

PATENT SPECIFICATION

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(54) BRIDGE TOP STOPS IN SLIDING CLASP FASTENERS

(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:—

This invention relates generally to sliding clasp fasteners and in particular to what is commonly referred to as bridge top stops whose primary function is to connect together permanently and inseparably the upper ends of the stringers of a sliding clasp fastener for limiting the upward movement of a slider in the operation of coupling or closing the fastener stringers.

As is well known, sliding clasp fasteners equipped with bridge top stops of the character described have found extensive use in garment placket and other closure openings including those in bags, suitcases and like articles. While a wide variety of bridge top stops have been proposed and used in the art, most of them have been found not entirely satisfactory in that, for instance, such prior art bridge top stops cannot be easily mounted in position adjacent the upper ends of a pair of fastener stringers, requiring undue attention on the part of the workman to the relative positioning of the stringers and the top stop. This difficulty arises, among other reasons, from the fact that the prior art bridge top stops are usually clamped or otherwise secured directly onto the reinforced or beaded edges of the stringer tapes.

As a result of this common defect of the prior art, a pair of fastener stringers interconnected by such bridge top stop may become longitudinally displaced one with respect to the other or may become irregular in the required spacing between their adjacent longitudinal edges. It is therefore highly possible that the rows of fastener elements on the respective stringer tapes should shift out of their correct relative positions, with the resultant impairment of

the smooth coupling and uncoupling of the fastener elements by the slider moving therealong.

According to the invention, there is provided a sliding clasp fastener comprising a pair of stringers each having a tape carrying a row of interlocking fastener elements on one inside edge thereof, a slider slidable along said rows of fastener elements for coupling and uncoupling the same, and a bridge top stop connecting together permanently and inseparably the upper ends of the stringers of the sliding clasp fastener for limiting the upward movement of the slider in the operation of coupling or closing the stringers, said bridge top stop comprising a body secured in position to the adjacent edges of said pair of stringers, and means on said body for defining a downwardly diverging, inverted Y-shaped guide channel therethrough, said guide channel accommodating corresponding parts of said rows of fastener elements throughout the entire length thereof, in such a manner that some of the fastener elements including the topmost ones of the respective stringers interengage within said body.

The features which are believed to be novel and characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, will be best understood from the following description of preferred embodiments when taken in conjunction with the accompanying drawings wherein like reference characters denote corresponding parts of the several views, and wherein:

Figure 1 is a fragmentary top plan view of a sliding clasp fastener incorporating a bridge top stop in accordance with this invention;

Figure 2 is a perspective view of the bridge top stop of the fastener shown in Figure 1;

Figure 3 is a sectional view showing the inside surface of a top wing or plate member in the bridge top stop of Figures 1 and 2;

Figure 4 is a sectional view taken along the planed of line IV—IV in Figure 1;

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Figure 5 is a perspective view of another bridge top stop;

Figure 6 is a view similar to Figure 4 but showing the bridge top stop of Figure 5 mounted in position on a pair of fastener stringers; and

Figure 7 is a schematic longitudinal sectional view explanatory of a further bridge top stop.

Reference is first directed to Figure 1 to briefly describe the general organization of a sliding clasp fastener embodying this invention. The illustrated sliding clasp fastener comprises a pair of stringers generally designated 10 and 11, respectively. Each stringer includes a tape 12 having along the reinforced inside edge 13 thereof a row of interlocking fastener elements 14 of any known or suitable type anchored thereto in a suitable manner. Although not shown in the drawings, it is assumed that the lower ends of the inside edges 13 of the stringer tapes 12 are permanently connected by a suitable bottom end fitting or bottom stop in a known manner. The rows of fastener elements 14 can be engaged and disengaged relative to each other by a conventional slider, also not shown, which is slidable therealong. The reference numeral 15 generally designates a bridge top stop.

As illustrated in greater detail in Figures 2 and 3, the bridge top stop 15 has a substantially dovetail-shaped body 16 comprising a pair of similar wings or plate members 17 and 18 interconnected at their lower ends by a centrally located web or neck 19 of wedge-shaped cross section. The opposite lateral sides of the top wing 17 terminate in downward flanges 20 which are each slightly bent at an intermediate point and which cooperate with the wedge-shaped web 19 to form a downwardly diverging, inverted Y-shaped guide channel 21 for accepting the upper end portions of the rows of interlocking fastener elements 14 therein. The lower end of the bridge top stop body 16 may be suitably concaved or recessed as seen in the drawings, thereby permitting the upper end portion of the unshown slider to fit snugly therein when the same is moved to its uppermost position to close the slider.

In order to mount the bridge top stop 15 of the above described configuration in position on the pair of stringers 10 and 11, the inside edges 13 of these stringers may be threaded through the inverted Y-shaped guide channel 21 of the top stop body 16 from its lower end, in much the same way as when a pair of such stringers is manipulated through the guide channel of the usual slider for sliding clasp fastener assemblage. The bridge top stop 15 is then shifted downwardly of the stringers 10 and 11 until the topmost ones of the fastener elements 14 on

the respective stringer tapes 12 reach the upper end of its body 16, as will be clearly seen from the showing of Figure 1. It will also appear from a consideration of Figure 1 that some of the fastener elements 14 including the topmost ones on the respective stringer tapes interengage in the upper end portion of the inverted Y-shaped guide channel 21 of the top stop body 16.

Thereafter, if the bridge top stop 15 is metal made, its top and bottom wings 17 and 18 may be mechanically compressed into positive clamping engagement with the pair of stringers 10 and 11 as illustrated in Figure 1. If the bridge top stop 15 is formed of some synthetic resin of thermoplastic nature, on the other hand, then its wings 17 and 18 may be substantially integrally secured to the stringers 10 and 11 under application of heat and pressure, as by the known techniques of supersonic or high frequency heating. Generally, where a metal-made top stop is employed, the fastener elements with which the stop is intended for use may also be metal made, and where a thermoplastic top stop is employed, the fastener elements will likewise be thermoplastic.

Figures 5 and 6 illustrate another preferred embodiment of the invention in which the bridge top stop 15a has a single plate member 17a corresponding in function to the top wing 17 in the preceding embodiment of Figures 1 to 4. The plate member 17a has on its inner surface a pair of flanges 20a extending along the respective lateral edges and a column 19a of wedge-shaped cross section located centrally at the lower end. These flanges 20a and column 19a cooperate to form a downwardly diverging, inverted Y-shaped guide channel or groove 21a as in the preceding embodiment. The bridge top stop 15a of this general configuration may be formed of thermoplastic material and, as illustrated in Figure 6, mounted in position on the pair of fastener stringers 10 and 11 under application of heat and pressure. If desired, the inner surfaces of the plate member 17a defining the guide groove 21a may be knurled by way of slippage prevention.

Other details of construction are substantially the same as those set forth in connection with the preceding embodiment.

Figure 7 schematically illustrates another preferred embodiment of the invention which assumes the use of metal for both fastener elements 14a and bridge top stop 15b. The bridge top stop 15b also comprises top and bottom wings or plate members 17b and 18b interconnected and configured so as to define a downwardly diverging, that is, inverted Y-shaped guide channel there-through as in the embodiment shown in Figures 1 to 4. This bridge top stop 15b can also be mounted in position on the pair of

fastener stringers by compressing its top and bottom wings 17b and 18b toward each other. However, this final embodiment of the invention features a plurality of longitudinally spaced teeth 22 which are formed on the inside surface of the bottom wing 18b, or of the top wing 17b if desired, by inwardly raising parts of the wing as seen in the drawing. These teeth 22 are intended to project into the spacings between the fastener elements 14b for added positional stability.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener comprising a pair of stringers each having a tape carrying a row of interlocking fastener elements on one inside edge thereof, a slider slidable along said rows of fastener elements for coupling and uncoupling the same, and a bridge top stop connecting together permanently and inseparably the upper ends of the stringers of the sliding clasp fastener for limiting the upward movement of the slider in the operation of coupling or closing the stringers, said bridge top stop comprising a body secured in position to the adjacent edges of said pair of stringers, and means on said body defining a downwardly diverging, inverted Y-shaped guide channel therethrough, said guide channel accommodating corresponding parts of said rows of fastener elements throughout the entire length thereof, in such a manner that some of the fastener elements including the topmost ones of the respective stringers interengage within said body.

2. A sliding clasp fastener as claimed in claim 1, wherein said body comprises a pair of plate members interconnected at their lower ends by a centrally located web of substantially wedge-shaped cross section.

3. A sliding clasp fastener as claimed in claim 2, wherein the lateral edges of at least one of said plate members are flanged toward the other plate member.

4. A sliding clasp fastener as claimed in claim 2, wherein said body is metallic and wherein a plurality of spaced apart teeth are formed on the inside surface of at least one of said plate members, said teeth being adapted to be received in the spacings between the fastener elements within said body.

5. A sliding clasp fastener as claimed in claim 1, wherein said body consists of a single plate member of thermoplastic material.

6. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1 to 4 of the accompanying drawings.

7. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1, 5 and 6 of the accompanying drawings.

8. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1 and 7 of the accompanying drawings.

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4. A sliding clasp fastener as claimed in claim 2, wherein said body is metallic and wherein a plurality of spaced apart teeth are formed on the inside surface of at least one of said plate members, said teeth being adapted to be received in the spacings between the fastener elements within said body.

5. A sliding clasp fastener as claimed in claim 1, wherein said body consists of a single plate member of thermoplastic material.

6. A sliding clasp fastener substantially as herein described with reference to and as illustrated in Figures 1 to 4 of the accompanying drawings.

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