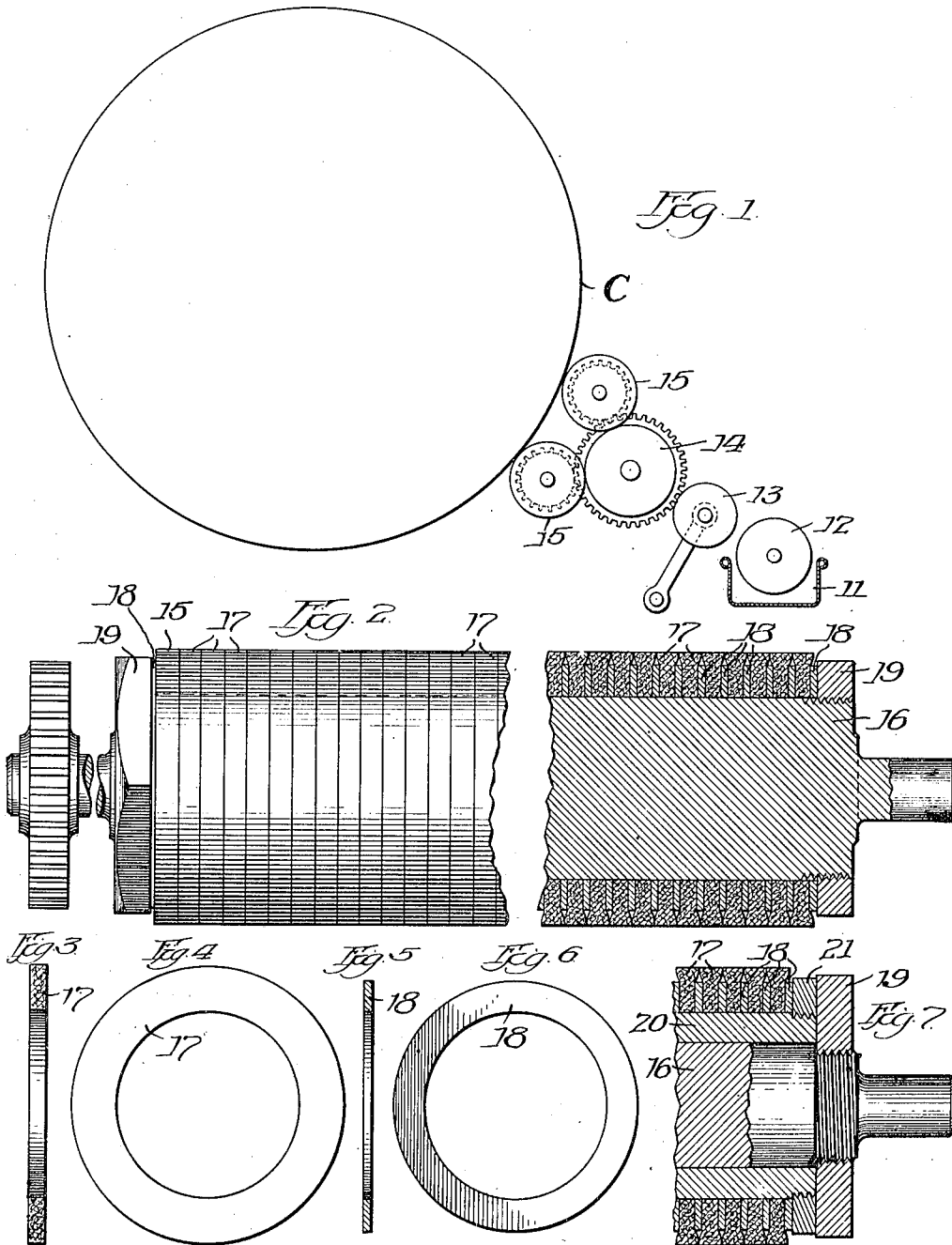


C. HENDERSON.
LITHOGRAPHIC DAMPING ROLLER.
APPLICATION FILED NOV. 29, 1915.

1,281,003.

Patented Oct. 8, 1918.



Witnesses:

Ed. Davidson
Lewis Freist

Inventor
Carl Henderson.

By C. C. Futhrum
Att'y.

UNITED STATES PATENT OFFICE.

CARL HENDERSON, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS & MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LITHOGRAPHIC DAMPING-ROLLER.

1,281,003.

Specification of Letters Patent.

Patented Oct. 8, 1918.

Application filed November 29, 1915. Serial No. 64,033.

To all whom it may concern:

Be it known that I, CARL HENDERSON, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lithographic Damping-Rollers, of which the following is a specification.

In connection with lithographic printing presses, damping rollers are used and it has been usual to employ for this purpose a mandrel of metal or other non-yielding substance with a cylindrical covering of felt or other similar absorbent fabric by which the water is taken up and transferred. It is necessary that the surface speed of the roller shall correspond to that of the co-acting cylinder and it is not uncommon for the fabric covering of the rollers to "creep" in spots, due to slight differences in surface speed, and thus form local protuberances or wrinkles which prevent perfect operation.

As it is exceedingly difficult if not practically impossible to secure and maintain absolute uniformity of surface speed, I have avoided the difficulties above pointed out by designing an absorbent covering for the damping roller which provides for the necessary slippage and maintains a smooth surface at all times.

In order that the invention may be readily understood, preferred and modified embodiments of the same are set forth in the accompanying drawings and in the following detailed description based thereon. It will be obvious, however, that the invention may be embodied in other varied and constructional forms, wherefore it is to be understood that the drawing and description are to be taken in an illustrative and not in an unnecessarily limiting sense. In these drawings,

Figure 1 is a diagrammatic view illustrating the damping mechanism of a press of the lithographic type;

Fig. 2 is a side elevation of the damping roller showing one end in longitudinal section;

Figs. 3 and 4 are respectively sectional and elevational views of an absorbent disk forming one of the component parts of the rollers;

Figs. 5 and 6 are similar views of a spac-

ing metal disk or ring forming one of the component parts of the roller; and

Fig. 7 is a fragmentary sectional view of a modification.

In Fig. 1 of the drawing is shown in a diagrammatic manner the water trough 11, the water roller 12, the ductor roll 13, the distributing roll 14, and the damping roller 15 arranged in a train in the usual manner to act upon the blanket cylinder C of a press. It is with the formation of the damping rollers 15 that the present invention has to do.

The dampening roller comprises a mandrel 16 having arranged thereon a series of yielding absorbent disks 17 of felt or other similar material suitable for the purpose. Between the adjacent absorbent disks 17 and alternating therewith is arranged a series of hard, firm non-absorbent disks 18 of slightly less exterior diameter than the absorbent disk 17. The disks 17 and 18 are in the form of rings having an interior diameter corresponding to that of the exterior diameter of the mandrel 16 so that they can be readily slipped upon the mandrel and will turn thereon. At each end of the mandrel 16 are threaded nuts 19 by means of which the series of disks may be clamped axially together while permitting of angular slippage on the mandrel. The ease of slippage will be controlled by the degree to which the nuts 19 are pressed against the series of disks.

It will be observed that by reason of the difference in exterior diameter of the disks 17 and 18, the former will project peripherally beyond the latter, and when axial pressure is applied by means of the nuts 19 that portion of the disk 17 between the firm spacing disk 18 will be so far compressed that the peripheral portions of the disk 17 will meet over the outer edges of the disks 18 and thereby bridge the space between each of the adjacent absorbent disks 17 and produce an unbroken absorbent periphery for the roller. This is clearly illustrated in the right hand end of Fig. 2 of the drawing. The extreme terminal spacing disk 18 of the series, adjacent the nut 19, act as anti-friction members or washers permitting of the angular slippage of the entire series of disks upon the mandrel independ-

ently of the nuts 19. It will be clear, however, that where the provision of slippage is not desired, the nut 19 may be screwed home upon the series of disks sufficiently to

5 prevent any angular slippage.

In Fig. 7 is shown a slight modification, the essential difference being that upon the mandrel 16 is arranged a sleeve 20 in such manner as to provide for angular slip-
10 page thereon; the rings 17 and 18 being mounted upon this sleeve, and clamped thereon by means of the nut 21. The disks 17 and 18 would be clamped by means of the nut 21 upon the sleeves 20 with
15 sufficient degree of pressure to prevent angular slippage upon the sleeve; the requisite slippage upon the mandrel being between the sleeve 20 and the mandrel 16, the disks would be indirectly under the control of
20 the adjusting nut 19, as in the former case. However, the degree of pressure exerted by the nut 19 to control slippage would be entirely independent of the axial compression exerted upon the disks 17 and 18 by the
25 end clamp or nut 21.

It will be noted that the two constructions shown embody the important advantageous feature that the moisture in the roll is confined substantially to the periphery thereof,
30 the central portion being tightly compressed between the spacing disk while the peripheral portion is comparatively free from compression. Moreover, the roller is without seam and is thus perfectly true and remains
35 true in use. A further advantage is the fact that by reason of the provision for slippage the damping rollers may be positively driven instead of by friction only.

I claim:

40 1. In a device of the character described, a roll comprising a mandrel, a series of yielding absorbent rings rotatably mounted on the mandrel, and means to clamp the series of rings together axially of the man-
45 drel.

2. In a device of the character described, a roll comprising a mandrel, a series of yielding absorbent rings and of interposed relatively unyielding spacing rings of less
50 diameter rotatably mounted on the mandrel, and means to clamp the series of rings together axially of the mandrel.

3. In a device of the character described, a roll comprising a mandrel, a series of yield-
55 ing absorbent rings and of interposed relatively unyielding spacing rings of less diameter rotatably mounted on the mandrel, and means to clamp the series of rings together axially of the mandrel and to regulate the
60 ease of rotation or angular slippage on the mandrel.

4. In a damping roller, the combination

of a mandrel, a series of yielding absorbent rings thereon, a series of firm spacing rings of but slightly less diameter arranged be- 65
tween adjacent yielding rings, and nuts threaded on the ends of the mandrel to clamp the series of firm and yielding rings together axially of the mandrel, whereby to isolate the absorbent rings except at their 70
edges and to cause the projecting peripheries of the adjacent yielding ring to meet beyond the peripheries of the spacing rings to form an unbroken absorbent peripheral surface, the clamping action of the nuts be- 75
ing limited to an extent to permit of angular slippage of the rings relative to the mandrel.

5. In a damping roller, the combination of a mandrel, a series of yielding absorbent 80
rings rotatable thereon, a series of firm spacing rings of less diameter arranged between adjacent yielding rings, and nuts threaded on the ends of the mandrel to clamp the series of firm and yielding rings 85
together axially of the mandrel, whereby to cause the projecting peripheries of the adjacent yielding rings to meet beyond the peripheries of the spacing rings to form an unbroken absorbent peripheral surface while 90
providing for angular slippage of the series relative to the mandrel.

6. In a damping roller, the combination of a mandrel, a sleeve rotatable thereon, a series of yielding absorbent rings on the 95
sleeve, a series of firm spacing rings of less diameter arranged between the adjacent yielding rings upon the sleeve, a nut threaded on the end of the sleeve to clamp the series of firm and yielding rings together 100
axially thereof, and a nut threaded on the mandrel and engaging the end of the sleeve to control the angular slippage of the sleeve on the mandrel.

7. In a damping roller, the combination 105
of a mandrel, a sleeve rotatable thereon, a series of yielding absorbent rings on the sleeve, a series of firm spacing rings of less diameter arranged between the adjacent yielding rings upon the sleeve, a nut thread- 110
ed on the end of the sleeve to clamp the series of firm and yielding rings together axially thereof, and a nut threaded on the mandrel and engaging the end of the sleeve to control the angular slippage of the sleeve 115
on the mandrel, the clamping action of the two nuts being independent one of the other.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CARL HENDERSON.

Witnesses:

C. I. MANSUR,
C. D. GIBBS.