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(54) SLIDER FOR CONCEALED SLIDING CLASP FASTENERS

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumi-cho, 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 a sliding clasp fastener of the concealed type wherein the fastener elements are completely concealed under the article when the sliding clasp fastener is closed thereon. More specifically, the invention deals with the improved configuration of a slider for use with such concealed sliding clasp fasteners.

As is well known, the rows of interlocking fastener elements of a concealed sliding clasp fastener are usually secured to folded portions along the opposed longitudinal edges of a pair of stringer tapes, respectively. These stringers are further stitched or otherwise attached to respective folds formed inwardly along the edges defining a desired closure opening in an article. As later referred to in connection with the accompanyng drawings, there are cases where the concealed sliding clasp fastener thus attached to the article is arranged at right angles with a seam joining two pieces of cloth of that article. The slider of the concealed sliding clasp fastener is then required to travel over an unduly thick region consisting of several superposed layers of cloth.

However, the prior art configuration of the slider for concealed sliding clasp fasteners is such that during the movement of the slider along the fastener elements, the aforesaid thick region tends to be caught between the top of the slider body and the connector ring through which the pull tab is coupled to the slider body. Due to the excessive resistance thus offered by the thick region, the prior art slider has often been restrained from smooth travel along the fastener elements in the concealed sliding clasp fasteners of the type now under consideration.

The present invention seeks to provide an improved slider for concealed sliding clasp fasteners, such that the slider can be smoothly pulled along rows of interlocking fastener elements of a concealed sliding clasp fastener regardless of the presence or absence of the aforementioned thick region.

According to the invention, there is provided a slider for a concealed sliding clasp fastener wherein said slider is of the type including a body having a flared front end and a contracted rear end, and a separator mounted centrally at the flared front end of said body, the improvement comprising a lug extending rearwardly from said separator and slotted substantially throughout the entire length thereof, said lug including a substantial portion projecting rearwardly of said contracted rear end of said body, and a pull tab pivotally coupled to said lug so as to be displaceable therealong.

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, both as to its construction and mode of operation, together with the further objects and advantages thereof, will become more apparent and understandable as the description proceeds hereinbelow, with reference made to the accompanying drawings wherein like reference characters denote like parts throughout the several views, and wherein:

Figure 1 is a side elevational view explanatory of a mode of operation of a

concealed sliding clasp fastener having a prior art slider;

Figure 2 is a cross sectional view taken along the plane of line II-II in Figure 1;

Figure 3 is a perspective view showing a pair of stringers of a concealed sliding clasp fastener as attached to an article having a seam disposed at right angles with the stringers;

Figure 4 is a perspective view of a slider for concealed sliding clasp fasteners which is constructed according to the invention;

Figure 5 is a top plan view explanatory of a mode of operation of a concealed sliding clasp fastener having the slider shown in Figure 4;

Figure 6 is a side elevational view of the concealed sliding clasp fastener shown in Figure 5;

Figure 7 is a side elevational view of another preferred embodiment of the invention; and

Figure 8 is a view similar to Figure 7 but showing a further preferred embodiment of the invention.

It is considered essential that prior to the description of the preferred embodiments of this invention, the prior art concealed sliding clasp fastener be shown and described in some more detail, the better to manifest the features and advantages of the invention. In the known configuration of the concealed sliding clasp fastener slider 10 illustrated in Figures 1 and 2, a pull tab 11 is coupled via a connector ring 12 to a slotted lug 13 or the like arranged longitudinally of the slider body 14 over a length not exceeding the slider body length.

On the other hand, as will be best understood from the showing of Figure 3, rows of interlocking fastener elements 15 of the concealed sliding clasp fastener now under consideration are affixed to folds 16, respectively, that are formed along the opposed longitudinal edges of a pair of stringer tapes 17. The thus-formed stringers, moreover, are secured to respective folds 18 formed inwardly along the edges defining a desired closure opening in an article 19. Sewing threads 20 may be used for thus joining the corresponding folds 18 of the stringer tapes 17 and the article 19. If this concealed sliding clasp fastener is applied, for instance, to the waist of women's dress or the like where the fastener must be arranged at right angles with a seam joining two pieces of cloth as shown in Figure 3, it will be seen that a thick region 21 is formed which consists of seven or more layers of cloth.

Hence, as the above described prior art slider 10 travels over the thick region 21 either in a fastener opening or fastener closing direction, as illustrated in Figures 1 and 2, this thick region may be caught between the connector ring 12 and the top of the slider body 14 thereby offering undue resistance to the slide motion of the slider 10. It will therefore be apparent that the smooth travel of the conventional slider along the fastener elements 15 cannot be realized wherever the applications of the concealed sliding clasp fastener involve the formation of such thick region 21.

The improved slider for concealed sliding clasp fasteners according to this invention will now be described in terms of a preferred embodiment thereof illustrated in Figures 4 to 6. With particular reference to Figure 4, the illustrated slider 22 according to the invention includes a body 23 having a flared front end 24 and a contracted rear end 25. The slider body 23 is composed essentially of a bottom wall or plate 26 and a pair of flanges 27 formed along the respective marginal edges of the bottom wall. A pair of lips 28 extend inwardly from the tops of the respective flanges 27 so as to be bilaterally symmetrical with respect to the longitudinal axis of the slider body. An island or separator 29 is fixedly mounted on the bottom wall 26 in a central position at the flared front end 24 of the slider body. As may now be apparent, a generally Y-shaped guide channel is formed through the slider body 23 for guiding therethrough the rows of fastener elements 15 of the concealed sliding clasp fastener in the act of coupling or uncoupling the same in the usual manner.

A lug 30 is coupled to the separator 29 as by means of a pin 31. The lug 30 extends rearwardly from the separator 29 and is slotted at 32 substantially throughout the entire length thereof. The slot 32 loosely receives a connector ring 33 through which a pull tab 34 is connected to the slider body 23. The pull tab 34 is thus rendered displaceable longitudinally of the slotted lug 30 and hence of the slider body 23 via the connector ring 33.

According to the concepts of this invention, the slotted lug 30 extends a substantial length beyond the contracted rear end 25 of the slider body 23, so that an open space is provided under the projecting rear end of the slotted lug. Thus, when the slider is moved in the fastener opening direction, the connector ring 33 is located further rearwardly of the contracted rear end 25 of the slider body.

Figures 5 and 6 illustrate, in top plan and side elevational views respectively, a mode of operation of the concealed sliding clasp fastener incorporating the improved slider 22 of Figure 4. Since the connector ring 33 is always held at the rear end of the slotted lug 30 projecting beyond the contracted rear

end 25 of the slider body 23 during the fastener opening movement of the slider 22 as above stated, the slider can smoothly travel past the thick region 21 previously explained in connection with Figure 3 in particular. This is possible because, as the slider 22 travels past the thick region 21 in the fastener opening direction, this thick region is guided from under the projecting rear end of the slotted lug 30 onto the lips 28 of the slider body 23, as best represented in Figure 6. The smooth and resistance-free slide motion of the slider 22 along the fastener elements 15 is thus assured regardless of the presence or absence of such thick region 21.

Figure 7 illustrates a slight modification of the above described concealed sliding clasp fastener slider, in which the modified slider 22*a* has its lug 30*a* fabricated of a continuous filament of suitably rigid material. Both ends 35 of this continuous filament are inserted into a bore 36 formed in the separator 29 of the slider body 23, and the top end of this separator is then compressed to securely retain the lug 30*a* in position over the slider body. It may be noted that the lug 30*a* thus fabricated of the continuous filament includes a portion projecting beyond the contracted rear end 25 of the slider body 23 and defines an aperture 32*a* corresponding to the slot 32 of the embodiment shown in Figure 4. Other details of construction and operation are exactly as above described in connection with Figures 4 to 6.

In a further preferred embodiment of the invention illustrated in Figure 8, the slider 22*b* has its lug 30*b* projecting not only beyond the contracted rear end 25 of the slider body but also beyond the flared front end 24. Other details of construction are exactly the same as those above set forth with reference to Figures 4 to 7. According to the configuration of Figure 8, the pull tab 34 can be turned rearwardly of the slider 22*b* over the projecting front end of the lug 30*b* via the connector ring 33 at the end of the fastener closing movement of the slider, so that the slider itself can be made substantially completely invisible upon closure of the concealed sliding clasp fastener.

Although the concealed sliding clasp fastener slider according to the invention has been shown and described hereinbefore in very specific aspects thereof to enable those skilled in the art to practice the invention, it will be apparent that the disclosure hereof is meant only to illustrate and explain and not to impose limitations on the invention. Various modifications may obviously be contemplated and resorted to by the specialists without departing from the scope of the invention, as hereinafter defined by the appended claims.

WHAT WE CLAIM IS:—

1. A slider for a concealed sliding clasp fastener wherein said slider is of the type including a body having a flared front end and a contracted rear end, and a separator mounted centrally at the flared front end of said body, the slider comprising a lug extending rearwardly from said separator and slotted substantially throughout the entire length thereof, said lug including a substantial portion projecting rearwardly of said contracted rear end of said body, and a pull tab pivotally coupled to said lug so as to be displaceable therealong.

2. The slider of claim 1 wherein said pull tab is coupled to said lug via a connector ring.

3. The slider of claim 1 wherein said lug is formed of a continuous filament of rigid material.

4. The slider of claim 1 wherein said lug further includes a portion projecting forwardly of said flared front end of said body whereby said pull tab can be turned rearwardly of said slider over the projecting front end of said lug at the end of the fastener closing movement of said slider.

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

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end 25 of the slider body 23 during the fastener opening movement of the slider 22 as above stated, the slider can smoothly travel past the thick region 21 previously explained in connection with Figure 3 in particular. This is possible because, as the slider 22 travels past the thick region 21 in the fastener opening direction, this thick region is guided from under the projecting rear end of the slotted lug 30 onto the lips 28 of the slider body 23, as best represented in Figure 6. The smooth and resistance-free slide motion of the slider 22 along the fastener elements 15 is thus assured regardless of the presence or absence of such thick region 21.

Figure 7 illustrates a slight modification of the above described concealed sliding clasp fastener slider, in which the modified slider 22*a* has its lug 30*a* fabricated of a continuous filament of suitably rigid material. Both ends 35 of this continuous filament are inserted into a bore 36 formed in the separator 29 of the slider body 23, and the top end of this separator is then compressed to securely retain the lug 30*a* in position over the slider body. It may be noted that the lug 30*a* thus fabricated of the continuous filament includes a portion projecting beyond the contracted rear end 25 of the slider body 23 and defines an aperture 32*a* corresponding to the slot 32 of the embodiment shown in Figure 4. Other details of construction and operation are exactly as above described in connection with Figures 4 to 6.

In a further preferred embodiment of the invention illustrated in Figure 8, the slider 22*b* has its lug 30*b* projecting not only beyond the contracted rear end 25 of the slider body but also beyond the flared front end 24. Other details of construction are exactly the same as those above set forth with reference to Figures 4 to 7. According to the configuration of Figure 8, the pull tab 34 can be turned rearwardly of the slider 22*b* over the projecting front end of the lug 30*b* via the connector ring 33 at the end of the fastener closing movement of the slider, so that the slider itself can be made substantially completely invisible upon closure of the concealed sliding clasp fastener.

Although the concealed sliding clasp fastener slider according to the invention has been shown and described hereinbefore in very specific aspects thereof to enable those skilled in the art to practice the invention, it will be apparent that the disclosure hereof is meant only to illustrate and explain and not to impose limitations on the invention. Various modifications may obviously be contemplated and resorted to by the specialists without departing from the scope of the invention, as hereinafter defined by the appended claims.

WHAT WE CLAIM IS:—

1. A slider for a concealed sliding clasp fastener wherein said slider is of the type including a body having a flared front end and a contracted rear end, and a separator mounted centrally at the flared front end of said body, the slider comprising a lug extending rearwardly from said separator and slotted substantially throughout the entire length thereof, said lug including a substantial portion projecting rearwardly of said contracted rear end of said body, and a pull tab pivotally coupled to said lug so as to be displaceable therealong.

2. The slider of claim 1 wherein said pull tab is coupled to said lug via a connector ring.

3. The slider of claim 1 wherein said lug is formed of a continuous filament of rigid material.

4. The slider of claim 1 wherein said lug further includes a portion projecting forwardly of said flared front end of said body whereby said pull tab can be turned rearwardly of said slider over the projecting front end of said lug at the end of the fastener closing movement of said slider.

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

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