Jan. 22, 1935. E. HAZELL 1,988,491

RUBBER COVERING FOR SPINNING ROLLS

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Fig. 1.

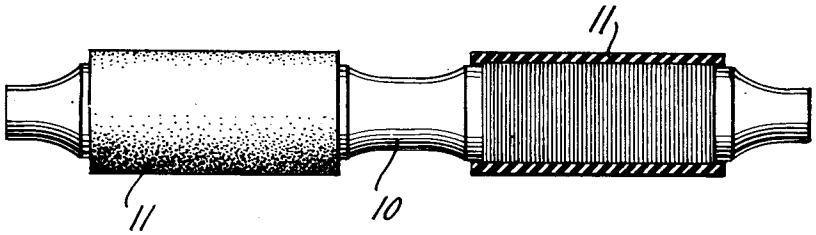
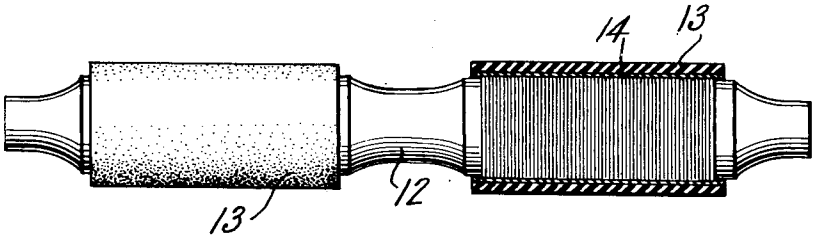


Fig. 2.



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RUBBER COVERING FOR SPINNING ROLLS

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5 Claims. (Cl. 19—143)

My present invention relates to textile machinery and more particularly to an improved rubber covering for spinning rolls.

Spinning rolls up to the present have had as a cover a sleeve made of leather, preferably calf skin. Leather is an ideal material for the covering of spinning or drawing rolls due to the fact that it is porous and does not develop static in use and consequently if an end breaks in passing under the roll, the roving does not stick to the roll and wind around the same. The objections to the use of leather is that it is expensive and relatively short lived. Attempts have been made heretofore to utilize rubber as a covering for drawing or spinning rolls in place of the leather usually employed, but such rubber coverings have been found objectionable in that they exhibit too much drag and also they tend to develop static with the consequent sticking of the roving thereto should an end break in passing under the roll.

In my present invention, I have obviated the objections to rubber coverings for spinning or drawing rolls and have developed a rubber covering in which the porosity and moisture absorption qualities may be controlled and varied over a considerable range and have developed a rubber covering which is slightly conducting as regards electricity and, therefore, prevents the formation of static with its consequent objection.

The object of my invention, therefore, is an improved rubber covering for spinning or drawing rolls and the like.

In the accompanying drawing illustrating spinning rolls to which my invention has been applied:

Figure 1 is an elevation partly in section showing one form of the rubber covering, and Fig. 2 is an elevation part in section showing another form of the invention.

My improved roll is preferably formed from latex or an aqueous dispersion of rubber or similar material compounded with ingredients which render the resulting article porous and slightly conducting. The rubber covering is preferably made in tubular form, the latex or aqueous dispersion being deposited by vacuum on the surface of a perforated knurled metal mandrel which forms no part of my present invention—such mandrel being coated with fabric and on which a layer of whiting paste may or may not be employed depending on the character of the covering to be produced. In one form of my invention, as illustrated in Fig. 1, 10 designates a spinning roll having thereon a covering 11 deposited on a perforated mandrel in a manner to be hereinafter described, and deposited on a coating of whiting attached to a fabric base, while in Fig. 2, the mandrel 12 similar to the mandrel 10 is provided with a rubber covering 13 which is deposited by vacuum on a fabric base 14, no coating or whiting in this form being deposited on the fabric base 14.

As regards my present invention, the method of depositing latex on a base is to be considered prior art, and I may utilize any of the modern well-known methods of depositing latex on an aqueous dispersion of rubber or rubber-like material. The compound of latex or aqueous dispersion of rubber or rubber-like material with ingredients may be any that may be desired and a typical compound is as follows:

Rubber (as 36.7% ammonia preserved latex)	100
Spindle oil (as emulsion)	10
Sodium oleate	.014
Condensation product of heptaldehyde (as emulsion)	.125
Condensation product of aniline and acetone (as emulsion)	.50
G. whiting (as paste)	90
Zinc oxide " "	5.84
Sulphur " "	1
Mapico yellow " "	.5
Glue " "	2.4
Casein (as ammonium caseinate)	.25
Sodium polysulphide (aq. 42.1% solids)	3.14
Sulphur (as ammonium polysulphide)	.126

The perforated mandrel above referred to in forming the article illustrated in Fig. 1 of the drawing is first covered with fabric and then dipped into a suspension of whiting or chalk and vacuum applied to the perforated mandrel until the fabric is covered with a thin coat of the whiting or chalk. The mandrel is then removed from the suspension of whiting or chalk and allowed to dry and the mandrel is then dipped into the compound above noted or into a similar compound and with vacuum applied to the mandrel the latex or aqueous dispersion of rubber or rubber-like material is deposited on the chalk base and after deposition the mandrel, together with the latex or aqueous dispersion of rubber or rubber-like material deposited thereon, is dipped into a hygroscopic material such as glycerine for a suitable length of time, for example 1.7 minutes. Other hygroscopic liq-

uids as well as solutions of hygroscopic solid materials may be used instead of glycerine, as for example, ethylene glycol or solutions of sodium sulphate. This latter treatment insures that the hitherto deposited latex or rubber-like material will be rendered sufficiently moist so that the natural or added electrolyte material of the rubber dispersion can properly confer electrical conductivity to the deposit so as to prevent formation of static electricity when in use. When sodium sulphate is used it provides a double function of being a hygroscopic agent and electrolyte, wherein the glycerine and glycol have only the former function. The porosity and moisture absorption qualities of the rubber or rubber-like deposit may be varied at will by altering the drying time of the deposit under vacuum, the length of time of immersion of the mandrel in the latex compound and the time and temperature of drying prior to the vulcanization. I find it preferable to dry the latex or rubber-like deposit thereon for approximately two hours at 180 degrees F. Also, I find it preferable to dust the surface of the rubber deposit or rubber-like deposit with zinc stearate in order to give the finished roll or covering a smooth finish and in order to cut down the drag heretofore experienced in rubber rolls of this type. The deposit is finally cured for a period of 12 minutes at 40 lb. pressure with a three minute rise thereafter to 60 lb. pressure. The rubber deposit after vulcanization is removed from the mandrel and washed to remove any excess whiting or chalk adhering thereto, dried and then cut into lengths suitable for covering spinning or drawing rolls. If it is desired, the tubular article may be adhered to the spinning or drawing roll by means of a suitable cement or the article may be attached to the spinning roll without any cement being employed.

When it is desired to manufacture a spinning or drawing roll covering having a fabric base, the same mandrel as employed in connection with the article shown in Fig. 1 is utilized and the same covered with a fabric base 14. In this case, the step of forming a whiting or chalk filter bed on the fabric is omitted, but otherwise the method of manufacture is the same. I have described my invention as being applicable for covering spinning or drawing rolls, but my invention is applicable for the production of a variety of articles utilized in textile machinery, notably a drawing apron and I do not intend, therefore, to limit my invention other than as pointed out in the appended claims.

The manner in which the roll is rendered porous has been described above, but should it be desired to impart a greater degree of porosity than that pointed out, this may be accomplished by incorporating fibrous materials, such as wool flock, cotton flock, paper pulp and similar products to the rubber compound.

It is obvious that the single hygroscopic materials or mixtures thereof may be used, and it is to be further understood that any material which is hygroscopic and water soluble and capable of transmitting electric current in water solution is to be considered equivalent to sodium sulphate for the purposes of the invention.

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

1. A cover for spinning or drawing rolls or the like comprising a moisture absorbing layer of the rubber and non-rubber solids of a latex or an aqueous rubber dispersion containing glycerine whereby the cover is rendered slightly conductive to electricity.

2. A cover for spinning or drawing rolls or the like comprising a moisture absorbing layer of the rubber and non-rubber solids of a latex or an aqueous rubber dispersion containing sodium sulphate whereby the cover is rendered slightly conductive to electricity.

3. A cover for spinning or drawing rolls or the like comprising a base fabric carrying a moisture absorbing layer of the rubber and non-rubber solids of a latex or an aqueous rubber dispersion containing glycerin whereby the cover is rendered slightly conductive to electricity.

4. A cover for spinning or drawing rolls or the like comprising a base fabric carrying a moisture absorbing layer of the rubber and non-rubber solids of a latex or an aqueous rubber dispersion containing sodium sulphate whereby the cover is rendered slightly conductive to electricity.

5. A cover for spinning or drawing rolls or the like comprising a moisture absorbing layer of the rubber and non-rubber solids of a latex or an aqueous rubber dispersion containing a water soluble hygroscopic material adapted to aid in conferring electrical conductivity to the cover.

EARDLEY HAZELL.