May 19, 1942. A. TAYLOR 2,283,830

INKING MECHANISM

Filed Jan. 22, 1941

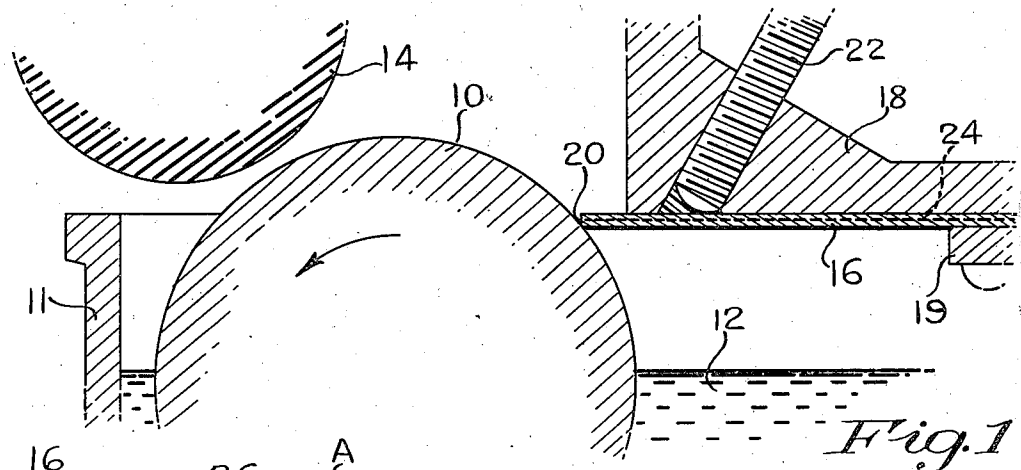


Fig. 1

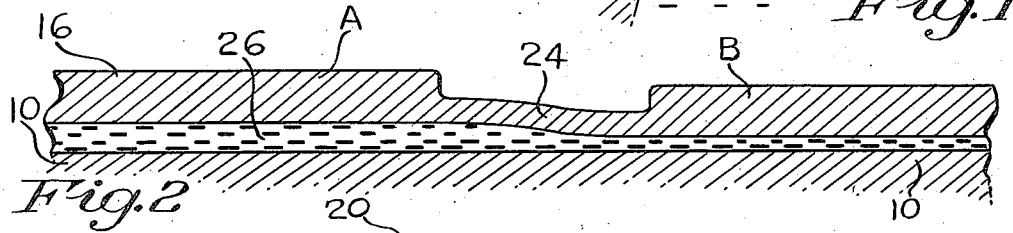


Fig. 2

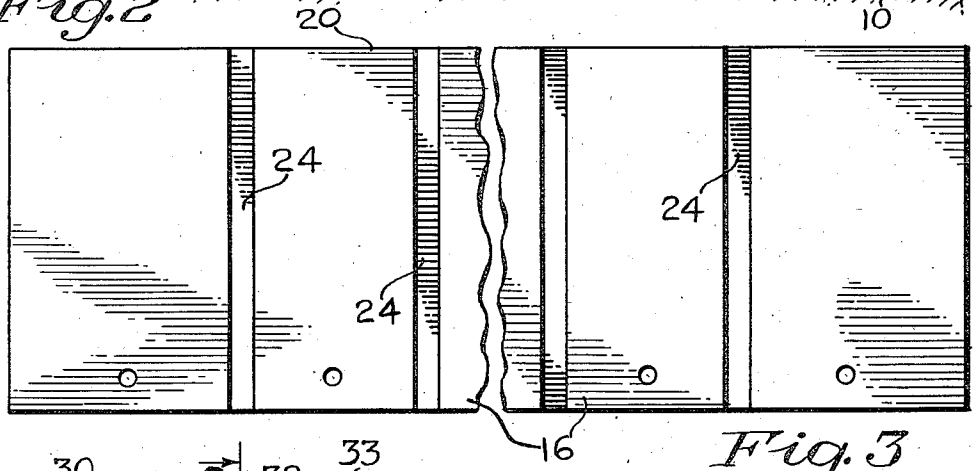


Fig. 3

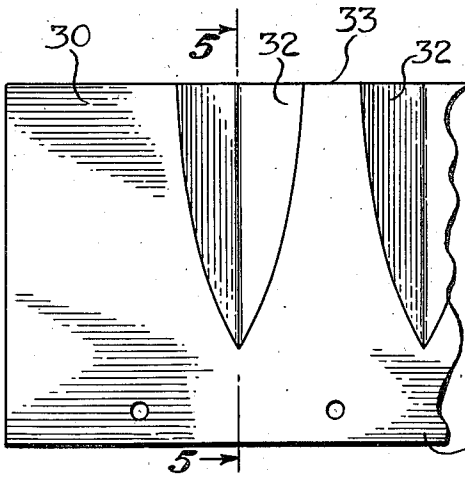


Fig. 4

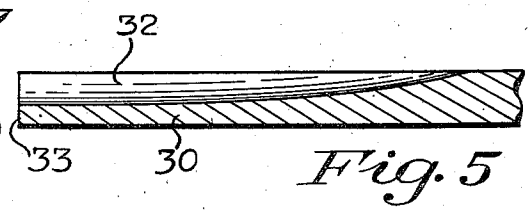


Fig. 5

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Patented May 19, 1942

2,283,830

UNITED STATES PATENT OFFICE

2,283,830

INKING MECHANISM

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Application January 22, 1941, Serial No. 375,406

9 Claims. (Cl. 101—365)

The present invention relates to new and useful improvements in inking mechanisms, and more particularly to an improved doctor blade of an ink fountain.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates two modifications of the invention, and together with the description, serves to explain the principles of the invention.

Of the drawing:

Figure 1 is a fragmentary vertical sectional view showing a typical and illustrative embodiment of the invention;

Figure 2 is a fragmentary longitudinal sectional view of the doctor blade and fountain roller of Figure 1 with a film of ink between them;

Figure 3 is a plan view of the doctor blade shown in Figure 2;

Figure 4 is a fragmentary plan view of a modified form of doctor blade; and

Figure 5 is a fragmentary sectional view taken on the line 5—5 of Figure 4.

The present invention has for its object the provision of a novel and improved ink fountain for use with high speed rotary printing presses. A further object of the invention is the provision of a novel and improved doctor blade for a printing press ink fountain which is adapted to give an improved control of the ink supplied from the fountain, so that columnar or other partial widths of the fountain can be accurately adjusted without materially affecting the adjustment of adjacent widthwise portions of the fountain. Still another object of the invention is the provision of an improved doctor blade having individually adjustable widthwise portions and may be formed from a single, integral piece of metal.

Heretofore, it has been customary to employ a blade of uniform thickness extending from one end of the fountain roller to the other, and the adjustment of the fountain has been accomplished by moving various widthwise portions of the blade towards and from the fountain roller. When one portion of the blade has been positioned closer to the roller than another, the curve in the edge of the blade has been very gradual, causing one edge of one columnar portion to receive a gradually diminishing quantity of ink while the adjacent edge has received a gradually increasing quantity of ink towards the line dividing one column from another. To overcome this defect, it has been proposed to make the doctor blade of a plurality of individually adjustable sections separate from each other, and to minimize as much as possible the space between adjacent sections. However, such a structure requires a relatively heavy cumbersome blade, a cumbersome support for the blade, and it is almost a practical impossibility to maintain the space separating the sections sufficiently small so that a heavy streak of ink will not be transferred through the space.

In accordance with the illustrative embodiment of the invention, the ink drum comprises a conventional fountain roller which is continuously or intermittently rotated in contact with a body of fluid or plastic ink so as to remove a portion of the ink from the fountain and transfer it to suitable ink distributing rollers which feed the ink to the printing plate. Cooperating with the fountain roller is a relatively thin doctor blade having a straight edge in contact or closely adjacent to the fountain roller, and adjustable with respect thereto at a plurality of points along its length so that the ink delivered from the fountain may be varied from column to column, depending upon the ink requirements of the plates to be inked. The blade is provided along its length with a plurality of weakened, or highly flexible portions, which extend normal to the edge of the blade adjacent the roller, so that movement of one or more of the columnar sections of the blade toward or from the fountain roller does not substantially affect the position of the remainder of the blades, the relative movement between the various sections being taken care of almost entirely by the highly flexible or weakened portions of the blade.

It will be understood that the foregoing general description and the following detailed description as well, are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the accompanying drawing, showing a typical and illustrative embodiment of the present invention, there is provided a fountain roller 10 which is driven continuously or intermittently, and is journalled in a fountain trough 11 which also receives the ink 12 to be transferred from the trough to a ductor

roller 14 by means of the fountain roller 10. As the fountain roller 10 rotates, the amount of ink allowed to remain on its surface for transfer to the ductor roller 14 is accurately regulated by means of the doctor blade 16 which is clamped against the doctor blade support 18 by means of a clamping bar 19, the edge 20 of the doctor blade being closely positioned with respect to the surface of the roller 10, and almost in contact therewith.

Means are provided for moving the doctor blade edge 20 toward and from the surface of the roller 10 in relatively narrow sections lengthwise of the roller 10, and for this purpose there are provided a plurality of adjusting screws 22 (of which only one is shown) which are threaded into suitable apertures in support 18 and engage the upper surface of the doctor blade 16 near its edge 20, these screws serving to flex the doctor blade 16 towards the roller 10 against the inherent resiliency of the doctor blade itself.

In accordance with the present invention, the doctor blade is preferably formed of a single piece of springy metal, such as spring steel, and as clearly shown in Figures 2 and 3, this blade is divided into columnar widths by weakened portions 24 which are parallel to each other and extend normal to the straight edge 20. These portions 24 are preferably formed by cutting narrow grooves in the upper surface of the blade 16. Illustratively, these grooves may be of a width equal to the marginal distance between columns and may be positioned so as to register with the margins between the various columns, while the adjusting screws 22 are preferably positioned substantially midway between adjacent grooves 24. These cut-away portions 24 are formed of the same material as the remainder of the blade 16, are much more highly resilient and flexible than the normal thickness of blade, and all of the bending necessary between adjacent column widths of the blade is taken up by flexure of the weakened or grooved portions 24, as clearly shown in Figure 2.

In Figure 2 one column width A of the blade 16 is positioned to allow a relatively large quantity of ink 26 to pass between the blade and the roller 10, while the adjacent column width B of the blade is positioned to allow a much smaller quantity of ink to be fed to the press, and it will be noticed that the difference in the spacing of the blade 16 from the roller 10 at the different column portions is entirely accommodated by flexure of the weakened portion 24, at the same time providing a continuous ink controlling edge 20 extending from one end of the blade to the other.

Figures 4 and 5 illustrate a modified form of the invention in which the doctor blade 30 is provided between the columns with weakened portions comprising the tapering grooves 32 which have their widest portions adjacent the roller contacting edge 33. Going away from the edge 33 the grooves become narrower and shallower, providing an edge 34 of full thickness to be clamped between the support 18 and the bar 19.

By making the grooves of tapering width and depth, the flexure of the blade edge between different columnar portions of the blade is of even more limited width than in the form shown in Figures 2 and 3.

In the operation of the device, the various sections of the blade between the pairs of grooves 24 or 32 are regulated by their respective screws 22. In the conventional fountain blade, the blade edge would curve smoothly from one screw 22 to the next, thereby limiting considerably the possible variation between adjacent sections. However, by use of the present invention, the flexure of the blade takes place at the grooves 24 or 32 and permits a greater variation between adjacent sections.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. In an ink fountain, the combination of a fountain roller and a doctor blade cooperating therewith, the doctor blade comprising a thin blade of springy material extending along the roller having a plurality of spaced apart weakened portions extending away from the roller.

2. In an ink fountain, the combination of a fountain roller and a doctor blade cooperating therewith, the doctor blade comprising a thin blade of resilient metal having an edge extending along and adjacent to the surface of the roller and provided with parallel, spaced apart weakened portions perpendicular to the edge of the blade.

3. In an ink fountain, the combination of a fountain roller and a doctor blade cooperating therewith, the doctor blade comprising a thin blade of resilient metal having an edge extending along and adjacent to the surface of the roller, a plurality of spaced means for moving the blade toward and from the roller, said blade being provided with a narrow weakened portion normal to the edge of the blade between each pair of moving means.

4. In an ink fountain, the combination of a fountain roller and a doctor blade therefor comprising a plurality of closely adjacent, narrow blade portions along the roller and tangential thereto, said portions being interconnected by means of more flexible portions to form a continuous ink removing edge adjacent the roller.

5. In an ink fountain, the combination of a fountain roller and a doctor blade therefor comprising a plurality of closely adjacent, narrow blade portions along the roller and tangential thereto, said portions being interconnected by means of more flexible portions integral with said blade portions to form a continuous ink removing edge adjacent the roller.

6. In an ink fountain, the combination of a fountain roller and an integral doctor blade therefor comprising a plurality of closely adjacent, narrow blade portions along the roller and tangential thereto said portions being interconnected by narrower portions of much greater flexibility than the first portions and extending normal to the roller and forming a continuous ink removing edge adjacent the roller and a plurality of blade adjusting means along the blade, one for each of the narrow blade portions.

7. In an ink fountain, the combination of a fountain roller and an integral doctor blade therefor comprising a plurality of closely adjacent, narrow blade portions along the roller and tangential thereto, said portions being interconnected by narrower portions of much greater flexibility than the first portions and extending normal to the roller and forming a continuous ink removing edge adjacent the roller.

8. In an ink fountain, the combination of a

fountain roller and a doctor blade therefor comprising a thin strip of springy metal having a straight edge adjacent to the roller surface, said strip being cut away to provide spaced apart, narrow, thin portions parallel to each other and normal to the edge whereby selected portions of the straight edge may be deflected without substantially affecting adjacent portions, and means for individually moving the various portions of the straight edge.

9. In an ink fountain, the combination of a fountain roller and a doctor blade therefor comprising a thin strip of springy metal having a straight edge adjacent to the roller surface, said strip being cut away to provide spaced apart, narrow, thin portions parallel to each other and normal to the edge whereby selected portions of the straight edge may be deflected without substantially affecting adjacent portions.

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