

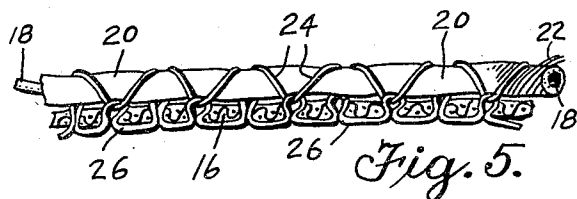
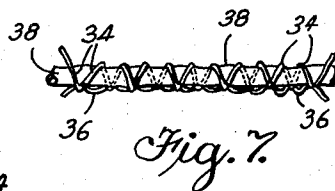
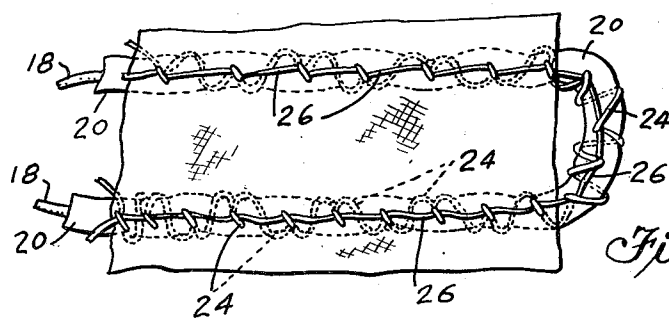
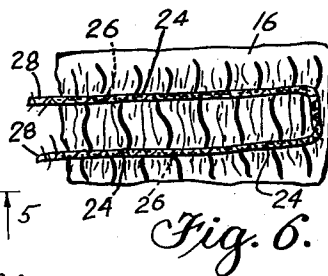
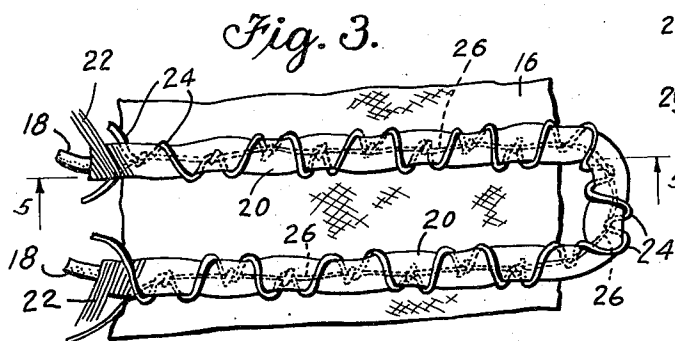
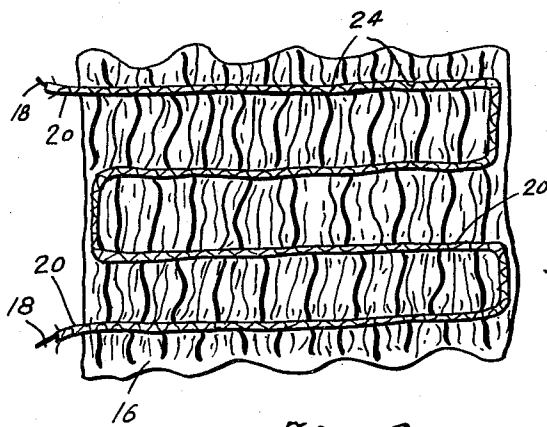
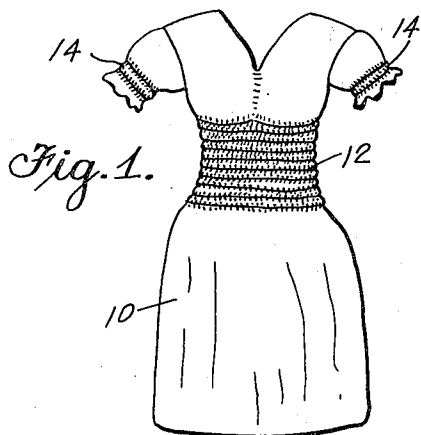
Aug. 18, 1953

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2,649,062

PUCKERED FABRIC

Filed Nov. 17, 1950



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2,649,062

PUCKERED FABRIC

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Application November 17, 1950, Serial No. 196,196

2 Claims. (Cl. 112—1)

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This invention relates to an improved puckered fabric and the method of making the same and has for one of its principal objects the production of a fabric which, while substantially non-resilient in itself, will, when constructed in accordance with the process of this invention, actually become resilient or stretchable in at least one direction thereby enabling its use for the construction of garments of various types and which will be ornamental and attractive.

One of the important objects of this invention is to provide a fabric for use in making various types of garments which will have applied thereto a length or plurality of lengths of a resilient cord or strip which is preferably applied by stitching when in stretched condition so that, when the stitching or other fastening method has been completed and the tension removed from the resilient cord or strip, the fabric will be automatically drawn together into a shirred or ruffled form which it will normally resume after a stretching has been exerted upon it, at least in the direction in which the resilient cords have been applied.

A further object of this invention is to provide a novel method of manufacturing a puckered or shirred fabric wherein resilient cords are applied to one face of the fabric by stitching or otherwise to produce the puckered effect and wherein the resilient strip or cord is applied directly to the fabric while at a tension and directly from a spool or holder which contains a considerable amount of the resilient cord or strip, whereby a practically continuous operation results and the necessity of stopping the machine at intervals to provide a new supply of resilient material is eliminated.

Yet another object of the invention resides in the development of a novel method of applying the resilient strip or cord to the fabric, particularly at its edges, whereby a U-shaped return loop is produced in the resilient cord whenever it runs off the edge of the fabric and an immediate restitching of the same to the fabric along another line is accomplished at the will of the operator.

Another and still further important object of the invention resides in a novel method of producing the puckered or shirred fabric of this invention whereby the necessity of a preliminary cover or coating for the resilient cord or strip is eliminated.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawings and following specification.

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The invention, in a preferred form, is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a plan view of a typical garment produced from one or more pieces of fabric, certain of which pieces result from the process of this invention.

Figure 2 is a plan view of a piece of fabric having a resilient strip or cord applied thereto by the process of this invention and this view shows the fabric after the tension on the resilient cord or strip has been released.

Figure 3 is an enlarged plan view of a piece of fabric with a section of resilient cord applied thereto according to the method and process of this invention and this view shows the elastic material under tension and on the upper face of the fabric.

Figure 4 is a view similar to Figure 3 but showing the elastic strip or cord applied to the under face of the fabric.

Figure 5 is a sectional view, taken on the line 5—5 of Figure 3, looking in the direction indicated by the arrows.

Figure 6 is a view similar to Figure 2 but showing a length of uncovered or uncoated rubber cord attached to the fabric as distinguished from the covered or coated resilient cord shown in Figures 2 to 5, inclusive.

Figure 7 shows a further development of the invention.

As shown in the drawings:

The reference numeral 10 indicates generally a garment having the waist portion 12 thereof composed of the novel shirred or puckered fabric of this invention. A similar puckered or shirred effect is illustrated at 14 on the sleeve portions of the garment 10. It is understood that the showing in this figure is merely illustrative of one of the many uses to which the fabric of this invention can be put.

As best shown in Figure 2, the material comprises essentially a layer of fabric 16 which can be of cotton, silk, rayon or any other material and is of such a weave that it is ordinarily or substantially non-stretchable in either direction.

The resilient material of the invention is shown as a cord but this can be a strip if desired. In Figures 2 to 5, inclusive, the cord is of a length of rubber 18 covered by a coating 20 of threads 22 wrapped around the length of rubber 18 in a helical relationship. This particular material is well known in the art.

A continuous length of resilient cord 18—20

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is applied to a section of fabric 16 by means of a series of stitches 24, these stitches being applied by means of a sewing machine specially developed and adapted for this purpose. The stitching includes a main thread as shown at 24 and this thread is fed to the sewing machine from a large spool as is usual in this construction, being locked in position about the resilient cord 20 by means of a series of lock stitches 26, the thread for which is supplied by means of a bobbin or the like positioned in the sewing machine in the ordinary, usual and accepted manner.

The main fastening thread is shown uppermost at 24 in Figure 3 and the thread 26 from the bobbin is shown uppermost in Figure 4 with the locking relationship between the threads and stitching being indicated along the sides of the resilient strip or cord 20.

In Figure 5 the fabric 16 is shown on the bottom, the lock stitches from the bobbin are shown at 26 and these stitches have pierced the fabric 16 by the application of the usual needle, while, at the same time, they were interlocked with the thread 24 from the main spool as the thread is fed into the machine during the sewing operation.

It will be noted that the stitching of the resilient material to the fabric is in long substantially parallel lines and that continuous U-shaped loops are provided whenever the resilient cord reaches the edge of the fabric 16 and a return bend becomes necessary. At these points, the resilient cord is stretched beyond the edge of the fabric 16 and the stitching operation continued whereby the thread is applied to the cord without any piercing of the fabric, as best shown in Figures 3 and 4. The U-shaped loop may be made long or short, according to the desires of the operator, but a loop not much longer than the distance between the lines of stitched cord is preferable. This loop will then usually recede within the boundaries of the fabric 16 as shown in Figure 2, especially when the tension is removed, and while the loop portion is not actually stitched to the fabric, it will be evident from the showings in Figures 3 and 4 that the finished product will appear as though it has been so stitched as indicated in Figure 2 and the final effect is about the same so far as appearances are concerned and also so far as relates to an actual fastening of the resilient cord to the fabric. By this method, the stitching is continuous and the operator can accomplish the return loops with a very little expenditure of time and effort.

A continuous length of resilient cord 18—20 being provided, there is never any necessity for stopping the operation for producing the puckered fabric even when an entire surface of such a fabric has been covered. The operator simply picks up another piece of fabric and continues the stitching procedure without cutting either the resilient cord 18—20 or the fastening threads 24—26. The only necessity for stopping the operation in any event is when the thread 26 becomes exhausted from the bobbin below the plate of the machine or when the large spools which hold the thread 24 or the resilient cord 18—20 become exhausted.

Heretofore, it has been considered necessary to cover the rubber 12 with a spirally applied coating 20 of threads 22 in order that a suitable application of this material to the fabric 16 by means of stitches composed of threads 24 and 26 can be made. In previous operations, there must be a certain amount of slippage between the resil-

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ient cord and the surfaces of the fabric during the sewing operation, otherwise undesirable binding between the parts will result causing a loss of time and slow production.

By the continuous lock stitch method of application of this invention, a cord or strip of uncovered rubber 28 may be applied directly to the fabric 16 by means of the same stitching operation and with very satisfactory results. This is illustrated in Figure 6, and as the uncovered rubber is considerably less costly than that which is covered, a considerable saving in price is accomplished.

Another advantage resides in the fact that if a break occurs in the thread 24 which is taken from a large spool, the operation can be immediately stopped, the thread replaced in the stitching needle and the sewing promptly resumed with practically no loss of time. When the bobbin which feeds the thread 26 becomes exhausted, a new bobbin can be inserted in the machine and the sewing operation again resumed in short order. The spool from which the resilient cord 18—20 is fed can be of such size that replacing of this element becomes necessary only at long intervals and this also applies to the spool which holds the thread 24.

The application of the threads by means of a locking stitch assures of a suitable attachment of the resilient cord while under tension to the fabric and this tension is effected during the sewing operation by a simple pull on the fabric on the part of the operator during the actual process of stitching. A suitable tension regulator is provided on the machine.

Heretofore, puckered, shirred or ruffled fabric has been produced by using a resilient cord as one of the threads in the lock stitch or other element. In other words, only two threads were used in the sewing operation, one being resilient and this resilient thread or cord was usually furnished from the bobbin below the bed plate of the sewing machine, which bobbin obviously would not have a very large capacity. Hence, the necessity for frequent changes of the bobbin and resultant gaps in the continuity of the resilient thread.

In the present invention, three threads are used, one being resilient and the other two threads are employed to fasten the resilient thread to the fabric. The resilient thread is never operated upon by the needle of the sewing machine and is fed from a large spool in practically unlimited lengths as distinguished from being employed as an actual portion of the stitches and being fed from a bobbin of very limited capacity. This produces a much more satisfactory resilient or puckered effect because the resilient cord is simply led upon and fastened to the fabric, and, in no case, is it ever pulled through the fabric as a portion of the stitch. The feeding of the resilient cord is accomplished by a guide element and the tension thereon during the sewing operation can be very accurately regulated.

From an inspection of Figures 3 and 4, it will be noted that the holes pierced in the fabric by the needle of the sewing machine are necessarily in a straight line and the loops produced by interlocking of the bobbin thread with the upper thread are also in a corresponding straight line, assuming, of course, that the fabric and the resilient cord are fed through the machine in a straight line.

The above statements will apply regardless of whether the line of stitching is straight or curved,

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the interlocking loops between the fastening thread being always along a medial line so far as the resilient cord is concerned. Due to this fastening relationship, the cord assumes a wavy or zig-zag line with a holding stitch first on one side and then on the other. The showing in the figures is greatly exaggerated for purposes of clarity and in actual operation the resilient cord in the final product appears substantially straight, especially when under tension with the fastening threads apparently zig-zagging from one side of the cord to the other. This is not entirely an optical illusion due to the fact that there is always some give in the fabric itself and this, combined with the puckered effect when the tension is released, will result in a straight line appearance of the resilient cord under practically all conditions.

It has been found that a single strand of uncovered rubber can be covered with thread or similarly coated by the process and machine of this invention regardless of whether the rubber is applied to a fabric or whether it is later put into commerce simply with the coating of thread thereon. This is best illustrated in Figure 7 where a cord or strip of plain rubber 38 can be covered with a coating of threads 34 and 36 in a lock stitch relationship and this coating will replace the spirally applied coating or helical covering heretofore considered to be the only feasible construction of this type on the market.

The coating of threads, whether in lock stitch or other relationship, is so applied that the adjacent strands thereof will separate whenever the rubber is stretched so that the effective resiliency of the coated strand is little, if any, less than the effective resiliency of the same if uncoated.

It will be seen that herein is provided a novel means of producing a shirred, ruffled or puckered fabric wherein a length of resilient strip or cord, while under tension, is applied to a piece of fabric and that this operation can be made practically continuous with little or no interruptions over a long period of time. The difficulty heretofore experienced in producing a fabric of this type is that the resilient cord was supplied from bobbins which held only a limited amount, and

when the bobbin was exhausted, it was necessary for the operator to supply a new one and start the stitching of the resilient cord anew. This always left a space which was either unsightly because of the doubling over of the resilient cord, or which would not pucker on account of the fact that the break in the resilient cord eliminated the pull which caused the puckering or shirred effect.

We are aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and we, therefore, do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

We claim as our invention:

1. A puckered panel for a garment composed of a layer of substantially non-resilient material of a predetermined configuration and a continuous length of resilient cord stitched thereto in parallel lines with U-shaped loops at the edges of the fabric, these stitches being applied to the cord at the U-shaped turns but not to the fabric.

2. A puckered panel for a garment composed of a layer of substantially non-resilient material of a predetermined configuration and a continuous length of resilient cord stitched thereto, two lengths of threads being employed to stitch the resilient cord to the fabric, the return bands for the resilient cord extending beyond the edges of the fabric.

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