

PATENT SPECIFICATION

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(54) SLIDING CLASP FASTENERS HAVING STRINGER TAPES OF WARP-KNITTED FABRIC

(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:—

10 This invention relates generally to sliding clasp fasteners, and more particularly to the improved construction of a slider for a sliding clasp fastener having a pair of stringer tapes formed of a warp-knitted fabric.

15 As is well known, warp-knitted fabric tapes have ridges, generally known as wales in the art, which extend longitudinally thereon in parallel spaced relationship to each other. Conventional sliders used in combination with stringers utilizing such warp-knitted fabric tapes have been equipped with no means for guiding the wales through their guide channels. The spacings 20 between the wales of these stringer tapes are therefore left unfilled in the guide channels of the slider, so that the inside edge portions of the stringer tapes carrying rows of fastener elements or scoops thereon are highly susceptible to deformation as the slider is moved therealong. This defect of the prior art becomes all the more pronounced because the warp-knitted fabric tapes are significantly more pliable than 35 usual woven fabric tapes. As a consequence, the rows of fastener elements tend to become displaced out of their proper relative positions in the guide channels of the slider moving therealong.

40 According to the invention, there is provided a sliding clasp fastener comprising a pair of stringer tapes of a warp-knitted fabric each carrying a row of interlockable fastener elements on one surface thereof, 45 and a slider which includes a body having

a pair of guide channels therethrough for receiving the respective rows of fastener elements, a pair of guide ridges being formed on the inside surface of said body of said slider so as to extend along the respective guide channels, said guide ridges being received in the spacings between the wales formed on the other surfaces of said stringer tapes in order to assure the correct coupling and uncoupling of said rows of fastener elements as said slider is moved therealong.

The invention will be described by way of examples with reference to the accompanying drawings wherein like reference characters denote corresponding parts of the several views, and wherein;

Figure 1 is a fragmentary rear plan view of a sliding clasp fastener embodying this invention;

Figure 2 is a cross sectional view taken substantially along the plane of line II-II in Figure 1 and looking in the direction of the arrows.

Figure 3 is a perspective view showing the bottom wing of the slider illustrated in Figures 1 and 2;

Figure 4 is a view similar to Figure 2 but showing another preferred embodiment of the invention; and

Figure 5 is also a view similar to Figure 2 but showing a sliding clasp fastener of the concealed type.

The nature and utility of this invention will become apparent from a consideration of Figure 1 which is the fragmentary rear plan view of a sliding clasp fastener embodying the invention. The illustrated sliding clasp fastener 10 includes a pair of stringer tapes 11 of a warp-knitted fabric carrying longitudinal rows of interlocking fastener elements or scoops 12 of any known or suitable type along the opposed inside edges thereof. It will be noted from the drawing, however, that the fastener ele-

ments 12 are supported only on one surface of each stringer tape 11. On the other surface of each stringer tape 11 there are longitudinally extending parallel wales 13, with spacings 14 therebetween, that are formed as a result of the warp knitting of the fabric tape.

The reference numeral 15 generally designates a slider which is so constructed as to make possible the smooth coupling and uncoupling of the rows of fastener elements 12 carried on the opposed inside edge portions of the respective stringer tapes 11, as hereinafter set forth in more detail with reference to Figures 2 and 3.

The slider 15 has a body 16 including top and bottom wings 17 and 18 which are interconnected through a web 19 at their flared ends so as to define a pair of guide channels 20 adapted to receive the respective rows of fastener elements 12 therethrough for their engagement or disengagement. Guide ridges 21 are formed on the inside surface of the bottom wing 18 of the slider body 16 so as to extend along substantially the whole length of the guide channels 20. It will be noted from Figure 3 that the guide ridges 21 are arranged symmetrically on both sides of a central ridge or partition 22 extending along the central longitudinal axis of the bottom wing 18. These guide ridges 21 on each side of the partition 22 are adapted to be received in the respective spacings 14 between the wales 13 of each stringer tape.

Figure 4 illustrates a slight modification of the preceding embodiment, wherein only one guide ridge 21 is formed on each side of the partition 22 on the inside surface of the bottom wing 18 of the slider body 16. The number of the guide ridges 21 can of course be determined arbitrarily depending upon the width or spacing of the wales 13 of the stringer tapes 11 or upon the crosswise dimension of the slider body 16. It is necessary, however, that at least a pair of such guide ridges be formed on the inside surface of the bottom wing 18 or of its essentially equivalent part.

As illustrated in Figure 5, the invention is applicable to sliding clasp fasteners of the concealed type wherein, when the pair of stringers is in a closed disposition, the fastener elements are completely hidden or concealed behind the stringer tapes. In the illustrated example of such concealed sliding clasp fasteners, the guide ridges 21 are formed symmetrically on the inside surfaces of the inwardly projecting portions 23 of a slider body 16a. These guide ridges 21 are likewise adapted to be received in the spacings between the wales 13 on the folded portions 24 of stringer tapes 11a. Other details of configuration will be apparent

from the foregoing description of Figures 65 1 to 4.

The fastener slider being constructed as hereinbefore described, if the slider 15 is moved along the rows of fastener elements 12, the element supporting edge portions 25 of the stringer tapes 11 (or the folded portions 24 of the stringer tapes 11a) can be guided correctly through the respective guide channels 20 as the guide ridges 21 slide through the spacings between the wales 13. The rows of fastener elements 12 can therefore be coupled and uncoupled without any undesirable displacement within the slider 15.

While some preferred forms of the fastener slider have been shown and described hereinbefore, it is of course understood that the invention itself is not to be restricted by the exact showing of the drawings or the description thereof but is inclusive of various modifications within the usual knowledge of those skilled in the art. It is therefore appropriate that the invention be construed broadly and in a manner consistent with the proper scope of the following claim.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener comprising a pair of stringer tapes of a warp-knitted fabric each carrying a row of interlockable fastener elements on one surface thereof, and a slider which includes a body having a pair of guide channels therethrough for receiving the respective rows of fastener elements, a pair of guide ridges being formed on the inside surface of said body of said slider so as to extend along the respective guide channels, said guide ridges being received in the spacings between the wales formed on the other surfaces of said stringer tapes in order to assure the correct coupling and uncoupling of said rows of fastener elements as said slider is moved therealong.

2. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1 to 3 of the accompanying drawings.

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

4. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figure 5 of the accompanying drawings.

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ments 12 are supported only on one surface of each stringer tape 11. On the other surface of each stringer tape 11 there are longitudinally extending parallel wales 13, with spacings 14 therebetween, that are formed as a result of the warp knitting of the fabric tape.

The reference numeral 15 generally designates a slider which is so constructed as to make possible the smooth coupling and uncoupling of the rows of fastener elements 12 carried on the opposed inside edge portions of the respective stringer tapes 11, as hereinafter set forth in more detail with reference to Figures 2 and 3.

The slider 15 has a body 16 including top and bottom wings 17 and 18 which are interconnected through a web 19 at their flared ends so as to define a pair of guide channels 20 adapted to receive the respective rows of fastener elements 12 there-through for their engagement or disengagement. Guide ridges 21 are formed on the inside surface of the bottom wing 18 of the slider body 16 so as to extend along substantially the whole length of the guide channels 20. It will be noted from Figure 3 that the guide ridges 21 are arranged symmetrically on both sides of a central ridge or partition 22 extending along the central longitudinal axis of the bottom wing 18. These guide ridges 21 on each side of the partition 22 are adapted to be received in the respective spacings 14 between the wales 13 of each stringer tape.

Figure 4 illustrates a slight modification of the preceding embodiment, wherein only one guide ridge 21 is formed on each side of the partition 22 on the inside surface of the bottom wing 18 of the slider body 16. The number of the guide ridges 21 can of course be determined arbitrarily depending upon the width or spacing of the wales 13 of the stringer tapes 11 or upon the cross-wise dimension of the slider body 16. It is necessary, however, that at least a pair of such guide ridges be formed on the inside surface of the bottom wing 18 or of its essentially equivalent part.

As illustrated in Figure 5, the invention is applicable to sliding clasp fasteners of the concealed type wherein, when the pair of stringers is in a closed disposition, the fastener elements are completely hidden or concealed behind the stringer tapes. In the illustrated example of such concealed sliding clasp fasteners, the guide ridges 21 are formed symmetrically on the inside surfaces of the inwardly projecting portions 23 of a slider body 16a. These guide ridges 21 are likewise adapted to be received in the spacings between the wales 13 on the folded portions 24 of stringer tapes 11a. Other details of configuration will be apparent

from the foregoing description of Figures 1 to 4.

The fastener slider being constructed as hereinbefore described, if the slider 15 is moved along the rows of fastener elements 12, the element supporting edge portions 25 of the stringer tapes 11 (or the folded portions 24 of the stringer tapes 11a) can be guided correctly through the respective guide channels 20 as the guide ridges 21 slide through the spacings between the wales 13. The rows of fastener elements 12 can therefore be coupled and uncoupled without any undesirable displacement within the slider 15.

While some preferred forms of the fastener slider have been shown and described hereinbefore, it is of course understood that the invention itself is not to be restricted by the exact showing of the drawings or the description thereof but is inclusive of various modifications within the usual knowledge of those skilled in the art. It is therefore appropriate that the invention be construed broadly and in a manner consistent with the proper scope of the following claim.

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2. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1 to 3 of the accompanying drawings.

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

4. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figure 5 of the accompanying drawings.

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