No. 870,811. PATENTED NOV. 12, 1907.

W. P. ALLEN.

PLATE PRINTING PRESS.

APPLICATION FILED MAR. 11, 1907.

2 SHEETS—SHEET 1.

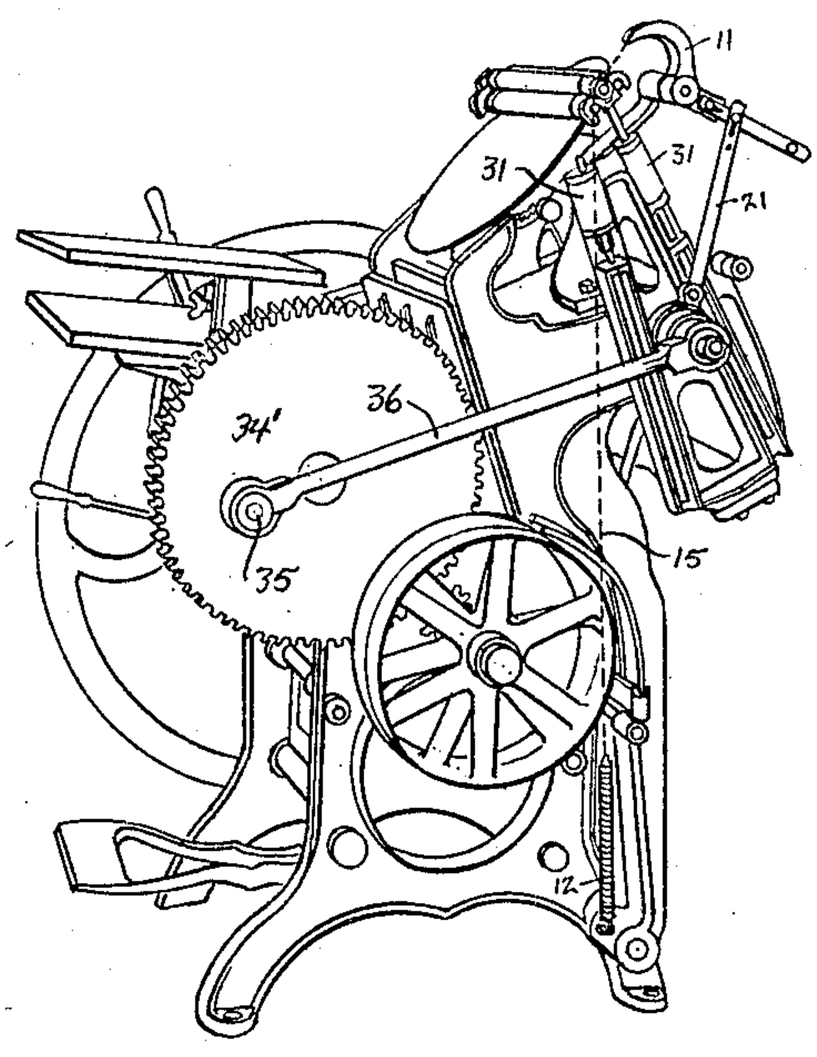

Fig. 1.

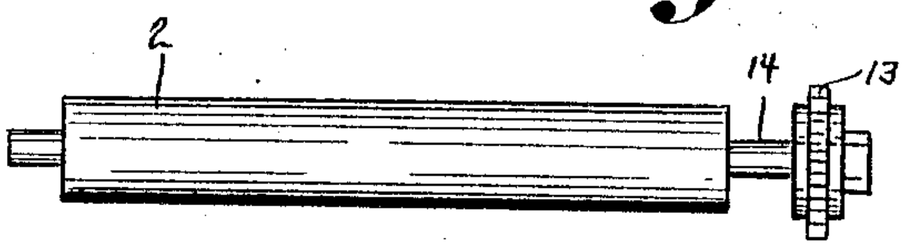

Fig. 2.

Witnesses

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Fig. 3.

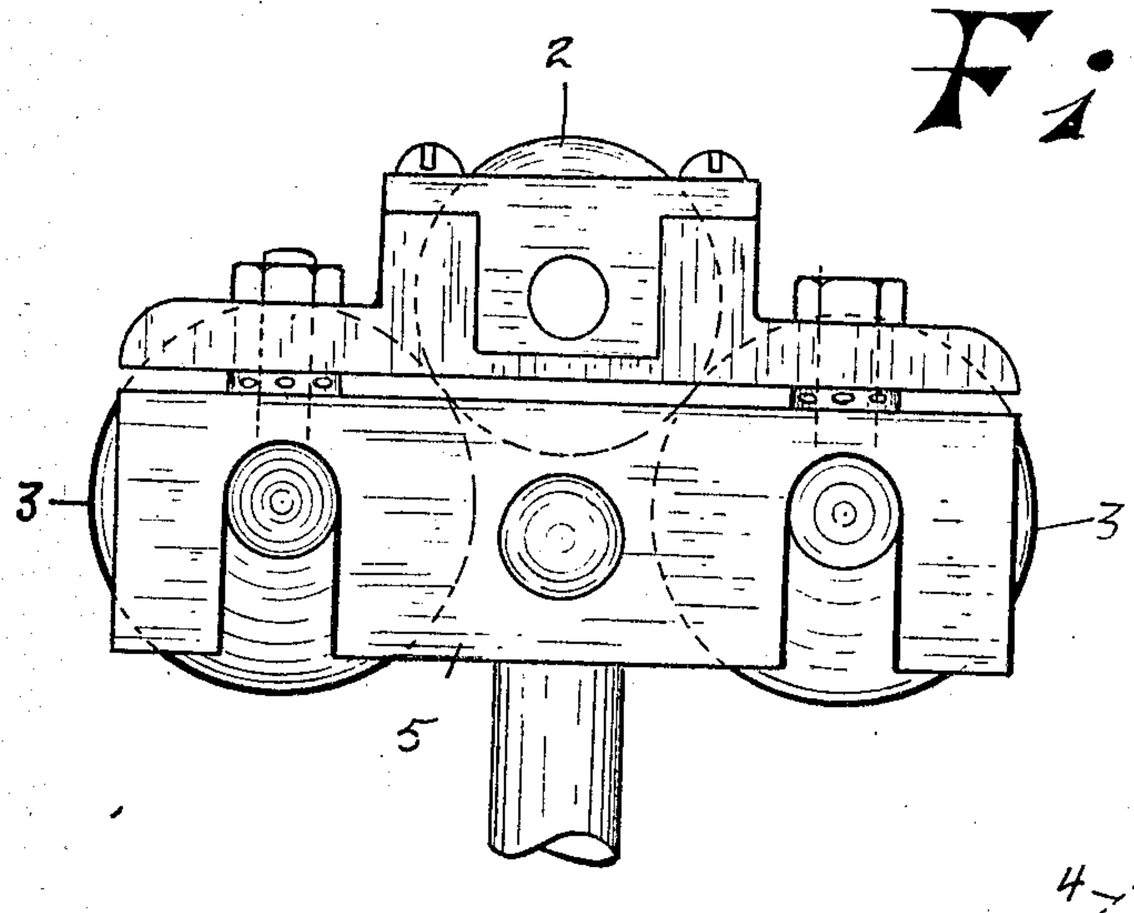
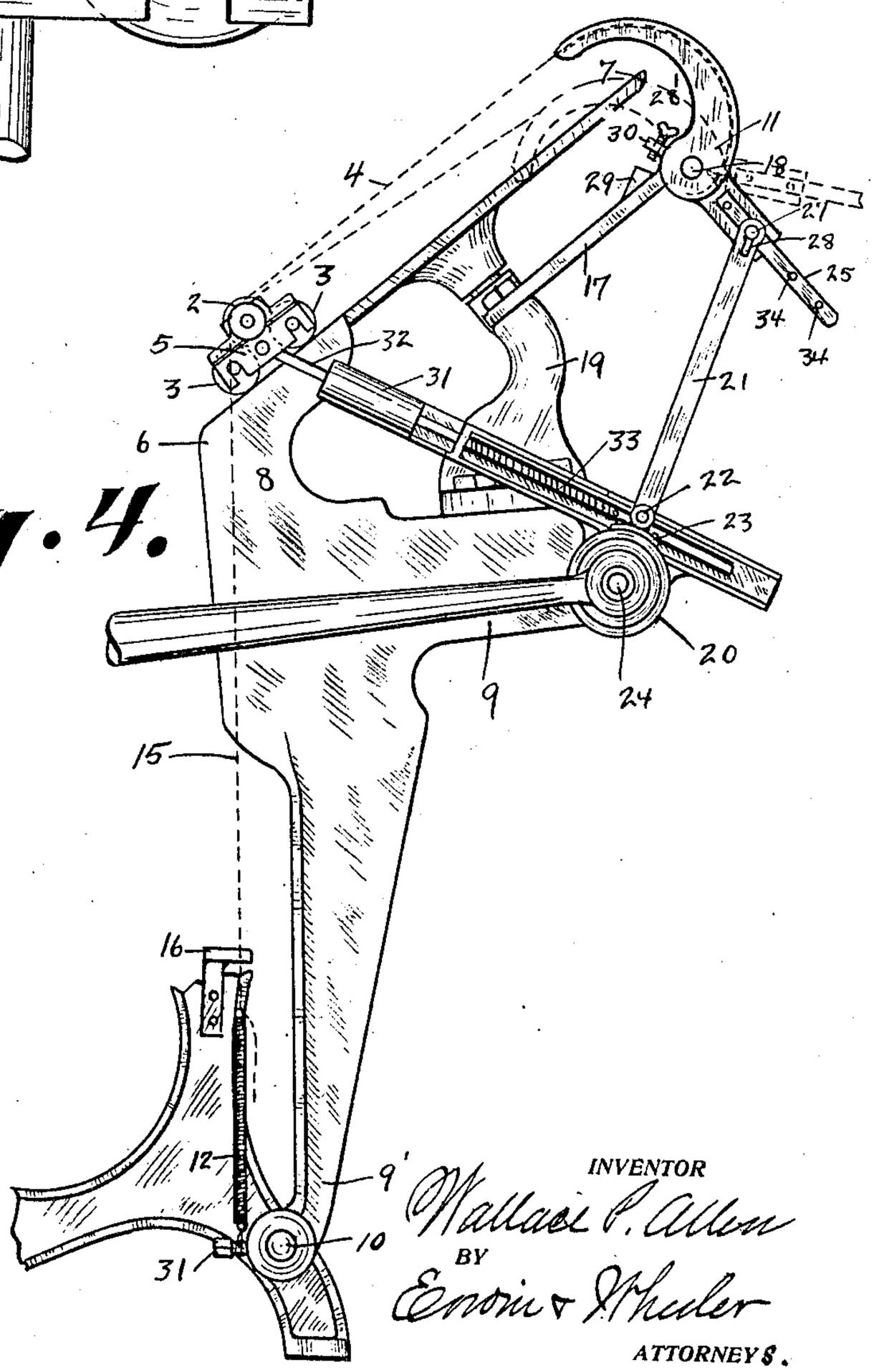


Fig. 4.



WITNESSES:

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PLATE PRINTING-PRESS.

No. 870,811. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed March 11 1907. Serial No. 361,700.

To all whom it may concern:

Be it known that I, WALLACE P. ALLEN, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Platen Printing-Presses, of which the following is a specification.

My invention relates to improvements in printing presses and it pertains more especially to the device for operating the ink distributing rollers.

It is a well known fact that when the friction of the journals of the rollers is slightly above the normal or is greater than that of the surface over which the rollers pass, such rollers will slide along such surface without revolving, whereby the ink will not be uniformly distributed and the printing will be blurred, dim and defective.

The object of my present invention is to provide a device by which the ink distributing rollers will be caused to revolve with a positive movement at all times regardless of the increased friction of their journal bearings, whereby the ink will be uniformly distributed and the printing will be clear and distinct.

The construction of my invention is further explained by reference to the accompanying drawings, in which, Figure 1 is a perspective view of an ordinary printing machine provided with my roller operating mechanism. Fig. 2 is a top view of one of the ink distributing rollers removed from the press. Fig. 3 is a detail, showing the relative position of the ink distributing rollers to each other and their supporting carriage, and Fig. 4 is a side view of the reciprocating member of the press and ink distributing mechanism removed from the other parts of the press.

Like parts are identified by the same reference characters throughout the several views.

The printing press proper, comprising the main frame, driving mechanism, form supporting frame, platen, ink distributing rollers and other coöperating parts are all constructed, combined and arranged in the ordinary manner and need not be herein further described.

My invention pertains more especially, as previously stated, to the means employed for communicating a continuous uniform rotary movement to the ink distributing rollers 2 and 3 from the sprocket chain or operating belt 4 and to the means employed for releasing and taking up the slack in the operating belt or chain 4 as the roller supporting carriage 5 approaches and recedes from the apex of the angle 6 of the bed 8. It will be understood that in operation, the carriage 5 together with the ink distributing rollers thereon have a reciprocating movement from the upper side of the ink distributing disk 7 to the lower side of the bed with each oscillating movement of the bed 8 toward the right and left, whereby the ink that is deposited upon the disk 7 is uniformly distributed over the face of the type in the form. Heretofore the ink distributing rollers 2 and 3 have been caused to revolve solely by frictional contact of their peripheries with the disk 7 and the face of the form. By my improvement, such rollers are caused to revolve not only by contact with the surface over which they are moved but also by the joint action of the sprocket chain 4 and sprocket wheel 13, whereby as the wheel 13 moves in contact with the chain said roller 2 is caused to revolve when motion is communicated from the roller 2 to the other two contiguous rollers 3, 3, whereby all of said rollers revolve in the same direction. The sprocket chain 4 is suspended at its upper end from the lever 11 and is connected at its lower end with the spiral spring 12.

It will be understood that as the roller carriage 5 approaches, either end of the chain 4 from the apex of the angle 6, the center of the chain 4 will approach the straight line between its respective ends and were such supporting ends stationary, the chain would become slack, and when slack would be inoperative to revolve the sprocket wheel 13 and the roller connected therewith. In view of this fact it becomes necessary to take up the slack of the sprocket chain as the roller supporting carriage approaches the limit of its movement in either direction. It will now be obvious that were the slack of the chain to be taken up by the recoil of the spiral spring 12 as the carriage approaches such spring, the chain would move bodily with the carriage without revolving the sprocket wheel. It is also obvious that were the slack of the chain to be taken up at its upper end as the carriage approaches such upper end of the chain, the carriage and chain would move bodily together without revolving the sprocket wheel. It therefore follows that in order to make the chain operative as the carriage approaches the limit of its movement in either direction, the slack in the sprocket chain must be taken up from the opposite end of the chain from that toward which the carriage moves, whereby the distance between the carriage and the end of the chain toward which the carriage moves will be constant. When this end is attained the sprocket wheel will be caused to revolve with a uniform speed corresponding with the movement of the carriage, the same as if the carriage were moving at all times in a direct line upon the same plane with and against a taut operating chain and will be unaffected by the slack of the chain as it approaches the limit of its movement in either direction. To accomplish this object the lower end of the chain 4 is connected with the spiral spring 12 which is expanded to the limit of its movement as the carriage moves upwardly to the apex of the angle 6 thereby providing the necessary slack of the chain to permit the carriage to pass over such angle. When, however, the carriage 5 has passed the angle 6 and approaches the upward limit of its movement above the disk 7, the slack in the chain 4 is taken

up by the recoil of said spring 12, whereby the tension of the spring remains uniform during the entire upward movement of the carriage from the point 15. When the carriage 5 has reached the limit of its upward movement and has started downwardly in the opposite direction, the slack in the chain 4 is taken up by the upward movement of the lever 11, while the lower end of said chain remains substantially constant under the tension of the spring 12. The upward movement of the spring 13 is limited by contact with the stop 16. The lever 11 is pivotally supported from the bar 17 by the pin 18 and said bar 17 is rigidly connected at its lower end with the bracket 19 or to any other stationary part of the frame.

Motion is communicated to the lever 11 from the oscillating member 20 by the link 21, pivotal bolts 22 and 27 and bolt supporting bracket 23. The member 20 is supported from the arm 9 of the bed by the pivotal bolt 24 and said member 20 is caused to perform a partial revolution around said bolt 24 with each reciprocating motion of the frame 9, whereby as the bed of the press moves forwardly, said link 21 is drawn downwardly when operating through the arm 25 of the lever 11, the opposite end of said lever is thrown upwardly, whereby the slack in the chain 4 is taken up by said lever as the carriage 5 approaches the lower limit of its movement. The arm 25 of the lever 11 is pivotally connected with the link 21 by the pin 27 operating in the slot 28 of said link. Thus it is obvious that upon the return or upward movement of the carriage 5, the link 21 is free to move upwardly slightly without communicating any movement to the lever 11, as the slot 28 in said link permits the link to move past the pin 27 without communicating movement to said pin or arm 25 connected therewith. The downward movement of the lever 11 is limited by contact of the set screw 28′ with a stop 29. Said screw 28′ has screw threaded bearings in the lug 30 which lug is formed integrally with or rigidly connected to said lever 11, while the stop 29 is rigidly connected with the lever supporting bar 17. The lower end of the spring 12 is connected with the arm 9′ by the supporting screw 31. It will be understood that the carriage 5 is yieldingly connected at its respective ends with the oscillating member 31 by rods 32 and spiral springs 33 and that motion is communicated to said oscillating member 31 from the gear wheel 34 through the crank pin 35 connecting rod 36 and bolt 24 in the ordinary manner. As the carriage 5 approaches the apex of the angle 6, said connecting rods 32 are drawn outwardly against the recoil of the spiral spring 33 and as said carriage recedes from the apex of said angle, said rods are drawn inwardly by the recoil of said spiral spring 33, whereby the carriage 5 and the rollers therein are retained in place against the surface over which they pass.

While I have described the rollers as being operated with a sprocket chain and wheel connected with the end of the roller 2 it is obvious, if desired, that a belt of ordinary flexible material may be substituted therefor. A sprocket chain and wheel, however, are preferable.

The arm 25 is provided with a plurality of apertures 34 for the reception of the pin 27, whereby the movement of said lever 11 may be increased or diminished by changing the adjustment of the pin 27 nearer to or farther from the lever supporting pivot 18. It will be understood also that the downward movement of the lever 11 may be limited and adjusted by the adjustment of the set screw 28′ in the bracket 30 nearer to or farther from the stop 29, whereby the movement of said lever 11 may be regulated to release and take up the slack in the chain 4 and cause the same to conform to the movement of the carriage over its contiguous bearing surfaces. While in Fig. 1 two carriage supporting members 31 are shown and a roller supporting carriage in connection with but one of said members, in the preferred form, shown in Fig. 4, a single carriage supporting member only is shown.

Experience has demonstrated that with my improved method of operating the ink distributing rollers a single roller supporting carriage with a single set of rollers are sufficient to accomplish the desired object.

While I have for convenience of description referred to the flexible operating device as a belt, I wish it to be understood that the word "belt" is intended to cover any form of flexible connection for operating the ink distributing rollers.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is,

1. In a printing press of the class described, the combination of an ink distributing roller, an operating wheel connected with said roller, a driving belt adapted to engage the periphery of said wheel and means connected with the press for keeping said belt taut as the roller and operating wheel passes over it.

2. In a printing press of the class described, the combination of a roller carriage, two parallel ink distributing rollers carried by said carriage and adapted to bear directly upon the ink disk and typeform, a third distributing roller centrally located between and adapted to bear upon both of said first named rollers, an operating wheel connected with said centrally located roller, a driving belt adapted to engage the periphery of said wheel, means connected with the press for keeping said belt taut and in operating contact with said wheel as the latter passes longitudinally over it.

3. In a printing press of the class described, the combination of a roller carriage, two parallel ink distributing rollers carried by said carriage and adapted to bear directly upon the ink disk and typeform, a third distributing roller centrally located between and adapted to bear upon both of said first named rollers, a sprocket wheel connected with said centrally located roller, a sprocket chain adapted to engage the periphery of said wheel, means connected with the press for keeping said sprocket chain taut and in operative contact with said sprocket wheel as said wheel passes longitudinally over it.

4. In a printing press of the class described a plurality of ink distributing rollers, a carriage for retaining said rollers in their proper operative relation to each other and the surface over which they are adapted to move, means connected with the press for moving said carriage and rollers upwardly and downwardly over the ink disk and form, an operating wheel connected with one of said rollers, a driving belt adapted to engage the periphery of said wheel, a spiral spring connected with the lower end of said belt and adapted to take up the slack in said belt as said rollers move in the opposite direction from said spring, a swinging lever connected with the upper end of said belt and adapted to move upwardly and take up the slack in said belt as the carriage moves in the opposite direction from said lever, and means connected with the press for moving said lever, substantially as described.

5. In a printing press of the class described, a plurality of ink distributing rollers, a carriage for retaining said rollers in their proper operative relation to each other and the surface over which they are adapted to move, means connected with the press for moving said carriage and rollers upwardly and downwardly over the ink disk and form, an operating wheel connected with one of said roll-

ers, a driving belt adapted to engage the periphery of said wheel, a spiral spring connected with the lower end of said belt and adapted to take up the slack in said belt as said rollers move in the opposite direction from said spring, a swinging lever connected with the upper end of said belt and adapted to move upwardly and take up the slack in said belt as the carriage moves in the opposite direction from said lever, means connected with the press for moving said lever, means for changing the adjustment of the connecting link between the operating member of said press and said belt operating lever and means connected with the opposite side of said belt operating lever for adjusting and limiting the movement to said lever toward the roller supporting carriage.

6. In a printing press of the class described, a plurality of ink distributing rollers, a carriage for retaining said rollers in their proper operative relation to each other and the surface over which they are adapted to move, means connected with the press for moving said carriage and rollers upwardly and downwardly over the ink disk and form, an operating wheel connected with one of said rollers, a driving belt adapted to engage the periphery of said wheel, a spiral spring connected with the lower end of said belt and adapted to take up the slack in said belt as said rollers move in the opposite direction from said spring, a swinging lever connected with the upper end of said belt and adapted to move upwardly and take up the slack in said belt as the carriage moves in the opposite direction from said lever, means connected with the press for moving said lever, means for changing the adjustment of the connecting link between the operating member of said press and said belt operating lever means connected with the opposite side of said belt operating lever for adjusting and limiting the movement to said lever toward the roller supporting carriage, and means for limiting the expansion of the spring connected with the lower end of said roller actuating belt.

In testimony whereof I affix my signature in the presence of two witnesses.

WALLACE P. ALLEN.

Witnesses:
JAS. B. ERWIN,
O. R. ERWIN.