March 30, 1937. P. L. TOLLISON 2,075,559

PLATE CLAMP

Original Filed Sept. 10, 1932 2 Sheets-Sheet 1

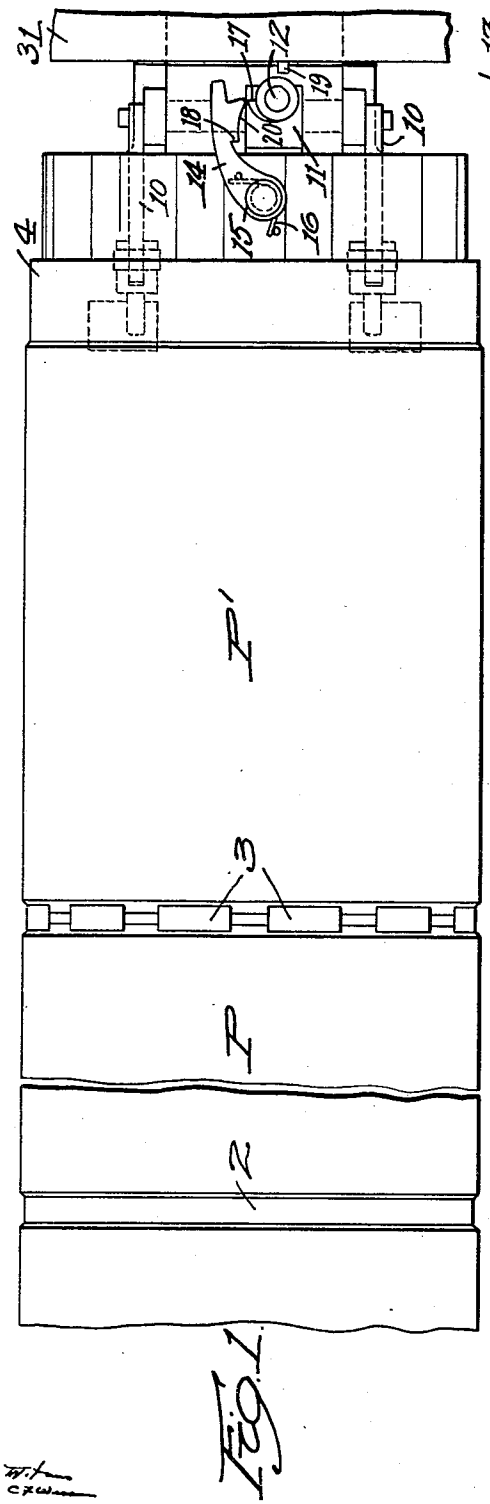


Fig. 1.

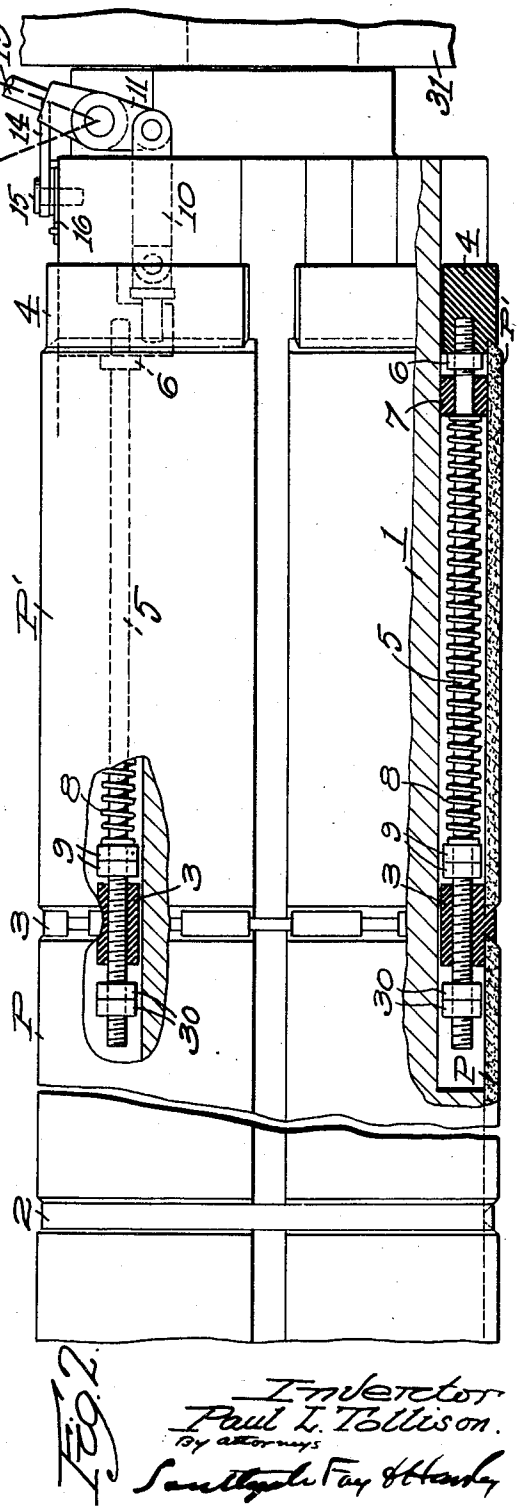


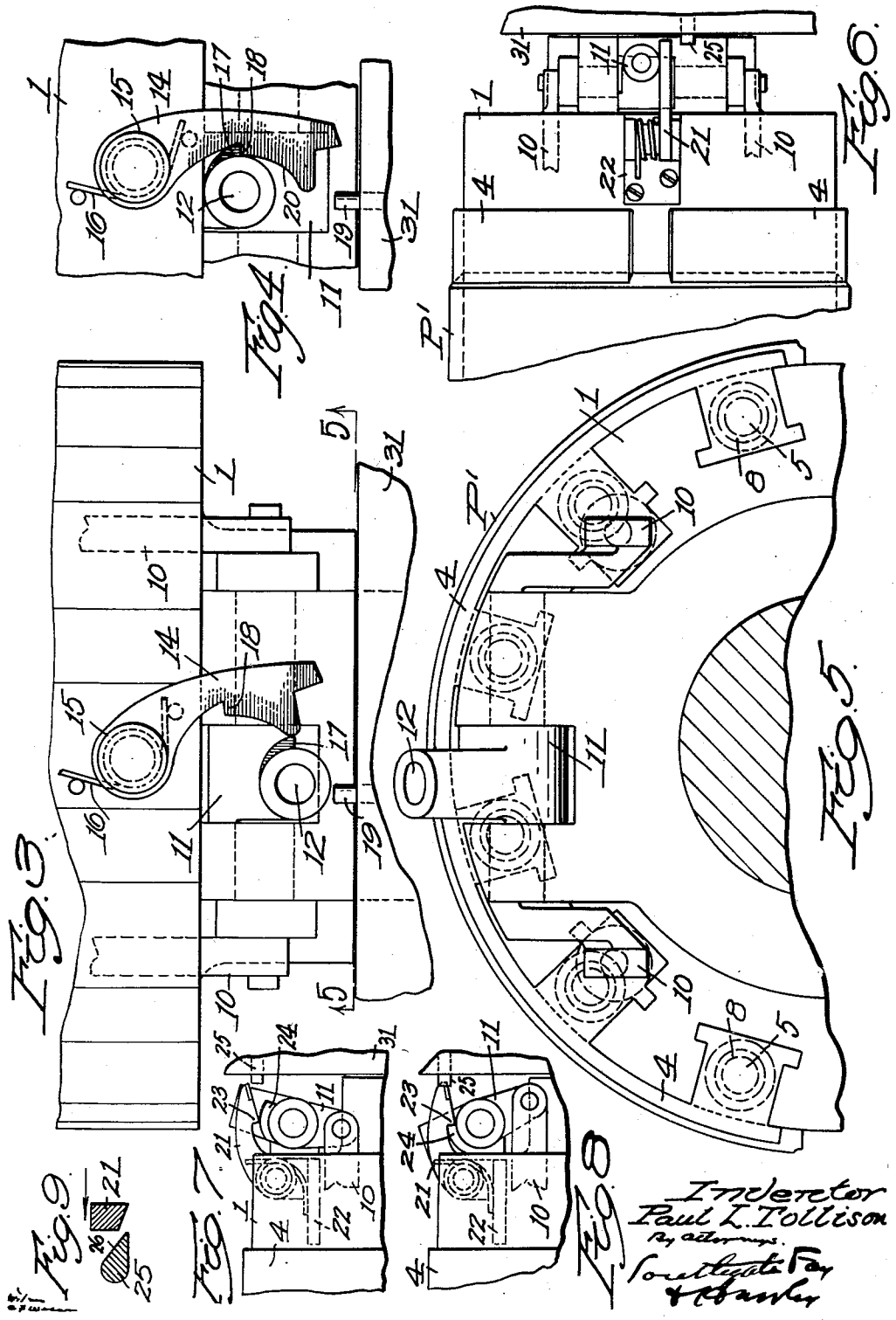
Fig. 2.

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PLATE CLAMP

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5 Claims. (Cl. 101—378)

This invention relates to means for clamping printing plates on a printing plate cylinder and for unclamping them.

The principal object of the invention is to provide a simple and convenient arrangement by which the plates will be clamped on the cylinder automatically by the rotation of the cylinder and will be unclamped manually and to provide a simple convenient latch for holding the plate clamping means in unclamped position while the plates are being adjusted.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the drawings, in which

Fig. 1 is a plan of one end of a printing plate cylinder with the plates thereon and showing a preferred embodiment of this invention;

Fig. 2 is an elevation, partly in section, of the same;

Fig. 3 is an end view showing the position of the latch when the plates are clamped;

Fig. 4 is a similar view showing the latch in the position for holding the clamping means in unclamped position;

Fig. 5 is an end view of the entire cylinder showing constructional details;

Fig. 6 is a plan showing a modification of the latching mechanism;

Fig. 7 is an elevation of the latter with the parts in the position they assume just after the latch has been tripped to allow the plate clamp to clamp the plates;

Fig. 8 is a similar view showing the latch in latched position, holding the plate clamps in unlocking position, and

Fig. 9 is a view of a cam-shaped pin for opening a latch of this character.

Referring to the first five figures, it will be seen that the customary type of plate cylinder 1 is shown carrying a center ring 2, center clips 3, and end clamps 4 for holding plates P and P^1 in place in the usual way by their beveled ends. Each end clamp 4 carries a plurality of push rods 5 threadedly secured thereto and locked in position by lock nuts 6. A filling-in piece 7 is secured to the cylinder 1 and constitutes a part thereof. This filling-in piece acts as an abutment for a spring 8 on each push rod 5, the other end of the spring contacting with lock nuts 9 adjustably carried on the push rod 5. These parts of course are generally duplicated, there being two or more of them for each plate clamp. The springs 8 are set in a compressed condition. Therefore they tend to force the end clamps 4 to the left, as shown in Fig. 2, and thereby these clamps and the clips 3 clamp the plates P and P^1.

In order to unclamp these plates, it is necessary only to overcome the pressure exerted by the springs 8. This is accomplished manually by means of a link 10 pivotally secured to each end clamp 4 and also pivotally secured to one end of a socket lever 11 pivotally mounted on the plate cylinder 1. In the end of this socket lever on the opposite side of the pivot is a recess 12 in which may be fitted a bar 13 for constituting a handle, whenever it is desired to operate the clamps by hand to loosen the plates. By moving the bar 13 from the full line position in Fig. 2 to the dotted line position, the end clamp 4 will be drawn away from the plates, thereby unclamping them. Likewise the center clips 3 will be drawn back in the same way, unclamping the plate P'. As there is a little space between the center clip 3 and another pair of lock nuts 30 on the push rod 8, the necessary separation will take place to release both plates.

In order to relieve the operator from holding the end clamp 4 open against the resilient pressure of the several springs 8, a latch 14 is provided. This latch is pivotally mounted by a stud 15 on the plate cylinder 1 and pressed in a clockwise direction by a spring 16. A latching tooth 17 carried on the socket lever 11 cooperates with a similar tooth or projection 18 on the latch 14. Therefore the socket lever 11 is locked in unclamped position as shown in Fig. 4.

After the plates have been properly arranged on the plate cylinder 1, the cylinder is rotated. During this rotation, the end of the latch 14 comes into contact with a stationary pin 19 secured in the side frame 31 of the press. This action releases the latch, permitting the springs 8 to act to rotate the socket lever 11 in a clockwise manner as viewed in Fig. 2. This permits the clamps 4 to be forced against the plates by the springs, to clamp them securely. It will be noticed that this latch 14 carries a cam projection 20 which insures that the end of the latch will be thrown clear of the pin 19 when the socket lever moves to the clamping position as shown in Fig. 1.

Referring to Figs. 6 to 9 inclusive, a different latch is shown. The manual unclamping is performed in the same manner as described above but the latch 21 is shown in this case as pivoted on an axis at right angles to that shown in the first five figures, that is, it is parallel with the lever pivot, and pivotally mounted on a bracket 22 secured to the plate cylinder. The latch is springpressed in a clockwise direction as shown in Fig. 7 and carries a tooth or projection 23 for coop-

erating with a complementary tooth or projection 24 on the socket lever 11. In this case a pin 25 mounted on the side frame 31 carries a cam-shaped surface 26 as indicated in Fig. 9. Thus, as the cylinder rotates, this surface lifts the beveled latch 21 free to disengage the teeth 23 and 24. Thus the springs 8 are free to move the end clamps 4 against the plates to hold them securely on the plate cylinder.

In both forms, the invention includes a manual unclamping of the printing plates, in combination with automatic means for clamping them as the cylinder is rotated. In this way the automatic operation for clamping the plates is retained with a material simplification of mechanism and yet no disadvantage is present from the fact that the pressman has to unclamp the plates. He unclamps only when the press has come to rest and it takes no time that he could use for any other purpose just at that instant. The slight disadvantage of having to unclamp the plates by hand is more than overcome by the additional simplification of the mechanism.

Although I have illustrated and described only two forms of the invention, I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a printing press, the combination with a plate cylinder and clamps for clamping the printing plates thereon, of automatic means for operating said clamps to clamp the plates thereon by the rotation of the cylinder, manually-operated means for unclamping said plates, and automatic means for latching the clamping means in unclamping position whenever moved fully to that position.

2. In a plate clamping device, the combination with the plate clamps, of yielding means operating to move the plate clamps into plate clamping position and hold them there by yielding pressure, of manually-operated means for retracting said clamps against the yielding pressure, a latch for holding the clamps in the unclamped position, and stationary means for engaging the latch as the cylinder rotates and releasing it to allow the yielding means to act to automatically clamp the plates on the cylinder.

3. In a plate clamping device, the combination with a plate cylinder and an end clamp, of springs for moving said end clamp into plate clamping position, links connected with the end clamp, a lever to which the links are connected, which lever is adapted to be operated manually, a spring-pressed latch for engaging the lever and holding it in the position to keep the clamps in unclamped position, and a stud mounted in stationary position in the path of said latch as the plate cylinder rotates to release the latch during the first rotation of the cylinder.

4. In a plate clamp latching device, the combination with a retractable plate clamp, an oscillatable lever, and a link for connecting the lever with the plate clamp, whereby the lever will reciprocate the plate clamp, of a latch pivoted on an axis at right angles to the axis on which the lever swings, the lever having a tooth on one side and the latch having a tooth for engaging it and holding the lever in retracted position when the plate is moved back fully, a stationary pin for unlatching the latch, said latch having a cam surface for engaging the tooth on the lever to throw the latch outwardly when the lever is in clamping position, the cam surface acting to hold the lever out of the path of the pin.

5. In a latch for a plate clamp for a rotary printing cylinder, the combination with a reciprocable plate clamp and an oscillatable lever connected with the plate clamp for retracting it to unclamping position, said lever having a tooth thereon, of a latch pivoted on the cylinder on an axis parallel with the axis about which the lever turns, the latch having a tooth for engaging the first-named tooth and holding the latch in its retracted position, of a stationary pin having a slanting surface for engaging said latch as the printing cylinder rotates and releasing one tooth from the other.

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