

PATENT SPECIFICATION

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- (21) Application No. 34029/73 (22) Filed 17 July 1973 (19)
 (31) Convention Application No. 85302/72 (32) Filed 18 July 1972 in
 (33) Japan (JA)
 (44) Complete Specification published 11 Dec. 1974
 (51) International Classification A44B 19/36
 (52) Index at acceptance
 E2S 1A4



(54) END STOP MEMBER 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:—
- 10 This invention relates to sliding clasp fasteners and more particularly to an improved end stop for use in restricting the movement of the slider thereof.
- 15 A sliding clasp fastener contemplated in the practice of the invention comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements formed from a continuous plastics filament into a spiral or meandering structure, and a slider arranged to move along the longitudinal edges of the stringer tapes to take the fastener elements into and out of engagement with one another thereby closing and opening the fastener. To restrict the movement of the slider at a predetermined point on the fastener, there are usually employed end stops anchored in place at a top and a bottom end region of the fastener. It is to the bottom end stop which the present invention relates.
- 25 There are known different types and forms of bottom end stops for preventing the slider from running off the rows of fastener elements. One such known end stop is formed by simply melting a group of plastics fastener elements together adjacent the bottom end of the fastener. Another end stop known in the art is formed by also melting or fusing a plastics film together with the fastener elements, and causing the molten material to spread over the full width of the fastener, with a stopper element formed at the upper end of the molten region. There is further known an end stop which consists of a relatively narrow plastics film fused to impregnate the fastener over its entire width and a stopper element projecting centrally of the impregnated area for engagement with the slider.
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The first mentioned prior art end stop has the disadvantage that it is liable to excessive wear or damage from repeated abutting engagement direct with the neck of the slider connecting its wing members and hence has very short service life.

The aforementioned second end stop is arranged such that the stopper element is brought into impinging contact with the flanged end of the slider, with the results that it is often separated from the fastener tape. Since the plastics film is applied to the entire width of the fastener, this area of the fastener tape becomes stiff, rendering it difficult to run a sewing stitch therealong.

The third known end stop has the drawback that the fastener is susceptible to flexing about the border defined between the plastics impregnated region and the non-impregnated region of the fastener where the sewn stitches are restricted to move and hence are liable to become torn off or damaged.

A further disadvantage which is common to the various conventional end stop devices is that when the chain of interlocking fastener elements is broken off, it is extremely difficult to bring the chain completely back into meshed condition.

Thus, it is the primary object of the invention to eliminate most, if not all, of the above noted or other difficulties of the prior art end stops.

According to one aspect of the invention, there is provided a bottom end stop member for a sliding clasp fastener, comprising a body for bonding to and/or a superimposition on a group of fastener elements, said body having at least one side shoulder for abutting engagement by the slider of the sliding clasp fastener, at least one side portion of reduced thickness for bonding to an associated stringer tape of the sliding clasp fastener, and at least one end portion of reduced thickness for bonding to fastener elements of or adjacent to said group.

By way of example, a preferred embodiment of the invention will now be described with reference to the accompanying draw-

ings wherein like reference numerals denote like parts.

In the drawings:

Fig. 1 is a plan view of a sliding clasp fastener to which a bottom end stop according to the invention is attached;

Fig. 2 is a transverse cross-sectional view taken on the line II—II of Fig. 1; and

Fig. 3 is a longitudinal cross-sectional view taken on the line III—III of Fig. 1.

According to another aspect of the invention, there is provided in a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastics filament and a slider having side flanges and mounted on the fastener tapes for reciprocal movement along the said longitudinal edges, the improved bottom end stop member for restricting the movement of the slider which is formed of a thermoplastic material and which consists of a central body adhesively covering a plurality of interengaged fastener elements and having shoulders laterally projecting for abutting engagement with the slider, first reduced or thinned-out foil portions extending on opposite sides of said body and adhesively bonded to the respective stringer tapes, and second reduced or thinned-out foil portions extending laterally on opposite ends of said body and downwardly stepped so as to lie below the surface of said body, said second foil portions being fused together with fastener elements thereat.

Referring now to the drawings, there is shown a sliding clasp fastener 10 of the conventional type which comprises a pair of oppositely disposed stringer tapes 11, 11 a row of fastener elements 12 secured by sewing threads 13 to the longitudinal inner edge of each tape 11 and a slider 14 mounted on the fastener for reciprocal movement along the opposed longitudinal edges of the stringer tapes 11, 11 to cause the fastener elements 12 to come into and out of engagement with one another in the usual manner.

The fastener elements 12 are made from a continuous plastics filament and formed into a spiral structure as shown. The slider 14 partly shown in Fig. 1 is of the usual construction consisting generally of spaced-apart upper wing (not shown) and lower wing 15, respectively, inwardly bent to form side flanges 16, 16 and connected by a neck (not shown) in such a manner as to provide substantially a Y-shaped channel for guiding the movement of the fastener elements 12 therethrough.

Designated at 17 is a bottom end stop provided in accordance with the invention, which end stop is adapted for restricting or terminating thereat the downward move-

ment of the slider 14 when the latter is manipulated to open the fastener 10. The bottom end stop 17 is made of a plastics material such as a thermoplastic resin and consists of a central body 17a adhesively covering a plurality of interengaged fastener elements 12 and having shoulders 17b, 17b laterally projecting for abutting engagement with flange ends 16¹, 16¹ respectively of the slider 14, first reduced or thinned-out foil portions 17c, 17c extending longitudinally on opposite sides of the body 17a and adhesively bonded to the respective stringer tapes 11, 11, and second reduced or thinned-out foil portions 17d, 17d extending laterally on opposite ends of the body 17a and downwardly stepped so as to lie below the surface of the body 17a, said portions 17d, 17d being fused together with the fastener elements 12.

The first foil portions 17c, 17c further extend beyond the forward end of the central body 17a and prevent the tapes 11, 11 thereat from flexing or otherwise moving. This will ensure that when the element chain is cracked open or broken apart, the end-most fastener elements remain in coupled condition thereby greatly facilitating the re-engagement or recoupling of the rows of fastener elements 12 by the action of the slider 14.

The second foil portions 17d, 17d which are integrally bonded by fusion to fastener elements 12 adjacent opposite ends of the central body 17a serve to bond these elements 12 intimately to the tapes, 11, 11. The second foil portion 17d which is positioned at the forward or upper end of the body 17a does not come directly into abrasive contact with the slider 14 and thereby protects the end stop 17 against detachment from the fastener.

The end stop 17 constructed as above may be provided by means of high-frequency heating or supersonic processing whereby a starting plastics material in the form of a strip, chip or film is moulded into the form illustrated, which is integral with both fastener elements 12 and tapes 11, 11 to provide a unitary bond structure strong enough to withstand severe stresses exerted by the slider 14.

WHAT WE CLAIM IS:—

1. In a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastics filament and a slider having side flanges and mounted on the fastener tapes for reciprocal movement along the said longitudinal edges, the improved bottom end stop member for restricting the movement of the slider which is formed of a thermo-



ings wherein like reference numerals denote like parts.

In the drawings:

Fig. 1 is a plan view of a sliding clasp fastener to which a bottom end stop according to the invention is attached;

Fig. 2 is a transverse cross-sectional view taken on the line II—II of Fig. 1; and

Fig. 3 is a longitudinal cross-sectional view taken on the line III—III of Fig. 1.

According to another aspect of the invention, there is provided in a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastics filament and a slider having side flanges and mounted on the fastener tapes for reciprocal movement along the said longitudinal edges, the improved bottom end stop member for restricting the movement of the slider which is formed of a thermoplastic material and which consists of a central body adhesively covering a plurality of interengaged fastener elements and having shoulders laterally projecting for abutting engagement with the slider, first reduced or thinned-out foil portions extending on opposite sides of said body and adhesively bonded to the respective stringer tapes, and second reduced or thinned-out foil portions extending laterally on opposite ends of said body and downwardly stepped so as to lie below the surface of said body, said second foil portions being fused together with fastener elements thereat.

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The fastener elements 12 are made from a continuous plastics filament and formed into a spiral structure as shown. The slider 14 partly shown in Fig. 1 is of the usual construction consisting generally of spaced-apart upper wing (not shown) and lower wing 15, respectively, inwardly bent to form side flanges 16, 16 and connected by a neck (not shown) in such a manner as to provide substantially a Y-shaped channel for guiding the movement of the fastener elements 12 therethrough.

Designated at 17 is a bottom end stop provided in accordance with the invention, which end stop is adapted for restricting or terminating thereat the downward move-

ment of the slider 14 when the latter is manipulated to open the fastener 10. The bottom end stop 17 is made of a plastics material such as a thermoplastic resin and consists of a central body 17a adhesively covering a plurality of interengaged fastener elements 12 and having shoulders 17b, 17b laterally projecting for abutting engagement with flange ends 16¹, 16¹ respectively of the slider 14, first reduced or thinned-out foil portions 17c, 17c extending longitudinally on opposite sides of the body 17a and adhesively bonded to the respective stringer tapes 11, 11, and second reduced or thinned-out foil portions 17d, 17d extending laterally on opposite ends of the body 17a and downwardly stepped so as to lie below the surface of the body 17a, said portions 17d, 17d being fused together with the fastener elements 12.

The first foil portions 17c, 17c further extend beyond the forward end of the central body 17a and prevent the tapes 11, 11 thereat from flexing or otherwise moving. This will ensure that when the element chain is cracked open or broken apart, the end-most fastener elements remain in coupled condition thereby greatly facilitating the re-engagement or recoupling of the rows of fastener elements 12 by the action of the slider 14.

The second foil portions 17d, 17d which are integrally bonded by fusion to fastener elements 12 adjacent opposite ends of the central body 17a serve to bond these elements 12 intimately to the tapes, 11, 11. The second foil portion 17d which is positioned at the forward or upper end of the body 17a does not come directly into abrasive contact with the slider 14 and thereby protects the end stop 17 against detachment from the fastener.

The end stop 17 constructed as above may be provided by means of high-frequency heating or supersonic processing whereby a starting plastics material in the form of a strip, chip or film is moulded into the form illustrated, which is integral with both fastener elements 12 and tapes 11, 11 to provide a unitary bond structure strong enough to withstand severe stresses exerted by the slider 14.

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plastic material and which consists of a central body adhesively covering a plurality of interengaged fastener elements and having shoulders laterally projecting for abutting engagement with the slider, first reduced or thinned-out foil portions extending on opposite sides of said body and adhesively bonded to the respective stringer tapes, and second reduced or thinned-out foil portions extending laterally on opposite ends of said body and downwardly stepped so as to lie below the surface of said body, said second foil portions being fused together with fastener elements thereat.

2. A fastener as defined in claim 1 wherein said first foil portions extend beyond the forward end of said body.

3. An improved bottom end stop member substantially as herein described with re-

ference to and as illustrated in the accompanying drawings.

4. A bottom end stop member for a sliding clasp fastener, comprising a body for bonding to and/or superimposition on a group of fastener elements, said body having at least one side shoulder for abutting engagement by the slider of the sliding clasp fastener, at least one side portion of reduced thickness for bonding to an associated stringer tape of the sliding clasp fastener, and at least one end portion of reduced thickness for bonding to fastener elements of or adjacent to said group.

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Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1974.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY,
from which copies may be obtained.

