

May 25, 1926.

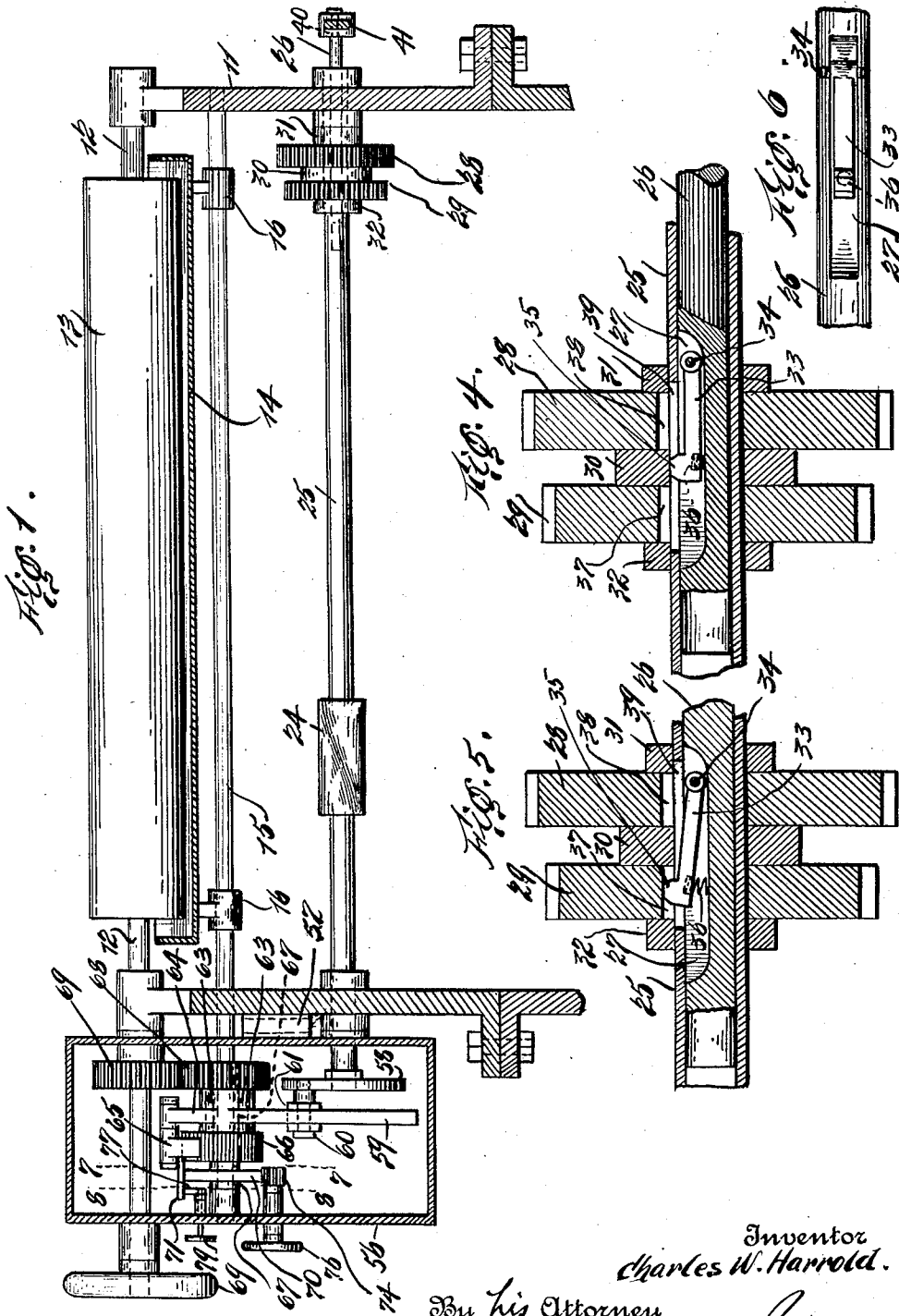
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DAMPENING MECHANISM

Filed Oct. 15, 1921

3 Sheets-Sheet 1



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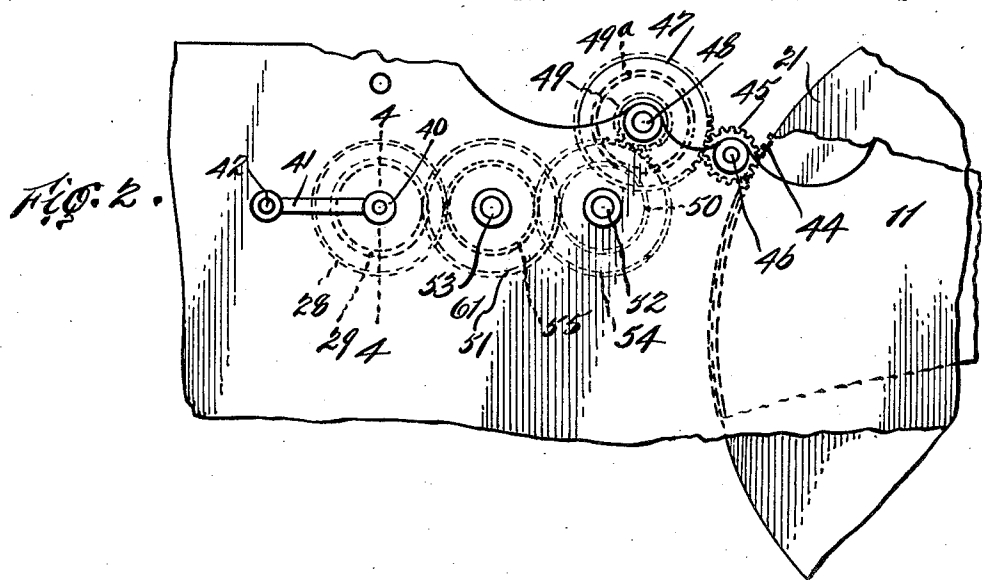
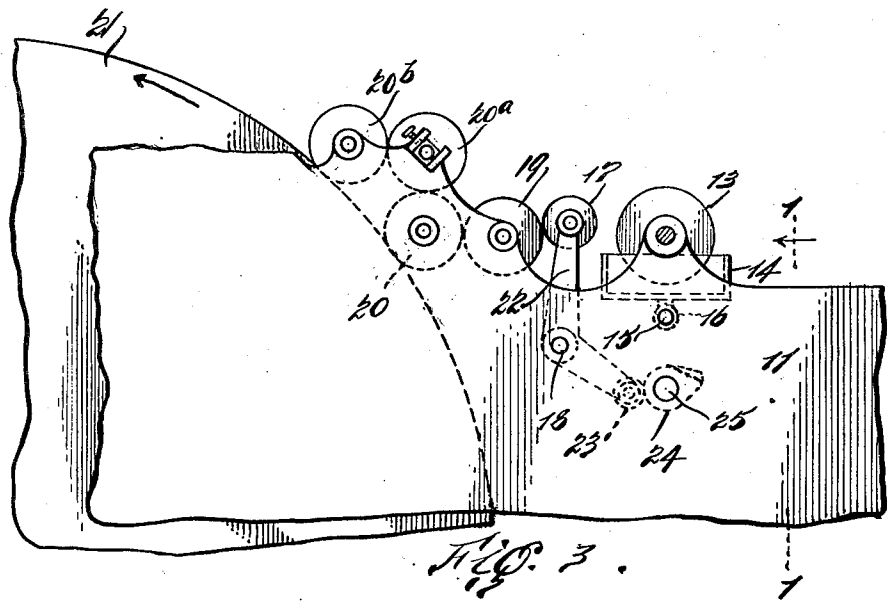
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

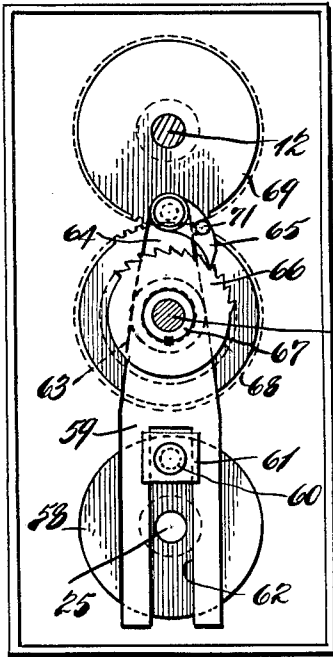


FIG. 7.

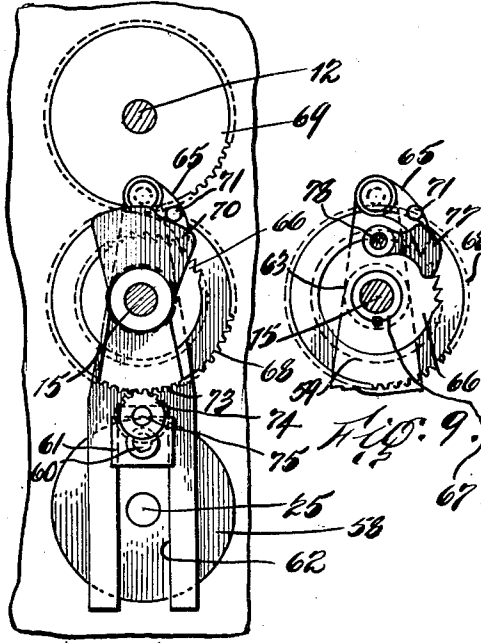


FIG. 8.

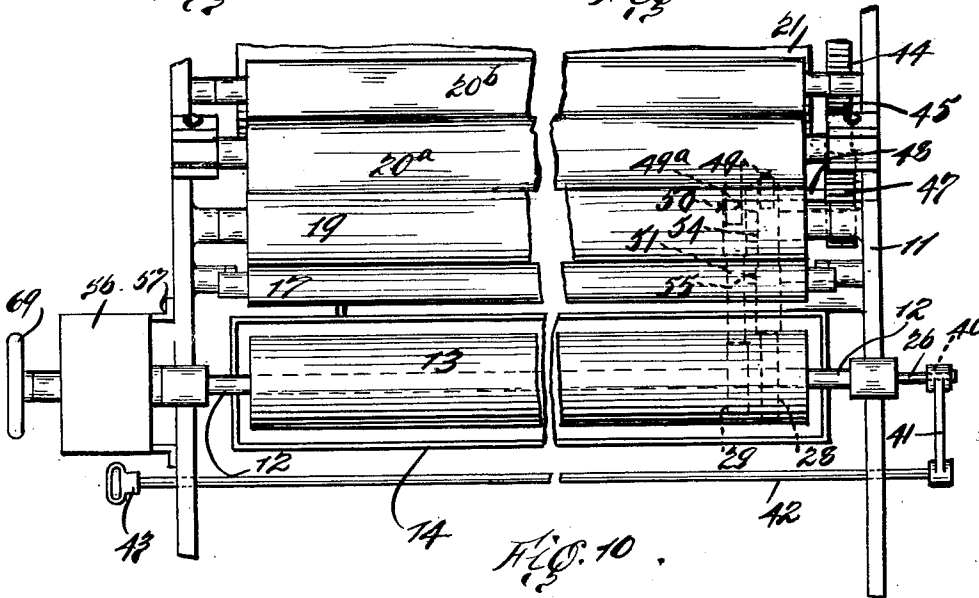


FIG. 10.

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DAMPENING MECHANISM.

Application filed October 15, 1921. Serial No. 507,843.

My invention relates to dampening mechanisms for planographic or lithographic printing-presses, and the objects of my invention are, among other things, to provide a simple and effective mechanism in connection with the water fountain and dampening rolls for controlling the supply of water to such rolls from the fountain, and to obtain a more even distribution of moisture on the rolls in contact with the form or plate-cylinder of the press.

Heretofore the water-fountain roll has been driven at a uniform low speed, and the only method of obtaining additional moisture for the dampening rolls was to allow the ductor roll to remain in contact with the fountain roll a greater length of time in the cycle which shortened the dwell of the ductor roll on the dampeners.

A further object of my invention is to provide means to obviate these defects whereby the water-fountain roll may be driven at different speeds in order to vary the amount of water applied to the ductor roll, and to provide an improved method of rotating the fountain roll so as to furnish a larger supply of water to the ductor in less time than has been heretofore possible, combined with means, under the control of the operator, for regulating the speed of rotation of such roll so that the operator may increase or decrease the amount of water that is being furnished to the dampening rolls according to requirements.

Further objects and advantages will appear hereinafter and be particularly pointed out in the claims, and I have shown a preferred embodiment of my invention in the accompanying drawings in which—

Fig. 1 is a section taken on line 1—1 of Fig. 3, certain parts being omitted;

Fig. 2 is a fragmentary side view looking from the right in Fig. 1 illustrating mechanism for operating the fountain-roll;

Fig. 3 is a similar view looking from the left in Fig. 1, illustrating the distributing rolls for transferring water from the fountain-roll to the plate-cylinder of a lithographic press;

Fig. 4 is an enlarged detail sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a similar view illustrating the high speed gear as connected to the shaft for actuating the fountain roll;

Fig. 6 is a detail top view illustrating the connecting means for the loose gears and their shaft;

Figs. 7 and 8 are enlarged sectional views on lines 7—7 and 8—8 respectively in Fig. 1;

Fig. 9 is a detail sectional view illustrating means to hold the oscillating pawl out of mesh with the ratchet which in turn operates the gears to rotate the fountain-roll; and

Fig. 10 is a plan view of the water-roll mechanism and the cooperating rolls to transfer the water from the fountain to the plate-cylinder.

Similar numerals refer to similar parts throughout the several figures.

Referring to the drawings, the frame 11 supports the shaft 12 of the fountain roll 13, in fixed bearings, below which is the water pan 14 suitably supported on the tie rod 15 by brackets 16 so as to allow the lower portion of the roll 13 to be submerged beneath the surface of the water in the pan 14 as shown in Fig. 1. The usual ductor roll 17 is mounted on the shaft 18 to oscillate between the fountain roll 13 and the distributing roll 19 which transfers moisture to the first dampening roll 20 which is one of a series contacting with the plate-cylinder 21 which rotates as shown by the arrow in Fig. 3. The second dampening roll 20^b also contacts with the plate-cylinder and receives moisture from the roll 20 through the intermediate roll 20^a removably secured in the frame 11 as shown, and adapted to rotate in operative contact with both rolls 20 and 20^b. The second roll 20^b serves to equalize the moisture applied to the plate from the fountain roll 13 through the ductor roll 17, either by taking up any excess water on the plate applied by the roll 20, or by supplying any additional moisture that may be required whenever the first roll 20 has insufficiently moistened the plate-cylinder 21. The intermediate roll 20^a is preferably removable so that the second roll 20^b may act solely as an equalizer of the moisture on the plate without receiving any moisture from the roll 20 which initially applies the water to the plate-cylinder 21 as the latter rotates in an anti-clockwise direction as shown in Fig. 3.

The ductor roll 17 is oscillated by the bell lever 22 the lower end of which carries the cam-roller 23 riding on the spiral cam 24

adjustably secured to the shaft 25 journaled in the frame 11 to change the timing of the movements of the ductor 17 to meet the requirements.

5 The right-hand end of the shaft 25 is tubular and has telescoped therein the sliding bar 26 having the slotted recess 27 cut therein as shown in Figs. 4 and 5. Loosely mounted on the shaft 25 are the change-
10 speed gears 28 and 29 of different diameters as shown, the gears being separated from each other by the annular block 30 that may be fastened to the shaft 25. The gears 28 and 29 are held in proper position by the
15 blocks 31 and 32 secured to the shaft 25, and according to their relative sizes, the gear 28 is the low-speed while the gear 29 is the high-speed gear.

Means are provided to rotatively connect
20 either of the gears 28 and 29 with the shaft 25 at will: In the embodiment shown in Figs. 4, 5 and 6, the sliding bar 26 has the latch 33 pivotally secured in the recess 27 by the transverse pin 34; the beveled latch-
25 tip 35 is normally raised by the compression spring 36 bearing beneath the latch 33 as shown in Fig. 5. The gears 28 and 29 have the longitudinal key-ways 37 and 38 respectively as shown in Figs. 4 and 5 to be en-
30 gaged by the latch-tip 35 passing through the elongated slot 39 formed in the tubular end of the shaft 25 to drive this shaft from either of said gears. In Fig. 5 the gear 29 is shown to be rotatively connected with the
35 shaft 25, but when the latch-tip 35 rests on the block 30 as shown in Fig. 4, the shaft 25 is disconnected and the gears 28 and 29 revolve freely on this shaft and the fountain-roll 13 is disconnected from the press. The
40 outer end of the bar 26 is rotatably secured in the socket 40 carried by the arm 41 secured to the transverse rod 42 which is slidably supported in the frame 11, and is operated by the handle 43 (Fig. 10) to transversely
45 move the bar 26 within the tubular end of the shaft 25 to carry the latch-tip 35 from gear 28 to gear 29 and vice versa as required, the beveled end of the latch-tip 35 enabling it to pass from one to the other of the key-
50 ways 37 and 38 on the edges of the annular block 30.

Referring to Figs. 2 and 10, the gears 28 and 29 are each driven from the plate-cyl-
55 inder 21 which carries the gear 44 in mesh with the gear 45 mounted in the stub-shaft 46; the gear 45 drives in turn the gear 47 mounted on the stub-shaft 48. The inner end of the shaft 48 carries the gears 49 and 49^a. The gear 49^a drives the gear 50, idler
60 gear 51 and then gear 29, the gears 50 and 51 being mounted on the stub-shafts 52 and 53 respectively; the shaft 52 carries the gear 54 driven by the gear 49. Gear 49 also drives the idler gear 55 on the shaft 53, and
65 then the gear 28. During the operation

of the press both gears 28 and 29 are revolved in the same direction by the two trains of gears just described.

Upon the opposite side of the press the casing 56 is secured to the frame 11 by
70 brackets 57 and contains the mechanism operatively connecting the fountain-roll 13 with the shaft 25; referring to Figs. 1, 7, 8 and 9, the left-hand end of the shaft 25 has affixed thereto the circular plate 58
75 adapted to operate the rock-lever 59 by means of the crank pin 60 which passes through a sliding block 61 operating in the slot 62 formed by the lower forked end of the rock-lever 59 as shown in Fig. 7. The
80 rock-lever 59 is secured to the collar 63 journaled about the tie-rod 15. The upper end 64 of the rock-lever 59 carries the pawl 65 to engage the ratchet 66 mounted on the sleeve 67 journaled within the collar 63
85 on the tie-rod 15. The inner end of the sleeve 67 carries the gear 68 which drives the gear 69 mounted on the shaft 12 which supports the fountain-roll 13 as shown in Fig. 1. The end of the shaft 12 passes outwardly
90 through the casing 56 in which it is journaled, and the hand-wheel 69 is affixed to the end thereof to rotate the fountain roll 13 manually, if desired, whenever the pawl 65 has been lifted from the ratchet 66 by
95 means hereinafter described.

Means are provided to regulate and control the number of teeth in the ratchet 66 to be engaged by the pawl 65 and are best shown in Figs. 1 and 8 to determine the
100 extent of the rotation of the fountain roll 13 through rock-lever 59. Rotatably secured to the tie-rod 15 is the cam-plate 70 adapted to engage the pin 71 extending laterally from the pawl 65. The lower end 72
105 of the cam-plate 70 is in the form of a sector and has the gear 73 formed in its periphery in mesh with the pinion 74 mounted on the shaft 75 journaled in the casing 56 which is operated by the handle 76. By
110 this means the operator, in laterally shifting the cam-plate 70, may regulate the number of teeth over which the pawl 65 is reciprocated in any stroke of the rock-lever 59, for when the pawl rides on the high part of the
115 cam, no teeth in the ratchet are engaged thereby. Hence the extent of the movement of the ratchet 66 is governed by the position of the cam-plate 70, as the pawl 65 will not drop into the ratchet until the high
120 part of this cam is cleared.

Means are provided to lift the pawl 65 out of the ratchet 66 and maintain same wholly disengaged therefrom, best shown in Figs. 1 and 9. The curved arm 77 is mount-
125 ed on the stub shaft 78 journaled in the casing 56 and is operated by the handle 79. When this curved arm 77 is raised to engage the pin 71, the pawl 65 is held out of en-
130 gagement from the ratchet 66, which will

not rotate, but the operator can turn the handle wheel 69 to rotate the fountain-roll 13 free from the connecting mechanism in making the proper adjustments.

The operation of my improved dampening mechanism is substantially as follows: Assuming that the press is in operation and that the plate-cylinder 21 is driving the low-speed gear 28 which revolves the shaft 25, and in turn oscillates the rock-lever 59 to actuate the ratchet and pawl mechanism for rotating the fountain-roll 13 as hereinbefore described, the operator finds that it is advantageous to speed up the operations of both roll 13 and ductor 17 to transfer more water to the dampening roll 20 for the plate-cylinder 21; he then shifts the slide rod 42 to the left in Fig. 10, which causes the sliding bar 26 to carry the latch-tip 35 from the key-way 38 of the low-speed gear 28 to snap into the key-way 37 of the high-speed gear 29. This change of gears causes the shaft 25 to increase the speed of its revolution which speed is jointly transmitted to the fountain-roll 13 and ductor 17 from the cam 24 so that in a given cycle a greater part of its peripheral surface is brought into contact with the ductor roll 17 when the two rolls are brought into contact by the cam 24. When the slide rod 42 is pushed to the right the latch-tip 35 disengages itself from the key-way 37 and engages with the key-way 38 by such sliding reverse movement to the right; or if the operator wishes to manually revolve the fountain roll 13, free from the drive of the press, the latch-tip 35 is allowed to bear on the intermediate block 30 as shown in Fig. 4, and the operator can then turn the hand-wheel 69 after he has lifted the pawl 65 from the ratchet 66 by operating the handle 79 which raises the curved arm 77 as heretofore described.

My improved mechanism therefore provides a device in which the relative operations of both fountain-roll and ductor-roll may be varied at will to increase or decrease the amount of moisture transferred to the dampening roll 20, combined with independent means to separately regulate and control the extent of rotation of the fountain-roll 13 through the ratchet and pawl drive for this roll from its adjustment of the position of the cam-plate 70, as heretofore described. By my improvement the ductor roll 17 can be immediately returned to the distributing roll 19 for the first dampening roll 20 and remain in contact with the roll 19 for a greater period of rotation thereby producing a more equalized distribution of the moisture. Furthermore I have shown and described an improved means and method of transferring water from the fountain to the plate-cylinder, and thereafter either removing any excess water applied by the first roll 20, or supplying any defi-

ciency of moisture, so as to properly equalize the water distribution before the plate reaches the inking mechanism for the plate-cylinder 21.

I claim as my invention:

1. A dampening mechanism comprising a fountain-roll, means for intermittently rotating same, and an interchangeable connection for actuating said rotating means at different speeds.

2. A dampening mechanism comprising a fountain-roll, means for intermittently rotating same, and manually-operated interchangeable means for actuating said rotating means at different speeds operable during any part of the cycle.

3. A dampening mechanism comprising a fountain-roll, means comprising a change-gear mechanism for intermittently rotating same at different speeds, and means for shifting said mechanism.

4. A dampening mechanism comprising a fountain-roll, means comprising a change-gear mechanism for intermittently rotating same at different speeds, and manual means for shifting said mechanism in either direction.

5. In a dampening mechanism, a rotatable fountain-roll, a coating ductor-roll, a common means for intermittently rotating said fountain-roll and oscillating said ductor-roll, and an interchangeable connection for varying the speed of said common means.

6. In a dampening mechanism, a rotatable fountain-roll, a coating ductor-roll, a common means for intermittently rotating said fountain-roll and oscillating said ductor-roll and a manually-operated interchangeable connection for varying the speed of said common means.

7. In a dampening mechanism, an intermittently rotatable fountain-roll, a coating oscillatable ductor-roll, means comprising a change-gear mechanism for actuating each of said rolls at different speeds, and means for shifting said mechanism.

8. In a dampening mechanism, an intermittently rotatable fountain-roll, a coating oscillatable ductor-roll, a common means comprising a change-gear mechanism for actuating each of said rolls at different speeds, and means for shifting said mechanism in either direction.

9. In a dampening mechanism, an intermittently rotatable fountain-roll, a coating oscillatable ductor-roll, a common means for respectively operating each of said rolls, and a manually-operated interchangeable connection to control the speed and extent of rotation of said fountain-roll.

10. In a dampening mechanism, a fountain-roll, a coating ductor-roll both having a common means for operating same at like speeds in unison, an interchangeable con-

nection for actuating said common means at different speeds, and means to control the speed and extent of the rotation of said fountain-roll during any part of the cycle of operation.

11. In a dampening mechanism, an intermittently rotatable fountain-roll, a coacting oscillatable ductor-roll, means comprising a change-gear mechanism for actuating each of said rolls at different speeds, means for shifting said gears, and means to separately control the extent of rotation of said fountain-roll without affecting the oscillation of said ductor roll.

12. In a dampening mechanism, an intermittently rotatable fountain-roll, a coacting oscillatable ductor-roll, means comprising a change-gear mechanism for actuating each of said rolls, at different speeds, means for shifting said gears, and means to separately control the extent of rotation of said fountain roll independently of the actuation of said ductor-roll.

13. In a dampening mechanism, an intermittently rotatable fountain-roll, a coacting oscillatable ductor-roll, means comprising a change-gear mechanism for actuating each of said rolls, at different speeds, manual means for shifting said gears, and independent manual means to separately control the extent of rotation of said fountain-roll independently of the actuation of said ductor-roll.

14. In a dampening mechanism, a fountain-roll and a coacting oscillatable ductor-roll, a common means for actuating said rolls including a ratchet and pawl mechanism for intermittently rotating said fountain-roll, a single interchangeable connection for actuating said common means at different speeds, and means for variably shifting the engagement of pawl with ratchet to vary the extent of rotation of said fountain roll during any part of the cycle of operation.

15. In a dampening mechanism, a fountain-roll and a coacting oscillatable ductor-roll, a common means for actuating said rolls including a ratchet and pawl mechanism for intermittently rotating said fountain-roll, a single manual interchangeable connection for actuating said common means at different speeds, and independent manual means for variably shifting the engagement of pawl with ratchet to vary the extent of

rotating of said fountain roll during any part of the cycle of operation.

16. In a dampening mechanism, a fountain-roll and a coacting oscillatable ductor-roll, a common means including a change-gear mechanism for actuating said rolls at different speeds and also including a ratchet and pawl mechanism for intermittently rotating said fountain-roll, a single means for varying the speed of said common means, and means for variably shifting the engagement of pawl with ratchet to vary the extent of rotation of said fountain-roll.

17. In a dampening mechanism, a fountain-roll and a coacting oscillatable ductor-roll, a common means including a change-gear mechanism for actuating said rolls at different speeds and also including a ratchet and pawl mechanism for intermittently rotating said fountain-roll, a single manual means for varying the speed of said common means, and independent manual means for variably shifting the engagement of pawl with ratchet to vary the extent of rotation of said fountain roll without affecting the oscillation of said ductor roll.

18. In a dampening mechanism, a fountain-roll, means comprising a coacting ratchet and pawl mechanism for rotating said roll, manually-operated means for holding said pawl free from said ratchet at any part of the cycle, and manual means for variably shifting the engagement of pawl and ratchet to vary the extent of rotation of said fountain roll.

19. In a dampening mechanism, a fountain roll, means for intermittently rotating said roll, a distributing roll, an intermediate ductor roll oscillatable between said fountain and said distributing rolls, means for varying the extent of rotation of said fountain roll, and means for varying the duration of contact of said ductor with either of the other rolls.

20. In a dampening mechanism, a fountain roll, means for intermittently rotating said roll, a distributing roll, an intermediate ductor roll oscillatable between said fountain and said distributing rolls, means for varying the extent of rotation of said fountain roll, and means for varying the duration of contact of said ductor with both said other rolls.

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