

No. 663,790.

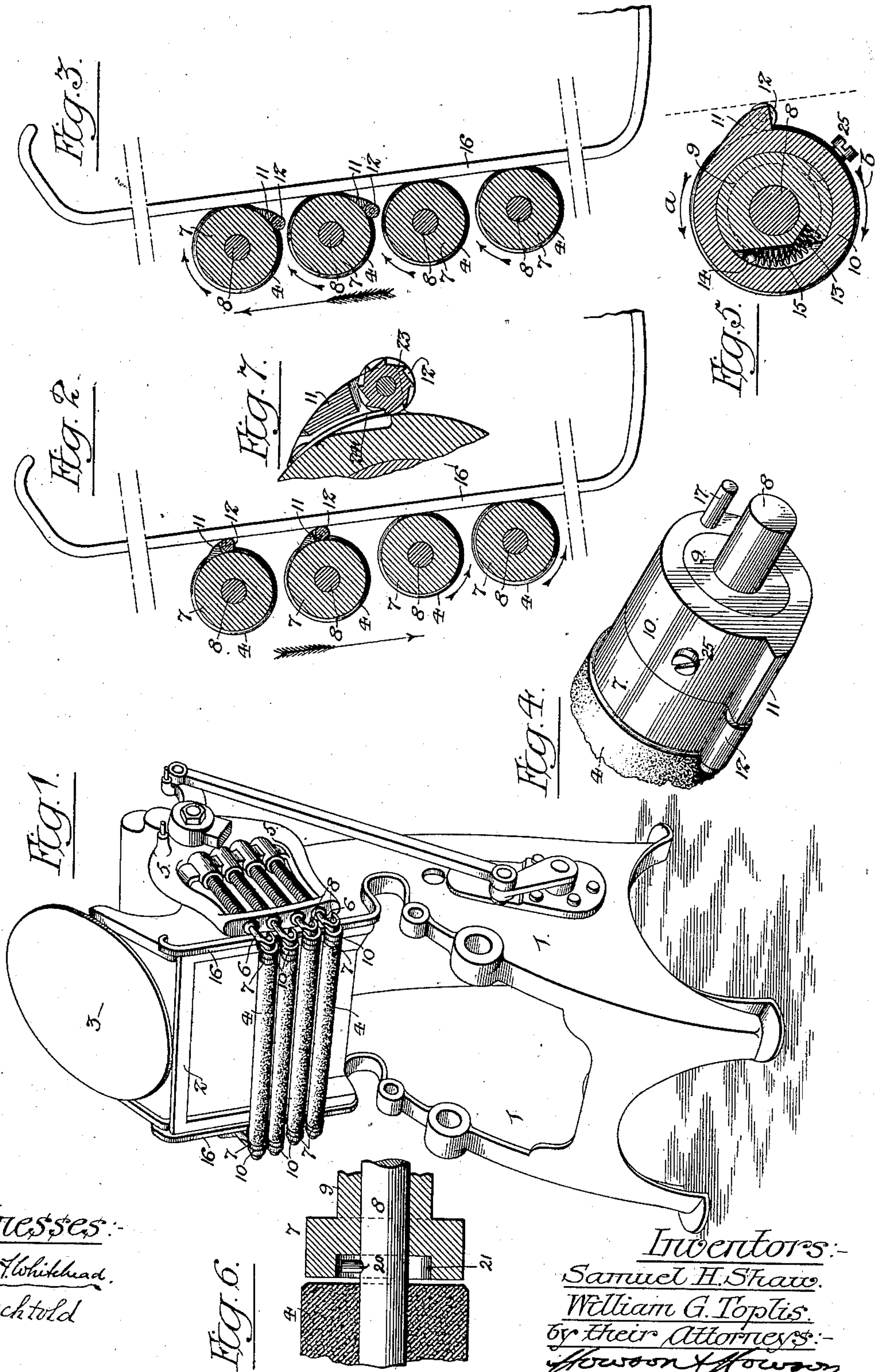
S. H. SHAW & W. G. TOPLIS.

Patented Dec. 11, 1900.

PRINTING PRESS.

(Application filed Mar. 12, 1900.)

(No Model.)



Witnesses:  
Charles H. Whitehead,  
J. E. Bechtold

Inventors:  
Samuel H. Shaw,  
William G. Toplis,  
by their Attorneys:  
Howson & Howson



# UNITED STATES PATENT OFFICE.

SAMUEL H. SHAW AND WILLIAM G. TOPLIS, OF PHILADELPHIA, PENNSYLVANIA; SAID TOPLIS ASSIGNOR OF ONE-THIRD OF HIS RIGHT TO SAID SHAW.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 663,790, dated December 11, 1900.

Application filed March 12, 1900. Serial No. 8,341. (No model.)

*To all whom it may concern:*

Be it known that we, SAMUEL H. SHAW and WILLIAM G. TOPLIS, citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Printing-Presses, of which the following is a specification.

The object of our invention is to insure such a supply of ink to all parts of the printing-form in a job-printing press as to cause the distribution of ink on the printing-form more effectively and uniformly than usual, an object which we attain by holding one or more of the form-inking rollers, preferably an upper roller or rollers of the set, out of contact with the face of the printing-form while said set of rollers is being carried downward over the same and bringing said roller or rollers into contact with the face of the form on the upward movement.

In the accompanying drawings, Figure 1 is a perspective view of sufficient of an ordinary job-printing press to illustrate our invention. Figs. 2 and 3 are diagrams illustrating the manner in which the invention is carried into effect. Fig. 4 is a perspective view illustrating the means employed for carrying out the invention. Fig. 5 is a transverse section of the same; and Figs. 6 and 7 are views, on an enlarged scale, illustrating certain details of the invention.

In Fig. 1 part of the frame of an ordinary form of job-printing press is represented at 1, while 2 represents the chase for receiving the printing-form; 3, the inking disk or plate above said chase; 4, the form-inking rollers, and 5 the vibrated frame, carrying the spring-pressed and hooked sockets or bearings, which engage with the projecting journals of the form-inking rollers and serve to draw the latter into contact with the face of the printing-form as they are carried up and down past the same by the vibration of the frame 5. Usually the chase from top to bottom is of a length about equal to twice the circumference of a form-inking roller. Hence each of said inking-rollers will make about two revolutions while being carried from the top to the bottom of the chase or back again. As a consequence of this most of the ink taken up by the form-inking rollers from the ink-sup-

plying plate or disk above the chase is spread upon the upper portion of the printing-form contained in the chase—that is to say, it is applied to the printing-form by the inking roller or rollers during the first revolution of the same on the downward movement. Hence there is a very perceptible difference between the upper and lower portions of the print or impression produced, this difference being accentuated by the fact that the rollers on the upward movement being relatively dry have a tendency to remove some of the ink from the form and to the further fact that each portion of each roller on the upward movement comes into contact with the same portion of the form with which it came into contact on the downward movement. Consequently the upward movement of the rollers in an ordinary press instead of being an advantage is actually a detriment. Attempts have been made to overcome this objection by a double inking of the form—that is to say, by having two complete downward and upward movements of the form-inking rollers over the printing-form between successive impressions; but this instead of correcting the evil tends to increase it, as there will always be more ink deposited on the upper part of the printing-form than on the lower part, and, besides, this plan reduces the production of the press one-half as compared with that of a press having but a single down-and-up movement of the inking-rollers over the printing-form for each impression. Other attempts to overcome the difficulty have involved the use of devices for giving the form-inking rollers a partial turn as they approached the limit of their downward movement, so that on the upward movement of the rollers a portion of each roller would come into contact with a portion of the form different from that with which it came into contact on the downward movement; but this device also has proven to be ineffective for the purpose when solid forms are to be printed. In carrying out our invention, therefore, we propose to hold certain of the form-inking rollers of the set out of contact with the printing-form when said set of rollers is being carried downward over the form and to permit said rollers to come into contact with the printing-



form on the upward movement of the set of rollers. By preference the form-inking rollers thus held out of action on the downward movement are the upper rollers of the set, since these rollers have the greatest amount of travel over the inking plate or disk of the press, and consequently under ordinary circumstances receive the greatest amount of ink therefrom.

10 The movement of each form-inking roller which is intended to be moved into and out of operative position is effected automatically, the means which we prefer to employ for this purpose being a truck-wheel mounted  
15 upon each spindle of the inking-roller and combined with a cam, whereby it is caused to lift the inking-roller out of action or permit the roller to move into operative position at the proper times. These devices in the press  
20 shown in the drawings are employed in connection with the two upper form-inking rollers of the set. The ordinary keying-pin 20 on the inking-roller spindle enters an annular groove 21 in the face of the truck-wheel 7, so  
25 that the latter can turn independently of the roller, as shown in Fig. 6. The wheel 7 has a central opening for the passage of the spindle 8 of the inking-roller, which spindle also passes through the elongated hub 9 of the wheel.  
30 On this hub 9 is mounted a cam-ring 10, said ring having a cam 11, part of which overhangs the wheel 7 and is provided at its abrupt end with an antifriction-roller 12. In the periphery of the hub 9 is a transverse  
35 groove or channel 13, presenting an inner face which is eccentric in respect to the axis of the hub, and in this groove or channel is a ball or roller 14, acted upon by a coiled spring 15, whereby it is constantly pressed  
40 toward the contracted portion of the groove or channel, and hence into contact with the inner face of the cam-ring 10 of the truck. A screw 25 on the cam-ring engaging with a circumferential groove in the periphery of  
45 the hub 9, as shown by dotted lines in Fig. 5, serves to prevent longitudinal separation of the truck-wheel 7 and cam-ring 10. The wheel 7 of the truck is in position to run upon the rails 16 of the press, and in traveling  
50 downward contact of the wheel 7 with the rail 15 tends to turn the wheel in the direction of the arrow *a*, Fig. 5, while upward movement tends to turn it in the contrary direction—that is to say, in the direction of  
55 the arrow *b*, Fig. 5. When the wheel 7 turns in the direction of the arrow *a*, the ball or roller 14 enters the contracted portion of the slot 13 and is pressed firmly against the inner face of the ring 10, so as to clutch the  
60 latter to the hub of the wheel 7 and cause it to move therewith; but when said wheel moves in the opposite direction the ball or roller 14 is free to enter a portion of the slot 13 which is of greater depth than the diameter of said ball or roller. Hence the hub 9  
65 and ring 10 are released from engagement with each other. When the set of inking-

rollers is traveling upward over the printing-form, as shown in Fig. 3, all of the inking-rollers are in contact with said form and are  
70 rotating in the direction of the arrows shown in said figure, the cams 11, which operate in connection with the upper wheels 7 of the truck, occupying the position in respect  
75 to said wheels, which turn freely, independently of the cam-rings 10. The wheels 7 finally leave the rails 16; but the inking-rollers are carried on upward over the plate or disk 3 and receive their supply of ink there-  
80 from. On the downward movement the direction of rotation of the wheels 7 is reversed as soon as said wheels reach the tracks 16, and said wheels are consequently clutched  
85 to the cam-rings 10 and the latter are caused to turn so as to bring their cams 11 into contact with the rails 16, the turning movement being continued by contact of said cams with  
90 the rails until the antifriction-rollers 12 finally bear upon the rails, as shown in Fig. 2, further movement being then arrested by contact of a pin 17 on the cam-ring 10 with any  
95 available stop—for instance, with some portion of the hooked journal-bearing or socket 6. The two upper form-inking rollers of the set are thus lifted out of operative position, as  
100 shown in Fig. 2. Hence during the downward movement of the set of four inking-rollers the upper rollers of the set are lifted free from contact with the printing-form contained in the chase 2 of the press. As soon as the di-  
105 rection of movement is reversed at the lower end of the travel of the inking-rollers, however, the cams 11 will be again moved back to the position shown in Fig. 3, so as to permit the inking-rollers to move into operative  
110 position and apply their ink to the printing-form during their upward travel. The truck-roller, with its clutch, and the cam and cam-ring thus provide a simple and inexpensive means of effecting the automatic throwing of  
115 the upper form-inking rollers of the set into and out of operative position, and said devices have a further advantage that they can be readily substituted for the simple roller with which the spindle of the form-inking  
120 roller is always provided in a press of the class to which our invention relates. Hence the improvement can be applied to a press in a few moments and without necessitating any change whatever in the construction of the  
125 same.

We have shown our invention as applied to a press having a set of four form-inking rollers and have shown the two upper rollers of the set as provided with means for throw-  
125 ing them automatically out of operative position; but it will be evident that our invention can be applied to a press having more or less than four form-inking rollers in the set, and that, if desired, only one of the said form-inking rollers may be moved into and out of  
130 operative position, or, on the other hand, more than two of the rollers may be thus moved. If desired also, we may provide the lower



form-inking roller or rollers of the set with cam devices operating in a manner the reverse of those of the upper form-inking roller or rollers of the set, so that the rollers which  
 5 are operative on the downward movement of the set will be inoperative on the upward movement, and vice versa, although it is preferable to maintain all of the rollers in operative position on the upward movement, so  
 10 that the lower rollers will distribute on the form the ink deposited upon said form by the upper rollers.

In order to insure the turning of the cam 11 from the position shown in Fig. 2 to that shown in Fig. 3, it may be advisable to prevent the turning of the roller 12 in one direction, and for this purpose we prefer to provide the roller with a ratchet at one end, as shown, for instance, at 23 in Fig. 7, this ratchet  
 15 engaging with a spring-pawl 24 on the cam 11.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. The combination of the journal of the  
 25 form-inking roller of a job-printing press, with a truck-roller, a cam and an automatic clutch whereby said cam is rendered operative to hold the inking-roller out of contact with the form during one movement of the roller across  
 30 the same, but permits said roller to come into contact with the form during the other movement of the roller across the same, substantially as specified.

2. The combination of the journal of the  
 35 form-inking roller of a job-printing press, with a truck having a wheel, a cam-ring alongside of said wheel, and a clutch whereby said cam-ring and truck-wheel are locked together by movement of the wheel in one direction and  
 40 released by movement of the wheel in the opposite direction, substantially as specified.

3. The combination of the journal of the

form-inking roller of a job-printing press, with a truck having a wheel, a cam-ring having a cam overlapping said wheel, and a clutch for  
 45 connecting said cam-ring and wheel when the wheel moves in one direction, but releasing them when the wheel moves in the opposite direction, substantially as specified.

4. The combination of the journal of the  
 50 form-inking roller of a job-printing press, with a truck having a wheel, a cam-ring, a clutch for connecting the wheel and ring when said wheel moves in one direction, and releasing  
 55 them when it moves in the opposite direction, and a stop for limiting the movement of the cam-ring, substantially as specified.

5. The combination of the journal of the  
 60 form-inking roller of a job-printing press, with a truck having a wheel, a cam-ring having a cam with antifriction-roller, and a clutch for connecting the wheel and cam-ring when said  
 65 wheel moves in one direction and releasing them when it moves in the opposite direction, substantially as specified.

6. The combination of the journal of the  
 70 form-inking roller of a job-printing press, with a truck having a wheel, a cam-ring having a cam with antifriction-roller, and a clutch for connecting the wheel and cam-ring when said  
 75 wheel moves in one direction, and releasing them when it moves in the opposite direction, and means for preventing the rotation of said antifriction-roller in one direction, substantially as specified.

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

SAMUEL H. SHAW.  
 WM. G. TOPLIS.

Witnesses:

F. E. BECHTOLD,  
 JOS. H. KLEIN.