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(58) Field of search

D1S

A3V

Selected US specifications from IPC sub-class

D06J

(54) **A knitted tape**

(57) Puckers pleats in a fabric 10 are produced by attaching the fabric 10, preferably by a sewn seam, to an elasticated tape 15 whilst the tape 15 is in a stretched condition and subsequently allowing the tape 15 to relax.

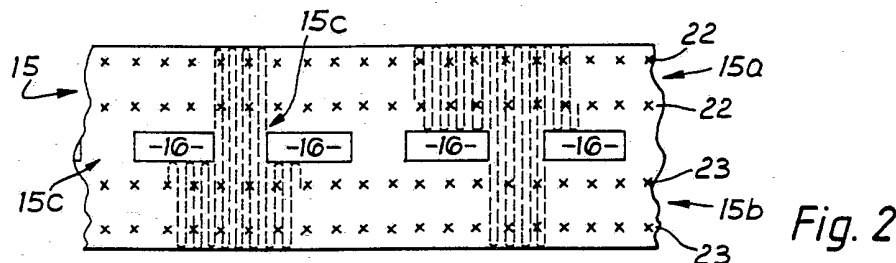
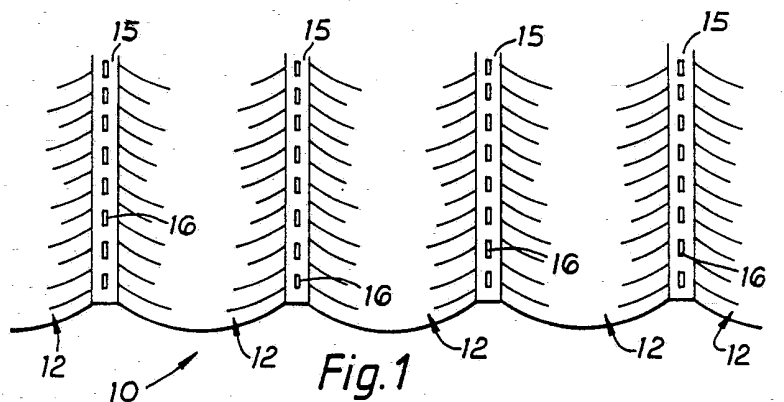
Contraction of an elasticated tape portion, joined to a rigid knitted tape portion, as the composite emerges from a knitting machine to cause puckering of rigid portion is also disclosed.

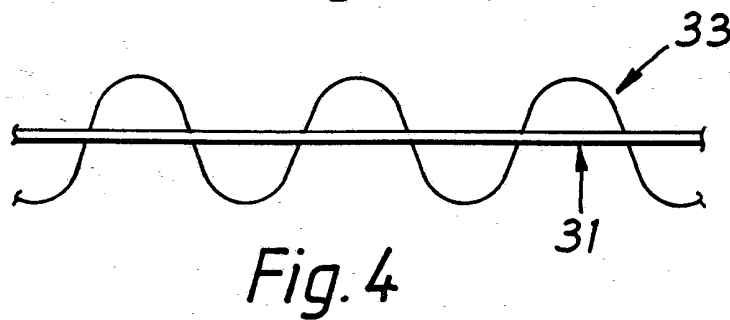
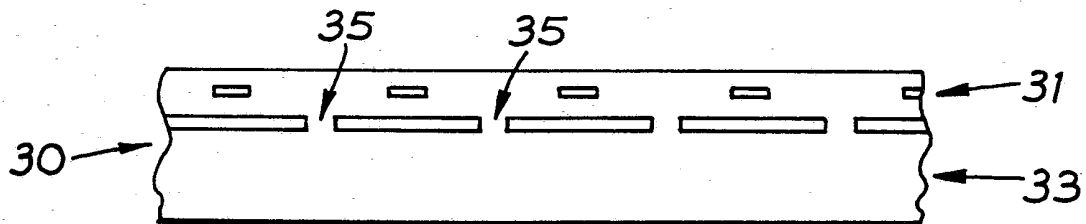
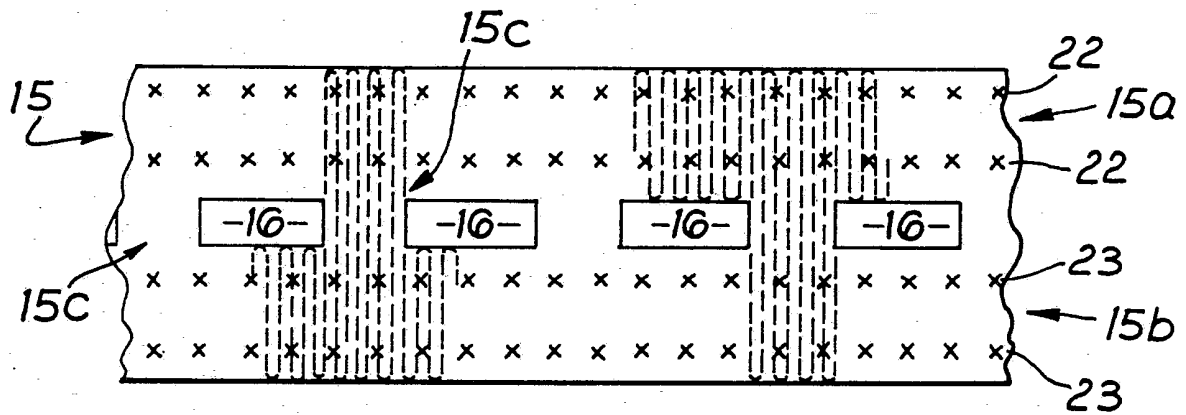
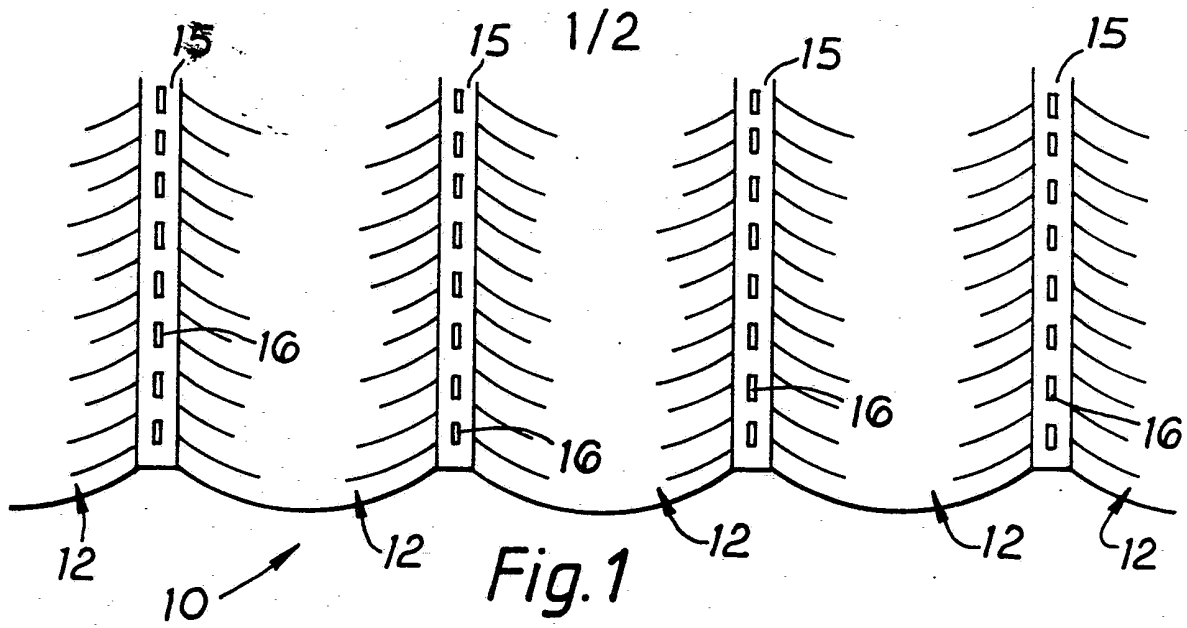
The tape 15 includes openings 16 for clips to gather up the fabric (curtain 10) further. A central pocket is formed to accommodate a pull cord. The tape 15 may be applied to strips of fabric to join adjacent strips.

The tape includes strip portions 15a, 15b of weft threads 20, 21 extending across the width of strip portions 15a, 15b and connected together by spaced wales of warp knitted threads 22, 23.

The weft thread may be inelastic and be of a yarn (e.g. polyester) similar to that of the fabric. The warp threads are of rubber or elastomeric yarns.

There are also described in elastic warp knitted tapes which use clips to pucker fabrics or draw cords to pucker tapes themselves.





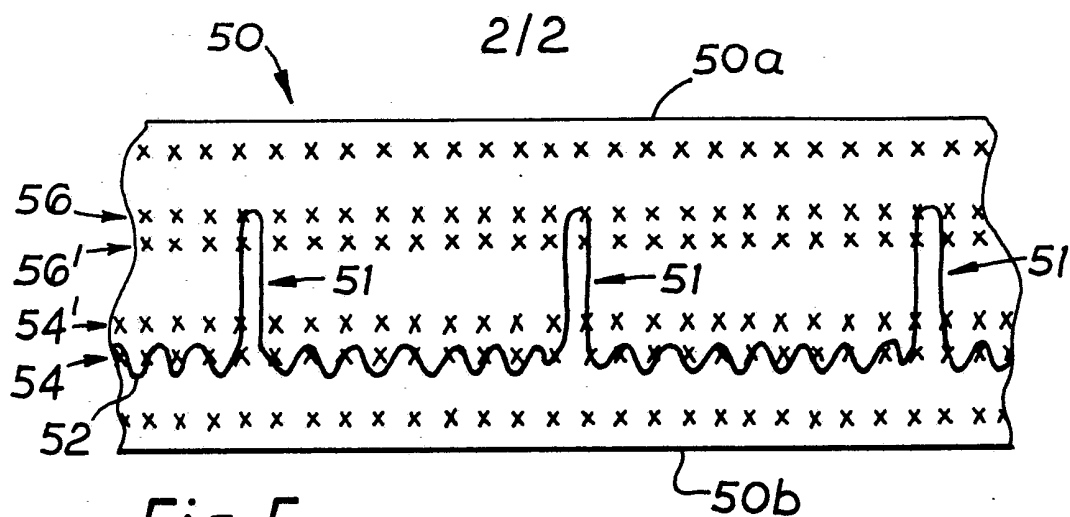


Fig. 5

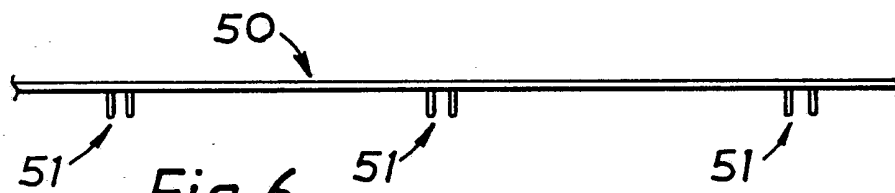


Fig. 6

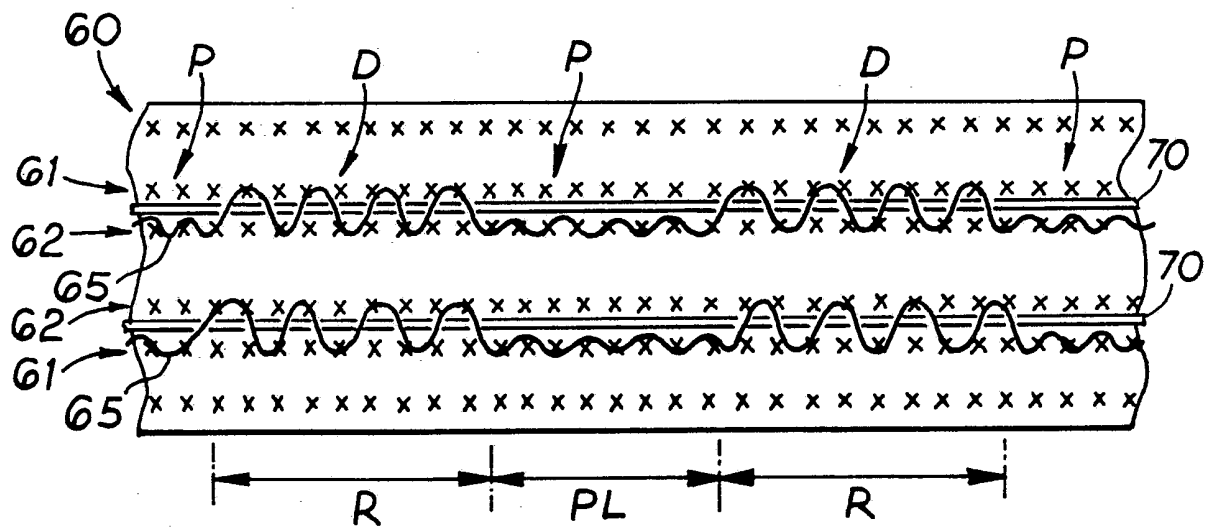


Fig. 7

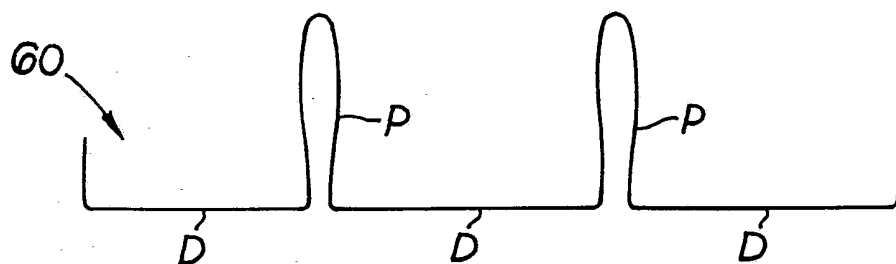


Fig. 8

A KNITTED TAPE

The present invention relates to a method for puckering or creating pleats in fabric, especially but not exclusively, furnishing fabrics such as curtains. The invention also relates to a fabric article such as a curtain or bedspread having pleats produced by the method. Additionally the invention also relates to a knitted tape capable of being puckered.

An Austrian curtain blind basically comprises fabric which is arranged in festoons. The festoons are created by puckering the fabric at spaced intervals across the width of the fabric. Conventionally this is achieved by a manual sewing operation wherein an operative feeds the fabric through a sewing machine together with an inextensible backing tape. The fabric is puckered either by the machine or the operative and is held in its puckered condition by seaming the fabric to the tape. Normally the sewing operation includes producing two seams, one extending along each side edge of the tape. Accordingly this operation tends to be a relatively slow operation.

According to one aspect of the present invention there is provided a method of producing puckers in a fabric comprising attaching the fabric, preferably by a sewn seam, to an elasticated tape whilst the tape is in a stretched condition and subsequently allowing the tape to relax.

According to another aspect of the invention there is provided a method of producing a fabric article having festoons, the method including producing puckers in the fabric along discrete lines spaced across the fabric article, the puckers for each line being created by attaching the fabric, preferably by a sewn seam, to an elasticated tape whilst the tape is in a stretched condition and subsequently allowing the tape to relax.

The tapes may be applied to a single piece of fabric which defines the width of the fabric articles or may be used to be connect adjacent strips of fabric together.

According to another aspect of the present invention there is provided a fabric article made by either method defined above.

According to another aspect of the present invention there is provided an elasticated knitted tape adapted for attachment to a fabric whilst stretched.

According to another aspect of the present invention there is provided a warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, the weft loops and wales being arranged to define at least one series of spaced apertures extending longitudinally along the tape.

According to another aspect of the present invention there is provided a warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, at least one weft yarn being incorporated for producing a series of loops spaced along the tape for accommodating a pull cord or retaining clips.

According to another aspect of the invention there is provided a warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, at least one draw cord attached to one side face of the tape at discrete locations spaced along the tape to enable the tape to be puckered on pulling of the cord.

According to another aspect of the invention there is provided a warp knitted tape having at least a pair of longitudinally extending strip portions which are spaced laterally apart and which are joined at discrete locations by connection formations spaced apart longitudinally along the tape, one of said pair of strip portions being elasticated so as to contract

longitudinally on emergence from the knitting machine so as to cause puckering of the other strip portion.

Various aspects of the invention are hereinafter described with reference to the accompanying drawings in which:-

Figure 1 is a schematic view of a portion of fabric having festoons formed therein;

Figure 2 is a schematic front view of a length of tape according to one embodiment of the present invention;

Figure 3 is a schematic front view of a length of tape according to another embodiment of the present invention shown in a stretched condition;

Figure 4 is a plan view of the tape of Figure 3 shown in a relaxed condition;

Figure 5 is a schematic front view of a length of tape according to another embodiment of the invention;

Figure 6 is a plan view of the tape shown in Figure 5;

Figure 7 is a schematic front view of a length of tape according to another embodiment of the invention; and

Figure 8 is a plan view of the tape shown in Figure 6.

A fabric article such as a curtain blind is illustrated generally at 10 in Figure 1 and includes festoons 12. The festoons are created by attaching at discrete lines across the width of article 10 elasticated knitted tapes 15 of the type illustrated in Figure 2.

The fabric article 10 illustrated in Figure 1 is formed from a single piece of fabric with the tapes being applied to one face of the fabric. Preferably the tapes 15 are applied to the rear face of the fabric so that in use they are hidden from view.

The tape 15 is preferably formed with a row of

openings 16 extending centrally along the length of the tape. The openings 16 serve to receive clips (not shown) which enable the fabric to be further puckered by gathering up the fabric and attaching a clip to selected openings 16.

The tape 15 is preferably attached to the fabric by two sewn seams extending along and adjacent to the side edges of the tape. In this way a central pocket extending along the length of the tape is produced between the tape and the fabric. Such a pocket is advantageous particularly for a curtain blind in that it enables a pull cord to be accommodated therein for enabling the curtain blind to be raised or lowered.

As an alternative, a series of loops may be provided projecting from one side edge of the tape through which the pull cord can be threaded. Such loops may be formed by laying a weft thread on several adjacent courses and then on a selected course drawing the weft thread across at least one row of stitches created by a warp thread and outside the edge of the tape and held there for at least one course before returning. An alternative arrangement for incorporating such loops is illustrated in Figures 5 and 6.

If desired the tape 15 may be applied to strips of fabric and be used to join adjacent strips along their side edges. In this way the width of the fabric article may be varied as desired and strips of different fabrics may be used. In such a construction the tape 15 may be visible from both sides of the fabric.

In Figure 2, the tape 15 illustrated is formed by warp knitting techniques. The tape 15 includes two spaced apart strip portions 15a, 15b which are connected at spaced intervals by connection portions 15c to define openings 16.

The strip portions 15a and 15b are each composed of

weft threads which extend across the width of each strip portion and are connected together by spaced wales of warp knitted threads. This is shown schematically in Figure 2 wherein wales of weft threads for strip portions 15a and 15b are indicated by dotted lines 20, 21 respectively and wales of warp threads for strip portions 15a, 15b are indicated by crosses 22 and 23 respectively.

Each connection portion 15c is formed by extending the weft loops of each strip portion over to the other strip portion so as to be incorporated therein. Thus the connection portions 15c are formed only of weft threads.

The weft thread (S) may be formed of a yarn similar to that of the fabric so as to visually blend therewith. For example for use with lace knitted using polyester yarns, a polyester yarn could be adopted for the weft threads. By way of example a polyester yarn of 167 Decitex is suitable for use with lace netting.

In one embodiment the yarn used for the weft threads is preferably relatively inelastic.

The yarn used for the warp threads is elastic in order to provide the elasticated nature of the tape. Preferably the warp threads are either rubber or an elastomeric yarn such as LYCRA (Registered Trade Mark).

If desired, the tape may be knitted so as to have decorative embellishments.

For certain applications it is envisaged that elastication of the tape for longitudinal stretch is not necessary. In this respect it is possible to provide an inelastic warp knitted tape having at least one series of spaced apertures extending longitudinally along the tape. Preferably the apertures of said at least one series of apertures are spaced at regular intervals and are of equal length, for example the apertures may be about 0.5 cm long and spaced apart by about 0.5 cm. It will be appreciated that the length of the apertures and the

spacing therebetween may be varied.

A suitable knitting construction for such a tape is illustrated in Figure 2 wherein the warp yarns and weft yarns are inelastic yarns, preferably monofilament yarns. These yarns are preferably translucent. Preferably each strip portion 15a, 15b includes four side-by-side wales of warp threads 22, 23 instead of the two wales illustrated. The warp and/or weft yarns may be multifilament yarns.

In use the tape is attached to a fabric article, preferably by a sewn seam extending along each longitudinal side of the tape. A pull cord is threaded between the tape and the fabric; the apertures permitting access to the interior between the fabric and tape for threading of the cord.

In a curtain, the lower connecting portions serve as anchorage for clips on the cord.

Since the connecting portions are closely spaced there is little waste in aligning neighbouring tapes for ensuring that adjacent cords raise a curtain evenly across its width. It is envisaged that a regularly spaced marker may be incorporated to enable users of the tape to easily align adjacent tapes during make up of the fabric article and facilitate positioning of puckering or cord anchorage clips. The marker may be defined by a marker yarn of a differing colour to the weft yarns which marker yarn is laid in on selected courses only to extend across the width of the tape. At other times the marker yarn could be laid along a given wale.

An alternative embodiment is illustrated in Figures 3 and 4 wherein a tape 30 is illustrated which is particularly suited for use as a curtain header tape.

The tape 30 is preferably formed by warp knitting and includes an elasticated tape portion 31 which is integrally joined to and spaced from a tape portion 33

which is knitted so as to be relatively rigid. The tape portions 31, 33 are connected at spaced locations by connection formations 35. Accordingly when the tape 30 emerges from the knitting machine, tape portion 31 contracts and causes the relatively rigid tape portion 33 to pucker. In use the tape 30 would be applied in a stretched condition to the edge of a fabric with the portion 33 being attached, preferably by sewn seams, to the fabric. Relaxation of the tape 30 then causes the tape portion 33 to pucker and thereby create pleats in the fabric attached thereto.

Preferably the elasticated tape portion 31 is of a similar construction to tape 15 shown in Figure 2; the openings 16 conveniently being used to accommodate suspension hooks (not shown).

The connection formations 35 are preferably formed by weft loops extending between portions 31, 33. The connection formations 35 serve to control and define the frequency of the puckering effect of tape portion 33 and so accordingly the spacing between connection formations 35 may be altered to achieve a desired frequency of puckering.

As indicated above the tape illustrated in Figure 2 may be modified to provide a series of loops through which a pull cord can be threaded. In the embodiment illustrated in Figures 5 and 6 an example of a tape 50 is shown wherein a series of loops 51 are provided projecting from a side face of the tape. The body or main fabric of the tape is defined by weft loops extending across the width of the tape and defining edges 50a, 50b. These weft loops have been omitted for clarity. The loops 51 are formed by a weft yarn 52 which is laid-in along a single wale 54 of warp stitches and at selected courses is laid across to an adjacent wale 56 and then returned to wale 54 on the next course. Preferably the weft yarn

52 when being laid between wales 54 and 56 is fed over a loop forming finger so that a raised loop is produced.

In order to provide better anchorage of each loop 51 the weft yarn 52 is preferably laid across a pair of closely spaced adjacent wales 54, 54' and 56, 56' located at opposite ends of each loop 51. Preferably the weft yarn 52 is a monofilament yarn.

It will be appreciated that since the loops 51 enable a pull cord to be threaded along the tape and also enable clips to be used for rucking the fabric to which the tape is attached the openings 16 of the tape 15 are no longer required. Thus in the tape 50 illustrated in Figures 5 and 6 openings 16 have been omitted.

It will be appreciated that provision of loops 51 in the manner described with reference to Figures 5 and 6 is applicable to any of the tapes so far described with reference to Figures 1 to 4 of the drawings.

A further embodiment of a tape 60 is illustrated in Figures 7 and 8. The tape 60 is of the type described above wherein both the warp and weft yarns are relatively inelastic. The tape 60 may therefore incorporate at least one series of openings 16 and/or at least one series of loops 51.

In the embodiment illustrated in Figures 7 and 8 a pair of draw cords 70 are provided. Each draw cord 70 is located on the same side face of the tape 60 and is positioned between a pair of wales 61, 62. A weft yarn 65 is laid in along one of the wales 61 or 62 and at selected courses is laid across to the other wale of the pair and in so doing traps the cord 70 between itself and the warp yarns 21. The laying of the weft yarn 65 between wales 61, 62 is performed in a repeated sequence wherein the weft yarn 65 is laid between the wales 61, 62 over a predetermined number of courses and then subsequently for another predetermined number of courses the weft yarn 65

is laid in one wale 61, or 61 only. Thereafter the sequence is repeated.

Each draw cord 70 is, thus, attached at discrete locations D spaced along the tape 60, the length of attachment at these discrete locations being represented in Figures 7 and 8 by the designation R. In between the discrete locations D the cord is free from the tape 60 and those portions of the tape in between the discrete locations D are represented by the designation P and are indicated as having the length PL.

If the draw cords 70 are pulled, the frictional contact between the tape and the cord at the discrete locations causes the discrete locations D to move and abut one against the other and in so doing causes the tape portions P to pucker. This condition is illustrated in Figure 8.

It will be appreciated that it is possible to alter the relative lengths of R and PL to produce differing puckering effects. This is simply done by altering the knitting sequence to change the predetermined number of courses over which weft yarn 65 is laid between adjacent wales 61, 62 and to change the predetermined number of courses over which the weft yarn is laid into one of the wales 61, or 62 only.

In the event that loops 51 are to be provided, these are preferably located within the region of each of the discrete locations D and between a pair of cords 70.

CLAIMS

1. A method of producing puckers in a fabric comprising attaching the fabric, preferably by a sewn seam, to an elasticated tape whilst the tape is in a stretched condition and subsequently allowing the tape to relax.
2. A method of producing a fabric article having festoons, the method including producing puckers in the fabric along discrete lines spaced across the fabric article, the puckers for each line being created by attaching the fabric, preferably by a sewn seam, to an elasticated tape whilst the tape is in a stretched condition and subsequently allowing the tape to relax.
3. A warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, the weft loops and wales being arranged to define at least one series of spaced apertures extending longitudinally along the tape.
4. A warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, at least one weft yarn being incorporated for producing a series of loops spaced along the tape for accommodating a pull cord or retaining clips.
5. A warp knitted tape according to Claim 3 or 4 wherein the warp threads are elastic.
6. A warp knitted tape according to Claim 3 or 4 wherein the warp threads are relatively inelastic.
7. A warp knitted tape according to Claim 6 wherein at least one draw cord is attached to one side face of the tape at discrete locations spaced along the tape to enable the tape to be puckered on pulling of the draw cord.
8. A warp knitted tape having a series of weft loops joined together by a plurality of spaced apart knitted wales, at least one draw cord attached to one side face of the tape at discrete locations spaced along the tape

to enable the tape to be puckered on pulling of the cord.

9. A warp knitted tape having at least a pair of longitudinally extending strip portions which are spaced laterally apart and which are joined at discrete locations by connection formations spaced apart longitudinally along the tape, one of said pair of strip portions being elasticated so as to contract longitudinally on emergence from the knitting machine so as to cause puckering of the other strip portion.

10. A warp knitted tape substantially as described with reference to and as illustrated in any of Figures 2 to 8 of the accompanying drawings.