W. P. ALLEN & L. SCHLESINGER.
PRINTING PRESS.
APPLICATION FILED DEC. 10, 1909.

1,048,476. Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.

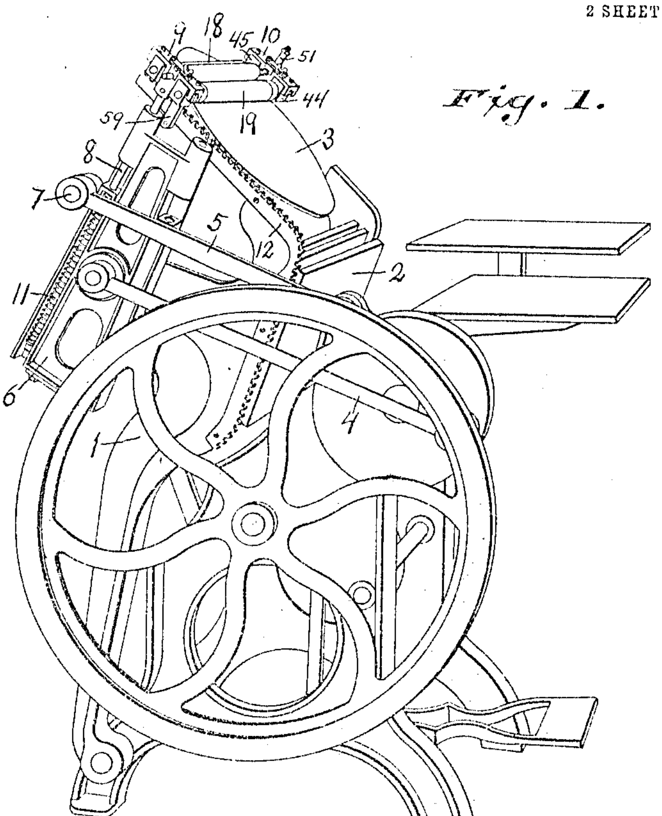


Fig. 1.

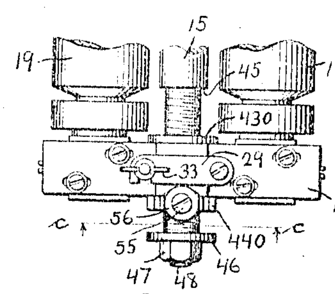


Fig. 7.

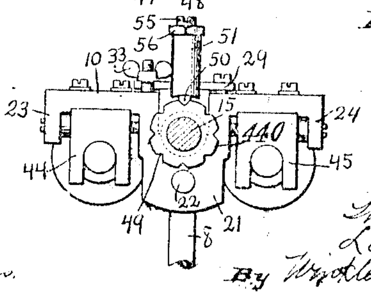


Fig. 8.

Witnesses:
Fred Palm
Chas. L. Goss

Inventors:
Wallace P. Allen
Louis Schlesinger
By Wright Flanders Bottum & Fawsett
Attorneys.

W. P. ALLEN & L. SCHLESINGER.

PRINTING PRESS.

APPLICATION FILED DEC. 10, 1909.

1,048,476.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 2.

Fig. 2.

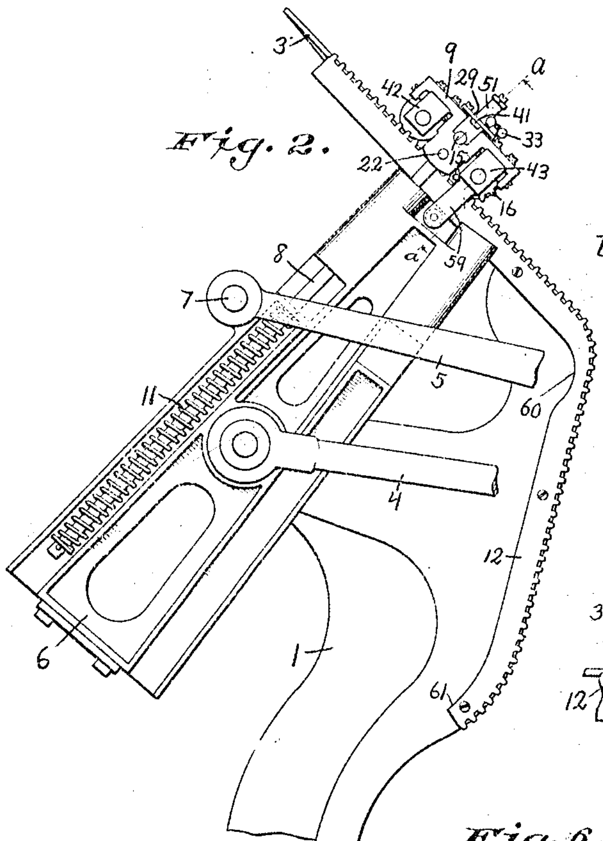


Fig. 4.

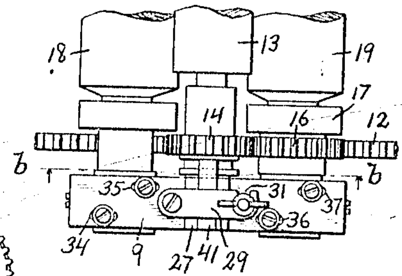


Fig. 5.

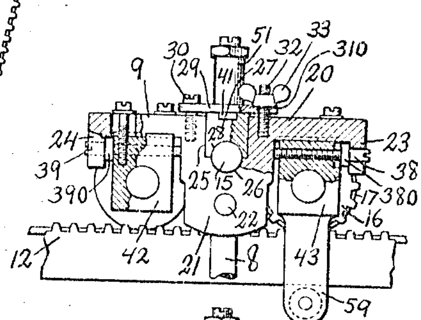


Fig. 6.

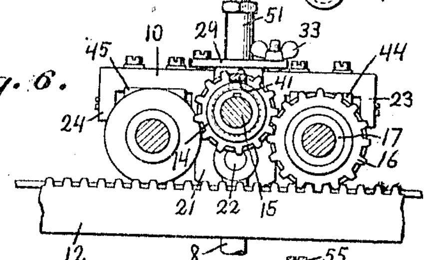
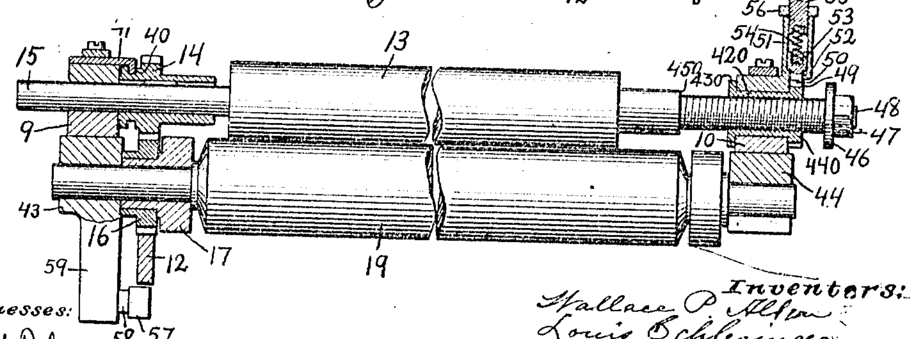


Fig. 3.



Witnesses:

Fred Palm

Chas L. Goss.

Inventors:

Wallace P. Allen

Louis Schlesinger,

By Winkler Flanders Bottum & Vogel,

Attorneys.

UNITED STATES PATENT OFFICE.

WALLACE P. ALLEN AND LOUIS SCHLESINGER, OF MILWAUKEE, WISCONSIN; SAID ALLEN ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SAID SCHLESINGER.

PRINTING-PRESS.

1,048,476. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed December 10, 1909. Serial No. 532,321.

To all whom it may concern:

Be it known that we, WALLACE P. ALLEN and LOUIS SCHLESINGER, citizens of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

This invention relates to platen printing presses, and the object of the invention is to secure a uniform distribution of ink upon the form from which the impressions are taken.

In certain types of printing presses known as platen presses, which are in common use in printing establishments, the form is inked by "composition rollers" which pick up the ink from a distributing disk or plate and are then rolled over the type or plates composing the form to cover them with ink. The rollers are then run back over the inked form to be out of the way of the paper and platen while the impression is taken and to return them to the ink plate or disk to pick up a fresh supply of ink. It is apparent that it is necessary, to insure good results in printing, for the inking rollers to be supplied, in the first instance, with a uniform quantity of ink from the inking plate or disk, and for the ink supplied to them to be evenly distributed over the whole face of the type or plates included in the form, and that on the return passage of the rollers over the already inked form the ink adhering to the types and plates shall not be removed. In order that the inking rollers shall receive a uniform supply of ink from the ink plate or disk it is necessary in the first place that the ink shall be uniformly distributed on said plate or disk, and in order that the type or plates shall receive a uniform supply of ink it is necessary that the ink be uniformly distributed over said rollers. If it were possible to provide an ink plate or disk which was uniformly supplied with ink, and if it were possible to use rollers of such a diameter that one revolution thereof or only a part of a revolution thereof would be necessary to carry the ink over the entire face of the form, it would be possible to secure uniform results as far as the application of the ink to the form is concerned, but it must be remembered that as the rollers in their backward movement pass over the inked form, they will pick up from the form, ink which has been deposited thereon, in the same way and to the same extent that they pick up ink from the ink plate or disk, so that it is necessary to provide mechanism or means whereby the ink will not be picked up from the inked form, or if ink is picked up from the inked form, that it shall be done uniformly so that the impression taken from the form will show the ink uniformly distributed.

A common form of platen printing press which is extensively used by printers, is provided with an ink plate or disk which is intermittently rotated, this disk being usually placed in an inclined position and the ink is applied upon its upper edge by hand or by an ink fountain. Heretofore it has been common to utilize the friction between this ink disk and the inking rollers for causing the inking rollers to roll over said disk, both to distribute the ink uniformly on said disk and to receive their supply of ink from the disk, but as these rollers are liable to be moved over the disk without revolving exactly according to their speed of progression or their rectilinear movement on the press, the slip thus resulting causes an uneven distribution of the ink upon the disk and rollers, and, moreover, the rollers are also liable to slip when passing over the form, thereby causing a further imperfect and uneven distribution of ink over the form. After the ink by contact with the form has been removed from parts of the inking rollers, those parts from which the ink has been removed are ready to pick up ink when they pass over an inked part of the form, the result being that the impression shows "ghosts" or other parts of the form, instead of showing a completely inked surface. This result it has been attempted to obviate by providing a so-called metallic distributing roller to revolve in contact with the composition inking rollers and to be moved longitudinally with respect to the composition rollers, whereby any spots on the rollers from which the ink has been taken by the form are covered again with ink from the parts of the rollers still supplied with ink; but the mechanism adopted has been faulty, as the metallic roller has been driven by its frictional contact with the composition rollers and the motion of the composition rollers has been caused by friction with the ink disk and form.

Heretofore attempts have been made to drive the inking rollers positively by some form of driving mechanism. In most of these attempts on platen presses, however, the driving mechanism was attached directly to the inking rollers. These inking rollers, being made of a composition which swells and shrinks, change their diameters continually, thus making a positive drive of these rollers a practical impossibility, which is evidenced by the fact that on platen presses not a single device which positively drives the inking rollers is in actual use.

By changing the positive drive from the ever changing composition rollers to a so-called metallic roller which always retains its size and position and is held always in uniform contact with the composition rollers so that it in turn always drives them by frictional contact, all slip and other difficulties heretofore encountered by attempts to directly drive the composition inking rollers on a platen press are eliminated because the peripheral movement of the metallic driving roller is constant for the same travel and therefore produces a constant peripheral movement of the composition rollers for the same travel, or rectilinear movement on the press, whether the composition rollers swell or shrink with a consequent change of size.

The purpose of this invention is to provide a platen press with composition rollers for distributing ink upon the disk of the press and for inking the form, a longitudinally movable metallic roller, so called, frictionally engaged with said composition rollers to drive said composition rollers in exact accordance with their rectilinear movement on the press or the progressive movement of said composition rollers over the disk and the form, means to positively drive said metallic roller itself in accordance with its rectilinear movement on the press whereby all slipping of the inking rollers either upon the ink disk or form is obviated, and whereby the ink upon the inking rollers is uniformly distributed thereon after any part of the inking rollers have touched the form and before that part can again touch the form, means for adjusting the composition rollers with respect to the metallic roller, means to cause limited lengthwise movements of said metallic roller and adapted to permit continued rotation of said metallic roller when its lengthwise movements are arrested, and generally to improve the inking mechanism of platen presses in the manner described and claimed.

Referring to the drawings which accompany this specification and form a part thereof and on which drawings the same reference characters are used to designate the same elements wherever they may appear in each of the several views, Figure 1 is a perspective view of a platen printing press showing this invention applied thereto; Fig. 2 is an end elevation on an enlarged scale of a part of the press; Fig. 3 is a transverse section through the saddles, taken on the line $a—a$, of Fig. 2; Fig. 4 is a plan view of one of the saddles and some of the associated parts; Fig. 5 is an elevation of one of the saddles and some of its associated parts, parts being shown in section and broken away to clearly show the construction thereof; Fig. 6 is a vertical section taken on the line $b—b$ of Fig. 4; Fig. 7 is a plan view of the other saddle and some of the associated parts; and Fig. 8 is a vertical section taken on the line $c—c$ of Fig. 7.

Referring specifically to the drawings, the numeral 1 designates the movable back of an ordinary form of Gordon platen press, said back being adapted to receive the form to be printed. The numeral 2 designates the platen of the press, 3 the ink disk, 4 a connecting rod which rocks the back 1, and 5 a stationary bar which causes the frame 6 to which the saddles are secured, to oscillate about the pivot 7 when the back 1 is rocked by the connecting rod 4. These parts of the press and the press generally do not require to be further described herein, as they are all old and well known, and this invention can be used with any form of platen press to which it is adapted.

The frame 6 is provided with the reciprocable rods 8, to which are pivotally secured the saddles 9 and 10 by suitable pivots or pins. The rods 8 are provided with yieldable means as, for example, springs 11 which tend to press the inking rollers against the ink disk 3 and the form in the well known manner.

In order to positively drive the metallic distributing roller, a rack 12 is secured to the press conforming to the path of movement of the rollers over the ink disk and form, and the metallic roller 13 is provided with a pinion 14 splined or otherwise secured to the shaft 15 of roller 13, so that it will positively rotate roller 13 while permitting the shaft 15 to be moved lengthwise therethrough. A pinion 16 is provided which is adapted to mesh both with rack 12 and pinion 14 and positively rotate pinion 14 as the frame 6 and the saddles and rollers are moved, and for convenience this pinion 16 may be mounted on the reduced hub of the bearing roller 17, as clearly shown by Fig. 3 of the drawings, but this pinion 16 is adapted to be revolved independently of the bearing roller 17. The specific construction shown by the drawings is adopted simply to save space and to economize material by mounting the pinion 16 upon a suitable and available support. If now frame 6 be rocked so as to move the rollers down over the ink disk and form, pinion 16 will be rotated by reason of its engagement with rack 12 and will rotate pinion 14, thereby rotating metallic roller 13, and by frictional contact metallic roller 13 will rotate the inking rollers 18 and 19 at the exact rate at which they progress over the ink disk and form, or, in other words, the peripheral speed of rotation of the rollers corresponds to their rectilinear movement on the press.

The saddles 9 and 10 are preferably substantially duplicates each of the other, and each saddle is composed of a body portion 20 formed with a downwardly projecting lug 21 to which a rod 8 is pivoted by pivot 22. These body portions of the saddles are further provided at their extremities with downwardly projecting lugs 23, 24, between which and the lug 21 the inking roller journal boxes are adapted to be received.

The top of each of the body portions of the saddles is provided with a recess 25, the lower part of which is provided with a rounded depression 26 adapted to receive the shaft 15 of the metallic roller 13. Blocks 27 are provided which are adapted to be seated within the recesses 25, each of said blocks being provided with a rounded depression 28 in the lower end thereof, adapted to seat against the shaft 15. These blocks may be prevented from moving laterally in the recesses 25 by dowel pins or any other suitable arrangement (not shown). A latch 29 is provided which is pivoted upon a stud or screw 30 at one end, its other end being provided with an open slot 31 for the reception of the screw 32 which carries the thumb nut 33 for clamping the latch 29 upon the block 27 in order to hold the shaft 15 securely in the saddle. The tops of the latches 29 are formed with depressions 310 adjacent the open slots 31 to receive the lower ends of the thumb nuts 33, as clearly shown by Figs. 4, 5 and 8 of the drawings, and as the slots 31 are of less width than the diameters of said depressions 310 and the lower ends of the nuts 33, the latches 29 cannot be swung on their pivots or screws 30 unless and until the thumb nuts 33 are unscrewed sufficiently to lift their lower ends entirely out of said depressions 310. This feature of construction prevents the latches from swinging loose and liberating the blocks 27 and shaft 15 if the thumb nuts 33 should become unscrewed a little. The top of each of the saddles is provided with elongated slots 34, 35, 36, 37, within which are received screws provided with heads and these screws engage in screwthreaded apertures in the journal boxes for the inking rollers. Washers may be interposed between the heads of these screws and the saddles, if desired. The elongated slots permit the journal boxes for the inking rollers to be moved either toward or away from the downwardly projecting lugs 21, and also provide for clamping said journal boxes to the saddles. The downwardly projecting lugs 23 and 24 are each provided with a slot in the lower extremity thereof, and screws 38 and 39 are passed through screwthreaded apertures in the journal boxes for the inking rollers and bear at one end against the downwardly projecting lugs 21, while heads 380 and 390 on said screws bear against the inside surfaces of the downwardly projecting lugs 23 and 24. The slotted extremities of the screws project into said slots so that the screws can be easily turned by screwdrivers. By this arrangement of parts it will be readily seen that by loosening the screws in the elongated slots 34, 35, 36 and 37, the journal boxes for the inking rollers are no longer clamped immovably to the bodies 20 of the saddles, and by then rotating screws 38 and 39, said journal boxes can be moved toward or away from the downwardly projecting lugs 21 with the result that the inking rollers 18 and 19 are moved toward or away from the metallic roller 13, and that after the rollers have been moved to the desired positions the journal boxes may be clamped to the bodies 20 of the saddles by means of the screws in the elongated slots 34, 35, 36 and 37. The purpose and function of this adjustable arrangement of the journal boxes for the inking rollers is to overcome difficulties heretofore experienced in attempting to drive inking rollers by frictional contact with a metallic roller. The inking rollers are what are known as "composition rollers" and these rollers swell and shrink according to changing conditions, as age, &c., which are well known to practical printers, and it is essential to be able to maintain a good frictional contact between the peripheries of the composition or inking rollers and the metallic driving roller, in order that the inking be properly done. With the construction of saddles above described the inking rollers can be moved toward or away from the metallic roller 13 so as to obtain the proper adjustment or frictional contact between the inking rollers and the metallic roller when the inking rollers used with the press are new or old, or when the inking rollers have shrunk or swelled from any cause whatsoever.

Small shims of paper or other suitable material may be inserted between the journal boxes for the inking rollers and the bodies 20 of the saddles if it is necessary to depress the journal boxes with reference to the saddles, and the screws 38 and 39 permit such an adjustment because of the open slots in the depending lugs 23 and 24 within which said screws are received, and said open slots provide for the removal of the journal boxes from the saddles.

Preferably the journal boxes 42 and 43 on the rack or driving side of the press are blocks with cylindrical apertures therethrough to receive the journals of the inking rollers, while the journal boxes 44 and 45 on the opposite side of the press are provided with open slots, as clearly shown by Fig. 3 of the drawings. This construction permits the inking rollers to be readily removed and replaced.

The pinion 14 which is splined or otherwise secured to shaft 15 so as to rotate said shaft while permitting said shaft to move endwise therethrough, is provided with a circumferential recess 40 in its hub within which extends the downwardly turned end of a lip 41 secured preferably to the block 27 of the saddle 9. The downwardly turned end of said lip 41 prevents the pinion 14 from being moved lengthwise as the shaft 15 moves therethrough. The opposite end of the shaft 15 is screwthreaded and the rounded depression 26 in the body of saddle 10 and the rounded depression 28 in its block 27, are made enough larger than the shaft 15 to receive the cylindrical nut 420 which is screwthreaded on its interior to engage with the screwthreads on shaft 15, and is provided with heads 430 and 440 which prevent it from moving lengthwise of shaft 15 with respect to saddle 10. The shaft 15 is provided with shoulders on opposite sides of said nut 420 which may contact with the heads thereof. These shoulders may be conveniently formed as shown by Fig. 3 of the drawings, by reducing the screwthreaded end of shaft 15 so as to form a shoulder 450, and securing a washer 46 on the end of said shaft by means of a nut 47 screwed on to a further reduced part 48.

The screwthreaded end of the shaft 15 and the nut 420 coacting therewith constitute means to cause limited lengthwise movements of the metallic roller and cause the metallic distributing roller 13 to be moved lengthwise in one direction with respect to the inking rollers 18 and 19 when the shaft 15 is revolved in one direction, and cause the metallic distributing roller 13 to be moved lengthwise in the opposite direction with respect to the inking rollers 18 and 19 when the shaft 15 is revolved in the opposite direction.

It may happen that in assembling the rollers the metallic roller 13 is not placed in its proper position with respect to the saddles to provide for its predetermined lengthwise movement while it is being carried by the frame 6 in one direction, and it may be displaced from its proper position from some other cause, so that said metallic roller 13 will be displaced lengthwise from the position it should occupy and a lengthwise movement of said roller in one direction will cause it or its shaft to bind against a saddle, resulting in damage to the attachment or press. In order to avoid any such possible accident this invention provides that the means which cause limited lengthwise movements of the metallic roller shall permit the metallic roller to be revolved without moving the metallic roller lengthwise, so that when the metallic roller reaches its limit of lengthwise movement in either direction it can still be revolved, but will be prevented from moving lengthwise any farther, and any dangerous strain upon the saddles or accident to the press is thus eliminated. This result is accomplished in the following manner: The cylindrical nut 420 can revolve within the depressions 26 and 28, and one of its heads, as for example, the head 440 is provided with V-shaped depressions 49 within which a correspondingly V-shaped tooth 50 carried by a standard 51 rigidly attached to block 27 of the saddle 10 or formed as an integral part of said block, is adapted to extend. This standard 51 is provided with a bore 52 at one end through which the tooth 50 projects and is counterbored to a larger diameter, as shown by Fig. 3 of the drawings, so as to receive the enlarged head 53 of the tooth 50. A spring 54 is secured between the head 53 of tooth 50 and a screw 55 screwed into a screwthreaded part of the bore of the standard 51, said screw 55 permitting a proper tension to be placed upon spring 54, a lock nut 56 being provided to prevent displacement of the screw 55 if desired. With this arrangement just described, if the metallic roller moves lengthwise in either direction so that shoulder 450 or washer or shoulder 46 contacts with nut 420, the friction between either of said shoulders and nut 420 will be sufficient to cause said nut 420 to revolve with shaft 15 and its screwthreaded end, because the tooth 50 will be forced out of the notches 49 in the head 440, as will be readily understood, so that metallic roller 13 can revolve and nut 420 will revolve with it, whereby no lengthwise movement of metallic roller 13 will result until the roller has reached its limit of upward or downward movement on the press and starts to revolve in the opposite direction on its return movement, when its screwthreaded end will readily screw through nut 420 and cause the roller to move lengthwise again, as it should.

In order to avoid any possibility of pinion 16 jumping out of mesh with rack 12, means may be provided to retain said pinion 16 in mesh with said rack 12. On the drawings these means are shown as a roller 57 beneath rack 12 supported on a stud 58 projecting from an arm 59. For convenience of construction arm 59 may be made integral with journal box 43. The under side of rack 12 may be cut away or narrowed at its angles, as shown by the drawings, at the places designated by the numerals 60 and 61, so that there will be no tendency for pinion 16 and roller 57 to bind the saddle at the curves of the rack.

It will be noticed from an inspection of the drawings that the metallic roller 13 is set low in the saddles so that in adjusting the inking rollers against it there will be little tendency for the inking rollers to wedge under the metallic roller and lift it and the saddles.

The pinions 14 and 16 may be of the same size or of different sizes depending upon the diameter of the metallic roller. They should be so proportioned that the peripheral speed of the metallic roller is the same as its rectilinear speed on the press, or in other words, the speed of rotation of the metallic roller should be just the same as if it were rolled over the ink disk and form with no slip. As this matter of proportion or sizes of pinions is a subject with which every mechanic is familiar, it need not be discussed further in this specification.

It is readily apparent that the elongated slots in the saddles, the screws passing therethrough, the screws 38 and 39 and the journal boxes, provide simple and efficient means for adjusting the inking rollers against the metallic roller, and that the rack 12 and pinions 14 and 16 provide simple and efficient means for positively rotating the metallic roller so that its peripheral speed of rotation corresponds to its rectilinear speed on the press.

While we have illustrated and described what we consider to be the preferred structures and arrangement of apparatus for practicing our invention, we do not thereby limit our invention to the specific structures and arrangements illustrated and described, as variations can be made without departing from the spirit of our invention as defined by the claims appended hereto.

What is claimed is:

1. The combination with a platen printing press of two inking rollers, a metallic roller located between said inking rollers, saddles, means for adjusting said inking rollers against said metallic roller so that they will be revolved by said metallic roller because of their frictional contact therewith, a rack secured to the press, a pinion adapted to rotate said metallic roller, means for preventing longitudinal movement of said pinion, a second pinion adapted to mesh with said first mentioned pinion and rack, a screwthreaded shaft for said metallic roller and a screwthreaded member to coact therewith to cause said metallic roller to move lengthwise when it is rotated by said pinions.

2. The combination with a platen printing press of two inking rollers, a metallic roller located between said inking rollers, saddles, means for adjusting said inking rollers against said metallic roller so that they will be revolved by said metallic roller because of their frictional contact therewith, a screwthreaded shaft for said metallic roller, a screwthreaded member to coact therewith, a pinion so secured to said shaft as to rotate said shaft while permitting the shaft to move lengthwise with respect thereto, a rack secured to the press, and a second pinion adapted to mesh with said first mentioned pinion and said rack.

3. The combination with a platen printing press of saddles, a metallic roller carried by said saddles, inking rollers adapted to be revolved because of their frictional contact with said metallic roller, said metallic roller being provided with a shaft having a screwthreaded end, a nut carried by one of said saddles and engaged with the screwthreaded end of said shaft, a yieldable connection between said nut and the saddle, and means for positively rotating said metallic roller so that its peripheral speed of rotation corresponds to its rectilinear speed on the press.

4. The combination with a platen printing press of saddles, a metallic roller carried by said saddles, inking rollers adapted to be revolved because of their frictional contact with said metallic roller, said metallic roller being provided with a shaft having a screwthreaded end, a cylindrical nut provided with heads carried by one of said saddles and engaged with the screwthreaded end of said shaft, one of the heads of said cylindrical nut being provided with depressions and a yieldable tooth supported by the saddle, and means for positively rotating said metallic roller so that its peripheral speed of rotation corresponds to its rectilinear speed on the press.

5. A saddle for a platen printing press provided with a recess in its body portion for the reception of a roller, a block adapted to be received within said recess, a latch pivoted to said saddle at one end and provided with an open slot at its other end and a depression adjacent said slot, a screw secured to said saddle adapted to be received within said slot, and a nut for said screw adapted to enter the depression in said latch.

6. A saddle for a platen printing press composed of a body portion having two depending lugs one of which is adapted to be secured to a rod of the roller frame, the other of said lugs being provided with a slot in its lower extremity, the body portion of said saddle being also provided with elongated slots, a journal box secured to said saddle between said lugs by screws which pass through said elongated slots, and a

screw provided with a head and a slotted end extending through a screwthreaded aperture in said journal box and bearing at one end against one of said lugs with its slotted end received within the slot of the other lug and its head bearing against the inside surface of said last mentioned lug.

In witness whereof we hereto affix our signatures in presence of two witnesses.

WALLACE P. ALLEN.
LOUIS SCHLESINGER.

Witnesses:
CHAS. L. GOSS,
FRANK E. DENNETT.