

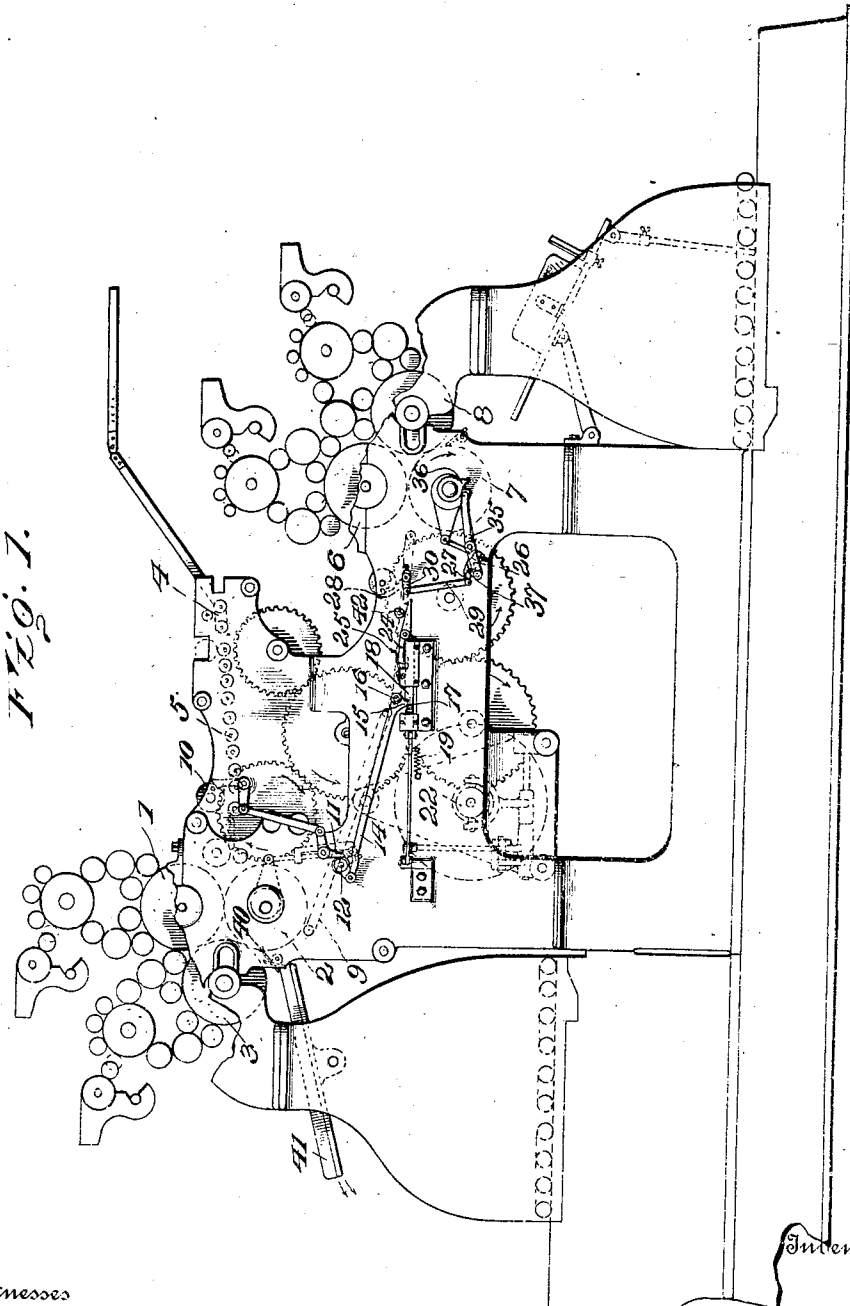
W. H. SMITH.
PRINTING PRESS.

APPLICATION FILED JULY 20, 1910. RENEWED JULY 31, 1912.

1,056,131.

Patented Mar. 18, 1913.

3 SHEETS-SHEET 1.



Witnesses
W. A. Williams
J. A. Murphy

384

Inventor
Walter H. Smith
Attorney

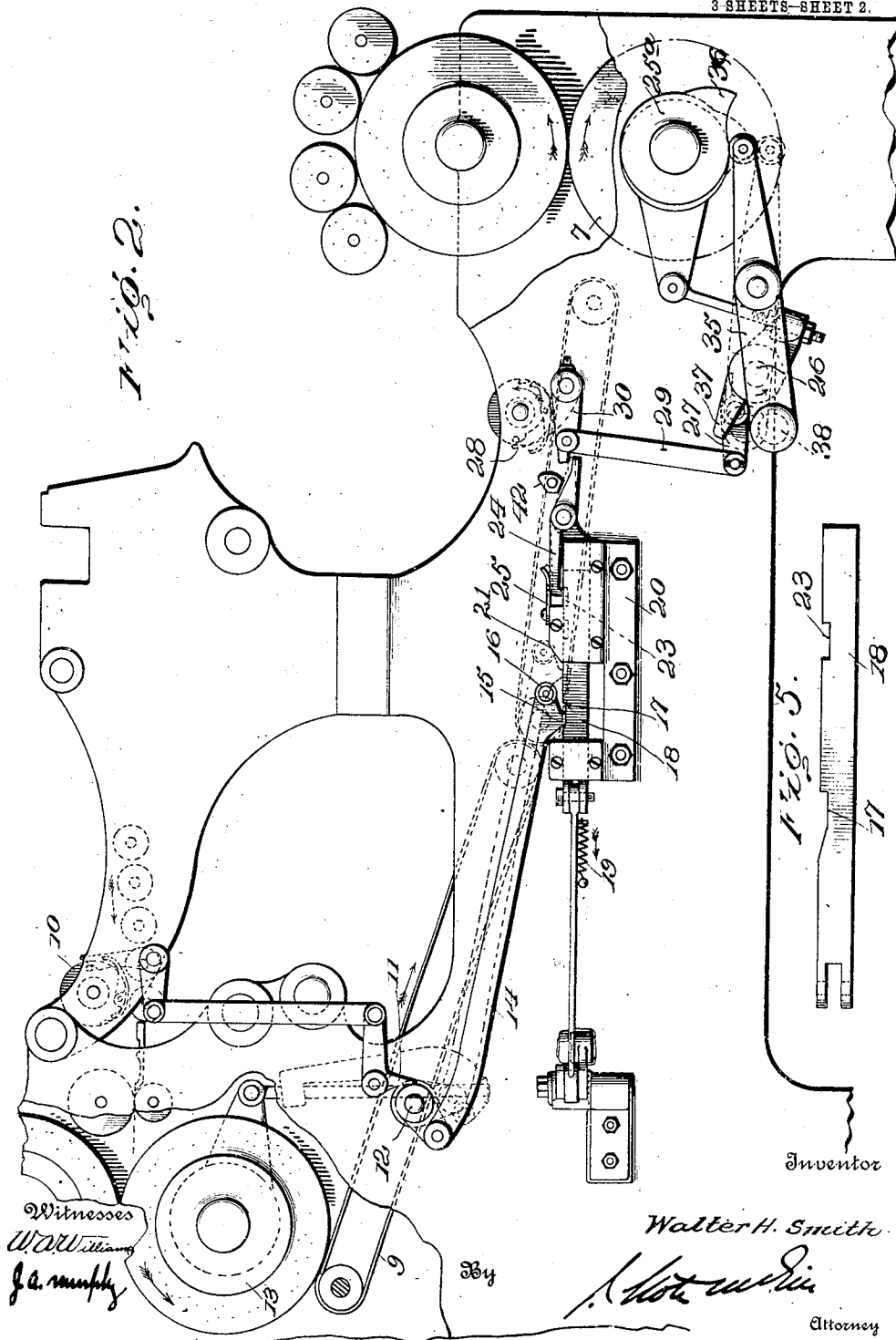
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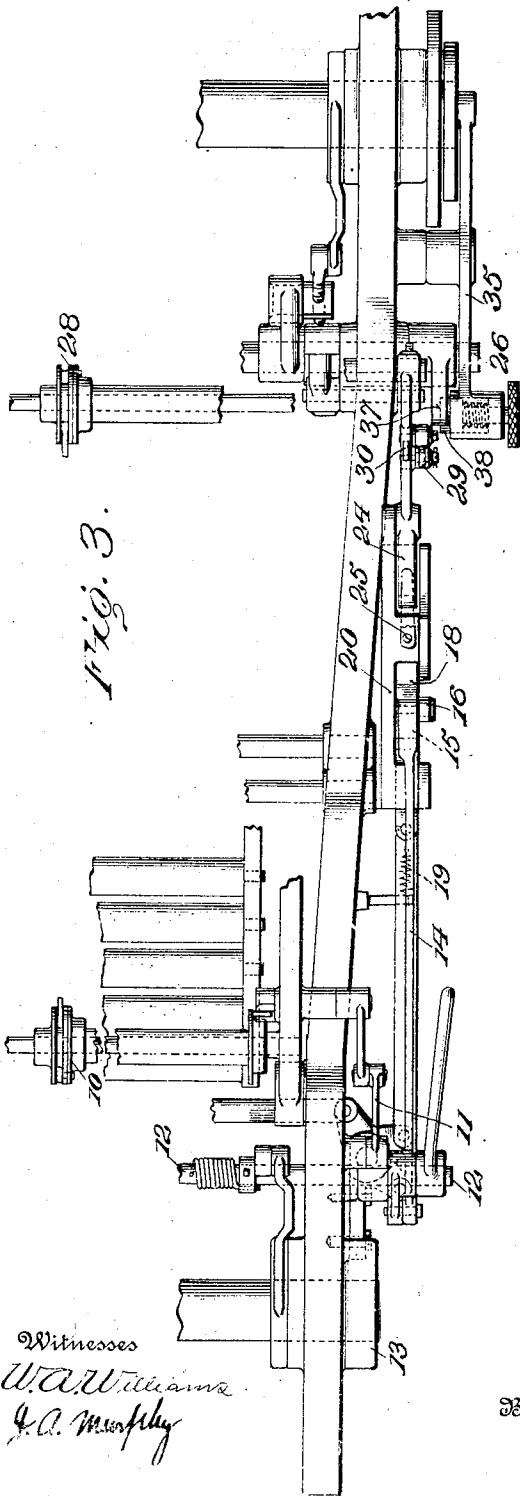


Fig. 3.

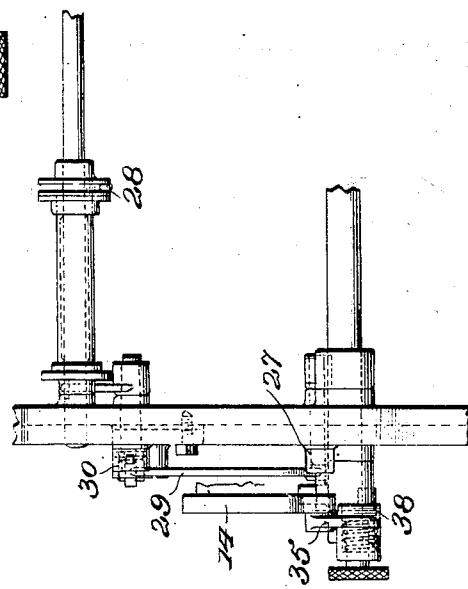


Fig. 4.

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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.

1,056,131.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed July 20, 1910, Serial No. 572,919. Renewed July 31, 1912. Serial No. 712,571.

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 perfecting printing press having separate printing couples, means for successively throwing off the impression of the printing couples and automatically stopping the operation of the machine after the impression of the last couple has been tripped.

The present invention is especially designed for machines for printing, or numbering and printing, in one or more colors, on both sides of a sheet, and embodies two printing couples or combined printing and numbering couples, the stock being automatically conveyed from one couple to the other.

It is the purpose of my invention not only to throw-off successively the impression of the separate couples, but to defer stopping the machine while stock is in transit there-through, and to then automatically operate the stop mechanism.

It is a further object of my invention to automatically restore the impression of the second printing couple when the impression of the first couple is untripped. And a further object is to enable a perfecting press to print stock on one side only and yet be capable of automatically tripping the impression and stop mechanism in the event of any interruption in the feed supply.

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

In the accompanying drawings, Figure 1 is a side elevation of a printing press showing my improvements. Fig. 2 is an enlarged side view of the tripping and stop mechanism. Fig. 3 is a plan view of the parts shown in Fig. 2. Fig. 4 is a fragmentary end view. Fig. 5 is a detail.

Referring to the drawings, 1 designates a form-carrying cylinder and 2 an impression cylinder of a printing couple. Coöperating with the impression cylinder is a third cyl-

inder 3 which may be a numbering cylinder or a second form-cylinder. The printing may be in different colors, since the cylinders 1 and 3 have separate ink reservoirs and rolls. The stock may be fed to the cylinders automatically or by hand. I have shown at 4 an automatic sheet feed of the "Harris" type, and at 5 conveyer rolls for transferring the stock to the cylinders.

6 designates a form-carrying cylinder, and 7 an impression-cylinder of a second printing couple. Coöperating with impression cylinder 7 is a third cylinder 8 which may be a numbering cylinder or a second form-cylinder, and these two cylinders, 6 and 8, may have separate reservoirs and ink rolls, as shown. This second couple is shown on a lower plane than the first couple, but this is not necessary. Stock after passing through the first couple is conveyed by any suitable means, such as tapes 9, to the second couple, and from the latter may be delivered to a folding machine or perforator, or onto an ordinary lay-boy, or it may be passed to and through another printing couple.

In connection with the first couple I employ some suitable stock-controlled trip mechanism for tripping or throwing-off the impression of the first couple in the event of any interruption in the feed supply. Any suitable means may be employed for this purpose, that shown at 10 being constructed after the manner contemplated by Letters Patent No. 925,047, issued to me June 15, 1909. When the trip mechanism is operated, by failure in the feed-supply, it will disengage a dog 11 and release a spring-impelled shaft 12 to which the eccentric bearings 13 of impression cylinder 2 are connected. When the impression is tripped the partial turning of shaft 12, under the action of its spring, causes the longitudinal movement of a shifting bar 14 which is shown as occupying an inclined position. At its lower end this bar has a lug or projection 15 on its underside, and above and to one side of this lug is a roller 16. The lug 15 normally rests in a notch 17 in a longitudinally-movable controlling bar 18 and holds the latter against the influence of a spring 19. When the impression of the first couple is tripped and bar 14 is moved longitudinally, bar 18 will be by it similarly moved in its guide 20, and as roller 16 rides

up an incline 21 of guide 20, lug 15 will be withdrawn from notch 17. Unless bar 18 be restrained it will then immediately fly forward under the recoil of its spring 19, and through suitable connections act on a prime-mover, conventionally indicated at 22, to bring the press to rest. It being necessary, however, to defer stopping the machine while stock is in transit between separate couples, I provide for holding controlling bar 18 in its set or shifted position until the last sheet or piece of stock has passed through the final couple. For this purpose bar 18 is provided with a second notch 23 into which the hooked end of a lever 24 is forced by a spring 25 when such notch is brought beneath such end. The controlling bar 18 will remain held by lever 24 until, according to the arrangement shown, the impression of the second couple is tripped.

The impression cylinder 7 of the second couple is mounted in eccentric bearings 25*, which bearings are connected to a spring-impelled shaft 26 which is normally held by a lever 27 which is caused to release said shaft when trip mechanism, indicated at 28, is actuated upon failure in the feed supply. The lever 27 is connected by a link 29 to an arm 30 of the trip mechanism, and when the latter is actuated by failure in the feed supply the projecting end of arm 30 will engage the free end of lever 24 to release bar 18 which will then be impelled by its spring 19 to stop the machine. This will not occur, however, until the trip-mechanism of the second couple is actuated by the non-presence of stock. If additional couples should be employed the impressions will be tripped successively, but the prime mover would not be brought to rest until after the last piece of stock has passed through the final couple. I preferably provide the final couple with means for automatically restoring the impression in each cycle of operation, and the same is shown as comprising a lever 35, a constantly-operating cam 36, and a projection 37 of shaft 26 with which a lateral projection 38 of lever 35 will engage to move said shaft to restore the impression. Unless the feed supply has been renewed, however, the shaft 26 will not be engaged and held by lever 27.

From what has been said it will be seen that notwithstanding the distance that separates the two printing couples the tripping of the first couple will not interfere with the continued operation of the second couple until the sheet last through the first couple has passed through the second couple, and thereupon the controlling bar of the prime-mover will be released to bring the machine to rest.

In order that a press normally intended as a perfecting press may be utilized for print-

ing on one side only, I provide strippers 40, as shown in Fig. 1. When they are moved in the position indicated in dotted lines the stock instead of passing to conveyer 9 will fall onto lay-boy 41, but when the machine is used for printing on both sides the strippers are moved into the positions shown in full lines. When the machine is used for printing on only one side it is necessary to bring it to rest when the impression of the first couple is thrown off. To this end I provide an eccentric 42 to prevent lever 24 from engaging controlling bar 18. When bar 14 is actuated by the partial rotation of spring-impelled shaft 12, and bar 18 is moved longitudinally, in opposition to its spring, such bar will immediately fly back, under the influence of its spring, as soon as lug 15 is lifted from notch 17, and thereby stop the press.

I claim as my invention:—

1. A printing press comprising, in combination, a plurality of separate printing couples, means for conveying stock between the couples, and means designed to be actuated in the event of any interruption in the feed supply between the couples for tripping and untripping one of the couples in each operation thereof.

2. A perfecting printing press comprising two separate printing couples, means for conveying stock from one couple to the other, means designed to be actuated in the event of any interruption in the feed supply for successively tripping said printing couples, and means for untripping the second couple in each operation thereof, the tripping of the second couple occurring in the event of any interruption in the feed supply thereto.

3. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, a second series of cylinders constituting a second printing couple, means for tripping the impression of the first couple, and means designed to be actuated in the event of any interruption in the feed supply of the second couple for automatically tripping the impression of such second couple.

4. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, a second series of cylinders constituting a second printing couple, means for tripping the impression of the first couple, and means for automatically tripping and untripping the impression of the second couple once to each revolution, the tripping of the second couple occurring in the event of an interruption in the feed supply to such second couple.

5. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, means designed to be actuated in the event of any

interruption in the feed supply for automatically tripping the impression of such couple, a second series of cylinders constituting a second printing couple, means for conveying stock from one couple to the other, and means designed to be actuated in the event of any interruption in the feed supply between the couples for automatically tripping the impression of the second couple.

6. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, means designed to be actuated in the event of any interruption in the feed supply for automatically tripping the impression of such couple, a second series of cylinders constituting a second printing couple, means for conveying stock from one couple to the other, means for automatically tripping and untripping the impression of the second couple once to each revolution, and means, actuated by the advance of a sheet, for preventing the tripping of such second couple.

7. A perfecting printing press comprising, in combination, a plurality of separate printing couples, means for conveying stock between the couples, means, actuated by the absence of stock, for tripping each printing couple, and stop mechanism designed to be automatically actuated after the last couple has been tripped.

8. A perfecting printing press comprising, in combination, a plurality of separate printing couples, means for conveying stock between the couples, means, actuated by the absence of stock, for successively tripping each printing couple, and stop mechanism designed to be actuated after the last couple has been tripped.

9. A perfecting printing press comprising, in combination, a plurality of separate printing couples, means for conveying stock between the couples, means, actuated by the absence of stock, for successively tripping each printing couple, and stop mechanism designed to be actuated by the tripping of the last couple.

10. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, means, actuated by the absence of a sheet, for automatically tripping the impression of such couple, a second series of cylinders constituting a second printing couple, means for conveying stock from one couple to the other, means, actuated by the absence of a sheet, for automatically tripping the impression of the second couple, and automatic stop-mechanism designed to be actuated by the tripping of the second couple.

11. A perfecting printing press comprising, in combination, a series of cylinders constituting a printing couple, means, actuated by the absence of a sheet, for automatically tripping the impression of such

couple, a second series of cylinders constituting a second printing couple, means for conveying stock from one couple to the other, means, actuated by the absence of a sheet, for automatically tripping the impression of the second couple, automatic stop-mechanism, means actuated by the tripping of the initial couple for setting said stop-mechanism, and means actuated by the tripping of the final couple for releasing such stop-mechanism.

12. A printing press comprising, in combination, a printing couple, a second printing couple, means for conveying stock from one couple to the other, means for tripping the first couple actuated by the absence of stock, a prime-mover, and stop-mechanism therefore actuated by the tripping of the second printing couple.

13. A printing press comprising, in combination, a printing couple, a second printing couple, means for conveying stock from one couple to the other, means for tripping the first couple actuated by the absence of stock, a prime-mover, stop-mechanism therefor, a controlling-bar for such stop-mechanism designed to be set by the tripping of the first couple, and means for releasing such controlling bar to permit such stop-mechanism to act, such means being rendered effective by the absence of stock in said second couple.

14. A printing press comprising, in combination, a printing couple, a second printing couple, means for conveying stock from one couple to the other, means for tripping the first couple actuated by the absence of stock, a prime-mover, stop-mechanism therefor, a controlling-bar for such stop-mechanism designed to be set by the tripping of the first couple, means for holding such bar in its set position, and means for tripping said second couple in the event of absence of stock, said bar being released synchronously with the tripping of the second couple.

15. In combination, a printing couple, throw-off mechanism therefor, a second printing couple, throw-off mechanism therefor, means for conveying stock from one couple to the other, a prime-mover, stop-mechanism therefor, means for actuating such stop-mechanism initially upon the actuation of the throw-off of the first couple, and other means for allowing such stop-mechanism to become effective on said prime-mover synchronously with the actuation of the throw off of the second couple.

16. In combination, a printing couple, throw-off mechanism therefor, a second printing couple, throw-off mechanism therefor, means for conveying stock from one couple to the other, a prime-mover, stop-mechanism therefor comprising a spring-held controlling bar, a second bar, designed

to be actuated by the throw-off of the first couple, for moving said controlling bar in one direction, a lever for retaining said controlling bar in the position to which it is moved by said second bar, and means for disengaging said lever from said controlling bar when the throw-off of the second couple is actuated.

17. In combination, a printing couple, throw-off mechanism therefor, a second printing couple, throw-off mechanism therefor, means for conveying stock from one couple to the other, a prime mover, stop-mechanism therefor comprising a spring-held controlling bar having two recesses, a second bar, designed to be actuated by the throw-off of the first couple, having a lug

for entering one of said recesses to move said controlling bar in one direction, means for disengaging said second bar from said controlling bar while moving the latter, a spring-held lever for engaging the second recess in said controlling bar, and means actuated by the throw-off of the second couple for disengaging said lever from said controlling bar.

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

WALTER H. SMITH.

Witnesses:

A. D. LOOP,

C. G. PRITCHARD.