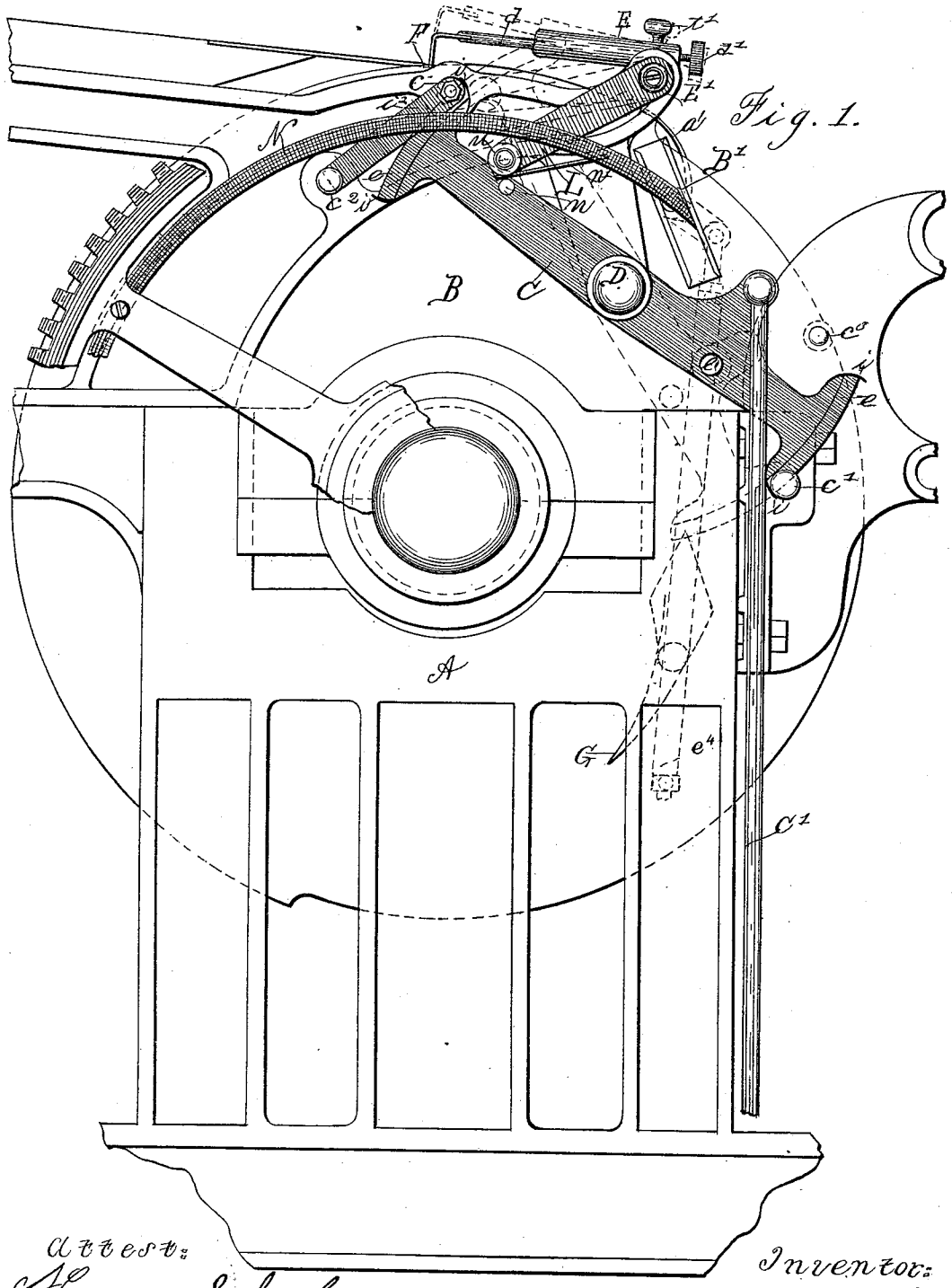
(No Model.)

3 Sheets—Sheet 1.

R. MIEHLE.

PRINTING MACHINE.

No. 391,178. Patented Oct. 16, 1888.



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(No Model.) 3 Sheets—Sheet 2.

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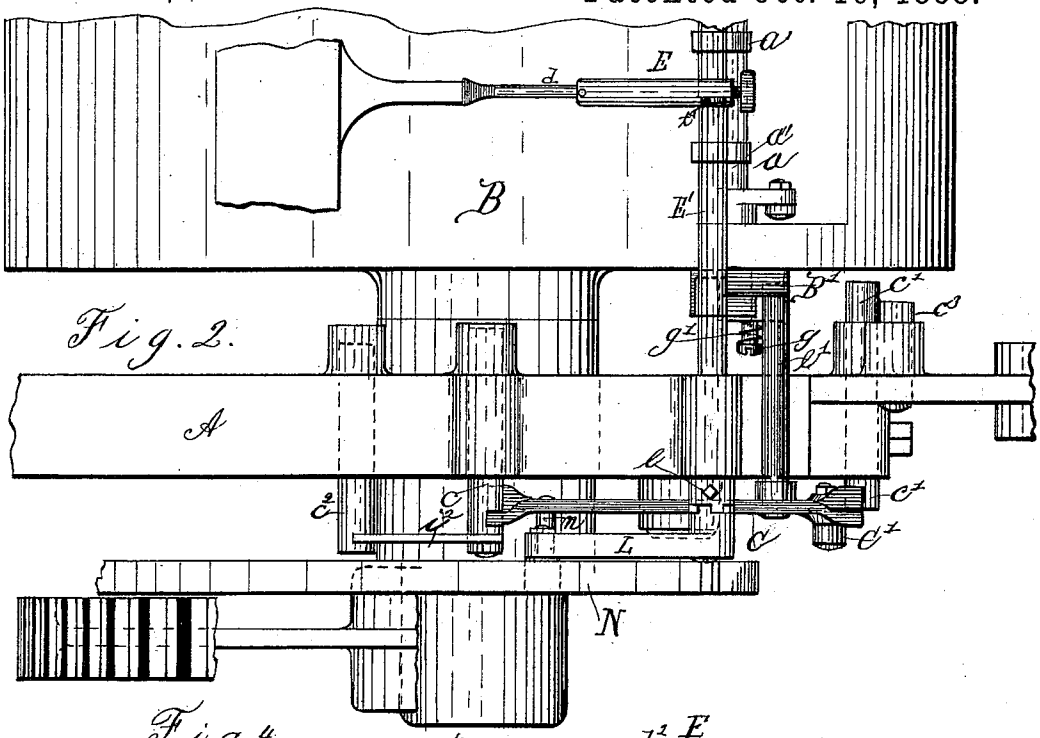


Fig. 2.

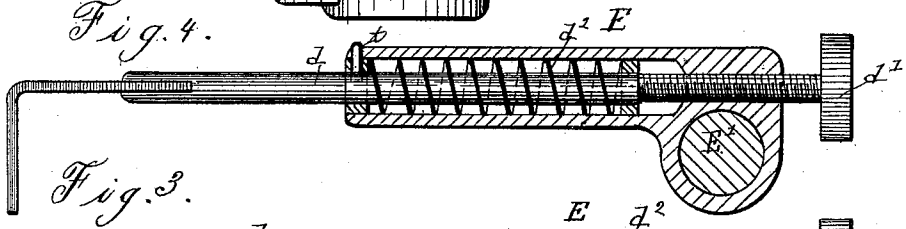


Fig. 4.

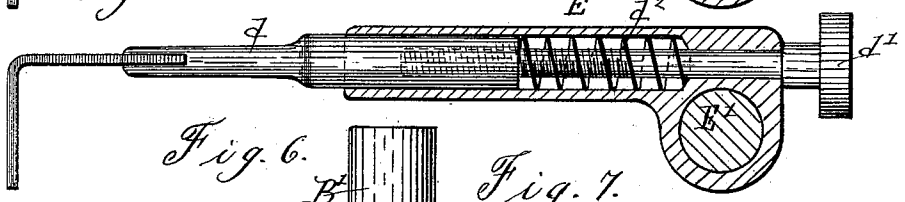


Fig. 3.

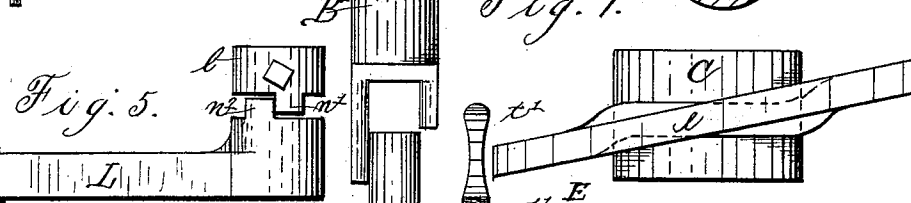


Fig. 6.

Fig. 5.

Fig. 7.

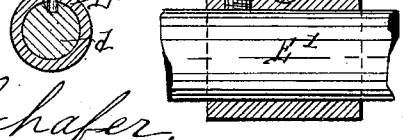


Fig. 14.

Fig. 15.

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Fig. 8.

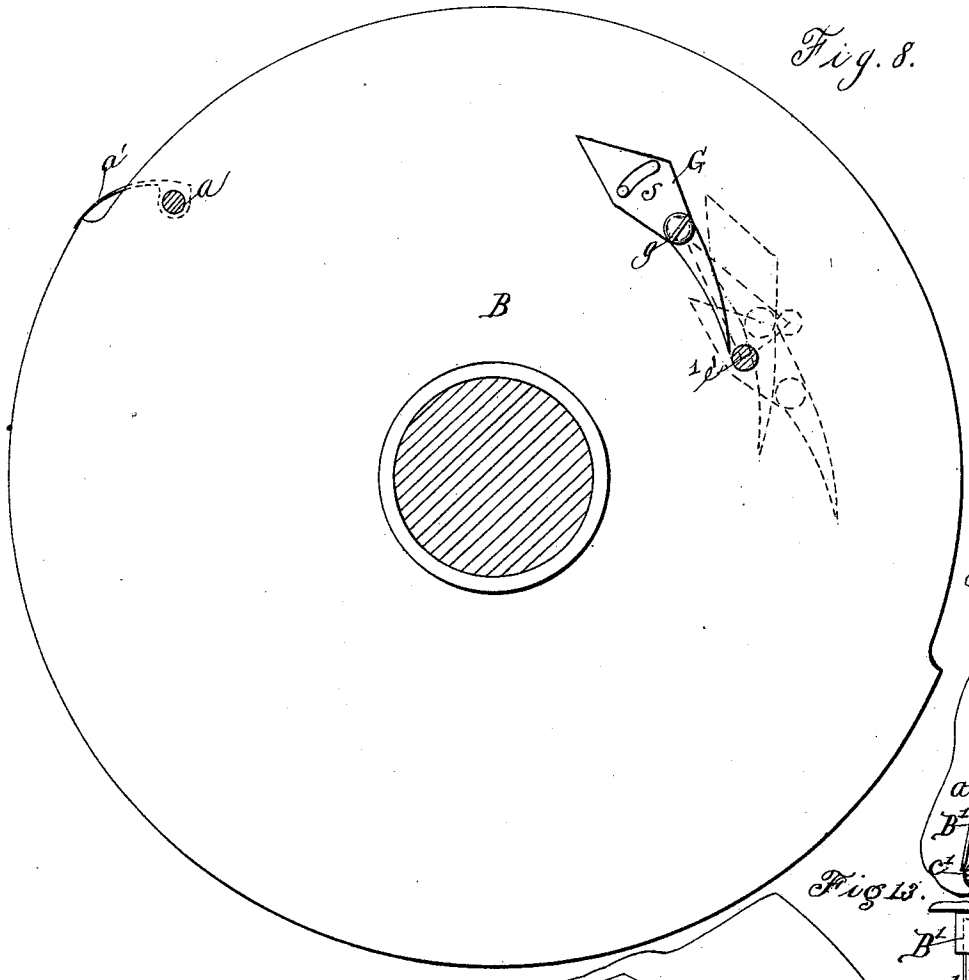


Fig. 12.

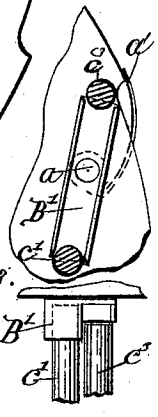


Fig. 13.

Fig. 10.

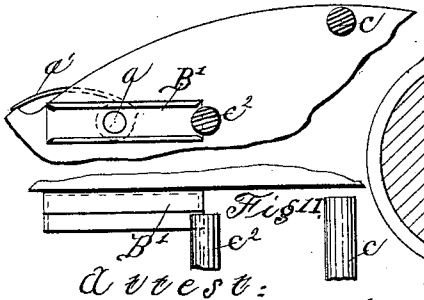
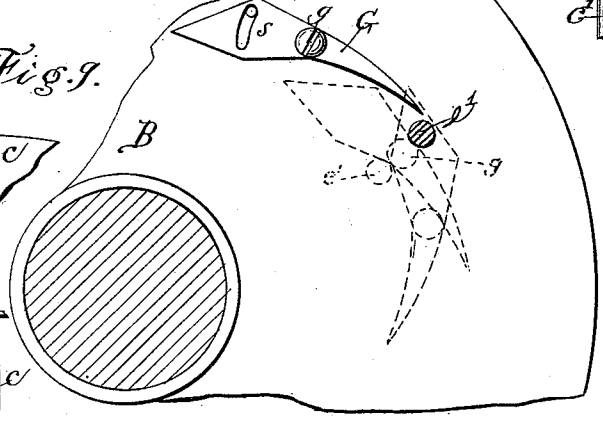


Fig. 11.

Fig. 9.



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UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 391,178, dated October 16, 1888.

Application filed June 10, 1887. Serial No. 240,960. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification, to wit:

The present invention relates to the gripper mechanism and feed-guides for cylinder printing-presses; and it consists of combinations and arrangement of parts by which the same are operated, hereinafter described and claimed.

In the drawings, Figure 1 represents a part of a side view in elevation of a two-revolution cylinder printing-press with the present invention attached thereto; Fig. 2, a top plan view of Fig. 1. Fig. 3 shows a longitudinal section of the feed-guides. Fig. 4 is a longitudinal section of a modification of the feed-guides. Fig. 5 shows a top view of the operating-arm and collar for the feed-guides. Fig. 6 shows an end view of the operating-tumbler for the grippers; also one of the safety-pins in its relative position with the same. Fig. 7 shows an end view of the rock-lever for operating the pins, which in turn operate the tumbler. Figs. 8 and 9 illustrate the operation of the wedge or dog for rocking the lever which operates the tumbler-pins. Fig. 10 illustrates one of the safety-pins engaging the tumbler. Fig. 11 is a top plan view of Fig. 10. Fig. 12 represents the tumbler passing one of the safety-pins without engaging the same; Fig. 13, a top plan view of same. Fig. 14 is a sectional end view of the extension of the feed-guides. Fig. 15 is a section of the rear portion of the feed-guides lengthwise of the rod, showing the set thumb-screws for fastening the same upon the rod.

A designates the usual side frame of a cylinder printing-press having the impression cylinder B mounted therein, in which the rod *a* is held, having the usual grippers, *a'*, secured thereon. Upon the outer end of said gripper-rod, which projects to the outside of the cylinder, is secured the tumbler B', which is operated by the pins *c c'* ordinarily. The spring c^4, as shown in dotted lines in Fig. 1, is the usual spring employed to hold the grippers *a'* in an open or closed position.

The press herein described is of the class known as "two-revolution cylinder printing-presses;" but parts of the herein-described invention may be used on a single-revolution printing-press as well. As already stated, the cylinder makes two revolutions for one impression. It is therefore necessary to slide the pins *c c'* into and out of the path of the tumbler B' to operate the same with but one of the pins alternately for each revolution of the cylinder. To accomplish this there is provided a sector or rock-lever, C, which is pivoted upon the side frame at D. This lever has each of its ends *e e* broadened, blade-like, the same being somewhat worm-shaped or twisted, as shown in Fig. 7. These ends pass into slots of the pins *c c'*, in which the same are allowed to slide.

It is evident that as the lever C is rocked the pins *c c'* are slid lengthwise, which is readily seen by referring to Fig. 2, in which the pin *c* is drawn back out of the path of the tumbler B', while the pin *c'* is in position to operate it. This is exactly reversed when lever C is rocked in the opposite direction, as shown in dotted lines in Fig. 1. The pin *c* then has a position to engage the tumbler B' while the other pin, *c'*, is drawn back. The pins c^2 c^3 are for the purpose of securing tumbler B' and operating-pins *c c'* from any accidental breakage, which occurs when the pins are not reversed properly or when the tumbler is turned in the wrong direction. This happens sometimes through carelessness or breaking of the spring c^4.

To bring the pins c^2 c^3 to act upon the tumbler B', the same must be turned in the wrong direction, as stated, so that the same must be reversed before being acted upon by either of the pins *c* or *c'*, whichever one is in the path of the tumbler, to prevent either the pins or tumbler being damaged. This is accomplished as follows: It will be noticed that the tumbler is formed with a wide and narrow flange, as shown in Fig. 6. This figure also shows one of the two safety-pins, which are shorter than the pins *c* and *c'*, corresponding to the difference of the width of two flanges on the tumbler, the wide flange of the tumbler being the operating side—that is to say, it strikes first upon the pins when either opening or closing the grippers. The difference of this shortage

is due to the fact that when the tumbler is in its proper positions to operate upon either of pins *c* or *c'* the tumbler clears the short pins c^2 c^3 without engaging the same, as will readily be seen in Figs. 12 and 13, in which the tumbler is about to be turned by the pin *c'*. In Figs. 10 and 11 is illustrated the tumbler turned in the wrong direction, so as to engage the short pin c^2 with the wide flange of the tumbler to turn the same properly to engage pin *c*. The pin c^3 performs the same function for pin *c'* when the tumbler is turned wrong for engaging the same. The only difference of the pins c^2 and c^3 is the one pin, c^3, is made stationary in the frame, while pin c^2 slides with pin *c* through connection of the plate i^2, this being a necessity, as the cylinder revolves one revolution and over before discharging the printed sheet, and the tumbler and grippers must pass pin *c* in a closed position, it being therefore necessary to also draw the short pin c^2 back from the path of the tumbler so as not to open the grippers at this point, which it will do if the same is left in its inner position. This movement of pin c^2 is not necessary when applied to a single-revolution cylinder-press in which all of the engaging-pins are made stationary, as the grippers receive the sheet and discharge it while making one revolution.

When delivering the sheet at the rear of a two-revolution press, the opening-pin *c'* is placed below the feed-board; also, the short pin c^3, which then would be made to operate with pin *c'* and pin c^2, will be made stationary.

In some cases the arrangement of the safety-pins may be modified—viz., by using but one of the safety-pins, whichever one is desired.

The rocking of lever C can be effected by the vertical rod C', as shown in Figs. 1 and 2, which may be operated by a cam or crank pin upon the cam-shaft, usually having its position at the lower part of the press; but the preferred way of operating the same is through the wedge or dog G, held by screw *g* to the cylinder, which serves as a pivot. A spring, *g'*, having a position between the screw-head and wedge G, serves to give enough friction to the wedge to hold it in position when turned in either direction while operating.

The operation and positions of the various parts described are: The cylinder-grippers having passed around with the sheet, as in Fig. 1, the same having received the impression and being now ready for delivery—which is effected at the front or top of the cylinder, the mechanism for which is not shown—the tumbler arrives at pin *c'*. The lower portion of the same is then swung so as to open the grippers. Now, in order to close the grippers, when they arrive at the point of the feed-board marked F, the lever C is rocked from the position shown in full lines in Fig. 1 to the position shown in dotted lines, which causes pin *c* to be moved in the path of the tumbler and closes the grippers when the same passes this point, the grippers being then allowed to retain the sheet to be printed as the pin *c'* has been drawn back and allows the tumbler to pass the same. The lever in the meantime is rocked so as to draw pin *c* back to allow the tumbler being brought to pin *c'* before opening the grippers to discharge the sheet, as before described.

When the wedge or dog G is employed to operate the rock-lever C, its function is such that at every revolution of the cylinder the lever C is moved in an opposite direction. Thus, when the parts have a position as in Fig. 9 and the cylinder is turned, the wedge G is brought to bear against pin *c'*, (which is secured firmly to the rock-lever C,) and moves the same inward toward the center of the cylinder, as illustrated by the dotted lines in Fig. 9. The rock-lever C now has a position as shown by the dotted lines in Fig. 1, the movement of which is limited at this point by stops *i* upon the outer end of same, which bear against the pins *c c'*. The continued movement of the cylinder brings the rear portion, *s*, of wedge G in contact with pin *c'* and presses it outward, as shown in dotted lines in Fig. 9. This movement given to the wedge serves to bring the same in position to operate the lever C in the opposite direction at the next revolution of the cylinder, which brings the wedge G in position with pin *c'*, as shown in full lines in Fig. 8, and when the cylinder is moved farther forward the positions of pin *c'* and wedge G are as shown by the intermediate dotted lines. Further movement of the cylinder will cause the pin to engage the part *s* and throw the same inward, as shown in the third position in Fig. 8, or in full lines in Fig. 9.

The description and operation of the feed-guides are as follows: E' designates the feed-guide rod, upon which are placed the feed-guides E. The outer end of said rod is provided with an arm, L, which swings loosely thereon, its downward movement being arrested by the pin *n*, secured into lever C. Upon rod E', between the arm L and bearing for said rod, is a collar, *l*, which is secured to rod E' by a set-screw. This collar has a small lug, *n'*, which engages lug n^2 upon arm L. The position of the feed-guides is such that the sheet may be fed to the same for the grippers to seize, and in order to allow the sheet being drawn past the same by the grippers the guides are raised as follows: The cylinder-grippers in Fig. 1 are in position to bring the sheet forward and discharge the same as the tumbler is turned by the pin *c'*, after which lever C is rocked by either the vertical rod or the wedge G, as heretofore described, so that pin *n* raises arm L to a position as shown by the intermediate dotted lines in Fig. 1, after which the forward end of cam N (which is secured upon the cylinder-driving gear) raises arm L and feed-guides, as shown by dotted lines in Fig. 1, by means of the lug n^2 upon arm L engaging lug *n'* on the collar *l*. It will be understood that collar *l* is so set as not to be engaged by arm L until cam N begins to raise arm L, the downward movement of the feed-guides being arrested by the usual fingers upon the feed-board, or

otherwise. They are again brought down to their proper position by the friction-roller *u* clearing cam N, which allows arm L to fall upon the pin *n*. The flat spring *n'*, secured to the under side of arm L, serves to raise the same in relation to cam N, the spring being formed so as to give the requisite movement to arm L to ride cam N properly.

It will be noticed by the above description that the feed-guides are raised for but one revolution of the cylinder, while on the other revolution the arm is dropped and the friction-roller *u* has a position below cam N, as in Fig. 1. The feed-guides then are allowed to rest upon the fingers of the feed-board for the sheet to be fed thereto.

The main part or body E of the feed-guides is hollowed to receive the extension *d*, which is adjusted by the thumb-screw *d'*, which in Fig. 3 passes freely through the rear portion of body E and is screwed into extension *d*. The spiral spring d^2 serves to force the extension outward when thumb-screw *d'* is screwed out of the extension. The extension *d* is again drawn back when the screw *d'* is screwed into the same, as the shoulder of the thumb-wheel bears against the rear part of body E. The object of this spiral spring is to move the extension in one direction and the screw to move the same in the other, thereby always preserving a tight joint between the extension and the shoulder of screw *d'*, which bears against the body E. Pin *t* is secured in body E and serves to prevent the extension from turning, the groove t^2 in the extension being sufficiently long to allow the same to be passed in and out of the body freely. Thumb-screw *t'* is for the purpose of securing the body E upon the guide-rod E'.

Fig. 4 shows the extension *d* pressed inward by the spring d^2 and the screw *d'*, having its thread in the body E, this being but another way of arranging the several parts, and is thought to be embraced in the invention and covered by the claims.

What I claim as new is—

1. In a cylinder printing-press, the impression-cylinder having grippers operated by a tumbler and engaging-pins, the combination of the tumbler having a wide and narrow flange, the usual two engaging-pins, and an additional short pin or pins to engage the wide flange of the tumbler when same is turned in a wrong direction, substantially as described.

2. In a cylinder printing-press, the combination of the impression-cylinder grippers, tumbler, and the usual engaging-pins, with a rock-lever, said rock-lever having twisted blades for operating said pins, substantially as described.

3. In a cylinder printing-press, the combination, with the cylinder-grippers, tumbler, and the usual engaging-pins, of the rock-lever having twisted blades, said lever being rocked by the dog or wedge passing around with the cylinder, substantially as described.

4. In a cylinder printing-press, the combination of the impression-cylinder, grippers, and tumbler, having a broad end flange and operated by two long pins and two short pins, one of which is connected with one long pin and moves with the same, substantially as described.

5. In a cylinder printing press, the combination, with the cylinder and the usual guides and their carrying-rod, of the operating-arm having a position below the operating-cam at one revolution of the cylinder, and a raised position at its next revolution, so as to be engaged by the cam to raise the guides, substantially as described.

6. In a cylinder printing-press, the combination, with the cylinder, of a feed-guide having an extension which is adjusted in one direction by a screw and in the other by a spiral spring, substantially as described.

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