This invention relates to slide fasteners and, in particular, to the provision of end stops therefor.

It is an object of this invention to provide a new and improved slide fastener wherein the end stops at both ends are similar, and similarly applied, and wherein puckering of the stringer tapes at the upper end adjacent the tape connecting or bridging top stop is eliminated.

It is a further object of this invention to provide a method of attaching conventional end stops of the type generally known as "bottom stops," in predetermined spaced relation, to the upper ends of the rows of engageable or cooperating fastener scoops to secure the advantages of conventional tape spreading bridge top stops with the advantages, in addition to the substantial elimination of tape puckering, in closed fasteners, of providing a locking feature wherein the aforesaid "bottom stop type" stops at the upper ends of the slide fasteners cooperate with the upper scoops of the fasteners and the wedges or necks of non-locking sliders effectively to resist or inhibit accidental opening of the fasteners.

It is a further object of this invention to provide such a method wherein the cooperative relationship between the slider (or slider neck or wedge) and the uppermost fastener scoops is utilized for properly locating the position for application of the aforesaid "bottom stop type" stop at the upper end of a slide fastener.

These and other objects and advantages will clearly appear from the following description, and the drawing forming a part thereof, and will be pointed out in the appended claims.

In the drawing:

Fig. 1 is a front view, partly broken away, of a conventional slide fastener provided with end stops according to this invention:

Fig. 2 is a fragmentary enlarged front view of the slide fastener stringers before application of the top stop to the upper ends thereof, the slider being shown in section:

Fig. 3 is a view similar to Fig. 2 but showing the top stop applied and clinched to the fastener stringers, according to this invention:

Fig. 4 is a view similar to Fig. 3 but showing the fastener partially opened, the pull tab being omitted from the slider in the interest of clear disclosure:

Fig. 5 is a transverse section illustrating the placement of the end stop blank before it is clinched to the fastener stringers; and

Fig. 6 is a section taken substantially on the plane indicated by the line 6—6 in Fig. 3 and showing the end stop clinched to the fastener stringers.

Referring to the drawing in detail, and with reference particularly to Fig. 1, the illustrative slide fastener shown comprises the right hand stringer 12 and the left hand stringer 11 each comprising a flexible tape 14 formed of any suitable material and provided at one edge with an edge reinforcement 15, such as a bead or cord structure, a row of predeterminedly spaced interlocking fastener members, elements or scoops 16 being secured to each of the reinforced edges as shown in Fig. 1.

A slider 17 having a pull tab 18 secured thereto in a known manner is supported on the rows of fastener members or scoops 16 for movement longitudinally thereof to close and open the slide fastener by progressively coupling and uncoupling the scoops 16 in a manner well known in the art.

As shown in Fig. 1, a bottom stop 19 connects the lower end of the stringers 11 and 12 immediately adjacent to the lower ends of the rows of scoops 16. A top stop 20 spaced a predetermined distance from the upper ends of rows of scoops 16, as hereinafter described in detail, connects the upper ends of the stringers 11 and 12.

The slider 17 illustrated is of conventional form and comprises a pair of similar obverse wings 21 connected at their upper ends by an integral neck or wedge 22 and each wing 21 being provided with inwardly directed marginal side flanges 23 which cooperate with the neck or wedge 22 to form an upwardly diverging guide channel in which the scoops 16 are guided into and out of interlocking engagement in a manner well known in the art.

The front wing 21 as shown in Figs. 1 and 4, is provided with a longitudinal lug 24 to which the pull tab 18 is secured in a manner well known in the art.

As shown in Fig. 1, the bottom stop 19 and top stop 20 are similar and are applied and secured in like manner to opposite end portions of the stringers 11 and 12. The illustrative end stops shown are applied in the form of blanks 20a (Fig. 5) of substantial T-section placed in the desired locations and clinched about the tape edge reinforcements 15 as shown in Fig. 6.

The bottom stops 19 are attached in conventional manner, the blank 20a being placed immediately adjacent to the lowermost scoop 16 of a pair of "pulled up" stringers 11 and 12 and
clinched to the tapes thereof as described above.

According to this invention, the slider 17 is then Threaded over the reinforced edges 15 at the upper ends of the stringer tapes until it reaches the position shown in Fig. 2. When the lower portion of the neck or Wedge 22 substantially engages the head portion of the uppermost scoop 16. The reinforced edge portion 15 of the tapes are then drawn together, substantially into parallelism and to the position of Fig. 3, and a blank 26 is positioned therebetween, as shown in Fig. 6 closely adjacent the upper portion of the slide neck or wedge 22 as shown in Fig. 3. The blank 26 is then formed and clinched to the reinforced edges 15 of the tapes as shown in Fig. 6 to form the top stop 20.

The slider 17 and the cooperative relationship of the neck or wedge 22 thereof with the uppermost scoop 16 is thus utilized to locate the top stop 20, according to this invention.

Heretofore, bridge top stop fittings have generally comprised intricate or complicated members secured to and between complementary stringer tapes and adapted to secure the tapes thereover together rather closely and in substantial parallelism while spacing the rows of scoops or fastener members on the tapes, therebelow, at a substantial distance. The attachment of such "tape-spreading" top stops resulted in placing a permanent pucker in the stringer tapes adjacent thereto and over a relatively large area. This pucker was extremely objectionable since it substantially destroyed the neatness of a closure embodying such fastener since the pucker was most appreciable when the fastener was closed.

According to this invention, by the use of an end stop fitting of the simplest and cheapest form, as illustrated, the cost and difficulty of attachment of such prior art bridge top stop fittings is eliminated. In addition, the aforesaid pucker is substantially eliminated when the fastener is closed thus materially improving slide fastened closures and closure applications as may be by comparison of Figs. 3 and 4 of the drawing, I have substantially eliminated all tape puckerling in the fastener when closed.

In addition, as shown in Fig. 3, when the fastener is closed, the uppermost scoop or fastening element 16, or the inclined head surfaces thereof, exerts a blocking effect upon the neck or wedge 22 of the slider for effectively inhibiting retrograde slider movement unless, and until, sufficient manual force is applied to the slider through the pull tab 18 to overcome this blocking force.

Since both top and bottom stop fittings are similar, according to this invention, the make up of a slide fastener according to this invention is substantially simplified. Also, because of the nature of the simplified top stop fitting, the attachment thereof is facilitated since it is merely necessary (Figs. 2 and 3) to bring the stringer tape reinforced edges thereinto into substantial and close parallelism without regard to the spacing thereof therebelow.

From the above description it will clearly appear that I have provided a new and improved bridge-top-stopped slide fastener substantially free of tape puckering, at least when closed, wherein the end stops at both ends are similar, wherein cheap construction and readily and conveniently applied, and wherein the cooperative relationship between the slider, scoops and top stop achieves a locking effect heretofore unattainable with non-locking sliders.

It will also clearly appear that I have provided a new and improved method of top stopping slide fasteners wherein the top stop fitting used is of the simplest, cheapest type and wherein the position thereof is effectively determined by the cooperative relationship between the fastened slider and the inter-locking members or scoops of the fastener.

It is, of course, to be understood that the above description is merely illustrative and in nowise limiting and that I desire to comprehend within my inventions such modifications as are included within the scope of the following claims.

Having thus fully described my invention, what I claim as new and secure to be by Letters Patent is:

1. In a slide fastener of the class described, a pair of complementary stringer tapes each having a row of scoops therein said scoops having complementary engageable heads with inclined surfaces, a slider supported on said rows of scoops for sliding movement therewith to engage and disengage said scoops, said slider comprising complementary steep engaging wings connected at their upper ends by a neck, and a top stop connecting said tapes at their upper ends and comprising a member clampingly engaging said tapes at a distance above the upper ends of said rows of scoops exceeding the longitudinal extent of said slider neck, said member having substantially parallel closely spaced jaws tending to maintain the adjacent edges of said tapes in parallelism.

2. The structure defined in claim 1, wherein the inclined head surfaces of the uppermost scoop exert a blocking effect upon the slider neck for preventing accidental retrograde slider movement.

ALEXANDER M. BROWN.

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