Sept. 10, 1929. W. C. HUEBNER 1,727,978

PRINTING PRESS ROLLER

Filed April 14, 1927

Fig. 1

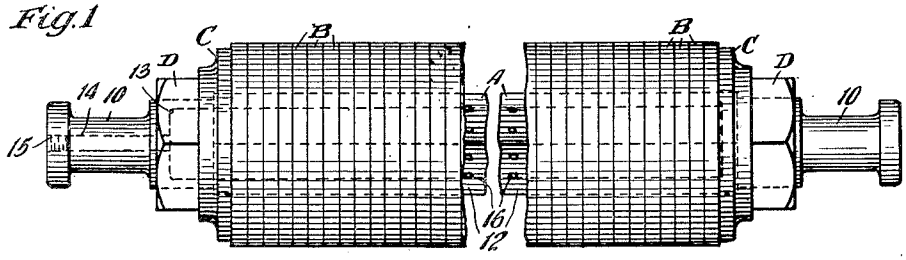


Fig. 2

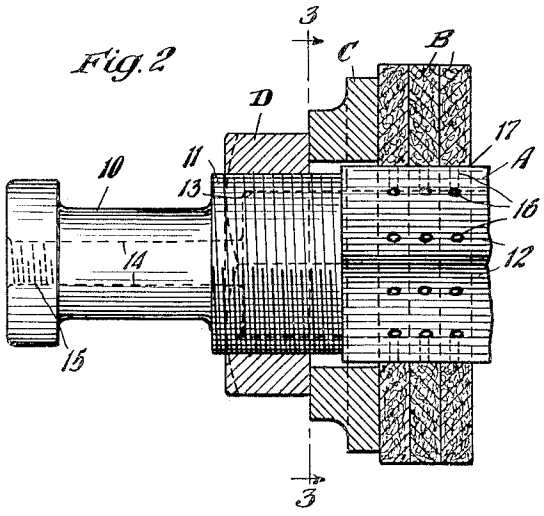
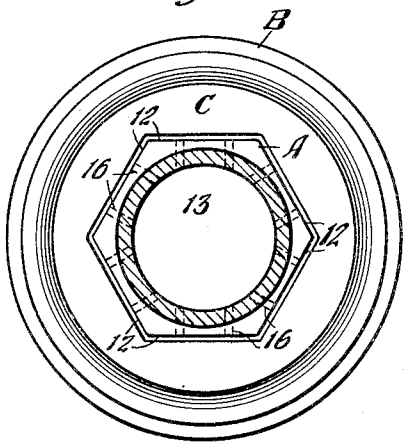


Fig. 3



Inventor
William C. Huebner
By George D Haight
His Atty.

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UNITED STATES PATENT OFFICE.

WILLIAM C. HUEBNER, OF BUFFALO, NEW YORK.

PRINTING-PRESS ROLLER.

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This invention relates to improvements in printing press roller.

In the operation of printing presses, and more particularly lithographic presses, it is highly desirable for satisfactory printing that the inking and damping rollers have an absolutely uniform and perfectly cylindrical surface. Inking rollers, as generally heretofore made, are generally covered with a layer of leather or equivalent material which necessitates a seam in the periphery of the roller and this seam, together with the inherent variations in the thickness of the leather covering result in an uneven or untrue cylindrical surface thus preventing absolutely uniform application or transference of the ink in the printing operation and causing streaks and other defects in the printed product. Similarly with the usual damping rollers of a lithographic press, it has been the general practice to provide an outer covering of felt or other fabric-like material which also necessitates a seam in the covering layer. Such seams, together with the fact that the coverings cannot be so applied as to entirely prevent "creeping" prevent uniform application of the water solution to the plate cylinder with whose surface speed the damping roller surface speed must absolutely coincide. These defects likewise result in the streaking of the printed product.

A further practical consideration in connection with rollers of the type referred to is the necessity for frequent cleansing of the same to maintain the operative surfaces in proper condition, a fact to which I advert for the reason that I am aware that a few attempts have heretofore been made to overcome the objections to the usual methods of covering rollers which I have described by adopting various expedients, but, so far as I am aware, none of these other suggested expedients has ever proven practical, primarily because, in endeavoring to overcome one difficulty, the other of inability to cleanse the roller in a practical manner has been encountered.

An object of my invention is to provide a roller for a printing press, which will have a true cylindrical surface of uniform, even character throughout and in which there is no possibility of creepage and wherein absolute uniformity of surface speed of the roller will be obtained, whether the improved roller is of the inking or damping type.

Another object of my invention is to provide simple and practical means for properly cleansing my improved roller without the necessity of disassembling any of the parts thereof.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawing forming a part of this specification, Figure 1 is an elevational view of a printing press roller showing my improvements embodied therein, the roller being broken away at the center in order to better accommodate the view on the sheet on a proper scale. Figure 2 is a broken, sectional view of a portion of the roller illustrated in Figure 1, the portions of the mandrel illustrated in this figure being shown in elevation. And Figure 3 is a vertical sectional view corresponding to the section line 3—3 of Figure 2.

In carrying out my invention, I provide broadly, a mandrel A, a series of discs B; end washers C—C; and locking nuts D—D.

The improved mandrel A, as shown, is provided at its ends with the usual journals 10—10 adapting it for mounting in the printing press. Immediately adjacent the journal sections 10, the mandrel is of enlarged diameter and is threaded at each end as indicated at 11 and with which cooperate the nuts D. Intermediate the threaded sections and constituting the major portion of the length of the mandrel the latter is made of non-circular formation on its exterior, the particular example illustrated in the drawing being of hexagonal form, thus providing six flat surfaces 12—12, uniformly arranged with respect to the center of the roller. In carrying out my invention, the mandrel A is made hollow so as to provide a main central enlarged chamber 13 approximately coextensive with the hexagonal por-

tion of the mandrel and also extending into the threaded section at one end of the mandrel as clearly illustrated in Figure 2. Through the corresponding adjacent journal section 10, a passage 14 is provided in communication with the chamber 13, the journal section being threaded at its end as indicated at 15 to thereby permit of ready attachment of a pipe coupling or the like for the introduction of a liquid medium to the interior of the mandrel, for the purposes hereinafter described. Throughout the length of the hexagonal section, of the mandrel, I provide a plurality of openings or perforations 16—16, the latter communicating with the interior chamber 13 and adapted to provide vents or discharge openings from the chamber 13 to the several flat surfaces of the non-circular section of the mandrel. In the particular embodiment illustrated, there are two such openings 16 for each face in each band corresponding approximately in width with the width of the discs B.

The discs B are preferably stamped or cut out and each has a circular periphery and a central opening 17 corresponding in size and contour to the non-circular section of the mandrel A so that the discs B may be slipped onto or threaded onto the non-circular section of the mandrel A with a snug fit with the latter, it being understood that a sufficient number of the discs B will be employed to make up the necessary length of the operative surface of the roller. With this construction, it will be observed that each disc B is individually prevented from turning or twisting with respect to the mandrel on account of the non-circular fit of the discs with the mandrel and hence there is no possibility of creepage of the discs.

After the discs are assembled on the mandrel A, they are compressed and locked together by means of the heavy end washers C and the nuts D in an obvious manner, it being noted that the discs B will have a somewhat larger diameter than the washers C so as to prevent any possible interference from the washers C with any other part of the press.

Where my improved roller is to be used for inking purposes, the discs B may be formed from leather or other equivalent material suitable for retaining and conveying ink. Where the roller is to be used for a damping roller, the discs B may be made of felt or other equivalent material suitable for absorbing and applying the water solution to the blanket roll. In actual practice, after the discs have been assembled and clamped or compressed to the desired degree, I may grind or turn down the disc section of the roller so as to insure an absolutely true cylindrical surface of uniform character throughout and without any possibility of lumps or protrusions at any point thereof.

By providing the mandrel A with an interior chamber and ducts leading therefrom to the inner edges of the discs B, I am enabled to cleanse the disc section of the roller in a very simple and efficient manner by simply introducing the desired cleansing solution, under pressure, through the passage 14 by connecting the hose or pipe to the threaded end 15. The solution thus introduced under pressure to the interior of the mandrel is forced uniformly radially outwardly, through the several ducts or openings 16 into the discs and through the latter to the surface thereof so as to thereby cut or dissolve or wash out any gums or solidified matter that in time gradually forms near the peripheries of the discs. After the discs have been cleansed by the solution, I may then force air or the like through the chamber of the mandrel and from the latter outwardly through the discs so as to thereby dry out the moisture and thus render the roller in proper condition to again perform its functions. It will further be observed that this cleansing operation may take place without the necessity of removing the roller from the printing press.

From the preceding description, it will be seen that my improved roller is one which may be readily manufactured and assembled at comparatively small expense; it provides a perfectly true cylindrical surface of uniform character throughout; there is no possibility of either the individual discs rotating or creeping or the entire disc section creeping or distorting and finally, the roller may be cleansed with a minimum of effort without the necessity of disassembling any of the parts. The inking or damping section of the roller can, of course, be renewed in a comparatively simple manner by substituting new discs and further, the roller may be interchangeably used for either inking or damping by utilizing the proper character of material in the disc elements.

Although I have herein shown and described what I now consider the preferred manner of carrying out my invention, the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. The herein described process of cleansing a printing press roller having a covering adapted to to carry and deposit a medium of liquid character onto another element of the press which includes: forcing a cleansing solution from the interior of the roller in radial directions outwardly through said covering; and then forcing a drying medium from the interior of the roller outwardly through said covering.

2. A printing roller comprising in combination a mandrel having intermediate of

its end portions an outstanding flat faced periphery and being provided with an interior chamber in communication with the flat faced periphery through a series of adjacent rows of perforations, a series of flat disks of absorbent material each having an interior aperture of a size to fit snugly upon the flat faced portion of the mandrel and each having a truly circular periphery, the peripheries in unison constituting a cylinder, each disk registering with a row of perforations in the mandrel, the mandrel adjacent one of its ends being of reduced diameter and threaded, an abutment at the opposite end of the mandrel for limiting the movement of the disks endwise of the mandrel, and clamping means mounted upon the threaded portion of the mandrel for tightly clamping the disks together in assembled relation between the clamping means and the abutment.

3. The herein described process of cleaning a printing press roller chambered on its interior and provided with radial perforations extending through its wall, and open at one end and closed at the other, and having an absorbent covering adapted to carry and deposit a medium of liquid character onto another element of the press, which includes the step of forcing a cleaning solution through the open end of the roller into the interior chamber and therefrom in radial directions through the perforations outwardly through said covering.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of April, 1927.

WILLIAM C. HUEBNER.