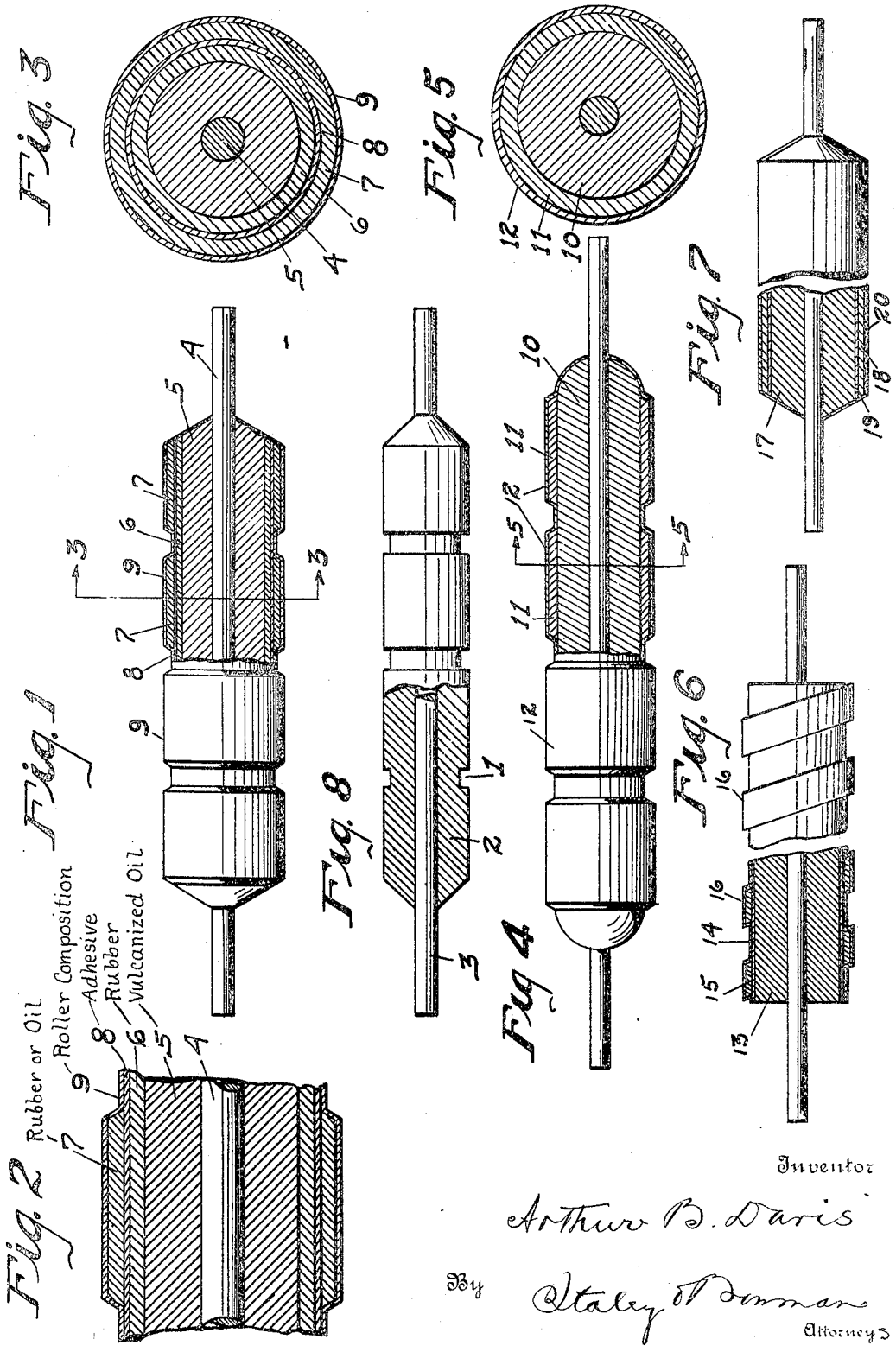
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A. B. DAVIS

PRINTING ROLLER AND METHOD OF MAKING SAME

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ARTHUR B. DAVIS, OF SPRINGFIELD, OHIO.

PRINTING ROLLER AND METHOD OF MAKING SAME.

Application filed April 24, 1924. Serial No. 708,717.

To all whom it may concern:

Be it known that I, ARTHUR B. DAVIS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Printing Rollers and Methods of Making Same, of which the following is a specification.

This invention relates to printing rollers and it particularly relates to a means for and method of equipping a printing roller with a temporary inking surface or periphery.

In the operation of printing presses it is frequently desired to apply to the forms a plurality of colors of ink to be carried and applied by the same rollers. To perform this operation it has been the custom to divide the rollers into sections of the required length by cutting grooves or depressions in the rollers to prevent the inks of different colors from running together, which operation renders the rollers unfit for use except with that particular job, necessitating remaking or recasting the rollers so that they can again be used as one-color rollers or again grooved with different sized sections for multi-color work. This method of making sectional rollers is expensive and troublesome, particularly in view of the fact that the arrangement of the sections are frequently varied and in view of the further fact that it destroys the roller for use other than on that particular job.

Again, it has been the custom in some cases to spirally groove those ink feeding or distributing rollers known as the ductor rollers so that their inking surfaces will be reduced, say, fifty per cent, more or less, so that the quantity of the ink fed and distributed thereby will be reduced beyond the minimum flow allowed by the ink fountains.

Again, it is sometimes desired to equip worn inking rollers with a new surface which can be readily removed and replaced with a similar surface when desired.

An object of my invention is to provide simple and effective means for and a method of applying to a printing roller a peripheral inking surface which can be applied and removed from the roller without destroying the original utility of the roller.

A further and more specific object of the invention is to provide a simple and effective means for and a method of converting a continuous one-color roller into a multi-color roller which will permit the roller to be readily restored to its original condition so that it may again be used as a one-color roller or again converted into the multi-color roller to suit different color schemes.

A further and more specific object of the invention is to provide simple and effective means for and a method of equipping an inking roller with an inking periphery of a character which will reduce the ink carrying surface of the roller and of such a nature that it can be readily removed when desired either to restore the roller to its original character or to equip the roller with a new and different inking surface.

A further object of the invention is to provide simple and effective means for and a method of equipping an inking roller with a printing surface which extends the full length of the roller of such a nature that it can be readily removed and replaced with a new surface when desired.

In the accompanying drawings:

Fig. 1 is a view partly in side elevation and partly in longitudinal section of a printing roller to which my improvements have been applied.

Fig. 2 is an enlarged longitudinal section of a portion of the same.

Fig. 3 is an enlarged section on the line 3—3 of Fig. 1.

Fig. 4 is a view partly in side elevation and partly in longitudinal section of another form of printing roller to which my improvements have been applied.

Fig. 5 is an enlarged section on the line 5—5 of Fig. 4.

Fig. 6 is a view partly in side elevation and partly in longitudinal section of a roller to which has been applied a spirally-formed inking surface.

Fig. 7 is a view partly in side elevation and partly in longitudinal section of a roll to which has been applied a continuous inking surface.

Fig. 8 is a view partly in side elevation and partly in longitudinal section of a roller showing the customary manner of grooving the same for multi-color work.

In Fig. 8 there is illustrated the customary manner of making a sectional roller in which it will be seen that annular grooves 1 are cut in the periphery of the core 2 of the roller, these grooves being spaced apart to provide the required length of sec-

tion for each color. The core of the roller may be formed of any soft resilient material suitable for the purpose. The annular grooves are cut or ground into the surface of the material and serve to divide the surface into separate sections, each of which acts to carry a certain kind or color of ink, the grooves preventing inks of different color from running together. With this method of sectioning the roller, when the particular job for which the roller has been sectioned is completed, it has been the custom to ship the stock 3 to the roller manufacturer and have it recast or remade with new composition.

Referring particularly to Figs. 1, 2 and 3, I have shown my invention applied to a roller which consists of a stock 4, core 5 of vulcanized oil and a skin or sleeve 6 of rubber, which is a type of roller which has been made effective for printing purposes. To convert such a roller into a sectional roller, I employ a series of sleeves 7, which may be formed of soft vulcanized rubber, vulcanized oil or other suitable material. The wall thickness of each sleeve is generally about one-eighth of an inch, this having been found sufficient to provide a groove of proper depth. These sleeves are held in position by adhesive substance, which is soluble under the action of water. The adhesive substance in the present case is applied by first covering the inner rubber sleeve 6 with a coating or film of well-known roller composition 8, composed generally of glue, molasses, glycerine and water. If the sleeves are placed in position before the roller composition sets or dries the drying of the composition serves to temporarily cement the sleeves to the roller. If the composition, however, has set or dried before the sectional sleeves are inserted, then the interior of the sleeves is first coated with glycerine which acts to soften the roller composition or render it tacky or sticky so that when the composition again dries it cements the sleeves in place. The glycerine also permits the sleeves to be readily slid to their proper position on the roller. After the sectional sleeves have been properly applied to the roller the entire roller is coated with a film of roller composition 9 preferably by pouring the composition in a heated state upon the roller and allowing it to drain therefrom in the manner described in my pending application Ser. No. 656,377, filed August 8, 1923. Such a manner of applying the composition results in a coating or film of generally less than one-sixteenth of an inch in thickness, which composition coating lends to the roller the characteristic of having a surface which has a good affinity for ink.

This outer surface may be renewed at any time by washing off the old composition with water and recoating in the manner described without affecting the material, which cements the sectional sleeves to the roller. If it is desired to remove or change the sectional sleeves, this may be readily accomplished by heating the sections of the roller with hot water or otherwise sufficiently to soften or melt the composition which cements the sections to the roller, after which the sections can be slipped off the roller, the roller washed, recoated with roller composition and new sections placed thereon if desired. The old sections if desired may also be washed and used over again.

If it is desired to make a roller with permanent sections the cement used for securing the rubber sections to the roller will be preferably of such a nature as to be unaffected by water.

In Figs. 4 and 5 the improvements are shown applied to a roller the core 10 of which is formed of the well known roller composition. In this case the sectional sleeves, which are indicated at 11, preferably have their inner walls coated with glycerine before application, the glycerine acting to soften the surface of the roller when the sleeves are applied, which after drying temporarily cements the sleeves in position. Such a roller after the sectional sleeves have been applied is also covered with a film or coating of roller composition indicated at 12.

In Fig. 6 there is shown a roller formed with a spiral inking surface. In this view 13 represents a core of any suitable soft resilient material which is first provided with a thin coating of roller composition 14. A tape 15 of rubber, vulcanized oil, or other suitable material, either with or without a coating of glycerine, is wound about the coating 14 in spiral fashion so as to be made to adhere to the roller in the manner explained in connection with the sectional sleeves. After the tape has been positioned the roller is submitted to another coating 16 of roller composition. This tape may be removed when desired by heating the roller with warm water or otherwise to soften the roller composition in the manner before described.

In Fig. 7 a roller having a base material or core 17 of any suitable material is shown equipped with a continuous sleeve 18 of vulcanized rubber, vulcanized oil or other suitable material. The core 17 is first coated with a film of roller composition 19 and the inner surface of the sleeve coated with glycerine to enable it to be readily slipped to position and serve to soften the roller composition so as to cement the sleeve in place. The rubber sleeve is then equipped with a thin coating 20 of roller composition. Such a sleeve may be removed when worn and a new sleeve applied in the manner described.

While I have shown the improvement applied to several types of printing rollers it is to be understood that the invention is applicable to rollers made from any material which has been or may be found suitable for a printer roller, such as soft vulcanized rubber, either solid or sponge, or vulcanized oil or any combination of rubber and vulcanized oil, or other suitable materials.

Having thus described my invention, I claim:

1. The method of forming a printing roller with a removable inking surface consisting in providing the surface of said roller with a coating of roller composition, placing on said roller over said coating a soft resilient member, rendering the roller composition soft by glycerine or an equivalent substance to cause it to act as a binder to cement said member to said roller when dried, and providing said member with a coating of roller composition.

2. The combination, with a printing roller formed of soft resilient material, of a soft resilient inking member removably secured to the periphery of said roller material, and a thin coating of roller composition placed on the outer surface of said inking member.

3. The combination, with a printing roller formed of soft resilient material, of a thin coating of roller composition on the periphery of said roller, a member formed of soft resilient material placed on said roller and cemented thereto by said roller composition, and an outer coating of roller composition on said member.

4. The combination, with a printing roller formed of soft resilient material, of a sleeve of soft resilient material removably secured to the surface of said roller, and a thin coating of roller composition on the outer surface of said sleeve.

5. The combination, with a printing roller formed of soft resilient material, of a sleeve formed of soft vulcanized rubber removably secured to said roller, and a thin coating of roller composition on the outer surface of said sleeve.

6. The combination, with a printing roller formed of soft resilient material, of a thin coating of roller composition on the outer surface of said roller, a sleeve of soft vulcanized rubber placed on said roller and cemented thereto by said roller composition, and a thin coating of roller composition on the outer surface of said rubber sleeve.

7. The combination, with a printing roller formed of soft resilient material, of a plurality of soft resilient spaced-apart sleeves removably secured to said roller, and a surface coating of roller composition on said sleeves.

8. The combination of a printing roller formed of soft resilient material, of a plurality of spaced-apart sleeves formed of soft vulcanized rubber removably secured to said roller, and a surface coating of printers' roller composition on said rubber sleeves.

9. The combination, with a printing roller formed of soft resilient material, of a coating of cementitious material placed on said roller, a plurality of spaced-apart soft resilient sleeves on said roller and secured thereto by said cementitious material, and a surface coating of printers' roller composition over said sleeves, said cementitious material being of a nature to be softened under the action of water or heat.

10. The method of providing a printing roller with a removable surface consisting in removably securing the said roller a plurality of spaced-apart removable sleeves of soft resilient material, and coating said sleeves with printers' roller composition.

11. The method of forming a printing roller with a removable surface consisting in providing the surface of said roller with a cementitious material of a nature to be softened under the action of heat or water, cementing to said roller by said material a plurality of spaced-apart sleeves of a soft resilient character, and coating said sleeves with printers' roller composition.

12. The method of providing a printing roller with a removable inking surface which consists in removably securing to said roller a sleeve of soft resilient material by a substance which can be softened under the action of water or heat without impairing the character of said roller.

13. The method of providing a printing roller with a removable surface which consists in securing to said roller an inking member through the medium of a cementitious material capable of being softened under the action of water or heat, and coating said member with a thin layer of roller composition whereby the roller composition may be removed and the cementitious material softened to permit the removal of said member without impairing the utility of said roller.

In testimony whereof, I have hereunto set my hand this 15th day of April, 1924.

ARTHUR B. DAVIS.