June 17, 1930. E. F. DUDLEY 1,764,157

INKING ROLLER

Filed June 14, 1928

Fig. 1.

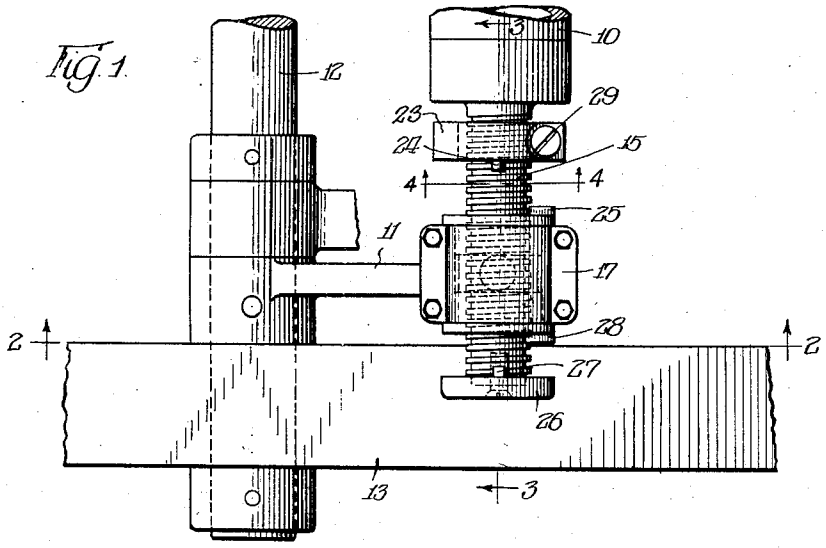


Fig. 2.

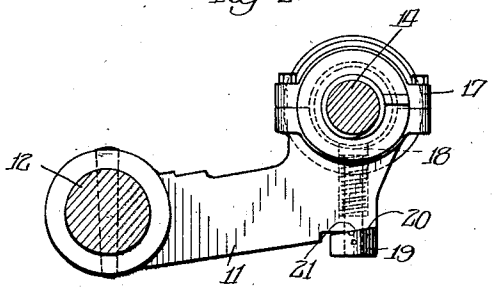


Fig. 4.

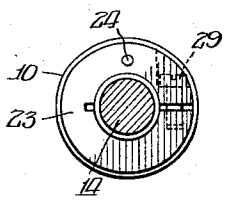
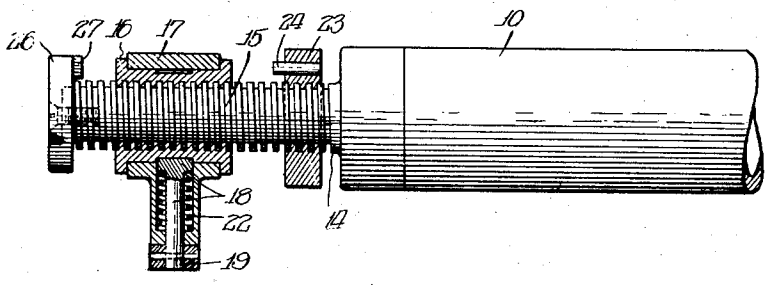


Fig. 3.



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UNITED STATES PATENT OFFICE

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INKING ROLLER

Application filed June 14, 1928. Serial No. 285,260.

This invention relates to improvements in printing presses and concerns more particularly the construction of the vibrator mechanism for vibrating inking rollers.

In connection with inking mechanism of printing presses and the like, it is common practice to embody in such mechanism vibrating rollers, preferably made of metal, and cooperating with composition rollers of the ink distributing and/or the form roller unit.

In the art of printing, it frequently occurs that several colors have to be printed simultaneously, that is to say, during one printing operation of the press. In such cases usually the ink fountain is divided into a number of sections corresponding to the number of colors to be printed simultaneously, and the composition rollers, whereby the ink is conveyed from the ink fountain to the printing surface of the press, are correspondingly divided into several sections. In such cases vibrating rollers, namely rollers which move laterally to and fro during the operation of the press are impractical. Therefore, in order to meet such conditions, it is desirable to provide means whereby the vibrator mechanism of such vibrating rollers can be rendered ineffective at will.

Accordingly, the primary object of the invention is to provide simple means whereby the vibrating roller can be readily converted into a non-vibrating roller to adapt the inking mechanism for jobs where several colors are to be printed during one printing operation.

Other objects of the invention will be apparent from the following description and appended claims.

In printing machinery, certain types of vibrating rollers are known in which the drive is not positive, i. e., the vibrator mechanism is driven by friction so as to avoid injury to any of the cooperating parts in the event that the vibrator mechanism is thrown into operation with its driving means out of time relationship with respect to the other operating parts of the press.

One of the well-known constructions of vibrator mechanism comprises a laterally extending threaded portion of the vibrating roller shaft with which portion cooperates a threaded bushing operating within a friction sleeve, which latter overcomes the friction of the threaded shaft within said bushing, but permits said bushing to rotate within the sleeve in the event that for some reason or other the vibrating roller is out of time relationship with the other parts of the press at the time said roller is placed in its operative position.

I have selected to illustrate my invention as applied to such type of vibrator mechanism and I accomplish the objects of my invention by means of the arrangement illustrated in the accompanying sheet of drawings, in which:

Figure 1 is a plan view of the vibrator mechanism;

Figure 2 shows a section taken along line 2—2 of Figure 1;

Figure 3 is a sectional view of the vibrator mechanism taken along line 3—3 of Figure 1; and

Figure 4 is a cross-section through the vibrating roller shaft taken along line 4—4 of Figure 1.

According to the particular form of construction shown for the purpose of illustrating my invention, the vibrating roller 10 is supported at both ends by means of brackets such as 11, keyed to a shaft 12, which is pivotally mounted within the machine frame 13. One end of the vibrating roller shaft 14 is formed with a screw portion 15 cooperating with a threaded nut or bushing 16 rotatably supported within the bearing 17.

In order to apply friction to the threaded bushing 16, so that during the normal operation of the vibrating roller, said bushing will be prevented from rotating, and permit the screw portion 15 of the shaft 14 to operate to and fro within the bushing, I provide a spring operated friction plunger 18 arranged as clearly indicated in Figure 3. The free end of said plunger has rigidly mounted thereon an operating knob 19 formed with a cam surface 20 which cooperates with a corresponding cam sur-

face 21 provided on the supporting bracket 11 as shown in Figure 2.

In the position shown in the drawings, the friction plunger 18 is in its operative position, namely in which the friction holds the bushing 16 against rotation.

When it is required to release this frictional engagement, the knob 19 is turned 180° whereby, through the cooperation of the cam surfaces 20 and 21, the plunger is pulled outwardly against the action of the compression spring 22.

Mounted upon the threaded end of the shaft 14 is a split nut or collar 23 having a laterally extending projection 24, which latter, under certain conditions, is adapted to move into engagement with a laterally extending projection 25 on one of the flanges of the threaded bushing 16. Secured to the outer end of the threaded extension of shaft 14 is a collar 26 having a laterally extending stop 27, which, under certain conditions, engages with a cooperating projection 28 formed on the other flange of the threaded bushing 16.

In view of the fact that, during the normal operation of the inking mechanism, the threaded bushing 16 does not rotate, it is apparent that as the shaft 14 rotates, it will also be vibrated laterally due to its cooperation with the frictionally held bushing 16.

The figures of the drawings show the shaft 14, and therefore the vibrating roller 10, in the central position of their vibrating motion.

Let it be assumed that, with reference to Figure 3, the vibrating roller has moved to its extreme position at the left, and that at this time the press is stopped and the vibrator roller with its operating mechanism is disconnected from its driving means. It is apparent under such conditions that, if the press were advanced for example a half cycle of its movement, while the vibrator mechanism is out of engagement with its driving means, the vibrated roller would subsequently be out of time relationship with the press.

If, for instance, the vibrator mechanism would, under such conditions, be moved back into operative relation, it is evident that the vibrating roller 10 would tend to move further to the left, and were it not for the fact that the threaded bushing 16 is frictionally supported, the cooperating parts of the vibrator mechanism would become wedged, resulting obviously in the breakage of certain parts.

I wish it to be understood, however, that the provision of a frictional bushing operating in a manner just described, is old in itself, and does not form the specific object of my invention.

As hereinbefore indicated, I aim to provide improved vibrator mechanism whereby friction can be applied at will to a threaded bushing such as 16, and whereby the vibration of the vibrating roller can be varied at will, or interrupted entirely by rendering the vibrator mechanism ineffective in a simple and convenient manner.

As already described, the friction plunger 18 can be readily moved out of frictional engagement with the bushing 16 by turning the operating knob 19 through 180°. Now, the friction between the threaded portion 15 of the shaft 14 and the thread of the bushing 16 will not be overcome by the friction between the bearing 17 and the bushing 16. Therefore, when the operation of the inking mechanism is continued, the vibrating roller 10 will rotate but it will not be displaced laterally.

In order to secure the vibrator roller against any possible lateral movement or to vary the extent of its vibration, I provide on the screw portion 15 the split nut or collar 23, which, after releasing the clamping screw 29, can be readily adjusted longitudinally of the screw portion 15 to any desired position corresponding with the amount of vibration required.

The collar 23 is shown on the drawing as being threaded onto the screw portion 15. It is obvious, however, that a split collar with a plain bore would equally well accomplish the purpose in view.

As indicated above, the friction between the screw 15 and the thread in the bushing 16 is greater than that between the latter and the bearing 17, so that when the plunger 18 is in its inoperative position, the bushing 16 will freely rotate within its bearing 17 and consequently the roller 10 will not move laterally. However, when it is desired to positively hold the roller 10 against lateral movement, after the plunger 18 has been withdrawn, the roller is moved to its extreme right hand position in Figure 3 so that the stop 27 on the collar 26 engages the projection 28 on the sleeve 16, then the set screw 29 is released and the collar 23 is moved to the left until its projection or pin 24 engages the projection 25 on the sleeve 16, whereupon the set screw 29 is again tightened in order to securely clamp the collar to the thread portion 15.

It will be readily understood that, without departing from the principle of my invention, various modifications could be incorporated, and it is therefore my intention to cover all such variations in construction as will come within the scope and essence of the appended claims.

I claim:

1. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, and means for applying frictional action to said bushing whereby said roller is

vibrated and for withdrawing frictional action whereby said bushing acts as a bearing.

2. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, means for applying frictional action to said bushing whereby said roller is vibrated and for withdrawing frictional action whereby said bushing acts as a bearing, and means for holding said bushing in a fixed position.

3. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, means operable to apply friction to said bushing whereby said roller is vibrated, and means to hold said roller against vibration.

4. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, spring actuated means manually operable to apply friction to said bushing whereby said roller is vibrated, and means to hold said roller against vibration.

5. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, cam actuated means to apply friction to said bushing whereby said roller is vibrated, and means to hold said roller against vibration.

6. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, cam actuated means manually operable to apply friction to said bushing whereby said roller is vibrated, and means to hold said roller against vibration.

7. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, means operable to apply friction to said bushing whereby said roller is vibrated, and means comprising a split collar to hold said roller against vibration.

8. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, manually operable means to apply friction to said bushing whereby said roller is vibrated, and means comprising a split collar adjustable longitudinally of said threaded shaft to hold said roller against vibration.

9. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, means operable to apply friction to said bushing whereby said roller is vibrated, and means to vary the amount of vibration of said roller.

10. In a printing press, the combination of a vibrator roller having a threaded shaft, a threaded bushing cooperating with said shaft, means for applying frictional action to said bushing whereby said roller is vibrated and means for holding said roller against vibration.

Signed at Chicago, Illinois, this 12th day of June, 1928.

EDWARD F. DUDLEY.