

PATENT SPECIFICATION

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(54) A SLIDING CLASP FASTENER STRINGER

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumicho, 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 a sliding clasp fastener stringer and more particularly to such a stringer which comprises a warp-knit tape and a row of interlocking fastener elements secured thereto.

Known warp-knit tapes for sliding clasp fasteners basically comprised chain stitches forming longitudinally extending wales and weft laid-in threads connecting these wales coursewise. A row of fastener elements was secured to a longitudinal selvage or edge portion of the tape by a line of stitching received in an intervale groove between an outermost wale and its neighbouring wale.

When thus securing the fastener elements to the tape edge, it is important to hold them stably in place against their displacement relative to the tape. With this in view, the present inventor has proposed in a copending application No. 7183/76 (Serial No. 1,506,804) a sliding clasp fastener comprising a warp-knit tape and a row of interlocking fastener elements secured to a longitudinal edge portion of the tape by at least one line of stitching, the tape including a web portion which is connected to said longitudinal edge portion by a connecting portion of the tape, the longitudinal edge portion of the tape consisting of longitudinal-wale-forming chain stitches and two kinds of transverse lapping stitches, the web portion of the tape consisting of longitudinal-wale-forming chain stitches, one kind of transverse lapping stitches and laid-in lapping threads, the connecting portion of the tape consisting of longitudinal-wale-forming chain stitches, two kinds of transverse lapping stitches and laid-in lapping threads, the two kinds of transverse lapping stitches of the longitudinal edge portion and

connecting portion of the tape spanning different numbers of wales respectively.

According to the present invention, there is provided a sliding clasp fastener stringer which comprises a warp-knit tape and a row of interlocking fastener elements secured thereto, said tape having a web portion formed by chain stitches defining longitudinally extending wales, tricot stitches extending diagonally across and between a plurality of adjacent wales, and laid-in weft threads extending over and connecting every four wales and a longitudinal edge portion consisting solely of knitted threads, both of said portions being interconnected transversely of the tape by threads constituting said web portion and said edge portion, respectively, one of said wales adjacent said longitudinal edge portion being pulled toward said web portion to widen an intervale valley between said one of wales and its neighbouring wale.

The invention will be described by way of example with reference to the accompanying drawings which illustrate by way of example certain preferred embodiments which the invention may assume in practice and in which like reference characters refer to like or corresponding parts throughout the several views, and wherein:

Figure 1 is a diagrammatic fragmentary view on enlarged scale of a fastener stringer tape embodying the invention;

Figure 2 is a diagram illustrating the knitted construction of the stringer tape of Figure 1;

Figure 3 is a transverse cross-sectional view of the stringer tape carrying a row of fastener elements by means of a double row of stitching;

Figure 4 is a transverse cross-sectional view of the fastener stringer having attached thereto a top end stop; and

Figure 5 is a transverse cross-sectional view of a pair of these stringers having attached thereto a bottom end stop.

Referring now to the drawings, and Figure 3 in particular there is shown one of

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a pair of fastener stringers generally designated 10 which comprises a warp-knit support tape 11 and a row of relatively large interlocking fastener elements 12 mounted on the longitudinal edge of the tape 11. The support tape 11 consists of a warp-knit structure which has, as better shown in Figure 2, a web portion 11a occupying a majority of the tape areas and a longitudinal edge portion 11b defining a selvage of the tape, both portions being interconnected transversely of the tape. The web portion 11a is formed by chain stitches A, defining a multiplicity of longitudinal wales 13 aligned in parallel, tricot stitches B extending diagonally across and between two adjacent wales 13, and laid-in weft threads C extending over and connecting every four wales 13.

The longitudinal edge portion 11b of the support tape 11 is formed solely by knitted threads; i.e. a chain stitch A, a first tricot stitch B spanning every two wales and a second tricot stitch B' spanning every four wales. The knitted construction of this tape portion is thus rendered rigid enough to anchor the fastener elements 12 stably into position thereon with uniform strength, irrespective as to whether the elements are mounted on the courses or not.

The wales 13 alternate transversely with interwale grooves or valleys 14 the second one of which, counting from either extreme edge and designated at 14'', is widened by pulling the third wale 13' toward the center or web portion of the tape. This is accomplished by the tension of lapping movement of the laid-in weft threads C around the third wale 13' which is formed by chain stitches A and first tricot stitches B in the absence of second tricot stitches B'. As shown in Figures 1 and 3, the thus widened valley 14'' serves to admit therethrough the passage of the second line of stitching S₂ which would otherwise be obstructed by the third wale 13' if the valley 14'' was narrow. The first line of stitching S₁ is introduced into the first interwale valley 14' as shown. These two lines of stitching can anchor a row of relatively large fastener elements 12 into position against displacement under any extreme stresses.

The provision of the widened valley 14''

adjacent the tape edge has a further advantage in that a staple-like top end stop 15 shown in Figure 4 as well as a bottom end stop 16 mounted astride the confronting edges of a pair of stringers 10 can be applied to a respective tape end in a manner desired to grip and anchor the terminal fastener elements 12 because the end stops 15 and 16 can be guided through respective widened valleys 14'' without coming into thrusting contact with the third wales 13' or damaging the knitted fabric thereat.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener stringer which comprises a warp-knit tape and a row of interlocking fastener elements secured thereto, said tape having a web portion formed by chain stitches defining longitudinally extending wales, tricot stitches extending diagonally across and between a plurality of adjacent wales, and laid-in weft threads extending over and connecting every four wales and a longitudinal edge portion consisting solely of knitted threads, both of said portions being interconnected transversely of the tape by threads constituting said web portion and said edge portion, respectively, one of said wales adjacent said longitudinal edge portion being pulled toward said web portion to widen an interwale valley between said one of wales and its neighbouring wale.

2. A sliding clasp fastener stringer as claimed in claim 1 wherein said widened interwale valley lies between the second and the third wale counting from an extreme edge of the tape.

3. A sliding clasp fastener stringer as claimed in claim 2 wherein said third wale is pulled toward the center of the tape by the tension of laid-in weft threads lapping around said third wale.

4. A sliding clasp fastener stringer substantially as herein described with reference to and as illustrated in the accompanying drawings.

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3. A sliding clasp fastener stringer as claimed in claim 2 wherein said third wale is pulled toward the center of the tape by the tension of laid-in weft threads lapping around said third wale.
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