

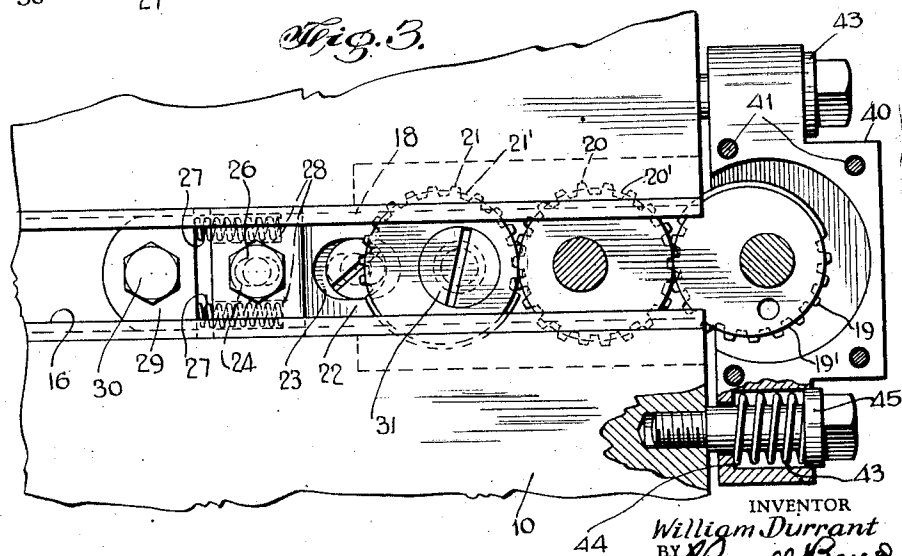
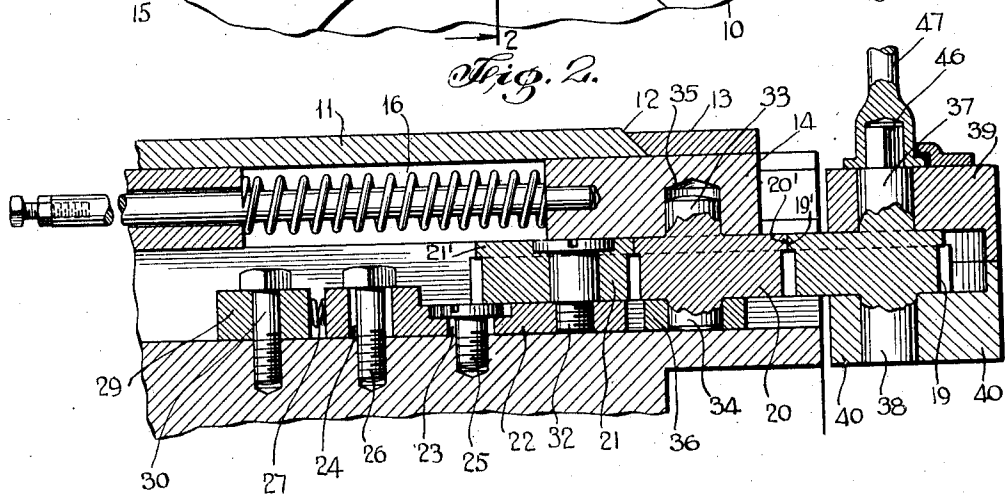
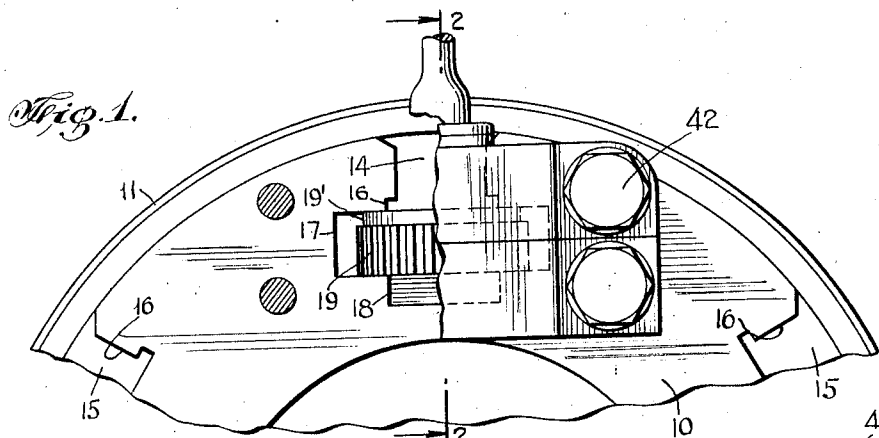
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PLATE LOCKING MECHANISM FOR PRINTING PRESSES

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PLATE-LOCKING MECHANISM FOR PRINTING PRESSES

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My invention relates to plate locking mechanism for printing presses and has for an object to provide an improved means for locking printing plates to a plate support.

5 My invention is particularly adaptable to the securing of curved stereotype plates on the cylinders of web presses. Such plates are usually formed at each end with beveled edges which are engaged by clamping rings and
10 clips carried by the cylinder. The plates are usually arranged in opposed pairs of semi-cylindrical form, and there are usually several such pairs on a single cylinder. In a cylinder adapted to carry four pairs of
15 semi-cylindrical stereotype plates, a central fixed clamping ring is used which engages the inner ends of the two inner pairs of plates, while sliding clamping rings are provided at the ends of the cylinder to clamp the outer
20 ends of the two pairs of outer plates. Intermediate clips are arranged to engage the outer ends of the inner plates and the inner ends of the outer plates. These clips as well as the
25 outer clamping rings are carried by slide blocks which slide in undercut slots formed in the face of the cylinder. Usually the outer clamping rings are arranged in opposed pairs of semi-annular form. The plates are locked
30 inwardly so that the outer pair of plates will bear against the clips, and the latter in turn will press the inner plates against the fixed clamping ring.

Various means have been provided for adjusting the outer sliding ring to clamping
35 position, and it is an object of my invention to provide improved means for adjusting the sliding ring to lock up the plates.

In a co-pending application, Serial No. 164,027, filed January 27, 1927, which has since eventuated in Patent Number 1,674,426, dated June 19, 1928, I disclose a locking mechanism comprising a set of eccentric gears which are so arranged as to force the sliding
40 ring to clamping or locking position. In the present invention I provide a similar locking mechanism, but in which the thrust is not taken by eccentric gears but by coacting cam surfaces on said gears.

50 Another object is to provide resilient means

for insuring the release of the ring clip when the plate locking mechanism is unlocked.

With these and other objects in view, I shall now describe an embodiment of my invention in connection with the accompanying drawings and will thereafter define the novelty and scope of my invention in the appended claims.

In the accompanying drawings,

Fig. 1 is a fragmentary view, partly in section, of the end of a printing press cylinder with my plate clamping mechanism attached thereto;

Fig. 2 is a view in longitudinal section taken along the line 2—2 of Fig. 1; and

Fig. 3 is a plan view of a portion of a press cylinder with my improved clamping mechanism attached thereto, certain parts being removed and other parts shown in section.

In the drawings, a portion of a press cylinder is indicated at 10 and on this cylinder, in Figs. 1 and 2, is shown a portion of a stereotype plate 11 which, at its outer end, is formed with a beveled edge 12 adapted to be engaged by a ring clip 13. This clip is secured to a central sliding block 14 and also to blocks 15 adjacent opposite ends thereof. These blocks engage and slide in undercut grooves or ways 16 formed in the cylindrical face of the cylinder 10. The central way 16 communicates at the bottom thereof with an undercut chamber 17, in the bottom wall of which is a recess 18.

My improved locking mechanism includes three eccentrically mounted intermeshing gears 19, 20, and 21, of which the inner gear 21 is carried by a plate 22 mounted to slide in the groove 18 at the bottom of the chamber 17. The plate 22 is formed with slots 23 and 24 through which pass the bolts or screws 25 and 26, respectively, these bolts serving to hold the plate to the bottom of the recess 18. A pair of springs 27 are seated in pockets 28 in the rear or inner end of the plate 22 and bear against a fixed lug 29 secured in the recess 18 by a bolt 30.

The gear 21 is eccentrically journaled on a stud 31 which is provided with a threaded stem 32 screwed into the plate 22. The eccentric gear 20 is provided with aligned upper and lower studs 33 and 34, respectively,

which are integrally formed thereon. The stud 33 finds bearing in a socket 35 formed in the slide block 14 while the stud 34 turns in a bearing formed in a block 36. The latter is fitted to slide in the recess 18.

The outermost gear 19 is similarly provided with upper and lower aligned studs 37 and 38, respectively, which are suitably journaled in upper and lower sections 39 and 40 of a journal box. The upper and lower sections are fastened together by means of bolts 41 as shown in Fig. 3. The journal box is provided with lateral extensions through which pass bolts 42. The latter are threaded in suitable openings in the end wall of the cylinder 10 and serve to secure the journal box thereto. The bolt holes in the lateral extensions are enlarged to receive coil springs 43 which are fitted about the bolts and each coil bears at one end against a shoulder 44 at the bottom of the bolt hole and at the other against a flange 45 formed on the bolt. Thus, the journal box is held to the end wall of the cylinder by spring pressure.

The stud 37 is provided with a squared extension 46 adapted to receive a suitable socket wrench 47 whereby the gear 19 may be rotated. The gears 19, 20 and 21 are each formed with a cam portion 19', 20', and 21'. These cam portions conform to the pitch lines of the gears, so that in service the cam surfaces are held in engagement by the springs 27 on the one hand and by the springs 43 on the other, and the teeth of the gears serve merely to cause relative rotary motion of the respective gears.

In operation, after the plate 11 has been placed on the cylinder, the ring clamp 13 is moved up into position to overlap the edge 12 and clamp the same to the press, by turning the cam 19' by means of the socket wrench 47. Owing to its eccentricity, turning of the cam 19' will press the cam 20' inward, carrying with it the slide block 14 and the ring clamp 13. At the same time the driving gear 19, meshing with driven gear 20 will cause the latter to turn on its axis while the cam 20' owing to its eccentricity will cause a still further movement of the slide 14 in the clamping direction. The parts will thus be moved to the position shown in Fig. 3. At the same time the gear 21 will have been turned by gear 20. The eccentricity of cam 21' is reversed with respect to that of cam 20' so that there will be no relative movement between the axis of stem 32 and that of studs 37 and 38. It will be observed that the gear 19 is mutilated so that it cannot make more than half a turn; hence the gear cannot turn beyond the locking position. A suitable latch such as described in my co-pending application may be employed to hold the gears in the position shown in Fig. 3.

To unlock the plate, the gear 19 is turned in the opposite direction causing the gears

20 and 21 also to turn on their axes of rotation. This will cause a translation of the axis of gear 20 toward the right, as viewed in Fig. 3. The gear will carry with it the slide block 14 and the ring clamp 13. The springs 27 are provided to keep the gear 21 in mesh with the gear 20, thereby holding the cam surfaces 20' and 21' in constant engagement. This insures meshing of the gear 20 with gear 19 and also with gear 21, with the result that, when the gear 19 is moved to unlocking position, the slide 14 will be positively moved toward the right by coaction of cams 20' and 21', withdrawing the ring clamp 13 from the plate 11.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a locking mechanism of the character described, a bearing member, a clamping member, a disk cam carried by one of said members and operatively engaging the other member, means for holding the cam in engagement with said other member, and means for operating the cam to effect relative movement of the clamping member with respect to the bearing member.

2. In a locking mechanism of the character described, a bearing member, a movable clamping member, a disk eccentrically journaled on each member, means for holding said disks in peripheral engagement, and means for turning one of the disks to effect movement of the clamping member with respect to the bearing member.

3. In a locking mechanism of the character described, a bearing member, a movable clamping member, a disk eccentrically journaled on each member, means for holding said disks in peripheral engagement, the disks being formed with intermeshing teeth whereby rotary movement of one of the disks will cause corresponding rotary movement of the other disk, and means for turning one of the disks to effect movement of the clamping member with respect to the bearing member.

4. In a locking mechanism of the character described, a bearing member, a slidable clamping member, a pair of intermeshing eccentric gears, one of the gears being journaled on the clamping member and the other in said bearing member, each gear being formed with a cam surface coinciding with the pitch circle of the gear, and means for turning the gear journaled in the bearing member to effect sliding movement of the clamping member relative to the bearing member.

5. In a locking mechanism of the character described, a support for a printing plate, a bearing member, a clamping member slidable along said support, a pair of peripherally engaging disk cams, one of said cams being eccentrically journaled in the clamping member and the other being eccentrically journaled in the bearing member, means for

turning the latter cam to effect sliding movement of the clamping member, and means for holding said cams in mutual engagement.

5 6. In a locking mechanism of the character described, a support for a printing plate, a bearing member, a clamping member slidable
10 along said support, a pair of peripherally engaging disk cams, one of said cams being eccentrically journaled in the clamping member and the other being eccentrically journaled in the bearing member, means for turning
15 the latter cam to effect sliding movement of the clamping member, means for holding said cams in mutual engagement, and a spring serving to hold the bearing member in yielding engagement with the support.

7. In a locking mechanism of the character described, a support for a printing plate, a
20 bearing member, a clamping member slidable along said support, a pair of peripherally engaging disk cams, one of said cams being eccentrically journaled in the clamping member and the other being eccentrically journaled in
25 the bearing member, means for turning the latter cam to effect sliding movement of the clamping member, and an idler disk cam serving to hold the other disk cams in mutual engagement.

30 8. In a locking mechanism of the character described, a bearing member, a clamping member, a sliding block, a driving disk eccentrically mounted in the bearing member, a driven disk eccentrically mounted on the
35 clamping member and peripherally engaging one side of the driving disk, an idler disk eccentrically mounted on the sliding block and peripherally engaging the opposite side of the driven disk, spring means acting on said
40 block to keep the disks in peripheral engagement, and means for turning the driving disks to cause movement of the clamping member relative to the block and to the bearing member.

45 9. In a locking mechanism of the character described, a bearing member, a clamping member, a sliding block, a driving disk eccentrically mounted in the bearing member, a driven disk eccentrically mounted on
50 the clamping member and peripherally engaging one side of the driving disk, an idler disk eccentrically mounted on the sliding block and peripherally engaging the opposite side of the driven disk, spring means acting on said block to keep the disks in peripheral
55 engagement, means for turning the driving disks to cause movement of the clamping member relative to the block and to the bearing member, and intermeshing teeth formed
60 on each disk to cause positive rotation of all of the disks when one disk is rotated.

In testimony whereof, I have signed this specification.