

Nov. 10, 1942.

H. J. LUEHRS

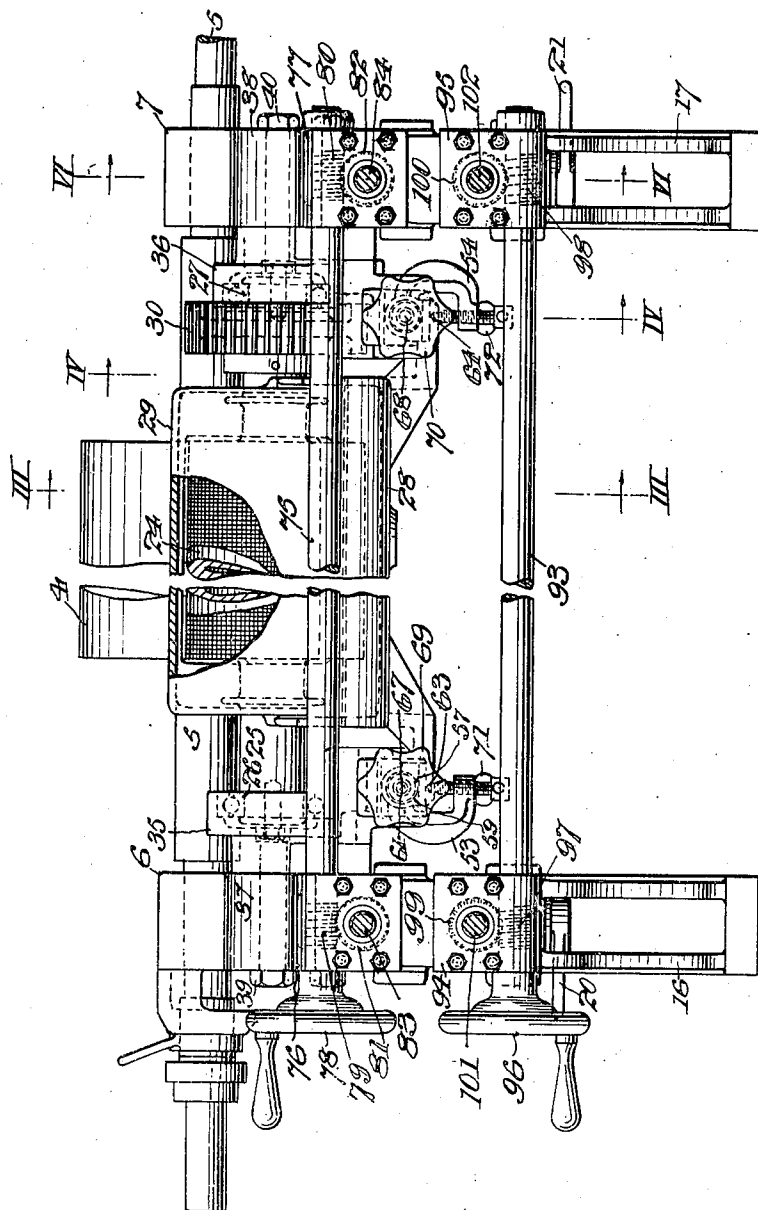
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4 Sheets-Sheet 1

Fig. 1.



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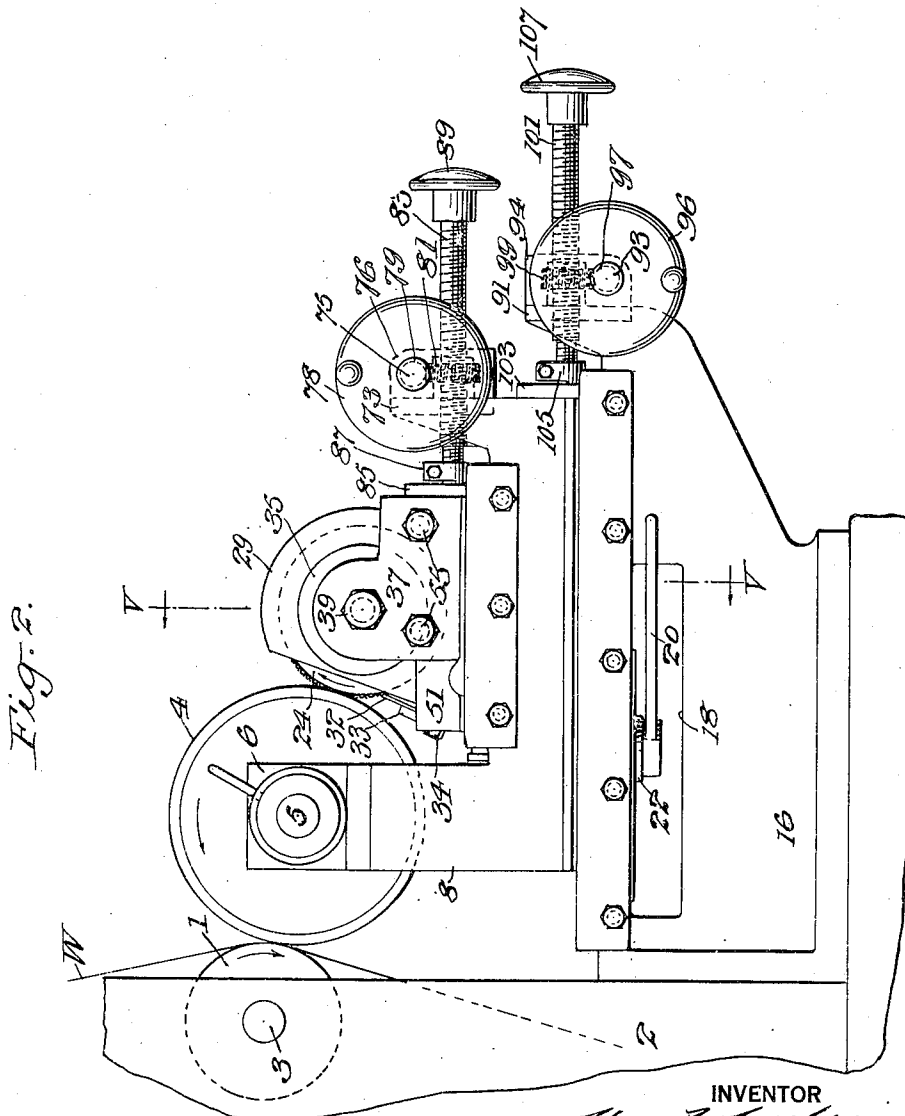


Fig. 2:

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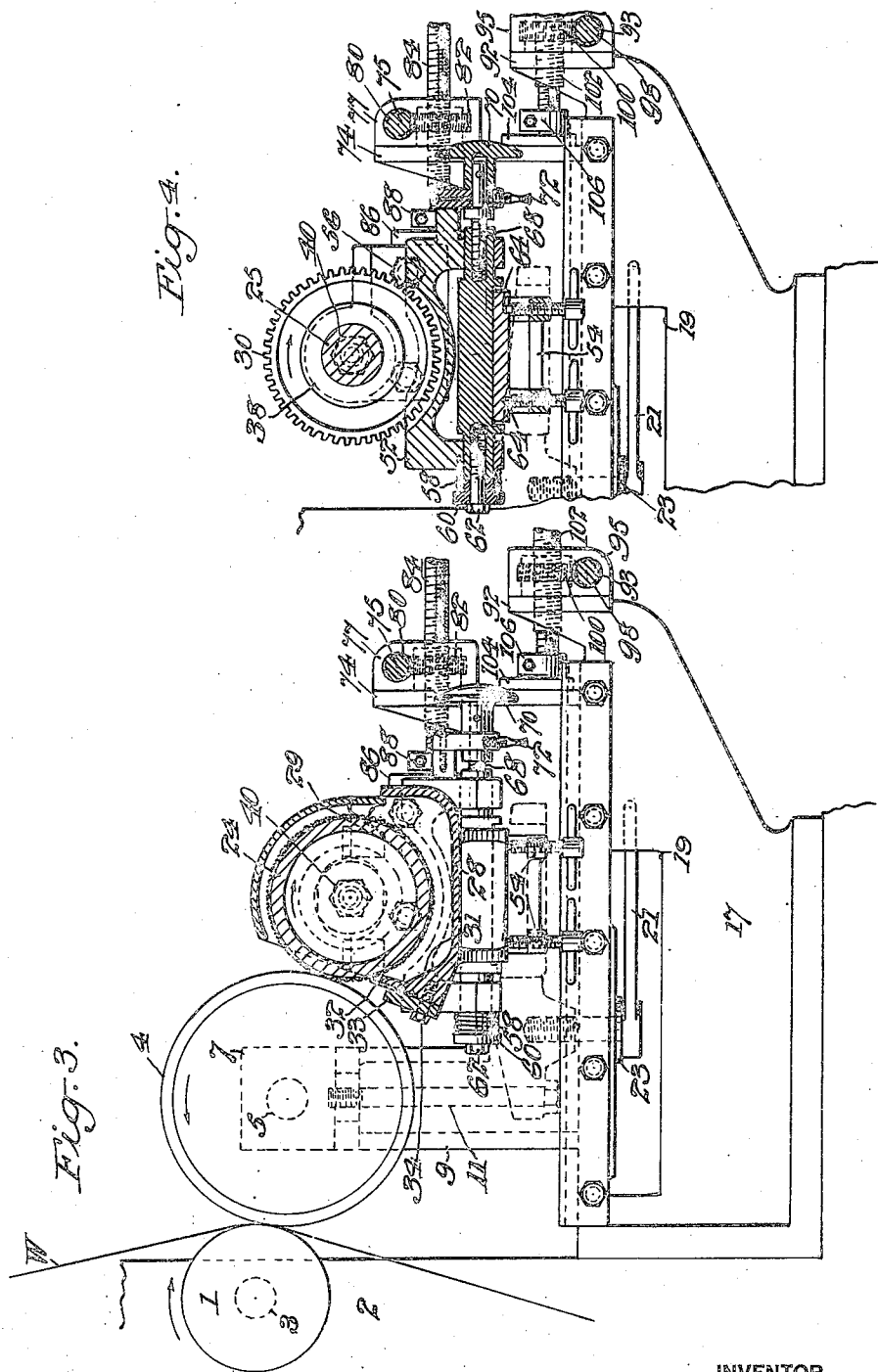
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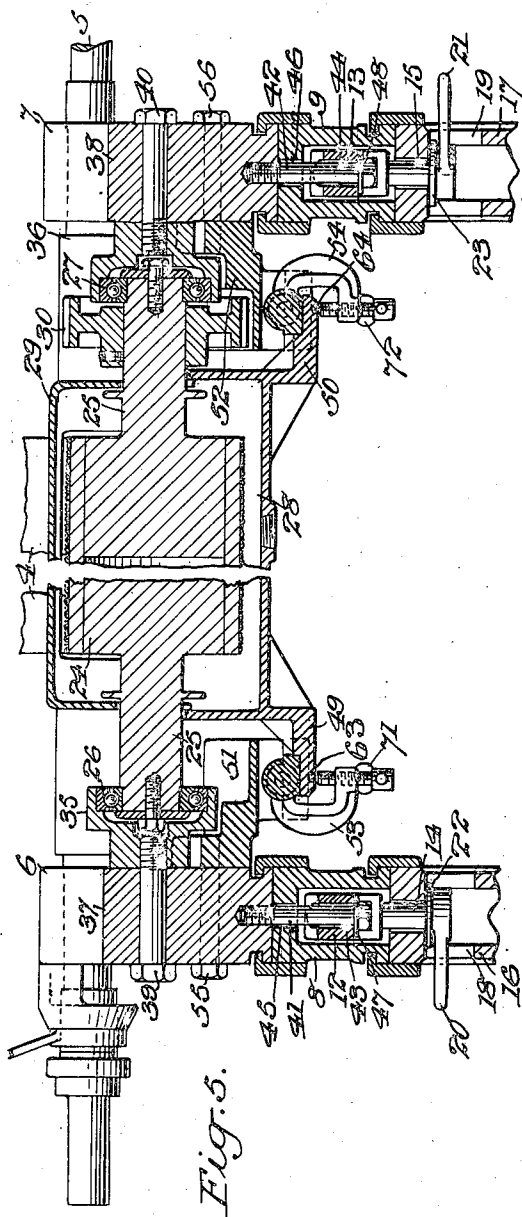
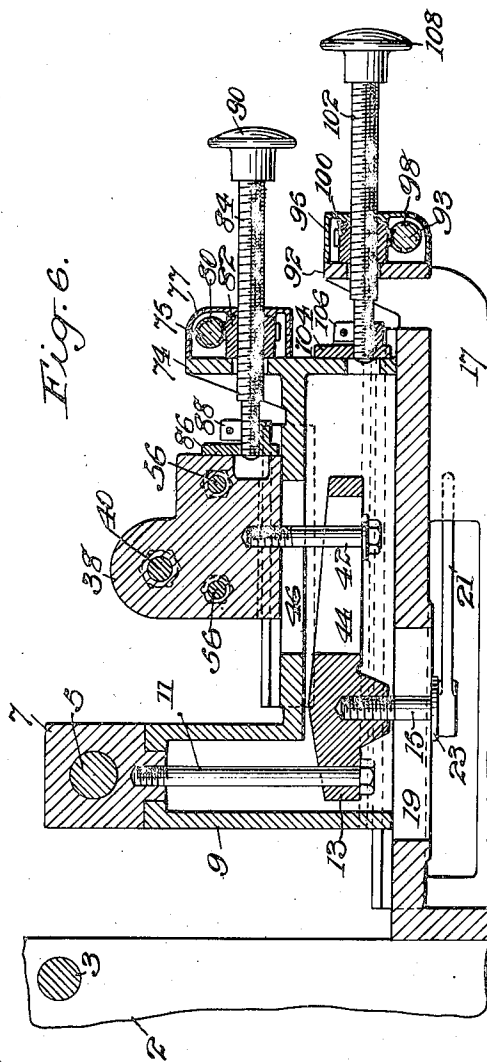
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UNITED STATES PATENT OFFICE

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18 Claims. (Cl. 101—247)

My invention relates to ink fountains for printing presses, said fountains embodying features of adjustability which make them particularly desirable for use with different sizes of form cylinders. Fountains built according to my invention are capable of micrometer adjustment toward and away from their respective form cylinders to obtain the proper inking relationship therewith and are also adapted for quick removal from the press, when desired.

The object of my invention is to provide an ink fountain which is capable of ready and accurate adjustment toward and away from its form cylinder.

Another object is to provide means for locking the fountain securely in its adjusted position.

Another object is to provide an adjustable fountain bowl mounting which is adapted for quick detachment and removal from the press.

Another object is to provide an ink fountain bowl which includes the mounting of the doctor blade as an integral part so that the fountain bowl casting acts as a rigid supporting tie for the doctor blade.

Another object is to provide means whereby the ink fountain, fountain roller, its mounting, doctor blade mounting and form cylinder may all be adjusted toward and away from the impression cylinder as a unit.

A further object is to provide an ink fountain having a structure whereby the above and other objects may effectively be attained.

My invention comprises, generally, an impression cylinder, a form cylinder, inking mechanism therefor including an ink fountain, its fountain roller, a doctor blade mounting formed integral with the fountain bowl casting, means for adjusting all, exclusive of the impression cylinder, toward and away from said impression cylinder as a unit, and means for locking the fountain bowl and form cylinder mountings in adjusted position.

A practical embodiment of my invention is represented in the accompanying drawings, in which

Fig. 1 represents a front elevation partly broken away of a portion of a mono-roll aniline printing press including my invention;

Fig. 2 represents an end elevation of the embodiment of my invention shown in Fig. 1;

Fig. 3 represents a transverse vertical section taken on the line III—III of Fig. 1, looking in the direction of the arrows;

Fig. 4 represents a transverse vertical section taken on the line IV—IV of Fig. 1, looking in the direction of the arrows;

Fig. 5 represents a transverse vertical section taken on the line V—V of Fig. 2, looking in the direction of the arrows; and

Fig. 6 represents a transverse vertical section taken on the line VI—VI of Fig. 1, looking in the direction of the arrows.

An impression cylinder 1 is shown rotatably mounted between frames 2, its shaft 3 being journaled therein. A form cylinder 4 is adapted to have its plates print on web W passing between it and impression cylinder 1. Form cylinder 4 is mounted on shaft 5 journaled in self-aligning bearings 6, 7, said bearings being mounted on the frames 8, 9 and secured thereto by bolts 11, passing through elements 12, 13. Elements 12, 13 are locked by bolts 14, 15 to base frames 16, 17 through slots 18, 19 in frames 16, 17. Bolts 14, 15 are rotatable by means of hand levers 20, 21 affixed thereto outside of washers 22, 23 which straddle and abut the lower edges of slots 18, 19.

Frames 8, 9 carrying bearings 6, 7 are slidably mounted on base frames 16, 17 and are adjustable therealong, as will hereinafter be described.

An ink fountain roller 24 having a fine screen, knurled or etched surface, is mounted on a shaft 25 journaled in ball bearings 26, 27 so as to revolve in the ink fountain bowl 28, said fountain bowl being provided with the usual fountain cover 29. The fountain roller 24 may be driven from any suitable source of power, not shown herein, through the gear 30 fixed on shaft 25 and is adapted to contact the plates carried by the cylinder 4 and apply the ink thereto in the usual manner.

Formed as an integral part of the fountain bowl casting 28 is a mounting 31 for a rubber doctor blade 32 which is adjustably fixed in position by means of the usual backing plate riveted thereto and the outer section 33 cooperating with the mounting 31 and affixed thereto by bolts 34 passing through said section 33 and threaded into mounting 31. Doctor blade 32 is held in contact with the periphery of the screen covered fountain roller 24 and scrapes the surplus ink therefrom, leaving the ink in the bottom portion of the mesh to be transferred to the plates on the form cylinder 4, as above stated.

Ball bearings 26, 27 for fountain roller shaft 25 are secured in mountings 35, 36 fixed to the adjustable elements 37, 38 by bolts 39, 40, said elements 37, 38 being supported by and movable along frames 8, 9 as will hereinafter be described. Elements 37, 38 are locked in position by the bolts 41, 42 which pass through slots 43, 44 in elements 12, 13, and slots 45, 46 in frames 8, 9,

said bolts abutting washers 47, 48 which straddle the under sides of slots 43, 44 in elements 12, 13.

Ink fountain bowl 28 is provided with outwardly extending flanges 49, 50 which are secured to brackets 51, 52 by clamps interconnected in pairs 53, 54, said clamps being journaled therein respectively. These brackets 51, 52 are secured by bolts 55, 56 extending through adjustable elements 37, 38 and are carried thereby. Screw clamps 53, 54 are provided with torsion springs 57, 58 fastened at one end to one pair of clamps and at the opposite end to the collars 59, 60. As the clamps are interconnected in pairs, only two torsion springs are required to actuate the two pairs of clamps. The springs are held between the brackets 51, 52 and the collars 59, 60 by means of the bolts 61, 62 threaded into the ends of clamps 53, 54 respectively. When the clamps are swung up and tightened to hold the fountain in place, the ends of said clamps engage recesses 63, 64 in the bottom of fountain flanges 49, 50. When said clamps are released torsion springs 57, 58 act to swing the clamps outwardly, thereby disengaging said clamps from the flanges 49, 50 of the fountain bowl casting 28 and permitting removal of the fountain. Means for positioning the pairs of clamps comprises screws 67, 68 threaded into clamps 53, 54 and furnished with hand wheels 69, 70 for actuating the screws.

When the pairs of clamps are fastened to fountain bowl flanges 49, 50 and screws 67, 68 are actuated, the fountain bowl 28 is moved and a setting of doctor blade 32 with relation to fountain roller 24 is thereby accomplished. As stated above, doctor blade mounting 31 is formed integral with said fountain bowl 28.

Thumb screws 71, 72 are threaded into an extension of brackets 51, 52 for locking screws 67, 68 against rotation, when so desired.

Means for adjusting the ink fountain bowl 28, its fountain roller 24 rotatable therein, its mounting, doctor blade 32 and its mounting as a unit toward and away from the form cylinder 4 are mounted in upward extensions 73, 74 of the frames 8, 9, said means including a shaft 75 mounted in bearings supported in casings 76, 77 fixed to extensions 73, 74, said shaft extending between parts 73, 74, a hand wheel 78 being provided at one end for rotating shaft 75. Said shaft is screw threaded at two portions 79, 80 for operative engagement as a worm with worm wheels 81, 82 which are internally threaded on the threaded spindles 83, 84. These spindles are mounted in bearings also supported in casings 76, 77 affixed to extensions 73, 74. The other ends of spindles 83, 84 are threaded in plates 85, 86 having clamps 87, 88 formed integral therewith, said plates being fixed to and abutting elements 37, 38. Said spindles may be secured against rotation by clamps 87, 88, when so desired.

Adjustment of the inking mechanism as a whole toward and away from the form cylinder 4 is accomplished by loosening screw bolts 41, 42, thereby permitting fountain bowl 28 to be moved along the frames 8, 9. This movement is imparted by turning the hand wheel 78 which rotates shaft 75 in the desired direction. The threaded portions 79, 80 in engagement with worm wheels 81, 82 turn said wheels, the internal thread of which serves to drive the spindles 83, 84 respectively and force them in or out, depending upon the direction of rotation of shaft 75. Since spindles 83, 84 are fixed against rotation in plates 85, 86 attached to and abutting elements 37, 38,

the inking mechanism is moved toward or away from the form cylinder 4, screw bolts 41, 42 traveling in slots 43, 44 in elements 12, 13.

If it is desired to adjust the fountain roller 24 for parallelism with form cylinder 4 this may be accomplished by loosening clamps 87, 88 and turning one of the threaded spindles 83, 84 by means of hand wheel 89 or 90, as desired. It will be understood that the inner ends of the spindles are provided with a thread of lesser pitch but concentric with the threads on their outer ends. This lesser pitch is threaded in plates 85, 86 and clamps 87, 88 and thereby gives a micrometer adjustment of the inking mechanism toward and away from form cylinder 4 at each end, in order to obtain the proper inking relationship.

After having been adjusted, the inking mechanism may be locked in position by setting up on screw bolts 41, 42, the heads of said bolts engaging washers 45, 46 on the lower side of slots 43, 44 in elements 12, 13, as stated above.

It will be understood that bolts 41, 42 will ordinarily not be disturbed after their initial setting.

It will be noted that these adjustments may be obtained without disturbing the peripheral relationship of the form cylinder 4 and its impression cylinder 1.

Means for adjusting the form cylinder 4 and all its inking mechanism including fountain bowl 28, fountain roller 24, its mounting, doctor blade 32 and its mounting, together with the adjusting means therefor all as a unit toward and away from the impression cylinder 1 are mounted in upward extensions 91, 92 of base frames 16, 17. Said means includes a shaft 93 mounted in bearings supported in casings 94, 95 and extending between parts 91, 92, a hand wheel 96 being provided at one end for rotating shaft 93. Said shaft is screw threaded at two portions 97, 98 for operative engagement as a worm with worm wheels 99, 100 which are internally threaded on the threaded spindles 101, 102. These spindles are mounted in bearings also supported in casings 94, 95 affixed to extensions 91, 92. The other ends of spindles 101, 102 are threaded in plates 103, 104 having clamps 105, 106 formed integral therewith, said plates being affixed to and abutting frames 8, 9. Said spindles, when so desired, may be secured against rotation by clamps 105, 106.

Adjustment of the form cylinder 4 and its inking mechanism as a unit toward and away from the impression cylinder 1 is accomplished by loosening screw bolts 14, 15 by means of hand levers 20, 21, thereby permitting the elements 12, 13 to be moved along the base frames 16, 17. This movement is imparted by turning the hand wheel 96, which rotates the shaft 93, in the desired direction. The threaded portions 97, 98 in engagement with worm wheels 99, 100 turn said wheels, the internal thread of which serves to drive the spindles 101, 102 respectively and force them in or out, depending upon the direction of rotation of shaft 93. Since spindles 101, 102 are fixed against rotation in plates 103, 104, attached to and abutting frames 8, 9, said frames carrying the form cylinder 4 and its inking mechanism are moved toward or away from the impression cylinder 1, screw bolts 14, 15 traveling in slots 18, 19 in base frames 16, 17.

If it is desired to adjust the form cylinder 4 for parallelism with its impression cylinder 1 this may be accomplished by loosening clamps 105,

106 and turning one of the threaded spindles 101, 102 by means of hand wheels 107, 108, as desired. It will be understood that the inner ends of said spindles are provided with a thread of a lesser pitch but concentric with the threads on their outer end. This lesser pitch is threaded into plates 103, 104 and clamps 105, 106 and thereby gives a micrometer adjustment of the form cylinder 4 toward and away from the impression cylinder 1 at each end in order to obtain the proper printing relationship.

After having been adjusted the form cylinder 4 may be locked in position by turning levers 20, 21 to set up on screw bolts 14, 15, the heads of said bolts engaging washers 22, 23 on the lower sides of slots 18, 19 in base frames 16, 17, as stated above.

It will be noted that these adjustments may be obtained without changing the peripheral relationship of the form cylinder 4 and its fountain roller 24.

It will thus be seen that I have provided means for an independent adjustment of the form cylinder and independent adjustment for the inking mechanism and an adjustment for both form cylinder and inking mechanism together as a unit.

It will also be seen that I have provided adjustment for parallelism of the fountain roll with respect to the form cylinder and the form cylinder with respect to the impression cylinder.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but what I claim is:

1. In combination, a form cylinder, an inking mechanism therefor comprising, an ink fountain bowl, a fountain roller revoluble therein, an ink fountain mounting, adjustable elements, brackets secured thereto, interconnected pairs of clamps for securing said mounting to said brackets, and means for disengaging said clamps, said disengaging means comprising torsion springs operatively connected to said pairs of clamps for swinging them away from the fountain mounting.

2. In combination, a form cylinder, an inking mechanism therefor comprising, an ink fountain bowl, a fountain roller revoluble therein, an ink fountain mounting, adjustable elements, brackets secured thereto, means for removably holding the fountain mounting to the brackets, said holding means comprising pairs of clamps journaled in said brackets and adapted to be swung into engagement with the fountain mounting, means for adjusting the pairs of clamps, said clamp adjusting means including screws threaded into the clamps and a hand wheel for said screws, said screws being mounted in said brackets.

3. In combination, a form cylinder, an inking mechanism therefor comprising, an ink fountain bowl, a fountain roller revoluble therein, an ink fountain mounting, adjustable elements, brackets secured thereto, means for removably holding the fountain mounting to the brackets, said holding means comprising pairs of clamps journaled in said brackets and adapted to be swung into engagement with the fountain mounting, means for adjusting the pairs of clamps, said clamp adjusting means including screws threaded into the clamps and a hand wheel for said screws, said screws being mounted in said brackets, and means for locking said screws against rotation.

4. In combination, slotted base frames, a form cylinder, form cylinder frames slidably mounted on the base frames, elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the said elements, and bolts passing through the base frame slots for securing the elements to the base frames.

5. In combination, slotted base frames, a form cylinder, its bearings, form cylinder frames slidably mounted on the base frames, elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the said elements, and bolts passing through the base frame slots for securing the elements to the base frames.

6. In combination, slotted base frames, a form cylinder, form cylinder frames slidably mounted on the base frames, elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the said elements, bolts passing through the base frame slots for securing the elements to the base frames, and means for adjusting the position of the form cylinder frames when said last named bolts are released.

7. In combination, slotted base frames, a form cylinder, its bearings, form cylinder frames slidably mounted on the base frames, elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the said elements, bolts passing through the base frame slots for securing the elements to the base frames, and means for adjusting the position of the form cylinder frames when said last named bolts are released.

8. In combination, slotted base frames, a form cylinder, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the elements, bolts passing through the base frame slots for securing the elements to the base frames, and bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports.

9. In combination, slotted base frames, a form cylinder, its bearings, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the elements, bolts passing through the base frame slots for securing the elements to the base frames, and bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports.

10. In combination, slotted base frames, a form cylinder, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the elements, bolts passing through the base frame slots for securing the elements to the base frames, bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports, means for adjusting the po-

sition of the form cylinder frames when said second named bolts are released, and means for adjusting the position of the fountain roller supports on the form cylinder frames when said last named bolts are released.

11. In combination, slotted base frames, a form cylinder, its bearings, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the elements, bolts passing through the base frame slots for securing the elements to the base frames, bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports, means for adjusting the position of the form cylinder frames when said second named bolts are released, and means for adjusting the position of the fountain roller supports on the form cylinder frames when said last named bolts are released.

12. In combination, slotted base frames, a form cylinder, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, an ink fountain bowl, means for removably and adjustably holding the fountain bowl on the fountain roller supports, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the said elements, bolts passing through the base frame slots for securing the elements to the base frames, and bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports.

13. In combination, slotted base frames, a form cylinder, its bearings, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, an ink fountain bowl, means for removably and adjustably holding the fountain bowl on the fountain roller supports, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the said elements, bolts passing through the base frame slots for securing the elements to the base frames, and bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports.

14. In combination, slotted base frames, a form cylinder, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, an ink fountain bowl, means for removably and adjustably holding the fountain bowl on the fountain roller supports, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames to the said elements, bolts

passing through the base frame slots for securing the elements to the base frames, bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports, means for adjusting the position of the form cylinder frames when said second named bolts are released, and means for adjusting the position of the fountain roller supports on the form cylinder frames when said last named bolts are released.

15. In combination, slotted base frames, a form cylinder, its bearings, slotted form cylinder frames slidably mounted on the base frames, an ink fountain roller, supports therefor slidable on the form cylinder frames, an ink fountain bowl, means for removably and adjustably holding the fountain bowl on the fountain roller supports, slotted elements located between the form cylinder frames and the base frames, bolts securing the form cylinder frames and bearings to the said elements, bolts passing through the base frame slots for securing the elements to the base frames, bolts passing through the slots in the elements and the slots in the form cylinder frames for securing the elements to the fountain roller supports, means for adjusting the position of the form cylinder frames when said second named bolts are released, and means for adjusting the position of the fountain roller supports on the form cylinder frames when said last named bolts are released.

16. In combination, a form cylinder, its frames, an ink fountain roller, its supports, an ink fountain bowl, a doctor blade carried thereby, means for adjusting the fountain bowl independently of the fountain roller for setting the doctor blade with relation to the fountain roller, and means for removably locking the fountain bowl to the said fountain roller supports.

17. In combination, a form cylinder, its frames, an ink fountain roller, its supports, an ink fountain bowl, a doctor blade carried thereby, means for adjusting the fountain bowl independently of the fountain roller for setting the doctor blade with relation to the fountain roller, means for removably locking the fountain bowl to the said fountain roller supports, and means for adjusting the fountain bowl and roller along the form cylinder frames to bring the fountain roller into contact with the form cylinder.

18. In combination, a form cylinder, its frames, an ink fountain roller, its supports, an ink fountain bowl, a doctor blade carried thereby, means for adjusting the fountain bowl independently of the fountain roller for setting the doctor blade with relation to the fountain roller, means for removably locking the fountain bowl to the said fountain roller supports, means for adjusting the fountain bowl and roller along the form cylinder frames to bring the fountain roller into contact with the form cylinder, and means for locking the fountain bowl and roller in their adjusted position.

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