

PATENT SPECIFICATION

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(54) END STOP MEANS FOR SLIDING CLASP FASTENERS

(71) We, YOSHIDA KOGYO KABUSHIKI KAISHA, of No. 1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan, a corporation duly organized under the laws of 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 a sliding clasp fastener and has particular reference to means for stopping the movement of a slider at a predetermined point on the top end of the fastener to prevent the same from running off the fastener elements.

Prior to this invention, there were known many top end stops of different form and construction that were adapted to restrict or terminate the movement of the slider when closing the fastener.

One such known end stop is formed by simply thermally deforming plastics fastener elements attached to the stringer tapes of the fastener. Although this is simple to manufacture, it is made up of only a limited quantity of a plastics material and is liable to damage from repeated impinging contact with the slider.

Another conventional end stop consists of a plastics strip or film adhered by heat and pressure to a relatively large area of the stringer tapes including the beaded edges thereof which are rendered rigid by impregnating a plastics material of the strip, with fastener elements removed from the portion of the beaded edges which lies opposite to the guide flange surface of the slider when brought into stopped position. This type of end stop renders the movement of the slider rather heavy and sluggish particularly when the same is manipulated to start off in a direction to open the fastener.

The present invention aims to reduce or eliminate the above or other difficulties of the prior art top end stops for sliding clasp fasteners.

According to the invention, there is provided a sliding clasp fastener of the type

which comprises a pair of opposed stringer tapes each carrying along one longitudinal edge portion a row of fastener elements made of a continuous plastics filament, each of said fastener elements having a coupling head for interlocking engagement with corresponding fastener elements on the other stringer tape, and a slider having side flanges including an inner guide wall and an upper flange end and mounted on said stringer tapes for reciprocal movement along their edge portions, wherein the fastener is provided with top end stop means comprising a pair of oppositely disposed slugs of a plastics material secured to the respective opposed stringer tapes adjacent to the longitudinal edge portions thereof, each of said slugs having a longitudinal linear edge extending substantially parallel to the edge portion of the respective stringer tape and a cam surface disposed in abutting relation to the inner guide wall and upper flange end of the slider, each of said slugs embracing a group of fastener elements of which the element or elements of said group located at a point opposite to said cam surface have their coupling heads intact and disengaged from corresponding ones on the mating stringer tape, with the remaining elements in said group having their ends registering with an extremity of the edge portion of the stringer tape.

The remaining elements in each of said groups may have their coupling heads removed at a point registering with the extremity of the edge portion of the stringer tape.

Alternatively, the remaining elements in each group may be displaced laterally to a point at which their coupling heads lie flush with an extremity of the edge portion of the stringer tape.

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

FIG. 1 is a plan view of a sliding clasp

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fastener having mounted thereon a slider and an end stop means shown in engagement therewith;

5 FIG. 2 is a plan view of one of the two stringer tapes of the fastener of FIG. 1, in which the coupling heads of some of the fastener elements embraced by the stop means are removed;

10 FIG. 3 is a transverse cross-sectional view taken along the line III—III of FIG. 2;

15 FIG. 4 is a plan view similar to FIG. 2 but showing the coupling heads of some of the fastener elements retracted at the stop means to lie flush with the beaded edge of the stringer tape;

FIG. 5 is a plan view of a modification of the stop means shown in FIG. 1; and

FIG. 6 is a transverse cross-sectional view taken along the line VI—VI of FIG. 5.

20 Referring to the drawings and FIG. 1 in particular, there is shown a sliding clasp fastener 10 of the type which comprises a pair of opposed stringer tapes, 11,11 each carrying along their respective longitudinal beaded edges 12,12 a row of interlocking fastener elements 13 formed from a continuous plastics filament and a slider 14 mounted on the fastener 10 for reciprocal movement along the beaded edges 12,12 to take the fastener elements 13 into and out of engagement with one another; namely, to close and open the fastener 10 in a well known manner. The slider 14 partly shown in FIG. 1 is of the usual construction consisting generally of a spaced-apart upper wing (not shown) and lower wing 14a, respectively, inwardly bent to form side flanges 14b,14b and connected by a neck 14c in such a manner as to provide substantially a Y-shaped channel for guiding the movement of the fastener elements 13 therethrough.

25 In accordance with the invention, there is provided a top end stop means generally designated 15 and which is adapted to restrict or terminate the movement of the slider 14 at a predetermined point adjacent to the top end region of the fastener 10. The stop means 15 comprises a pair of oppositely disposed slugs 16,16 made of a plastics material such as a thermoplastics resin and secured as by a moulding operation to the respective opposed stringer tapes 11,11 adjacent to the beaded edges 12,12 thereof. Each slug 16 is substantially lobe-shaped and has a longitudinal linear edge 16a extending substantially parallel to the beaded edge 12, a bottom end 16b disposed substantially at right angles to the longitudinal edge 16a, a cam surface 16c contiguous to the bottom end 16b and consisting of a first contour or guide surface 16c₁ configured to match a flared inner guide wall 14a of the slider 14 and a second contour or abutment 16c₂ disposed in

abutting relation to the upper flange end 14e of the slider 14 as depicted in FIG. 1.

70 With this construction, as the slider 14 is brought up into abutting engagement with the stop means 15 after closing the opposed stringer tapes 11,11 together, the flange ends 14e of the slider 14 abut against corresponding cam surfaces 16c of the opposed slugs 16,16 and urge these slugs to move slightly inwardly in the direction of the arrow together with adjacent portions of the stringer tapes 11,11 until the beaded edges 12,12 of the opposed stringer tapes 11,11 are brought into close registry with corresponding sides of the neck 14c, thereby holding the opposed stringer tapes 11,11 above the stop means 15 substantially in alignment which would otherwise tend to flare apart or spread outwardly away from each other.

85 The coupling head portions 13a of a fastener element or elements 13 encompassed by the slug 16 on each stringer tape 11 and located at a point opposite to the guide surface 16c₁ of the slug 16 are retained thereat without being removed, while the coupling heads 13a of the remaining elements embraced by the slug 16 are either cut off as shown in FIGS. 1, 2 and 5 or displaced or retracted laterally away from the beaded edge 12 of the tape 11 as shown in FIG. 4. In either case, the said remaining elements 13 that are exposed on the beaded edge 12 should extend fully up to its extremity or marginal line 12a as best depicted in FIGS. 2 to 4.

90 The starting movement of the slider 14 is improved by the provision of the fastener element or elements 13 which lie opposite to the guide surface 16c₁ and which have their respective uncut coupling heads 13a disengaged from the corresponding ones on the mating stringer tape 11 to permit the passage therethrough of the neck 14c of the slider 14.

105 Referring to FIGS. 5 and 6, there is shown a modification of the stop means 15 according to the invention wherein the opposed slugs 16,16 constituting the stop means 15 are each reinforced with an integral reduced thickness or thinned foil member 17 of plastics material which penetrates into and is adhesively bonded to the fabric of the stringer tape 11, thereby securing the slug 16 firmly in position on the fastener 10.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener of the type which comprises a pair of opposed stringer tapes each carrying along one longitudinal edge portion a row of fastener elements made of a continuous plastics filament, each of said fastener elements having a coupling head for interlocking engagement

fastener having mounted thereon a slider and an end stop means shown in engagement therewith;

FIG. 2 is a plan view of one of the two stringer tapes of the fastener of FIG. 1, in which the coupling heads of some of the fastener elements embraced by the stop means are removed;

FIG. 3 is a transverse cross-sectional view taken along the line III—III of FIG. 2;

FIG. 4 is a plan view similar to FIG. 2 but showing the coupling heads of some of the fastener elements retracted at the stop means to lie flush with the beaded edge of the stringer tape;

FIG. 5 is a plan view of a modification of the stop means shown in FIG. 1; and

FIG. 6 is a transverse cross-sectional view taken along the line VI—VI of FIG. 5.

Referring to the drawings and FIG. 1 in particular, there is shown a sliding clasp fastener 10 of the type which comprises a pair of opposed stringer tapes, 11,11 each carrying along their respective longitudinal beaded edges 12,12 a row of interlocking fastener elements 13 formed from a continuous plastics filament and a slider 14 mounted on the fastener 10 for reciprocal movement along the beaded edges 12,12 to take the fastener elements 13 into and out of engagement with one another; namely, to close and open the fastener 10 in a well known manner. The slider 14 partly shown in FIG. 1 is of the usual construction consisting generally of a spaced-apart upper wing (not shown) and lower wing 14a, respectively, inwardly bent to form side flanges 14b,14b and connected by a neck 14c in such a manner as to provide substantially a Y-shaped channel for guiding the movement of the fastener elements 13 therethrough.

In accordance with the invention, there is provided a top end stop means generally designated 15 and which is adapted to restrict or terminate the movement of the slider 14 at a predetermined point adjacent to the top end region of the fastener 10. The stop means 15 comprises a pair of oppositely disposed slugs 16,16 made of a plastics material such as a thermoplastics resin and secured as by a moulding operation to the respective opposed stringer tapes 11,11 adjacent to the beaded edges 12,12 thereof. Each slug 16 is substantially lobe-shaped and has a longitudinal linear edge 16a extending substantially parallel to the beaded edge 12, a bottom end 16b disposed substantially at right angles to the longitudinal edge 16a, a cam surface 16c contiguous to the bottom end 16b and consisting of a first contour or guide surface 16c₁ configured to match a flared inner guide wall 14a of the slider 14 and a second contour or abutment 16c₂ disposed in

abutting relation to the upper flange end 14e of the slider 14 as depicted in FIG. 1.

With this construction, as the slider 14 is brought up into abutting engagement with the stop means 15 after closing the opposed stringer tapes 11,11 together, the flange ends 14e of the slider 14 abut against corresponding cam surfaces 16c of the opposed slugs 16,16 and urge these slugs to move slightly inwardly in the direction of the arrow together with adjacent portions of the stringer tapes 11,11 until the beaded edges 12,12 of the opposed stringer tapes 11,11 are brought into close registry with corresponding sides of the neck 14c, thereby holding the opposed stringer tapes 11,11 above the stop means 15 substantially in alignment which would otherwise tend to flare apart or spread outwardly away from each other.

The coupling head portions 13a of a fastener element or elements 13 encompassed by the slug 16 on each stringer tape 11 and located at a point opposite to the guide surface 16c₁ of the slug 16 are retained thereat without being removed, while the coupling heads 13a of the remaining elements embraced by the slug 16 are either cut off as shown in FIGS. 1, 2 and 5 or displaced or retracted laterally away from the beaded edge 12 of the tape 11 as shown in FIG. 4. In either case, the said remaining elements 13 that are exposed on the beaded edge 12 should extend fully up to its extremity or marginal line 12a as best depicted in FIGS. 2 to 4.

The starting movement of the slider 14 is improved by the provision of the fastener element or elements 13 which lie opposite to the guide surface 16c₁ and which have their respective uncut coupling heads 13a disengaged from the corresponding ones on the mating stringer tape 11 to permit the passage therethrough of the neck 14c of the slider 14.

Referring to FIGS. 5 and 6, there is shown a modification of the stop means 15 according to the invention wherein the opposed slugs 16,16 constituting the stop means 15 are each reinforced with an integral reduced thickness or thinned foil member 17 of plastics material which penetrates into and is adhesively bonded to the fabric of the stringer tape 11, thereby securing the slug 16 firmly in position on the fastener 10.

WHAT WE CLAIM IS:—

1. A sliding clasp fastener of the type which comprises a pair of opposed stringer tapes each carrying along one longitudinal edge portion a row of fastener elements made of a continuous plastics filament, each of said fastener elements having a coupling head for interlocking engagement



with corresponding fastener elements on the other stringer tape, and a slider having side flanges including an inner guide wall and an upper flange end and mounted on said stringer tapes for reciprocal movement along their edge portions, wherein the fastener is provided with top end stop means comprising a pair of oppositely disposed slugs of a plastics material secured to the respective opposed stringer tapes adjacent to the longitudinal edge portions thereof, each of said slugs having a longitudinal linear edge extending substantially parallel to the edge portion of the respective stringer tape and a cam surface disposed in abutting relation to the inner guide wall and upper flange end of the slider, each of said slugs embracing a group of fastener elements of which the element or elements of said group located at a point opposite to said cam surface having their coupling heads intact and disengaged from corresponding ones on the mating stringer tape, with the remaining elements in said group having their ends registering with an extremity of the edge portion of the stringer tape.

2. A sliding clasp fastener according to claim 1, wherein the remaining elements in each of said groups have their coupling heads removed at a point registering with the extremity of the edge portion of the stringer tape.

3. A sliding clasp fastener according to claim 1, wherein said remaining elements in each of said groups are displaced laterally to a point at which their coupling heads lie flush with an extremity of the edge portion of the stringer tape.

4. A sliding clasp fastener according to any preceding claim, wherein each of said slugs is reinforced with a foil member integrally formed therewith and adhesively bonded to the fabric of the stringer tape.

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

For the Applicants
J. WILLIAMS & CO.,
Chartered Patent Agents,
113 Kingsway,
London WC2B 6QP.

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