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**COMPOSITE ELASTIC BANDS FOR GARMENTS
INCORPORATING SUCH BANDS**

John Edward Lynam, Mapperley, England, assignor to
Automatic Braiding Company (Nottingham) Limited,
Nottingham, England

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This invention concerns improvements in composite elastic bands and particularly composite elastic bands which are adapted to be attached to a garment as a pre-fabricated part or incorporated in the garment during manufacture as an integral part. The principal location at which such bands may be used is at the waist, for example as supporting bands in pajamas, briefs, shorts and like garments, but it will be appreciated that they may be employed as constricting bands at edge openings of garments as required, or for constricting without supporting.

This invention provides a composite elastic band which is capable of being stretched elastically from a relaxed condition and particularly a band in or for a garment, comprising a core of at least one ribbon of elastic (i.e. rubber, natural or synthetic) and a textile covering sheath at least partly enclosing it wherein over at least a substantial part of the width of the core and at regions closely spaced lengthwise of the core the latter is stuck to the sheath and in the relaxed condition of the band the material of the sheath is tensioned in the widthwise direction of the band and is puckered or gathered in the lengthwise direction of the band by the adhered core.

The invention also provides a composite elastic band which is capable of being stretched elastically from a relaxed condition, comprising a core of at least one ribbon of elastic (rubber) and an enclosing sheath consisting of a strip of textile material folded round the core with its edges disposed at one face of the band and extending lengthwise thereof, which core and sheath are stuck together over at least a substantial part of the width of the core and at regions closely spaced lengthwise of the core.

Preferably the edges of the sheath substantially abut or overlap, and it is also preferred that these edges be stuck together. It is however within the scope of the invention so to arrange matters that there is a gap between the edges of the sheath.

In one construction according to the invention the core occupies substantially the full width of the sheath. In an alternative construction it occupies less than the full width of the sheath and the latter presents at least one marginal or intermediate portion unoccupied by the core.

The sheath may be made of inextensible fabric or extensible fabric. Of the latter, knitted fabric is preferred and it is also preferred that the wales shall extend widthwise of the band although they may extend lengthwise of the band. Interlock fabric or a suitable warp knitted fabric may be used.

In manufacture it is necessary to enclose the core in the sheath while the core is extended. If the sheath is made of extensible fabric it may be applied while in unstretched, or in partially stretched, or substantially fully stretched, condition provided that the core is stretched to a still greater extent so that when the composite band is relaxed the adhered core tensions the sheath widthwise of the band and puckers or gathers it in the lengthwise direction of the band. The resultant composite band is capable of being stretched lengthwise without an accompanying undesirable reduction in width and the puckering or gathering of the sheath in the relaxed condition gives the band an attractive appearance and a desired

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bulk; these features render the band particularly suitable for use in garments for example as a waist band or other constrictive band at an edge opening or at any other desired location.

In order that the invention may be better understood reference will now be made to the accompanying drawings in which:

FIGURE 1 is a perspective view of one composite band according to this invention, the sheath being partly removed to disclose the core, and

FIGURE 2 is a section on a larger scale taken on the line 2—2 in FIGURE 1.

FIGURE 3 is a similar perspective view of a further band, and

FIGURES 4 and 5 are elevations of still further bands.

FIGURES 6, 7 and 8 are sectional views similar to FIGURE 2 but showing modifications, while

FIGURES 9 and 10 are sectional views illustrating, to some extent diagrammatically, ways in which a band according to this invention may be incorporated in a garment.

Referring to FIGURE 1 the composite elastic band therein illustrated comprises a core consisting in this example of a single thin and initially flat ribbon 10 of elastic (rubber) disposed within a covering or sheath 11 constituted by a strip of fabric folded round the core to closely embrace it. The ribbon may with advantage be $1\frac{3}{8}$ " wide by $\frac{1}{16}$ " thick although these dimensions may be varied somewhat. The sheath is made of interlock fabric with wales extending widthwise of the band. It consists of a wide strip of fabric, wider than the ribbon 10, which completely covers one face of the ribbon and is folded round the two edges of the ribbon and completely covers the other face of the ribbon at which last mentioned face the marginal parts 11a, 11b of the fabric overlap. The overlap may occur at any desired location in the width of the band and the overlapping material parts are desirably stuck together by adhesive indicated at 12 in FIGURE 2.

At least one face of the ribbon 10 is stuck to the sheath 11 over a substantial part of the width of the ribbon and at regions closely spaced lengthwise thereof. In the arrangement illustrated in FIGURE 1 the adhesive is disposed in closely spaced transverse lines or stripes 13. In other arrangements it is disposed in dots 14, FIGURES 3 and 4, or dashes 15, FIGURE 5. Any desired pattern arrangement of lines, dots, dashes (or any combination thereof) may be employed. It is preferred however that basically the areas of adhesive shall form transverse (and continuous as in FIG. 1 or discontinuous as shown by way of example in FIGS. 3, 4, and 5) lines or narrow stripes which are separated but closely spaced in the lengthwise direction of the core.

In the manufacture of the composite band, the ribbon 10 is drawn from a supply thereof, tensioned, and while stretched to an appropriate extent has the adhesive applied to it and the sheath material wrapped round it, the sheath material being in unstretched condition or stretched to a desired extent and its overlapping edges being stuck together. The applied sheath is held on the stretched ribbon for a sufficient time to permit the adhesive to take effect before the composite band is permitted to relax. As the band relaxes the ribbon 10 tends to expand widthwise. This widthwise expansion is resisted by the sheath material along the adhesive stripes 13 with the result that at these regions, since the ribbon is unable to expand widthwise, it thickens up. Between the stripes 13 the ribbon adopts a corrugated form as shown in FIGURE 2. The lengthwise contraction of the ribbon 10 also causes the sheath to be gathered or puckered in the lengthwise direction of the band, the degree of puckering being pro-

portional to the difference in stretch between the sheath and the ribbon when the sheath is being applied around the ribbon.

As the adhesive is applied in what are essentially closely spaced transverse lines the puckering will be in the form of regular transverse ridges or flutes as shown in FIGURES 1, 2, 4 and 5 but it will be understood that other pattern arrangements of adhesive will produce other forms of puckering.

Instead of the marginal parts 11a, 11b of the sheath material having an overlap as shown in FIGURES 1 and 2, they may be arranged substantially to abut as illustrated in FIGURE 3. The abutting marginal parts may be stuck to the face of the ribbon by a longitudinally extending stripe of adhesive 16. Although in FIGURE 3 this arrangement is illustrated in conjunction with spots of adhesive, it is applicable to any of the constructions herein described and illustrated.

Instead of the core consisting of a single ribbon it may consist of a plurality of ribbons with their adjacent edges abutting, or spaced apart to leave an intermediate portion in the width of the sheath which is unoccupied by the core. In FIGURE 6 the use of two such ribbons 10a, 10b is illustrated. A plurality of such core ribbons may be employed in conjunction with any pattern arrangement of adhesive and in conjunction with overlapping or abutting marginal parts of the sheath.

In FIGURES 1-6 the core occupies the full width of the sheath 11. FIGURES 7 and 8 illustrate constructions in which the core 10 occupies less than the full width of the sheath and the latter presents at least one marginal part indicated at 11c which is unoccupied by the core. Even although in such a construction the sheath does not closely embrace both edges of the core it is tensioned widthwise of the band because it is stuck to the core in the manner already described and is likewise puckered or compressed lengthwise of the band. This puckering or compression dies out in the part 11c which is not occupied by the core. This part may be employed in attaching of a band to the fabric of a garment or to any other material. FIGURE 8 illustrates the fact that the overlapping margins 11a, 11b may occur in this part 11c.

FIGURE 9 illustrates one manner in which a composite band according to this invention may be secured to a garment. For the sake of neatness that face of the band at which the edges of the sheath occur is presented to the garment fabric 17 and the edge portion 17a of this fabric is turned over and down so as to lie against that face, the fold in the garment fabric being substantially coincident with an edge of the band. The band is sewn to the garment fabric by as many lines of stitching as is desirable, four lines 18a, 18b, 18c and 18d being illustrated in FIGURE 9. Since this figure illustrates the use of a two-ribbon core there are two rows of stitches for each of the ribbons 10a, 10b. It will be understood that the band is sewn to the garment fabric while in the longitudinally stretched condition, the garment fabric being desirably either unstretched or incompletely stretched so that when the band is permitted to relax the garment fabric is puckered.

In the modified arrangement shown in FIGURE 10 the marginal part of the garment fabric 17 is sandwiched be-

tween the aforesaid face of the composite band and a covering strip 19 which has its marginal parts 19a, 19b turned inwards for the sake of neatness. At least one row of stitches extends through the main or outer portion of the covering strip 19, each such marginal part 19a or 19b, and the composite band. In FIGURE 10 two such rows of stitches through each marginal part 19a or 19b are illustrated.

What I claim is:

1. A composite band capable of being stretched elastically from a relaxed condition, comprising a core of elastic ribbon means, a covering sheath formed of a single strip of textile material folded around said core and enclosing it, the elastic core in its relaxed condition being of a width initially greater than the portion of the sheath which encloses it, the sheath along one of its folded edges closely embracing the core while in its extended condition, and adhesive adhering the core to the interior surface of said sheath along closely spaced lines extending transversely to the length of said band while in the stretched condition, said core in its relaxed condition tensioning the enclosing portion of the sheath in the widthwise direction and gathering it in puckered form in the lengthwise direction, thereby allowing it to be expanded without substantial decrease in width and to the limit defined by unstretching of the puckered form thereof.

2. A composite band capable of being stretched elastically from a relaxed condition, comprising a core of elastic ribbon means, a covering sheath formed of a single strip of textile material folded around said core and enclosing it, the elastic core in its relaxed condition being of a width initially greater than the portion of the sheath which encloses it, the sheath along both of its folded edges closely embracing the core while in its extended condition, and adhesive adhering the core to the interior surface of said sheath along closely spaced lines extending transversely to the length of said band while in the stretched condition, said core in its relaxed condition tensioning the enclosing portion of the sheath in the widthwise direction and gathering it in puckered form in the lengthwise direction, thereby allowing it to be expanded without substantial decrease in width and to the limit defined by unstretching of the puckered form thereof.

3. A composite band as claimed in claim 2, wherein said closely spaced lines of adhesive are discontinuous.

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