Feb. 23, 1965 L. H. MORIN 3,170,208

LOCK SLIDER

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FIG. 1.

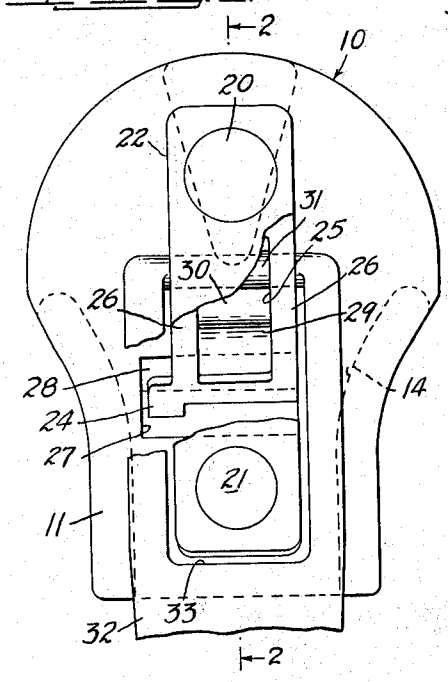


FIG. 2.

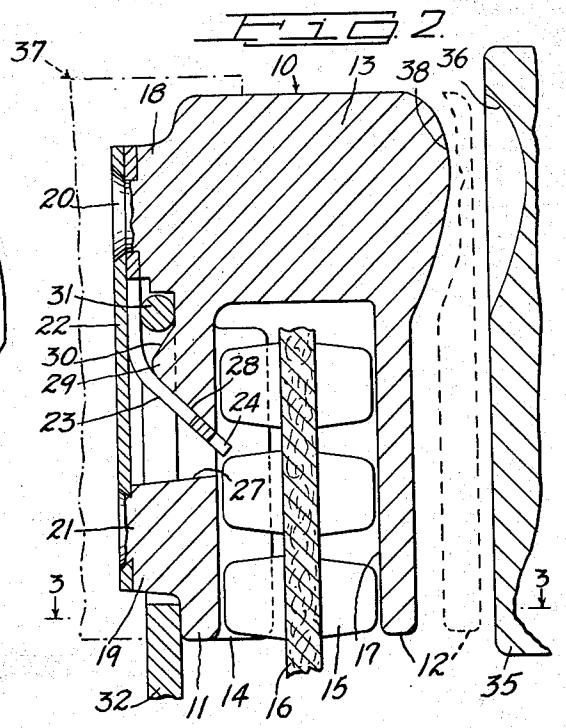


FIG. 5.

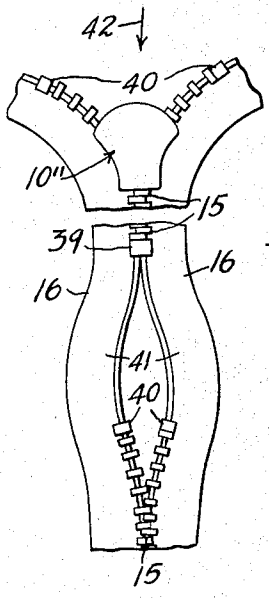


FIG. 4.

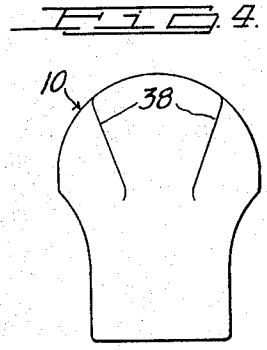
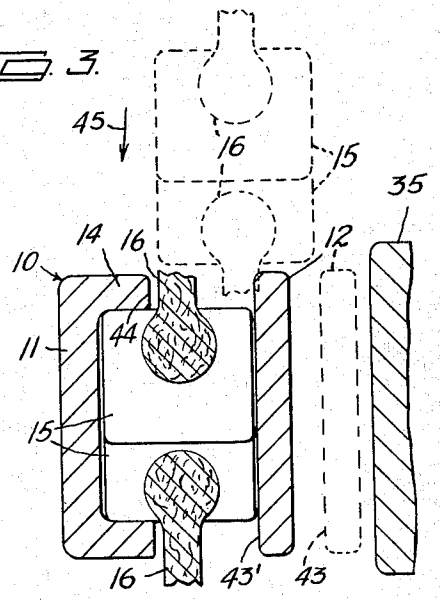


FIG. 3.



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FIG. 6.

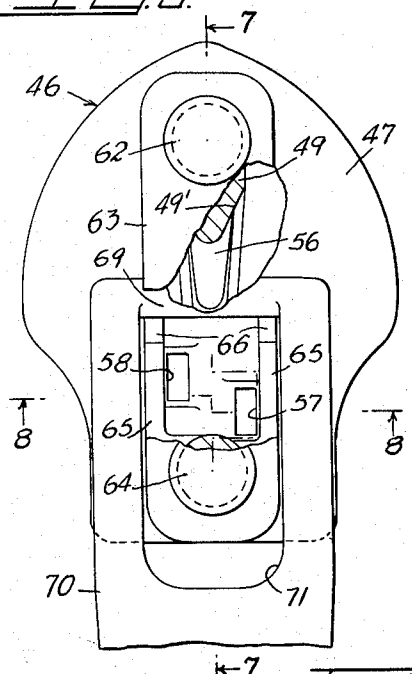


FIG. 7.

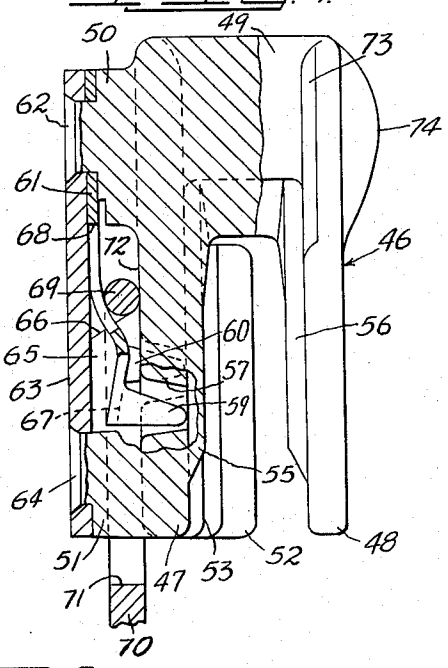


FIG. 8.

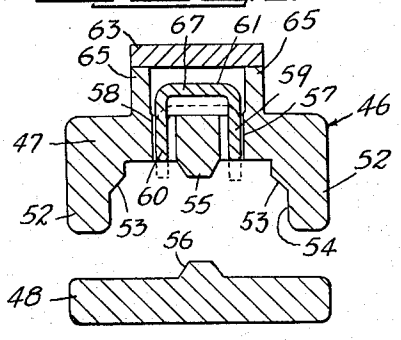
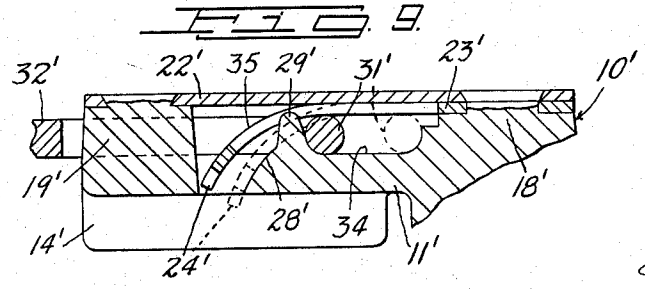


FIG. 9.



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LOCK SLIDER

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Filed May 16, 1962, Ser. No. 195,173
5 Claims. (Cl. 24—205.14)

This invention relates to sliders used in coupling and uncoupling separable fastener stringers. More particularly, the invention deals with a slider structure, wherein one wall only of the slider includes flanged sides to thereby minimize the degree of compression required in retaining the stringers within the channel portions of the slider body. Still more particularly, the invention deals with a slider of the character described having means for retaining the lock element in hold-open position in providing free separation of the stringers as and when desired.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is an enlarged plan view of one form of slider which I employ, with parts of the construction broken away.

FIG. 2 is a section, generally on the line 2—2 of FIG. 1, and diagrammatically illustrating, in dotted lines, the normal position of one wall of the slider and indicating the nest for support of the slider body in dot-dash lines and the tool for compressing the slider wall partially in section.

FIG. 3 is a section, generally on the line 3—3 of FIG. 2, diagrammatically illustrating in dotted lines the admission of a pair of stringers between normally formed walls of the slider and indicating the stringer within the compressed wall in full lines, the compression tool being shown in section.

FIG. 4 is a somewhat smaller view of the rear surface of a slider, diagrammatically illustrating the bulged contour of the compressed wall.

FIG. 5 is a diagrammatic view, illustrating the manner of positioning and assembling sliders with a pair of stringers in accordance with the teachings in FIGS. 2 and 3.

FIG. 6 is a view, similar to FIG. 1, of a modified form of slider, illustrating two broken away portions and omitting part of the slider structure.

FIG. 7 is a sectional view, generally on the broken line 7—7 of FIG. 6.

FIG. 8 is a cross-section on the broken line 8—8 of FIG. 6, omitting background showing; and

FIG. 9 is a view, similar to FIG. 2, showing only part of the construction and showing a modification.

In FIGS. 1 to 4, inclusive, I have shown at 10 one form of slider made according to my invention, the slider comprising walls 11 and 12 joined and spaced by a connecting web 13, the wall 11 only having side flanges 14 for guidance of the scoops 15 of a pair of stringers 16, note FIG. 3, into and out of the channel 17 of the slider body, as with other devices of this type and kind.

The wall 11 includes, at end portions thereof, projecting platforms 18 and 19, having integral rivet forming portions 20, 21 for retaining the plate or yoke 22 upon the platforms, with the rivets flush with the outer surface of 22, as clearly seen in FIG. 2 of the drawing. It will clearly appear, from FIG. 2 of the drawing, that the platform 18 is lower than the platform 19, so as to receive and support a spring lock 23 having a protruding lock element 24 at the terminal end thereof. Considering FIG. 1 of the drawing, it will appear that the element 24 is offset to one side of the lock 23, but any desired arrangement of this element can be provided. In order to increase the spring properties of the lock 23, the end portion thereof is provided with an elongated aperture 25, as clearly noted in FIG. 1 of the drawing, this aperture forming side arm portions 26.

The wall 11 has a transverse aperture 27 therein, in which the free end portion of the lock 23, including the element 24, operates. The aperture 27 has a bevelled wall 28 which extends onto a raised cam lug or member 29, including a bevelled surface 30, upon which the rounded pivot end 31 of a pull 32 operates in movement of the lock 23 into inoperative position, in other words, with the element 24 out of the channel 17 of the slider body in providing free movement of the slider along the scoops 15 in the operation of separating the stringers 16. In the reverse operation of the slider, the element 24 will ratchet over the scoops 15, as with other devices of this type and kind. The pivot end portion of the pull 32 has an elongated aperture 33 to allow the pull to drop onto the wall 11 with the pull in either direction on the slider.

Turning now to the showing in FIG. 9 of the drawing, in this figure, 10′ represents a slider body modified from the showing in FIGS. 1 to 4, inclusive, to the extent of providing a wider spacing between the platforms 18′ and 19′ and to positioning a stop member 29′, similar to member 29 of FIGS. 1 and 2 in wider spaced relationship to the platform 18′, so as to provide on the wall 11′ a long surface 34, upon which the rounded pivot end 31′ of a pull 32′ operates. With this construction, the shape of the lock element 23′ is modified to provide a rounded end portion 35 terminating in a lock element 24′, generally of the type and kind shown in FIGS. 1 and 2. In this construction, the surface 28′ is formed primarily on the wall 11′ and does not extend continuously onto the member 29′ in the bevelled form, as shown in FIG. 2 of the drawing. In FIG. 9, the normal position of the pivot end 31′ is indicated in dotted lines. However, when the pull is advanced to the full line position in moving the element 24′ into inoperative position, as shown in full lines in FIG. 9, the lock element will be retained in hold-open position by engagement of 31′ with the surface 34. However, in moving the pull 32′ into a position, generally similar to the dotted line position, the spring lock 23′ will be automatically moved into the dotted line position of FIG. 9 to operate to lock the slider against movement on the stringers. In FIG. 9, the plate or yoke is shown at 22′ and one of the flanges on the wall 11′ is indicated at 14′. Aside from the foregoing, the structure of the slider of FIG. 9 will be the same as that shown in FIGS. 1 to 4, inclusive.

Considering now FIGS. 2 and 3 of the drawing, the slider, as originally formed, will have the wall 12 in the dotted line position indicated in these figures and, then, when a separable fastener is positioned within the wide-open channel, facilitating free positioning of coupled stringers within the channel, as will appear from the dotted line showing of the scoops 15 and stringers 16 in FIG. 3 of the drawing and after the scoops and stringers have assumed the full line position of FIG. 3, a compression tool 35, having a contour portion, as indicated at 36 in FIG. 2, is actuated to force the wall 12 from the dotted line position to the full line position in FIGS. 2 and 3. In this operation, the slider body is supported in a suitable backing or nest, as indicated in dot-dash lines at 37 in FIG. 2, the nest being omitted from the showing in FIG. 3. Upon completing the compression operation described, a raised mound 38 will be formed on the wall 12 in alinement with the web 13 and the general contour of this mound, as viewed from the rear of the slider body, is diagrammatically outlined in FIG. 4 of the drawing. The mound 38 is formed as the wall 48 is moved

toward the wall 47 during the compression of the slider blank. The metal at the right side of the web as seen in FIG. 2 flows into the cavity 36 to form the mound 38.

In order to diagrammatically illustrate the method of procedure, the pairs of stringers 16, including the scoops 15, are diagrammatically illustrated in FIG. 5, with the bottom stops of long lengths of stringers being illustrated at 39 and the top stops being illustrated at 40, 41 representing the spaced portion of the stringers between each stringer length in the automatic production of fasteners of the type and kind under consideration.

In FIG. 5, 10'' diagrammatically outlines a slider, such as shown in FIGS. 1 to 4, inclusive, which can be positioned on the coupled stringers by movement in the direction of the arrow 42 of FIG. 5 when the wall 12 of the slider is in the dotted line position, as in FIGS. 2 and 3, after which the compression operation takes place in positively coupling the slider with each stringer length.

With my improved slider structure and by virtue of employing the plain or unflanged wall 12, it will be apparent that the compression of the wall 12 is minimized by virtue of spacing of the inner surface 43 from the dotted line showing in FIG. 3 to the surface 43' on the full line showing of the wall 12 in FIG. 3. In other words, the surface 43 is so spaced with respect to the surface 44 of the flanges as to provide free admission of the coupled stringers between the surfaces 43 and 44, as will clearly appear from a consideration of FIG. 3 of the drawing. This compression movement is materially less than that which would be required as and when both walls of the slider body are flanged. From this standpoint, it will be understood that, in some instances, the slider can be positioned on the stringers by movement across the stringer tapes or, in other words, in the direction of the arrow 45 of FIG. 3 of the drawing.

Turning now to the showing in FIGS. 6, 7 and 8 of the drawing, in these figures 46 shows a modified form of slider body, having spaced walls 47 and 48 joined and spaced by a connecting web 49. The wall 47 has spaced platforms 50, 51, generally similar to the platforms 18', 19' of FIG. 9. The wall 47 includes side flanges 52, which differ from the flanges 14 in including bevelled shoulder portions 53, the purpose of which is solely to guide specially contoured scoops through the channel 54 of the slider body, as will appear from a consideration of FIG. 8 of the drawing.

The slider body 46 differs from the body 10 in that the web 49 has an abruptly contracted inner end, as indicated at 49' in FIG. 6 of the drawing. Further, the wall 47 has a longitudinal rib 55, generally of the cross-sectional form illustrated in FIG. 8, the rib tapering in the direction of the contracted end of the slider body. The wall 48 has a similar rib 56; these ribs, in addition to adding strength to the slider body, further conform to and guide special type of scoops through the channel of the slider body. The slider body 46 is further modified to the extent in providing spaced apertures 57, 58 in the wall 47 rather than the single aperture 27, as noted in FIG. 1, these apertures providing free movement of two lock elements 59 and 60 of a lock spring 61, the spring being fixed to the platform 50 by the integral rivet 62, generally similar to the rivet 20, which secures the plate or lug 63 to the platforms, the other rivet, for this purpose, being indicated at 64, which is generally similar to the rivet 21. For sake of clarity, the spring lock 61 and its components are omitted from the showing in FIG. 6.

The lock elements 59 and 60 are spaced at sides of the free end of the spring lock 61 to register with and operate in the apertures 57 and 58, respectively, as will appear from a consideration of FIG. 7 of the drawing. For simplification in the illustration, the spring lock 61 and the elements 59 and 60 are omitted from the broken away portions of FIG. 6. Part of this broken away portion will show raised side walls 65 on the wall 47 terminating at their ends in bevelled walls 66, one of these bevelled walls being clearly shown in FIG. 7 of the drawing. These walls 65 form guides definitely locating the reduced end of the spring lock 61 in alinement with the apertures 57 and 58. This end of the spring lock includes a crosshead 67, clearly shown in FIG. 8 of the drawing, which will seat upon the upper surface of the wall 47 in checking inward movement of the elements 59, 60 or, in other words, movement into operative position, as indicated in dotted lines in FIG. 8 of the drawing, with said elements projecting into the channel 54 of the slider body. As with the structure shown in FIGS. 1 and 2, the spring lock 61 is apertured intermediate its ends, as indicated at 68 in FIG. 7, to control tension of said spring lock.

At 69 I have shown the rounded pivot end of the pull 70, generally similar to the pull 32 shown in FIGS. 1 and 2 of the drawing. The pull has an elongated aperture 71 to clear the platforms in swinging movement of the pull in both directions on the slider body. In FIG. 7 of the drawing, the pull is shown with the pivot end 69 supporting the spring lock 61 with the elements 59 and 60 in inoperative position, or in the full line position of FIG. 8 and, in this position, the spring lock 61 is retained in a hold-open position by arrangement of 69 on the surface 72 of the wall 47 in a manner similar to the hold-open position, as noted in FIG. 9 of the drawing. However, in upward movement of the pull, as viewed in FIG. 7, the spring lock 61 will be released and the elements 59 and 60 will automatically move into the operative position, as indicated in dotted lines in FIG. 8 of the drawing.

Considering FIG. 7 of the drawing, it will appear that inner edge portions of the wall 48, in alinement with the web 49, are bevelled for free guidance of the scoops into the channel of the slider body and one of these bevels is indicated at 73. In this figure, I have also shown at 74 the bulge on the wall 48 as a result of moving this wall from its normally formed position to the operative position for engagement with the scoops of the stringers. This bulge 74 is formed as is the mound 38 during the compression operation for attaching the slider to the stringer. In other words, the wall 48 would assume a spaced position, generally similar to the dotted line position of the wall 12 in FIGS. 2 and 3 of the drawing, and the full line position of the wall 12 in said figures is comparable to the showing of the wall 48 in FIGS. 7 and 8 of the drawing. It is pointed out, at this time, that the ribs, as at 55, 56, do not interfere with attachment of the slider with coupled stringers in the manner illustrated in FIG. 5 of the drawing, as these ribs fit in grooved or recessed portions between adjacent coupled scoops at upper and lower surfaces thereof, which is a characteristic of the scoops for which the slider shown in FIGS. 6 to 8 inclusive is constructed.

By employing the two apertures 57 and 58, as seen in FIGS. 6 and 8 of the drawing, it will appear that the rib 55 extends from the web 49 longitudinally of the wall 47 without a break therein, thus providing a smooth non-raspy operation of the slider over the separable fastener chain.

It will be apparent from the foregoing that the slider made in accordance with my construction will have limited overall thicknesses, thus producing what I term the low silhouette contour. This is advantageous from the standpoint of general use of the slider in operation of the fastener and, further, from the standpoint of subjecting the apparel to which the fastener is attached to laundering operations.

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

1. A compression slider comprising a slider body defined by normally widely spaced walls joined and spaced by a web, one wall only of the slider having flanged sides for guidance of scoops of a stringer into and out of a channel of the slider body, said flanged wall having spaced

raised platforms, a flat plate fixed to and joining said platforms, a spring lock fixed to one of the platforms between said plate and one of said platforms, said spring lock having lock means operating in an aperture in said flanged wall of the slider body and normally extending into the channel of said body, a pull having a pivot end arranged between said flanged wall and said spring lock and operatively engaging the spring lock to move said lock means into inoperative position with respect to the channel of the slider body, projecting means with a bevelled surface on and integral with said flanged wall engaged by the pivot of the pull in checking movement of the pull in one direction on the slider body, a shoulder on one of said platforms for checking movement of the pull in the opposite direction, and the other unflanged wall of the slider body adapted to being moved by compression in the direction of the flanged wall in mounting and retaining the slider on coupled scoops of a pair of stringers.

2. A slider as defined in claim 1, wherein the projecting means on said flanged wall comprises raised side walls guiding the spring lock in its movement on the slider body.

3. A slider as defined in claim 1, wherein the flanged wall has, adjacent said projecting means, a flat outer surface for retaining the pivot of the pull in hold-open position with respect to said spring lock.

4. A slider as defined in claim 1, wherein inner opposed surfaces of the walls of the slider body include central longitudinally extending ribs integrally joining inner end portions of said web.

5. A slider as defined in claim 4, wherein the flanges of said flanged wall include bevelled shoulders on inner surfaces thereof adjacent said wall.

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