April 9, 1957 J. V. MOORE 2,788,026

WOVEN ELASTIC FABRIC

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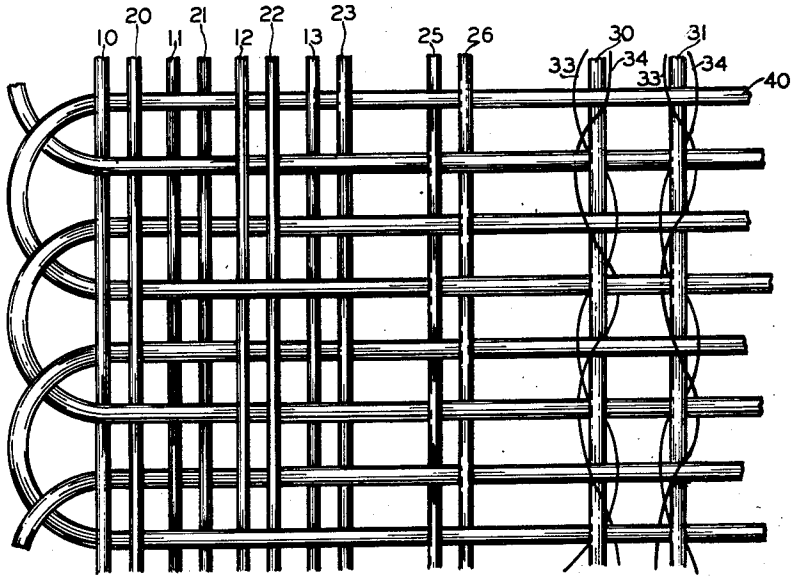


Fig. 1

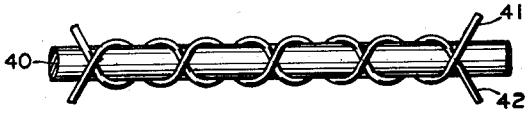


Fig. 2

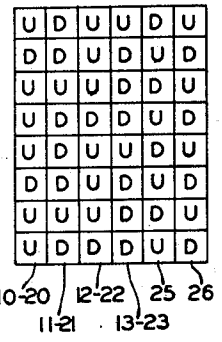


Fig. 3

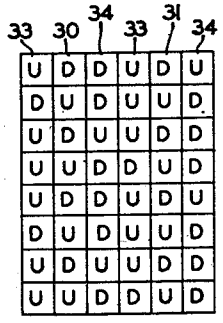


Fig. 4

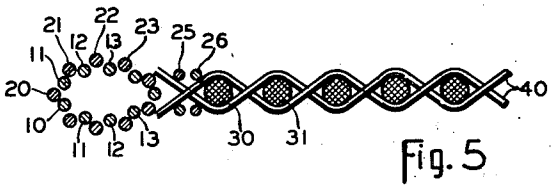


Fig. 5

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WOVEN ELASTIC FABRIC

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2 Claims. (Cl. 139—421)

This invention relates to a woven elastic fabric comprising a body portion, and a selvage portion at each edge thereof. The fabric is elastic warp-wise only but not weft-wise.

A part of the warps in the body portion are of covered rubber thread and the remaining body warps are of non-elastic thread and are preferably disposed in an open-weave leno-type structure.

The preferred weft is a synthetic, single-filament thread which has a very smooth outer surface. To prevent relative displacement of the warp threads along the weft threads, I provide one or more spirally-wound covering threads of non-elastic material on the smooth and uniform outer surface of each synthetic weft thread.

Such synthetic weft threads are relatively stiff and, even when covered, they do not bend smoothly and uniformly at the selvages of the fabric but form rough and unsatisfactory edges.

To cover and conceal these rough edges, I provide a special selvage construction with an inner core of covered elastic warps. This inner core is surrounded by an outer set of stretchable but inelastic warp threads which will be shortened and looped by the contraction of the associated elastic warp threads and thus provide a soft edge-covering structure.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a plan view of a portion of my improved fabric on an enlarged scale;

Fig. 2 is a plan view of a portion of a non-elastic and synthetic single-filament covered weft thread;

Fig. 3 is a weave diagram of the selvage portion of my improved fabric;

Fig. 4 is a weave diagram of the body portion; and

Fig. 5 is an enlarged sectional and somewhat diagrammatic elevation of one of the selvage edge portions.

Referring to Fig. 1, my improved fabric comprises covered rubber selvage warp threads **10**, **11**, **12** and **13**, etc. and inelastic but stretchable associated warp threads **20**, **21**, **22** and **23** etc.

Successive pairs of inelastic warp threads **25** and **26** may form plain stripes between the selvages and the body portion. In the body portion, I may use covered rubber body warp threads **30** and **31** and non-elastic or leno warp threads **33** and **34**.

In Fig. 1, only a portion of the selvage warp threads **10** to **13** and **20** to **23** are shown, and it will be understood that the body elastic warp threads **30** and **31** are repeated across the width of the fabric, together with associated leno warp threads **33** and **34**.

Waft threads **40** are provided, and these weft threads are preferably single-filament synthetic threads as shown in Fig. 2, and which are provided with reverse windings of inelastic covering threads **41** and **42**, wound on the threads **40** at relatively coarse pitch. The effect of the covering threads **41** and **42** is to provide the relatively smooth synthetic thread **40** with a roughened or interrupted outer surface which will prevent the warp threads from slipping lengthwise of the weft threads, and which

will thus preserve the desired structure and appearance of the open weave.

While the details of the selvage weave may be somewhat varied, a preferred construction is as shown in Fig. 1, in which an inelastic warp thread as **20** is associated with each elastic warp thread as **10**, and the pair are preferably woven in the same pick and lift.

The selvage weave is actually double, but is shown single for clearness. One pair of warp threads as **10—20** may be woven one-down and three-up as shown in Figs. 1 and 3, while the next pair, as **11—21**, is woven one-up and three-down. This alternate arrangement is preferably continued until the inelastic warp threads **25—26** are reached.

These latter threads are preferably woven plain, one-up and one-down alternately. While only two warp threads **25—26** are shown, it will be understood that enough of these inelastic warp threads are provided to form a plain stripe of a desired width between each selvage portion and the body portion.

The body portion may have the elastic warp threads woven one-up and one-down as shown in Figs. 1 and 4 but held in place transversely by leno warp threads **33** and **34** which cross alternately and in the manner of a common leno weave.

Fig. 3 is a weave diagram of one of the selvage portions, with the raised warps indicated by the letter "U" for "up," and with the depressed warps indicated by the letter "D" for "down." A weave for the body portion is similarly designated in Fig. 4.

In Fig. 5, the effect of release and contraction of the covered rubber selvage warps **10** to **13** and the shortening of the associated inelastic warps **20** to **23** is indicated somewhat diagrammatically. The general effect is that the elastic warps as **10** to **13**, etc. will contract to form the core of the selvage, while the associated inelastic but stretched warps **20** to **23**, etc. are shortened along with the contracting elastic warps but form loose loops and without actual contraction. These loose loops form a soft or cushioned covering for the rough and sharp edge bends of the mono-fil weft.

An extremely satisfactory woven elastic fabric of open weave is thus provided, which is well adapted for use in footwear or for other similar purposes.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In an elastic fabric, a selvage portion comprising a plurality of elastic warp threads and a plurality of inelastic but stretchable warp threads, all of said warp threads being woven in stretched condition, and the elastic warp threads when released contracting said inelastic warp threads to a looped condition and thus providing a definitely soft surface about the selvage edge of the fabric.

2. In an elastic fabric, a selvage portion comprising weft threads, an inner group of elastic warp threads, and an outer group of inelastic but contracted warp threads, and said contracted inelastic warp threads providing a relatively soft outer edge for said selvage portion.

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