Feb. 18, 1936. S. C. LILLEY 2,031,375

NONCREEP ELASTIC STRANDS FOR ELASTIC FABRICS

Filed Dec. 23, 1933

Fig. 1.

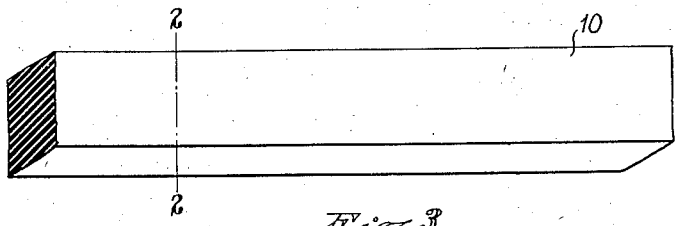


Fig. 2.

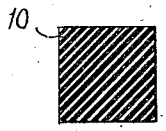


Fig. 3.

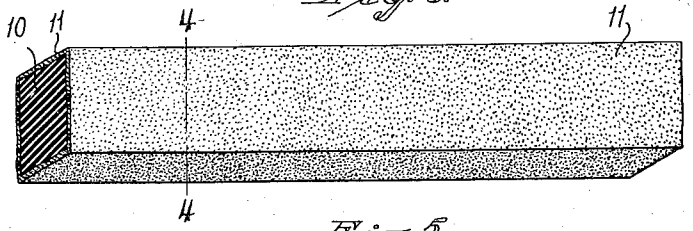


Fig. 4.

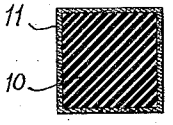


Fig. 5.

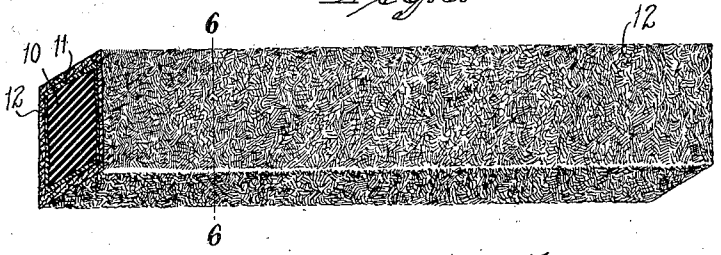


Fig. 6.

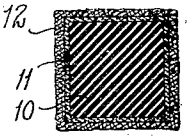


Fig. 7.

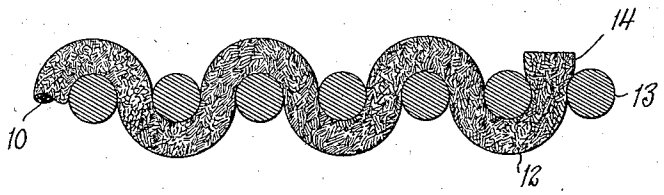
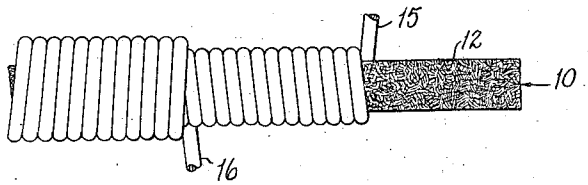


Fig. 8.



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NONCREEP ELASTIC STRANDS FOR ELASTIC FABRICS

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Application December 23, 1933, Serial No. 703,795

10 Claims. (Cl. 139—421)

This invention relates to an improvement in elastic strands and particularly to elastic strands for incorporation into fabrics to provide the desired elasticity therein.

One of the objects of the present invention is to provide a superior elastic strand for incorporation into fabrics and having superior resistance to creeping in a fabric, when severed.

Another object is to provide a superior non-creep elastic strand capable of economical manufacture.

A further object is to provide a non-creep elastic strand having superior resistance to deterioration caused by exposure to the atmosphere.

Other objects and advantages will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawing and the appended claims.

In the accompanying drawing:

Fig. 1 is a perspective view of a bare elastic strand preparatory to receiving a non-creep coating in accordance with the present invention;

Fig. 2 is a transverse sectional view thereof taken on the line 2—2 of Fig. 1;

Fig. 3 is a view corresponding to Fig. 1 but showing the strand as coated with an elastic adhesive;

Fig. 4 is a transverse sectional view thereof taken on the line 4—4 of Fig. 3;

Fig. 5 is a perspective view corresponding to Figs. 1 and 3 but showing amorphically-arranged anti-creep coating or skin of fibrous material in place upon the strand;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a longitudinal sectional view of a piece of fabric illustrating an elastic strand embodying the present invention incorporated therein; and

Fig. 8 is a view showing the application of a wrapped covering to the non-creep strand.

Heretofore, many different types of so-called "non-creep" elastic strands have been proposed, among which may be mentioned those having a wrapped covering cemented to the elastic strand. All of these previously-proposed non-creep elastic strands have, however, been open to one or more objections, such, for instance, as difficulty of manufacture, high cost of manufacture, relatively-inefficient non-creep qualities, relatively-brief life, etc.

In carrying out the present invention in the preferred manner, a strand 10 of rubber or equivalent elastic material is employed which may be of round, rectangular, or other cross-sectional form. The said strand is provided with a coating 11 of elastic adhesive, applied in any approved manner, such, for instance, as by passing the strand through a bath of elastic adhesive, preferably of a character which will not harmfully affect the rubber or other elastic material from which the strand itself is made. For the purpose referred to, latex, water-dispersed rubber, synthetic rubber solutions, etc., are suitable.

After the coating 11 of elastic adhesive has been applied to the strand and before the said adhesive has dried or completely cured, and while the strand is in a stretched or extended condition, a coating or skin 12 of amorphically-arranged relatively-short fibers is applied in any approved manner, such, for instance, as by blowing fibrous material against the now tacky or sticky strand, or by passing the strand through a loosely-packed mass of fibrous material. Later, the excess fibrous material may be removed by an air blast, by brushing, or the like. The fibrous material suitable for use may assume a wide variety of forms, such, for instance, as cotton flock, rayon flock, wool flock, etc.

As a further step, the now-coated strand may be passed through suitable rollers to compress and shape both the strand and the fibrous coating or skin 12.

The strand as now supplied with non-creep coating or skin 12 of amorphically-arranged fibers is suitable for incorporation into a woven, knitted, or netted fabric, such, for instance, as that illustrated in Fig. 7. Should the improved strands embodying the present invention be cut after their incorporation into a fabric, the amorphically-arranged fibers of their surfaces will afford a high degree of friction, and when gripped between the weft or filling picks 13 of a fabric will very materially reduce the tendency of the elastic strand to creep with respect thereto, when cut as described. Under some conditions, when elastic strands embodying the present invention are severed, the severed end thus relieved of tension will expand or swell laterally as indicated at 14 in Fig. 7, and afford a nodule-like anchoring-bulge further resisting the tendency of the strand to creep through the interstices between the weft or filling strands. Owing to the irregular or amorphous arrangement of the fibers of the covering 12 as described, no harmful unraveling occurs when such elastic strand is cut.

The fibrous material applied to the strands as above described may be suitably colored before application or, if desired, under some conditions the entire strand may be colored after coating.

The non-creep elastic strand above described may be economically manufactured and when completed provides a strand having not only an attractive surface but a relatively-tough one, owing to the interlaced irregular arrangement of the fibers of the coating. Furthermore, the coating as thus applied serves to materially retard the deterioration of the elastic strand itself by guarding the same against the harmful effect of oxygen and atmospheric impurities, as well as against the harmful effects of sunlight, etc.

If desired, after the strand has been coated as above described, the same may have applied to it one or more helical wrappings of textile strands 15 and 16, as indicated in Fig. 8. These wrappings may be applied in any approved manner, such, for instance, as by wrapping machines now common in the textile art. It will be understood in this connection that in some types of fabrics, it is desired to have but one helical wrapping, and under other conditions double-wrapped elastice strands are required, in which latter case the individual wrappings are preferably reversely wound, as shown in Fig. 8.

The above-described process for the manufacture of the improved elastic strand is the preferable one, though it will be obvious that if desired an elastic strand may have its surface rendered tacky by heat or by a light application of solvents, so as to render the said surface capable of receiving and holding the fibrous coatings referred to. Under this mode of manufacture, while no separate coating of adhesive material is applied, nevertheless, the fibrous coating is cemented in place upon the surface.

Elastic strands made in accordance with the present invention may be stretched to a maximum degree without material injury. Thus, if desired, the core may be stretched to the maximum degree while being supplied with its amorphically-arranged fibrous coating, and when released from tension the coating will permit a maximum degree of contraction.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. As a new article of manufacture, a filamentous non-creep elastic strand adapted for incorporation into fabrics comprising: an elastic core of rubber or equivalent material; and a coating of fibers cemented to the surface of the said elastic core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other.

2. As a new article of manufacture, a filamentous non-creep elastic strand adapted for incorporation into fabrics comprising: an elastic core of rubber or equivalent material; and a coating of fibers elastically cemented to the surface of the said elastic core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other.

3. As a new article of manufacture, a filamentous non-creep elastic strand adapted for incorporation into fabrics comprising: an elastic core of rubber or equivalent material; a coating of elastic adhesive applied to the surface of the said elastic core around the entire perimeter thereof; and a coating of amorphically-disposed fibers applied to the said elastic adhesive and elastically anchored thereby to the entire perimeter of the said core.

4. As a new article of manufacture, a filamentous non-creep elastic strand adapted for incorporation into fabrics comprising: an elastic core of rubber or equivalent material; a coating of latex applied to the surface of the said elastic core around the entire perimeter thereof; and a coating of amorphically-disposed fibers applied to the said latex and elastically anchored thereby to the entire perimeter of the said core.

5. As a new article of manufacture, a filamentous non-creep elastic strand adapted for incorporation into fabrics comprising: an elastic core of rubber or equivalent material; a coating of fibers elastically cemented to the surface of the said elastic core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other; and a helically-wound wrapping surrounding the said amorphically-disposed coating of fibers.

6. An elastic fabric comprising intermeshed strands; at least some of the said strands being of non-creep character and comprising an elastic core of rubber or equivalent material and a coating of fibers cemented to the surface of the said core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other.

7. A woven elastic fabric comprising interwoven weft and warp strands; at least some of the said warp strands being of non-creep character and comprising an elastic core of rubber or equivalent material and a coating of fibers cemented to the surface of the said core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other.

8. An elastic fabric having incorporated therein a plurality of elastic strands, each comprising an elastic core and a coating of fibers cemented to the surface of the said core around the entire perimeter thereof and in amorphically-disposed relationship with respect to each other.

9. An elastic strand adapted to be woven or knitted comprising an elastic core of rubber and a coating of fibrous flock cemented to the surface of the core completely covering the same.

10. An elastic fabric having incorporated therein a plurality of elastic strands each comprising an elastic core of rubber or equivalent material and a coating of fibrous flock elastically cemented to the surface of the said core and completely covering the same.

SAMUEL CLARK LILLEY.