May 20, 1952 S. J. GLUCK 2,597,580

WOVEN ELASTIC FABRIC

Filed June 26, 1951

Fig. 1.

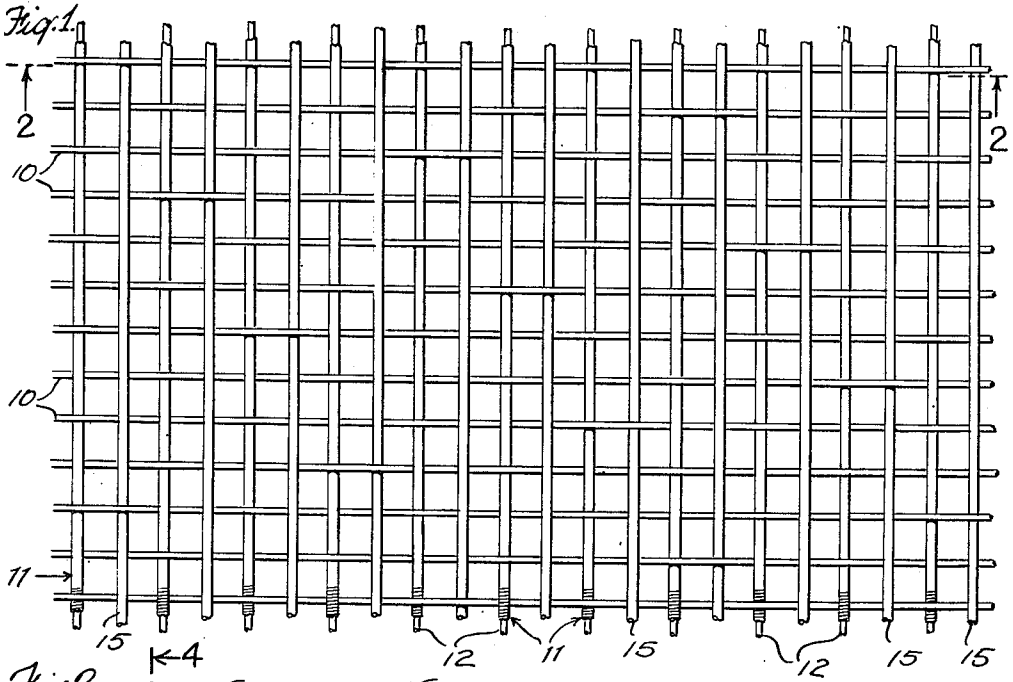


Fig. 2.

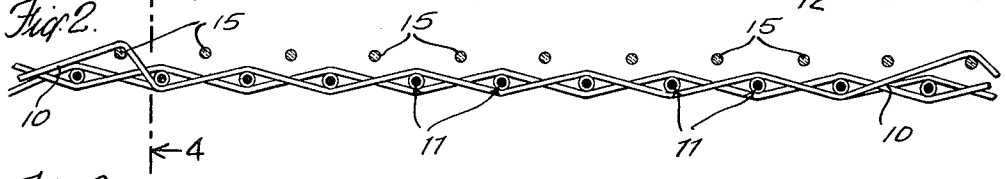


Fig. 3.

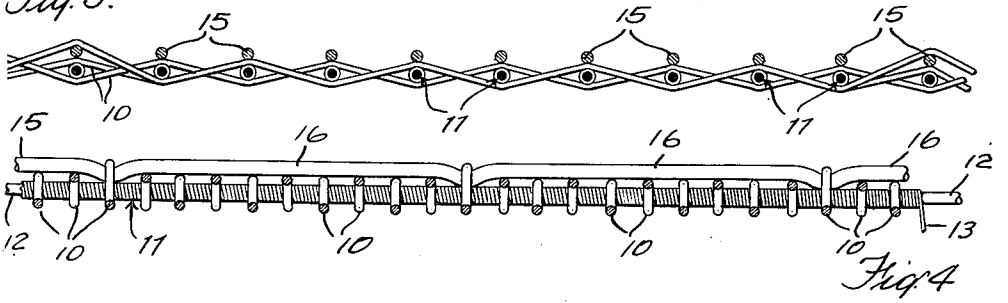


Fig. 4

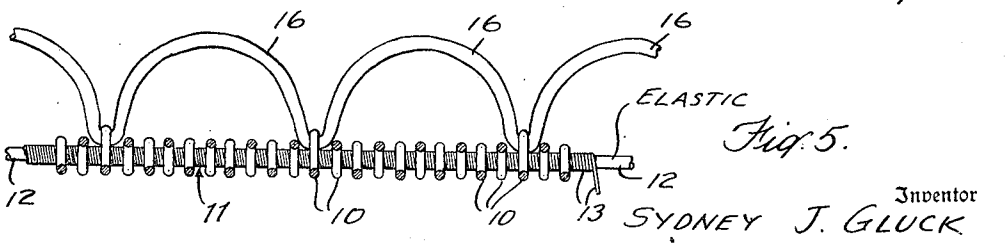


Fig. 5.

Inventor

SYDNEY J. GLUCK

By

Attorney

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## WOVEN ELASTIC FABRIC

Sidney J. Gluck, Brooklyn, N. Y.

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3 Claims. (Cl. 139—392)

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This invention relates to woven fabric of the one-way stretch type having a terry cloth appearance on one face and a smooth appearance on the other face, and to a method of weaving the same.

An object of the invention is to provide a fabric of the above type having novel and improved characteristics.

The fabric may be of any standard type weave such as taffeta, twill or satin and may be woven on a standard loom, a taffeta weave being shown in the drawings for purposes of illustration.

In accordance with this invention the basic weave consists of wound rubber filler yarns and non-stretchable warp yarns woven in the usual manner with the filler yarns in stretched condition. One or more non-stretchable filler yarns, such as cotton, are woven into the base fabric above each rubber yarn and passed under each tenth warp yarn (for example) and over the intermediate warp yarns while the rubber filler yarns are still in stretched condition. When the tension on the rubber yarns is released after weaving the contraction thereof causes the cotton filler yarns to form loops between the warps under which they are secured which produce a terry cloth appearance on one face while the other face remains smooth with the appearance of the usual woven elastic fabric.

The invention will be better understood from the following description, taken in connection with the accompanying drawing in which a specific embodiment has been shown for purposes of illustration.

In the drawing:

Fig. 1 is an enlarged diagrammatic plan view of a plain or taffeta fabric embodying the invention, showing the stretchable and non-stretchable filler yarns spaced apart and with the spacing between yarns greatly exaggerated for clearness;

Fig. 2 is a warpwise section taken on the line 2—2 of Fig. 1;

Fig. 3 is a similar warpwise section showing the non-stretchable filler yarns located directly above the stretchable filler yarns as in the finished fabric, but with the spacing between filler yarns greatly exaggerated as in Fig. 1;

Fig. 4 is a filler-wise section taken on the line 4—4 of Fig. 2 showing the stretchable filler yarns in stretched condition, as in weaving, and with the spacing between warp yarns somewhat less exaggerated than in Fig. 1; and

Fig. 5 is a filler-wise section similar to Fig. 4, but showing the stretchable filler yarns retracted to relaxed condition and the non-stretchable filler yarns looped between the warp yarns under which they are secured to give a terry cloth effect.

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Most standard looms in use today include a harness which consists of a plurality of frames, each of which has mounted therein a plurality of heddles. The warp yarns are all mounted upon a beam or spools and extend through selected heddles. The arrangement of the warp yarns with respect to the heddles, i. e. the entry pattern, determines the type of weave and possible variation of patterns. During weaving selected frames are successively raised and lowered at predetermined times as the warp yarns are withdrawn from the beam or spools. This raises and lowers the warp yarns passing through the heddles carried by the frames, which is generally known as shedding. The raising and lowering of the frames is controlled by either a card or a chain, depending upon the type of loom. While the selected warp yarns are raised, a shuttle inserts a filler yarn transversely of and between the raised and lowered warp yarns. The filler yarn is then beaten up into proper position by the forward motion of the reed. A let-off which controls the feeding of warp yarns from the beam or spools releases the warp yarns during the beating operation and allows a predetermined length of warp yarns to be pushed forwardly by the reed during the beating up of each filler yarn. The fabric is wound onto a take-up roll after it is woven. After each beating everything is in position for the next selected set of warp yarns to be shedded and the next filler yarn inserted thereunder.

According to the present invention non-stretchable warp yarns 10 are heddled to pass alternately under and over successive stretchable filler yarns 11 each of which consists of a rubber thread 12 with a wound wrapping 13 of cotton or other covering yarn.

After each stretchable filler yarn 11 is laid in and beaten up, one or more non-stretchable filler yarns 15, such as cotton, are woven into the fabric. In the embodiment shown the warp yarns are heddled so that the filler 15 passes under every tenth warp and over the intermediate warps. The warp which passes over the filler 15 also passes over the preceding filler 11. When the filler 15 is laid it is spaced from the preceding filler 11, as shown in Fig. 2. When it is beaten up by the reed however it takes a position directly over the preceding filler 11, as shown in Fig. 3.

In order to avoid introducing a diagonal effect successive warps 10 are not passed over successive fillers 15. Considering the warp yarns as numbered from 1 to 10 the warp yarns which

pass over successive filler yarns 15 are numbered as follows in the form shown in Fig. 1: 1—4—7—10—3—6—9—2—5—8. This sequence is repeated both warpwise and fillerwise over the entire fabric. Of course other arrangements can be used depending upon the effect desired.

The filler yarns 15, as woven, are in the form of long spans 16 secured by spaced warp yarns 10 as shown in Fig. 4. When the rubber fillers 11 are relaxed however and retract as much as 40% to 50% the spans 16 form loops as shown in Fig. 5. These loops are disposed over one face of the fabric to give a terry cloth effect although the other face remains smooth and the fillers 15 and loops 16 are entirely concealed by the rubber filler yarns 11.

Obviously the spacing of the warp which pass over the non-stretchable filler yarns may be varied provided the filler yarns are secured to the underlying rubber fillers at spaced points with loose spans therebetween which form loops when the rubber yarn is relaxed.

The above fabric is suitable for bathing suits or similar uses wherein the rubber base fabric provides a form fitting effect and the looped pile fillers provide a terry cloth appearance. This fabric is to be distinguished from the common terry cloth or turkish toweling in which the weave includes a single filler and two sets of warps, a ground warp and a loop pile warp. Hence the loops in such prior weaves extend warpwise whereas the loops according to the present invention extend filler-wise.

What is claimed is:

1. A woven fabric having warp yarns and rubber filler yarns woven together with the rubber filler yarns under tension and with the successive warp yarns passing over and under the filler yarns in succession, non-stretchable filler yarns disposed directly over each of said rubber filler yarns, spaced warp yarns passing over both filler yarns with intermediate warp yarns passing below said last filler yarn whereby said last filler yarn is secured to said rubber filler yarn at spaced points and spans several warp yarns therebetween, said non-stretchable filler yarn being the same length as the rubber filler yarn when in stretched condition, but forming loops between said spaced points when said rubber filler yarn is retracted to unstretched condition.

2. A fabric, as set forth in claim 1, in which the rubber filler yarn are composed of a rubber thread with a cotton wrapping.

3. A filler, as set forth in claim 1, in which the non-stretchable filler yarn is cotton.



SIDNEY J. GLUCK.


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