Dec. 23, 1952 C. E. LARSEN 2,622,521

DAMPENING MECHANISM FOR OFFSET-PRINTING PRESSES AND OTHER PRINTING PRESSES

Filed May 12, 1947 2 SHEETS—SHEET 1

Fig. 1

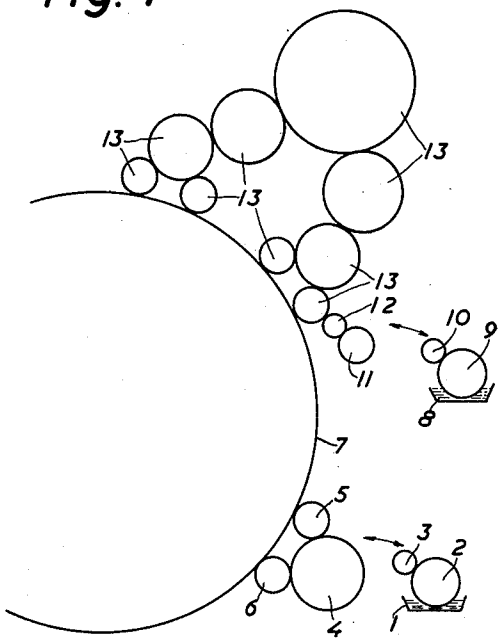


Fig. 2

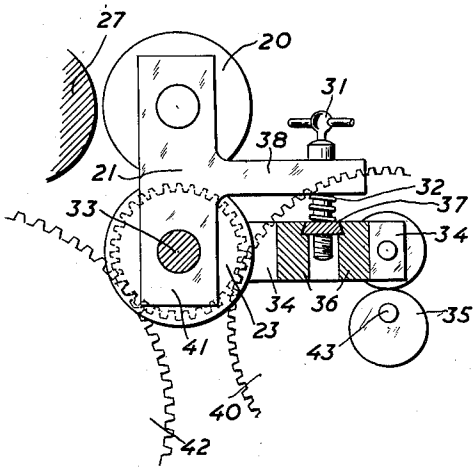
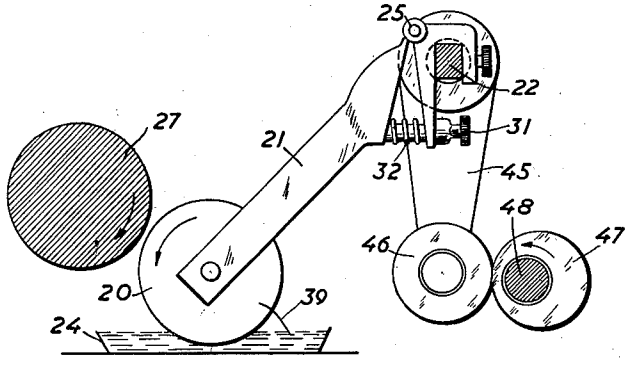


Fig. 3



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Fig. 4

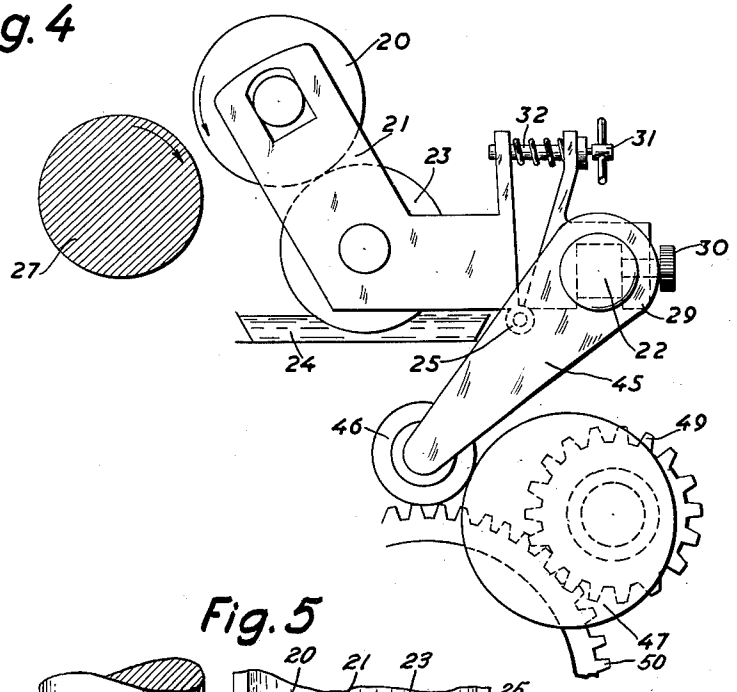
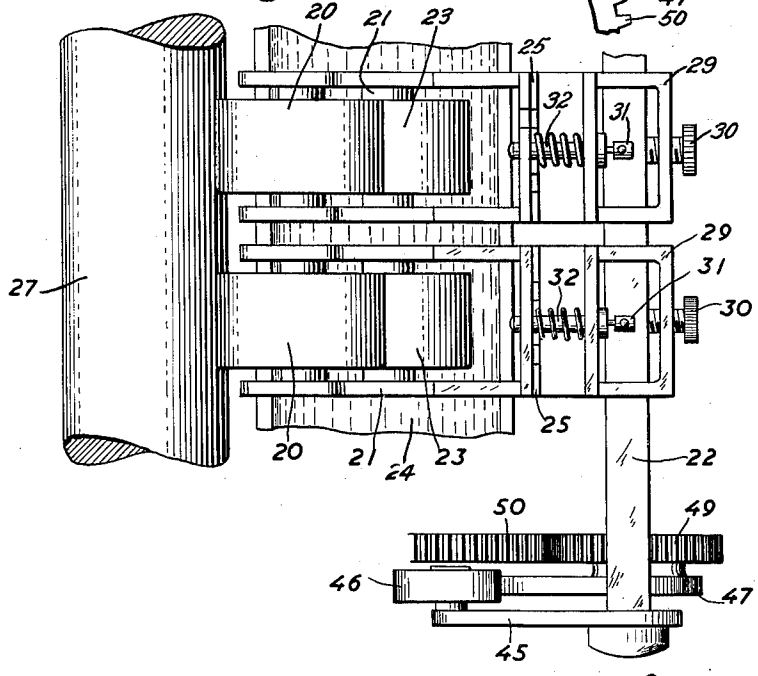


Fig. 5



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DAMPENING MECHANISM FOR OFFSET-PRINTING PRESSES AND OTHER PRINTING PRESSES

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2 Claims. (Cl. 101—148)

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Dampening works for offset-printing presses and other printing presses in which during the printing a supply of water or another dampening fluid is effected are generally so arranged that the dampening fluid is supplied to the printing cylinder by means of one or more dampening fluid carrying rollers, which are constantly or periodically in contact in part contingently with one another, in part to one side with the printing cylinder and to the other side with the dampening fluid.

A printing method is, however, also known for offset-printing, by which the dampening fluid is not transferred direct to the printing cylinder, but indirect through the ink-work, the dampening fluid thus supplied somewhere in the ink-work settling as a film over the ink and being supplied to the printing cylinder together with the ink. In this case the said dampening fluid carrying roller or rollers will thus be in contact to one side with the dampening fluid, to the other side with one of the rollers of the ink-work.

In dampening-works of the said two kinds there is often as one of the carrying rollers used a roller accommodated in oscillative arms, which during the operation perform a reciprocating oscillating motion, whereby the particular roller is only periodically brought in contact with the adjacent roller and on this deposes a wider or narrower streak of dampening fluid. By the smoothening activity of the succeeding rollers in the dampening- or ink-work the dampening fluid will gradually be evenly distributed.

It is also known in dampening-works as well as in ink-works to have one or more rollers which perform a reciprocating motion in the axial direction simultaneously with their rotation.

In the known dampening-works the quantity of dampening fluid may be regulated in different ways, e. g. by regulating the rate of revolutions of a roller dipping into the dampening fluid, the succeeding rollers having a rate of revolutions independent of the rate of revolution of the former roller, there being e. g. inserted a reciprocating oscillative roller between the roller, the rate of revolutions of which may be regulated and the other rollers. The supply of dampening fluid may also be regulated by the variation of the time of contact of a reciprocating oscillative roller with the other rollers, or by applying the fluid by spraying or sprinkling of a quantity of the dampening fluid that may be regulated.

In these known dampening-works the supply of dampening fluid cannot, however, be regulated

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in the longitudinal direction of the dampening rollers in such a way that at the individual points of the contact-generatrix of the dampening rollers with the printing cylinder or with one of the rollers of the ink-work may be supplied different quantities of dampening fluid.

Such a regulation has, however, been proposed by the dampening fluid being supplied by means of wicks which may be of varying thickness or have a varying capillary activity at different points of the width of the dampening-work.

Furthermore it is known to let wiper-plates or wiper-rollers rest against a fabric-coated roller that is dipping into the dampening-work in order to wipe off a greater or smaller part of the dampening fluid absorbed by the said roller.

Finally it is known to insert a thin plate with cuts of varying firm and width between two of the rollers of the dampening-work in order thereby to prevent contact between the particular rollers in some places where no transmission of dampening fluid is desired.

These known means for regulating the supply of dampening fluid in the longitudinal direction of the dampening-work are, however, extremely unreliable as to their working.

In accordance with this invention the result aimed at may on the other hand be attained by the dampening-work consisting of or comprising a dampening fluid carrying roller, the dampening fluid carrying surface of which is divided into zones, which either have different dampening fluid transmission or are separated by non-dampening fluid carrying spaces.

As hereby the dampening fluid is supplied in zones, which are in most cases separated from one another by zones where no dampening fluid is supplied, it will generally be necessary that a distribution takes place in the longitudinal direction of the rollers, which may be effected by rollers being inserted either into the dampening work or, if the dampening fluid supply is effected through the ink-work, into the latter, which rollers will perform a reciprocating motion in the axial direction simultaneously with their rotation.

The dampening fluid carrying roller, the dampening fluid carrying surface of which is divided into zones, may be substituted by a row of mutually independently movable or changeable rollers or narrow rolls, and the regulation of the dampening fluid supply may then either be effected by these rollers or narrow rolls being shifted, so that at some places they are brought closer to one another, in other places not so close, or by their being interchanged with other rollers or rolls of

greater or smaller breadth, or by their number being varied, or by all these means together, or by the rollers or narrow rolls being accommodated in oscillative holders, the oscillating motion of which may be regulated, so that they will individually for a shorter or longer period come in contact with another dampening fluid carrying roller, or with a roller in the dampening-work. The regulation may also be effected by the rollers being interchanged with rollers of another material.

The dampening fluid carrying roller, the dampening fluid carrying surface of which is divided into zones, may also consist of a number of more or less thick, circular discs or cylinders, which may be shifted in the axial direction and contingently be detachable from the shaft, or it may consist of a roller around which are placed shiftable or detachable rings. It may also consist of a roller, in the surface of which are turned recesses, whereby the dampening fluid transmission becomes less than if the roller had an unbroken surface, and then there may contingently be several carrying rollers with turned recesses of varying width and varying distribution at disposal.

The features necessary for understanding the invention may be seen on the drawing on which

Fig. 1 shows schematically a printing cylinder with two dampening-works placed in different ways, while

Fig. 2 is a vertical section of an embodiment of a holder, which performs an oscillating motion during the operation,

Fig. 3 is a vertical section of another embodiment with oscillating narrow carrying rolls.

Fig. 4 is an elevational view, partly in section, of the invention having an oscillating narrow carrying roll, and

Fig. 5 is a partial plan view of the embodiment of Fig. 4 with oscillating narrow carrying roll.

1—6 in Fig. 1 is a dampening-work intended for direct supply of dampening fluid to the surface of a printing cylinder 7. As to details the construction of the dampening-work may vary very much, but is here shown in a typical form. 1 is a water container, 2 a dipping roller, most frequently fabric-covered or with an iron surface and generally movable in variable steps. 3 is an oscillating, most frequently fabric-covered carrying roller, 4 a reciprocating roller most frequently of iron, and 5 and 6 two fabric-covered rollers which roll direct on the printing cylinder. According to the invention the dampening fluid carrying surface of the carrying roller 3 is divided in the whole length of the roller or in part of its length in zones, the width and/or spacing of which may be adapted to or is adapted to the requirements of dampening fluid. The roller will then most expediently not be fabric-covered, but consist of e. g. iron or brass, and as the reciprocating roller 4 should preferably be of iron, there may in this case between the rollers 3 and 4 expediently be inserted another roller, which e. g. may be fabric-covered.

8—12 is a dampening-work supplying dampening fluid over an ink-work of which some rollers, designated by 13, are shown. In a water container 8 a dipping roller 9, e. g. of caoutchouc, is submerged, and between this and a roller 11, which may also be of caoutchouc, is inserted an oscillating roller, the carrying roller 10. The connection between the dampening-work and the ink-work is in the embodiment shown effected by a reciprocating roller 12 of e. g. iron.

This roller may be etched so as not to be ink-receiving, whereby the rollers 9—11 are kept free of ink. The carrying roller 10 is according to the invention made with separated dampening fluid carrying zones.

In Figs. 4 and 5 the holders 21 carry besides a narrow roll 20 another narrow roll 23 which is in constant contact with it. The roll 23 dips down into a container 24 with dampening fluid. The holder 21 is by means of engagement means 29 fitted down over a carrying rod 22 and may be secured to it by a tightening screw 30. The carrying rod 22 may turn around a longitudinal axis and is intended for performing a backwards and forwards turning motion around the said axis while the machine is being operated. The holder is divided into two parts connected with a link 25. The said parts are mutually adjustable by means of an adjusting screw 31 screwed into the part of the holder carrying the rolls while passing freely in a hole in the part fitted on the carrying rod 22, which part is, however, by means of a spring 32 held against a collar on the adjusting screw.

When the carrying rod 22 turns backwards and forwards, the holder 21 will perform an oscillating motion. The oscillating movement is effected by means which consist of an arm 45 fixed on the bar 22 and carrying at its free end a roller 46 in rolling contact with the circumference of an eccentric disc 47 which is fixed upon a shaft 48 of a pinion 49 meshing with one of the driving wheels 50 of the printing machine. During this the oll 23 remains immersed in the fluid in the container 24. The roll 20 is during part of the motion pressed against a roller 27 of the dampening-work or the ink-work, and during the further motion in the same direction of the carrying rod 22 the part of the holder carrying the rolls 20 and 23 will on account of the play of the screw 31 remain stationary, the roll 20 being pressed against the roller 27 with a pressure determined by the tension of the spring 32. During the return motion of the carrying rod 22 the roll 20 is once more raised from the roller 27. The time, during which the roll 20 is in contact with the roller 27, is determined by the adjustment of the adjusting screw 31.

In the dampening-work a row of these holders are placed beside each other, two of which are shown in Figure 5, and the individual holders may as it be desired be removed from the carrying rod or moved nearer to or farther away from each other.

In Fig. 2 the narrow rolls 23 and the holders 21 are mounted on a shaft 33 running through the machine, on which shaft they may be shifted. At the ends, the shaft 33 carries rocker arms 34, one of which is shown, and which by means of an eccentric sheave 35 gives it a rocking motion. The eccentric disc 35 is fixed on the shaft 43 of a toothed wheel 40 meshing with a pinion 41 freely rotatable on the shaft 33 and meshing with one of the driving wheels 42 of the printing machine. The rocker arms 34 are interconnected by means of bars 36, in which is fitted a sliding block 37 for each set of holders. An adjusting screw 31 is screwed into the sliding block and passes through a hole in an arm 38 on the holders, this arm being by a spring 32 held against a collar on the adjusting screw 31.

The narrow rolls 20 are thereby made to act in a quite similar way as in Fig. 6 and are together with the holders and the rolls 23 freely

shiftable on the shaft 33, and likewise they are adjustable by means of the adjusting screw 31.

Instead of letting the rolls 23 dip down into a fluid container they may be in contact with one of the rollers of the dampening-work, to which is by direct dipping or otherwise supplied dampening fluid. It is also possible to let the rolls 20 come periodically in contact with the dampening fluid carrying roller, while the rolls 23 are in contact with a roller to which the dampening fluid is to be transferred.

On the whole the construction shown and described may be varied in many ways without getting outside the scope of this invention.

In Fig. 3 the holders 21 consist, as was the case in Fig. 4, of two parts interconnected by a link 25, but each pair of holders carries only one roller or narrow roll 20, which, as shown, dips down into the container 24. The two parts of the holder are in the embodiment shown interconnected by an adjusting screw 31 and a spring 32, and the part of the holder, which does not carry the roll, is fitted down over or contingently secured to a carrying rod 22 running through the machine, which rod during the working of the machine performs a motion as described in the reference to Figs. 4–5. Against the roll 20 is resting a wiper 39. By the motion of the carrying rod the roll 20 will periodically and for a time dependent on the setting of the adjusting screw 31 come in contact with a roller 27 in the dampening- or ink-work. A number of such holders may be placed beside one another along the carrying rod.

I claim:

1. In a dampening arrangement for offset-printing and other printing presses having a dampening roller by which during the printing a fluid is supplied to the printing cylinder, a ductor roller comprising a row of narrow dampening fluid carrying rollers extending along the length of said dampening roller, holders for each said roller, supporting means for said holders, said holders being individually securable to and movable on said supporting means, means for oscillating all said narrow rollers as a unit toward or away from said dampening roller for contact therewith, adjustable means coacting with said holders for said narrow rollers and said supporting means therefor, springs coacting with said adjustable means for controlling the pressure of said narrow rollers against said dampening roller in conjunction with said adjustable means, said adjustable means forming adjusting means for individually varying time of contact between each narrow roller and said dampening roller.

2. In a dampening arrangement for offset-printing and other printing presses as claimed in claim 1, said holders comprising two parts pivotally connected together, one of said parts coacting with said supporting means, the other said part carrying said narrow rollers, said adjustable means comprising an adjusting screw screwed into said part carrying said narrow rollers and passing freely through a hole in said part coacting with said supporting means, said spring being interposed between said parts and around said adjusting screw.

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