Sept. 4, 1928. 1,683,243

J. R. BLAINE

PRINTING PRESS DUCTOR MECHANISM

Filed Feb. 28, 1927 2 Sheets-Sheet 1

Fig. 1.

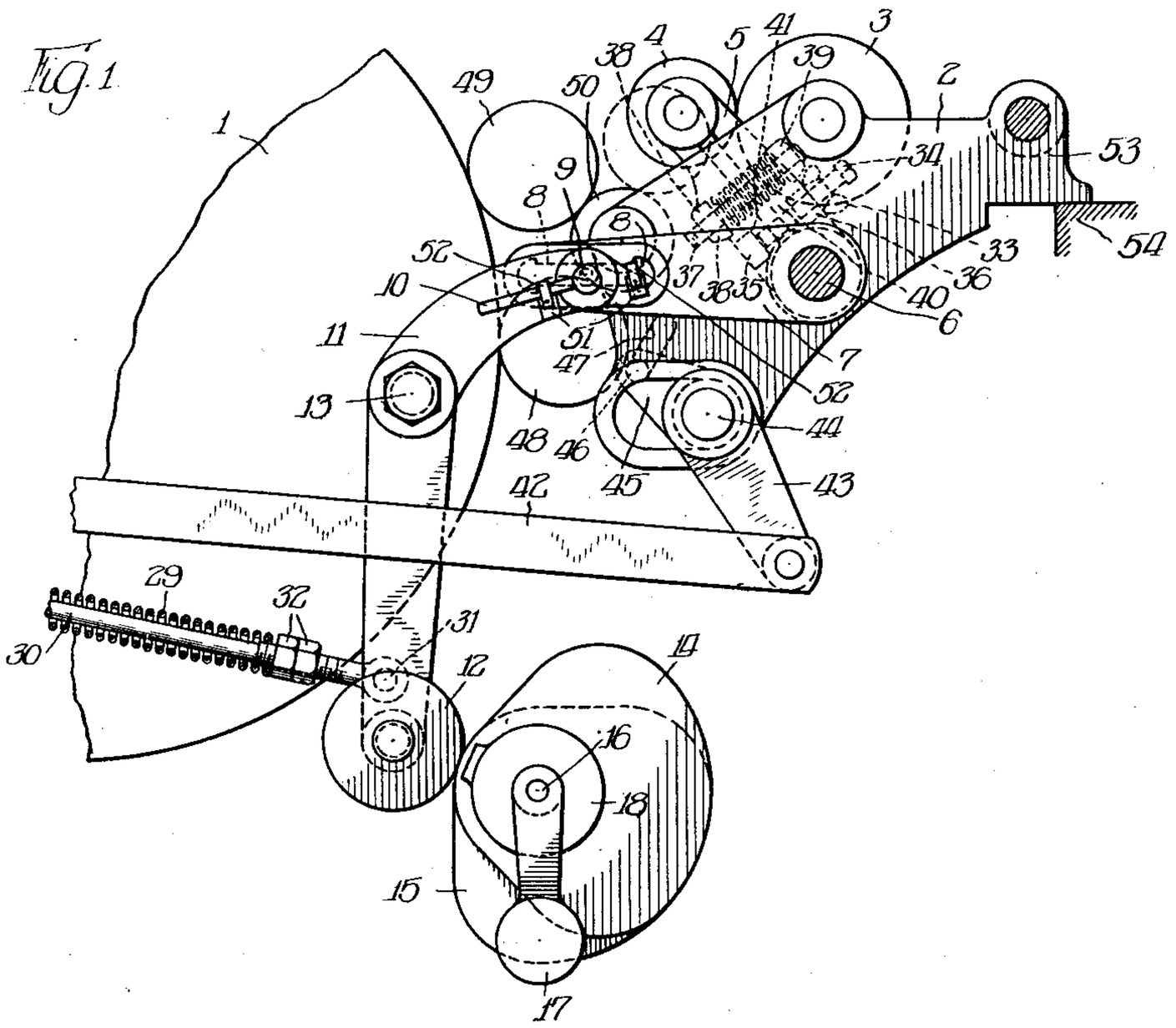

Fig. 2.

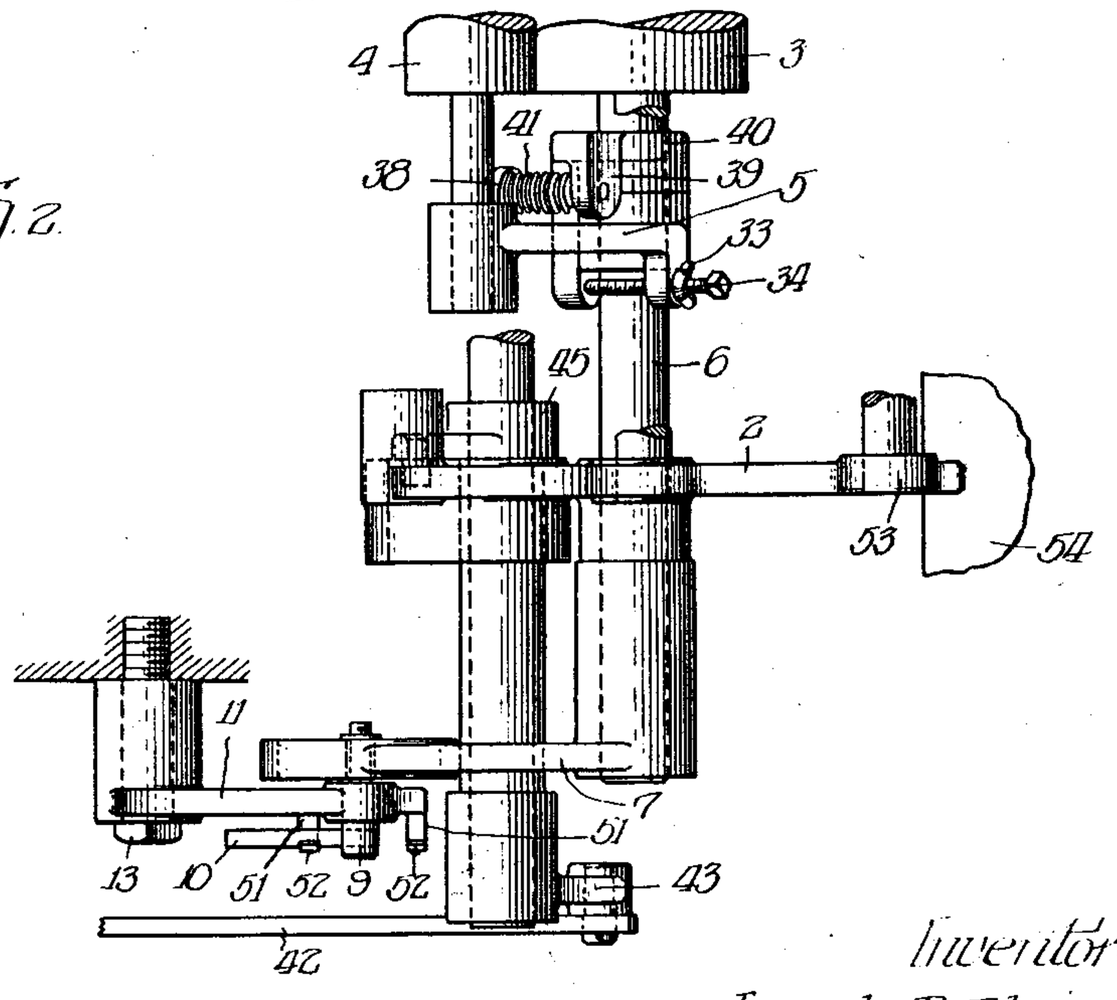

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Fig. 3

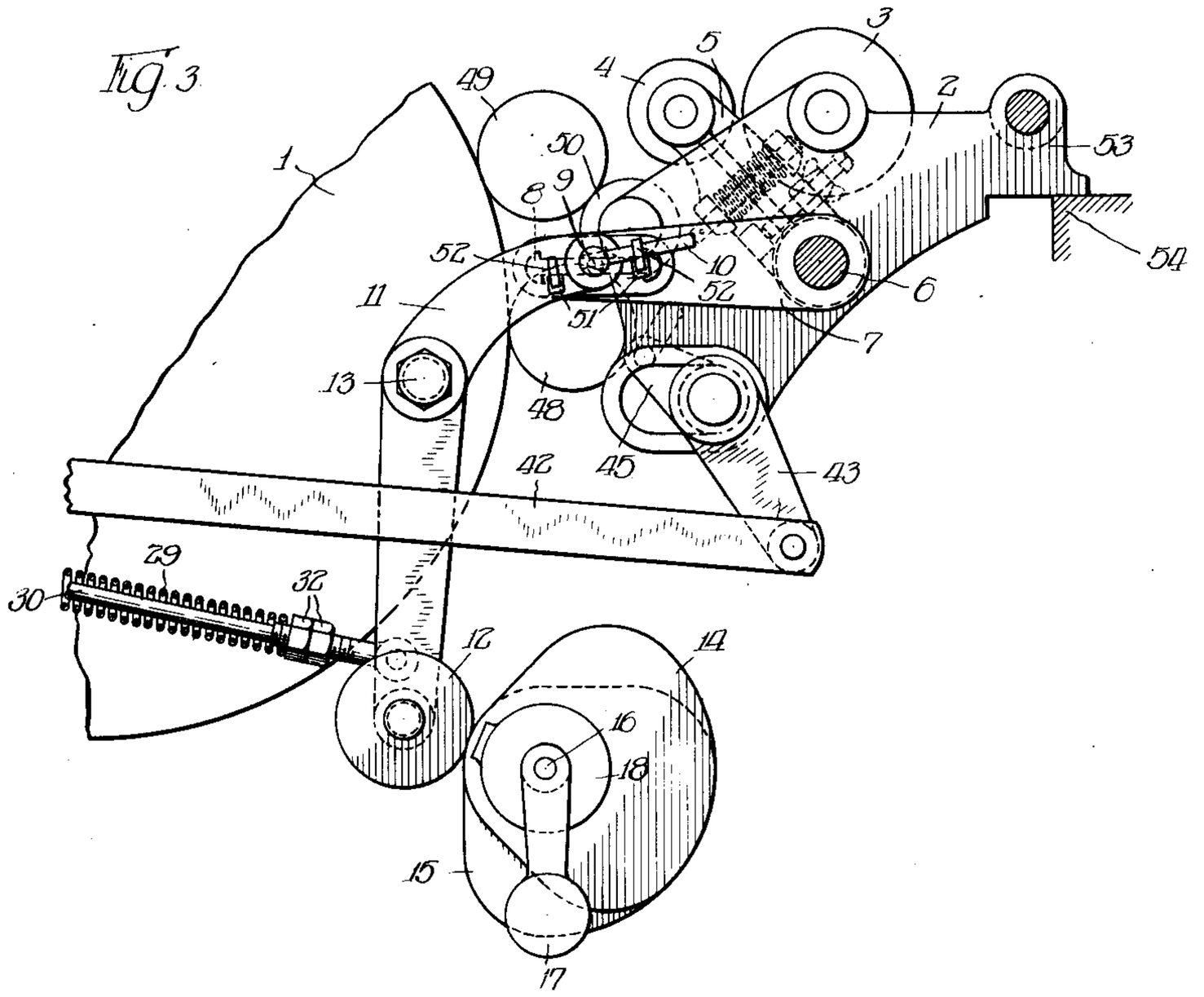


Fig. 4

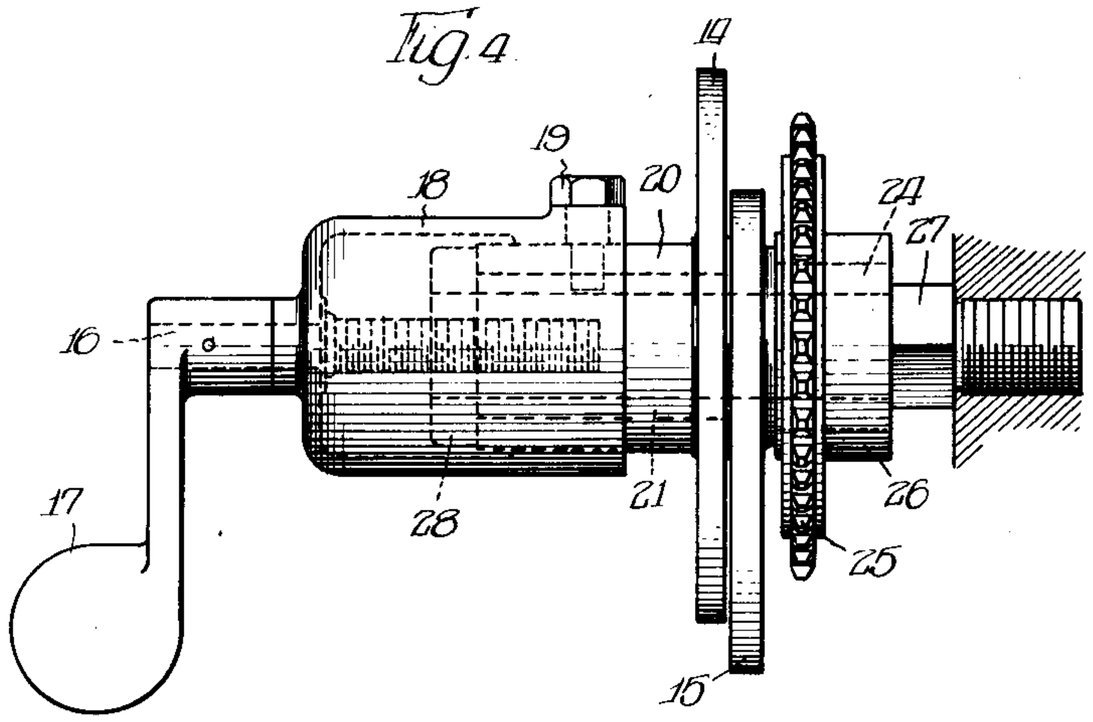
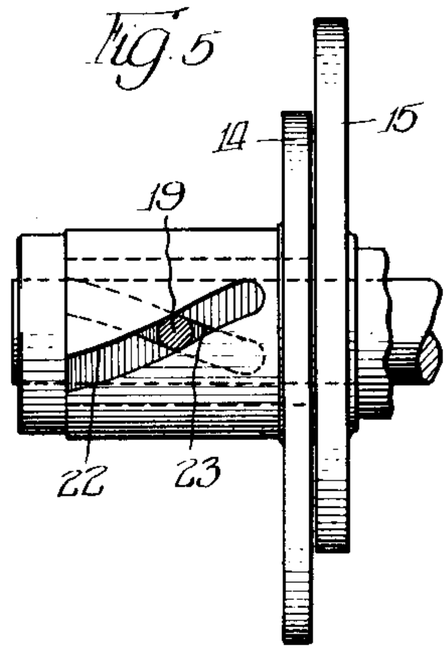


Fig. 5



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UNITED STATES PATENT OFFICE.

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PRINTING-PRESS DUCTOR MECHANISM.

Application filed February 28, 1927. Serial No. 171,510.

The present invention relates to improvements in lithographic dampening mechanisms, particularly adapted for use in connection with lithographic cylinder presses.

In the use of lithographic presses in general, it is customary to apply a thin film of water to the surface of the plate which carries the subject from which an impression is to be pulled.

In order to accomplish this, a series of dampening rollers are used, comprising a fountain roller from which a small quantity of water is conveyed by means of an oscillating ductor roller to a set of distributing rollers, whereby the required volume of water is applied to the plate of the press.

In order to successfully meet different conditions which present themselves in lithographic printing, and to thereby attain the desired results, it is essential that the volume of water that is to be applied to the plate of the press be correspondingly varied.

In connection with most mechanisms resorted to in the past for the purpose of accomplishing this, however, it has been found that such mechanisms had not proven strictly practical, inasmuch as the respective parts, whereby the adjustment had to be effected, were not readily accessible to the operator, and furthermore did not permit of an absolutely positive adjustment of the cooperating parts.

The principal object of this invention, therefore, is to provide an improved lithographic dampening mechanism including novel means whereby the movement of the ductor roller can be conveniently and positively timed so as to vary its time of contact with the fountain roller and to thereby correspondingly vary the volume of water supplied to such plate.

Other objects of the invention will be apparent from the specification and accompanying drawings in which:

Figure 1 is a side elevation of the combined mechanism, showing the relative position of the parts when the ductor roller is in contact with the fountain roller;

Figure 2 is a partial plan view with some of the parts omitted in order to more clearly illustrate the principal elements of the mechanism;

Figure 3 is a similar view to that shown in Figure 1, but showing the respective parts in their position when the ductor roller is tripped;

Figure 4 shows an assembly of the ductor roller cam adjusting means;

Figure 5 is a detail of the device shown in Figure 4, illustrating the relative position of the helical slots for adjusting the cams.

As illustrated on the drawings, 1 represents the plate cylinder of a lithographic press; 2 denotes one of the side frames of the water fountain wherein the fountain roller 3 is mounted to rotate, and from which roller water is transferred to water distributing mechanism by means of the ductor roller 4 carried by the oscillating arm or bracket 5. The latter is pivotally supported on the shaft 6, and is imparted its oscillatory movement by means of the operating arm 7, as will be hereinafter described. The arm 7 is provided at its free end with a substantially horizontal slot 8, which receives an excenter 9 adapted to move longitudinally therein. The excenter 9 is formed on a stud which is pivotally mounted in the free end of one arm of the bell crank lever 11, and has secured thereto a manually operated lever 10 whereby the ductor roller can be tripped, as will be described. The operating lever 11 is pivotally mounted to the machine frame as indicated at 13, and carries at its lower extremity a cam roller 12, which operatively engages the cam disks 14 and 15 for the purpose of oscillating the ductor roller 4.

In order to vary the time of contact of the ductor roller 4 with the fountain roller 3, so as to correspondingly vary the volume of water that is to be supplied to the subject plate of the cylinder 1, the cams 14 and 15 can be adjusted relatively to each other so as to increase or decrease the operative cam surface which engages the cam roller 12 on the lever 11.

The mechanism whereby the relative adjustment of the cams 14 and 15 is accomplished comprises a threaded shaft 16 to which is pinned or otherwise secured, a handle 17, preferably located at the side of the press so as to be readily accessible to the operator. The shaft 16 also supports a sleeve 18 which carries a bolt or stud 19 arranged so as to operatively engage within the helical slots 22 and 23 formed in the hubs 20 and 21 of the cams 14 and 15, respectively, as shown in Figures 4 and 5. The cam 15 is also pro-

vided with a hub portion 24 onto which is keyed the sleeve 26 which supports the driving sprocket 25. The threaded shaft 16 screws into the outer end of the supporting shaft 27 which is secured to the press frame. The hub 20 of the cam 14 is loosely mounted so as to be capable of adjustment about the hub 21 of the cam 15. The cams 14 and 15 are held in position by means of a collar 28 driven onto or otherwise secured to the end of the shaft 27. It will readily be understood with reference to Figures 1, 4 and 5 that, if for example, the handle 17 is rotated in an anti-clockwise direction, the sleeve 18 with its stud 19 will slide outwardly on the hub 20 and away from the cam 14. Inasmuch as the cam 15 is positively driven by the sprocket 25 and therefore cannot be rotated when the press is at a standstill, the stud 19 will follow the slot 23 formed in the hub 21 of the cam 15, while the cam 14 will be caused to rotate in an anti-clockwise direction, owing to the engagement of the stud 19 with the helical slot 22 formed in the hub 20 of the cam 14. This will correspondingly change the timing of the ductor roller 4 inasmuch as it will increase the time of contact of the cam roller 12 with the high parts of cams 14 and 15 and consequently the time of contact of the ductor roller 4 with the fountain roller 3 will be correspondingly decreased. By moving the handle 17 in a clockwise direction, the cams 14 and 15 will be moved together so that the contact surface of the high parts of said cams will be decreased and the time of contact of the ductor roller 4 with the fountain roller 3 will be correspondingly increased.

The cam roller 12 is held in constant engagement with the cams 14 and 15 by means of an expansion coil spring 29 mounted on the rod 30, the outer end of which rod is slidably mounted in a bracket not shown, while the other end of the rod is pivoted at 31 to the operating lever 11. The tension spring 29 can be adjusted by means of the locknuts 32.

In order to render the ductor roller 4 inoperative so as to interrupt the supply of water from the fountain roller 3 to the subject plate of the plate cylinder, tripping means is provided which comprises a tripping lever 10 pivotally mounted on the end of one of the arms of the operating lever 11. The pivot of the tripping lever 10 is formed with an excentric portion 9 which slidably operates within the slot 8 formed in the lever 7. When the lever 10 is thrown over to the position shown in Figure 3, the excenter will move the lever 7 downwardly sufficient to move the ductor roller 4 out of engagement with the fountain roller 3, as indicated in Figure 3, so that during the continuance of the oscillating movement of the lever 11, the roller 4 will be prevented from contacting with the fountain roller 3.

Preferably the lever or bracket 5 is mounted resiliently so that it can yield when the ductor roller 4 engages the vibrating roller 50 of the water distributing means. For this purpose the bracket 5, which, as hereinabove mentioned, is pivotally mounted on the shaft 6, is formed with an abutment 38, while the bracket 40, which is rigidly secured to the shaft 6 in any suitable manner, has provided thereon a similar abutment 39. An expansion coil spring 41 is placed between the said two abutments and is held in position by means of a pin 37 which passes through bores provided in the abutments 38 and 39, so that it can freely slide therein. The pin 37 is held in position by a cotter pin or by any other suitable means.

It will be apparent that when the roller 4 contacts with the vibrating roller 50, as indicated in dotted lines in Figure 1, before the downward movement of the lever 7 is completed, then the spring 41 will yield so that there will not be any excessive pressure exerted between the roller 4 and the roller 50 during the continued downward movement of the lever 7.

The lever or bracket 5 is also formed with an abutment 36 which carries an adjusting screw 34 with its set screw 33. The free end of the adjusting screw 34 abuts against a stop 35 formed integral with the bracket 40. Inasmuch as the bracket 40 is rigidly secured to the shaft 6, the stop 35 will engage the adjusting screw 34 during the upward movement of the lever 7, and move the bracket 5 upwardly to bring the roller 4 into contact with the fountain roller 3. The degree of contact between the ductor roller 4 and the fountain roller 3 can be readily varied by means of the adjusting screw 34 and locknut 33.

In order to securely hold the trip lever 10 in its two operative positions against the stops 51, such as indicated in Figures 1 and 3, the stops 51 are provided with small leaf springs 52, arranged so that the lever 10 is frictionally engaged and held in position thereby.

The water fountain, together with its cooperating vibrating roller 50 and distributing rollers 48 and 49, can be moved as a unit, a variable distance, towards and away from the plate cylinder 1 without, however, interrupting its operation. The mechanism whereby this is accomplished comprises an arm 42, the outer end of which is secured to a pivoted, manually operated lever not shown, while the other end of said arm is pivoted to a bell crank lever 43 as shown on Figures 1 and 3. The free end of the arm 45 of said bell crank lever, which latter is pivotally supported on the shaft 44, is provided with a stud 46 which engages a slot or recess 47 formed in the frame member 2 of the water fountain. The extension 53 of the fountain frame 2 is slidably supported on the flange 54 provided on the press frame.

When the arm 42 is drawn to the left as viewed in Figures 1 and 3, the bell crank lever 43 will be moved in a clockwise direction, and the engagement of the stud 46 with the wall of the slot or recess 47 will cause the fountain to move as a unit to the right, that is, out of operative engagement with the plate cylinder 1.

During the movement of the fountain mechanism as a unit away from the plate cylinder, the excentric portion 9 of the trip lever pivot will slide in the slot 8 of the arm 7. Inasmuch as it is necessary to thoroughly saturate the distributing rollers with water prior to the commencement of the actual printing operation of a lithographic press, i. e., before the said rollers are brought into contact with the plate of the press, it will be understood that the ductor roller must be adapted to operate effectively, also when the fountain mechanism is in its removed or tripped position.

Therefore, in order that the movement of the fountain as a unit away from the plate cylinder does not appreciably affect the throw of the ductor during the latter's operation when the fountain is tripped, it is essential that said slot be in a substantially horizontal position when the ductor roller 4 is in contact with the fountain roller 3, as indicated in Figure 1.

It will be readily understood that various modifications may be embodied in the construction of the mechanism described and illustrated with reference to the accompanying drawings without, however, departing from the spirit of the invention; therefore, I intend to cover all such modifications that will come within the scope of the appended claims.

I claim as my invention:

1. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for adjusting the water fountain as a unit a variable distance towards and away from the printing plate of the press.

2. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for tripping said ductor roller to render it inoperative, without interrupting its intermittent movement.

3. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for adjusting the water fountain as a unit substantially horizontally and a variable distance towards and away from the printing plate of the press.

4. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, means for adjusting the water fountain as a unit towards and away from the printing plate of the press, and means for tripping said ductor roller to render it inoperative, without interrupting its intermittent movement.

5. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for tripping said ductor roller to prevent it from moving into contact with said fountain roller, without interrupting its intermittent movement.

6. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, cam means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and manually operated means for tripping said ductor roller to prevent it from moving into contact with said fountain roller, without interrupting its intermittent movement.

7. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller mounted therein, water distributing means, a ductor roller

intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, manually adjustable means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for adjusting the water fountain as a unit a variable distance towards and away from the printing plate of the press.

8. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller mounted therein, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, manually adjustable cam means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and manually operative means for adjusting the water fountain and associated parts as a unit a variable distance and substantially horizontally towards and away from the printing plate of the press.

9. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller mounted therein, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, manually adjustable cam means for timing the operation of said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, and means for tripping said ductor roller to render it inoperative without interrupting its intermittent movement.

10. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller mounted therein, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, manually adjustable, relatively movable cams for timing said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, each of said cams having a hub with a helical slot formed therein, said slots extending in opposite directions relative to each other, means engaging said slots and operable to effect relative adjustment of said cams, and means for tripping said ductor roller to render it inoperative.

11. In lithographic printing press dampening mechanism, the combination of a water fountain, a fountain roller mounted therein, water distributing means, a ductor roller intermittently engaging said fountain roller and said distributing means for conveying water from the former to the latter, manually adjustable, relatively movable cams for timing said ductor roller to vary its time of contact with said fountain roller and the amount of water conveyed therefrom, each of said cams having a hub with a helical slot formed therein, said slots extending in opposite directions relative to each other, means engaging said slots and operable to effect relative adjustment of said cams, means for moving said fountain mechanism as a unit, and means for tripping said ductor roller to render it inoperative.

12. In combination with printing press fountain mechanism, a fountain roller, a ductor roller intermittently engaging said fountain roller, means for timing the intermittent movement of said ductor roller to vary its time of contact with said fountain roller and the amount of substance conveyed therefrom, and means for tripping the ductor roller to render it inoperative without interrupting its intermittent movement.

13. In combination with printing press fountain mechanism, a fountain roller, a ductor roller intermittently engaging said fountain roller, manually adjustable means for timing the intermittent movement of said ductor roller to vary its time of contact with said fountain roller and the amount of substance conveyed therefrom, and means for tripping said ductor roller to render it inoperative without interrupting its intermittent movement.

14. In combination with printing press fountain mechanism, a fountain roller, a resiliently mounted ductor roller intermittently engaging said fountain roller, manually adjustable cam means for timing the intermittent movement of said ductor roller to vary its time of contact with said fountain roller and the amount of substance conveyed therefrom, and means for tripping said ductor roller to prevent its contact with said fountain roller without interrupting its intermittent movement.

15. In combination with printing press fountain mechanism, a fountain roller, a resiliently mounted ductor roller intermittently engaging said fountain roller, a pair of relatively adjustable cams for timing the intermittent movement of the ductor roller to vary its time of contact with said fountain roller and the amount of substance conveyed therefrom, and means, comprising a manually operated lever, for tripping said ductor roller to render it inoperative without interrupting its intermittent movement.

16. In combination with printing press fountain mechanism, a fountain roller, a resiliently mounted ductor roller intermittently engaging said fountain roller, a pair of relatively adjustable cams for timing the intermittent movement of the ductor roller to vary its time of contact with said fountain roller and the amount of substance conveyed

therefrom, and means comprising an excentric and a member for actuating said excentric for the purpose of tripping said ductor roller to prevent its contact with said fountain roller without interrupting the intermittent movement of said ductor roller.

17. In printing press fountain mechanism, the combination of a fountain roller, a ductor roller intermittently engaging said fountain roller, adjustable means for timing the intermittent movement of said ductor roller, means for moving said fountain mechanism as a unit substantially horizontally and a variable distance towards and away from the printing plate of the press without interrupting its operation, and means whereby the throw of said ductor roller will not be appreciably affected when said fountain mechanism is moved.

18. In printing press fountain mechanism, the combination of a fountain roller, a ductor roller intermittently engaging said fountain roller, means for timing the intermittent movement of said ductor roller, means for moving said fountain mechanism as a unit, means whereby the throw of said ductor roller will not be appreciably affected when said fountain mechanism is moved and comprising cam operated means to effect the intermittent movement of said ductor roller, a rock arm having formed therein a substantially horizontal slot, and a stud provided on said cam operated means and operatively engaging said slot.

19. In printing press fountain mechanism, the combination of a fountain roller, a ductor roller intermittently engaging said fountain roller, means for timing the intermittent movement of said ductor roller, means for tripping said ductor roller to render it inoperative, means for moving said fountain mechanism as a unit, means whereby the throw of said ductor roller will not be appreciably affected when said fountain mechanism is moved and comprising cam operated means to effect the intermittent movement of said ductor roller, a rock arm having formed therein a substantially horizontal slot, and a stud provided on said cam operated means and operatively engaging said slot.

20. In a printing press fountain mechanism, the combination of a fountain roller, a ductor roller intermittently engaging said fountain roller, means for timing the intermittent movement of said ductor roller, means for moving said fountain mechanism as a unit, means whereby the throw of said ductor roller will not be appreciably affected when said fountain mechanism is moved and comprising cam operated means to effect the intermittent movement of said ductor roller, a rock arm having formed therein a slot which extends in a direction parallel to the direction of movement of said fountain mechanism, and a stud provided on said cam operated means and operatively engaging said slot.

21. In a printing press fountain mechanism, the combination of a fountain roller, a ductor roller intermittently engaging said fountain roller, means for timing the intermittent movement of said ductor roller, means for tripping said ductor roller to render it inoperative, means for moving said fountain mechanism as a unit, means whereby the throw of said ductor roller will not be appreciably affected when said fountain mechanism is moved and comprising cam operated means to effect the intermittent movement of said ductor roller, a rock arm having formed therein a slot which extends in a direction parallel to the direction of movement of said fountain mechanism, and a stud provided on said cam operated means and operatively engaging said slot.

22. In a lithographic printing press, the combination of a fountain mechanism, a fountain roller supported thereby, a ductor roller intermittently engaging said fountain roller, means for varying the intermittent movement of said ductor roller to vary its time of contact with said fountain roller, means for tripping said ductor roller to prevent its contact with said fountain roller without interrupting its intermittent movement, and means for variably moving the fountain mechanism as a unit towards and away from the printing plate of the press.

Signed at Chicago, Illinois, this 25th day of February, 1927.

JOSEPH R. BLAINE.