Oct. 8, 1963 A. A. SAUL 3,106,154

DAMPENER FOR PRINTING PRESSES

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Fig. 1.

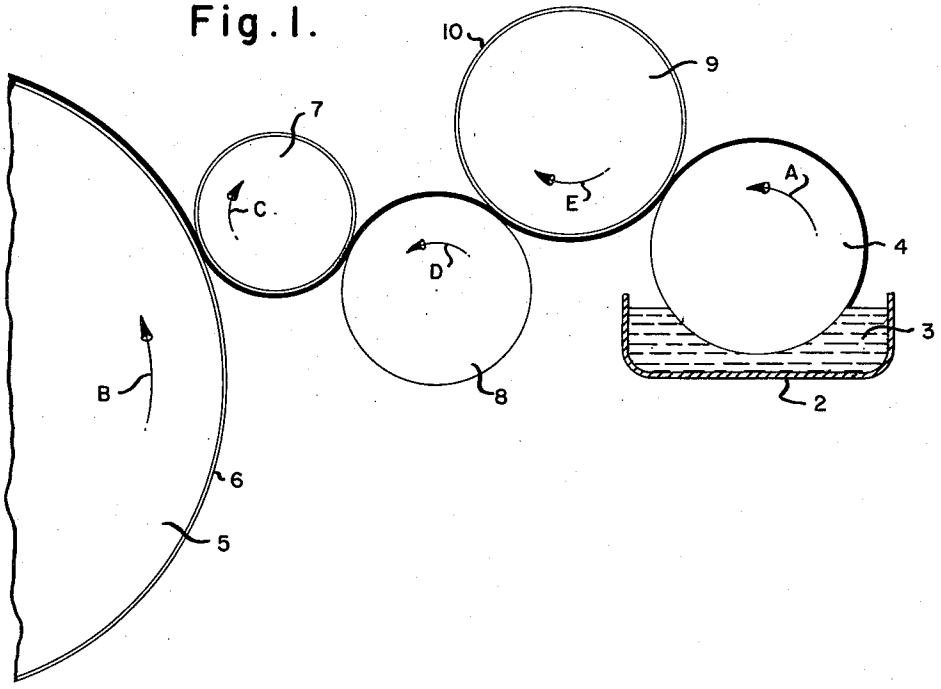
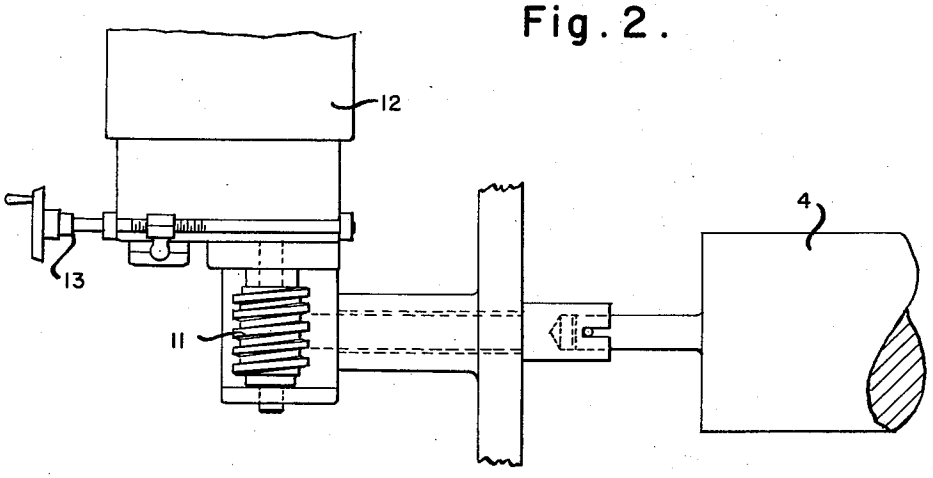


Fig. 2.



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DAMPENER FOR PRINTING PRESSES

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3 Claims. (Cl. 101—148)

This invention relates to a dampener for printing presses which accomplishes superior results in control of delivery of dampening fluid to a printing form while at the same time being of extremely simple construction, inexpensive to manufacture and easy to service and maintain in repair. This application is a continuation of my copending application Serial No. 42,291, filed July 12, 1960, now abandoned.

The art of dampeners for printing presses is well developed. Dampening fluid, normally water with or without additives, is applied to a form, as, for example, to a plate cylinder in a lithographic offset printing press, for reasons well understood by those skilled in the art and which therefore need not be dealt with here. It has heretofore been the practice to deliver the dampening fluid through a ductor roller, the ductor roller generally moving between and alternately touching a transfer roller and an applicator or form roller. In such dampeners the ends of the form rollers tend to dry out with attendant nonuniform application of dampening fluid. Attempts have been made to eliminate the use of the ductor roller and acceptable results have been obtained with a dampener which is of relatively intricate design, costly to manufacture and difficult to maintain and service.

I have discovered that exceptionally reliable and uniform dampening can be accomplished by the employment of a metering roller in novel relationship to the cooperating elements of the dampener without utilizing a ductor roller and without resorting to the intricate and costly mechanisms heretofore proposed.

I provide a dampener for a printing press comprising a plurality of rollers in series contact with one another and which remain continuously and uninterruptedly in such contact and means for continuously and uninterruptedly rotating all of the rollers, a first one of such rollers serving as a source of dampening fluid, a second one of such rollers being a metering roller having a dampening fluid carrying surface in contact with the first roller, said plurality of rollers comprising roller means in contact with the second roller and with the form of the press including an intermediate roller and a dampening fluid form roller for applying dampening fluid to the form of the press, the intermediate roller being disposed at a somewhat lower elevation than the first roller, the second roller being supported against gravity solely in the saddle formed by the first roller and the intermediate roller, the intermediate roller by reason of its elevation somewhat lower than that of the first roller tending to rotate the second roller at the speed of the intermediate roller, the means for rotating the first roller being independent of the means for rotating the other rollers and comprising adjustable means for rotating the first roller at variable speed less than the speed of the other rollers, the first roller and the second roller rotating so that the surface portions thereof in contact with each other move in the same direction, the relative speeds of the first roller and the second roller determining the quantity of dampening fluid taken by the second roller from the first roller and delivered to the intermediate roller and thence to the form. Such roller means preferably comprise a third roller which is a distributor roller in contact with the second roller and which is the intermediate roller above mentioned and a

fourth roller which is the dampening fluid form roller above mentioned. The distributor roller is preferably a vibrating roller. The first roller is normally a dampening fluid fountain roller which receives dampening fluid from a fountain in conventional manner. The dampenig fluid carrying surface of the metering roller may be provided in various ways; I prefer to dispose a fabric sleeve over the metering roller. I have found that a knitted cotton fabric sleeve treated to render the sleeve receptive to the dampening fluid and of a type heretofore used on the form rollers of dampeners for printing presses serves my purpose excellently.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof proceeds.

In the accompanying drawings I have illustrated diagrammatically a present preferred embodiment of the invention in which

FIGURE 1 is a roller diagram showing the relationship to one another and to the plate cylinder of the rollers of a dampener for a lithographic offset printing press in accordance with my invention; and

FIGURE 2 is a diagrammatic illustration of an independent variable speed drive for the roller serving as a source of dampening fluid which is shown in FIGURE 1 as a dampening fluid fountain roller.

Referring to the drawings, the dampening fluid fountain is designated **2**. It contains dampening fluid **3** which may be water with or without additives as well known to those skilled in the art. A roller **4** serving as a source of dampening fluid for the dampener dips into the dampening fluid **3** as shown and is driven to rotate in the direction of the arrow A. The roller **4** is the dampening fluid fountain roller. It is driven in conventional manner at relatively low speed by a drive independent of the drive for other rollers of the dampener and which is controllable so that the speed at which the roller **4** is driven may be increased or decreased as may be desired. FIGURE 2 shows diagrammatically an independent variable speed drive for roller **4**; such roller is driven through a worm **11** by a driving unit **12** having means **13** for controlling at will the speed of the roller (the unit shown is of the type sold commercially under the name "Zero-Max" but various other variable speed drives may be employed). The roller **4** is preferably a smooth surfaced metal roller such as a steel roller with a smoothly ground surface.

A plate cylinder is shown at **5** having on its surface a printing plate **6**. The plate cylinder is driven to rotate in the direction of the arrow B and may be conventional as to structure and drive. A dampening fluid form roller is shown at **7** which rotates consonantly with the plate cylinder **5** in the direction indicated by the arrow C. The form roller **7** may be of conventional construction as well known to those skilled in the art and having a surface adapted to receive dampening fluid from the fountain roller **4** transferred thereto by intermediate rollers presently to be described and to apply such dampening fluid to the plate **6**.

A distributor roller is shown at **8** which is driven to rotate in the direction indicated by the arrow D. The distributor roller **8** is preferably a vibrator roller vibrating endwise relatively to the form roller C and to the metering roller to be described. The distributor roller may be of the same construction as the fountain roller **4**, that is, it may be a smooth surfaced metal roller such as a steel roller with a smoothly ground surface. The rollers **7** and **8** are driven together with the cylinder **5** at synchronized speed so that they turn with uniform surface velocity to transfer dampening fluid from the roller **8** to the roller **7** and thence to the plate **6** without relative slippage between the fluid transfer surfaces. The drive for

the cylinder 5 and the rollers 7 and 8 may be conventional, such, for example, as that of United States Patent No. 1,029,239. The rollers 7 and 8 and the cylinder 5 are rotated at a surface speed substantially higher than that of the fountain roller 4.

A saddle is formed between the fountain roller 4 and the distributor roller 8. The distributor roller 8 is disposed at a somewhat lower elevation than the fountain roller 4 for a purpose to be presently described.

My metering roller is designated 9 and is in continuous contact with the fountain roller 4 and the distributor roller 8. The metering roller 9 turns in the direction indicated by the arrow E. It turns at a speed greater than the speed of the fountain roller 4. The metering roller 9 may be a metal roller provided with a sleeve 10 which may be a knitted cotton sleeve treated to render it receptive to dampening fluid. The sleeve may be of a construction known to those skilled in the art and which has heretofore been utilized on the dampening fluid form rollers of printing presses.

Preferably the metering roller 9 is simply cradled in the saddle formed by the fountain roller 4 and the distributor roller 8 and has no other mounting and is rotated by surface contact. Abutment means may be provided at the ends of the metering roller 9 to prevent it from travelling endwise under influence of the distributor roller 8 if the distributor roller 8 is a vibrator roller.

Since the distributor roller 8 is disposed at a somewhat lower elevation than the fountain roller 4 the metering roller 9 bears more directly upon the distributor roller 8 than upon the fountain roller 4 so that the tendency is for the metering roller 9 to rotate at the speed of the distributor roller 8 rather than at the slower speed of the fountain roller 4. Thus the metering roller 9 takes dampening fluid from the fountain roller 4 and delivers it to the distributor roller 8 as indicated in the drawing. The quantity of dampening fluid thus delivered by the metering roller 9 is determined by the relative speeds of the fountain roller 4 and the metering roller 9. Since the speed at which the cylinder 5 and the rollers 7 and 8 are driven is normally dictated by press operating conditions the control of the relative speeds of the fountain roller 4 and the metering roller 9 is normally controlled by speeding up or slowing down the fountain roller, it being borne in mind that due to the arrangement of the rollers with the distributor roller 8 at a somewhat lower elevation than the fountain roller 4 the metering roller 9 tends through its more intimate contact due to gravity with the distributor roller 8 to rotate at the speed of the distributor roller 8, which speed is higher than that of the fountain roller 4 so that the metering roller 9 wipes dampening fluid off of the fountain roller 4 and delivers it through the distributor roller 8 and the form roller 7 to the form 6. The quantity of dampening fluid thus delivered may be accurately controlled. If it is desired to reduce the quantity of dampening fluid being applied to the plate 6 the speed of the fountain roller 4 may be somewhat slowed down. If a somewhat greater quantity of dampening fluid is to be delivered the speed of the fountain roller will be somewhat increased.

Thus in a very simple manner I provide for accurate and reliable control of the delivery of dampening fluid to a form without the use of a ductor roller and without resorting to the complex and expensive structures heretofore proposed for accomplishing the result without the use of a ductor roller.

While I have illustrated and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A dampener for a printing press comprising a plurality of rollers in series contact with one another and which remain continuously and uninterruptedly in such contact and means for continuously and uninterruptedly rotating all of the rollers, a first one of such rollers serving as a source of dampening fluid, a second one of such rollers being a metering roller having a dampening fluid carrying surface in contact with the first roller, said plurality of rollers comprising roller means in contact with the second roller and with the form of the press including an intermediate roller and a dampening fluid form roller for applying dampening fluid to the form of the press, the intermediate roller being disposed at a somewhat lower elevation than the first roller, the second roller being supported against gravity solely in the saddle formed by the first roller and the intermediate roller, the intermediate roller by reason of its elevation somewhat lower than that of the first roller tending to rotate the second roller at the speed of the intermediate roller, the means for rotating the first roller being independent of the means for rotating the other rollers and comprising adjustable means for rotating the first roller at variable speed less than the speed of the other rollers, the first roller and the second roller rotating so that the surface portions thereof in contact with each other move in the same direction, the relative speeds of the first roller and the second roller determining the quantity of dampening fluid taken by the second roller from the first roller and delivered to the intermediate roller and thence to the form.

2. A dampener for a printing press comprising a plurality of rollers in series contact with one another and which remain continuously and uninterruptedly in such contact and means for continuously and uninterruptedly rotating all of the rollers, a first one of such rollers serving as a source of dampening fluid, a second one of such rollers being a metering roller having a dampening fluid carrying surface in contact with the first roller, a third one of such rollers being a distributor roller in contact with the second roller and a fourth one of such rollers being a dampening fluid form roller for applying dampening fluid to the form of the press, the third roller being disposed at a somewhat lower elevation than the first roller, the second roller being supported against gravity solely in the saddle formed by the first and third rollers, the third roller by reason of its elevation somewhat lower than that of the first roller tending to rotate the second roller at the speed of the third roller, the means for rotating the first roller being independent of the means for rotating the other rollers and comprising adjustable means for rotating the first roller at variable speed less than the speed of the other rollers, the first roller and the second roller rotating so that the surface portions thereof in contact with each other move in the same direction, the relative speeds of the first roller and the second roller determining the quantity of dampening fluid taken by the second roller from the first roller and delivered to the third roller and thence to the fourth roller and to the form.

3. A dampener for a printing press comprising a plurality of rollers in series contact with one another and which remain continuously and uninterruptedly in such contact and means for continuously and uninterruptedly rotating all of the rollers, a first one of such rollers being a dampening fluid fountain roller, a second one of such rollers being a metering roller having a dampening fluid carrying surface in contact with the first roller, said plurality of rollers comprising roller means in contact with the second roller and with the form of the press including an intermediate roller and a dampening fluid form roller for applying dampening fluid to the form of the press, the intermediate roller being disposed at a somewhat lower elevation than the first roller, the second roller being supported against gravity solely in the saddle formed by the first roller and the intermediate roller, the intermediate roller by reason of its elevation somewhat lower than that of the first roller tending to rotate the second roller at the speed of the intermediate roller, the means for rotating the first roller being independent

of the means for rotating the other rollers and comprising adjustable means for rotating the first roller at variable speed less than the speed of the other rollers, the first roller and the second roller rotating so that the surface portions thereof in contact with each other move in the same direction, the relative speeds of the first roller and the second roller determining the quantity of dampening fluid taken by the second roller from the first roller and delivered to the intermediate roller and thence to the form.

References Cited in the file of this patent

UNITED STATES PATENTS

1,780,695	Alger	Nov. 4, 1930
2,224,331	Wittnebel	Dec. 10, 1940
2,821,132	Brodie	Jan. 28, 1958
3,026,795	Dietrich	Mar. 27, 1962

FOREIGN PATENTS

433,132	Great Britain	Aug. 6, 1935
460,092	Great Britain	Jan. 19, 1937