CONCEALED SLIDE FASTENER

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ABSTRACT

A concealed slide fastener having fastener tapes each carrying along its folded one longitudinal edge a row of fastener elements. The fastener elements are secured to the element-carrying edge by two needle threads interlooped together with a looper thread at the legs remote from the edge, one of which needle thread is when cross-sectionally viewed vertically extended and passes through a cord within the elements and the other of which is extended obliquely at an angle to the vertical axis towards the fold of the element-carrying edge and hold the fold in place on the coupling region of the elements. The last-mentioned needle thread abuts against an inner periphery of the cord and serves to urge or bias the cord away from the coupling region to maintain a constant clearance thereat required for proper coupling engagement of the two opposed rows of fastener elements.

2 Claims, 2 Drawing Figures
CONCEALED SLIDE FASTENER

BACKGROUND OF THE INVENTION

This invention relates to slide fasteners, more particularly to a slider-operated fastener of the concealed or masked type which in its closed disposition substantially simulates a garment seam.

Slide fasteners having two rows of interlocking fastener elements formed from a continuous filament or wire and secured to respective folded edges of opposed stringer tapes are well known, and such fasteners when closed by the slider mask the elements from external view, only leaving a linear seam in the junction of the opposed tapes.

The so-called “concealed” slide fasteners of known type are designed to maintain the effect of concealing or masking the fastener elements by folding the respective element-carrying edges of the stringer tapes on themselves about the sewn seams which extend longitudinally of the tapes and secure the respective rows of fastener elements to the tapes.

The sewn seam in the prior art normally consisted of a pair of first and second sewing threads provided by a lock stitch or double chain stitch which when cross-sectionally viewed, run in vertically parallel relation to each other between the lower leg portions of the elements and the element-carrying edge of the stringer tape. The first thread was arranged to pass through a filler cord inserted longitudinally within and through the space defined between the upper and lower legs of the fastener elements in a row, while the second thread extended vertically parallel with the first thread and in close abutment against part of the periphery of the cord adjacent the coupling region of the fastener elements. The filler cord was kept out of engagement with the coupling heads by the second thread to provide between the filler cord and the coupling heads of the elements on one stringer a clearance large enough to receive therein the mating coupling heads on the other stringer. However, the second sewing thread was arranged in the vicinity of the axis of fold about which the tape is folded on itself but not sufficiently close thereto to engage directly with and stabilize the fold relative to the fastener elements. This has resulted in the drawback that the fastener elements are easily exposed to sight when lateral forces are exerted tending to split the two opposed tapes apart. One solution of the drawback would be to employ a larger filler cord such that will bring the second thread up closer to the coupling heads. However, such attempt would in turn cause interference of the cord with the normal coupling engagement of the two stringers, and would furthermore make the fastener objectionably stiff.

SUMMARY OF THE INVENTION

It is therefore the principal object of the invention to provide an improved concealed slide fastener which is designed to eliminate the above-noted drawback.

A more specific object of the invention is to provide a concealed slide fastener having a pair of rows of interlocking fastener elements which are mounted on and along the folded edges of respective stringer tapes in such a manner that the folds of the stringer tapes can be held in closely abutted relation to each other against lateral stresses and that the filler cord is urged away from the coupling region of the fastener elements to maintain a sufficient clearance for the opposed element rows to perform the proper intermeshing operation.

These and other objects and features of this invention will become apparent from the following detailed description when taken in conjunction with the accompanying drawing which illustrates by way of example a preferred embodiment and in which like reference characters or numerals refer to like parts throughout the same.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a transverse cross-sectional view of a concealed slide fastener stringer provided in accordance with the invention and having a row of fastener elements secured to the folded edge of its stringer tape; and

FIG. 2 is a transverse cross-sectional view of a pair of such fastener stringers coupled together.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing and FIG 1 in particular, there is shown a slide fastener stringer 10 which essentially comprises a stringer tape 11 and a row of fastener elements 12 attached to the stringer tape, which fastener elements are shown for purposes of illustration to be in the form of a continuous helically coiled structure. This structure when taken as an individual coupling element comprises an upper leg portion 13, a lower leg portion 14, a coupling head 15 merging into these leg portions and a connecting portion 16 remote from the coupling head 15 and connecting the element 12 to a respective adjacent element. The lower leg portion 14 is provided centrally at its lower surface with a cutaway or indent recess 17. There is provided a longitudinally extending filler cord 19 which is inserted in and through the space defined between the upper and lower legs 13 and 14 of the fastener element 12. The stringer tape 11 is shown for illustration purposes to be preferably of a warp-knitted structure having on one surface a multiplicity of alternate wales 20 and interwale grooves 21, with the opposite surface rendered flat, as shown. More specifically, stringer tape 11 has an element-carrying edge 22 inwardly folded on itself about a fold 23 and adapted for mounting thereon the row of fastener elements 12.

In accordance with the features of this invention, there are provided two needle threads 24 and 25 which are interlooped with a looped thread 26 to fill up the recess 17 in the lower leg portion 14. A close inspection of FIGS. 1 and 2 shows that the first sewing thread 24 passes substantially vertically from the interlooping 27 up through the filler cord 19 and extends into a first interwale groove 21a in the element-carrying edge 22 thereby fastening the latter to the upper leg 13 of the element 12. The second sewing thread 25 extends from the interlooping 27 upwardly but at an angle to the vertical axis 28 of the fastener stringer 10 and passes into a second interwale groove 21b in the element-carrying edge 22 immediately adjacent the fold 23. When thus running obliquely towards the fold 23 in close abutment to an inner periphery of the filler cord 19, the second thread 25 serves to urge or bias the cord 19 away from the coupling region 29 of the element 12, so that there can be maintained a constant clearance thereat required for the proper coupling engagement of the two opposed rows of the fastener elements 12 as seen in
FIG. 2. It will be also appreciated that since the second thread 25 is anchored securely in the groove 21b, which is located immediately adjacent the fold 23, the opposed, abutted folds 23 of the respective stringers 10 in closed disposition exhibit resistance to lateral stresses tending to spread them apart, and thus the junction in the opposed tapes can be kept closed to maintain the masking effect of a concealed slide fastener in use.

With this arrangement, the sewing thread 25 fits in the groove 21b and securely holds the fold 23 in place on the coupling region 29 of the fastener element 12 thereby preventing the fastener elements 12 from being exposed to sight when severe stresses are applied particularly in a direction to force apart the two opposed stringer tapes 11 and 11' as shown in FIG. 2. The sewing thread 25 is also effective to confine the filler cord 19 in its proper position away from the coupling heads 15, leaving the clearance large enough to receive the mating coupling heads 15' of the elements 12' when the slide fastener is closed, as depicted in FIG. 2, thereby assuring secure interengagement between the opposed fastener elements.

While the invention has been described herein as to one specific embodiment thereof wherein it is applied to a helically coiled fastener element structure, it will be understood that the invention may be applied to fastener elements of a meandering or other suitable form as well.

What is claimed is:

1. A concealed slide fastener comprising a pair of opposed stringer tapes each having a longitudinal element-carrying edge inwardly folded on itself, rows of fastener elements secured to respective element-carrying edges, each of said fastener elements having an upper leg portion, a lower leg portion and a coupling head merging into these leg portions, said lower leg portion being provided with a recess for accommodating sewing threads; a filler cord inserted longitudinally in a space defined between said upper and lower leg portions of the fastener elements, and a first and a second sewing thread for securing the row of fastener elements to said element-carrying edge, said first sewing thread passing substantially vertically towards said recess through said filler cord and securing the latter together with the elements to said element-carrying edge, said second sewing thread extending from said recess obliquely at an angle to the vertical axis of the fastener stringer and located immediately adjacent the fold of the respective stringer tape and urging said filler cord away from the coupling region of the fastener elements.

2. A concealed slide fastener as defined in claim 1 wherein each stringer tape is provided on one surface with longitudinally extending alternate wales and interwale grooves, one of which grooves located nearest the fold of the tape is adapted to anchor therein said second sewing thread.

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