

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN SLIDER FOR SLIDING CLASP FASTENER

(71) We, YOSHIDA KOGYOK 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 improvements in and relating to sliding clasp fasteners and especially for example to a slider of the character which is suitable for mounting on and manipulating such heavy duty sliding clasp fasteners which are applied to joints in partition members such as oil fence or seams in hoods for trains and automobiles. There are known sliding clasp fastener sliders constructed with symmetrically disposed top and bottom wing members, these wing members being connected at one end by a neck portion and flared or otherwise enlarged transversely on opposite sides of the neck portion so as to permit a top end stop to be fully retracted into and anchored between the enlarged portions of the wing members. While sliders of this type have the advantage that they can be retained firmly in locked relation with the fastener stringers, such prior-art sliders have suffered from the drawback that the fastener stringer tapes are liable to become objectionably creased or wrinkled along their edge portions, to which rows of fastener elements are secured, as the fastener elements are drawn through the guide channel in the slider and such creased or wrinkled portions of the stringer tapes tend to get jammed between the fastener elements and the flanges of the wing members, with the results that the slider becomes inoperative. This tendency is pronounced particularly with sliding clasp fasteners attached to relatively rigid objects such as for example hoods for trains and automobiles.

According to the invention there is provided a sliding clasp fastener comprising rows of interengageable fastener elements

carried by respective stringer tapes and a slider which comprises an upper wing and a lower wing disposed in generally parallel relation, each wing having a pair of inwardly directed side flanges, said wings being connected together at one end by a neck portion and a pull tab being pivotally carried at least on one of said upper and lower wings, the side flanges of one of said wings being shorter than those of the other wing, said wings having unobstructed end edges, one of said wings having a transversely diverging shoulder on each of two opposite sides of said neck portion, with the corresponding shoulder of the other wing being offset relative to said diverging shoulder to provide an open area where the upper and lower wings are not superimposed, said open area having a configuration allowing the fastener elements upon entry into said open area to tilt longitudinally and transversely to relieve any creases in the stringer tapes.

The invention will be described by way of example with reference to the accompanying drawings in which like reference characters denote like parts throughout the several views, and wherein:

Figure 1 is a plan view of a slider of a sliding clasp fastener in accordance with the invention;

Figure 2 is a perspective view of the slider, showing the same upside down;

Figure 3 is a side view of the slider shown as mounted on a sliding clasp fastener chain;

Figure 4 is a transverse cross-sectional view taken on the line IV—IV of Figure 1;

Figure 5 is a perspective view of the slider, showing the same in movement relative to a sliding clasp fastener chain; and

Figures 6 and 7 are transverse cross-sectional views, respectively in part of a conventional type of slider, utilized to explain the jamming of a stringer tape between adjacent fastener elements and the slider flanges.

Referring now to the drawings and Figures 1 and 2 in particular, there is shown

a sliding clasp fastener slider 10 which comprises an upper wing 11 and a lower wing 12 constituting a slider body and connected together at one end by a neck portion 13. The upper and lower wings 11, 12 are provided with unobstructed end edges and with inwardly directed side flanges 14, 15, respectively and are configured to define with the neck portion 13 a substantially Y-shaped guide channel 16 through which a fastener elements E of sliding clasp fastener F are allowed to pass in the well known manner. A supporting lug 17 projects upwardly from the upper wing 11 and carries a pull tab 18 pivotally thereon. A similar additional pull tab 19 is pivotally connected to another supporting lug 20 on the lower wing member 12.

There is provided a locking prong 21 secured to or formed integrally with at least one of the two pull tabs 18, 19 (tab 18 as shown) and adjacent at least either of opposite sides of the lug 17 (or 20). In the illustrated embodiment, the locking prong 21 is adapted to extend slightly beyond an entrance end 22 of the slider 10 and engage in the space between adjacent fastener elements E or with a top end stop (not shown) thereby to lock the slider 10 against movement relative to the fastener elements E. This locking engagement is established by joining the two pull tabs 18, 19 together beyond and forwardly of the entrance end 22 of the slider 10 when the slider 10 has been brought to a terminal end of the fastener F upon closing of the latter. To thus join the two pull tabs 18, 19 together, there is provided a male engaging member 23 on the lower wing 12 which is engageable snappingly with a female engaging member or receptacle 24 on the upper wing 11, as better shown in Figure 3, when the two pull tabs are flipped down back to back.

Now, one of the wings 11, 12 (the upper wing 11 in the illustrated embodiment) is provided with diverging or transversely elongated shoulders 25, while the other (lower) wing 12 has conversely offset or progressively reduced shoulders 26, resulting in an asymmetric wing structure such as seen in Figures 1 and 2. This arrangement provides an enlarged open area 27 on opposite sides of the neck portion 13 and in the vicinity of the entrance end 22 of the slider 10 at which the fastener elements E are drawn into the guide channel 16. The provision of the open area 27 is intended to reduce the tendency of stringer tapes T to become creased or wrinkled as and when they arrive at the entrance end 22 of the slider in a manner hereinbefore described.

Reference to Figure 5 shows the above constructed slider 10 mounted on a pair of stringer tapes T each carrying along one edge a row of fastener elements E and

secured as by stitches S to a relatively stiff article C. Due to the article C being stiff and heavy as in the case of hoods in trains or automobiles, the stringer tapes T are liable to become creased or otherwise deformed under the influence of severe stresses applied by the slider 10 during movement thereof along the fastener elements E to open or close the fastener F. Such deformation of the stringer tapes T has been augmented with the conventional slider 10' shown in Figures 6 and 7 from which it will be seen that a portion of the stringer tape T adjacent the row of fastener elements E tends to rise and is squeezed between the elements E and the slider flange 14 as the fastener F is opened or closed by the slider 10', thus impairing the function of the slider.

Advantageously according to the invention, such deformation of the stringer tapes T are held to an absolute minimum so that the slider 10 can be smoothly manipulated without becoming jerked by jammed stringer tapes. This is achieved by the improved construction of the slider 10 herein disclosed wherein the open area 27 functions to relieve the creases or wrinkles that may develop in the stringer tapes T upon approaching or arrival at the entrance end 22 of the slider 10. More specifically, when the stringer tapes T are drawn through the guide channel 16 in a fastener closing direction, the fastener elements E upon entry into the open area 27 are allowed to tilt longitudinally of the fastener F as seen in Figure 3 and also transversely within the region of the open area 27, as seen in Figure 4, in a manner yielding to and dispersing the stresses applied to the stringer tapes T adjacent the neck portion 13, so that the magnitude of creases or wrinkles in the tapes T is minimized and deflected outwardly of the side flanges 14, 15 of the slider 10.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener comprising rows of interengageable fastener elements carried by respective stringer tapes and a slider which comprises an upper wing and a lower wing disposed in generally parallel relation, each wing having a pair of inwardly directed side flanges, said wings being connected together at one end by a neck portion and a pull tab being pivotally carried at least on one of said upper and lower wings, the side flanges of one of said wings being shorter than those of the other wing, said wings having unobstructed end edges, one of said wings having a transversely diverging shoulder on each of two opposite sides of said neck portion, with the corresponding shoulder of the other wing being offset relative to said diverging shoulder to provide an open area where the upper and

a sliding clasp fastener slider 10 which comprises an upper wing 11 and a lower wing 12 constituting a slider body and connected together at one end by a neck portion 13.

5 The upper and lower wings 11, 12 are provided with unobstructed end edges and with inwardly directed side flanges 14, 15, respectively and are configured to define with the neck portion 13 a substantially Y-shaped guide channel 16 through which a fastener elements E of sliding clasp fastener F are allowed to pass in the well known manner. A supporting lug 17 projects upwardly from the upper wing 11 and carries a pull tab 18 pivotally thereon. A similar additional pull tab 19 is pivotally connected to another supporting lug 20 on the lower wing member 12.

20 There is provided a locking prong 21 secured to or formed integrally with at least one of the two pull tabs 18, 19 (tab 18 as shown) and adjacent at least either of opposite sides of the lug 17 (or 20). In the illustrated embodiment, the locking prong 21 is adapted to extend slightly beyond an entrance end 22 of the slider 10 and engage in the space between adjacent fastener elements E or with a top end stop (not shown) thereby to lock the slider 10 against movement relative to the fastener elements E. This locking engagement is established by joining the two pull tabs 18, 19 together beyond and forwardly of the entrance end 22 of the slider 10 when the slider 10 has been brought to a terminal end of the fastener F upon closing of the latter. To thus join the two pull tabs 18, 19 together, there is provided a male engaging member 23 on the lower wing 12 which is engageable snappingly with a female engaging member or receptacle 24 on the upper wing 11, as better shown in Figure 3, when the two pull tabs are flipped down back to back.

45 Now, one of the wings 11, 12 (the upper wing 11 in the illustrated embodiment) is provided with diverging or transversely elongated shoulders 25, while the other (lower) wing 12 has conversely offset or progressively reduced shoulders 26, resulting in an asymmetric wing structure such as seen in Figures 1 and 2. This arrangement provides an enlarged open area 27 on opposite sides of the neck portion 13 and in the vicinity of the entrance end 22 of the slider 10 at which the fastener elements E are drawn into the guide channel 16. The provision of the open area 27 is intended to reduce the tendency of stringer tapes T to become creased or wrinkled as and when they arrive at the entrance end 22 of the slider in a manner hereinbefore described.

60 Reference to Figure 5 shows the above constructed slider 10 mounted on a pair of stringer tapes T each carrying along one edge a row of fastener elements E and

secured as by stitches S to a relatively stiff article C. Due to the article C being stiff and heavy as in the case of hoods in trains or automobiles, the stringer tapes T are liable to become creased or otherwise deformed under the influence of severe stresses applied by the slider 10 during movement thereof along the fastener elements E to open or close the fastener F. Such deformation of the stringer tapes T has been augmented with the conventional slider 10' shown in Figures 6 and 7 from which it will be seen that a portion of the stringer tape T adjacent the row of fastener elements E tends to rise and is squeezed between the elements E and the slider flange 14 as the fastener F is opened or closed by the slider 10', thus impairing the function of the slider.

Advantageously according to the invention, such deformation of the stringer tapes T are held to an absolute minimum so that the slider 10 can be smoothly manipulated without becoming jerked by jammed stringer tapes. This is achieved by the improved construction of the slider 10 herein disclosed wherein the open area 27 functions to relieve the creases or wrinkles that may develop in the stringer tapes T upon approaching or arrival at the entrance end 22 of the slider 10. More specifically, when the stringer tapes T are drawn through the guide channel 16 in a fastener closing direction, the fastener elements E upon entry into the open area 27 are allowed to tilt longitudinally of the fastener F as seen in Figure 3 and also transversely within the region of the open area 27, as seen in Figure 4, in a manner yielding to and dispersing the stresses applied to the stringer tapes T adjacent the neck portion 13, so that the magnitude of creases or wrinkles in the tapes T is minimized and deflected outwardly of the side flanges 14, 15 of the slider 10.

WHAT WE CLAIM IS:—

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lower wings are not superimposed, said open area having a configuration allowing the fastener elements upon entry into said open area to tilt longitudinally and transversely to relieve any creases in the stringer tapes.

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2. A sliding clasp fastener substantially as

herein described with reference to and as illustrated in Figures 1 to 5 of the accompanying drawings.

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