

PATENT SPECIFICATION (11)

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- (21) Application No. 49979/74 (22) Filed 19 Nov. 1974 (19)
(31) Convention Application No. 133 472 /73 (32) Filed 19 Nov. 1973 in
(33) Japan (JA)
(44) Complete Specification published 19 May 1976
(51) INT. CL.³ D04B 21/20
(52) Index at acceptance
D1K 24A10 24A11 24A6 24B2



(54) IMPROVED SLIDING CLASP FASTENER TAPE

(71) We, YOSHIDA KOGYO K.K., a corporation duly organised 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 carrier tape for sliding clasp fastener and has particular reference to a warp-knitted tape for mounting thereon a row of interlocking fastener elements.

There are various known types of warp-knitted tapes for use in the field of sliding clasp fasteners. Warp-knitted tapes of the known type are basically constructed with longitudinally extending chain stitches which form a multiplicity of wales and transversely extending lapping threads laid in to connect the wales coursewise. However, due primarily to their structural characteristics, the knitted tapes are susceptible to both longitudinal and transverse stretch and hence are not suitable per se for use in holding rows of fastener elements stably in position.

Attempts have been made to hold such stretch to a minimum mostly by making the knitted structure as fine and compact as possible. However, this has in turn led to the drawback that when sewing the fastener elements to the tape, the sewing needle tends to slip out of the correct line of path on account of resistance of too finely knitted threads, resulting in misaligned row of fastener elements on the tape. Such misalignment is pronounced in the event the tape is deficient in thickness at its edge to which the fastener elements are to be secured.

With the above noted drawback of the prior art in view, it is an object of this invention to provide an improved warp-knitted carrier tape for sliding clasp fastener which is highly resistant to stretch and which is contrived to permit a sewing needle to follow a correct path along a longitudinal marginal edge of the tape thereby securing a row of fastener elements into properly aligned position on the tape.

According to the invention, there is provided a warp-knitted tape for a sliding clasp fastener, the tape comprising a web portion and a marginal edge portion extending longitudinally thereof, said web portion comprising chain stitches which form longitudinally extending wales and tricot stitches interknitted therewith and interconnecting said wales, said marginal edge portion including a first or innermost wale of chain stitches, a second wale of chain stitches adjacent thereto, and warp threads laid in a direction to close the open laps of the respective first and second wales being separated by a space substantially corresponding to the pitch span of one wale and being interconnected by lapping threads to provide a longitudinally extending groove that accommodates passing sewn stitches through the tape to secure same to a row of fastener elements.

The invention will be described by way of example with reference to the accompanying drawings, wherein:—

Figure 1 diagrammatically illustrates the construction of a preferred warp-knitted carrier tape embodying the invention; and

Figure 2 illustrates a transverse cross-section of the same with a row of fastener elements mounted thereon.

Referring now to Figure 1, there is shown a carrier tape of warp-knitted structure for sliding clasp fasteners, which tape generally designated by the reference numeral 10 comprises a web portion 11 and a marginal edge portion 12 extending longitudinally thereof. The web portion 11 is basically constructed with chain stitches 13, which form longitudinally extending wales *W*, and tricot stitches 14 interknitted therewith. Laid into this foundation structure are transversely extending lapping threads 15 each laid over and across a plurality of wales *W* and each arranged to wrap around a location where a chain stitch 13 and a tricot stitch 14 are interknitted in each course.

As illustrated in Figure 2, the marginal edge portion 12 of the tape 10 to which the fastener elements (*E*) are to be attached is comprised of chain stitches 13a and 13b forming a first wale *W*₁ and a second wale

W₂, respectively. The first wale W₁ located at an extremity or innermost of the tape 10 and the second wale W₂ lying adjacent thereto are spaced apart by a distance substantially corresponding to one pitch of wale so as to provide thread-free regions H. These thread-free or course regions H provide unrestricted passage for sewing needles (not shown) such that the needles can run straight along a correct line of path, without slippage, to produce stitching 16 that secure the fastener elements into properly aligned position on the tape 10. The chain stitches 13a and 13b in the marginal edge portion 12 are preferably formed of bulk yarns of plastics material or textile yarns of large count such as spun yarns. The first wale W₁ and the second wale W₂ are interconnected by transverse lapping threads 17 comprised of threads thicker and stronger than lapping threads 15 in the web portion 11 or two or more of the latter threads bundled together. There are provided warp threads 18 which are arranged along the first and second wales W₁ and W₂, respectively, (there being similar warp threads, unreferenced, in the other wales,) and each of the warp threads 18 is knitted in a direction to close the open laps of the respective wale.

It will be seen that the web portion 11 and the marginal edge portion 12 are connected together integrally with the combination of transverse lapping threads 17, chain stitches 13b, tricot stitches 14 and lapping threads 15, resulting in the formation of the second wale W₂ which is larger than the rest of wales.

Designated at 19 is a connecting thread adapted to connect a plurality of unit tapes widthwise that are produced in parallel, which connecting thread may be removed to separate the tapes to individual product lengths in a manner well known in the art.

Referring to Figure 2, there is shown an example of the manner in which a row of fastener elements E is attached to the tape 10 provided in accordance with the invention. The fastener elements E shown to be of a meander form are mounted with their upper and lower legs Ea, Eb disposed astride

or sandwiching the marginal edge portion 12 of the tape 10 and secured in position by stitching 16 that run through a pair of braids 20 laid over the respective legs Ea, Eb of the fastener elements.

WHAT WE CLAIM IS:—

1. A warp-knitted tape for a sliding clasp fastener, the tape comprising a web portion and a marginal edge portion extending longitudinally thereof, said web portion comprising chain stitches which form longitudinally extending wales and tricot stitches interknitted therewith and interconnecting said wales, said marginal edge portion including a first or innermost wale of chain stitches, a second wale of chain stitches adjacent thereto, and warp threads laid in a direction to close the open laps of the respective first and second wales being separated by a space substantially corresponding to the pitch span of one wale and being interconnected by lapping threads to provide a longitudinally extending groove that accommodates passing sewn stitches through the tape to secure same to a row of fastener elements.

2. A warp-knitted tape as defined in claim 1 wherein the lapping threads comprises transversely extending lapping threads each laid over and across said longitudinally extending wales and arranged to wrap around a location where one of said chain stitches and one of said tricot stitches are interknitted in each course.

3. A warp-knitted tape as defined in claim 1 wherein lapping threads connecting said first and second wales are thicker and stronger than the lapping threads in said web portion or are two or more of the latter threads bundled together.

4. A warp-knitted tape substantially as herein described with reference to and as illustrated in the accompanying drawings.

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