

## Description

This invention relates to a slider pull tab for a slide fastener comprising a first connector, a second connector either of said first and second connectors having bifurcated arms provided with respective aligned transverse bores, a pull tab body integrally connected to said second connector and a pivotal pin having both ends received in said aligned transverse bores and being secured to either one of said first and second connectors and being freely rotatable with respect to the other connector.

There are known a variety of slide fastener sliders having different forms and designs of pull tabs which are tailored to meet with the particular specifications set up by the garment manufacturers who produce all sorts of garment articles ranging from clothing, sports wears, sports equipment to bags, etc.

A pull tab of the type mentioned above is disclosed in JP-U-62-200915. In this conventional slider pull tab, the second connector and the pull tab body are formed integrally of an elastic material. The first connector includes bifurcated arms interconnected by a pin about which the pull tab is pivotally mounted. Since the pin is stationarily clamped at both ends to the arms, this would often restrict free pivotal motion of the pull tab when assembled and leave the pull tab lifted up above the plane of the slider as shown in Figure 10 of the accompanying drawings, whereas the pull tab should desirably be dropped downwardly toward the article to which the slider is attached. When the pull tab thus is disposed in such erected position, it is prone to catch and impair what is there to come in contact with the pull tab, not to mention of its unsightly appearance.

With the prior art technology utilized to make a slider having a pull tab formed from an elastic material such as synthetic rubber, it would be necessary to provide an axial bore in the pull tab by injection-molding for insertion of a pivotal pin or, to form such a pin-receiving bore, in the case of synthetic leather, by folding back an end of a leather strip or by folding the same in halves and then sewing or otherwise bonding near the folds to produce the bore. Injection-molded pull tabs however have limited mechanical strength such that the resulting pin-receiving bore cannot be made large enough and would undergo deformation with time and with the way many of the pull tabs are stacked together. In the case of a pull tab made of artificial leather, the bore when formed by folding the tab is rather flattened, making it tedious, if not difficult, to thread the pin through the bore and to keep the pin freely rotative, not to mention of the case where the pin is clamped at both of its ends to the pull tab

connector.

FR-A-2 145 453 discloses a mold for simultaneously cast-molding a slider body and a pull tab. The pull tab and a pivotal pin are integrally formed of metal, said pivotal pin being freely rotatable within aligned transverse bores provided in the slider body.

The present invention seeks to provide a slider pull tab for a slide fastener which is formed by cast molding of an elastic, flexible material, into an integral structure including a pivotal pin and first and second connectors, without the necessity of an additional step of assembling these parts and wherein the pull tab is supported for free rotation.

According to the present invention, there is provided a slider pull tab of the type mentioned above, characterized in that said first and second connectors and said pivotal pin are formed by simultaneous cast molding, that said pivotal pin is freely rotatable within said aligned transverse bores provided in the bifurcated arms of either one of said first and second connectors and is formed integrally with the other connector, and that said pull tab body is cast-molded from an elastic, flexible material.

The above and other objects and features of the invention will appear more apparent from the following detailed description taken in conjunction with the accompanying drawings in which like reference numerals refer to like or corresponding parts throughout the several views.

Figure 1 is a plan view of a slider embodying the invention;

Figure 2 is a side elevational view of the same;

Figure 3 is a partially sectional plan view of a portion of a slider pull tab according to one embodiment of the invention;

Figure 4 is a partially sectional plan view of a portion of a slider pull tab according to another embodiment of the invention;

Figure 5 is a partially sectional plan view of a portion of a slider pull tab according to a further embodiment of the invention;

Figure 6 is a partially sectional plan view of a portion of a slider pull tab according to still another embodiment of the invention;

Figure 7 is a perspective view showing a mold and a slider pull tab formed thereby;

Figure 8 is a perspective view showing another mold and a slider pull tab formed thereby;

Figure 9 is a cross-sectional view of a portion of a mold used in the invention; and

Figure 10 is a perspective view of a prior art slider.

Referring now to the drawings and Figures 1 and 2 in particular, there is shown a slider 10 embodying the invention which is used to open and close a slide fastener. The slider 10 comprises a

slider body 11 formed by an upper flange 12 and a lower flange 13 defining therebetween a guide channel 14 for the passage of a slide fastener (not shown) and connected together at one of its ends by a neck 15 (commonly known as a diamond), and an arch-shaped trunnion 16 having an aperture 17 for pivotally receiving a pull tab 18.

The pull tab 18 includes a first connector 19 provided at one end with a ring-like hook portion 20 pivotally engaged with the trunnion 16 of the slider body 11 and at the other end with bifurcated arms 21 and 22 defining therebetween a concave recess 23 and having respective aligned transverse bores 24 and 25, and a second connector 26 in the form of a cross-sectionally square or oblong bar extending within the recess 23 transversely between the bifurcated arms 21 and 22 and having an integral pivotal pin 27 at each of its opposite ends for pivotal engagement in the corresponding one of the bores 24, 25.

Both first and second connectors 19 and 26 are formed from a metal or mechanically strong plastics material. Preferably a reinforcing strip 28 is provided extending integrally centrally from the second connector 26 into a pull tab body 18' and has a plurality of through aperture 28a.

Designated at 29 is a grommet formed on opposite faces of the reinforcing strip 28 for ornamental purposes.

A stitch-like design 30 is likewise provided for ornamental purposes on the pull tab body 18'.

A pull tab 18a shown in Figure 3 is substantially identical with the pull tab 18 in Figure 1 except that it is devoid of the reinforcing strip 28, the grommet 29 and the stitch-like design 30.

A pull tab 18b shown in Figure 4 has a first connector 31 in the form of a generally rectangular block including a square opening 32 at one end, shoulders 33, 34 on opposite sides of the opening 32 and a transverse pivotal pin 35 at the other end. A second connector 36 in the pull tab 18b is substantially U-shaped with parallel arms 37 and 38 having respective bores 39 and 40 for pivotally receiving the transverse pin 35 of the first connector 31.

A pull tab 18c shown in Figure 5 is similar to the pull tab 18a in Figure 3 but having through apertures 41 in the second connector 26 for purposes hereafter to be described.

A pull tab 18d shown in Figure 6 is similar to the pull tab 18b in Figure 4 but having through apertures 41 and a connecting bridge 42 in the second connector 36 for purposes hereafter to be described.

According to the invention, the first connector 19, (31) and the second connector 26, (36) are formed as an integral part by simultaneous cast molding which is casting if the part is a metal, or

injection-molding if the part is a plastics material. Figures 7 and 9 show a molding device which is used to form the first and second connectors of the pull tab 18 shown in Figure 1 simultaneously with the pivotal pin 27 pivotally inserted in the bores 24, 25. The device comprises a pair of identical vertically opposed molds 43 and 44, one of which is shown in Figure 7 which includes molding cavities 45 and 46 configured to represent a replica of an integrally formed first and second connector assembly (19 and 26), a runner 47, gates 48 and 49 and a pair of transverse sliding cores 50 and 51. The cores 50 and 51 have respective cut-away apertures 50a and 51a into which a molten mold or cast material is introduced to form the pivotal pin 27 as inserted in the bores 24, 25 which are simultaneously formed by the respective peripheral surfaces 50b and 51b of the cores 50, 51. The pin 27 and its associated bores 24 and 25 are formed by inserting the cores 50 and 51 from opposite sides through the junction of the first connector 19 and the second connector 26 as shown in Figure 7 and better in Figure 9. The through apertures 28a in the reinforcing strip 28 serve to ensure firm adhesion thereof with the mold material subsequently applied to form the pull tab body 18'. Those apertures 28a closely adjacent to the grommet 29 serve in particular to prevent the resinous material from separating from around the margin of the grommet 29.

Figure 8 illustrates a pair of identical vertically opposed molds 52, 53 for forming the pull tab body 18' and then finishing the formation of a complete pull tab product to be assembled with a slider body. Each of the molds 52, 53 (the lower one being shown in Figure 8) comprises connector support member 54 and 55 for supporting the first and second connectors 19 and 26 respectively, when molding the pull tab body 18' integrally therewith a first cavity 56 defined by the support member 55 for receiving a mold material in the recess 23 to adhesively cover the second connector 26, and a second cavity 57 contiguous to the first cavity 56 for receiving the material to form the pull tab body 18' including the reinforcing strip 28, the second cavity 56 having sub-cavities 56a and 56b for shaping the grommet 29 and the stitch design 30 respectively. Designated at 58 and 59 are a gate and a runner respectively.

The connector assembly 19 and 26 is supported in place on the support members 54, 55, followed by casting a molten mold material into the cavities 56, 57 thereby forming a pull tab body 18' integrally connected to the second connector 26 as shown in Figure 8. The through apertures 28a in the second connector 36 (Figure 6) communicating with apertures 28a or in the reinforcing strip 28 (Figure 1) adjacent to the grommet 29 form con-

necting bridges 28b which firmly bond the upper and lower halves together of the pull tab body 18'.

### Claims

1. A slider pull tab (18) for a slide fastener comprising a first connector (19; 31), a second connector (26; 36) either of said first and second connectors having bifurcated arms (21, 22; 37, 38) provided with respective aligned transverse bores (24, 25; 39, 40), a pull tab body (18') integrally connected to said second connector (26; 36) and a pivotal pin (27; 35) having both ends received in said aligned transverse bores and being secured to either one of said first and second connectors and being freely rotatable with respect to the other connector, characterized in that said first and second connectors (19; 31 and 26; 36) and said pivotal pin (27; 35) are formed by simultaneous cast molding, that said pivotal pin (27; 35) is freely rotatable within said aligned transverse bores (24, 25; 39, 40) provided in the bifurcated arms (21, 22; 37, 38) of either one of said first and second connectors (19; 31 and 26; 36) and is formed integrally with the other connector, and that said pull tab body (18') is cast-molded from an elastic, flexible material.
2. A slider pull tab (18) according to claim 1 wherein said second connector (26) has an integral reinforcing strip (28) which is integrally bonded to said pull tab body (18') by cast molding.
3. A slider pull tab (18) according to claim 1 wherein said second connector (26) has a plurality of through apertures (28a) and said pull tab body 18' has connecting bridges (28b) communicating with said apertures (28a).

### Patentansprüche

1. Schiebergriff (18) für einen Reißverschluß, umfassend ein erstes Verbindungsteil (19; 31), ein zweites Verbindungsteil (26; 36), wobei das erste oder das zweite Verbindungsteil gegabelte Arme (21, 22, 37, 38) hat, die mit entsprechenden fluchtenden Querbohrungen (24, 25; 39, 40) versehen sind, einen mit dem zweiten Verbindungsteil (26; 36) einstückig verbundenen Griffkörper (18') und einen Schwenkzapfen (27; 35), dessen beide Enden in die fluchtenden Querbohrungen eingreifen und der entweder an dem ersten oder dem zweiten Verbindungsteil befestigt und in Bezug auf das andere Verbindungsteil frei verdrehbar ist,

dadurch gekennzeichnet, daß das erste und das zweite Verbindungsteil (19; 31 und 26; 36) und der Schwenkzapfen (27; 35) durch gleichzeitiges Formgießen ausgebildet werden und daß der Schwenkzapfen (27; 35) in den fluchtenden Querbohrungen (24, 25; 39, 40) frei verdrehbar ist, die in den gegabelten Armen (21, 22, 37, 38) des ersten oder des zweiten Verbindungsteils (19; 31 und 26; 36) ausgebildet sind, und mit dem anderen Verbindungsteil einstückig ausgebildet ist und daß der Griffkörper (18') aus einem elastischen, flexiblen Material formgegossen ist.

2. Schiebergriff (18) nach Anspruch 1, wobei das zweite Verbindungsteil (26) einen einstückigen Verstärkungsstreifen (28) hat, der durch Formgießen mit dem Griffkörper (18') einstückig verbunden ist.
3. Schiebergriff (18) nach Anspruch 1, wobei das zweite Verbindungsteil (26) mehrere Durchbrechungen (28a) hat und wobei der Griffkörper (18') Verbindungsbrücken (28b) hat, die mit den Durchbrechungen (28a) in Verbindung stehen.

### Revendications

1. Tirette (18) de curseur pour une fermeture à glissière comprenant un premier connecteur (19 ; 31), un second connecteur (26 ; 36), l'un ou l'autre desdits premier et second connecteurs comprenant des bras fourchus (21, 22 ; 37, 38) pourvus de trous transversaux alignés respectifs (24, 25 ; 39, 40), un corps (18') de tirette faisant partie intégrante dudit second connecteur (26 ; 36) et un axe d'articulation (27 ; 35) dont les deux extrémités sont reçues dans lesdits trous transversaux alignés et qui est fixé à l'un ou l'autre desdits premier et second connecteurs et peut tourner librement par rapport à l'autre connecteur, caractérisée en ce que lesdits premier et second connecteurs (19 ; 31 et 26 ; 36) et ledit axe d'articulation (27 ; 35) sont formés par moulage-coulée simultané, que ledit axe d'articulation (27 ; 35) peut tourner librement à l'intérieur des trous transversaux alignés (24, 25 ; 39, 40) formés dans les bras fourchus (21, 22 ; 37, 38) de l'un ou l'autre desdits premier et second connecteurs (19 ; 31 et 26 ; 36) et fait partie intégrante de l'autre connecteur, et que ledit corps (18') de tirette est moulé-coulé à partir d'un matériau élastique et flexible.
2. Tirette (18) de curseur selon la revendication 1, dans laquelle ledit second connecteur (26)



necting bridges 28b which firmly bond the upper and lower halves together of the pull tab body 18'.

#### Claims

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2. A slider pull tab (18) according to claim 1 wherein said second connector (26) has an integral reinforcing strip (28) which is integrally bonded to said pull tab body (18') by cast molding.
3. A slider pull tab (18) according to claim 1 wherein said second connector (26) has a plurality of through apertures (28a) and said pull tab body 18' has connecting bridges (28b) communicating with said apertures (28a).

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#### Revendications

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2. Tirette (18) de curseur selon la revendication 1, dans laquelle ledit second connecteur (26)



comporte une bande de renforcement (28) qui en fait partie intégrante et qui est venue de moulage avec le corps (18') de tirette par moulage-coulée.

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3. Tirette (18) de curseur selon la revendication 1, dans laquelle ledit second connecteur (26) comporte une pluralité d'ouvertures traversantes (28a) et ledit corps (18') de tirette comporte des ponts de raccordement (28b) communiquant avec lesdites ouvertures (28a).

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