-cylinder alone as embraced by Letters Patent No. 577,405.

It will be understood that suitable inking and water rolls are employed for the form-cylinder.

We claim as our invention:

1. In a printing press having a form-carrying cylinder, a transfer-cylinder, and an impression-cylinder, means for successively throwing the impression-cylinder out of printing relation to the transfer-cylinder and the transfer-cylinder out of printing relation to the form-cylinder.
2. In a printing press having a form-carrying member, a transfer-member, and an impression-member, means for throwing the impression-member out of printing relation to the transfer-member, and separate means constructed and arranged to be actuated subsequent to the throw-off of the impression member for throwing the transfer member out of printing relation to the form-member.
3. In a printing press having a form-carrying member, a transfer-member, and an impression-member, means for throwing the impression-member out of printing relation to the transfer-member, and separate means actuated by the movement of the last mentioned means for throwing the transfer-member out of printing relation to the form-member.
4. In a printing press having a form-carrying member, a transfer-member, and an impression-member, means for automatically throwing the impression-member out of printing relation to the transfer-member, and means actuated by the movement of the

last mentioned means for throwing the transfer-member out of printing relation to the form-member.

5 5. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, means for throwing-off the impression-cylinder with relation to the transfer-cylinder and means for throwing off the latter with relation to the form-cylinder, the
10 throw-off means of the impression-cylinder being actuated in advance of the throw-off means of the transfer-cylinder.

6. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, means for throwing-off the impression-cylinder with relation to the transfer-cylinder, and separate means actuated by the movement of the last-mentioned means for throwing off the transfer-cylinder with
20 relation to the form-cylinder.

7. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, means for throwing-off the impression-cylinder, means for throwing-off the transfer-cylinder, and means for actuating the latter as the impression-cylinder is moved
25 out of its normal position.

8. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, means for throwing-off the impression-cylinder, means for throwing-off the transfer-cylinder, and means actuated by the throw-off means of the impression-cylinder for releasing said throw-off means of the
35 transfer-cylinder.

9. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, eccentric bearings for the impression-cylinder, eccentric bearings for the transfer-cylinder, means tending to turn such
40 bearings so as to throw-off the impression-cylinder and the transfer-cylinder, and means for releasing such latter means.

10. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, eccentric bearings for the impression-cylinder, eccentric bearings for the transfer-cylinder, means tending to turn such bearings so as to throw-off the impression-cylinder and the transfer-cylinder, and means
50 for automatically releasing such latter means.

11. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, eccentric bearings for the impression-cylinder, eccentric bearings for the transfer-cylinder, means tending to turn such bearings so as to throw-off the impression-cylinder and the transfer-cylinder, and means
55 for automatically releasing such latter means in the event of any interruption in the feed-supply.

12. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, with their axes out of line, eccentric bearings for the impression-cylinder, and
65

eccentric bearings for the transfer-cylinder, means for turning such bearings so as to throw such cylinders downwardly and laterally in opposite directions.

13. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, throw-off mechanism for the impression-cylinder, throw-off mechanism for the transfer-cylinder, means connecting such mechanisms whereby the actuation of the
75 throw-off mechanism of the impression-cylinder will effect the actuation of the throw-off mechanism of the transfer-cylinder, and means for throwing on the transfer-cylinder while the impression-cylinder remains off. 80

14. In a printing press having a form-cylinder, a transfer-cylinder, and an impression-cylinder, throw-off mechanism for the impression-cylinder, throw-off mechanism for the transfer-cylinder, means connecting such mechanisms whereby the actuation of the throw-off mechanism of the impression-cylinder will effect the actuation of the throw-off mechanism of the transfer-cylinder, means
85 for throwing on the transfer-cylinder, and means for re-throwing-off such cylinder while the impression-cylinder remains off. 90

15. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, means tending to normally turn said bearings so as to move the impression-cylinder away from the transfer-cylinder, and the latter away from the form-cylinder, said means comprising spring-impelled shafts to which the eccentric bearings
100 of such cylinders are connected, trips for normally restraining such shafts, and means for actuating such trips. 105

16. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, means tending to normally turn said bearings so as to move the impression-cylinder away from the transfer-cylinder, and the latter away from the form-cylinder, said means comprising spring-impelled shafts to which the eccentric bearings
115 of such cylinders are connected, trips for normally restraining such shafts, and means for actuating first the impression-cylinder trip and then the transfer-cylinder trip.

17. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, means tending to normally turn said bearings so as to move the impression-cylinder away from the transfer-cylinder, and the latter away from the form-cylinder, said means comprising spring-impelled shafts to which the eccentric-bearings of such cylinders are connected, trips for normally re-
120 125 130

straining such shafts, means for actuating the impression-cylinder trip, and means for actuating the transfer-cylinder trip, such latter trip being actuated by the throw-off of the impression-cylinder.

18. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, spring-impelled shafts to which the eccentric bearings of such cylinders are connected, trips for normally restraining such shafts, a device adapted to actuate the impression-cylinder trip in the event of any irregularity in the feed to the press, and a second device, for actuating the transfer-cylinder trip, operated by the throw-off of the impression-cylinder.

19. In a printing press having a plurality of cylinders, and means for throwing such cylinders out of printing relation, comprising eccentric-bearings for one such cylinder, a spring-impelled shaft to which such bearings are connected, a trip for normally restraining such shaft, and manually-operable means adjacent to the base of the press and capable of actuating said trip to release said shaft.

20. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric bearings for the transfer-cylinder, and eccentric bearings for the impression-cylinder, spring-impelled shafts to which the eccentric bearings of such cylinders are connected, trips for normally restraining such shafts, means for releasing said trips, and manually-operable means at the side of the press for actuating the last-mentioned means.

21. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, spring-impelled shafts to which the eccentric bearings of such cylinders are connected, trips for normally restraining such shafts, a shaft having an arm for engaging the impression-cylinder trip, manually-operable means adjacent to the

base of the press and connected to said last-mentioned shaft, and means for actuating the transfer-cylinder trip in the event of the throw-off of the impression-cylinder.

22. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, spring-impelled shafts to which the eccentric bearings of such cylinders are connected, trips for normally restraining such shafts, a manually-operable shaft having an arm for disengaging the impression-cylinder trip, a device for disengaging the transfer-cylinder trip when the spring-impelled shaft of the impression-cylinder is actuated, and a crank-shaft adjacent to the base of the press connected to said manually-operable shaft, said crank-shaft having a treadle.

23. In a printing press having a form-cylinder, a transfer-cylinder, an impression-cylinder, eccentric-bearings for the transfer-cylinder, and eccentric-bearings for the impression-cylinder, spring-impelled shafts to which the eccentric bearings of such cylinders are connected, trips for normally restraining such shafts, a trip-arm having a shoulder for engaging and releasing the transfer-cylinder trip, a connection between said trip-arm and the spring-impelled shaft of the impression-cylinder, means for disengaging the trip-arm from the transfer-cylinder trip after such cylinder has been turned on its bearings, and means for placing the spring-impelled shaft of the transfer-cylinder in re-engagement with its trip while the spring-impelled shaft of the impression-cylinder is free of its trip.

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

CHARLES GRANT HARRIS.
WALTER HAROLD SMITH.

Witnesses:

J. C. FRYE,
H. A. PORTER.