

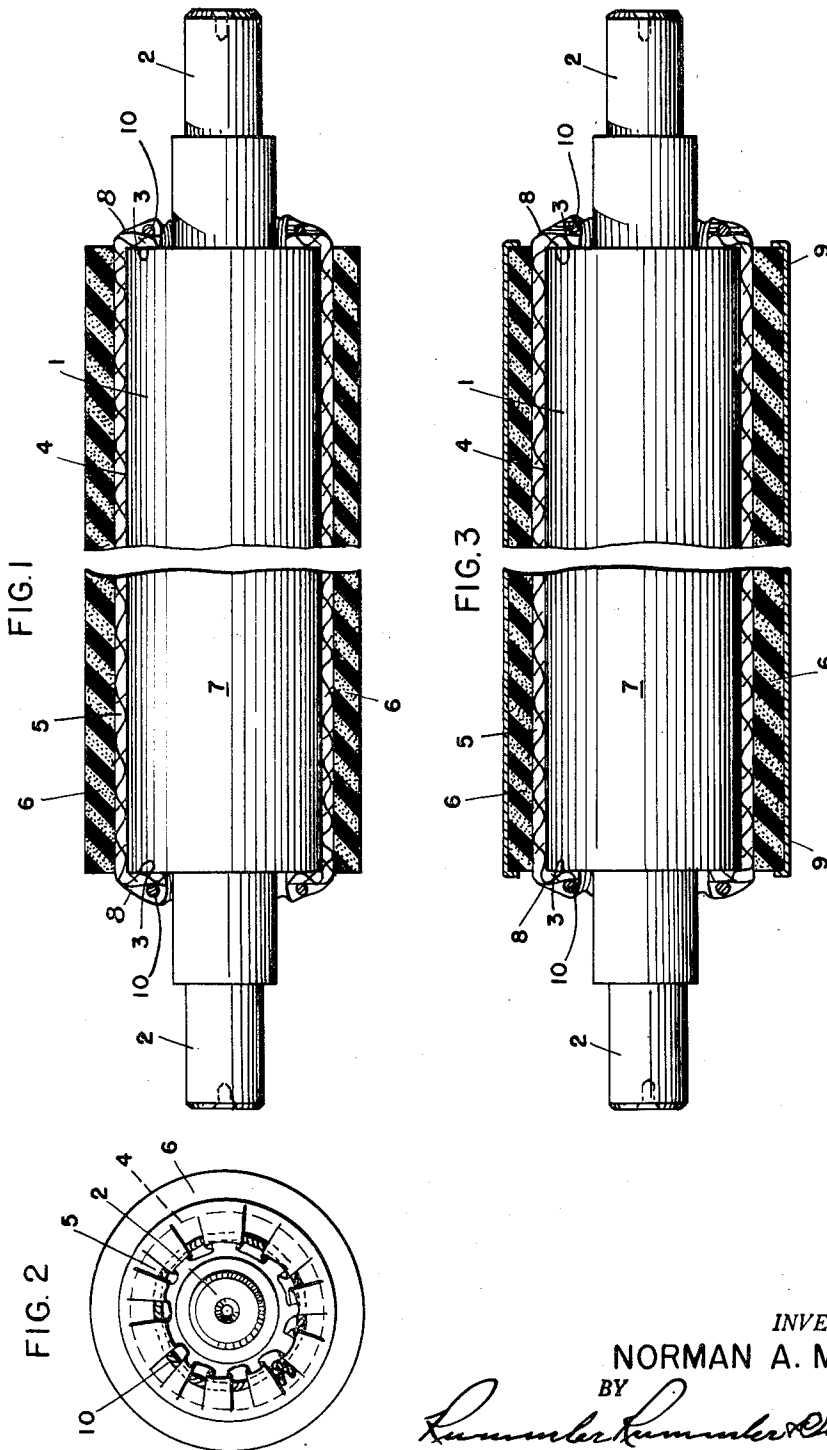
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LITHOGRAPHIC PLATE DAMPENING ROLLER

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LITHOGRAPHIC PLATE DAMPENING ROLLER

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5 Claims. (Cl. 29—119)

This invention relates to improvements in removable moisture-carrying sleeves or jackets that are applied on cylindrical pressure rolls for use in lithographic presses to dampen the non-printing areas of lithographic plates prior to the inking thereof.

Heretofore these removable sleeves have been made of knitted or woven fabrics known as mollenon which is a thick moisture-absorbent padding. Another commonly used material for this purpose is a fabric like the usual knitted turkish toweling.

The main objects of the present invention are to provide an improved form of jacket for lithographic plate dampening rollers, which has sufficient elasticity to allow it to expand or contract to fit snugly on dampening cores of varying diameters and which has greatly increased moisture-carrying capacity and increased efficiency; to provide an improved jacket of this kind in which the plate-contacting surface is of microporous nature and devoid of any possibility of depositing lint upon the printing plate; and to provide an improved form of moistening roller jacket of composite structure that is readily removable for cleaning and of greatly increased durability over the usual structures heretofore used for this purpose.

Specific embodiments of this invention are illustrated in the accompanying drawings in which:

Figure 1 is a longitudinal section of the improved jacket as applied to a dampening roller.

Fig. 2 is a transverse section of the same.

Fig. 3 is a longitudinal sectional view of a modified structure having a disposable surface element.

In the form shown in Fig. 1, the inner roller body 1 is of the usual metal structure comprising a cylindrical body with journal portions 2 of reduced diameter at its ends and with abrupt shoulders 3 at each end of the cylindrical surface 4. The moisture-carrying jacket comprises a thin tubular base layer 5 of flexible woolly fabric material, preferably of cotton yarn or other spun fibers, that is knitted or interlaced in such fashion as to allow the jacket to expand and contract to fit dampening roller cores of various diameters and adapted to be readily slid lengthwise on and off the metal roller. This base fabric tube may be knitted in circular fashion or flat with an abutting seam.

Mounted on the exterior surface of this tubular base fabric 5 is a layer 6 of microporous synthetic rubber sponge material, such as made from "Buna-N," produced by co-polymerization of butadiene and acrylonitrile, or "neoprene," produced by polymerization of chloroprene (monochloro-butadiene), said layer being of uniform thickness with its outer surface finished by grinding to true cylindrical form with respect to the axis 7 of the roller. This sponge rubber-like layer 6 is securely fastened to the base fabric layer 5 by water-resistant glue or cement that will not deteriorate when submerged in the usual cleaning solution or water containing certain chemicals that are commonly used in lithographic fountains to assure proper wetting of the non-printing surfaces of the lithographic plates. Another method of securing

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the sponge rubber-like material to the base fabric is that of vulcanizing and curing these to each other. The jacket is of slightly less internal diameter than the core on which it is to be mounted, so as to insure a tight fit on the roller core.

The layer 6 is preferably made of synthetic rubber which is produced by methods now common to rubber fabrication technique so as to have a microporous sponge structure in which the air cells are interconnected, so that it has the ability to take up and hold the lithographic fountain solution from the water pan and to transfer such water to the surface of the lithographic plate.

The fabric tube that comprises the base layer 5 of the jacket is extended beyond the ends of the sponge rubber layer 6 to provide flexible end portions 8 that can be drawn snugly over the shoulders 3 of the roller and fastened in constricted form by lacing 10 or other suitable means to secure the jacket against shifting on the roller.

The jackets are, of course, constructed of various tubular shapes with diameters and lengths varying according to press sizes. It may be made flat and rolled to cylindrical form with abutting edges meeting in a flush seam secured by a cement appropriate for such purpose; or the sponge rubber material may be extruded in seamless tubular form. The rubber tube is then cemented or vulcanized upon the knitted tubular cotton material in appropriate lengths.

The presence of free sulphur in the composition of the sponge rubber-like material should be at a minimum percentage consistent with the curing of such materials, preferably less than one percent.

In the carrying out of this invention, I impregnate the sponge rubber-like material with a chemical that will cause it to become highly water receptive and oil repellent. Among such chemicals are numerous poly-vinyl derivatives, such as poly-vinyl acetate. Poly-vinyl acetate is a common commercial substance that can be obtained on the open market. It is generally mixed with water until it has reached a viscosity of approximately 20 SAE motor oil. It is also acidified to a proper pH value of 2.0 to 2.6 by addition of certain acids among which I prefer furfural which acts as a binding agent for the poly-vinyl molecules. The entire formula is well mixed and blended, the mixture is heated to 160° F. and then allowed to cool. There are many variations of poly-vinyl acetate in its raw state and I do not wish to be restricted to any particular type. My only requirement is that it be highly water absorbent, oil repellent and capable of being solidified. It will then serve the important function of absorbing moisture uniformly throughout the entire mass without contaminating the usual lithographic dampening formulas. The impregnation is usually done by soaking the jacket in the poly-vinyl compound until saturation is reached, allowing the excess liquid to drain off, and then exposing the impregnated jacket to ultra-violet or infrared light to complete the chemical conversion of the poly-vinyl compound to a water absorbent gum-like consistency.

The sponge rubber-like material may be made according to any formula wherefrom the product possesses the ability to resist chemical or structural break-down when in contact with printing inks, commonly known as quick-drying types. Suitable for this purpose are the before-mentioned synthetic rubber materials known commercially as "neoprene" or "Buna-N." These types of synthetic rubber are selected because of their resistance to attacks by solvents used in lithographic printing inks. These types of synthetic rubber do not possess an affinity for greasy or oily materials, such as printing inks.

The exterior surface of the sponge rubber layer 6, which comes in contact with the lithographic plate and the other rollers that comprise the usual dampening system, has a

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surface finish or texture of extremely fine porosity. Such finish can be mechanically produced by abrasive or other action common to the processing of such materials.

In the modified construction shown in Figure 3, the layer 6 of sponge rubber is covered by a readily replaceable, non-woven fabric surface layer 9 of tubular form that is capable of absorbing and carrying the moistening solution. A specific fabric suitable for layer 9 is a paper-like composition of cotton fibers that are interlocked, by vibration rather than by spinning and weaving, and held in place by resinous materials that are water absorbing but not soluble in water, or mild acids, or alkalies. The water absorbing resins act upon the cotton fibers to bind the entire mass together and to resist, when wet, tearing in any direction. Such materials are well-known in the printing industry for use on dampening rolls. Another specific material suitable for this purpose is molleton because it has water absorbent fibers and a wooly surface adapted to spread the fluid evenly on the printing plate or roller.

This invention does not change the present techniques of changing of dampening roller coverings. Such coverings must be changed frequently to clean the surfaces of accumulated chemicals and inks that become embedded in the materials. The improved jacket gives the pressman more latitude for adjusting the pressure between the moistening roller and the plate; and the layer of soft sponge rubber-like material allows the roller to conform with any slight irregularities in the non-printing surface of the plate. A further feature of the invention is that the hardness of the rubber-like material can be made to fit the circumstances present in various types of presses.

Although but two embodiments of the invention are herein shown and described it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A lithographic dampening roller jacket, comprising a resiliently knitted textile fabric tube having integrally mounted on its exterior surface a cylindrical layer of microporous liquid-absorbent synthetic rubber sponge composition of uniform thickness, said fabric tube being expandible and contractible and adapted to be slid on and off of the roller and having portions extending beyond both ends of said layer and adapted to be constricted over the ends of a cylindrical roller, and said layer of sponge rubber being impregnated with polyvinyl acetate.

2. A lithographic dampening roller jacket comprising a resiliently expandible wooly textile fabric tube having integrally mounted on its exterior surface a cylindrical layer of liquid-absorbent, microporous, synthetic rubber

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sponge composition of uniform thickness, said tube having portions extending beyond both ends of said layer, and means for constricting and fastening said end portions over and against the ends of said roller, said layer being impregnated with liquid poly-vinyl acetate converted to a gum-like consistency after impregnation.

3. A lithographic dampening roller jacket, comprising a resiliently expandible textile fabric tube having integrally mounted on its exterior surface a cylindrical layer of liquid-absorbent, microporous, synthetic rubber sponge composition of uniform thickness, said tube having portions extending beyond both ends of said layer and means for constricting the extending portions over the ends of a cylindrical roller, and an external layer of water absorbent fabric removably mounted on said sponge rubber layer and adapted for carrying the dampening fluid to a lithographic plate.

4. A removable and replaceable lithographic dampening roller jacket, comprising an expandible and contractible knitted textile fabric inner tube, and a concentric layer of microporous water-absorbent synthetic rubber sponge material integrally mounted thereon, said inner tube extending beyond both ends of said sponge layer and adapted for pulling the jacket on and off of the roller, and said rubber sponge layer being impregnated with polyvinyl acetate converted in situ to a gum-like consistency.

5. A lithographic dampening roller jacket, comprising a resiliently expandible and contractible textile fabric inner tube and a concentric outer layer of microporous synthetic rubber sponge material integrally mounted thereon, said fabric layer having end extensions adapted for pulling said jacket as a unit on and off from a roller core, said sponge material being impregnated with a water-receptive and oil-repellent polyvinyl derivative.

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