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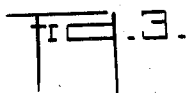
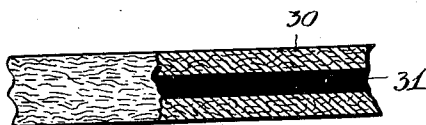
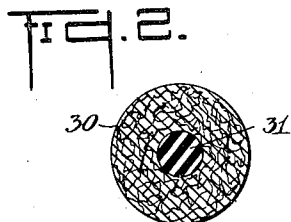
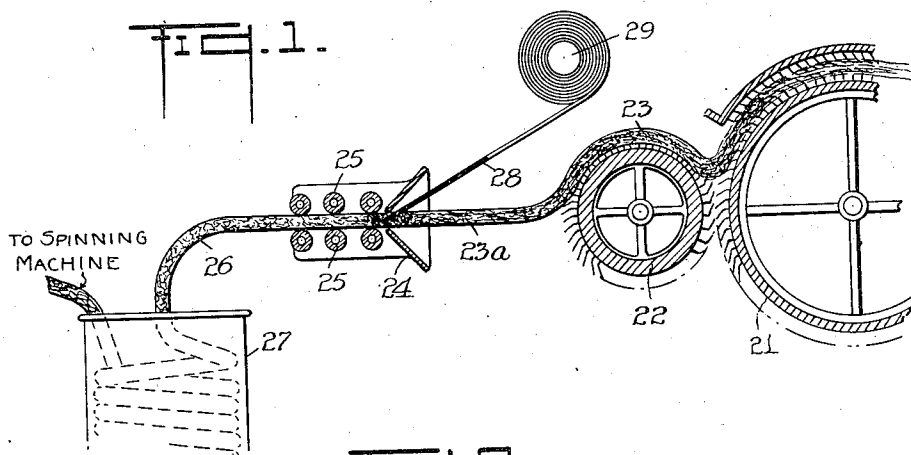
R. CLEELAND ET AL

2,459,620

PROCESS OF MANUFACTURING TEXTILE MATERIALS

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2 Sheets-Sheet 1



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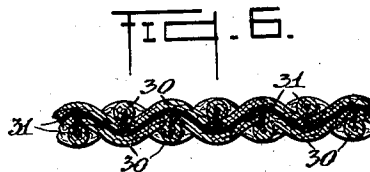
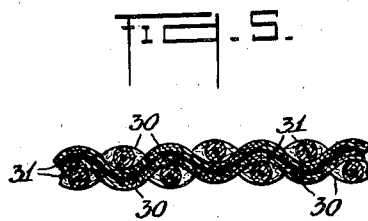
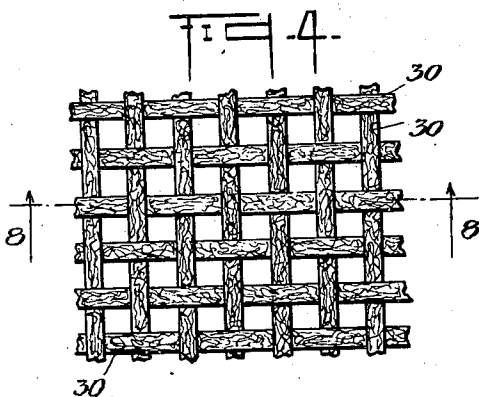
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PROCESS OF MANUFACTURING TEXTILE MATERIALS

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2 Sheets-Sheet 2



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PROCESS OF MANUFACTURING TEXTILE MATERIALS

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2 Claims. (Cl. 28—73)

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The present invention relates to a process for manufacturing a new kind of textiles and certain intermediates from which these textiles can be made.

One object of the invention is to produce a substantially fibrous fabric which can be die cut to any desired size, shape or configuration into mats or strips the edges of which are protected against unravelling without any further treatment.

Another object of the invention is to produce a textile fabric composed of substantially fibrous threads bonded firmly together at numerous contact points so as to form an extremely durable and wear resisting material.

Still another object of the invention is to produce threads of spinnable fibers combined with a strip material of natural or synthetic unvulcanized rubber, partly vulcanized or which, after incorporation of the threads into a fabric, may be cured to diffuse the strip material partly through the adjacent fiber layers so as to bind the adjacent threads firmly and securely together.

A still further object of the invention is to provide a fibrous thread material consisting of natural or synthetic spinnable fibers combined with one or more slightly tacky strips of an unvulcanized rubber composition, said thread material being capable of being formed into various fabric articles and of being cured in the fabric to bond the individual threads of the fabric together.

These and other objects which will appear more clearly as the specification proceeds, are accomplished according to the invention by the process set forth in the following detailed description, defined in the appended claims and illustratively exemplified in the accompanying drawings in which:

Fig. 1 is a diagram illustrating one method of manufacturing thread material according to the invention.

Fig. 2 is a cross-section, and

Fig. 3 is a side elevation, partly broken away of a thread obtained by this method.

Fig. 4 is a diagrammatic enlarged plan view of a piece of fabric in which warp and weft consist of threads as shown in Figs. 2 and 3.

Fig. 5 is a cross-section of the fabric, taken on line 5—5 of Fig. 4 before curing.

Fig. 6 is a similar cross-section of the same fabric after curing.

Referring now to the drawing, and first to Fig. 1, 21 is the carding cylinder of an upstriker card and 22 is the associated doffer. The fibrous lap 23 formed in the form of separate lap sections, on the carding cylinder and thrown onto the doffer 22

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consists preferably of natural fibers such as wool, cotton jute, or other soft or hard fibers but it may also contain an admixture or consist entirely of synthetic fibers such as staple rayon fibers. A lap section 23a of suitable width, upon leaving the doffer, is guided into a conical cup 24, causing a condensation of the material of the lap section. The condensed material passes between pressure rollers 25 which form it into a sliver 26 and deposit the sliver in a conventional sliver can 27. A strip 28 consisting of an unvulcanized natural crude rubber composition is fed to the lap section 23a from a spool 29 shortly before the lap section 23a enters the cup 24 and at a speed substantially equal to the speed of the lap section 23a in such a manner that the rubber strip 28 is placed in the center of the sliver formed by the condensation of the lap section 23a. The sliver 26 thus contains, extending along its longitudinal axis, a rubber strip 28. When the can 27 is filled, it is moved to a spinning machine and the sliver 26 is spun in the usual manner. The resulting thread 30 contains a central core of unvulcanized rubber 31 as shown in Figs. 2 and 3.

The rubber strip 28 may be produced by cutting a film formed from a suitable rubber composition, by extruding a composition containing latex coagulate or in any other suitable manner.

Other natural or synthetic vulcanizable rubber compositions may be used for the strip material. Reclaimed rubber has been found to give excellent results.

A piece of fabric woven with both warp and weft consisting of threads of the type illustrated in Figs. 2 and 3 is shown in a diagrammatic plan view in Fig. 4. Fig. 5 is a cross-section through this fabric prior to vulcanization. In order to bind the threads of the fabric securely together the fabric is cured, for instance at a temperature of about 240° F. and a pressure between 2000 lbs. and 10,000 lbs. per square inch for 7 to 15 minutes. This vulcanization causes part of the rubber core in each of the threads to diffuse so that tentacle like formations project into adjacent threads where they become anchored in the fibrous material of the latter and also join with similar diffused tentacle formations of the rubber cores therein, as indicated in Fig. 6. A fabric of this type is highly resistant to wear and tear and it can be cut, for instance by means of dies, to any desired size, shape or configuration without danger of unravelling.

We claim:

1. A process of manufacturing a wear resisting fibrous fabric containing fibrous threads bonded

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firmly together, which process comprises the steps of combining with a lap section obtained by carding spinnable fibers, during condensation of the lap section into a sliver, a curable strip material selected from the group consisting of the vulcanizable natural and synthetic rubbers by feeding said strip material to the lap section parallel to the length of the latter while advancing the lap section at substantially the same speed in the direction in which the strip material is fed thereto, forming from said lap section and strip material a composite sliver, spinning the composite sliver into a substantially fibrous thread having the curable strip material extending along the longitudinal axis thereof, forming a fabric containing said thread, and curing said fabric under heat and pressure so as to cause a diffusion of portions of the curable strip material through adjacent fiber layers and a bonding together of adjacent threads in the fabric without any substantial impairment of the fibrous nature of the latter.

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2. A process as claimed in claim 1, in which the fabric is cured by vulcanization at a pressure between 2000 and 10,000 lbs. per square inch.

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