

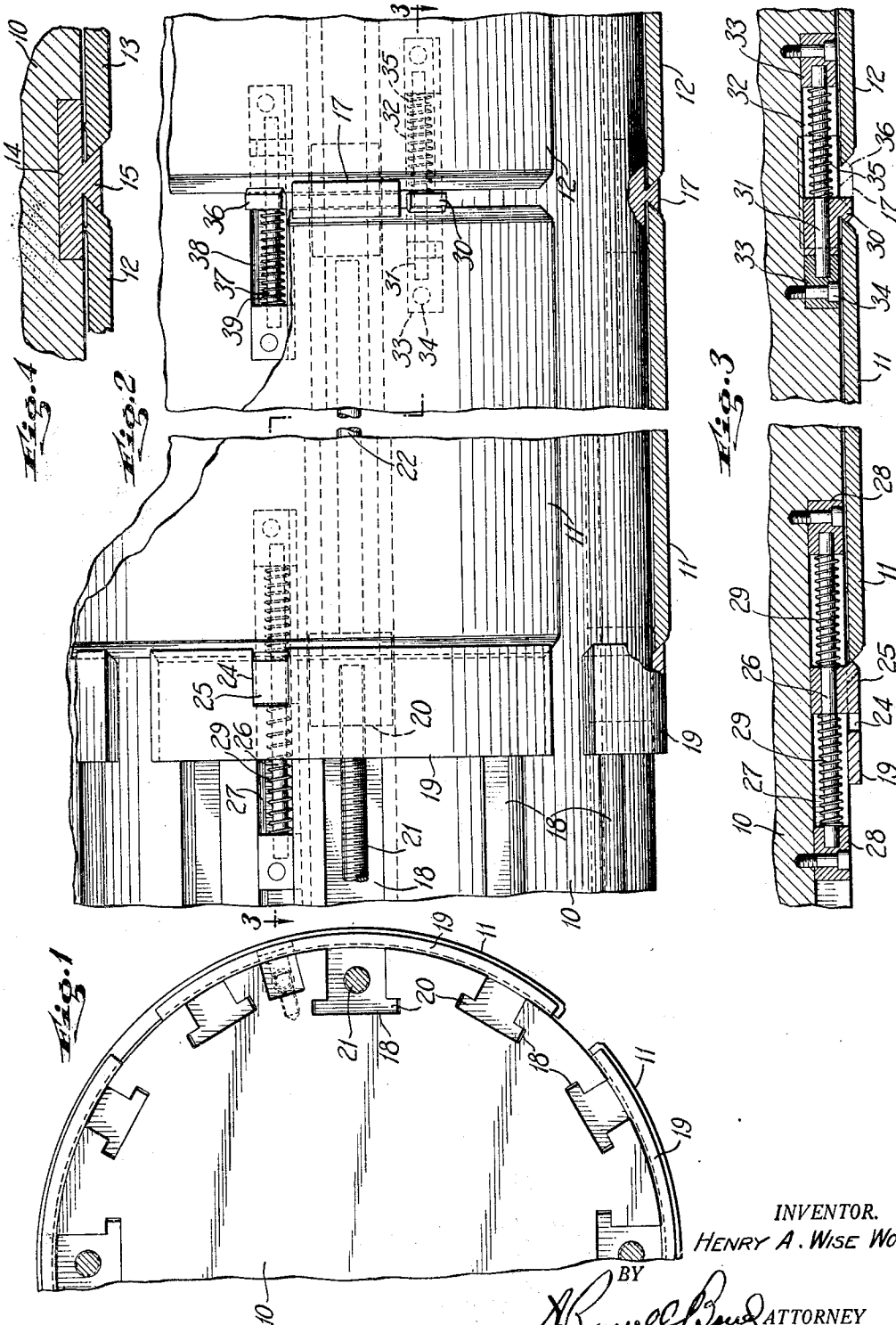
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PLATE CLAMP FOR PRINTING PRESSES

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## UNITED STATES PATENT OFFICE

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## PLATE CLAMP FOR PRINTING PRESSES

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The present invention relates to means for clamping curved stereotype plates to printing cylinders of the rotary type.

It is customary to form stereotype plates with bevelled end faces which are engaged by overlapping bevelled faces of clips and end clamps. The end clamps must be withdrawn to permit of applying a plate to a cylinder and then are pulled up to lock the plate securely to the cylinder. It very often happens that in plating up a press, difficulty is encountered in holding the plate in position against the cylinder until the end clamps are pulled up. When the plate is placed upon the top of the cylinder no such difficulty is encountered because it is supported by gravity, but when the plating positions are such that the plate must be placed on the under side or the lateral side of the cylinder, the plate must be supported by hand until the clamps are tightened up. This is a difficult task for a pressman to perform unaided, and ordinarily it is necessary to use two men, one to support the plate while the other tightens up the clamps.

It is an object of my invention to overcome this difficulty by providing an auxiliary clamping means which will furnish a temporary support for the plate when it is placed against the cylinder, so that it need not be manually supported while the clamps are being pulled up.

A more specific object of my invention is to provide a spring-pressed auxiliary clamp which will snap over the edge of the plate when the plate is applied to the cylinder without requiring any manual operation of said clamp.

Another object of the invention is to provide an auxiliary clamp which will support but little more than the weight of the plate so that the plate may be pulled off the cylinder by the pressman without material effort.

With these and other objects in view which will appear hereinafter, I shall now describe a preferred embodiment and thereafter the novelty and scope of the invention will be pointed out in the claims.

In the accompanying drawing;

Figure 1 is a fragmental end view of a

plate cylinder showing a temporary plate clamp applied thereon;

Fig. 2 is a fragmental side elevation of the same partly in section;

Fig. 3 is a view in section taken on the line 3—3 of Fig. 2; and

Fig. 4 is a detail view in section of a center holding ring on the plate cylinder.

In the drawing I show a plate cylinder 10 of the type adapted to carry four pairs of opposed substantially cylindrical stereotype plates, one pair at each end of the cylinder and two intermediate pairs. I show in the drawing, only one end pair of plates 11 and an adjacent intermediate pair 12; also, in Fig. 4, one of the other intermediate pair 13. The cylinder 10 is provided with a fixed central ring 14 formed with a peripheral tenon 15 which is of dovetail cross-section adapted to lap over the adjacent bevelled end faces of the inner stereotype plates 12 and 13.

To engage the opposite end faces of the plates 12, clips 17 are provided which are slidable to and from clamping position in T slots 18 cut in the cylinder 10. These clips are provided with dovetailed tenons adapted to engage the bevelled end faces of plates 11 and 12 disposed respectively on opposite sides thereof.

To hold the outer ends of the plates 11 clamping rings 19 are provided, each ring being formed with an undercut bevelled clamping face to overlap the outer bevelled end face of a plate 11. The clamp 19 is formed with lugs 20 which slide in the T slots 18. Suitable means are provided for forcing the clips and end clamps into clamping engagement with the stereotype plates. As pictured in Fig. 2, a screw 21, fixed against longitudinal movement, by means not shown, has threaded engagement with the central lug 20 of the end ring 19, so that by turning this screw the ring 18 will be forced against plate 11 and the latter will then force the sliding clip 17 against the plate 12. Thus both plates 11 and 12 will be firmly clamped to the cylinder 10. In the particular construction illustrated there are two end rings and two sliding clips for each plate 11.

It will be understood, of course, that the mechanism described above for holding the plates 11 and 12 is duplicated on the other end of the cylinder to hold the plates 13 and 5 the plates at the other end of the cylinder which are not shown in the drawing.

The mechanism so far described is typical of present common practice. In some constructions a single end ring is provided for 10 each end plate and various other means are provided for tightening up the end rings.

Since it often happens that the plates at one or the other end of the cylinder are omitted various means are provided for forcing 15 the sliding clips 17 into clamping engagement with the inner plates without the intervention of an end plate. As shown in Fig. 2, a rod 22, somewhat shorter than the stereotype plates, is placed in the T slots 18 20 between each central lug 20 and the clip 17. Thus when the end rings 19 are advanced by turning the screws 21 the clips 17 will be forced into clamping engagement with the plates 12 or 13 as the case may be.

In plating up a cylinder an inner stereotype plate 12 is first fitted under the central holding ring 14, and if the plate is in such position on the cylinder that it is not supported by gravity thereon, it must be held 30 in place by the pressman while he screws up an end clamp 19 to force a clip 17 into clamping position. Since the stereotype plates are heavy this is a difficult task for one man to perform. If an end plate also is to be applied 35 to the cylinder both the inner and outer plates must be held manually in position until an end clamp 19 has been pulled up to hold them in place. Obviously, this is too much for one man to do. These difficulties and the necessity of using an assistant are overcome by my invention as will now be explained.

As shown in Figs. 2 and 3, a slot 24 is cut 45 in the clamping ring 19 and in this slot plays an auxiliary clamp 25. The latter is mounted to slide on a rod 26 which lies in a slot 27 cut in the cylinder 10. The rod 26 is supported at opposite ends thereof in blocks 28 50 which are secured by screws to the cylinder 10. Between the blocks 28 and clamp 25 opposed springs 29 are mounted, which serve to retain the clamp 25 in a normal clamping position. The clamp 25 is formed with a double-bevelled clamping edge. In other 55 words, the edge is V shaped in cross-section, as clearly shown in Fig. 3, so that when a plate 11 is pressed into position on this cylinder it will first force the clamp 25 outward and then when it has cleared the V-edge, the clip will snap forward and hold the plate 11 60 in place.

To hold the opposite end of the plate 11 another spring clamp 30 is provided which 65 is mounted to slide on a rod 31 situated in a

slot 32 cut in the cylinder 10. The rod is supported at opposite ends in blocks 33 which are fastened to the plate cylinder. A spring 35 normally presses the clip 30 against the left hand block 33 in which position the clip 70 will engage the right hand bevelled end faces of the plates 11. The clamp 30 is also formed with a double bevelled clamping edge to snap over the plate 11 when the latter is pressed against the cylinder. 75

To hold the intermediate plates 12 in place no spring clamps are necessary at the center of the cylinder because the plates may be slipped under the dovetailed tenon 15 as shown in Fig. 4 but to hold the outer ends of 80 the plates 12, I provide another auxiliary spring clamp 36, similar in form to the clamp 30 but oppositely disposed. Thus the clamp 36 is mounted to slide on a rod 37 which lies in a slot 38 formed in the cylinder 10, and 85 a spring 39 presses the clip 36 toward the right, as viewed in Fig. 2.

The operation of the mechanism will now be clearly understood. The end rings 19 and clips 17 are withdrawn to the positions indicated in Fig. 3. The inner stereotype plates are first applied to the cylinder and then those at the outer end. A plate 12 is slipped under the tenon 15 and its outer end is pressed toward the cylinder 10 until it snaps past the clips 36. The latter will then hold the plate 12 temporarily in place. If no end plate 11 is to be applied to the cylinder the screws 21 may then be operated to force the clips 17 into clamping position. If an end plate 11 100 is to be applied, the clips 17 are slid manually against the plate 12 to clear the plate 11 which is then pressed against the cylinder so that its opposite ends will snap past the clamps 25 and 30. The plate 11 is thus held temporarily 105 in place by the latter clamps and then the end rings 19 are pulled up to clamp the plates 11 and 12 securely to the cylinder. In a similar manner the plates on the other end of the cylinder may be applied and clamped fast. 110

The purpose of the opposed springs 29 on each clamp 25 will now be clear. The spring 29 at the outer end yields to permit of forcing a plate 11 past the clamping edge of the clamp. The other spring 29 will yield when, 115 there being no end plate 11, the ring 19 is moved beyond its normal clamping position to force the rod 22 against clip 17.

The springs which hold the clamps 25, 30 and 36 in clamping position are of such strength as to hold the stereotype plates temporarily in place, but when the plates are to be removed from the cylinder the springs will yield to a comparatively slight pull on the plates. Thus the plates may be easily snapped 125 on or off the cylinder.

While I have described a preferred embodiment of my invention, I wish it to be understood that this is to be taken as illustrative and not limitative and that I reserve the 130

right to make such changes in form, construction and arrangements of parts as fall within the spirit and scope of the following claims.

I claim:

5 1. Means for holding a stereotype plate against a plate cylinder of a printing press, said means comprising a clamp movable on the cylinder toward and from plate holding position, and a spring urging the clamp towards said position, the clamp being formed to yield to pressure of the plate as said plate is pressed toward the cylinder.

10 2. Means for holding a stereotype plate against a plate cylinder of a printing press, said means comprising a clamp mounted to slide on the cylinder and a spring urging the clamp toward plate holding position, the clamp being formed to yield to pressure of the plate as said plate is pressed toward or pulled away from the cylinder.

15 3. Means for holding a stereotype plate against a plate cylinder of a printing press, said means comprising a clamp movably mounted on the cylinder, and a spring urging the clamp toward plate holding position, the clamp having a clamping edge formed with an outwardly bevelled face permitting the stereotype plate to be snapped past the clamp and against the cylinder.

20 4. Means for holding a stereotype plate against a plate cylinder of a printing press, said means comprising a clamp movably mounted on the cylinder, and a spring urging the clamp toward plate holding position, the clamp having a clamping edge of V-shape in cross section.

25 5. Means providing temporary attachment of a stereotype plate to a plate cylinder of a printing press, said means comprising a pair of oppositely disposed spring-pressed clamps normally in plate clamping position, each clamp having a V-shaped clamping edge whereby the clamp will yield to pressure of the plate as the plate is pressed toward or pulled away from the cylinder.

30 6. In a printing press having a rotary printing cylinder, the combination with positive clamping means for securing a stereotype plate to said cylinder, of a spring-pressed latch carried by the cylinder, and adapted to snap into plate holding position when the plate is pressed thereagainst.

35 7. In a printing press having a rotary printing cylinder, the combination with positive clamping means for securing a stereotype plate to said cylinder, of a spring-pressed latch carried by the cylinder, and adapted to snap into plate holding position when the plate is pressed thereagainst, the latch being formed with a bevelled clamping edge to permit of pulling the plate off the cylinder.

40 8. In a printing press having a rotary printing cylinder, the combination with a positive clamping means for securing a stere-

otype plate to said cylinder, of a pair of opposed spring-pressed latches adapted to snap over opposite ends of the plate when the latter is pressed against the cylinder.

9. In combination with a rotary printing cylinder, a clamping ring movably mounted on the cylinder and adapted to secure a stereotype plate to the cylinder, the ring being formed with a notch, an auxiliary clamp slidably mounted on the cylinder and projecting through the notch, and a spring normally holding the auxiliary clamp in plate holding position.

10. In combination with a rotary plate cylinder, a clamping ring movably mounted on the cylinder and adapted to secure a stereotype plate to the cylinder, the ring being formed with a notch, an auxiliary clamp slidably mounted on the cylinder and projecting through the notch, and a pair of opposed springs normally holding the auxiliary clamp in plate clamping position.

In testimony whereof, I have signed this specification.

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