April 22, 1930. W. J. STRAIN 1,755,278

ROLLER ARRANGEMENT FOR PRINTING PRESSES

Filed July 18, 1928

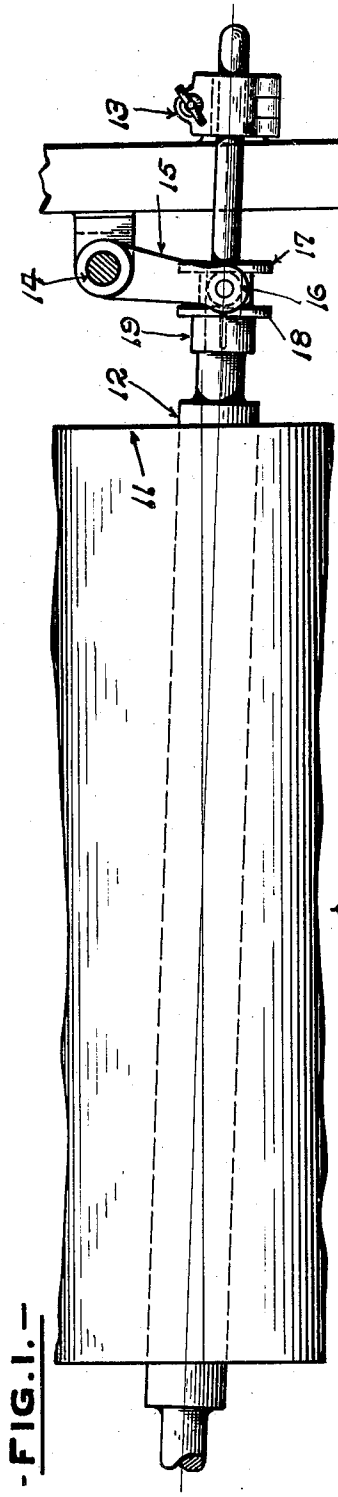


FIG. 1.

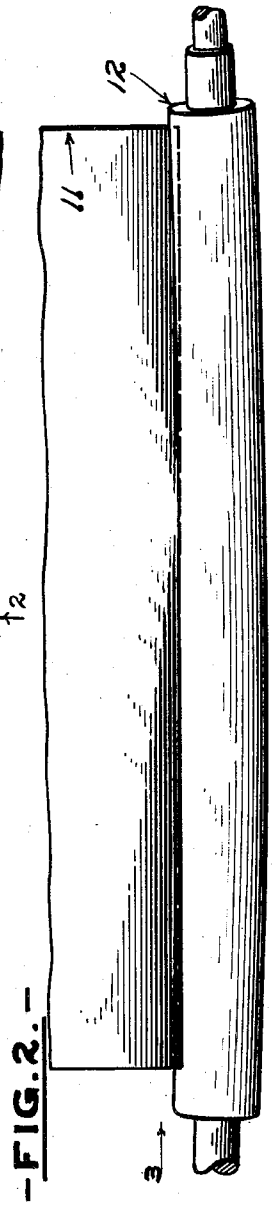


FIG. 2.

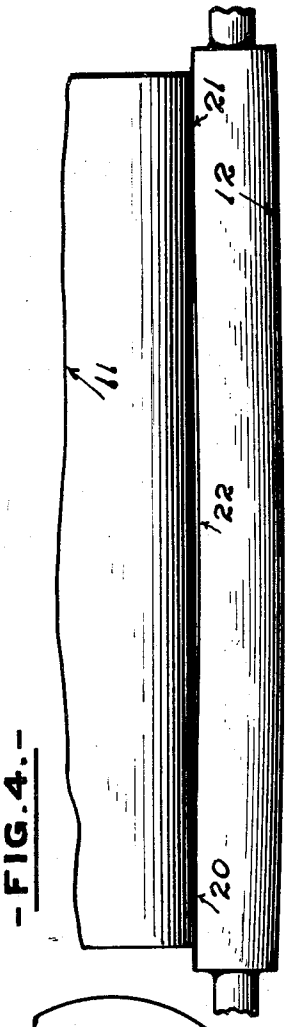


FIG. 4.

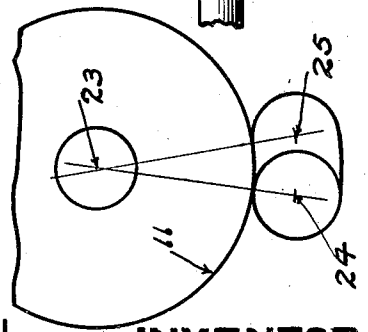


FIG. 3.

INVENTOR
WILLIAM J. STRAIN.
John R. Stanley
ATTY

Patented Apr. 22, 1930 1,755,278

UNITED STATES PATENT OFFICE

WILLIAM JAMES STRAIN, OF UPPER MONTCLAIR, NEW JERSEY, ASSIGNOR TO R. HOE & CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

ROLLER ARRANGEMENT FOR PRINTING PRESSES

Application filed July 18, 1928. Serial No. 293,507.

The present invention relates to inking mechanism for printing presses and constitutes an improvement in the means for supporting the relatively long rollers that run in contact with the ink cylinder and serve to evenly distribute the ink thereon before it is transferred to the printing cylinder which carries the plate. The invention is also applicable to wetting mechanism, so it will be understood that what is said herein in reference to ink rollers is applicable to plate wetting rollers used on lithographic presses.

Owing to their length these rollers have a certain degree of flexibility and when their bearings are adjusted to press them into contact with the cylinder with which they co-act their flexibility allows them to bend so that the pressure between the roller and the cylinder is less at a point midway of their length than it is at the ends. In the case of rollers that are supported below the cylinders, the weight of the roller is an additional factor that causes it to bend in some cases so the roller does not even touch the middle part of the cylinder.

The especial object of the invention is to provide a means for supporting rollers having a relative degree of flexibility, in such manner that they will bear with substantially equal pressure throughout their length when co-acting with relatively rigid cylinders.

Another object of the invention is to operably support the ink rollers in such relation to the ink cylinder as to aid in producing uniform distribution of the ink on the surface of the ink cylinder.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the arrangement of parts as hereinafter described and claimed, it being understood that various changes in the precise embodiment and application of the invention herein disclosed may be made within the scope of the claims without departing from the spirit of the invention.

Referring to the drawing:

Figure 1 is a plan view illustrating an ink cylinder of a printing press with portions broken away and showing an ink roller supported under the cylinder in accordance with the invention.

Figure 2 is a side view of the cylinder and roller as viewed in the direction of arrow 2 of Figure 1.

Figure 3 is a diagrammatic end view of the cylinder and roller arrangement; and

Figure 4 is a side view of a cylinder and a roller arranged in the manner heretofore used.

In the drawing 11 indicates an ink cylinder which is usually made of cast iron or steel, while 12 indicates an ink roller that may consist of a metallic core over which a covering of a suitable composition or rubber is molded.

Bearings not shown in the drawing are provided for the cylinder, and bearings, one of which is shown at 13 are provided for the roller. The roller may be moved endwise, which is commonly termed vibrating it, by means of any suitable mechanism. As herein shown, a shaft 14 is oscillated by being suitably connected to some moving part of the press or other source of power. The lever 15 is secured to the shaft and carries a roller 16 which operates between the flanges 17 and 18, of the collar 19 attached to the shaft of the roller 12. Thus when the shaft 14 is oscillated, the shaft of the roller 12 moves endwise in its bearings and the body of the roller is moved back and forth across the cylinder, this being the method usually employed to distribute the ink evenly over the surface of the cylinder. It is customary to provide several of these rollers distributed around the periphery of the cylinder.

The ink rollers must be removed from the press frequently for cleaning and as they are handled manually they are made with a relatively small diameter and with tubular cores in order to reduce the weight. In consequence of their construction they cannot be strained transversely to their axes without bending them appreciably.

In Figure 4 the cylinder 11 is shown with the roller 12 supported below it in the usual manner, arranged to keep their axes parallel. However, when the bearings for the

roller are adjusted to produce the requisite pressure against the cylinder at the points 20 and 21, the roller is so distorted that it bears against the cylinder at the point 22 with but a very light pressure and in some cases there is no contact whatever at this point and over a considerable distance on both sides of it.

The arrangement whereby the roller is supported with relation to the cylinder, as shown in Figures 1, 2, and 3 overcomes the objection to the use of a roller that has an appreciable degree of flexibility.

As shown in Figure 1, the roller is supported with its axis in an askew relation to the axis of the cylinder. The bearings for both ends of the roller are placed at the same distance from the axis of the cylinder, but one bearing is displaced in relation to the other in a direction rotary to the axis of the cylinder. This is shown diagrammatically in Figure 3 wherein 23 indicates the axis of the cylinder, 24 the centre of one end of the roller and 25, the centre of the other end.

The angular relation of the roller's axis with respect to the axis of the cylinder, results in bending the roller and causing it to conform to the helical line of its contact with the cylinder. Obviously by varying this misalignment of the roller any desired degree of curvature may be obtained and a point found that will cause the roller to bear against the cylinder with equal pressure throughout their line of contact. It is also obvious that this method of supporting rollers in an askew relation is applicable when both the roller and the cylinder have a small amount of flexibility for in such case the distortion will be divided, varying with their relative rigidity.

This angular disposition of the ink rollers relative to the ink cylinder also aids in distributing the ink to produce a uniform film on the surface of the ink cylinder. To this end the ink roller may be provided in pairs, and the rollers of each pair disposed at opposed angles to thereby cause the ink to move spirally along the surface of the cylinder from right to left and then left to right.

What I claim is:

1. A device of the class described including, a rotatable cylinder, a roller rotatable about a yieldable axis, and helically disposed relative to the cylinder, and arranged so that the periphery of the roller engages the periphery of the cylinder.

2. A device of the class described including, a rotatable cylinder, a roller rotatable about a yieldable axis and helically disposed relative to the cylinder, and arranged so that the periphery of the roller engages the periphery of the cylinder substantially throughout its length.

3. A device of the class described including, a rotatable cylinder and a cooperating roller helically disposed relative to the cylinder and positioned so that the peripheries of the roller and cylinder engage each other longitudinally.

4. In an inking mechanism for a printing press, a relatively rigid ink cylinder, an ink roller having a relative degree of flexibility, bearings rotatably supporting the roller in peripheral contact with the cylinder and maintaining a degree of pressure therebetween, said bearings for the roller being positioned substantially equi-distant from the axis of the cylinder but out of parallelism therewith.

5. In an inking mechanism for a printing press, an ink cylinder and an ink roller one of which is relatively rigid, and the other having a relative degree of flexibility, bearings rotatably supporting the cylinder, and bearings rotatably supporting the roller in contact with the cylinder and maintaining a degree of pressure therebetween, said bearings for the roller being positioned to support the roller with its axis in an askew relation to the axis of the cylinder.

6. In an inking mechanism for a printing press, a relatively rigid ink cylinder, an ink roller having a relative degree of flexibility, bearings rotatably supporting the cylinder, and bearings rotatably supporting the roller in contact with the cylinder and maintaining a degree of pressure therebetween, said bearings for the roller being positioned to produce a misalignment of the roller relative to the cylinder whereby the contact pressure produced between the roller and the cylinder near the center of their line of contact is substantially the same as the contact pressure produced at the ends.

7. A device of the class described, including a rotatable ink cylinder, an ink roller having an appreciable degree of flexibility, supported in running contact with the cylinder and in an askew relation thereto, and means for moving the roller axially to distribute ink on the cylinder.

8. In an inking mechanism for a printing press, a relatively rigid ink cylinder rotatably supported in bearings, an ink roller having an appreciable degree of flexibility, bearings rotatably supporting the roller in contact with the cylinder and maintaining pressure therebetween, and means for vibrating the roller; said bearings for the roller being positioned to support it in an askew relation to the cylinder, whereby it bears with a substantially equal degree of pressure at all points throughout its length.

In testimony whereof, I affix my signature.

WILLIAM JAMES STRAIN.