

No. 773,516.

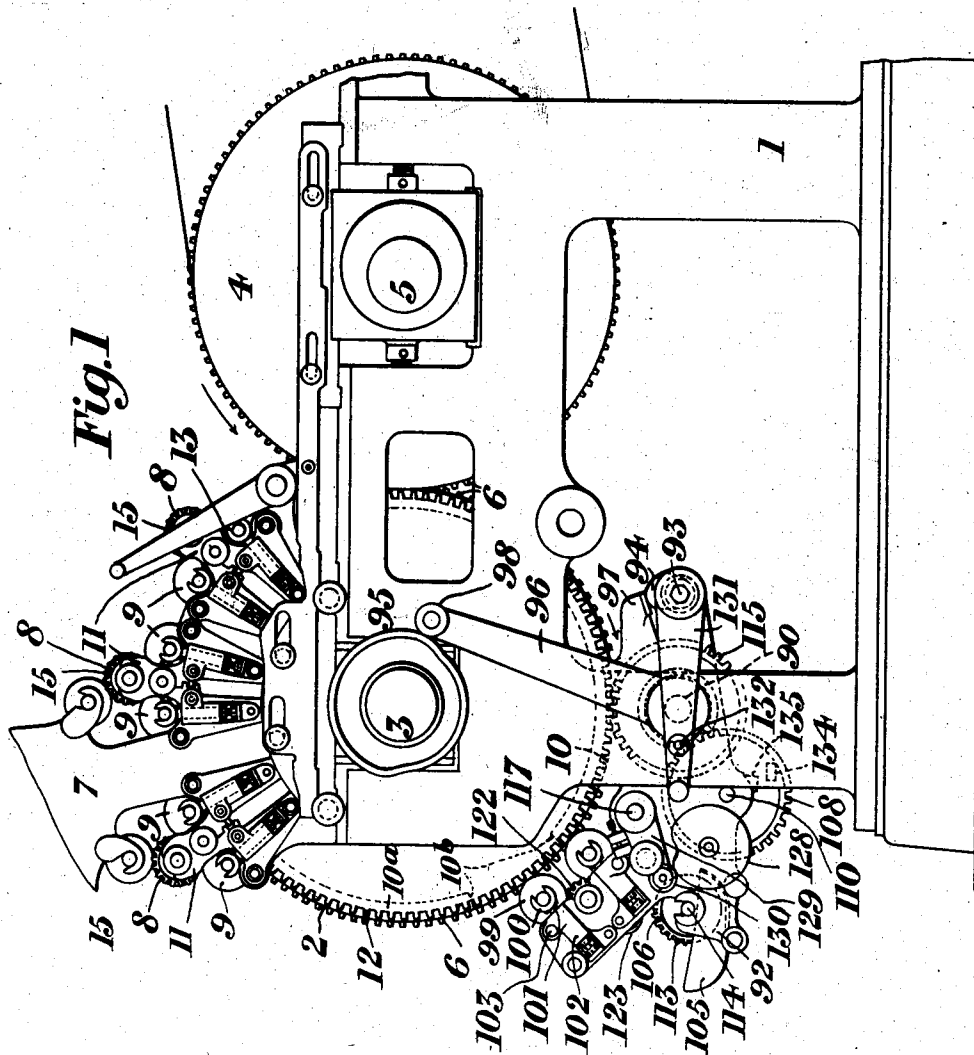
PATENTED OCT. 25, 1904.

T. M. NORTH.  
DAMPING MECHANISM OF ROTARY PRINTING MACHINES.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses  
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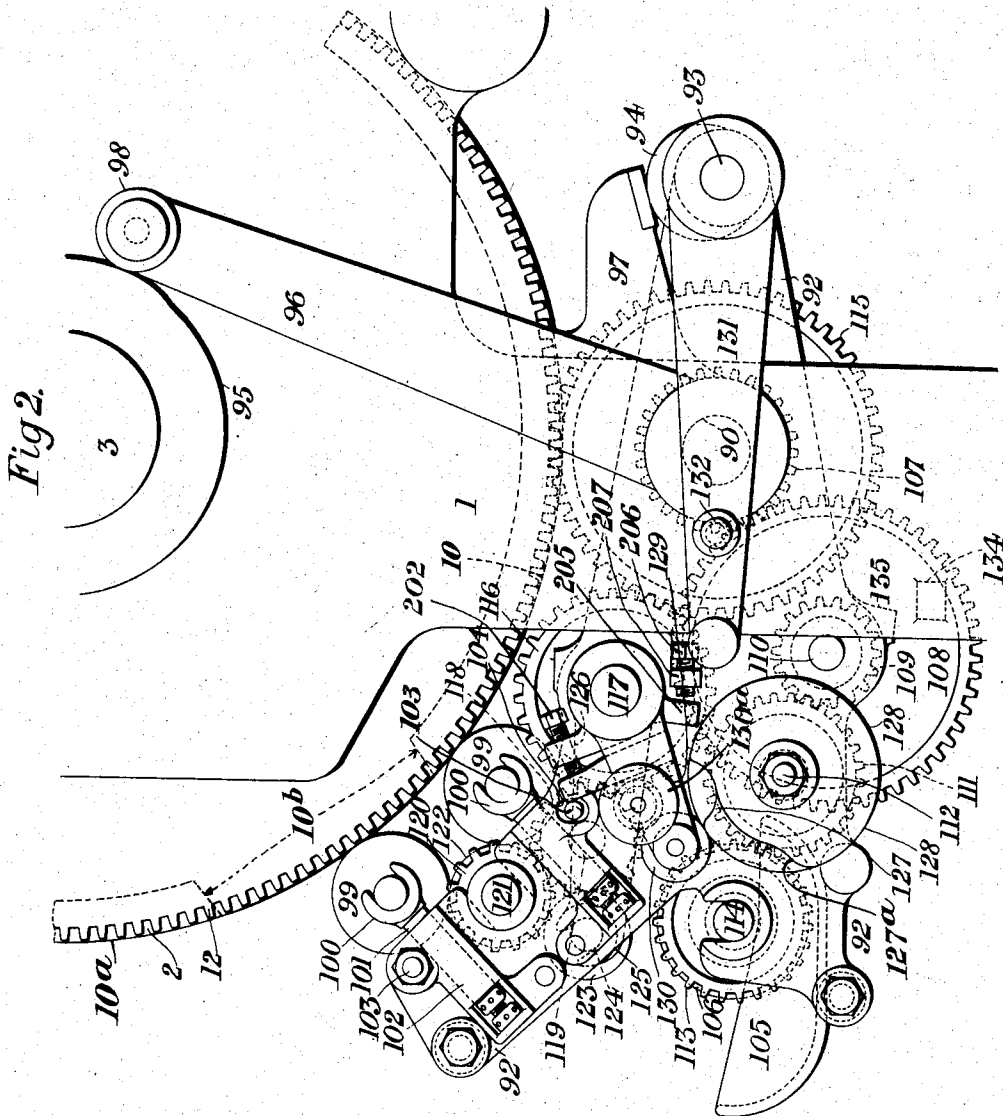
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APPLICATION FILED AUG. 24, 1903.

NO MODEL.

4 SHEETS—SHEET 2.



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No. 773,516.

PATENTED OCT. 25, 1904.

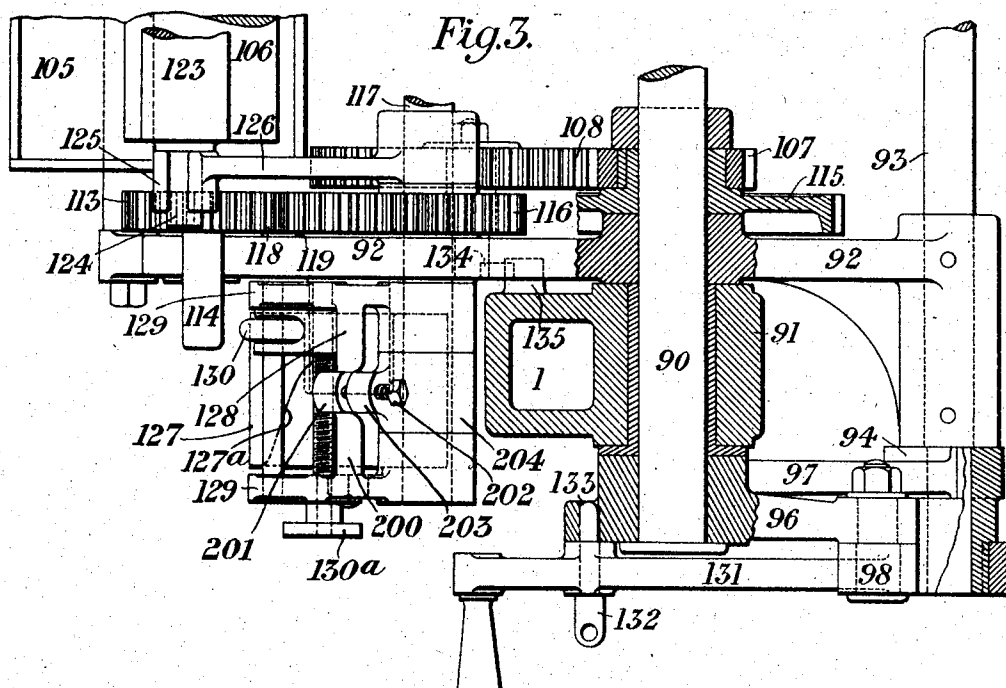
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# DAMPING MECHANISM OF ROTARY PRINTING MACHINES.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

4 SHEETS—SHEET 3.



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No. 773,516.

PATENTED OCT. 25, 1904.

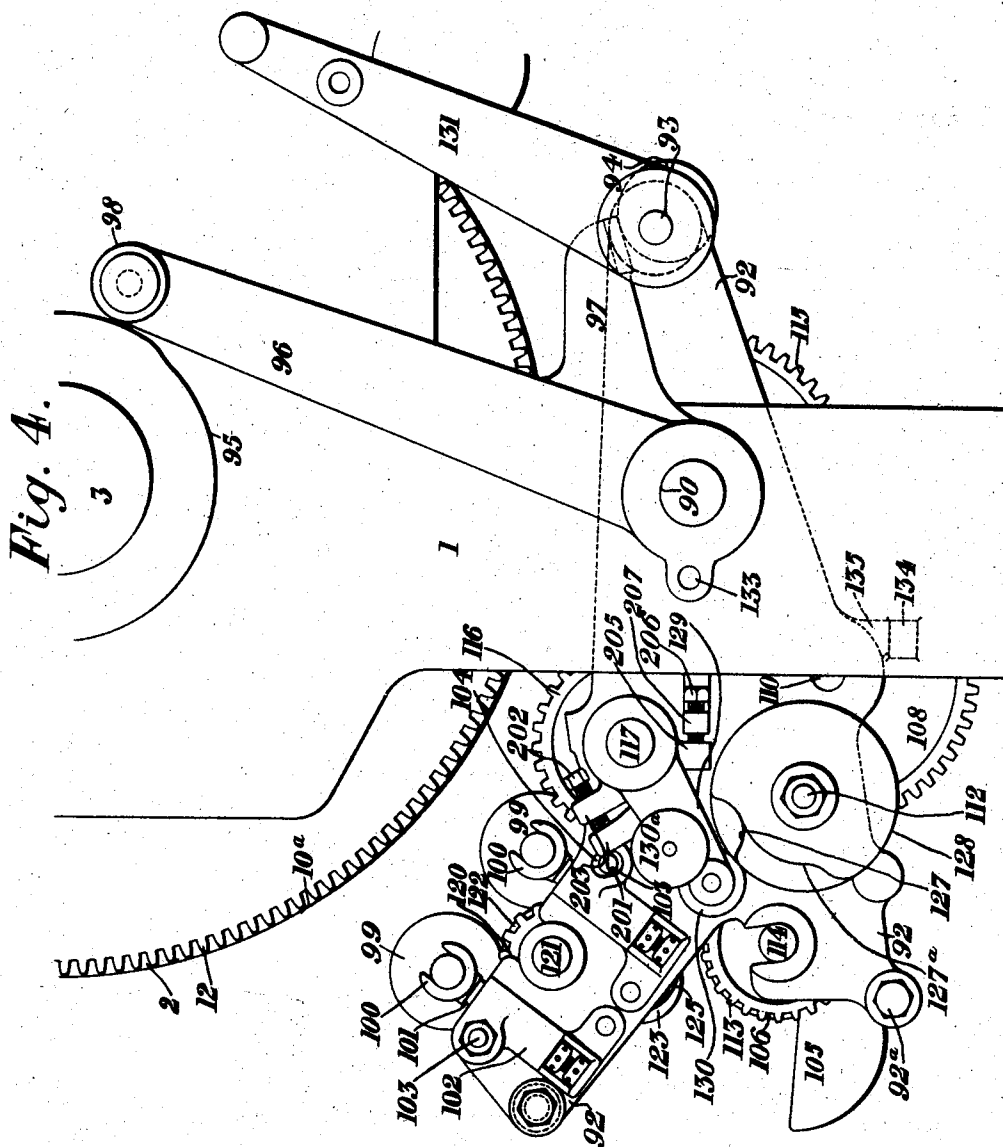
T. M. NORTH.

DAMPING MECHANISM OF ROTARY PRINTING MACHINES.

APPLICATION FILED AUG. 24, 1903.

NO MODEL.

4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

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LINOTYPE COMPANY, LIMITED, OF LONDON, ENGLAND.

## DAMPING MECHANISM OF ROTARY PRINTING-MACHINES.

**SPECIFICATION** forming part of Letters Patent No. 773,516, dated October 25, 1904.

Application filed August 24, 1903. Serial No. 170,604. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS MERRIFIELD NORTH, of Kingswood Lodge, Ellesmere Road, Altrincham, Cheshire, England, have invented certain new and useful Improvements in the Damping Mechanism of Rotary Printing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in the damping mechanism of any rotary printing-machine that prints according to the lithographic method from any suitable surface.

It consists in the combinations hereinafter described in connection with the accompanying drawings and claimed in the respective claims.

Figure 1 is a side elevation of a printing-couple fitted with the improved damping mechanism, showing it in position to damp the printing-surface; Fig. 2, a side elevation of the said mechanism in the same position and on an enlarged scale. Fig. 3 is a plan corresponding with Fig. 2, but partly in section. Fig. 4 is a view similar to Fig. 2, but showing the mechanism in its inoperative position.

1 is part of one side frame of the printing-machine, the opposite side frame not showing in the figures; 2, the printing-cylinder; 3, its shaft turning in suitable bearings in the side frames; 4, the impression-cylinder; 5, its shaft, also turning in suitable bearings in the said side frames; 6, the gearing between the two cylinders 2 and 4, and 7 a portion of the inking mechanism. These seven parts are as heretofore.

8 8 8 are the vibrator-rollers of the inking mechanism, and they coöperate, as heretofore, with the rollers 9, that ink the printing-surface 10 of the printing-cylinder 2. They are journaled in fixed bearings in brackets 11, bolted to suitable brackets fast to each side frame 1, and are all rotated together by a gear 12, fast on one end of the printing-cylinder 2, and which gear 12 engages for the purpose with intermediate spur-gears 13, turning on

suitable stud-axles fast to the brackets 11 on the respective side frame of the machine and driving spur-pinions 15, respectively, fast on the axles of the vibrator-rollers 8.

The damping mechanism is carried by a transverse shaft 90, supported (but preferably not turning) in suitable bearings 91 (only one of which is included in the figures) in the respective side frames of the machine. The operative parts of this mechanism are carried by two cheeks 92, pivoted one at each end of the shaft 90 and just inside the respective side frame 1, as clearly shown in Fig. 3. It can therefore rock on the shaft 90 up and down and as far in either direction as the present invention requires—that is, into contact with the printing-surface 10, out of contact with the ink-surface 10<sup>a</sup>, which is coradial with the surface 10, and far enough away from the latter to make space enough for the damping-rollers to be taken out.

The damping mechanism is rocked by the following means:

The cheeks 92 are prolonged to the front of the machine, the front ends of these prolongations carrying a transverse shaft 93, which turns in suitable bearings therein.

94 is a cam fast on the shaft 93 in proper position thereon to engage with the cam 95 fast on the shaft 3 at the feeder side of the machine, through 96 97, the two arms of a bell-crank lever fulcrumed upon the shaft 90. The arm 96 is in permanent contact by means of the antifriction-roller 98 in the outer end of it with the cam 65, (excepting when the damping mechanism is down upon the stop 134, described farther on,) while the arm 97 is in permanent contact with the cam 94.

The rear part of the damping mechanism is heavier than the front by reason of its containing the damping-rollers, the water-trough, the rollers for conveying water from the trough to the damping-rollers, and nearly the whole of the two trains of gearing that actuate all the rollers above mentioned.

99 99 are the two damping-rollers, each turning in the usual crutch-bearings 100, fast upon the tops of pins 101, fitting in sockets 102, fixed to the respective cheek 92 by bolts

103 103, and adjustable radially to and from the printing-cylinder by the bolts 103, being passed through slots 104 instead of holes in the cheeks 92.

5 105 is the water-trough.

106 is the trough-roller rotated in bearings in the cheeks 92 92 by a train of gearing consisting of a gear 115, loose on the shaft 90 and driven by the gear 12, already described, a  
10 gear 107 incorporated with the gear 115, a gear 108, (see Fig. 2,) and pinion 109, fast on a shaft 110, turning in suitable bearings in the cheeks 92 92, a gear 111, fast on a short shaft 112, turning in suitable bearings in the re-  
15 spective cheek and engaging with the gear 113, fast on the spindle 114 of the trough-roller 106.

The damping-rollers 99 99 are rotated by a train of gearing consisting of the gear 115, already described, a gear 116, loose on the  
20 shaft 117, rocking in suitable bearings in the cheeks 92, a gear 118, turning on a stud-axle 119, carried by the cheek 92 on the feeder side of the machine, and a gear 120, fast on the spindle 121 of the distributor-roller 122, turn-  
25 ing in crutch-bearings in the cheeks 92 92, and with which roller 122 the two rollers 99 99 are in constant contact.

The water is conveyed from the trough-roller 106 to the distributor-roller 122 by a  
30 ductor-roller 123, the spindle 124 of which turns in suitable bearings 125 in the rear ends of arms 126, fast upon the shaft 117, above mentioned, and rocked between the said rollers 106 and 122 by a cam 127, combined with  
35 a drum 128, both cam and drum fast on the shaft 112, above mentioned, and a second pair of arms 129 loosely mounted upon the feeder end of the shaft 117. These two arms 129 are held together by a cross-piece 200.

40 201 is an abutment projecting from the cross-piece 200, and 202 a set-screw which works through an arm 203, springing from a hub 204, fast upon the shaft 117, just mentioned, and fitting loosely between the two  
45 arms 129. The set-screw 202 is made to project more or less through the arm 203 and against the abutment 201 to adjust the position of the roller 123 between the rollers 106 and 122. The necessity for this adjustment  
50 arises out of the liability of the roller 123 (which is covered with felt) to shrink, and as the distance between the rollers 106 and 122 is constant, more throw is given to the cam 127 than would be required for the full size  
55 of the roller 123, so that when it is large the roller 130 in one of the arms 129 following the contour of its cam will take the abutment 201 away from the set-screw 202, whereupon the arm 205 on the hub 204 will contact with  
60 the set-screw 206, carried by the lug 207 on the cheek 92 on the feeder side of the machine.

Fig. 3 shows a helically-shaped extension 127<sup>a</sup> of the cam 127. The function of this extension is to give the roller 123 more time  
65 to rest upon the roller 106, which is desirable

under certain circumstances and is exercised by moving the cam-roller 130 across the cam 127 by means of a hand-wheel and screw 130<sup>a</sup>. The cam-roller 130 is shown as upon the disk 128.

70 The cam 95 is so proportioned that it will keep both rollers 99 in contact with the printing-surface 10; but as the ink-surface 10<sup>a</sup> is coradial with it the rollers 99 if they were not moved away would roll over it and be  
75 inked. To prevent this inking, the cam 95 is made to lift them to the printing-surface 10 and drop them away from the ink-surface 10<sup>a</sup>. This lifting and lowering take place when the gaps 10<sup>b</sup> are opposite the said rollers. The  
80 weight of the rear part of the damping mechanism keeps the cam 94 in contact with the arm 97 and the roller 98 on the arm 96 both of the bell-crank lever above mentioned in contact with the cam 95. Consequently when  
85 the high portion of this cam 95 is opposite the roller 98 the damping-rollers 99 are rocked into contact with the printing-surface 10, and when the drop in the said cam 95 is opposite the said roller 98 the weight of the damping  
90 mechanism rocks the rollers 99 away from the ink-surface 10<sup>a</sup>. The present invention also makes use of the same weight of the damping mechanism to rock it away from the printing-cylinder 2 for a distance that will al-  
95 low of the damping-rollers 99 being removed from the damping mechanism and, further, of keeping all the rollers of the latter—*i. e.*, the trough-roller 106, the transferring-roller 123, the distributor-roller 122, and the damping-  
100 rollers 99—running in working contact with each other during the time that the latter are at the above-mentioned distance from the printing-cylinder 2. To allow of the weight  
105 of the rear part of the damping mechanism so rocking it, the shaft 93 has a hand-lever 131, keyed on its outer end on the feeder side of the machine. The outer or rear end of this lever 131 is normally held locked to the bell-  
110 crank lever 96 97 by a locking-pin 132, (shown best in Fig. 3,) sliding transversely through the said lever 131 into a socket 133, Figs. 3 and 4, in the said lever 96 97. The lever 131 is unlocked from the bell-crank lever and  
115 swung over to the front—*i. e.*, to the right of the figures—as shown in Fig. 4, whereupon the damping mechanism is rocked until the lower portion of the cam 94 bears against the arm 97, the roller 98 on the arm 96 being then  
120 out of contact with the cam 95 to allow the mechanism to rest on the stops 134. There is one of these stops on each side frame 1 of the machine upon which a suitable foot 135 on each cheek 92 rests when the damping  
125 mechanism is at the required distance from the printing-cylinder 2, and the position of the shaft 93 and stops 134, as well as the dimensions of the bell-crank lever 96 97 and cam 94, are proportioned accordingly. When the  
130 damping mechanism is in its lowered position,

as shown in Fig. 4, the damping-rollers 99 are at such a distance from the printing-cylinder 2 as to establish a space through which they can easily be removed from the machine in a direction transverse to the direction of their axes, thus overcoming a difficulty hitherto experienced with existing damping mechanism of the same or a similar class.

I claim—

1. The combination of printing-cylinder; damping-rollers adapted to contact with the printing-cylinder; distributor-roller in contact with the damping-rollers; water-trough; trough-roller rotatable in the water-trough; a ductor-roller; means for vibrating the ductor-roller into contact with the trough-roller and distributor-roller alternately; pivoted cheeks carrying the said damping, distributing, ductor and trough rollers and the trough; and means for turning the cheeks on their pivot to move the said rollers and trough toward and away from the printing-cylinder.

2. The combination of printing-cylinder; damping-rollers adapted to contact with the printing-cylinder; distributor-roller in contact with the damping-rollers; water-trough; trough-roller rotatable in the water-trough; a ductor-roller; means for vibrating the ductor-roller into contact with the trough-roller and distributor-roller alternately; pivoted cheeks carrying the said damping, distributing, ductor and trough rollers; means for turning the cheeks on their pivot; a gear coaxial with the pivot of the cheeks; means for rotating this gear; and gearing operatively connecting the said gear with the distributor-roller and trough-roller respectively.

3. The combination of printing-cylinder; damping-rollers adapted to contact with the printing-cylinder; distributor-roller in contact with the damping-rollers; pivoted cheeks carrying the said damping and distributing rollers; means for turning the cheeks on their pivot to move the said rollers toward and away from the printing-cylinder; a gear coaxial with the pivot of the cheeks; means for rotating this gear; and gearing operatively connecting the said gear with the distributor-roller.

4. The combination of printing-cylinder; damping-rollers adapted to contact with the printing-cylinder; distributor-roller in contact with the damping-rollers; a ductor-roller; means for vibrating the ductor-roller into and out of contact with the distributor-roller; pivoted cheeks carrying the said damping and distributing rollers and means; means for turning the cheeks on their pivot to move the said rollers toward and away from the printing-cylinder; a gear coaxial with the pivot of the cheeks; means for rotating this gear; and gearing operatively connecting the said gear with the means for vibrating the ductor-roller.

5. The combination in a printing-machine

of a water-trough; trough-roller rotatable in the water-trough; a ductor-roller; means for vibrating the ductor-roller into and out of contact with the trough-roller; pivoted cheeks carrying the said trough-roller and vibrating means; means for turning the cheeks on their pivot to move the said rollers toward and away from the printing-cylinder; a gear coaxial with the pivot of the cheeks; means for rotating this gear; and gearing operatively connecting the said gear with the means for vibrating the ductor-roller.

6. The combination in a printing-machine, of a water-trough; trough-roller rotatable in the water-trough; pivoted cheeks carrying the trough and roller; means for turning the cheeks on their pivot to move the said trough and roller toward and away from the printing-cylinder; a gear coaxial with the pivot of the cheeks; means for rotating this gear; and continuously-rotating gearing operatively connecting the said gear with the trough-roller, and imparting continuous rotary motion to the said trough-roller.

7. The combination in a printing-machine, of printing-cylinder; rocking damping mechanism having removable damping-rollers; a cam on the shaft of the printing-cylinder; cam on the damping mechanism; bell-crank lever having its arms normally in constant contact with the said cams respectively; and means for moving the cam on the damping mechanism away from the respective arm of the bell-crank lever to allow the weight of the damping mechanism to rock it away from the printing-cylinder.

8. The combination in a printing-machine, of printing-cylinder; rocking damping mechanism having removable damping-rollers; cam on the shaft of the printing-cylinder; cam on the damping mechanism; bell-crank lever having its arms normally in constant contact with the said cams respectively; means for rocking the cam on the damping mechanism away from the respective arm of the bell-crank lever to allow the weight of the damping mechanism to rock it away from the printing-cylinder and a locking device to lock the said means out of action.

9. The combination in a printing-machine, of printing-cylinder; rocking damping mechanism having removable damping-rollers; cam on the shaft of the printing-cylinder; cam on the damping mechanism; bell-crank lever having its arms normally in constant contact with the said cams respectively; means for moving the cam on the damping mechanism away from the respective arm of the bell-crank lever to allow the weight of the damping mechanism to rock it away from the printing-cylinder; and stops for the damping mechanism to rest it during the time it is so away from the said cylinder.

10. The combination in a printing-machine,

of printing-cylinder; rocking damping mechanism having removable damping-rollers; means for allowing the weight of the damping mechanism to rock it away from the printing-cylinder for a distance that will allow of the damping-rollers being removed; means for locking the last-mentioned means out of action; and gearing driven by the printing-cylinder to keep all the rollers of the damp-

ing mechanism rotating in any position of the latter.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

THOMAS M. NORTH.

Witnesses:

J. H. JOY,

T. R. G. PARKER.