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F. G. WALTERS

1,856,085

ROLLER

Filed Aug. 24, 1928

Fig. 1.

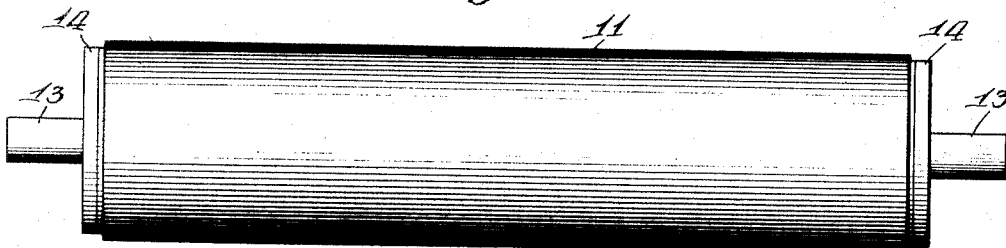


Fig. 2.

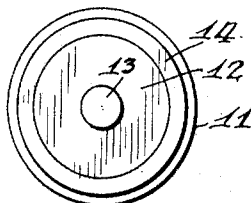
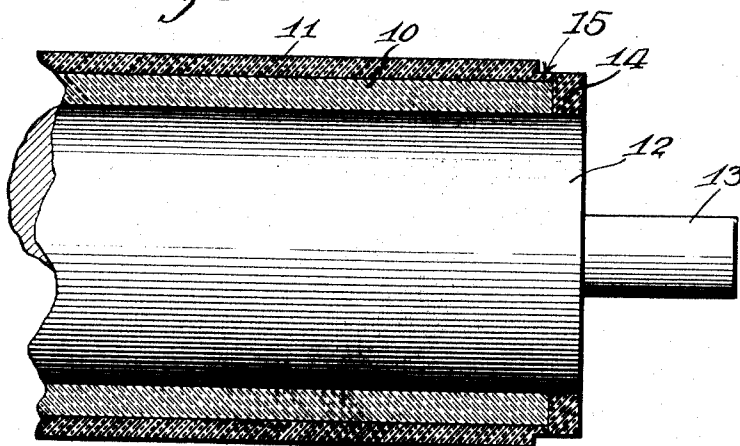


Fig. 3.



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UNITED STATES PATENT OFFICE

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ROLLER

Application filed August 24, 1928. Serial No. 301,925.

This invention relates to a roller and has particular reference to a printer's roller or a lithographic roller or any other roller or cylinder which embraces either a central core of high resiliency in combination with an outer face layer of tough exterior or a homogeneous material.

More particularly, this invention relates to a printer's roller or lithographic roller especially adapted for use in presses in which the roller is subjected to wide ranges of temperature and humidity and wherein the requirements are for a roller which will retain its resilience and toughness under all practical conditions of use. Further, it has been the practice to bevel the ends of the roller material, whereinafter, the tough outer face layer of protecting material, in being applied to the bevelled portion of the roller material falls away from the upper end thereof to leave the same inadequately protected. The material facing adjacent the ends of the rolls becomes worn off and in many instances pieces of the facing are broken away or torn out rendering the end portions inefficient and unserviceable.

The present invention contemplates building up the extreme outer ends of the roller with a tough resilient protecting homogeneous material similar in characteristics or of the same material as that of the composition formed on the stock or shaft. By "building up the outer ends of the roller" is meant preferably casting a substantial collar on the stock to unite with the face layer and the resilient core, or with the homogeneous material if such be employed, whereby to anchor and to protect the ends of these materials against checking, tearing, or damage from bumps.

The surface of the outer ends of the roller, in excess of the working surface may be ground to provide a reduced diameter whereby dried ink and foreign matters are prevented from accumulating in a sufficient

quantity to affect the accuracy of the roller. Also, this construction provides that the entire inking or dampening surface of the roller is supported by the resilient cushion and there is no restraining influence of a rigid nature. However, it may be desired that the built-up ends of the roller be of the same diameter as that diameter of the working surface and may be of any desired consistency although it is preferable to be hard.

Other objects and advantages will hereinafter be more fully described, and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description and accompanying drawings, wherein, for purposes of illustration, a roller composed of a central core of high resiliency covered with an outer face layer of tough resilient material is shown, in which:

Figure 1 is a front elevational view of a roller embodying the features of this invention;

Fig. 2 is an end elevational view of the device shown in Fig. 1; and

Fig. 3 is an enlarged detail view of a portion of the roller shown in Fig. 1, partly in section.

Referring now to the drawings, the roller comprises a central core portion 10 made of a suitable resilient material, and a face layer 11 which surrounds and is preferably bonded to the resilient core 10. The outer face layer 11 is preferably composed of a homogeneous material which is relatively tougher than the resilient core 10. The material from which the resilient core 10 is formed is preferably of vulcanized oil, such as linseed oil, and the face layer 11 of the roller may be made from the same general character of oil, although treated somewhat differently to produce a tough and smooth outer face.

The combination of the aforementioned materials is deposited on a stock or shaft 12, which extends centrally through the afore-

mentioned roller, a reduced portion thereof extending beyond the ends thereof to constitute the bearing member 13 therefor. The resilient roller material 10 and the outer face layer 11 terminate at a spaced distance from the end of the stock 12, this distance being from three-eighths of an inch to three inches long, or as may be desired. However, these dimensions are merely for the purpose of clearer description and it will be understood that this invention is not to be limited to the same. A collar 14 is formed on the stock 12 and extends preferably the full distance between the end of the stock 12 and the ends of the outer face layer 11 and the resilient roller material 10. The collar 14 is preferably united with the materials of this assembly in order that the ends of the outer face layer 11 are anchored to the stock and the ends of the resilient roller material are protected against checking or tearing or other damage.

One of the methods of forming the roller material 10 and outer face layer 11 on the stock 12 and the apparatus therefor is more plainly shown and described in Patent No. 1,283,392 issued October 29, 1918, and assigned to the assignee of this application. However, it is to be understood that various other methods, apparatus, and materials may be used in the making of the roller as embodied in this invention, and, therefore, inasmuch as such apparatus, methods and materials are old in the art, a more complete description is not believed to be necessary. However, one method of forming the collar portion 14 on the stock to unite with the materials of the roller will now be recited.

After the roller is assembled on the stock, a cylindrical collar of the same inside diameter as the outside diameter of the roller may be disposed around the outer periphery of the face layer 11 to extend a substantial distance past the end of the stock 12. A material, such as the material of the outer face layer 11, is then poured in the mold formed by the aforementioned cylinder as the roller is set on end whereby the uniting of the material thus poured with the materials of the roller is accomplished by means of vulcanization, or otherwise. By vulcanization, it is intended to mean the hardening or partial hardening or solidification of the oil, rubber, or analogous composition. It is to be understood that the collar 14 is tough, although flexible, in order to form a protective covering over the comparatively soft resilient core and face layer.

After the collar is thus united with the ends of the roller materials, the outer surface thereof, together with the portion of the outer face roller 11, may be ground down to a size such that the external diameter of the collar is smaller than the external diameter of the face layer 11 and greater than the ex-

ternal diameter of the roller material or resilient core 10. By reducing the diameter of the end portions 15 of the face layer 11, the entire working surface of the face layer is uniformly cushioned by the resilient core 10. It will be particularly noted that the extreme outer ends of the resilient core 10 extend a short distance beyond the working surface of the face layer 11 in order to accomplish the aforementioned result.

As stated hereinbefore, the ends of a homogeneous roller may be built up in the manner aforesaid. The homogeneous roller may be formed of a shaft or stock of metal, wood, or other desired material, either solid or hollow, having a cover consisting largely of vulcanized materials of any desired thickness. The collar 14 may be cast in such a manner that it will become a part of the roller surface and will provide either a hard or a soft strip at the ends of the roller. However, in this instance, also, the diameter of the collar may be reduced to prevent the otherwise common accumulation of dried inks and other foreign substances thereat which latter affects the accuracy of the roller.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and therefore the same is to be limited only by the scope of the appended claims and the prior art.

I claim:

1. A roller for the purpose set forth comprising a central core of high resilience having a face layer of tough exterior formed thereon, and a collar of tough flexible material adjacent to and uniting with the ends of said face layer and said core to anchor the ends of said face layer and to protect the ends of said central core, said collar being of a reduced diameter relative to the outside diameter of said face layer.

2. A roller for the purpose set forth comprising a central core of high resilience having a face layer of tough exterior formed thereon, and a collar of tough flexible material adjacent to and uniting with the ends of said face layer and said core to anchor the ends of said face layer and to protect the ends of said central core, said collar having an external diameter greater than the outer diameter of said central core and smaller than the outer diameter of said face layer.

3. A roller for the purpose set forth comprising a rigid stock, a resilient roller material on said stock extending to within a spaced distance of the ends thereof, a tough flexible face layer on said roller material, and a collar of tough flexible material on said stock at the ends of and uniting with said roller material and said face layer to anchor the ends of said face layer and to protect the

ends of said roller material, said collar having a smaller external diameter than the external diameter of said face layer and a greater external diameter than the external diameter of said roller material, the outer ends of said face layer being reduced to conform to the external diameter of said collar whereby the working surface of said face layer is uniformly cushioned.

10 In witness whereof, I have hereunto subscribed my name.

FRED G. WALTERS.

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