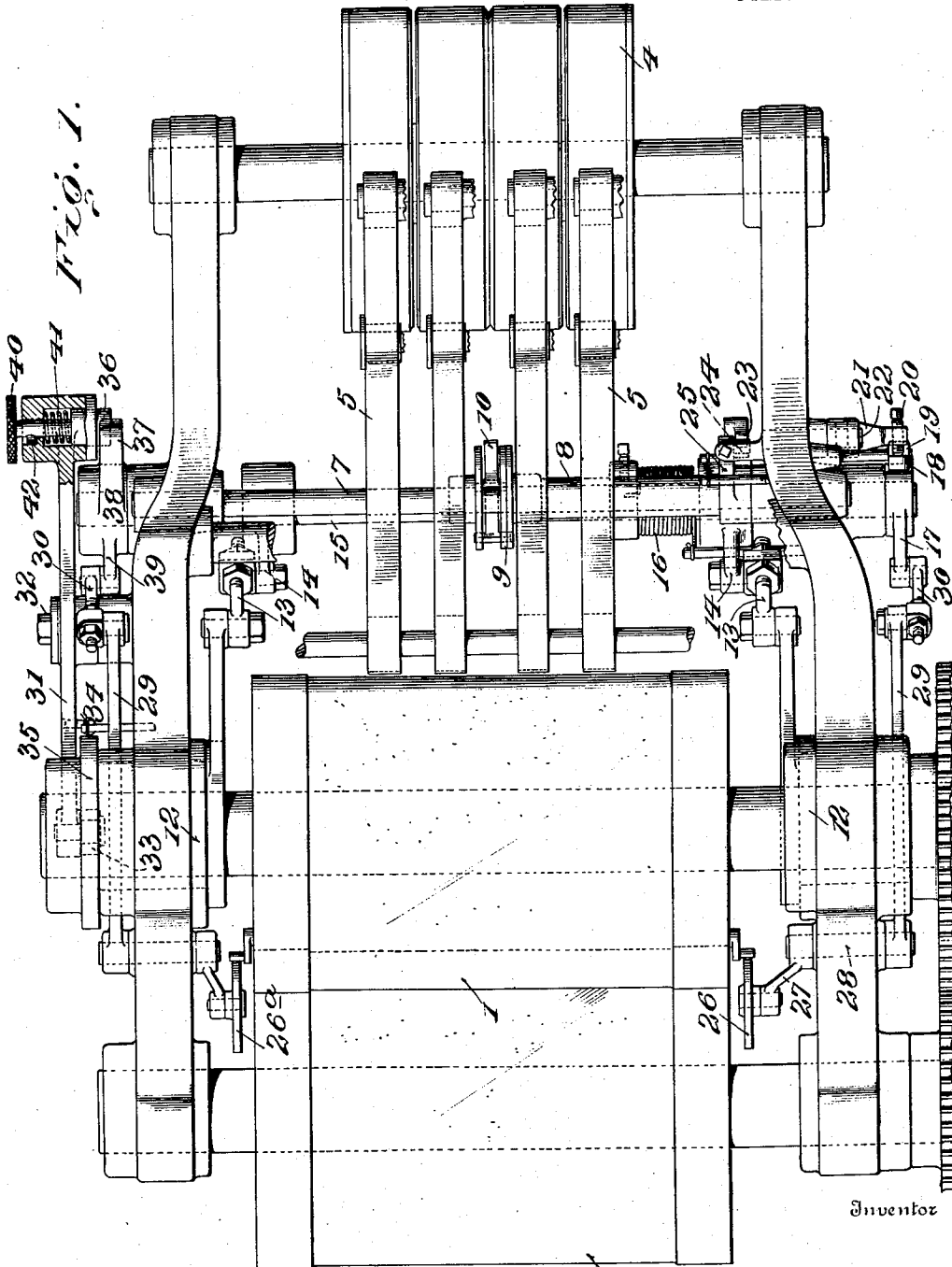


W. H. SMITH.
 PRINTING PRESS.
 APPLICATION FILED APR. 13, 1909.

1,019,197.

Patented Mar. 5, 1912.

2 SHEETS—SHEET 1.



Inventor

Witnesses

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By

Walter H. Smith.

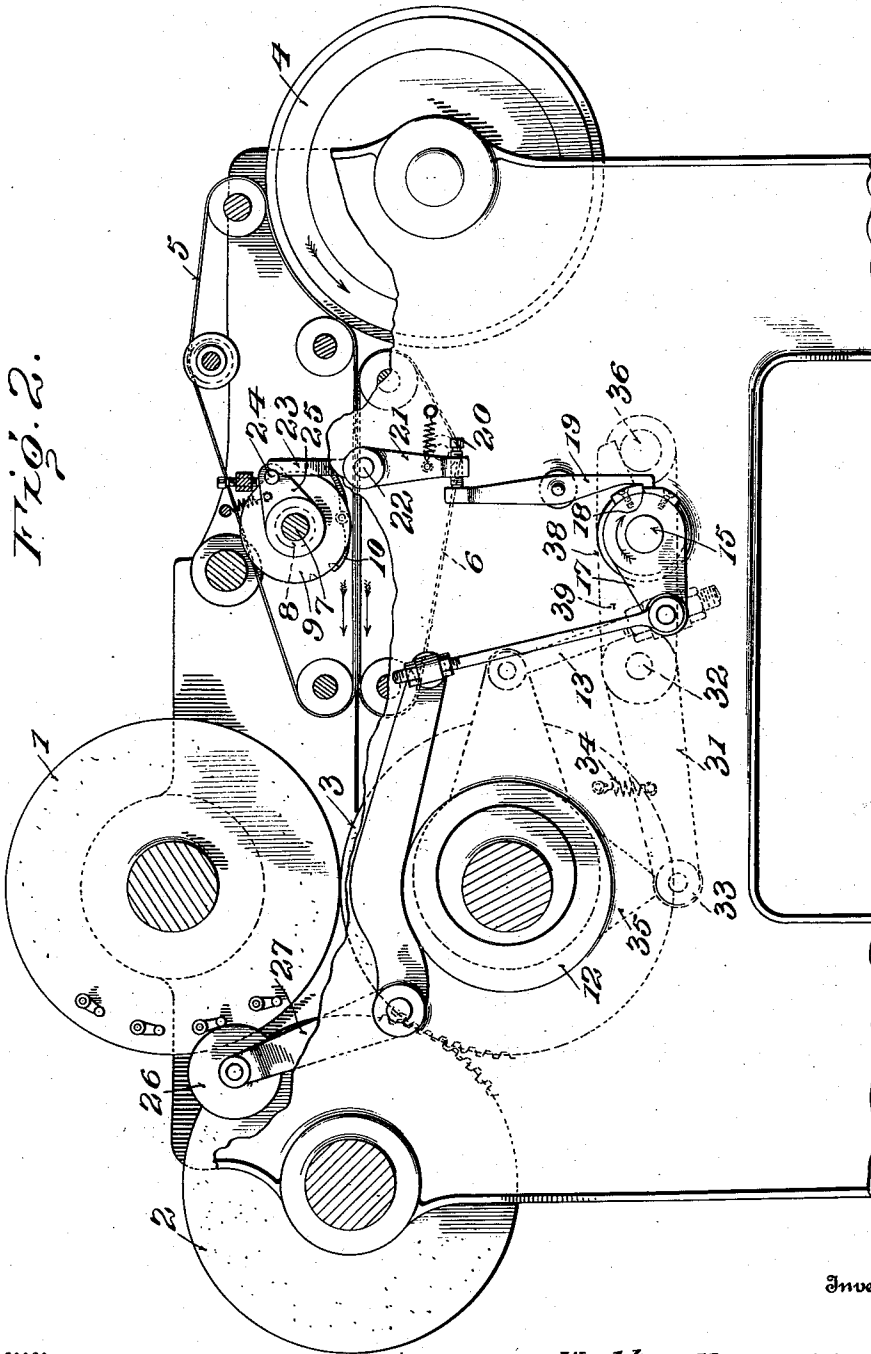
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2 SHEETS—SHEET 2.



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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.

1,019,197.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed April 13, 1909. Serial No. 489,588.

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 primary object of this invention is to provide in a printing or numbering machine, or a combined printing and numbering machine, having means for throwing off the impression, improved means for automatically restoring the impression. By such improved means, regardless of the fact that the press is constantly in operation, there will be no coöperative relation between the cylinders of a printing press, or any imprint of the head or heads of a numbering machine, when the impression is thrown-off, but the parts will be caused to automatically resume their normal positions.

A further object is to provide in a printing or numbering machine, or a combined printing and numbering machine, having means for automatically throwing off the impression in the event of any interruption in the feed supply, improved means for automatically restoring the impression. By such improved means there will be no coöperative relation between the cylinders of a printing press, or any imprint of the head or heads of a numbering machine, if there is any interruption in the feed supply, but the parts will be caused to automatically resume their normal positions and so remain when and as long as the feed supply continues unbroken.

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

In the accompanying drawings, Figure 1 is a plan view. Fig. 2 is a side elevation.

Referring to the drawings, 1 designates a numbering cylinder; 2 a plate-carrying cylinder; 3 an impression cylinder and 4 the trimming cylinder of a paper trimming machine in connection with which my present improvements may be employed, but its use is in no sense restricted thereto, nor is it

confined to a combined printing and numbering machine.

5 and 6 designate upper and lower tapes for conveying the stock from the trimming cylinder to the impression cylinder, but any suitable means may be employed for this purpose, and likewise the stock may be fed directly to the impression cylinder without being previously trimmed.

Extending transversely of the machine, between the flights of tapes 5, I have shown a reciprocating shaft 7 whereon is a tubular shaft or spindle 8 carrying at its inner end a disk 9 with which a feeler lever 10 carried by shaft 7 is designed to interlock in the event of any interruption in the feed supply and through the turning of the tubular shaft 8 effect the automatic throw off of the press. The means for effecting this purpose forms no part of my present invention, being embraced by Letters Patent issued June 15th, 1909, No. 925,047. Any suitable means may be employed for imparting to the feeler lever shaft 7 a reciprocating movement.

The impression cylinder 3 is shown as being shiftable, that is, it is mounted in eccentric bearings 12, extensions of which are connected by adjustable rods 13 to arms 14 fast on a spring impelled shaft 15, which latter is shown as surrounded by a coiled spring 16, and as supported by the sides of the machine. The tendency of spring 16 is to turn shaft 15 in the direction of the arrow, Fig. 2, to effect the throw off. Fast on shaft 15, at one end thereof, is an arm 17 which on its hub has a shoulder 18 with which engages the lower hooked end of a vertically disposed trip-lever 19. The upper end of lever 19 is designed to be engaged by a screw carried by an arm 21 depending from a short shaft 22 having its bearing in the press frame, said shaft also carrying an upwardly extending arm 23 with which is designed to engage a pin 24 of an arm 25 mounted on tubular shaft 8. When this shaft is caused to rotate with the constantly operated shaft 7, through the instrumentality of the feeler lever, arm 8 will act on arm 23, shaft 22, and arm 21, to turn lever 19 so as to release shaft 15 and permit it to partly rotate under the action of spring 16 and thereby throw off

the impression. In addition to automatically throwing off the impression this movement of shaft 15 may also effect a change in position of one or more devices which normally cooperate to effect the change of the dies or wheels of numbering heads (not shown) carried by cylinder 1. The idea here present is embraced by Letters Patent of the United States No. 764,289 issued to Charles G. Harris, July 5, 1904. In the present instance I have shown a trip roll 26 carried by an arm 27 mounted on a short shaft 28, which shaft is connected by an arm 29 and rod 30 to arm 17. When in its normal position, roll 26 will insure the successive operations of the actuating shafts of several numbering heads, but when shaft 15 is released by trip-lever 19 roll 26 will be thrown out of its working position. Hence while the impression is off the dies of the numbering heads will not be affected by roll 26 although the press cylinders continue to rotate. I have shown two trip rolls 26 and 26^a, one at each side of the machine, so that there may be employed two separate series of numbering heads, having independent actuating shafts, after the manner set forth in my application for patent filed April 26, 1909, Serial No. 492,223.

The means for automatically restoring the impression, and shifting the trip rolls when numbering heads are employed, may be varied, but I shall now describe one form which I have found of advantage.

31 is a lever which is fulcrumed on a stud 32 at one side of the press. This lever at one end carries a roll 33 which is normally held by a spring 34 against a cam 35, which cam is shown as mounted on the shaft of the impression cylinder and as revoluble therewith, but it may be otherwise located and operated provided its action on the lever 31 will occur once in each revolution of the press cylinders. At its other end lever 31 carried by a stud 36 which extends laterally beneath a shoulder 37 of lever 38 fast on shaft 15. This lever has an arm 39 corresponding to arm 17 and connected in the manner described in connection with the latter to a numbering head trip roll 26^a. This allows of the use of separate series of numbering heads having independent actuating shafts extending in opposite directions. When cam 35 depresses the roll-carrying end of lever 31 stud 36 will, if shaft 15 has been previously tripped, engage shoulder 37 of lever 38 and turn shaft 15, as against the tension of its spring, to an extent sufficient to permit such shaft to be retained by lever 19. Thus the impression is automatically thrown on and the numbering head trip rolls are restored to their normal positions. If, however, no stock is interposed at the proper time to prevent the re-locking of the feeler

lever and disk 9 the impression will be again thrown off and the trip rolls shifted before the plate cylinder can act on the impression cylinder or any of the numbering head shafts engage such trip rolls.

I have shown stud 36 as mounted on the end of a rod having a knurled head 40 so that by pulling the latter, to overcome the tension of a spring 41, and slightly turning such stud axially it will be held retracted by means of a lug 42. This is of advantage when it is desired to work up the inking rolls, wear of the parts being avoided by preventing the constant throwing on and off of the impression and the switching of the numbering head trip rolls.

The various parts are so arranged that at the moment the shouldered end of lever 38 is raised by the lever 31, the feeler lever 10 is starting on its forward travel. By the action of lever 31 on lever 38 the impression is thrown on and the trip rolls 26 and 26^a positioned to engage the numbering head shafts. If no stock is present, the impression is immediately thrown off, since the feeler lever will again lock with disk 9 and release the trip-lever 19 from shaft 15 which will turn under the action of its spring to throw off the impression and change the positions of trip rolls 26 and 26^a. The upward movement of stud 36 of lever 31, to effect the re-setting of shaft 15, occurs when all the numbering head actuating shafts have passed the rolls 26 and 26^a in one cycle of operation and when the printing cylinder has passed out of cooperative relation to the impression cylinder. If the parts have been previously thrown off they will now be thrown on and so remain as long as stock is in position to be engaged by the feeler lever. If during the next cycle of operation no sheet should be in position to be engaged by the feeler lever the trip mechanism will be actuated to release shaft 15, to effect the throw off and shift the positions of the numbering head trip rolls 26 and 26^a.

My present invention is of primary advantage in connection with printing presses having means for feeding stock from two different positioning points to the point of feeding to the press. It is possible for one of the two operators or feeders to entirely discontinue feeding and yet not interfere with the press handling the stock supplied by the other operator or feeder. In other words, even though stock may be absent for one cycle of operation and the throw off effected, the parts will be immediately restored to their proper positions in ample time for the next cycle of operation. The use of the present improvements, however, is in no way restricted and may be employed in connection with hand fed presses. Here-

tofore it has been customary to provide machines with foot pedals or hand levers to restore the parts to their normal positions by manual power. With my invention the operator is required to give attention only to the feeding of the stock, the throw-off and throw-on being automatically effected.

I claim as my invention:—

1. In a printing press having a shiftable cylinder, throw-off means therefor comprising a shaft, a spring connected to said shaft normally tending to turn the latter to shift said cylinder; a trip for holding such shaft in opposition to the action of said spring, means for releasing such trip to permit said shaft to turn under the action of its spring, and means for automatically restoring such shaft, as against the influence of its spring, to its normal position to be again held by said trip.

2. In a printing press having a shiftable cylinder, throw-off means therefor comprising eccentric bearings and a spring-impelled shaft to which said bearings are connected, a trip for normally restraining said shaft so as to hold said cylinder in its normal position, means for releasing such trip to permit said shaft to turn under the action of its spring, and means for automatically restoring said shaft to its normal position to be again held by said trip.

3. In a printing press having a shiftable cylinder, throw-off means therefor comprising eccentric bearings and a spring-impelled shaft to which said bearings are connected, a trip for normally restraining said shaft so as to hold said cylinder in its normal position, means for releasing such trip to permit said shaft to turn under the action of its spring, and means actuated by the revolution of said cylinder for automatically restoring said shaft to its normal position to be again held by said trip.

4. In a printing press having a shiftable cylinder, throw-off means therefor comprising eccentric bearings and a spring-impelled shaft to which said bearings are connected, a trip for normally restraining said shaft so as to hold said cylinder in its normal position, means for automatically releasing such trip in the event of any interruption in the feed supply so that said shaft may turn under the action of its spring, and means for automatically restoring said shaft to its normal position to be again held by said trip.

5. In a printing press having a shiftable cylinder, throw-off means therefor comprising eccentric bearings and a spring-impelled shaft to which said bearings are connected, a trip for normally restraining said shaft so as to hold said cylinder in its normal position, means actuated by the revolution of said cylinder for automatically releasing such trip in the event of any interruption

in the feed supply so that said shaft may turn under the action of its spring, and means for automatically restoring said shaft to its normal position to be again held by said trip.

6. The combination with a rotary numbering machine, and means for feeding stock thereto, of means for automatically actuating the numbering heads in each revolution of the machine, means for automatically throwing off such actuating means in the event of any interruption in the feed of the stock, and means for automatically restoring such actuating means.

7. The combination with a printing press and a numbering machine, of means for automatically actuating the numbering heads in each revolution of the machine, throw-off means for such actuating means, throw-off means for the printing press, and means for automatically restoring both said throw-off means to their normal positions.

8. The combination with a printing press having a type or plate carrying cylinder, and an impression cylinder, of a numbering attachment for coöperating with said impression cylinder, throw-off means for one of said cylinders, means for automatically actuating the numbering attachment after each imprint thereof, throw-off means for such actuating means, and means for automatically restoring both said throw-off means to their normal positions.

9. The combination with a printing press having a type or plate carrying cylinder, and an impression cylinder, of a rotary numbering attachment having a numbering head or heads for coöperating with said impression cylinder, throw-off means for one of said cylinders, means for automatically actuating the numbering head or heads in each revolution of the numbering attachment, throw-off means for such actuating means, and means for automatically restoring both said throw-off means to their normal positions.

10. The combination with a printing press having a type or plate carrying cylinder, and an impression cylinder, of a numbering attachment for coöperating with said impression cylinder, means for feeding stock to said impression cylinder, means for automatically actuating the numbering attachment after each imprint thereof, means for automatically throwing off said impression cylinder and said actuating means in the event of any interruption in the feed supply, and means for automatically restoring such throw-off means.

11. The combination with a printing press having an impression cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft,

means adapted to actuate said trip in the event of any interruption in the feed supply, and means for automatically restoring said shaft in position to be again held by said trip.

12. The combination with a printing press having an impression cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft, means adapted to actuate said trip in the event of any interruption in the feed supply, and means actuated by the revolution of said impression cylinder for automatically restoring said shaft in position to be again held by said trip.

13. The combination with a printing press having a shiftable cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft, means for releasing said trip to permit said shaft to turn under the action of its spring, and means for automatically restoring such shaft in position to be again held by said trip, such means comprising a shoulder carried by said shaft, and an intermittently operated element for engaging said shoulder.

14. The combination with a printing press having an impression cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft, means adapted to actuate said trip in the event of any interruption in the feed supply, and means for automatically restoring said shaft in position to be again held by said trip, such means comprising a shoulder carried by said shaft, and an intermittently operated lever for engaging said shoulder.

15. The combination with a printing press having an impression cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft, means adapted to actuate said trip in the event of any interruption in the feed supply, and means for automatically restoring said shaft in position to be again held by said trip, such means comprising a shoulder carried by said shaft, and an intermittently operated lever for engaging said shoulder, said lever being actuated by the revolution of said impression cylinder.

16. The combination with a printing press having an impression cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected,

a trip for normally restraining such shaft, means adapted to actuate said trip in the event of any interruption in the feed supply, means for automatically restoring said shaft in position to be again held by said trip, such means comprising a shoulder carried by said shaft, and an intermittently operated lever for engaging said shoulder, said lever being actuated by the revolution of said impression cylinder and having a stud projecting therefrom to engage said shoulder.

17. The combination with a printing press having a shiftable cylinder, and eccentric bearings therefor, of a spring-impelled shaft to which said bearings are connected, a trip for normally restraining such shaft, means adapted to actuate said trip in the event of any interruption in the feed supply, a numbering attachment for cooperating with said impression cylinder, means for automatically actuating the numbering attachment after each imprint thereof, said actuating means being connected to said spring-impelled shaft, and means for automatically restoring said shaft in position to be again held by said trip.

18. In a printing press having throw-off mechanism comprising a spring-impelled shaft, means for normally holding such shaft to retain the throw-off mechanism in its normal position, means for releasing said trip to permit said shaft to turn under the action of its spring, said shaft having at one end a laterally-extended shoulder, a lever having a stud projecting therefrom to engage said shoulder to turn said shaft in opposition to its spring, and a cam actuated by the press for operating said lever.

19. In a printing press having throw-off mechanism comprising a spring-impelled shaft, means for normally holding such shaft to retain the throw-off mechanism in its normal position, means for tripping such holding means in the event of any failure in the feed-supply, said shaft having at one end a laterally-extended shoulder, a lever having a stud projecting therefrom to engage said shoulder to turn said shaft in opposition to its spring, and a cam actuated by the press for operating said lever.

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

WALTER H. SMITH.

Witnesses:

JOHN A. MURPHY,
FRANCIS S. MAGUIRE.