

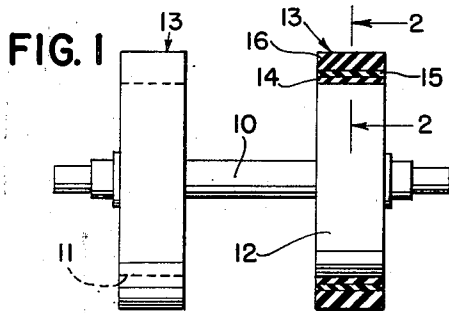
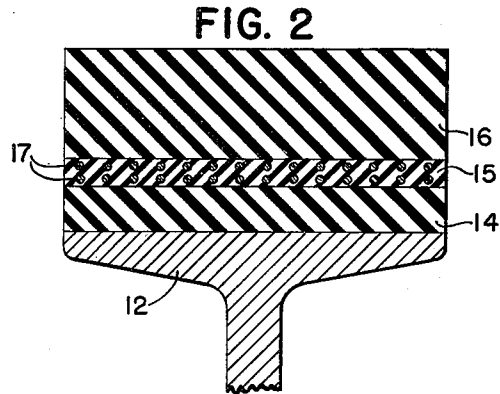
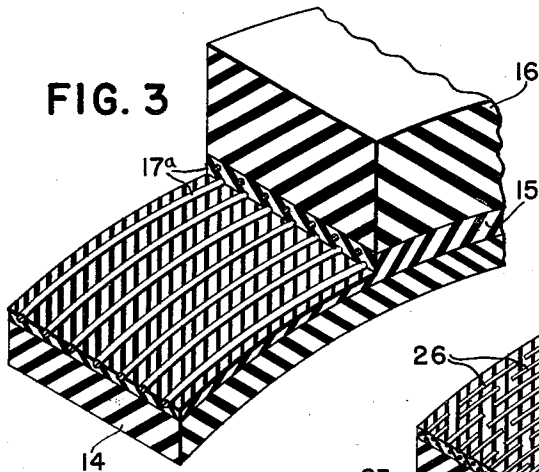
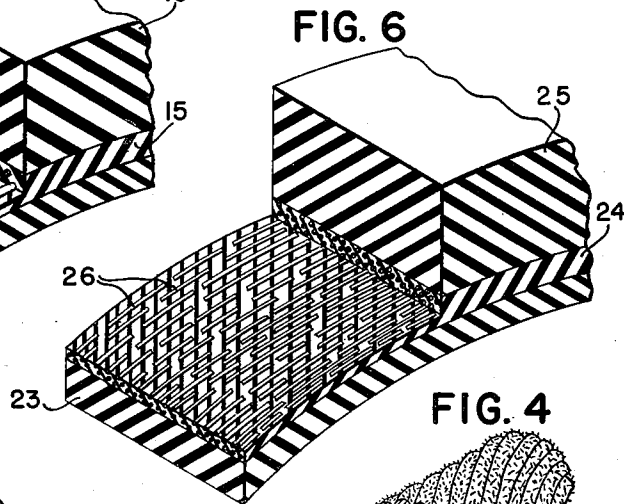
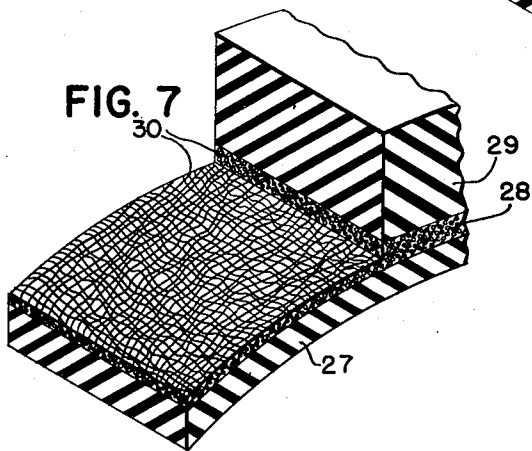
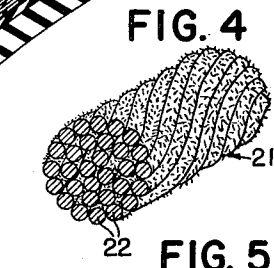
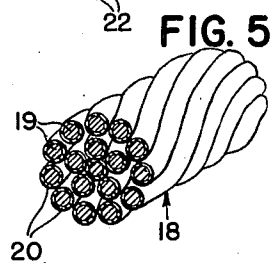
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2,597,858

COVERING FOR TEXTILE MACHINERY ROLLERS

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COVERING FOR TEXTILE MACHINERY
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3 Claims. (Cl. 19-143)

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This invention deals with coverings for rollers as they are used in textile machinery, e. g. for spinning, drafting or the like apparatus, and in particular with aprons, cots and similar units.

Rollers used in textile machinery usually have a small diameter, and the coverings therefore have to stand a high degree of curvature. It has always been difficult to make aprons, cots or similar roller coverings sufficiently flexible so that they fit snugly such small rollers and at the same time to make these coverings rigid and resistant to deformation so that no traveling occurs.

It is an object of this invention to provide coverings for rollers of textile machinery which have a high degree of flexibility and at the same time a high resistance to deformation-causing stresses.

It is another object of this invention to provide coverings for rollers of textile machinery which do not travel during use but remain on the rollers during their entire service life.

It is still another object of this invention to provide coverings for rollers of textile machinery in which any frictional heat created on one surface of said covering is not conveyed to the other surface thereof.

It is still another object of this invention to provide coverings for rollers of textile machinery which are relatively inexpensive.

These and other objects are accomplished by reinforcing the neutral axis zone of the coverings by means of fibrous glass material.

The invention will be more fully understood from the following description taken in connection with the accompanying drawings, in which

Figure 1 is an elevational view of a pair of rollers as they are used in textile machinery, one of said rollers being illustrated partly in cross section in order to show the construction of the covering thereon;

Figure 2 is a cross section on an enlarged scale of one of the rollers of Figure 1 taken along line 2-2 thereof;

Figure 3 is a perspective fragmentary view of a modified form of covering with parts thereof removed in order to show certain details more clearly;

Figure 4 is a perspective view of a cable suitable for the reinforcement of the neutral axis zone of the covers of my invention;

Figure 5 is a perspective view of another modification of a cable as it may be used to reinforce the neutral axis zone of the coverings of my invention;

Figure 6 is a perspective fragmentary view of another modification of my invention; and

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Figure 7 is a fragmentary perspective view of still another modification of my invention.

Referring to the drawings in detail, and in particular to Figures 1 to 2, reference numeral 10 designates an axle shaft on which two rollers 11 and 12 are mounted. Each roller has a rubber covering 13 on its circumference. The cover 13 comprises an inner compression section 14, a neutral axis section 15, and an outer tension section 16. The neutral axis section, in the instance illustrated in Figures 2 and 3, comprises two layers of longitudinally and parallelly extending glass cords 17. These cords 17 are embedded in rubber or rubber-like composition. The tension and compression sections are also formed of rubber materials. While any kind of rubber is suitable for the coverings of my invention, it is advantageous to use a softer and more cushioning composition for the compression section and a harder and more resilient rubber composition for the tension section.

In Figure 3 a covering similar in structure to Figure 2 is illustrated with the exception that cords 17a are shown arranged in staggered relationship instead of being superposed as are cords 17 in Figure 2.

In Figure 4, a cable is illustrated which may be used in the neutral axis zone in place of the cords 17. This cable 21 is formed of a plurality of cords 22, each of which again is built of short glass staples. The short glass staples provide for a relatively rough surface, a feature which enhances the bond of the reinforcing members with the rubber material of the coverings.

Another modification of a cable, which also gave excellent results, is illustrated in Figure 5. There, plain glass cords 19 individually covered by a cushioning material 20, such as rubber, resin, or the like, are twisted into a cable 18. The individual coatings 20 provide for a reduction of the friction between the glass cords of the cable and thus reduce breakage thereof and consequently damaging of the rubber layers. Moreover, the coatings 20 increase the bond between the glass and the rubber of the neutral axis zone.

Another embodiment of my invention is illustrated in Figure 6. There, the compression section is designated with 23, the neutral axis section with 24, and the tension section with 25. The neutral axis section is reinforced by independent individual glass fibers 26 of different lengths; these fibers have been calendered into the rubber of the neutral axis zone so that they extend substantially parallelly to each other and to the longitudinal axis of the covering.

This modification is even more flexible than those shown in the previous figures due to the use of thinner and discontinuous glass fibers; yet the resistance to deformation is still relatively high, since the staples overlap with regard to their lengths.

In Figure 7 the compression section is designated with the reference numeral 27, the neutral axis section with 28, and the tension section with 29. There, the neutral axis section is reinforced by glass fibers which are matted into a blanket 30.

The various coverings of my invention are formed by building up the layers consecutively on a mandrel, by then cutting the built up layers into the width desired of the textile unit and then curing these units in a mold. During vulcanization the rubber flows between and around the reinforcing elements and thus provides for a firm anchorage therebetween.

Although the bond between the glass elements and the rubber is sufficiently high, it is advantageous in some instances to apply a coating on the glass elements either of rubber material, resin, or other materials known to the art whereby the bond is still increased.

In the case of using cords as the reinforcing elements, one layer or several layers may be used. If more than one layer is used, a staggered arrangement may be chosen which arrangement is another means of increasing the resistance to deformation and of providing for a more uniform distribution of the strength elements. The more layers of cords or of other reinforcing elements are used, the thinner the individual members thereof may be made. The thinner the individual glass members are, the higher the flexibility will be; yet the resistance to deformation will not be reduced thereby.

All rubbers customary in the art may be used for the article of my invention. However, butadiene copolymers and neoprene are preferred.

It will be evident that the reinforcing elements may be either made entirely of glass or of any combination of other materials with glass. Thus, for example, textile cords or fibers, plastic materials, or the like may be combined with the glass.

The coverings may be cemented onto the rollers, or else they may be made of a slightly smaller diameter than that of the rollers so that the coverings have to be stretched before mounting and are held in place by the forces of resiliency.

It will be obvious that the coverings of my invention are highly flexible and yet have an excellent resistance to deformation stresses. They do not travel on the rollers during use but remain thereon in the position which they

originally occupied when mounted. Due to the arrangement of glass fibrous materials in the neutral axis zone of the coverings, heat which is created at either surface cannot be conveyed to the opposite surface of the covering. It is also an important factor that glass fibers are a relatively inexpensive material so that the incorporation of such elements hardly increases the cost of the coverings while it considerably enhances their service life and quality.

It will also be understood that while there have been described herein certain specific embodiments of my invention, it is not intended thereby to have it limited to or circumscribed by the specific details given in view of the fact that this invention is susceptible to various modifications and changes which come within the spirit of this disclosure and the scope of the appended claims.

I claim:

1. A rubber cover for textile rollers having an outer rubber tension layer, an intermediate rubber neutral axis layer, and an inner rubber compression layer, and having at least one layer of cables embedded in said neutral axis layer, said cables being constructed of glass cords each of which is provided with a coating of cushioning and bonding material.

2. A rubber cover for textile rollers having an outer rubber tension layer, an intermediate rubber neutral axis layer, and an inner compression layer, and having at least one layer of cables embedded in said neutral axis layer, said cables being formed of cords which are built from short staple glass fibers the ends of some of which project beyond said cables.

3. A rubber cover for textile rollers having an outer rubber tension layer, an intermediate rubber neutral axis layer, and an inner rubber compression layer, said neutral axis layer being formed of rubber material with a plurality of layers of glass fiber-containing cables embedded therein, said cables in each layer being arranged in staggered relationship with the cables in adjacent layers.

ABRAHAM L. FREEDLANDER.

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