Nov. 17, 1959 H. HARDIE 2,912,699

GARMENT BAND

Filed Jan. 14, 1957

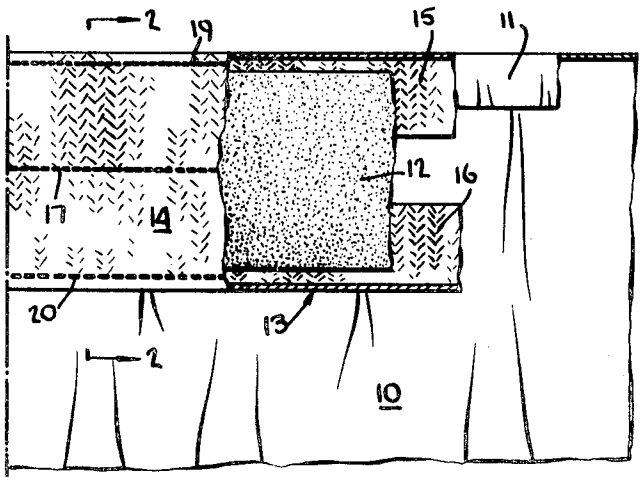


Fig. 1.

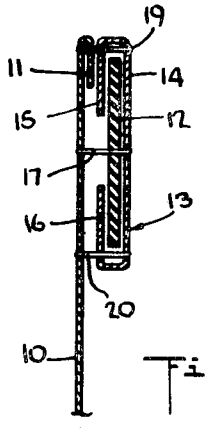


Fig. 2.

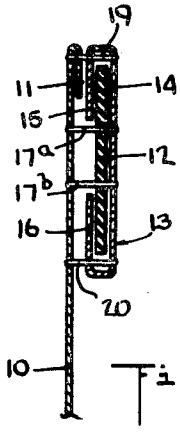


Fig. 3.

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United States Patent Office 2,912,699 Patented Nov. 17, 1959

2,912,699

GARMENT BAND

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Application January 14, 1957, Serial No. 633,858

1 Claim. (Cl. 2—237)

This invention relates to elastic garment bands used to contract a body opening in a garment about the wearer.

Garment constructions of this type are well-known, and the elastic band may extend completely or partially around the body opening that is to be contracted. The body opening may be continuous or it may be severed and provided with a separable fastener which is secured after the wearer has donned the garment.

A class of elastic garment band that is much used includes a strip of sheet rubber which is located at the edge zone of the garment, one face of the rubber being covered by the garment material, the other face of the rubber being covered by a fabric sheath, and the parts being secured in such assembled relation by a plurality of longitudinal rows of stitches. Bands of this class are extensively used as waistbands; and it is desirable that the rubber be anchored in position and that there be three or more longitudinal rows of stitches which strengthen the band and limit the amount of tension that can be imposed on the rubber while the garment is being worn.

In making garment bands of this class the strip of sheet rubber is usually suitably tensioned by a metering device as it approaches the sewing station so that the rubber will be in its longitudinally stretched condition while it is being sewed. As the band leaves the sewing station the rubber strip returns to its relaxed state, the strip contracting lengthwise and the stitched sheath and adjacent garment material being correspondingly shortened by the action of the rubber. If the fabrics of which the sheath and the garment are made are sufficiently stretchable-and-contractable in nature, the sheath and adjacent garment material may be flat and smooth after being shortened by the contracting rubber. If not, they will be shirred as a result of the longitudinal contraction of the rubber.

In many waistbands of this class the rubber strip and the sheath are placed on the inside of the garment, and the sheath is made of knit fabric which is highly stretchable and contractable and which provides a soft layer in contact with the wearer's body. The garment itself may be either knit or woven fabric. If made of ribbed knit material, the ribs are ordinarily disposed perpendicularly to the margin of the body opening thereby affording great stretch circumferentially of the body opening. If made of woven fabric, which is relatively nonstretchable, the shirring produced upon contraction of the rubber is sufficient to afford large expansion circumferentially of the body opening. It will therefore be understood that the garment material and sheath of the present invention include means for permitting the garment band to elongate.

Whether the garment be made of ribbed knit material as above referred to, or be made of woven fabric, the garment material has little stretch in a direction transverse to the rubber strip. When the rubber strip contracts lengthwise after being sewed it necessarily expands sidewise; and in many instances the garment material will not readily expand crosswise of the rubber strip and permit the garment material to follow the rubber strip in its crosswise expansion. The result is that the rubber folds and bulges between the rows of stitching. This often produces an uncomfortable and unsightly garment band. In addition washing and ironing reduces the life of the band, since the action of a hot iron is unduly localized on the folded-over and bulged portions of the rubber strip and tends to deteriorate the rubber at these points.

Among the objects of the present invention are to overcome the foregoing disadvantages of garment bands of the type referred to, to provide an extensible garment band of this type in which the rubber is free to expand sidewise and will tend to lie flat upon contracting lengthwise after being sewed, to provide a garment band of this type which will result in a more uniform product with the manufacturing variations that are encountered in practice, to provide a garment band of this type in which the rubber will be entirely concealed despite manufacturing variations in the band, to provide a garment band of this type having longer life, and to generally improve garment bands of this type.

Other objects and advantages will be apparent from the detailed description which follows.

Where parts are referred to on the basis of the oriented position shown in the drawing, no limitation as to the positioning of the related garment structure is to be inferred. It will be understood that the band may be at the top of the garment (as the waistband of a nether garment), at the bottom of the garment (as a leg band), or on the side of the garment (as an arm band). In both the description and the claims parts may at times be identified by specific names for clarity and convenience but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the concept of my invention as distinguished from the pertinent prior art. The best modes in which I have contemplated carrying out my invention are illustrated in the accompanying drawings. However, it will be understood that the invention may be carried out by means of particular constructions other than those illustrated, and that various modifications capable of carrying out the invention, perhaps without a maximum realization of the advantages thereof, may be made.

Fig. 1 of the drawings is a largely diagrammatic elevation, the band shown in this figure being on the inside of the garment and the view being from the inside of the garment. The thicknesses of the materials shown are necessarily exaggerated.

Fig. 2 is a diagrammatic section, taken on the line 2—2 of Fig. 1. The thicknesses of the materials are necessarily exaggerated. For clarity of illustration the various layers of material are shown separated from one another, being in exploded relation to varying degrees, rather than being shown lying directly against one another throughout, as in the actual garment.

Fig. 3 is the same type of view as Fig. 2 showing a modified example of the invention.

Reference will first be had to Figs. 1 and 2. An edge zone of woven or knitted garment fabric layer **10** is folded to form a hem **11**. A strip of sheet rubber **12** is enclosed within a sheath designated as a whole by **13**. The sheath **13** is formed of a strip of knitted or other fabric and has a face portion **14** which lies against the wearer-adjacent face of the rubber. The sheath material has its edge portions folded around the longitudinal edge zones of the rubber strip, so as to embrace said edge zones with the folds of the sheath in spaced relation thereto as shown, and is formed into hems **15** and **16** which lie

against the wearer-remote face of the rubber strip. The sheath hem 15 lies against the garment-material hem 11, and the sheath hem 16 lies against the garment material layer 10 itself.

The parts are secured together in the foregoing assembled relation by longitudinal stitching which is located at a central zone of the rubber strip 12 and also by stitching which is adjacent to the respective edges of the sheath 13. In the example of the invention shown in Figs. 1 and 2 the stitching in the central zone of the rubber strip is composed of a single longitudinal row of stitches 17, indicated diagrammatically. The stitching close to the top fold of the sheath and spaced from the top edge of the rubber is a sigle row of stitches 19, and the stitching close to the bottom fold of the sheath and spaced from the bottom edge of the rubber is a single row of stitches 20, these two rows being indicated diagrammatically also.

The stitches of row 17 pass through the rubber, a single layer of the sheath material and a single layer of the garment material; and these stitches anchor the rubber to both the sheath material and the garment material. The stitches of row 19 are above the top edge of the rubber and pass through the layer of garment material 10, the garment-material hem 11, the upper sheath hem 15 and the face portion 14 of the sheath 13. The stitches of the lower row 20 pass through the layer of garment material 10, the lower sheath hem 16 and the face portion 14 of the sheath.

When the rubber strip 12 contracts lengthwise upon being released from the sewing station, with resultant transverse expansion of the rubber strip, the top and bottom edges of the strip are free to move outwardly without carrying with them either the sheath material or the garment material. Thus, folding and bulging of the rubber between the rows of stitching is obviated and both the rubber and the sheath tend to lie flat. The flatness may be augmented by placing the rows of stitching 19 and 20 in such relation to the edges of the rubber strip 12 that, upon the outward movement of the edges of the rubber strip, the rubber will substantially fill the sheath to these lines of stitching.

In Fig 3 the same reference characters are used to designate the same parts that are shown in Figs. 1 and 2. The construction shown in this figure is the same as that shown in Figs. 1 and 2 except that the stitching in the central zone of the rubber strip is composed of two parallel rows of stitches 17*a* and 17*b*. This strengthens the band with an additional longitudinal row of stitching, and the major portion of the width of the rubber strip is still free to expand transversely without interference from the sheath material or the garment material.

The sheath being free of sewing to the rubber at one or both edges of the rubber, the parts have more freedom of movement for expansion and adjustment as the wearer moves about, with the result that while the garment is being worn there is less strain on the band and more comfort to the wearer. At the same time the rubber strip is permanently anchored, by the center-zone stitching, to both the sheath material and the garment material.

With the present improvement I prefer to use a rubber strip that is somewhat narrower and somewhat thicker than would customarily be used for a particular band of this class as heretofore made. For example, certain commercial garments made with prior-art bands of this class have used a rubber strip 1¼" wide and .012" thick, and with the present improvement I have obtained good

results by using a rubber strip 1" wide and .015" thick. This gives approximately the same amount of rubber per lineal inch of band but, because the rubber is thicker, it is stronger and deterioration from the surface has to proceed farther before impairing the strip. At the same time, the upper and lower edges of the sheath which project beyond the rubber are short enough so that, when sewn as indicated in the drawing, these edge zones have considerable body and the effective width of the band of the present invention, as far as the wearer's comfort is concerned, is at least as great as with the prior-art bands using the wider strips of rubber.

In making a band according to the present invention and using a rubber strip 1" wide in its relaxed state, I have placed the rows of stitches 19 and 20 either 1" apart or $\frac{63}{64}$" apart. In either case the decrease in the width of the rubber strip upon suitable tensioning by the metering device through which it is fed to the sewing station is sufficient to give working tolerance for the sewing of the lines of stitches 19 and 20 beyond the edges of the rubber strip. With a rubber strip wider or narrower than 1" the distance between the rows of stitches 19 and 20 would be increased or decreased accordingly.

The stitches in rows 17, 19 and 20 may be of any suitable type. When the sewing is done while the rubber is under suitable tension, which is ordinarily the case, the stitches need not be of a stretchable type, as the length of each row of stitches as sewn will correspond with the stretched length of the band. I have obtained good results with all of the rows sewed with a single thread chain stitch.

I claim:

An extensible garment-band construction consisting of a sewed-together assembly comprising a layer of garment material, a one-layer elastic strip that is a strip of sheet rubber, and a sheath that directly contacts and directly embraces the strip of sheet rubber, the material edge portions of the sheath being folded around the two longitudinal edge zones of the rubber so as to embrace the said edge zones with the folds of the sheath in spaced relation to the edges of the rubber and providing the sheath, adjacent the two longitudinal folds thereof, with sewing zones beyond the rubber, the band having in each of said sewing zones a row of stitches which is close to the folds of the sheath and spaced from the longitudinal edges of the rubber and the stitches of which pass through the sheath, one hem of the sheath and the garment material, and the band having rubber-anchoring stitching extending along the central longitudinal zone of the sheath-and-strip, the rubber-anchoring stitching passing through the sheath, the rubber and the garment material, and the strip of rubber being free throughout the two zones thereof that lie on the opposite sides of the central longitudinal zone whereby sidewise expansion and contraction of the rubber strip are facilitated, the said garment material and sheath including means for permitting the said band to elongate.

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