

SLIDE FASTENER SLIDER WITH DETACHABLE PULL TAB

The present invention relates to slide fasteners, and more particularly to a slide fastener slider with a detachable pull tab.

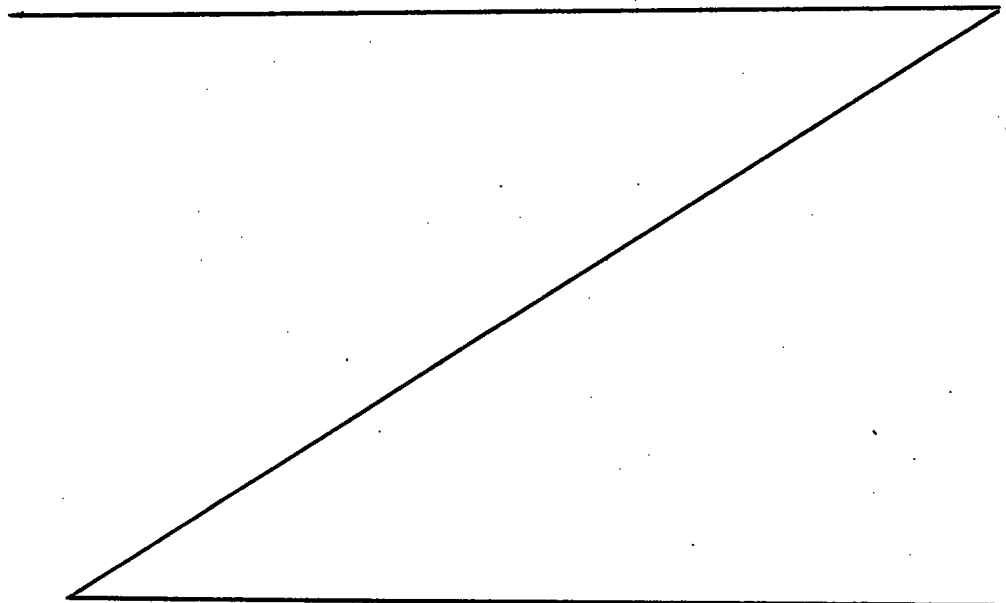
5 Japanese Utility Model Publication No 49-43449 published on November 28, 1974 discloses a slide fastener slider having a pull tab removably attached to a pull tab support pivotably connected to a slider body. The pull tab and the support are joined
10 together by a pin fitted in and extending through a pair of aligned holes in the pull tab and the support, a U-shaped resilient member being snappingly fitted in a groove in the support over the opposite ends of the pin. The disclosed slider has a relatively
15 complex structure and hence is not suitable for an automated assembling. Further, the attachment and detachment of the pull tab to and from the support is tedious and time-consuming.

According to the invention, there is provided
a slide fastener slider comprising:

(a) a slider body;

(b) a pull tab support pivotably connected
5 at one end to said slider body and having at the
opposite end a support portion, an aperture partly
defined by said support portion, and at least one
channel communicating with said aperture;

(c) a pull tab having a neck portion normally
10 received in said aperture, and an opening in said
neck portion normally receiving therein said
support portion, said channel being wide enough
to allow said neck portion to pass therethrough; and



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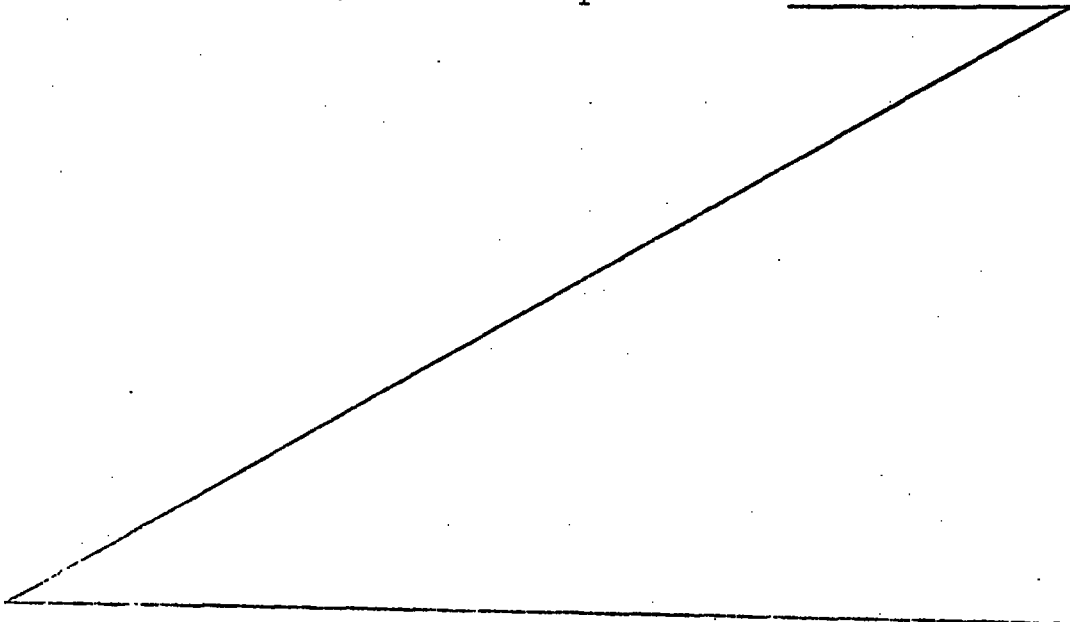
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(d) a resilient pull tab retainer disposed on said pull tab support and movable between a first position in which said retainer normally closes said channel under its own resiliency and a second position in which said retainer is displaced out of said channel against its own resiliency.

It is possible by means of the present invention to provide a slide fastener slider having a pull tab support to which a pull tab can detachably be attached easily.

It is possible by means of the present invention to provide a slide fastener slider which is relatively simple in construction and assemblable through a simple and time-saving procedure which easily lends itself to automation.

It is possible by means of the present invention to provide a slide fastener slider with its pull tab easily replaceable with another pull tab to meet a certain mode of use or user's preference.



The invention will be described by way of examples with reference to the accompanying drawings, wherein:-

Figure 1 is a schematic plan view of a slide fastener slider embodying the present invention;

5 Figure 2 is an enlarged fragmentary plan view of a portion of the slider shown in Figure 1, showing the manner in which a pull tab is being attached;

Figure 3, appearing with Figure 1, is a side elevational view of the portion of Figure 2;

10 Figure 4 is an enlarged exploded perspective view of the slider shown in Figure 1;

Figure 5 is an enlarged fragmentary plan view, partly in cross section, of a portion of a slide fastener slider forming another embodiment of the invention;

15 Figure 6 is an enlarged fragmentary plan view of Figure 5, illustrative of the way in which a pull tab is being attached;

Figure 7 is a cross-sectional view taken along line VII-VII of Figure 6;

20 Figure 8 is a cross-sectional view taken along line VIII-VIII of Figure 6;

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Figure 9 is an enlarged fragmentary plan view of a portion of a slide fastener slider forming still another embodiment of the invention;

Figure 10 is an enlarged fragmentary plan view of the portion shown in Figure 9, illustrative of the manner in which a pull tab is being attached;

Figure 11 is a cross-sectional view taken along line XI-XI of Figure 10;

Figure 12 is a view similar to Figure 11, showing parts prior to their assembly;

Figure 13 is a cross-sectional view taken along line XIII-XIII of Figure 9;

Figure 14 is a cross-sectional view taken along line XIV-XIV of Figure 10;

Figure 15 is an enlarged plan view of a portion of a slide fastener slider forming another embodiment of the invention; and

Figure 16 is an enlarged fragmentary cross-sectional view taken along line XVI-XVI of Figure 15.

The present invention is particularly useful when embodied in a slide fastener slider such as shown in Figure 1, generally indicated by the reference numeral 20. The slide fastener slider 20 generally comprises a slider body 21, a pull tab support 22 pivotably connected at one end to the slider body 21, and a pull tab 23 detachably attached to the pull tab support 22.

As shown in Figures 2 through 4, the pull tab support 22 has a substantially oval opening 24 in one end thereof and a substantially rectangular aperture 25 in the opposite end thereof. The opening 24 is partly
5 defined by an arcuate pivot portion 26 pivotably connected to the slider body 21 (Figure 11). The aperture 25 is defined, at its one side remote from said opening 24, by a straight support portion 27. The support portion 27 is in the shape of a rod having an oval cross section
10 (Figure 3) and has an enlarged end 27' of circular cross section having a diameter D (Figure 3) which is substantially the same as the length of the major axis of the oval cross section.

The pull tab 23 has at one end thereof a neck
15 portion 28 and an opening 29 extending in and transversely through the neck portion 28. The neck portion 28 is in the shape of a split sleeve having a longitudinal slit 30 (Figures 3 and 4) communicating with the opening 29. The opening 29 has a diameter which is larger than the dia-
20 meter D of the end portion 27', and the slit 30 has a width W (Figures 3 and 4) which is smaller than the diameter D and the length of the minor axis of the oval cross section of the support portion 27. The pull tab 23 as it is mounted on the pull tab support 22 is pivotably
25 movable with the opening 29 loosely receiving therein the support portion 27.

The pull tab support 22 is recessed in its

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opposite surfaces to form a thin portion 31 adjacent to the aperture 25, and a pair of channels 32,33 extending parallel to the end 27' and communicating with the aperture 25. The thin portion 31 has a thickness T (Figure 3) which is smaller than the width W of the slit 30 in the neck portion 28 so that the latter can be moved through the channels 32,33 in the directions of the arrowheads A (Figures 2 and 4). The thin portion 31 further has a recess 34 opening to the aperture 25 adjacent to the end 27'.

As shown in Figure 2, the channels 32,33 are normally closed by a resilient pull tab retainer 35 acting as a torsion spring on the pull tab support 22. As shown in Figures 3 and 4, the pull tab retainer 35 is generally U-shaped and comprises a pair of laterally spaced legs 36,37 connected by a lateral joint 38 and a pair of confronting bent ends 39,40 extending from the legs 36,37 remotely from the lateral joint 38. The lateral joint 38 is slightly twisted on itself such that the legs 36,37 are normally out of lateral alignment with each other as shown in Figure 2. The thin portion 31 has in its opposite surfaces a pair of holes 41,42 located remotely from the aperture 25 and the channels 32,33 and positioned out of lateral registry. The pull tab retainer 35 is attached over the thin portion 31 across the channels 32,33 with the bent ends 39,40 pivotably fitted respectively in the holes 41,42. The shape of the pull tab

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retainer 35 and the position of the holes 41,42 are selected such that the pull tab retainer 35 is normally urged under its own resiliency to move in the counter-clockwise direction indicated by the arrow B (Figure 2) with the lateral joint 38 received in the recess 34, thus closing off the channels 32,33.

For removing the pull tab 23, the pull tab retainer 35 is angularly moved by fingers (not shown) in the direction of the arrow C (Figure 2) against the resiliency of the retainer 35 until the retainer 35 is lifted clear out of the channels 32,33. The pull tab 23 can now be detached from the pull tab support 22 by pulling the neck portion 28 out through the channels 32,33. The pull tab retainer 35 can move in the direction of the arrow B under its own resilicency to close off the channels 32,33 again when it is released from the finger pull.

When the detached pull tab is to be attached again, it is pushed laterally along so that the opening 29 fits over the end 27' of the support portion 27 and the neck portion 28 forces the retainer 35 to turn in the direction of the arrow C (Figure 2) against its own resiliency. Continued forced insertion of the neck portion 28 causes the same to slide below and past the lateral joint 38 and then into the aperture 25, whereupon the retainer 35 springs back in the direction of the arrow B to close the channels 32,33. Accordingly, the pull tab 23 can be attached and detached quite easily.

Figures 5 to 8 show a modification in which a pull tab 43 is removably attached to a pull tab support 44. The pull tab 43 and the pull tab support 44 are substantially the same as the pull tab 23 and the pull tab support 22 described above, and shown in Figures 1 to 4 with the exception that the pull tab support 44 is recessed in one surface thereof to form a substantially rectangular thin portion 45 extending perpendicular to a support portion 46 along one end of an aperture 47. The thin portion 45 has a thickness which is smaller than the width of a slit (not shown) in a neck portion 48 of the pull tab 43. The pull tab support 44 further has a blind hole 49 extending parallel to the support portion 46 across the aperture 47, the hole 49 opening at one end 50 (Figure 6) to the thin portion 45. A stopper 51 extends on the thin portion 45 along an edge 52 thereof remote from the aperture 47 so as to define a gap 53 between the end 50 of the hole 49 and the stopper 51, there being also defined, between one or the lower end of the stopper 51 and one end 54 of the support portion 46, a channel 55 for the passage therethrough of the neck portion 48.

As shown in Figure 5, a substantially U-shaped, resilient pull tab retainer 56 is placed in the hole 49. The pull tab retainer 56 has a pair of interconnected legs 57, 58 spaced from each other, the legs 57, 58 being snugly received in the blind hole 49. The leg 58 has an

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outwardly bent end portion 59 extending through the gap 53 normally across the channel 55 to thereby prevent the neck portion 43 from being removed out of the aperture 47 through the channel 55.

5 For detaching the pull tab 43 from the pull tab support 44, the bent end portion 59 of the pull tab retainer 56 is lifted by a finger (not shown) inserted through the channel 55 against the resiliency of the retainer 56 until the bent end portion 59 abuts against
10 the stopper 51 as shown in Figure 6. Then, the pull tab 43 is pulled off the pull tab support 44 by guiding the neck portion 48 through the channel 55. When released from the finger, the bent end portion 59 and hence the leg 58 is resiliently lowered to the position of Figure
15 5. For re-attachment of the pull tab 43, the neck portion 48 is pushed into the channel 55 to thereby force the bent end portion 59 to move upwardly out of the channel 55. At this time, the upward movement of the leg 58 may be assisted by a finger inserted through the channel 55.
20 The neck portion 48 is finally moved past the bent end portion 59 into the aperture 47, and then the leg 58 springs downwardly back to the position of Figure 5.

 In another embodiment of the present invention shown in Figures 9 to 14, a pull tab support 60 has
25 in its one surface a substantially C-shaped recess 61 extending along and in spaced relation to an aperture 62. The recess 61 communicates at one end with

a groove 63 extending longitudinally in a support portion 64. The opposite end of the recess 61 is held in communication with the aperture 62 to form a channel 65 for the passage therethrough of a neck portion 66 of a pull tab 67 (shown by phantom lines by clarity).

A generally U-shaped, resilient pull tab retainer 68 has a pair of interconnected legs 69,70 spaced from each other and extending normally parallel to each other, the legs 69,70 being positioned respectively in the recess 61 and the groove 63. The leg 69 has an inwardly bent end portion 71 normally extending across the channel 65 to thereby prevent the pull tab 67 from displacing off the pull tab support 60. As shown in Figures 12 and 11, the leg 70 is first placed in the groove 63 and then is secured to the support portion 64 by staking opposite edges 72,73 of the groove 63.

When the pull tab 67 is to be detached, the bent end portion 71 of the resilient pull tab retainer 60 is elevated by a finger (not shown) against the resiliency of the retainer 60 until the bent end portion 71 is displaced clear out of the channel 65. Then, the neck portion 66 is guided through the channel 65 into the aperture 62 as shown in Figure 10. When released from the finger, the retainer 60 can snappingly be returned to its normal position shown in Figure 9. To attach the pull tab 67 again, the neck portion 66 is pushed into the channel 65 against the bent end portion 71, which is

forcibly moved upwardly against the resiliency of the retainer 68. The neck portion 66 is forced until it moves past the bent end portion 71 into the aperture 62. The retainer 68 then snaps downwardly to the normal position of Figure 9 in which the bent end portion 71 closes off the channel 65.

—In still another embodiment of the present invention shown in Figures 15 and 16, a pull tab support 74 comprises a substantially rectangular body 75 and a ring 76 joined to the body 75 and adapted to be pivotably connected to a slider body (not shown). The body 75 is in the form of a split bush and has an aperture or hole 77 extending transversely therethrough, and a channel 78 (Figure 16) extending in the lower surface of the body 75 and communicating with the hole 77 throughout the length thereof, the hole 77 being partly defined by a hook or support portion 79 having a substantially C-shaped cross section (Figure 16). The support portion 79 has in its free end a recess 80 (Figure 16) facing to the hole 77. A pull tab 81 has an opening 82 in one end, defined partly by a neck portion in the shape of an arcuate pintle 83 acting as a pivot about which the pull tab 81 turns, the pintle 83 being normally received in the hole 77. The pull tab 81 as it is mounted on the pull tab support 74 is pivotably movable with the pintle 83 loosely retained in the hole 77. The channel 78 is wide enough to allow the pintle 83 to pass therethrough.

A generally U-shaped, resilient pull tab retainer 84 is attached to the body 75 to normally close the channel 78. As shown in Figure 16, the body 75 has a horizontal groove 85 extending in the lower surface thereof longitudinally between the hole 77 and one end remote from the support portion 79, and a vertical groove 86 extending in and vertically across one end surface and communicating at one end with the groove 85. A bottom wall 87 of the groove 85 slopes upwardly toward the hole 77 for the purpose described below. The body 75 further has a horizontal slot 88 extending substantially parallel to the groove 85 and opening at one end to the groove 86, and a rectangular aperture 89 in the upper surface, communicating with the slot 88. The aperture 89 has a width smaller than the width of the slot 88 as shown in Figure 15.

As shown in Figure 16, the resilient pull tab retainer 84 comprises a leaf spring including a pair of spaced legs 90,91 connected by a joint 92 and normally extending parallel to each other. The legs 90,91 and the joint 92 are positioned respectively in the slot 88, the groove 85 and the groove 86. The leg 90 is notched to form a resilient locking flap or projection 93 inclined upwardly away from a free end of the leg 90. For attaching the retainer 84 fixedly to the body 75, the leg 90 is inserted into the slot 88 to thereby force the projection 93 downwardly until the projection 93 enters the aperture



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89, whereupon the projection 93 snappingly returns to its normal position and lockingly engages with an edge 94 of the aperture 89. The leg 91 has a straight free end portion 95 normally extending across the channel 78 and
5 received resiliently in the recess 80 in the support portion 79.

For removing the pull tab 81, the end portion 95 of the leg 91 is moved by a finger (not shown) upwardly against the resiliency of the retainer 84 until the leg
10 91 abuts against the sloped bottom wall 87 to thereby clear out of the channel 78. Then, the pull tab 81 is pulled off the pull tab support 74 by guiding the pintle 83 through the channel 78. The leg 91 is resiliently lowered to its normal position of Figure 16. When the
15 detached pull tab 81 is to be attached again, the pintle 83 is pushed into the channel 78 to thereby force the end portion 95 upwardly away from the recess 80 against the resiliency of the retainer 84. The pintle 83 is forced in until it moves past the end portion 95 into the hole
20 77. The leg 91 then springs downwardly back to the normal position in which the end portion 95 closes off the channel 78 and is held against the recess 80.

With the arrangement of the present invention, the pull tab can quickly be attached to and detached from
25 the pull tab support in a simple operation. The pull tab retainer is relatively simple in construction and hence can operate reliably and stably for an extended period



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of time. The overall slider structure is accordingly relatively simple and can be assembled through a simple and time-saving procedure which easily lends itself to automation. The pull tab can therefore be replaced with
5 other pull tabs to suit desired application or meet user's preference.



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CLAIMS:-

1. A slide fastener slider comprising:

(a) a slider body;

(b) a pull tab support pivotably connected at one end to said slider body and having at the opposite end a support portion, an aperture partly defined by said support portion, and at least one channel communicating with said aperture;

(c) a pull tab having a neck portion normally received in said aperture, and an opening in said neck portion normally receiving therein said support portion, said channel being wide enough to allow said neck portion to pass therethrough; and

(d) a resilient pull tab retainer disposed on said pull tab support and movable between a first position in which said retainer normally closes said channel under its own resiliency and a second position in which said retainer is displaced out of said channel against its own resiliency.

2. A slide fastener slider according to claim 1, said support portion comprising a rod, said channel extending alongside said rod, said neck portion comprising a split sleeve, said opening being defined in said split sleeve and receivable therein said rod.

3. A slide fastener slider according to claim 2, said rod having an enlarged end of circular cross section, said pull tab support having a recessed thin portion adjacent to said aperture, said channel extending in said

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thin portion, said sleeve having a longitudinal split having a width wide enough to allow said thin portion to pass therethrough but narrow enough to prevent said bar from passing therethrough, said opening having
5 a diameter larger than the diameter of said enlarged end.

4. A slide fastener slider according to claim 1, said pull tab support including a split bush, said aperture being defined in said bush, said channel extend-
10 ing longitudinally through said bush and communicating with said aperture, said support portion having a generally C-shaped cross section partly defining said aperture and insertable in said opening, said neck portion including an arcuate pintle receivable in said aperture
15 through said channel.

5. A slide fastener slider according to claim 1, said resilient pull tab retainer comprising a pair of spaced legs extending out of alignment with each other and having a pair of bent ends, respectively, and
20 a joint interconnecting said spaced legs remotely from said bent ends, said pull tab support having a pair of holes opening away from each other out of mutual registry, said bent ends being fitted respectively in said holes, said legs being normally urged resiliently to extend
25 across and close off said channel in said first position.

6. A slide fastener slider according to claim 5, said pull tab support having a recess opening toward said aperture, said joint being normally received



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resiliently in said recess in said first position.

7. A slide fastener slider according to claim 5, said pull tab support having, in its opposite surfaces, a pair of recessed portions communicating with said aperture and said channel, said legs being received respectively in said recessed portions.

8. A slide fastener slider according to claim 1, said resilient pull tab retainer comprising a pair of parallel interconnected legs and a bent end extending from the free end of one leg away from the other leg, said pull tab support having in its one surface a recessed portion communicating with said aperture and said channel, and a blind hole opening to said recessed portion, said legs being fitted resiliently in said blind hole, said bent end being normally urged resiliently to extend across and close off said channel in said first position.

9. A slide fastener slider according to claim 8, said pull tab support having a stopper on said recessed portion adjacent to an open end of said blind hole, said bent end being engageable with said stopper in said second position.

10. A slide fastener slider according to claim 1, said resilient pull tab retainer comprising a pair of parallel interconnected legs and a bent end extending from the free end of one leg toward the other leg, said pull tab support having in its one surface a recessed portion communicating with said channel, said other

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leg being secured to said support portion, said bent end being normally urged resiliently to extend across and close off said channel in said first position.

5 11. A slide fastener slider according to claim 10, said support portion having a groove, said other leg being fixedly received in said groove.

10 12. A slide fastener slider according to claim 1, said pull tab support having a groove communicating at one end with said channel, and a blind slot opening to the opposite end of said groove, said resilient pull tab retainer comprising a pair of parallel interconnected legs, one of said legs being fitted in said slot, the other leg having an end portion normally urged resiliently to extend across and close off said channel in said
15 first position.

20 13. A slide fastener slider according to claim 12, said pull tab support further having another aperture extending perpendicular to and communicating with said blind slot, said one leg having a resilient flap lockingly engageable with an edge of said another aperture.
