

"SLIDE FASTENER STRINGER"

The present invention relates to a slide fastener stringer having a longitudinal core cord extending through a space extending longitudinally through a row of coiled coupling elements and sewn together with the latter to a stringer tape.

There are two kinds of longitudinal core cords used in mounting a row of coiled coupling elements stably in position on a stringer tape. One of these comprises a plurality of spun yarns twisted together. Such core cord is soft and flexible enough to allow a sewing needle to penetrate smoothly therethrough for sewing a row of coiled coupling elements to a stringer tape, but it is irregular in diameter and likely to produce lint. A resulting slide fastener stringer is flexible. However, the coupling elements are likely to become undulated or out of alignment in the longitudinal direction thereof. The slide fastener stringer having such undulated coupling elements is hard to pair with a companion stringer.

Another core cord includes a plurality of multifilament yarns twisted together. The core cord has a substantially uniform diameter and is free of lint. On the other hand, it is relatively rigid and lacks stretchability. Such core cord hinders a sewing needle from penetrating smoothly therethrough and contracts as it is sewn to a stringer tape, with the result that a row of coupling elements lacks flexibility, and hence a smooth coupling and uncoupling engagement thereof with a corresponding row of coupling elements is difficult to achieve.

According to the present invention there is provided a slide fastener stringer comprising a stringer tape, a row of coiled coupling elements sewn to said stringer tape along a longitudinal edge portion thereof and having a space extending longitudinally there-

through, and a core cord extending through said space in said coupling elements and sewn together with the latter to said stringer tape, said core cord including at least one twisted yarn characterized in
5 that said twisted yarn has a plurality of textured bulky stretchable multifilament yarns twisted together.

It is possible, by means of the present invention, to provide a slide fastener stringer having a row of coiled coupling elements sewn neatly onto a stringer
10 tape.

It is also possible, by means of the present invention, to provide a slide fastener stringer having a core cord extending through a row of coiled coupling elements for reliable attachment of the same to a
15 stringer tape, which core cord is soft and flexible, free of lint, and substantially uniform in diameter.

The invention will be described by way of example with reference to the accompanying drawings in which a preferred embodiment of the present invention is
20 shown by way of illustrative example. In the drawings:-

FIG. 1 is a fragmentary plan view of a slide fastener stringer embodying the present invention;

FIG. 2 is a longitudinal cross-sectional view
25 taken along line II-II of FIG. 1;

FIG. 3 is a schematic transverse cross-sectional view taken along line III-III of FIG. 1;

FIG. 4 is a fragmentary plan view of a core cord of the slide fastener stringer of FIG. 1;

FIG. 5 is a schematic end elevational view of the
30 core cord; and

FIG. 6 is a schematic fragmentary plan view explaining a problem associated with a conventional slide fastener stringer.

35 As shown in FIG. 6, a conventional slide fastener stringer F comprises a row of coiled coupling elements

E sewn by a row of sewing stitches S to a stringer tape T along a longitudinal edge thereof. A longitudinal core cord C made of a plurality of spun yarns twisted together extends through a space defined through the coiled coupling elements E and is sewn together with the latter to the stringer tape T. The coupling elements E are out of alignment or undulate by a distance d in the longitudinal direction thereof due to the irregularity in diameter of the core cord C. The slide fastener stringer F having such undulated coupling elements E fails to provide smooth closing and opening operation when it is paired with a mating fastener stringer F'.

The preferred embodiment of the present invention is described hereinbelow with reference to FIGS. 1 to 5.

In FIGS. 1 to 3, a slide fastener comprises a pair of slide fastener stringers 10, 10, each of which has a stringer tape 11 and a row of coiled coupling elements 12 formed of synthetic resin sewn by a row of sewing stitches 13 (shown by phantom lines for clarity) to the stringer tape 11 along a longitudinal edge portion thereof. Each of the coupling elements 12 comprises a coupling head 14 projecting transversely beyond the longitudinal edge portion of the stringer tape 11, and a pair of upper and lower legs 15, 16 (FIGS. 2 and 3) extending from the coupling head 14 in a common direction and spaced from each other vertically in a

direction substantially perpendicular to the general plane of the stringer tape 11. The upper and lower legs 15, 16 are blended into and are interconnected by a heel portion 17 located remotely from the coupling head 14. The lower legs 16 of the coupling elements 12 are mounted on the longitudinal edge portion of the stringer tape 11. The coiled coupling elements 12 have a space or tunnel 18 (FIGS. 2 and 3) defined jointly by the coupling heads 14, the upper and lower legs 15, 16 and the heel portions 17 and extending longitudinally therethrough. A longitudinal core cord 19 extends through the space 18 in the coupling elements 12 adjacent to the heel portions 17 of the latter. The sewing stitches 13 pass through the core cord 19 at the spaces between adjacent coupling elements 12 to secure the coupling elements 12 to the stringer tape 11.

As shown in FIGS. 4 and 5, the core cord 19 includes a plurality of threads 20 twisted together. Each of the threads 20 has a plurality of textured multifilament yarns 21 twisted together. To make the core cord 19, a thermoplastic multifilament yarn is subjected to texturing processes in which it is highly twisted, heat-set, and untwisted. The multifilament yarn 21 thus textured has an increased degree of bulkiness and stretchability. Then, a plurality of such textured multifilament yarns 21 is twisted together to form a twisted thread 20. Finally, a plurality of the twisted threads 20 is twisted together to form the core cord 19. The core cord 19 thus arranged has a number of small holes or pores 22 (FIG. 4) not only between the twisted threads 20 but also between the twisted textured multifilament yarns 21. The pores 22 serve to accommodate the contraction of

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the core cord 19 and to allow a sewing needle (not shown) to penetrate the core cord 19 smoothly when the coupling elements 12 are being sewn to the stringer tape 11. Due to the use of the textured multifilament
5 yarns 21 which are bulky, stretchable, uniform in diameter, and free of lint, the core cord 19 is soft and flexible, has a substantially uniform diameter, and is prevented from becoming frayed.

As shown in FIG. 2, the core cord 19 has a
10 diameter R larger than the distance r between the respective upper and lower legs 15, 16 of the coupling elements 12 so that it includes alternating compressed and expanded longitudinal portions 23, 24. The compressed portions 23 are located between the upper
15 and lower legs 15, 16 and the expanded portions are located between adjacent coupling elements 12 such that the portions 23, 24 jointly embrace the upper and lower legs 15, 16 at substantially a half of the full circumference thereof and hence maintain the coupling
20 elements 12 at a substantially uniform pitch. In FIG. 3, the core cord 19 is held in the space 18 out of contact with the coupling head 14 of a mating stringer 10. The coupling elements 12 thus arranged provide a uniform meshing length which enables opposite rows of
25 coupling elements 12, 12 to engage and disengage smoothly with each other.



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Claims:

1. A slide fastener stringer comprising a stringer tape, a row of coiled coupling elements sewn to said stringer tape along a longitudinal edge portion thereof and having a space extending longitudinally therethrough, and a core cord extending through said space in said coupling elements and sewn together with the latter to said stringer tape, said core cord including at least one twisted yarn, characterized in that said twisted yarn has a plurality of textured bulky stretchable multifilament yarns twisted together.
 2. A slide fastener stringer according to claim 1, said core cord including a plurality of said twisted threads twisted together.
 3. A slide fastener stringer according to claim 1, said twisted thread having a number of pores defined between said twisted, textured multifilament yarns.
 4. A slide fastener stringer according to claim 2, said core cord having a number of pores defined between said plurality of twisted threads.
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