F. SMITH.

INKING ROLLER.

APPLICATION FILED DEC. 16, 1919.

1,370,709. Patented Mar. 8, 1921.

Fig. 1.

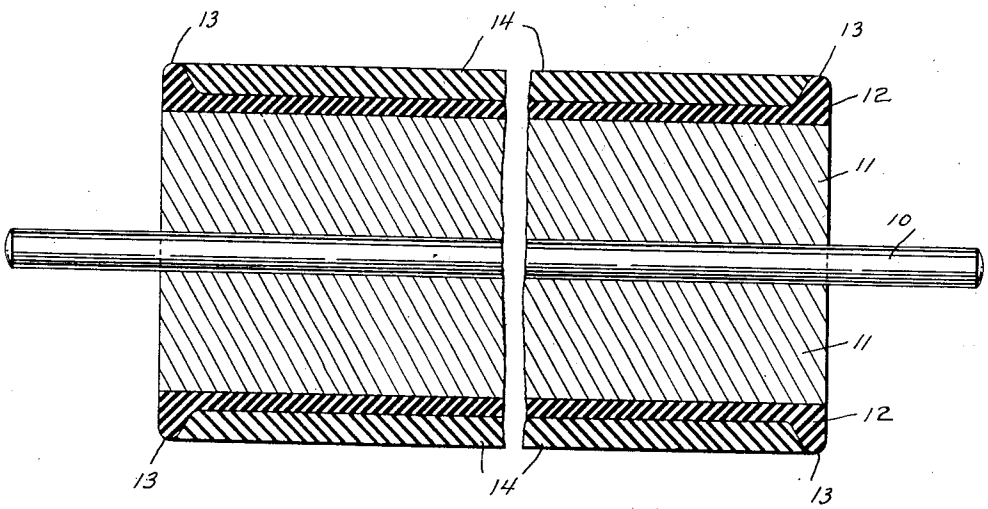


Fig. 3.

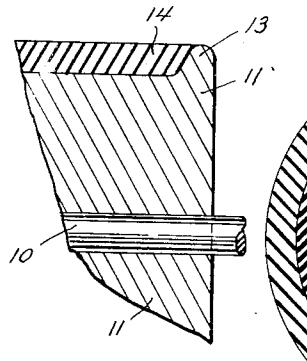
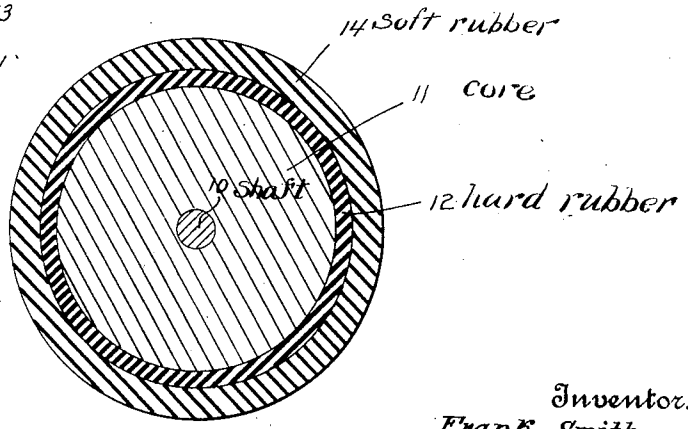


Fig. 2.



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INKING-ROLLER.

1,370,709. Specification of Letters Patent. Patented Mar. 8, 1921.

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To all whom it may concern:

Be it known that I, FRANK SMITH, a citizen of the United States, and a resident of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Inking-Rollers, of which the following is a full, clear, and exact description.

The object of the present invention is to provide an inking roll for printing presses, with a surface which will overcome the disadvantages incident to the use of the ordinary gelatin roll. In the modern newspaper printing press there may be as many as one hundred inking rolls, all of the gelatin type, and these rolls are subject to wide variations due to changes in atmospheric humidity and in temperature. It is the usual practice, at the beginning of printing operations, for the pressman to adjust all of his rolls, so that the pressure between the rolls provides for a contact of about $\frac{1}{4}''$ in width. Upon the maintenance of this contact depends, in a great measure, the proper distribution of the ink on the rolls. As a result of the extended contact, the surface of the gelatin roll is constantly being flexed and, due to the friction between the surfaces, heat is developed and this, in addition to a rise in the room temperature, often results in the contacting surface being extended from $\frac{1}{4}''$ to $\frac{1}{2}''$ in width, thus preventing the proper distribution of the ink on the rolls. Due to these characterisitcs of the gelatin roll, it is frequently necessary in hot humid weather, to replace the gelatin rolls two or three times a day.

Moreover, under ordinary conditions of temperature and moisture the gelatin roll deteriorates very rapidly, and frequently, will not outlast a day's work. This requires the substitution of new rolls, thus delaying the printing operations. When the surface of a gelatin roll has become unfit for use it is necessary to remake the gelatin portion on the roll in its entirety.

With the view to overcoming these and other disadvantages attending the use of the ordinary gelatin roll, I have designed a roll which will be understood by reference to the accompanying drawing in which—

Figure 1 is a longitudinal section of one form;

Fig. 2 a transverse section through Fig. 1; and

Fig. 3 a partial longitudinal section of another form.

In the preferred form of my invention shown in Figs. 1 and 2, the numeral 10 designates a shaft upon which is mounted a cylindrical core 11 of metal, wood or other suitable material. Vulcanized to the outer surface of the core 11 is a shell of relatively hard rubber 12 formed, at its periphery, with flanges 13. Vulcanized to the base of relatively hard rubber 12, and confined between the flanges 13 thereof, is a surface 14 of relatively soft rubber constituting the inking surface of the roll. The end flanges 13 prevent the lateral spreading of the soft rubber surface, thus maintaining the diameter of the roll substantially uniform under the conditions encountered in practice.

Instead of supporting the inking surface upon a base of relatively hard rubber, I may support it directly upon the center core 11 as indicated in Fig. 3. If desired the surface of the core 11 may be roughened, in order to secure a firm contact between the core and the rubber sheathing, in either of the forms shown in Figs. 2 and 3.

The advantages of the rubber covered roll are that it has better ink transferring qualities than the gelatin roll, and because of the contact, which is about $\frac{1}{64}''$ in width, the soft rubber roll enables a much better and cleaner application of the ink to the type to be made than is the case with the gelatin roll with its relatively wide contact surface with the inking roll. Again, the soft rubber roll is not affected, as is the gelatin roll, by changes in temperature and humidity, enabling the soft rubber roll to run, without change, for considerable periods of time, many lasting for six months daily use. The life of the soft rubber roll is therefore, very much longer than that of the gelatin roll, and even when worn to such extent that it has become inefficient or defective in its operation, its surface can be ground or buffed to restore it to substantially its original condition. This reuse of the soft rubber roll by the simple operation of refacing by subjecting its surface to a buffing operation, results in a material saving in the expense of purchasing and maintaining the

rolls. An advantage of the hard rubber confining flanges is that they may be easily ground off to compensate for the reduction of the size of the roll caused by the refinishing operation.

As an example of the method of making a compound of the soft rubber surface, I would say that I have found that a compound consisting of 20 lbs. of rubber and $1\frac{5}{8}$ lbs. of sulfur vulcanized for a period of five hours at 280° Fahr. has given the best results.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A printing roll having an inking surface of soft rubber and means for preventing the elongation of the inking surface.

2. A printing roll having a core comprising a base of relatively hard rubber, and an inking surface of soft rubber supported upon the said base.

3. A printing roll comprising a core having peripheral flanges, and an inking surface of soft rubber supported upon said core between the flanges.

4. A printing roll comprising a core of relatively hard rubber having peripheral flanges, and an inking surface of soft rubber supported upon the core between said flanges.

5. A printing roll comprising a base of relatively hard rubber and an inking surface of soft rubber vulcanized thereto.

6. A printing roll comprising a base of relatively hard rubber formed with peripheral flanges, and an inking surface of soft rubber vulcanized thereto.

7. A printing roll comprising a supporting member, a layer of hard rubber vulcanized thereto, and an inking surface of relatively soft rubber vulcanized to the layer of hard rubber.

Signed at New York, N. Y., this 9th day of December, 1919.

FRANK SMITH.