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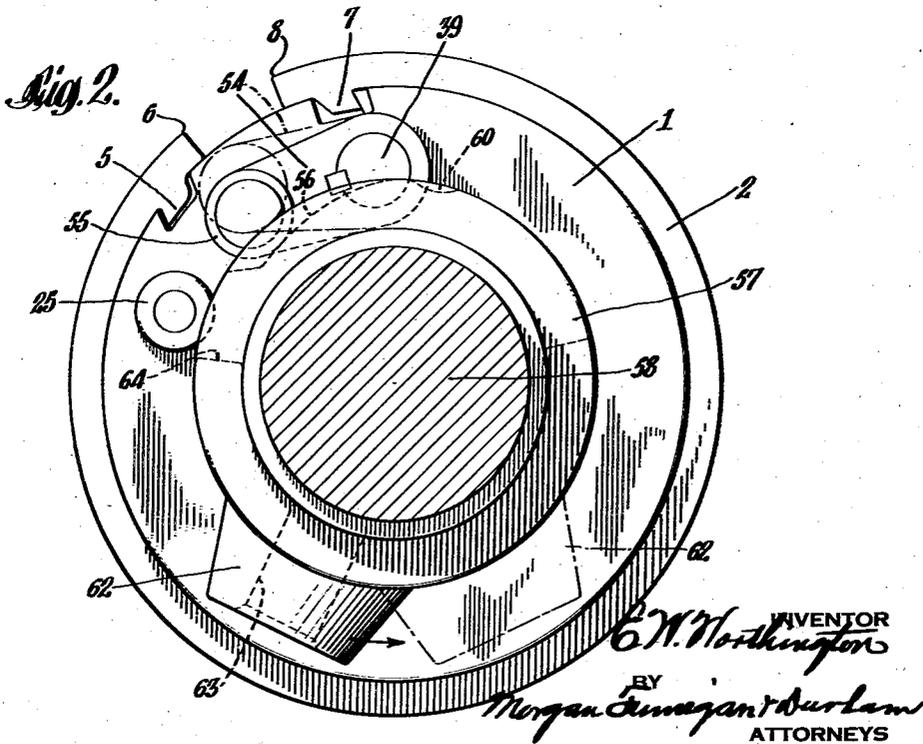
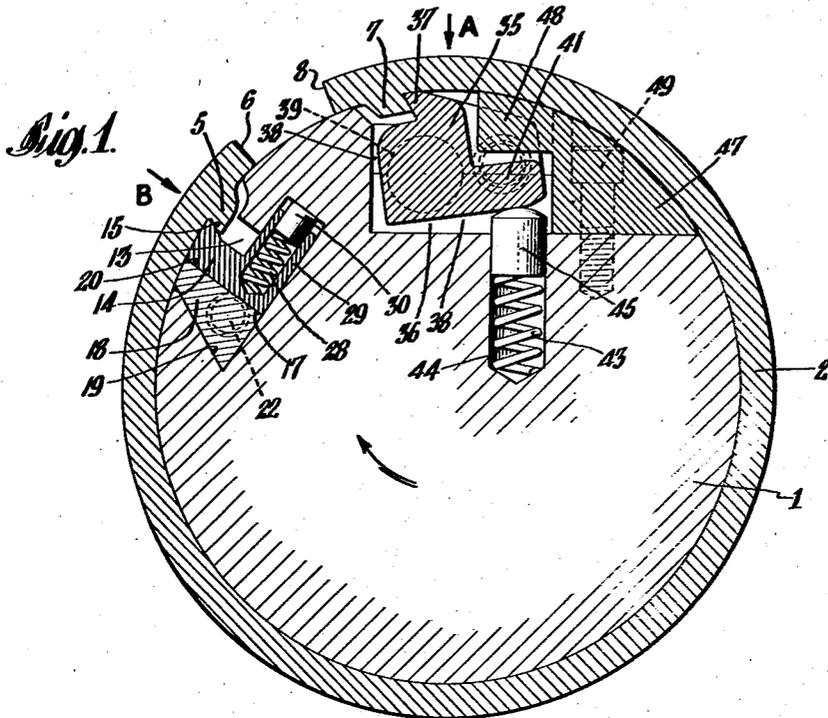
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STEREOTYPE PLATE HOLDING AND TENSIONING MECHANISM

Filed March 28, 1939

3 Sheets-Sheet 1



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STEREOTYPE PLATE HOLDING AND TENSIONING MECHANISM

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3 Sheets-Sheet 2

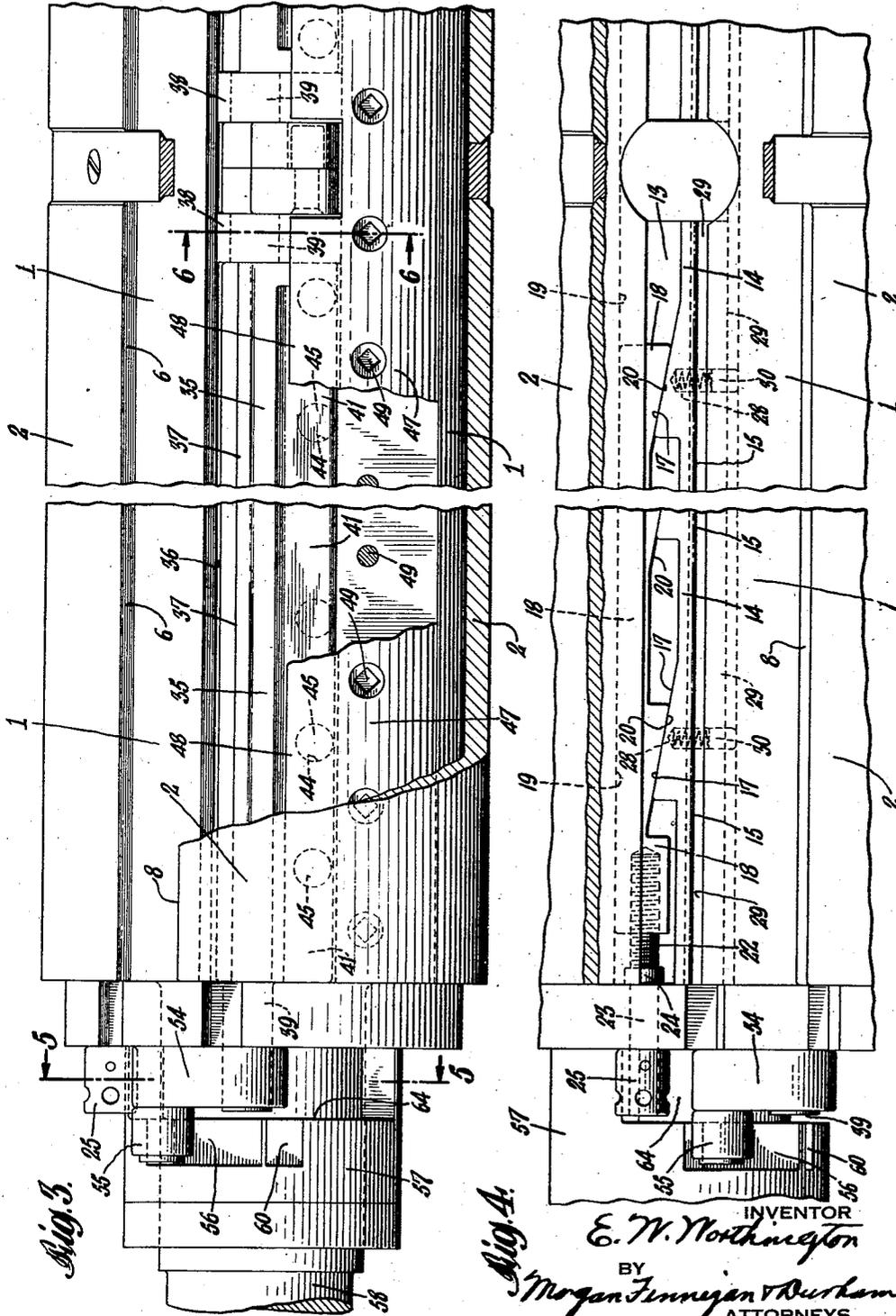


Fig. 4.

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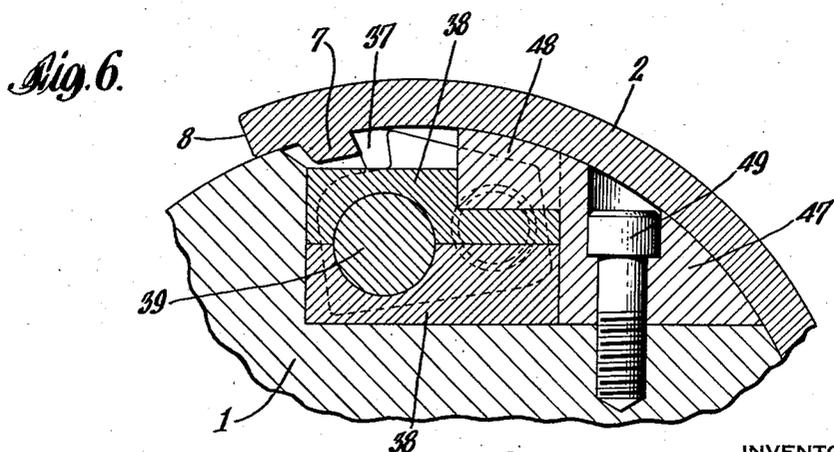
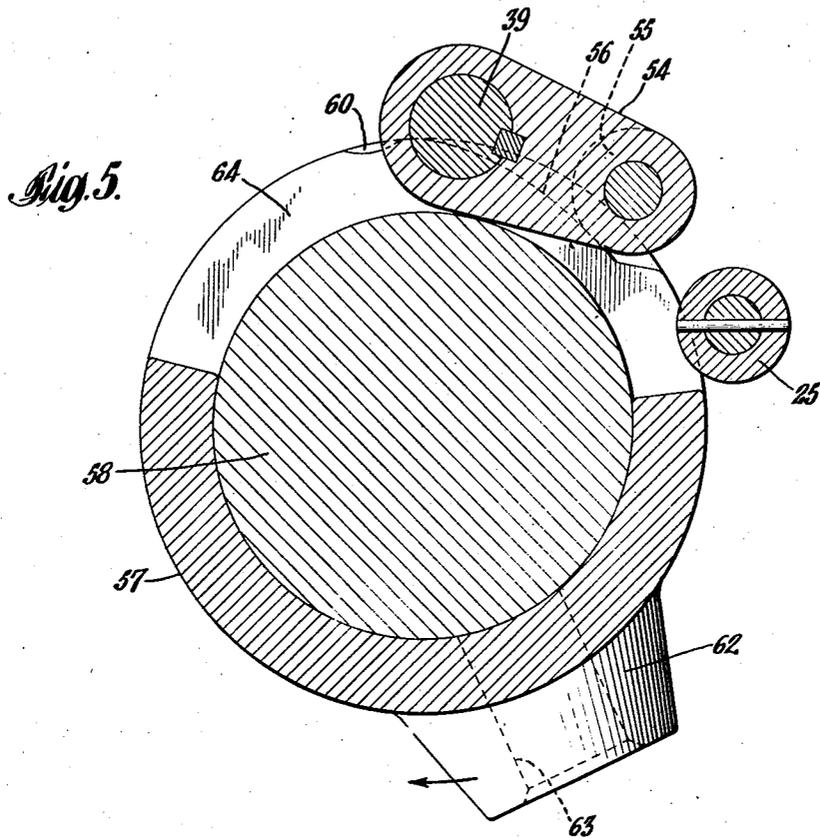
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STEREOTYPE PLATE HOLDING AND TENSIONING MECHANISM

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3 Sheets-Sheet 3



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STEREOTYPE PLATE HOLDING AND TENSIONING MECHANISM

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8 Claims. (Cl. 101—378)

The invention relates to new and useful improvements in mechanisms for holding and applying peripheral tension to printing plates upon a printing press cylinder, and more particularly to such improvements in mechanisms mounted on the press cylinder and engaging the head and tail ends of a curved stereotype plate and applying peripheral tension to the plate about the cylinder.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:

Fig. 1 is a transverse section through a plate cylinder of a press and showing an embodiment of my invention;

Fig. 2 is an end view of the plate cylinder looking from the left in Fig. 3;

Fig. 3 is a plan with parts broken away, looking at the plate cylinder of Fig. 1 in the direction of arrow A (Fig. 1);

Fig. 4 is a similar view, looking at the plate cylinder of Fig. 1 in the direction of the arrow B;

Fig. 5 is a section taken on line 5—5 of Fig. 3; and

Fig. 6 is a section taken on line 6—6 of Fig. 3.

The invention is directed to improvements in plate cylinders and in plate holding and tensioning means of the type wherein stereotype plates are held and tensioned peripherally about the cylinder, wherein the head of the plate is held firmly to the cylinder, and powerful, resilient tension is applied along the tail of the plate to hold and to tension it peripherally about the cylinder. Plate holding means of this type, as is well known, exert holding forces, and act on a plate, in the manner and direction most favorable to oppose and to eliminate the deteriorative and disruptive forces which act powerfully on the plates in fast rotary printing, many of which forces are either created or at least are not eliminated by other types of plate holding devices.

Objects of the invention are to provide simple, sturdy and powerfully operating peripheral tensioning and holding means for the plate; to provide such means so designed and so located and spaced in the cylinder so as to afford room for mounting and operating the especially powerful spring tensioning mechanism which is applied along the tail end of the plate to tension the plate peripherally about the cylinder; to provide simple, and powerful means for retracting the tail end plate-engaging jaw against its tensioning spring to release the plate, and automatically holding it in the retracted position; to provide accurate and precise peripheral positioning means for the head plate-engaging clamp; and to provide these means applicable to plate cylinders of different sizes, including the standard two-plates around cylinder, and being especially applicable and efficient in rotary presses using the tubular or one plate around cylinders and plates, as the powerful plate holding and tensioning mechanism is mounted so that the plates may be slid on and off the end of the plate cylinder in the manner customary in presses of that type.

Referring now in detail to the embodiment of the invention illustrated by way of example in the accompanying drawings, the invention is applied to a printing press cylinder of the tubular or one plate around type. The plate cylinder is shown with a stereotype plate 2 encircling the cylinder for the greater part of its circumference, the gap passing the plate cylinder bearing when the plates are slipped onto and off from the plate cylinder. The plate 2 is provided with means for engaging the plate holding and tensioning means near and along the head and tail of the plate, and these means may be of various forms so far as concerns the present invention. As here embodied, a projecting, undercut hook-like bar 5 is formed on the inner face of the plate 2, adjacent to and extending along the straight head edge 6 of the plate, and a similar bar 7 is formed adjacent to and along the inner face of the straight tail edge 8 of the plate 2.

Referring now to the means mounted on the cylinder 1 for engaging with and holding the head end of the plate, a longitudinally-extending bar 14 lies in a recess 13 in, and extending longitudinally of the cylinder 1. The bar 14 has an integral foot portion 20 which extends forwardly into, and fits slidably within an undercut portion of the recess 13. Along the upper front edge of the bar 14 is an outwardly-extending, hook-like or jaw portion 15 adapted to engage within the

undercut bar 5 on the plate 2. The jaw 15 is preferably integral for the entire width of the plate. Means are provided for minutely and precisely positioning this holding means for the plate head, and as embodied (Figs. 1 and 4) there are formed on the rear, radial face of the bar 14 a plurality of wedge-like projections 17. Located in said recess 13 in the plate cylinder and behind the bar 14 is a longitudinally-extending bar 18, the rear face of which engages the undercut wall 19 of the recess 13. On the front face of the bar 18 are wedge-shaped members 20 which engage with the wedge faces 17 of the bar 14, whereby longitudinal sliding movement of the bar 18 against the back wall 19 of the recess will move the plate-engaging bar 14 forwardly or permit backward movement thereof, so as to precisely position the head of the plate with reference to the cylinder.

Means are provided for moving and positioning the bar 18 longitudinally of the cylinder for the purpose stated, and as embodied a screw-rod 22 is journaled at 23 in the plate cylinder 1, and is in screw-threaded engagement with one end of the bar 18. The screw rod is held against longitudinal movement in its bearing in the plate cylinder by means of a collar 24 on one side of the bearing and a turning head 25 on the exterior of the cylinder end. The bar 14 is resiliently held with its wedge faces 17 in engagement with the wedge faces 20 of the bar 18 by resilient means, comprising a plurality of compression springs 28 nested in bores in the L-shaped foot 29 of the bar 14, the springs pressing against cylindrical contact pieces 30 which engage the forward wall of the undercut portion of the recess 13.

Referring now to the embodied means for engaging with and placing powerful peripheral tension on the tail end of the stereotype plate, a bar 35 is positioned in a longitudinally-extending recess 36 formed in the plate cylinder. The bar 35 has along its upper edge a hook-like jaw or portion 37 that engages behind and underneath the bar 7 on the plate 2. The jaw 37 likewise is preferably integral for the width of the plate. This plate engaging bar is movable under powerful resilient pressure to tension the plate. As embodied, the bar 35 has at either end pintles or spindles 39, journaled in bearing blocks 38, mounted at the ends of the recess 36 in the plate cylinder, so that the jaw 37 moves angularly into and out of engagement with the stereotype plate 2, and the resilient tensioning action on the stereotype plate is exerted substantially tangentially of the plate cylinder at the locus of the bar 7. The bar 35 has an integral foot 41 extending rearwardly therefrom within the recess 36. Powerful spring action is exerted on the foot 41 tending to rotate the bar 35 around its axis 39 in the direction to tension of the plate, and as embodied, a plurality of spiral compression springs 43 are nested in openings 44 which are formed in the plate cylinder and open into the bottom of the recess 36. The springs 43 act against the bottom ends of a plurality of cylindrical contact pieces 45, which in turn press against the bottom face of the foot 41. An exteriorly cylindrical closure block 47 is mounted upon the cylinder 1 and forms a support for the stereotype plate, also retaining and coverage means for the mechanism and also the rear wall of the recess 36, the block 47 having an overhanging portion 48 extending over the foot 41

of the plate-tensioning device. The closure block is held in place on the cylinder by screws 49.

The embodied means for retractively rocking the bar 35 about its pivotal bearings against the spring tension to release the stereotype plate, comprises an arm 54 keyed on one of the pintles 39 of the bar 35, the arm having a cam roller 55 journaled in the end thereof. The cam roller 55 runs on a cam track 56 formed in a ring 57, which is rotatively mounted on a shaft 58 of the plate cylinder 1. The ring 57 has a cut-away portion 64 to give clearance of the jaw-actuating mechanism (Figs. 2 and 5). Means are provided for holding the clamping jaw in this retracted position, and for this purpose at the end of the cam track 56 is a detent depression 60 into which the cam roller 55 runs, thereby holding the plate-engaging hook 37 in retracted position against the springs 43 while a plate is removed from the cylinder and a new plate is put on. When the new plate is in place, the cam ring 57 is moved in the opposite direction, jaw 37 engages the new plate and places it under peripheral tension. The means for manually rotating the cam ring 37 to move the part 37 into and out of plate engaging position comprises a boss 62 having an axial bore 63 adapted to take a hand bar or other actuating tool.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. In combination in a rotary printing press, a stereotype plate cylinder, circumferentially movable means for holding the head end of the plate to the cylinder, means for peripherally tensioning the plate about the cylinder, said means including a pivotally mounted jaw adapted to engage the plate near its tail end, springs mounted within the cylinder and resiliently acting to move the jaw to exert peripheral tension on the plate and means for retractively moving the jaw in the opposite direction to release the plate, said means comprising an arm connected to and concentric with the mounting of said jaw, a cam for actuating said arm, and means for holding the jaw in the retracted position.

2. In combination in a rotary printing press, a stereotype plate cylinder, circumferentially movable means for holding the head end of the plate to the cylinder, means for peripherally tensioning the plate about the cylinder, said means including a member pivotally mounted within the cylinder and having a jaw which engages the plate near its tail end throughout substantially the entire width of the plate, springs nested within the cylinder and resiliently acting to move said member about its pivotal mounting to cause the jaw to exert peripheral tension on the plate and means for moving said member in the opposite direction against its springs to disengage the jaw from the plate, said means comprising an arm connected to and concentric with the pivotal mounting of said member and a cam for actuating said arm.

3. In combination in a rotary printing press, a stereotype plate cylinder, circumferentially movable means for holding the head end of the plate to the cylinder, means for peripherally tensioning the plate about the cylinder, said means including a pivotally mounted jaw adapted to

engage the plate near its tail end, resiliently acting means for causing the jaw to exert peripheral tension on the plate, and means for retractively moving the jaw in the opposite direction to release the plate, said means comprising an arm connected to and concentric with the mounting of said jaw and a ring rotatively mounted on the plate cylinder shaft and having a cam surface for moving said arm, said ring having a detent adapted to engage said arm to hold the jaw in retracted position.

4. In combination in a rotary printing press, a stereotype plate cylinder, and means for holding and peripherally tensioning a plate about the cylinder, said means comprising a bar mounted in a recess in the cylinder and having a plate engaging jaw, wedge members on said bar, a second bar alongside said first-mentioned bar and having wedge members engaging said first-mentioned wedge members, and means including a screw-threaded member rotatably mounted on the cylinder and having threaded engagement with said last-mentioned bar longitudinally of the cylinder to effect movement of said jaw circumferentially of the cylinder at one end of the plate and resilient means carried by the cylinder and engageable with the other end of the plate for resiliently tensioning the plate on the cylinder to hold it thereon.

5. In combination in a rotary printing press, a stereotype plate cylinder, and means for holding and peripherally tensioning a plate about the cylinder, said means comprising a longitudinal bar mounted in a recess in the cylinder and having a plate engaging jaw, wedge members on the rear face of said bar, a second bar alongside and behind said first-mentioned bar and having wedge members on said first-mentioned bar, and means including a screw-threaded member rotatively mounted on the cylinder and having threaded engagement with said last-mentioned bar longitudinally of the cylinder to effect movement of said jaw circumferentially of the cylinder at one end of the plate and resilient means carried by the cylinder and engageable with the other end of the plate for resiliently tensioning the plate on the cylinder to hold it thereon.

6. In combination in a rotary printing press, a stereotype plate cylinder, means for holding

and tensioning a stereotype plate peripherally about the cylinder comprising means engaging the plate near its head end including a member mounted on and extending longitudinally of the cylinder and having a plate-engaging jaw and a plurality of wedge members spaced therealong, a cooperating member mounted on and extending longitudinally of the cylinder, having wedge members cooperating with said first-mentioned wedge members, and screw-threaded means for moving said last-mentioned member longitudinally of the cylinder to impart peripheral plate-tensioning movement to said jaw, and plate tensioning means mounted on the cylinder and engaging the plate near its tail end including a member pivotally mounted on the cylinder and having a jaw adapted to engage the plate, means including springs nested within the cylinder and acting to move said pivotally mounted member about its pivot to move said jaw in one direction to exert peripheral tension upon the plate and means for moving said jaw in the opposite direction to release the plate from the cylinder, said means comprising an arm fixed to said member concentrically with its pivot and a cam for actuating said arm, rotatably mounted on the plate cylinder shaft.

7. In combination in a rotary printing press, a stereotype plate cylinder, circumferentially movable means for engaging and securing the plate to the cylinder near its head end, means for circumferentially moving said means to vary the position of the plate on the cylinder, and resiliently acting means engageable with the plate near its tail end for circumferentially tensioning the plate to hold the plate to the cylinder.

8. In combination in a rotary printing press, a stereotype plate cylinder, circumferentially movable means for holding the head end of the plate to the cylinder, means for peripherally tensioning the plate about the cylinder, said means including a jaw adapted to engage the plate near its tail end, springs mounted within the cylinder and resiliently acting to move the jaw to exert peripheral tension on the plate, and means for retractively moving the jaw in the opposite direction to release the plate.

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