

PATENT SPECIFICATION

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(54) IMPROVED SLIDE FASTENER TAPE

(71) We, YOSHIDA KOGYO KABUSHIKI KAISHA, a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to slide fasteners, more particularly to supporting stringer tapes of a warp-knitted structure for mounting thereon rows of interlocking fastener elements.

There are known various types of warp-knitted tapes for use in the field of slide fasteners or zippers. However, due primarily to their coarse network, knitted tapes have suffered from reduced mechanical strength and less dimensional stability compared to woven fabric tapes, and the fastener elements mounted thereon were prone to become displaced from their properly aligned position or disengaged from the longitudinal marginal edge of the tape along which they are secured. While conventional knitted fastener tapes are capable of supporting thereon such fastener elements which may be sewn into position by sewing threads, they cannot satisfactorily hold such fastener elements made of metal which are not ordinarily secured by sewing threads. The tendency of a knitted tape to stretch warp-wise and weft-wise has caused problems in its application to slide fasteners, and many attempts have been made to reinforce the tape to provide resistance to such stretch particularly at the longitudinal edge portion thereof along which the fastener elements are secured into position. However, none of these attempts have proved completely satisfactory to retain the fastener elements firmly and stably in their aligned position against displacement under severe stresses applied by a slider.

The present invention aims to provide an

improved knitted supporting stringer tape for slide fasteners which is capable of being secured to a row of fastener elements of any type and form presently available including continuously formed coil or meander elements made of plastic materials and discrete elements made of metals, and retaining these elements in their properly aligned position against displacement or detachment from the longitudinal marginal edge portion of the tape under severe stresses applied by a reciprocating slider.

According to the invention, there is provided a stringer tape for slide fasteners which comprises a warp-knitted structure comprising wales of warp stitches connected coursewise by laid-in weft threads and a reinforcing member anchored in between and extending along said wales adjacent one longitudinal edge of the tape, said reinforcing member being held in position along said edge of the tape by a laid-in weft thread and forming a region of increased thickness with respect to the remainder of the tape which region extends along said longitudinal edge of the tape for securing fastener elements thereon.

The invention will now be further described, by way of example, with reference to the accompanying drawings, in which:—

FIG. 1 is a schematic, enlarged plan view of part of a knitted stringer tape embodying the invention;

FIG. 2 is a similar view showing a modification of the tape of FIG. 1;

FIG. 3 is a schematic knit pattern of another modification;

FIG. 4 is a cross-sectional view of FIG. 1 showing the tape as applied to a metal type fastener element;

FIG. 5 is a cross-sectional view of the tape shown as applied to a meander or zig-zag type element; and

FIG. 6 is a cross-sectional view of the tape shown as applied to a spring-coil or helical type element.

[Price 33p]

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Referring to the drawings and FIG. 1 in particular, there is shown a supporting stringer tape T of a warp-knitted structure which comprises wales W formed by warp stitches such as open-pillar stitches as shown and connected course-wise by laid-in weft threads 10 and a plurality of warp threads 11 interposed between the wales W to provide resistance to longitudinal stretch. Importantly, according to the invention, there is provided a reinforcing member 12 which extends longitudinally along the inner longitudinal edge 13 of the tape T between the first and second wales W₁, W₂ and which is intimately held in position therebetween by the laid-in weft threads. The member 12 is made of strands of spun yarn having a diameter large enough to produce an enlarged marginal edge 13 as shown in FIG. 4. This marginal edge 13 is dimensionally stable, comparable to a beaded edge of an ordinary woven fabric tape, so that a fastener element E made of metal may be securely clamped thereon and firmly retained in position against lateral displacement under severe stresses applied by a slider (not shown).

The modification shown in FIG. 2 is characterized by the provision of a pair of aligned reinforcing members 12 in between the wales W₁, W₂ which are anchored and connected by thicker laid-in weft threads 10' than the remaining weft threads 10 at the web portion of the tape T. This stringer tape T is particularly adapted for fastener elements E of a coil or meander form which are sewn by lines of stitches S to the enlarged marginal edge 13 of the tape as illustrated in FIGS. 5 and 6. More specifically, the stitches S are run in through the core members 12 so that they are prevented from shifting laterally of the tape. This in turn adds to positional stability of the elements E during opening and closing of the fastener.

The modification shown in FIG. 3 is characterized by the provision of a knitted

pattern having a tricot stitch 15 combined with a chain stitch 16, both connected by laid-in weft threads 10, with a reinforcing member 12 laid-in between the wales W₁, W₂.

Having thus described the invention, it will be understood that the or each reinforcing member 12 provides increased reinforcement at the longitudinal marginal edge 13 of the tape T which becomes advantageously enlarged to permit secure clamping of metal fastener elements thereon. At the same time, the or each reinforcing member 12 serves to receive and retain the stitches S in intimate contact therewith to prohibit the latter from moving under the influence of pressures applied by the slider, so that the fastener elements E sewn thereon are retained stably in position against displacement.

WHAT WE CLAIM IS:—

1. A stringer tape for slide fasteners which comprises a warp-knitted structure comprising wales of warp stitches connected coursewise by laid-in weft threads and a reinforcing member anchored in between and extending along said wales adjacent one longitudinal edge of the tape, said reinforcing member being held in position along said edge of the tape by a laid-in weft thread and forming a region of increased thickness with respect to the remainder of the tape which region extends along said longitudinal edge of the tape for securing fastener elements thereon.

2. A stringer tape according to claim 1, wherein a plurality of core members are laid in along said longitudinal edge of the tape for receiving sewing stitches therethrough.

3. A stringer tape substantially as herein described with reference to the accompanying drawings.

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