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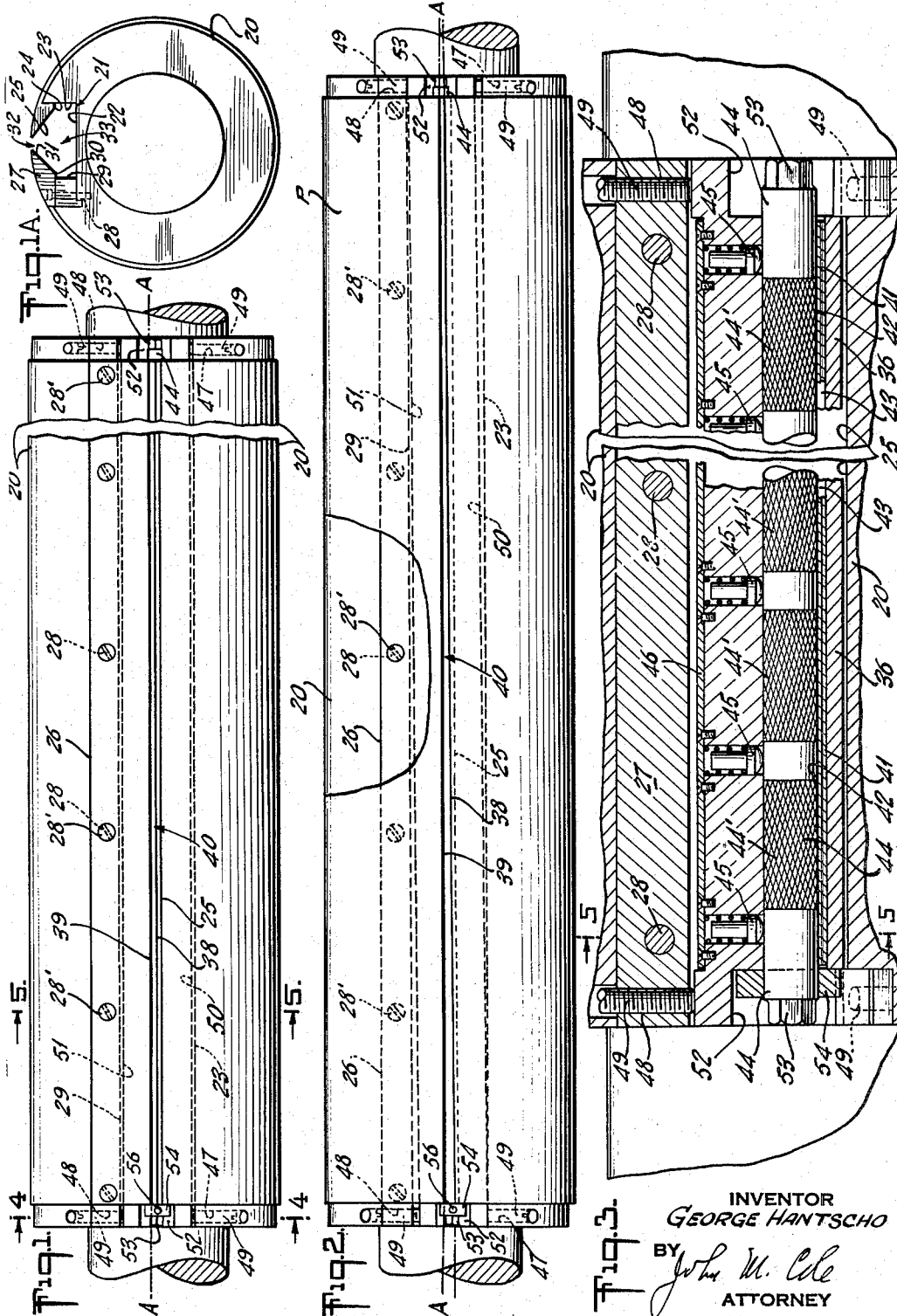
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2,900,904

PRINTING PRESS ROLLERS

Filed June 8, 1953

2 Sheets-Sheet 1



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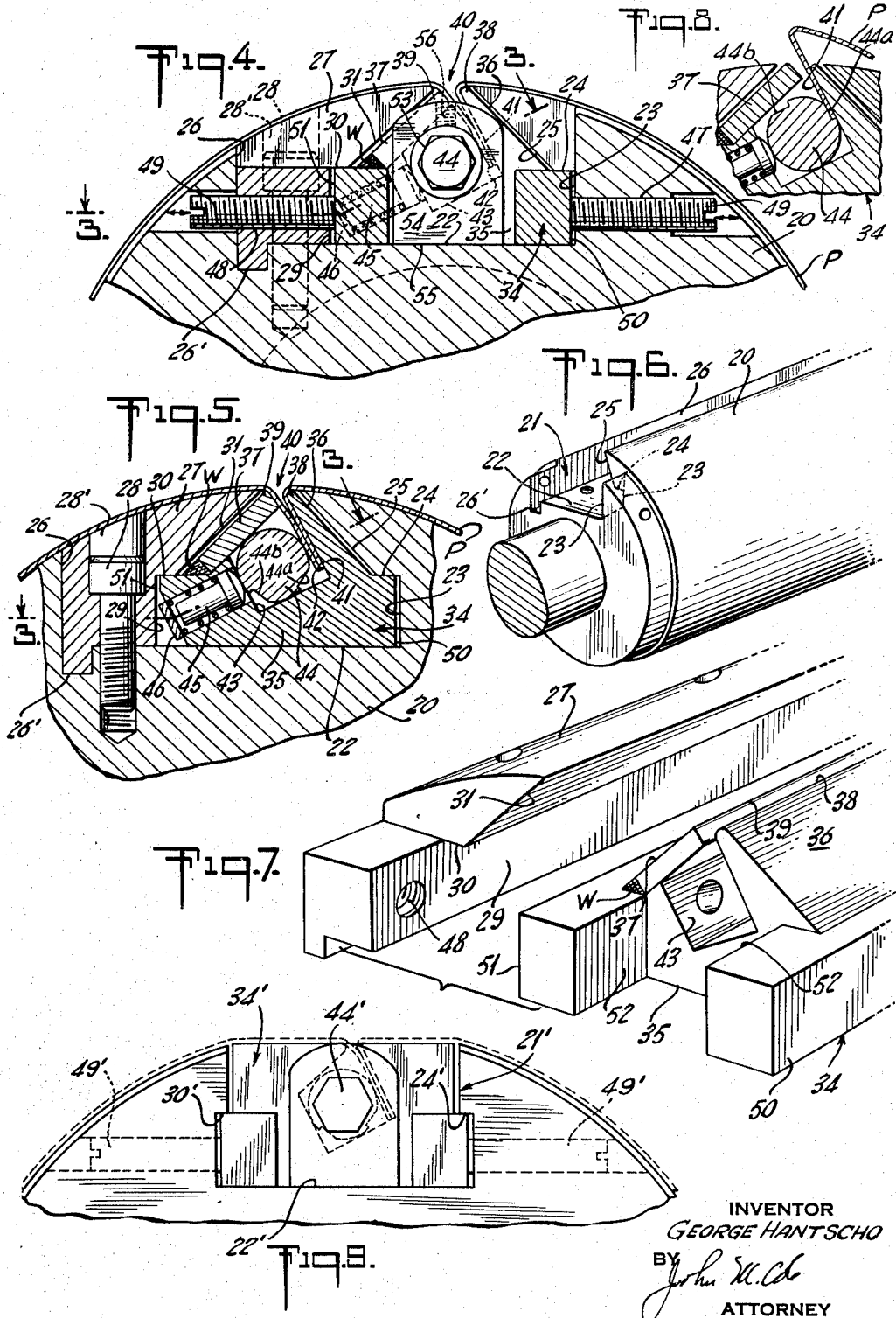
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PRINTING PRESS ROLLERS

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19 Claims. (Cl. 101-415.1)

This invention relates to printing press rollers and more particularly to a device for positioning and aligning flexible plates about printing press rollers.

In the printing art where it is desired to superimpose one or more impressions on another, it is necessary that they be accurately aligned. This is particularly so in multi-color work to obtain clearly defined and pleasing results. The problem exists not only as between separate presses, but as between separate rollers within the same press, the latter being the more difficult to correct.

Lateral alignment has been obtained by moving the entire printing press roller within its bearings and longitudinal alignment has been obtained by synchronizing the rotation of the several printing press rollers, but no simple and accurate means of effecting diagonal realignment has been available. As it is extremely difficult to exactly position a plate about a roller when clamping it on, and also as the plates themselves may "give" unevenly as they are strained about the roller, it has heretofore been virtually impossible to insure accurate diagonal alignment of the various plates in a multi-plate type press.

The present invention contemplates the accurate diagonal alignment of printed impressions and particularly the alignment of a plate on a roller relative to the corresponding plates of other rollers of the same or other press, after the plates have been clamped about the rollers.

According to the present invention, the reel rod is mounted in a reel rod carrier or bar which is adjustably mounted in an over-sized longitudinal recess or chamber in the roller and adjustable positioning screws are provided at each end of the roller to adjust the reel rod carrier and thus the reel rod and plate relative to the roller axis.

Other and further objects will appear as the description proceeds.

The accompanying drawings show for purposes of illustration of the present invention, two embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In the drawings:

Figure 1 is a plan view of printing press roller embodying the present invention showing the gap in the surface of the roller and the reel rod carrier or bar centrally positioned in the recess therebeneath, the plate being omitted;

Figure 1A is an end view of the fixed parts of the printing roller, the reel rod carrier or bar being omitted;

Figure 2 is a view similar to Figure 1 showing the printing plate in position and reel rod carrier in an extreme diagonal position;

Figure 3 is a sectional view taken on line 3-3 of Figures 4 and 5 showing the details of the mounting springs for positioning the reel rod within the reel rod carrier;

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Figure 4 is a sectional view taken on line 4-4 of Figure 1 showing the plate on the roller and the relative configurations and positions of the reel rod and reel rod carrier;

5 Figure 5 is a sectional view similar to Figure 4 and taken on line 5-5 of Figures 1 and 3, showing details of the mounting of an inserted bar;

Figure 6 is a perspective view of a printing press roller showing a slot milled therein according to the present invention before the installation of the bar and the reel rod assembly;

Figure 7 is an enlarged fragmentary exploded perspective showing the reel rod carrier and the bar;

10 Figure 8 is a fragmentary view illustrating the insertion of the end of the plate into engagement with the reel rod; and

Figure 9 is a fragmentary end elevational view showing a modified form of construction.

The drawings show so much of a cylindrical roller for a printing press as is essential to understand the present improvement by which it is possible to secure a printing plate on the same and then adjust it so as to advance or turn back one edge of the plate relative to the other. The construction contemplates the use of a steel roller of the usual general shape and dimensions, adapted to be driven in the usual way and similarly longitudinally and angularly adjusted.

In the improved construction as shown in Figures 1-7, the roller body 20 is machined to have a longitudinal slot or groove 21 (Figure 6). This slot or groove has a bottom 22 which extends both sides of a longitudinal radial plane A-A and at right angles thereto (Figures 4 and 5). The right-hand side of this slot or groove is undercut as indicated at 23 and provided with an inwardly facing bearing surface 24, and then extends upwardly and to the left as indicated at 25 so as to overlie the bottom of the groove.

At the left, the groove 21 has a wall 26 and a slot 26'. A bar 27 is secured in the groove and slot by bolts 28. This bar is similarly undercut as indicated at 29, has an inwardly facing bearing surface 30, and extends upwardly and to the right as indicated at 31 so as to also overlie the bottom of the groove. The bolt holes are counter-sunk and the heads of the bolts covered by plugs 28'.

It will be seen that these parts provide a narrow gap 32 in the cylindrical surface and a widened longitudinal chamber 33 (Figure 1A) provided with opposed bearing surfaces 22, 24 and 22, 30.

50 The chamber 33 receives a reel rod carrier or bar 34 with a base 35 of a width somewhat less than the spacings of the walls 23 and 29 and a thickness to fit between the bearing surfaces 22, 24 and 22, 30. The bar is made of two parts welded together as indicated at W. Its upper surfaces 36 and 37 are shaped to be spaced from the oblique surfaces 25 and 31. The portions 38 and 39 of the bar are shaped to extend into the gap 32 and provide a narrower gap 40 through which the ends 41 and 42 of the printing plate may be passed, as indicated in Figures 4 and 5. The bar 34 is cut out to form a reel rod chamber, or cavity, 43 for a rotatable reel rod 44. The reel rod has two or more longitudinal grooves 44a, 44b, is knurled as indicated at 44' (Figure 3) and is pressed toward the printing plate by spring pressed plungers 45 held in place by a back strap 46.

65 The ends of the roller body 20 and of the bar 27 are drilled and threaded as indicated at 47 and 48 to receive screws 49 adapted to bear against the outer walls 50 and 51 of the bar 34 so as to hold this bar against sidewise movement, or to adjust it sidewise at either end.

The bar 34 is cut back at the ends as indicated at

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52, 52 and the ends of reel rod 44, project into these cut backs. The ends of the rod are hexagonal at 53 to accommodate a socket wrench with which to turn the rod. One end of the rod carries a block 54 having a bottom surface 55 engageable with the surface 22 of the slots or groove 21 in the roller. A jam screw 56 is provided to secure the rod against rotation after the plate is tightened in place. This construction may be duplicated on the other end, if desired.

When the plate P is to be mounted on the roller, the reel rod carrier or bar 34 is adjusted to a central position from which it can later be shifted in either direction, if desired. Then the gap 32 parallels plane A—A (Figure 1). One of the notches 44a is positioned as shown in Figure 8. The end 41 of the plate is inserted in place and the reel rod turned to draw in this end of the plate. The plate is wrapped about the cylinder and the other end 42 is pushed in place to enter the other notch 44b of the reel rod. The rod is then turned to tighten the plate on the roller. After the roller has been adjusted to secure the desired longitudinal and axial location, it may be found that the plate is slightly askew and that one or both ends should be advanced or turned back on the roller. This is done by loosening and tightening opposed screws 49 at one end or the other so that the gap 32 is shifted out of plane A—A as shown in Figure 2.

In the modified form illustrated in Figure 9, the printing roller body 20' is provided with a slot or groove 21' of T-shaped cross-section and the reel rod carrier or bar 34' is narrower than the groove and also of T-shaped cross section. Bearing surfaces 22'-24' and 22'-30' are provided as before. The plate tightening rod 44' and associated parts may be substantially the same, also the lateral adjustment screws 49'. In this type of construction, the slot or groove 21' may be machined directly into the roller body, or by one or two bars of suitable cross-section bolted to the roller body in a manner similar to that shown in Figures 1-8.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular forms shown are but two of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A printing press roller having a cylindrical printing plate supporting surface except for a longitudinal, inwardly extending slot, a bar having elements which extend into and narrow the slot and between which elements the plate ends are insertable, a spring pressed, rotatable bar-carried reel rod for engaging one of the inserted ends of the printing plate to tighten the plate on the roller, the printing roller and bar having means which dispose the bar at a fixed distance from the printing roller axis, and means to adjust either end of the bar sidewise so as to circumferentially shift the corresponding edge of the printing plate about the printing roller.

2. A printing press roller as claimed in claim 1, having means to lock the rotatable reel rod against rotation.

3. A printing press roller having a cylindrical printing plate supporting surface except for a longitudinal, inwardly extending slot, a bar having elements which extend into and narrow the slot and between which elements the plate ends are insertable, a spring pressed, rotatable bar-carried reel rod for engaging one of the inserted ends of the printing plate to tighten the plate on the roller, the printing roller and bar having opposed bearing surfaces which confine the bar to a fixed distance from the printing roller axis, and means to adjust either end of the bar sidewise so as to circumferentially shift the corresponding edge of the printing plate about the printing roller.

4. A printing press roller such as claimed in claim 3, wherein the printing press roller is made of two separate parts, one being in the form of a relatively narrow bar

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detachably secured to the other part and providing one of the outer bearing surfaces for the bar.

5. A printing press roller such as claimed in claim 4, wherein the bar end-adjusting means includes screws carried by each roller part at the ends thereof and bearing against said bar.

6. A printing press roller such as claimed in claim 3, wherein each of the roller parts has a portion thereof which overlies the bar, whereby the slot at the periphery is substantially narrower than at its base.

7. A printing press roller such as claimed in claim 3, wherein the adjusting means for shifting the bar sidewise includes screws bearing against the opposite sides of the ends of the bar.

8. A printing press roller having within the body thereof single means for gripping both ends of a printing plate wrapped about the roller and tightening the printing plate against the roller, means for holding said gripping means against radial movement, and means for independently shifting each end of the plate gripping means transversely of the axis of the roller and the corresponding side of the gripped plate in a circumferential direction to angularly adjust one side of the plate with respect to the other.

9. A printing press roller having a cylindrical plate supporting surface interrupted by a cut-away portion having a flat bottom on each side of a longitudinal radial plane, a plate end gripping device having a gap in said plane and adapted to receive the ends of the plate and a plate tightening rod, means for holding said gripping device against radial movement, and means for independently shifting each end of the plate gripping device and the corresponding side of the gripped plate in a circumferential direction to angularly adjust one side of the plate with respect to the other.

10. A printing roller having a longitudinal slot with a flat bottom, and one undercut side which provides an overlying rib with an inwardly facing bearing shoulder, a filler piece secured in the slot and shaped to provide a second overlying rib and inwardly facing bearing shoulder, the ribs being spaced from one another to form an elongated narrow gap outside said flat bottom, a bar received in the space under the bearing shoulders and held thereby against radial movement but free for limited lateral movement, printing plate end-clamping means carried by the bar, and means for shifting the ends of the bar across the flat bottom of the slot.

11. A printing press roller having a cylindrical printing plate supporting surface interrupted by an outwardly opening chamber having a flat bottom, and inwardly facing bearing surfaces spaced from said bottom, a bar narrower than the chamber width and having a base bearing on said bottom and having sides extending under the inwardly facing bearing surfaces, the bar and roller having cooperative elements which restore the surface to cylindrical form except for a small gap adapted to receive the ends of the printing plate, a plate end tightening rod carried by the bar, and means for adjusting the position of the bar across the bottom surface of said chamber.

12. A printing roller having a cylindrical plate supporting surface and on opposite sides of a radial plane a flat tangential surface spaced from the plate supporting surface and inwardly facing diverging surfaces which, with the flat surface, form in the roller a longitudinal chamber opening outwardly through a narrow gap in the cylindrical surface, printing plate securing means in said chamber, said means including a bar narrower than the chamber and having a flat surface bearing on the flat surface of the chamber and having separated, gap narrowing elements between which the ends of a printing plate wrapped about the cylinder are insertable, with the two ends of the plate in face to face contact, a plate tightening roller spring pressed against the plate ends, means holding the bar tightly against the flat surface of the chamber, and means cooperable with the ends of the bar

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for independently adjusting the position of the ends of the bar to effect corresponding circumferential shift of the printing plate.

13. A printing press roller comprising a cylindrical body adapted to support a flexible plate thereabout, there being at least one longitudinal gap in said roller into which both ends of the plate may extend, means disposed in said gap engaging both ends of the plate and extending therealong, and adjustable means disposed at each end of said plate engaging means to variably position said engaging means transversely of said gap and transporting both ends of the plate.

14. A printing press roller having a longitudinal recess therein, a single reel rod assembly in said recess and engageable with both ends of a flexible member extending about said roller and into said recess, the reel rod assembly being narrower than the recess, mounting means associated with said roller for positioning said reel rod assembly within said recess for movement laterally only therein, and means for varying the relative alignment of the axes of said roller and reel rod assembly and transporting both ends of the plate.

15. A printing press roller having a longitudinal recess therein; a reel rod carrier disposed in said recess, carrier guides for permitting movement laterally only in said recess; a reel rod rotatably mounted in said carrier; and positioning means mounted in said roller, adjacent each end thereof, to engage the ends of said carrier and shift said reel rod carrier in said guides.

16. A printing press roller comprising a cylindrical body adapted to rigidly support thereabout a flexible plate, the roller having a longitudinal recess, said recess extending inwardly from a narrow opening in the surface thereof to a broader base, a movable bar positioned in said recess and provided with a gap into which the ends of the flexible plate may project, the bar carrying therein a reel rod to engage the ends of the plate extending into

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said gap; and set screws mounted in said roller for selectively positioning said bar in said recess.

17. A printing press roller having a longitudinal recess therein, said recess having opposed inwardly diverging walls; a reel rod carrier positioned in said recess for movement transversely thereof and having therein a longitudinal cavity; a reel rod positioned in said cavity and movable stop means in said roller on each side of each end of said carrier to selectively vary the relative position of said reel rod carrier in said recess.

18. A device as described in claim 17, wherein said recess includes a keyway portion in each wall thereof, said carrier includes corresponding key portions disposed in said keyways and said movable stops are positioned in said roller to engage said key portions of said carrier.

19. A printing press roller having a longitudinal recess therein, a reel rod, mounting means for said reel rod operatively associated with said roller to mount said reel rod in said recess, said mounting means being movable relative to said roller to displace the axis of said reel rod relative to the axis of said roller while keeping it at the same radius.

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