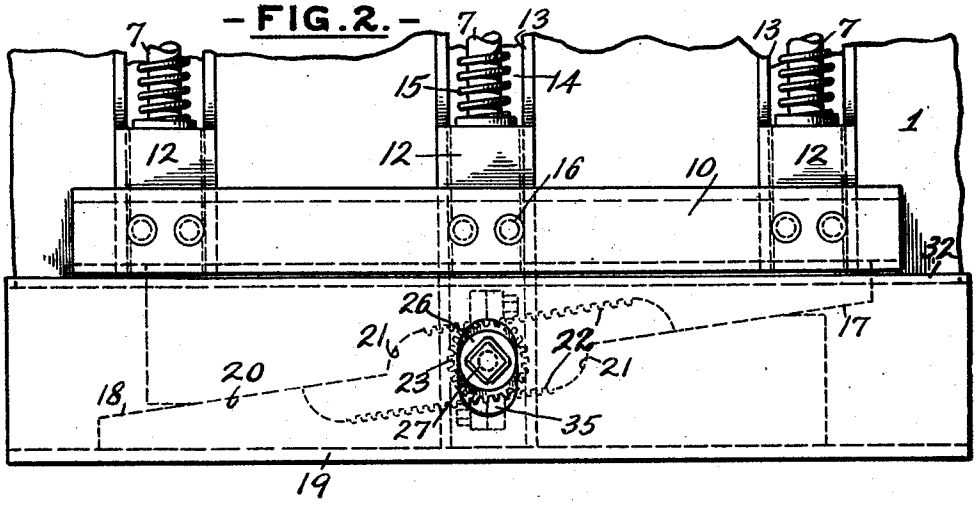
Oct. 26, 1926. 1,604,653

E. L. MARTIN

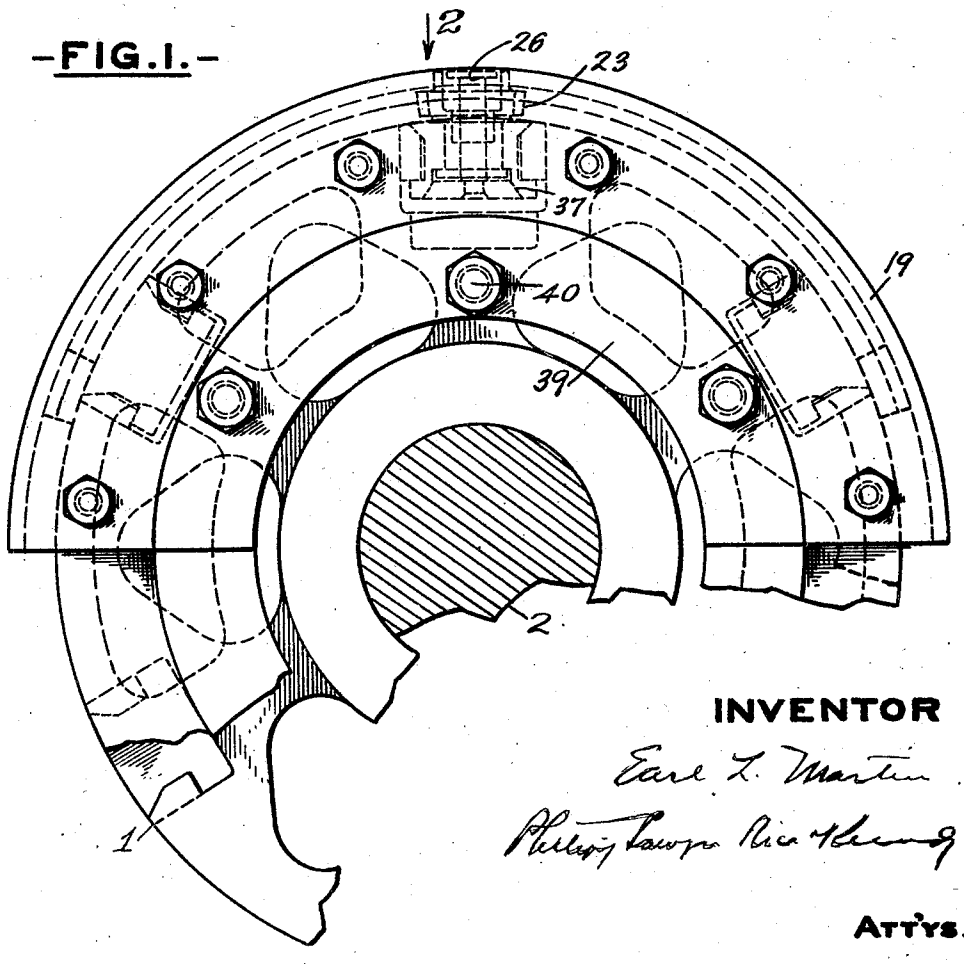
PLATE CLAMP

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-FIG. 2.-



-FIG. 1.-



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PLATE CLAMP

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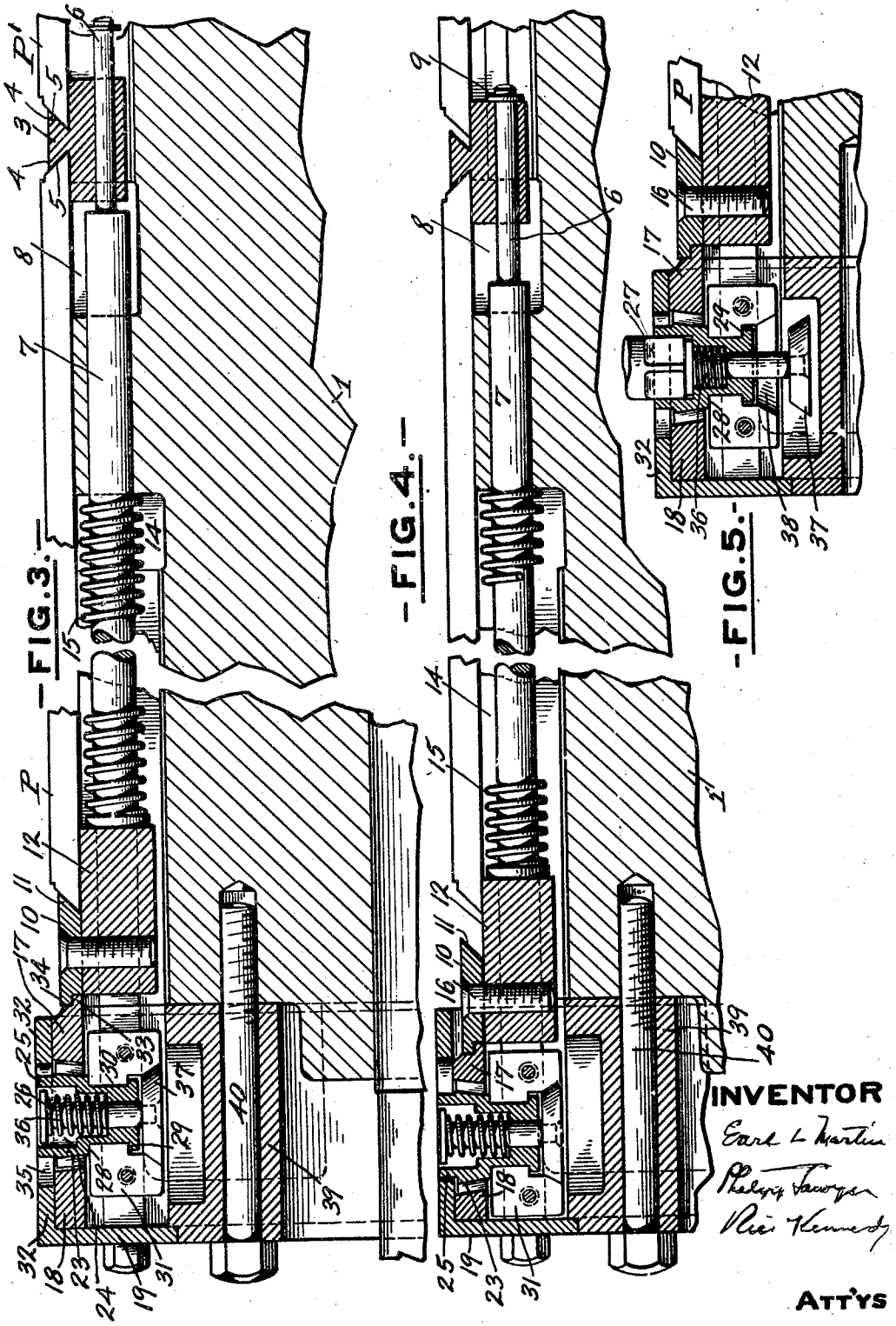


FIG. 3.

FIG. 4.

FIG. 5.

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UNITED STATES PATENT OFFICE.

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PLATE CLAMP.

Application filed November 29, 1924. Serial No. 752,838.

This invention relates to certain improvements in plate clamps for clamping printing plates on their supports.

The invention has for its special object the provision of a clamping mechanism by which a plate may be quickly clamped and released, and in which the plate is rigidly and firmly held while in clamping position on its support. It is another object of the invention to provide a construction which can be readily operated to clamp and release the plate. With these and other objects not specifically referred to in view, the invention consists in certain novel parts, combinations and arrangements which will be described in connection with the accompanying drawings and the novel features pointed out in the claims hereunto appended.

In these drawings which show one concrete embodiment of the invention—

Figure 1 is an end view of a plate support, partly in section and partly broken away, the view showing the general arrangement of the parts.

Figure 2 is a plan view of the construction shown in Figure 1, the view being taken looking in the direction of arrow 2 of that figure.

Figure 3 is a longitudinal sectional view on an enlarged scale of one end of a plate support illustrating the operating mechanism, the plates being shown in locked position.

Figure 4 is a similar section showing the plates released, and

Figure 5 is a detail sectional view of the clamp operating mechanism shown with a portion of the tool for operating the same.

Referring now to these drawings, the construction selected to illustrate the invention includes a plate support which is in the form of a cylinder 1. It will be understood as to certain features of the invention, the clamp could be employed with a plate support other than a cylinder.

This cylinder 1 is supported in the usual manner upon a shaft 2 which may be mounted in any usual and desired manner in the framework of the machine, not shown. The cylinder will be capacitated to carry the desired number of plates across the cylinder, two such plates, P, P′, being shown. The outer edge of the plate P′ and the inner edge of the outer plate P engage clip 3 having undercut edges, indicated at 4, to receive the bevelled edges 5 of the plates. This clip is in the form of a block which has passed therethrough the reduced end 6 of an operating rod 7 and this block has a longitudinal movement in a recess 8 cut in the cylinder wall. The end of the rod 6 is provided with a flange or collar 9 arranged to bear against the inner face of the block, as shown in Figure 4.

The outer edge of the outer plate P is engaged by a clip plate 10 having an inwardly bevelled edge 11 for engagement with the bevelled edge of the plate. This clip 10 is, as it will be observed by referring to Figure 2, a wide clip, that is, the clip is made of sufficient dimensions to engage a considerable part of the edge of the plate so that a very firm backing for the plate is provided and the plate is very securely clamped in position. This clip 10 is mounted so as to have a movement toward and away from the plate and in the best constructions the movement away from the plate, so as to free the latter, is automatically accomplished. As shown, there are provided a suitable number of rods 7, three such rods being shown. These rods have secured thereon blocks 12 which slide in guideways 13 formed in recesses 14 cut in the cylinder walls. The rods in these recesses are surrounded with coiled springs 15 which act to force the blocks outwardly to free the plate when the clip is released by its operating mechanism, as hereinafter referred to, and this movement of the rods also moves the blocks 3 and frees the inner plate. The plate clip 10 may be secured to the blocks in any suitable manner, as by screws 16. Where, in the present embodiment of the invention, the plate support is a cylinder, this clip will be circular or semi-ring shaped, as shown in the drawing. In accordance with the invention, means are provided for manipulating this plate clip so as to move the clip into clamping relation with the plate or to release the clip so that it will move clear of the plate, and these means will be such that a thrust is exerted along the length of the clip so that the clip will be rigidly held throughout its length. These means, furthermore, will be such as to be easily manipulated and readily accessible to the pressman. As shown, there are provided a pair of slides 17 and 18 which are so shaped as to

maintain a parallel relation with the clip 10 and with an abutment 19. The inner faces of these slides 17 and 18 are, however, correspondingly wedge-shaped or tapered, as indicated at 20 in Figure 2. These slides have a sliding movement circumferentially of the cylinder and as they are moved in one direction the clip is forced into clamping relation, and as they are moved in the other direction the clamp is released. A convenient way for effecting this movement of the slides is that shown in which a sufficient portion of the inner faces of the slides is cut away, as indicated at 21, and these portions are provided with racks 22, these racks and the openings being of sufficient length to allow the required travel or movement of the slides. Engaging with these slides is a pinion 23 which has at its upper end a square recess 24. This pinion carries a movable stud 25 which, at its upper end, is formed with a head or stop 26. The recess 24 receives an operating tool, such as a common lug wrench 27, part of which is shown in Figure 5 in operative position. This pinion is provided with upper and lower shoulders 28 and 29 between which extend holding projections 30 on blocks 31 suitably secured in place, the pinion thus having a bearing in these lugs. The rotation of this pinion, by means of the wrench 27 or other suitable tool, reciprocates the slides so as to increase or decrease the distance between the clip 10 and the abutment 19, and by this movement the bevelled edge of the clip 10 is forced against the bevelled edge of the outer plate and the plate is thus rigidly and firmly locked on the cylinder, as shown in Figure 3.

The abutment against which the parts work may be of any suitable construction but, in the construction shown, comprises a clamp ring bolted to the end of the cylinder and extending halfway around, this clamp ring also projecting over the top surfaces of the wedges or slides, as indicated at 32 in Figures 3 and 4, to hold the slides and the pinion in position against centrifugal action caused by the rotation of the cylinder. In the best construction, furthermore, the inner slide 17 is formed with a ledge 33 on which bears a shoulder 34 which provides an additional support or resistance for this slide against the centrifugal motion of the cylinder. The abutment plate or ring 19 is, of course, provided with a suitable aperture 35 to permit access to the driving pinion.

In the best constructions means will be provided for locking the pinion against accidental rotation and also means will be provided for automatically releasing the wrench but these means may be of somewhat different character. In the particular construction illustrated, the stud 25, before referred to, is surrounded by a coiled spring 36 which bears, at one end, against the bottom of the recess 24 of the pinion 23, before referred to and at the other end against the head or stop 26. This stop, at its other end has secured thereto a friction device in the form of a bevelled locking plate 37 which takes bearing in a correspondingly bevelled recess 38 (see Figure 5) in the blocks 31, before referred to. When the pressure of the hand of the operator is removed from the wrench, the action of this spring ejects the wrench from the socket in the gear and at the same time the upward movement of the spindle moves the locking plate 37 into tight engagement with the bevelled recess 38 in the block 31, before referred to, thus locking the pinion, and consequently the slides, against movement.

The various parts of the clamp are operated in blocks 39 secured to the cylinder wall by bolts 40 and it will be understood that the construction described may be duplicated for as many plates as the cylinder is capacitated to carry around it.

While the invention, as shown and described, is a practical embodiment of the same, certain changes and variations may be made in the specific structures and arrangements illustrated and that the invention is not to be restricted to the details thus shown.

What is claimed is:

1. In a plate clamp, the combination of a curved plate support, a wide plate clip for engaging the outer edge of a plate, an abutment on the support outside the clip, a pair of blocks between the clip and the abutment having parallel relation with these two parts and intermediate wedge surfaces, and means for manipulating the blocks to lock and release the clip.

2. In a plate clamp, the combination of a curved plate support, a wide plate clip for engaging the outer edge of a plate, an abutment on the support outside the clip, a pair of blocks between the clip and the abutment having parallel relation with these two parts and intermediate wedge surfaces, means for manipulating the blocks to lock and release the clip, and means for locking the parts against movement.

3. In a plate clamp, the combination of a curved plate support, a wide plate clip for engaging the outer edge of a plate, an abutment on the support outside the clip, a pair of blocks between the clip and the abutment having parallel relation with these two parts and intermediate wedge surfaces, means for manipulating the blocks to lock and release the clip, and means for locking the manipulating means against movement.

4. In a plate clamp, the combination of a wide plate clip for engaging the outer edge of a plate, an abutment, a pair of slides between the clip and the abutment in parallel relation with these parts, said slides having intermediate wedge surfaces provided with

teeth, a rotary toothed actuator engaging the teeth, and means for locking the actuator against rotation.

5. In a plate clamp, the combination of a wide plate clip for engaging the outer edge of a plate, an abutment, a pair of slides having parallel sides engaging the abutment and the clip, intermediate wedge surfaces, an actuator for manipulating the slides capacitated to receive a wrench, and means for disengaging the wrench from the actuator.

6. In a plate clamp, the combination of a wide plate clip for engaging the outer edge of a plate, an abutment, a pair of slides having parallel sides engaging the abutment and the clip, intermediate wedge surfaces, an actuator for manipulating the slides capacitated to receive a wrench, means for disengaging the wrench from the actuator, and means for locking the actuator.

7. In a plate clamp, the combination of a wide plate clip for engaging the outer edge of a plate, an abutment, a pair of slides having parallel sides engaging the abutment and the clip, intermediate wedge surfaces, an actuator for manipulating the slides capacitated to receive a wrench, means for disengaging the wrench from the actuator, and means for simultaneously locking the actuator.

8. In a plate clamp, the combination of a plate clip for engaging the edge of a plate, a wedge, means for driving the wedge to lock and release the plate, and means for locking the wedge driving means against movement.

9. In a plate clamp, the combination of a plate clip for engaging the edge of the plate, wedges for clamping the clip, means for manipulating the wedges including a rotary actuator, said actuator being shaped to receive a wrench, a spring for freeing the wrench from the actuator, and a friction device actuated by the spring for locking the actuator against movement.

10. In a plate clamp, the combination of a plate clip for engaging the outer edge of the plate, toothed wedges, a pinion for actuating the wedges for operating the clip, a friction disk carried by the pinion for clamping it against movement, a seat for the disk, and a spring for clamping the disk in its seat.

11. In a plate clamp, the combination of a clip for engaging the edge of a plate, wedges, an actuator for operating the wedges to manipulate the clamp, an abutment against which the wedges act, said abutment having a part overlying the wedges to hold them in position.

12. In a plate clamp, the combination of a clip for engaging the edge of a plate, wedges, an actuator for operating the wedges to manipulate the clip, an abutment against which the wedges act, said abutment having a part overlying the wedges to hold them in position, and means for locking the actuator against movement.

13. In a plate clamp, the combination of a curved plate support, a clip for engaging the edge of a plate, wedge slides, means for operating the slides to manipulate the clip, an abutment against which the wedges act having a part overlying the wedges, a ledge on one of the slides, and a shoulder on the clip overlying the ledge.

14. In a plate clamp, the combination of a curved plate support, a clip for engaging the edge of a plate, slides for operating the clip, an actuator for the slides, and means for retaining the parts in position against centrifugal force.

15. In a plate clamp, the combination of a curved plate support, a clip for engaging the edge of a plate, a pair of tooled slides for operating the clip, a toothed actuator for engaging the slide, means for locking the actuator against movement, and means for holding the parts in position against centrifugal force.

In testimony whereof, I have hereunto set my hand.

EARL L. MARTIN.