

APPLICATION FILED SEPT. 22, 1909. RENEWED MAR. 30, 1911.

Patented May 16, 1911.

Inventor.
Dwight W. Custer
By his Attorney J. Chris Larsen

D. W. CUSTER.
PRINTING PRESS.

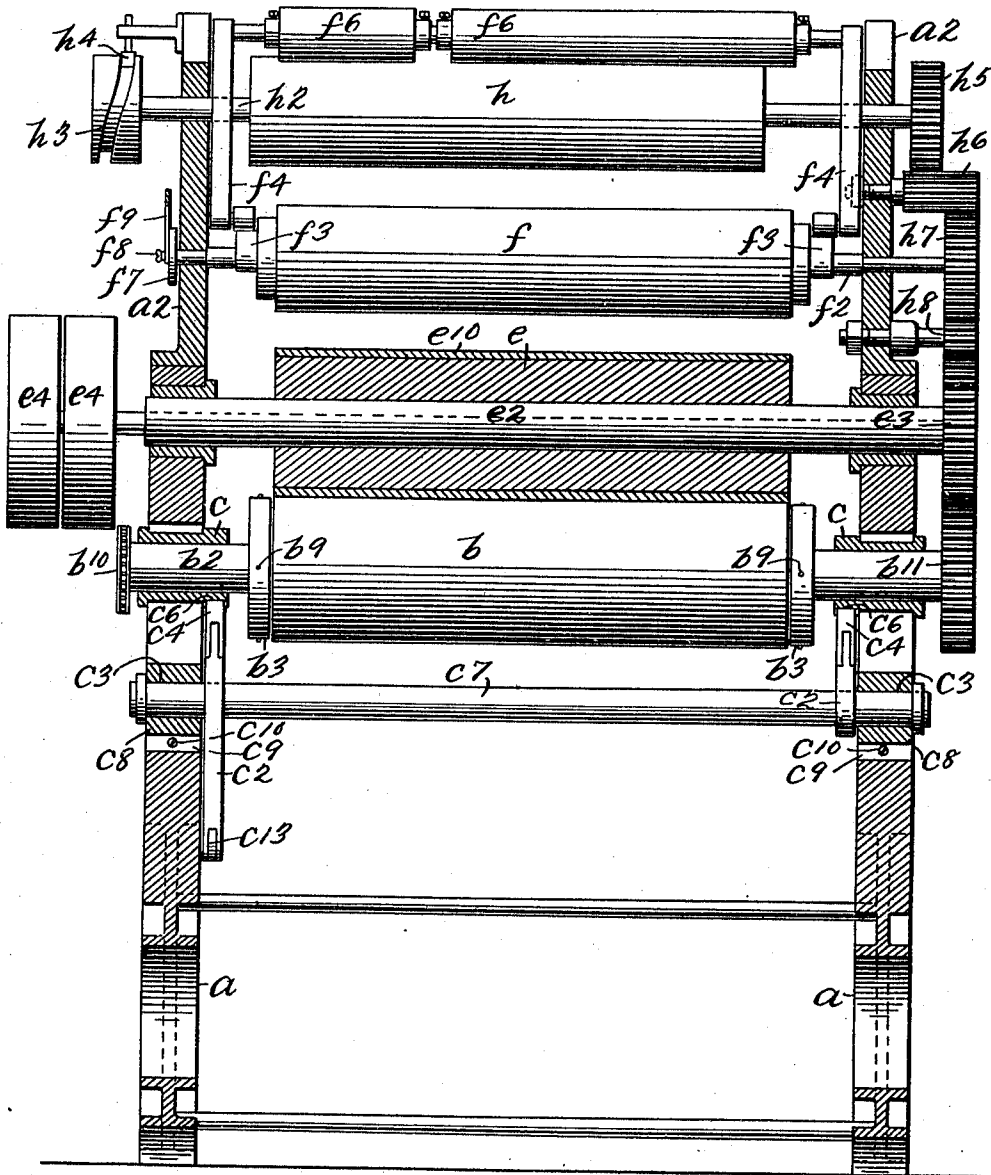
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992,172.

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3 SHEETS-SHEET 2.

FIG. 2.



Witnesses:
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3 SHEETS—SHEET 3.

FIG. 3.

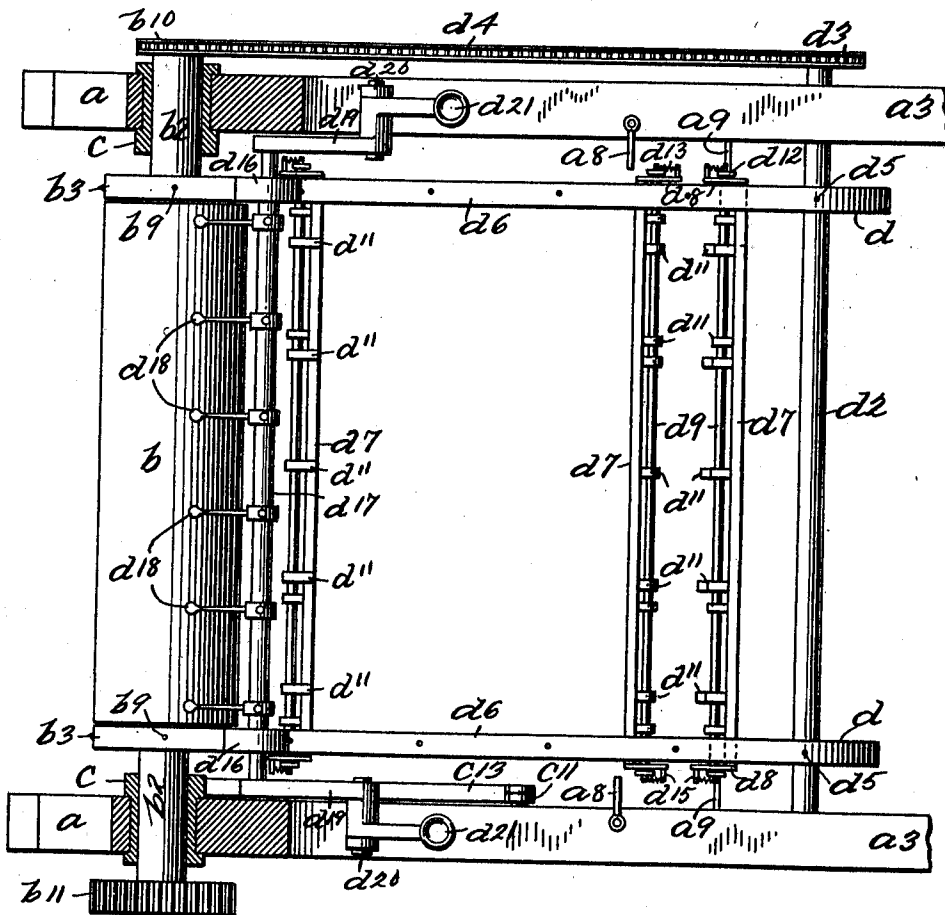
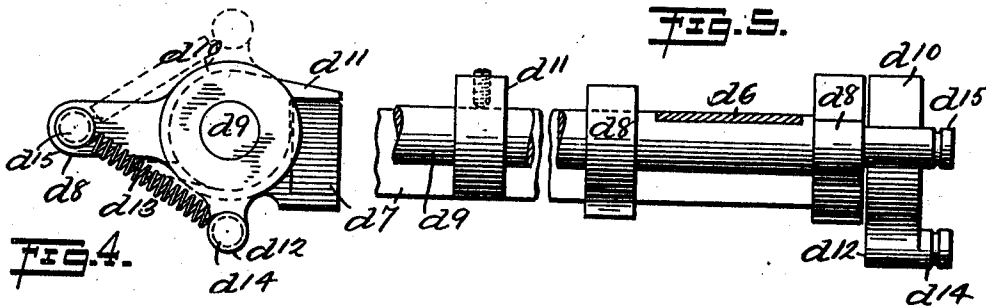


FIG. 5.



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UNITED STATES PATENT OFFICE.

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PRINTING-PRESS.

992,172.

Specification of Letters Patent.

Patented May 16, 1911.

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To all whom it may concern:

Be it known that I, DWIGHT W. CUSTER, a citizen of the United States of America, and residing at New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to printing and the object thereof is to provide a press therefor which is simple and effective in construction and operation, which is very compact and symmetrical in appearance, and which is capable of very high speed.

A further object is to provide simple belt conveyers for the blanks, from feed to printing position, and thence to the delivery.

A further object is to provide positive blank gripping devices, at the feed, which are easily tripped at the delivery.

A further object is to provide means for insuring a positive relative position of the conveyer belts; and a further object is to provide tension devices for the said belts which also insure the blanks' platen contact some distance in advance of printing position.

My invention is fully described in the following specification, of which the accompanying drawings form a part, in which the separate parts are designated by the same reference characters in each of the views, and in which:—

Figure 1 is a central sectional elevation of a press constructed in accordance with my invention; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 1; Fig. 4 is an end view of a gripper which I employ; Fig. 5 is an edge view thereof; Fig. 6 is a side view of a pulley which I employ; Fig. 7 is a section on the line 15—15 of Fig. 6; and Fig. 8 is an enlarged view of my "throw-off."

In the drawings forming a part of this application I have shown a frame, comprising two side members, each of which comprises a base a , an inking device carrier a^2 , a horizontal member a^3 provided with supports a^4 , and carrying a feed device a^5 , and a horizontal member a^6 for the delivery

a^7 , said frame carrying a trip a^8 , adjacent the feed a^5 , and another a^9 , above the delivery a^7 , on each side thereof and, in practice, I also employ a jogger for the said delivery, although not shown, as many forms thereof might be designed.

Rotatably mounted in the base a is a platen roller b upon a shaft b^2 upon which are also mounted two pulleys b^3 comprising, each, a central member b^4 secured to the shaft and an outer member b^5 rotatably adjustable thereon by means of bolts b^6 passed through slots b^7 , shown in Figs. 14 and 15, a plurality of teeth b^9 being carried by the member b^5 and which is also provided, as well as the roller b , with a recess b^8 in the periphery thereof and, as shown, the shaft b^2 also carries a sprocket b^{10} and a gear wheel b^{11} . The shaft b^2 is carried by vertically movable boxes c supported by levers c^2 rotatable at c^3 and having a tongue c^4 pivoted thereto at c^5 engaged in recesses c^6 in the corresponding box c , said levers being secured to a shaft c^7 carried by boxes c^8 having inclined lower ends and vertically adjustable by means of wedges c^9 operated by reversely threaded screws c^{10} , and said levers are operated by means of a hand lever c^{11} pivoted at c^{12} and connected therewith by means of a link c^{13} .

Rotatably mounted beneath the feed a^5 are two pulleys d upon a shaft d^2 which also carries a sprocket d^3 connected with that b^{10} by means of a chain d^4 , said pulleys having teeth d^5 thereon which, together with those b^9 , are adapted to engage conveyer belts d^6 connecting the pulleys b^3 and d and, in turn, connected with each other by means of transverse bars d^7 having arms d^8 thereon supporting a rod d^9 to the ends of which are secured disks d^{10} and intermediate thereof disks provided with a tongue d^{11} , each, normally resting on the bar d^7 contiguous thereto and forming blank grippers, the disks d^{10} having, each, a lug d^{12} thereon connected with the corresponding arm d^8 by means of a contractile spring d^{13} secured to posts d^{14} and d^{15} .

Bearing on the belts d^6 are two rollers d^{16} on a shaft d^{17} which carries a plurality of spring fingers d^{18} bearing on the roller b , said shaft being carried by levers d^{19} piv-

oted at d^{20} and adjustable by means of screws d^{21} , and it will be observed that the pulleys d are provided with peripheral recesses d^{22} to receive the transverse bars d^7 , as do also the recesses in the pulleys b^3 and roller b , said pulleys being made adjustable in order to insure a positive entry thereinto of said bars and thus maintain the said bars in positive positions.

At e is shown a printing roller upon a shaft e^2 , mounted preferably in adjustable boxes, and provided with a gear e^3 engaging that b^{11} , and with power pulleys e^4 , said roller e being also provided with a longitudinal recess e^5 adapted to register with that b^8 in the roller b to receive the bars d^7 and connected parts.

Above the roller e , in the frame member a^2 , is mounted an ink roller f upon a shaft f^2 and having an adjustable cam f^3 mounted on each end thereof to actuate arms f^4 pivoted at f^5 and carrying a roller, or rollers of different lengths, f^6 thereon, adjustably and interchangeably, for conveying ink, and said shaft f^2 carries a disk f^7 having an adjustable pivot f^8 thereon for a pawl rod f^9 actuating a ratchet f^{10} secured to a shaft f^{11} of an ink fountain roller f^{12} in an ink fountain f^{13} provided with an ink blade f^{14} adjustable by means of screws f^{15} and coacting with the roller f^{12} to control the ink feed.

Interposed between the rollers f and f^6 is an ink distributing roller h upon a shaft h^2 having a worm cam h^3 at one end, into which projects a fixed pin h^4 for oscillating the said roller to spread the ink thereon, and having a gear h^5 on the other end enmeshed with an idler h^6 engaging a gear h^7 on the shaft f^2 and which is enmeshed with the gear e^3 through the medium of an idler h^8 , thus insuring uniform rotation.

At i and i^2 are a plurality of ink distributing and ink conveying rollers on shafts i^3 and i^4 , respectively, each of which is carried in hangers of which but one is shown in Fig. 6 to avoid confusion and which is shown in detail in Figs. 12 and 13, enlarged, comprising a plate i^5 provided with a horizontal slot i^6 through which passes a bolt i^7 secured in the frame a^2 and with a bolt i^8 which is adapted to be engaged in a segmental slot i^9 , indicated by dotted lines in Fig. 12, in the frame a^2 , this arrangement permitting both horizontal and swinging adjustment of the plate i^5 . Pivoted to the plate i^5 , at i^{10} , is a cap i^{11} which is provided with a lug i^{12} adapted to strike a stop i^{13} to limit the movement of said cap when dropped into the position indicated by dotted lines in Fig. 12 to remove the roller carried thereby from the operative position, either for cleansing, repair, or substitution, but said cap is normally held in vertical position by means of a swinging screw i^{14} in the plate i^5 and provided with a thumb-nut i^{15} for locking the

cap in position, said cap and plate jointly forming the bearing for the roller journals, as will be seen.

From the foregoing description it will be seen that I provide a printing press having a printing couple of which the printing roller is in constant communication with an efficient and positively controllable ink feed, both as to quantity and distribution, and also as to the supply of ink at but a predetermined portion of the printing roller through the medium of the interchangeable and adjustable rollers f^6 which convey the ink from the fountain roller f^{12} to the oscillating roller h and thence to the printing roller, and by means of my roller and ink fountain adjusting devices I may provide as thin a film of ink as may be desired, and I also provide means for a very fine adjustment of the printing plates on the roller e , not possible in presses as at present constructed.

In practice, with the use of a hand feed as shown, the blanks are fed to the conveyer belts and there gripped by the tongues d^{11} of which there are a plurality on each of the bars d^7 , said grippers being made operative by the lug d^{12} striking the trip a^8 when in the position shown in dotted lines in Fig. 4, the released position, after which the blank is carried to and around the platen b , around which the conveyer chains also travel without releasing the blank, and printed, being carried thence to the delivery a^7 in which position the blank is released from the grippers by the lugs d^{12} striking the trips a^9 and the disks d^{10} are again reversed and the tongues d^{11} carried into the position indicated by dotted lines ready for another blank engagement, the spring d^{13} being so arranged as to permit being carried over the axis of the rod d^9 and exert force on the lugs d^{12} in either position thereof.

If, in the operation of my press, no blank shall have been engaged by the grippers in their passage to the printing couple, the lever c^{11} is operated to actuate the levers c^2 and the boxes c thereby drop, through gravity, and carry the platen away from the printing roller, whereby no soiling of the same, or of the "make-ready" results, the teeth of the gears b^{11} and e^3 being of sufficient length to permit such platen movement without disengagement, thus not interfering with the conveyer movement when the throw-off is operated.

By means of the rollers d^{16} a desired tension may be maintained on the belts d^6 and the blank about to be printed is forced into contact with the platen some distance in advance of the printing position by the fingers d^{18} and thereby insuring a smooth and positive printing surface, and, while I have shown a manual feed, it will be obvious that

an automatic feed may be substituted therefor, and various other changes in and modifications of the details shown and described may be made to accomplish the desired results.

Reserving all such changes as may come within the scope of the following claims to myself, what I claim as new and desire to secure by Letters Patent, is:—

1. In a printing press, a printing couple, a pulley at each end of one member thereof, feed devices, conveyer belts from said feed devices to each side of said couple and around corresponding pulleys, said couple and pulleys being recessed in their peripheries, blank grippers extending between said belts, and means for adjusting said pulleys to insure positive positioning of said grippers.
2. In a printing press, a printing couple, a pulley at each end of one member thereof, feed devices, conveyer belts from said feed devices to each side of said couple and around corresponding pulleys, said couple and pulleys being recessed in their peripheries, blank grippers extending between said belts, and said pulleys comprising an inner and an outer member adjustably connected to insure positive positioning of said grippers.
3. In a printing press comprising the usual printing couple and means for conveying blanks thereto, comprising belts and pulleys; a shaft, a flanged member secured thereto and provided with concentric slots,

a member encompassing said flanged member and bolts therein passed through said slots for adjustably locking said members together to insure an exact belt adjustment.

4. In a printing press, a printing couple, a pulley at each end of one member thereof, feed devices, conveyer belts from said feed devices to each side of said couple and around corresponding pulleys, said couple and pulleys being recessed in their peripheries, blank grippers extending between said belts, and tension devices for said belts, said pulleys comprising an inner and an outer member adjustably connected to insure positive positioning of said grippers.

5. In a printing press, a printing couple, a pulley at each side of one member thereof, feed devices, conveyer belts from said feed devices to each side of said couple and around corresponding pulleys, said couple and pulleys being recessed in their peripheries, blank grippers extending between said belts, means for adjusting said pulleys to insure positive positioning of said grippers, and means for actuating said grippers to grasp and release blanks.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 17th day of September 1909.

DWIGHT W. CUSTER.

Witnesses:

C. R. ROBINSON,
J. C. LARSEN.