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*Fig. 1.*

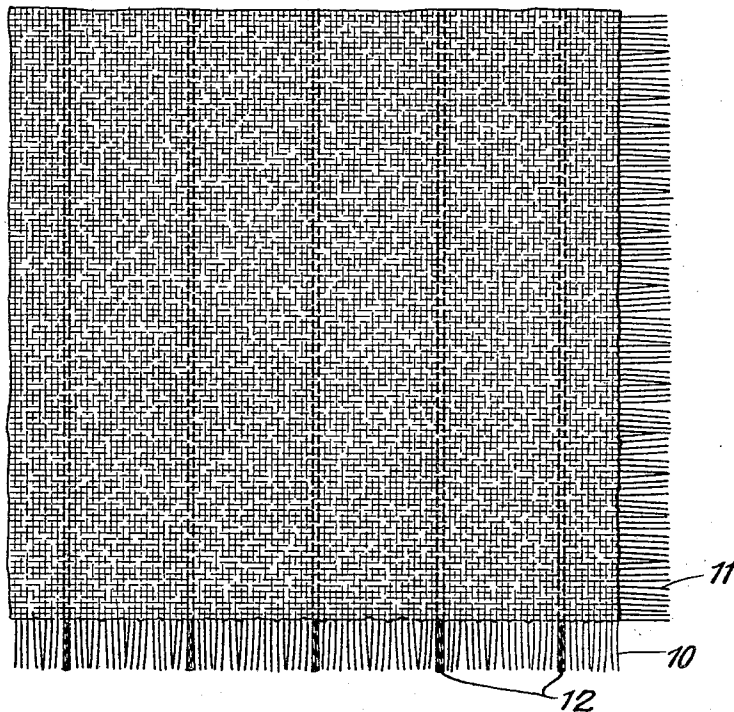
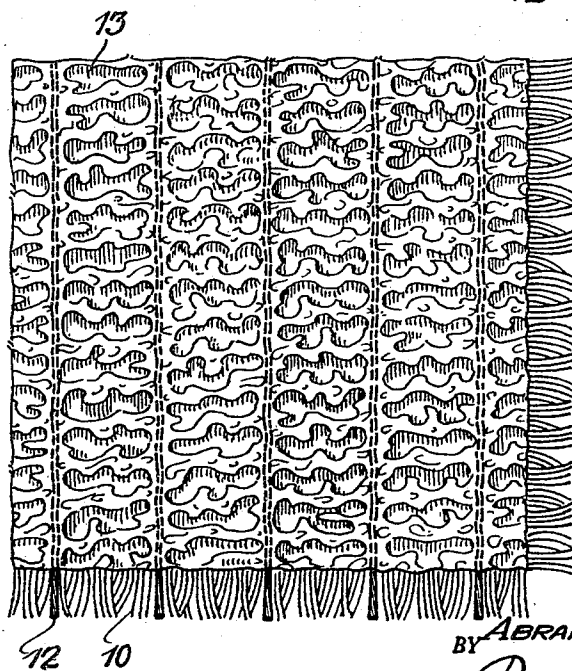


*Fig. 2.*



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## UNITED STATES PATENT OFFICE

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4 Claims. (Cl. 139-426)

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My invention relates to a single-ply puckered fabric and particularly to a woven fabric which is puckered by shrinking certain threads woven at spaced intervals in the fabric.

Heretofore puckered fabrics of the above type have generally been formed of two plies interwoven at spaced intervals and one of these plies being shrunk or otherwise contracted to a smaller area than the other with the result that the unshrunk fabric is wrinkled or puckered between the points at which it is interwoven with the shrunk fabric. The two-ply fabrics of this type, however, have certain limitations, namely the increased expense of weaving and interweaving the two plies, and also the increased weight and thickness of the fabric necessitated by the use of two plies.

In my present invention I provide a puckered fabric in which the puckering of the fabric is obtained by the selected shrinking of certain of the threads of the woven fabric. These threads may be either in the warp or in the weft threads or may be both in the warp and the weft. The fabric of my invention is formed predominantly of threads which are non-shrinkable when subjected to fulling but in which there are substituted at spaced intervals, or interwoven in the fabric either as warp or weft threads or both, threads which are shrinkable by fulling. Accordingly when the fabric is woven in the usual way it is flat and not puckered, but when subjected to a fulling operation the shrinkable threads at spaced intervals are permanently shrunk and draw the fabric into small wrinkles or puckers giving the desired puckered effect. For this purpose the shrinkable threads are of wool or contain a substantial quantity of wool, for example, fifty per cent or more, or of a percentage of a mixture of wool and other fibers such as cotton, rayon, etc. When subjected to fulling these threads shrink permanently so that they cannot be stretched while wet or while being dried and, therefore, hold the fabric in a permanent puckered or wrinkled condition. If the fabric comprises a mixture of woolen fibers and fibers of rayon or cotton or other unfullable fibers in combination with wool which is fullable, the extent of shrinkage may be controlled and limited to a definite percentage.

For example threads containing a mixture of wool and sufficient percentage of relatively non-shrinking fibers when subjected to fulling may be shrunk to a certain extent and do not shrink substantially to any further extent upon further fulling. This has the advantage that a puckered,

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fabric having such threads may be subjected to washing and fulling without danger of increasing the puckered effect or of shrinking the fabric beyond the shrinkage originally given to it.

The various features of my invention are illustrated by way of example in the accompanying drawing in which Fig. 1 is a face or plan view on an enlarged scale of a fabric of my invention prior to fulling and shrinking, and Fig. 2 is a similar view of the same fabric after it has been fullled and the shrinkable threads shrunk to pucker the fabric.

Referring more particularly to Fig. 1 the fabric is comprised of warp and weft threads 10 and 11 which are substantially non-shrinkable by fulling, that is, threads of cotton, rayon, nylon, silk, or mixtures of these fibers, and others.

At spaced intervals are also warp or weft threads or both, indicated at 12, although these threads need not be heavier than the threads 10. The threads 12 are shrinkable by fulling, that is, by working the fabric when subjected to water. The effect of the fulling is to cause the fibers of the thread 12, particularly the woolen fibers, to mat together or to work longitudinally in such a way as to shorten the threads by permanently shrinking them. As the threads 12 shorten the distance from any two points on these threads becomes less, while the threads 10 and 11 maintain their original length and therefore gather the fabric into puckers 13, as indicated in Fig. 2. To control the extent of puckering and to set a definite limit to it, the threads 12 are preferably made of wool or of a mixture of wool and other relatively non-shrinkable fibers. The presence of relatively non-shrinkable fibers serves to limit the working together of the woolen fibers so that after they have been fullled to a certain extent the substituted fibers interfere with further shrinkage. It will be understood that by substituting other fibers for woolen fibers the shrinkage is limited and the amount of puckering may thereby be predetermined.

The shrinkable threads 12 may be spaced at any desired distance and in this way the size of the puckers may be controlled. Also the threads 12 may be woven in two directions in the fabric, that is, they may be present both in the warp and in the weft threads.

The puckers may be selectively controlled to modify the appearance of the fabric by weaving the fullable threads to one surface or the other at intervals or onto the surface at intervals.

Through my invention I have provided a fabric which is puckered by a permanent shrinkage

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of certain threads but in which this shrinkage is limited and in which all of the shrinkage is obtained in a single ply. Inasmuch as the fabric is permanently shrunk it may be handled while wet or dried without destroying the puckered effect. 5

What I claim is:

1. A single ply fabric of closely woven threads substantially unshrinkable by fulling and of threads comprising wool permanently shrunk by fulling, said shrunk threads being woven at spaced intervals in said fabric and substantially non-stretchable and the fabric being puckered by the shrinking of said shrunk threads. 10

2. The fabric of claim 1 in which said shrunk threads comprise about fifty per cent wool. 15

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3. The fabric of claim 1 in which said shrunk threads contain substantially equal parts of wool and of fibers substantially non-shrinkable by fulling.

4. A single ply fabric having closely woven warp and weft threads, certain of said threads at spaced intervals comprising wool and being permanently shrunk by fulling, the warp and weft threads between said shrunk threads being substantially unshrinkable, and said shrunk threads puckering the fabric in the spaces between said shrunk threads.

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