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PLATE LIFTING DEVICE

Original Filed Feb. 10, 1925

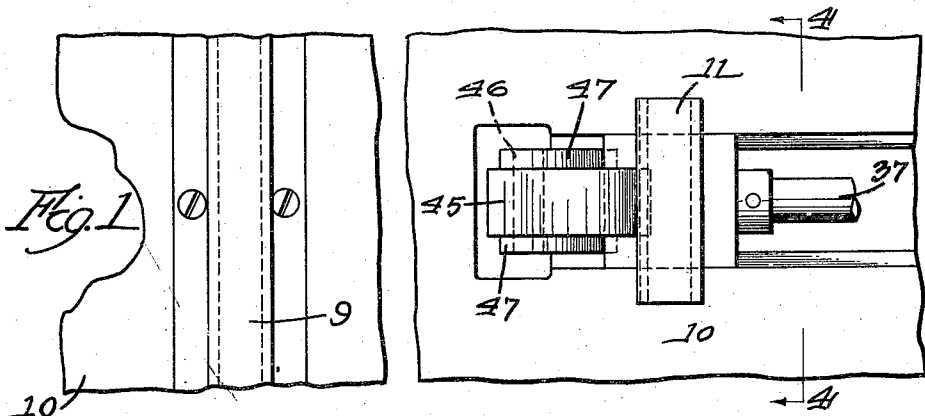
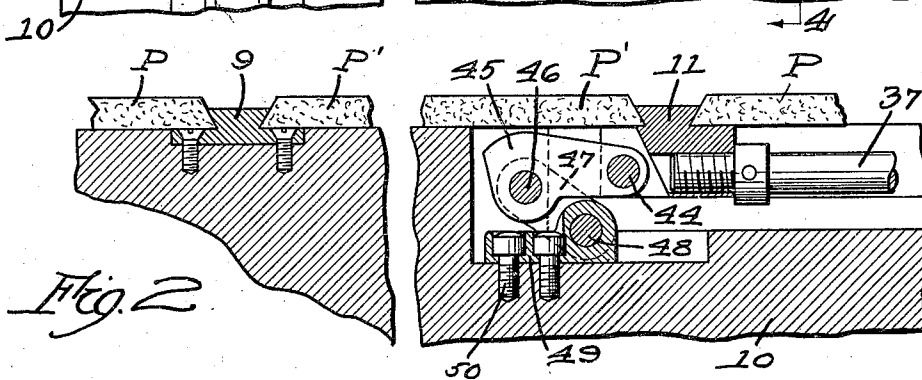
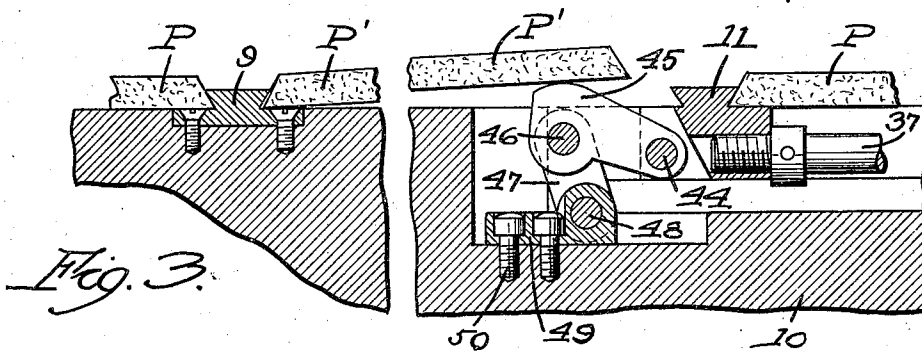
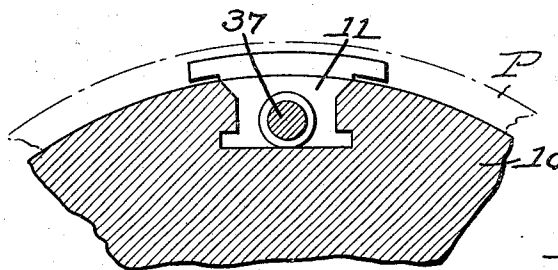


Fig. 4

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PLATE-LIFTING DEVICE

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This invention relates to a device for lifting a plate on a printing plate cylinder so as to free it from the cylinder when it is desired to remove it.

5 On a long run the printing plates on a press cylinder often become seated so firmly that in order to remove them they must be beaten with a wrench or a piece of iron, so that they can be loosened so as to be easily
10 lifted from the cylinder. They are cylindrical in shape and thus hug around the cylinder. This beating operation consumes time and labor often when the time especially is valuable.

15 This invention is designed for the purpose of mechanically freeing a plate, particularly the inner one and lifting it slightly from the cylinder so that it can be taken off without resistance. At the same time the outer plate
20 is freed by being slid along the cylinder at the end, both functions being performed together and automatically by the device for unclamping the plates and also being performed substantially instantaneously.

25 Reference is to be had to the accompanying drawings, in which

Fig. 1 is a plan of a portion of a plate cylinder showing the center clip with its operating means;

30 Fig. 2 is a sectional view through the center of Fig. 1 taken radially of the cylinder and showing the plates clamped in position, that is, in running condition;

Fig. 3 is a similar view showing the operation for freeing the plates; and

35 Fig. 4 is a sectional view on the line 4-4 of Fig. 1.

I have shown the invention as applied to a plate cylinder 10 arranged with a center
40 ring 9 in fixed position for holding the adjacent edges of two so-called inside plates P' and with a center clip 11 for holding the opposite end of one of these plates P' and also the corresponding outside plate P.

45 The stationary center ring extends about half way around the cylinder 10 and is beveled on both edges to hold the entire inner edge of each of the two plates P' but the center clip has a short length and is beveled
50 in like manner to hold the opposite edge of

the plate P' and the adjacent edge of the plate P at a single point. Preferably three of these center clips 11 are employed for a semi-cylindrical plate. It is the middle one of the three that is illustrated and this is the
55 only one which has the plate lifting device upon it. The others are made plain preferably but operated simultaneously with the middle one shown.

It will be understood, of course, that means is provided for clamping the plates by moving the center clips 11 forward to the left into the position shown in Fig. 2, and also it will be understood that this clamping means
60 comprises some kind of a clip for clamping the outer end of the outside plate P, but that is not a part of the invention, neither is the operating means for the rod 37 which actuates the center clip 11.

Around the half circumference of the cylinder there may be three of these rods 37 and
70 each of them screws into a center clip as indicated so that the effective length of the rods can be adjusted. That is all there is to the side center clips, but the middle one of the center clips is shown with additional features which constitute the plate lifting means.
75 This center clip is provided with a stud 44 on which is pivoted a lifter toe 45 which in turn is pivoted at 46 to the upper end of a link 47. This link is pivoted at 48 in stationary position to a stationary bracket 49 fixed to the cylinder 10 by screws 50 or the like.

Assuming the parts to be located in position as shown in Fig. 2 and a run to have
85 been made, a pull on the left of the rod 37 draws back the plate P from the position shown in Fig. 2 to that shown in Fig. 3, thus loosening this plate from any adhesion to the cylinder. Obviously that has no effect whatever on the plate P' but as the clip is drawn
90 back from the position shown in Fig. 2 it will necessitate the rising of the lifter toe 45 as indicated in Fig. 3, and the consequent lifting of that end of the plate P' as shown in Fig. 3. With three center clips 11 around the half of the cylinder and a lifter toe 45 on the center one, the plate is adequately
95 freed from the cylinder without having this mechanism on the side clips.

In this manner the inner plate is free to be lifted by the lifter toe and rests on it. There is no necessity of pounding on it to free it from its hub against the cylinder. The outer plate is freed also by being slid along the cylinder. Both actions are performed automatically by the operation of unclamping the plates. The manner in which the rod 37 is reciprocated is not a part of this invention and is not shown therein.

It will be understood that on the opposite operation for the clamping of the plate, the plate is put in position up against the center ring 9 and rested on the lifter toe 45 as shown in Fig. 3.

It will be noticed that in Fig. 2 there is a clearance between this toe and this plate. This is sufficient to allow the toe to lay the plate down on the cylinder in advance of the coming of the clip 11 to clamping position so that when it does come to that position the plate will already be located properly to receive it. Thus in putting the plates in position the operatives have no more careful and accurate work to do than under present conditions. Of course the outer plates can be lifted by similar mechanism properly placed.

Although I have illustrated and described only a single form 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, or to the particular type of cylinder or plate, but what I do claim is:—

1. The combination with a printing press cylinder adapted to receive both inside and outside plates, of a movable clip for engaging and holding the adjacent edges of an inside and outside plate, and means connected with said clip for lifting the said adjacent edge of the inside plate when the clip is drawn back to unclamp the plate.

2. The combination with a printing press cylinder adapted to receive both inside and outside plates, of a movable clip for engaging the adjacent edges of an inside and outside plate, and means connected with said clip for lifting the said adjacent edge of the inside plate and simultaneously drawing back the outside plate to free that plate also.

3. In a device of the character described, the combination with a fixed center ring for holding the edge of an inside plate, a center clip for holding the outer edge of said plate and the inner edge of the outside plate, said center clip being movable to free the edge of the inside plate and to carry the outside plate outwardly with it along the cylinder, and means operated by the withdrawal of said center clip for lifting the adjacent edge of the inside plate to free it from the cylinder.

4. In a plate lifting device, the combination with a reciprocable center clip for engaging two printing plates, one on each side, of a lifting toe pivoted to the center clip, a link pivoted in a fixed position at one end and pivotally connected with the lifting toe in such position that when the locking clip is in locking position the lifting toe is substantially horizontal and the link in inclined position extending from its pivotal connection with the toe toward the clip.

5. In a device of the character described, the combination with a printing cylinder having a recess, of a reciprocable clip thereon for clamping two plates on opposite sides of the clip, a pivot fixed with respect to the cylinder, a link connected with the pivot and extending from it in a direction away from the clip, a lifting toe pivoted to the other end of the link and pivotally connected with the clip and adapted to lie in the recess in the cylinder and spaced below the printing plate when in locking position, whereby when the clip is drawn back the toe will be forced upwardly by its connection to release a plate.

6. In a device of the character described, the combination with a reciprocable clip for clamping two plates on opposite sides thereof, a fixed pivot, a link connected with the pivot and extending from it in a direction away from the clip, a lifting toe pivoted to the other end of the link and pivotally connected with the clip and adapted to lie spaced below the printing plate when in locking position, whereby when the clip is forced forward the toe will be drawn down away from the plate before the clip engages the plate.

7. The combination with a press cylinder having inside and outside plates thereon, and means for simultaneously unclamping an inside and an outside plate, of means for automatically lifting the outer edge of the inside plate.

8. In a plate lifting device, the combination with a reciprocable clip for engaging and holding a printing plate, of a lifting toe, a link pivotally connected with the lifting toe and pivotally mounted at the other end at a point located between the first-named pivotal connection and the end of the cylinder, whereby when the clip is drawn back, the lifting toe will be lifted thereby into engagement with the plate to release the plate from the cylinder on which it is mounted.

In testimony whereof I have hereunto affixed my signature.

HENRY A. WISE WOOD.