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PULL APART SEPARABLE FASTENER

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Fig. 1.

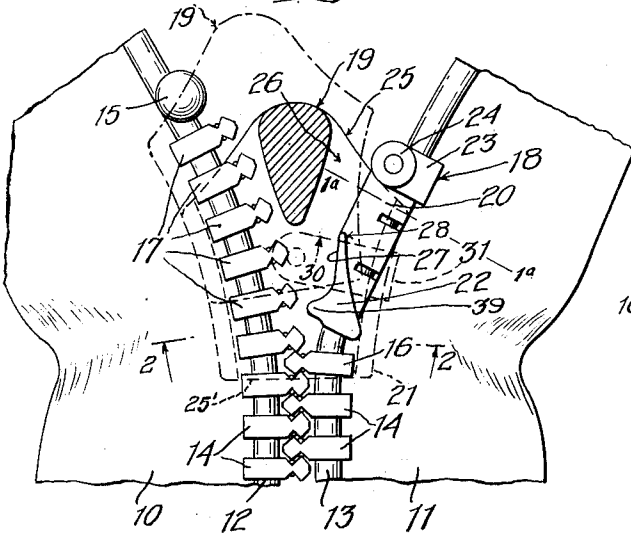


Fig. 2.

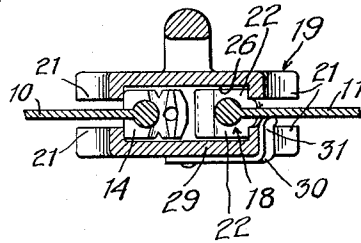


Fig. 3.

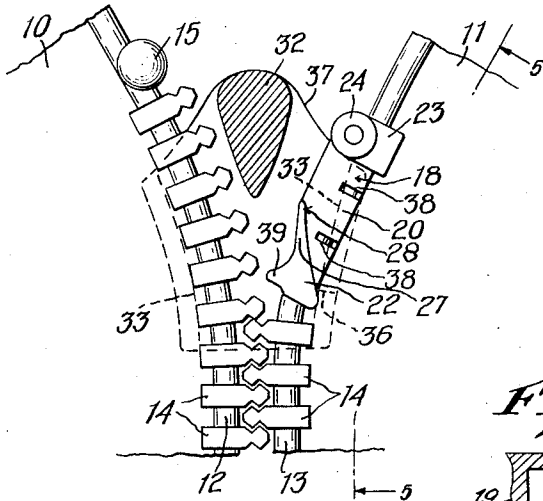


Fig. 5.

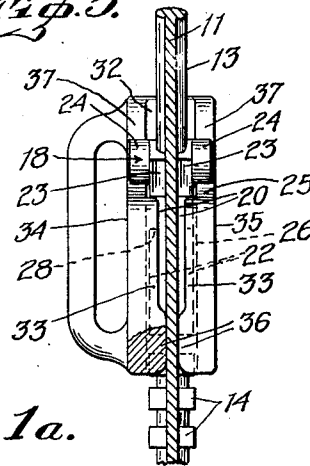


Fig. 1a.

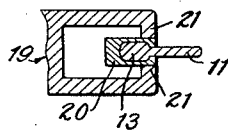
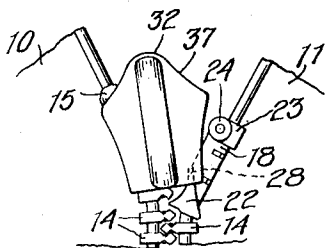


Fig. 4.



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PULL APART SEPARABLE FASTENER

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11 Claims. (Cl. 24—205.11)

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This invention relates to separable fasteners wherein the upper or normally closed end of the stringers of the fastener may be quickly separated or pulled apart. Further, the invention comprises a pull apart end stop construction which will check normal closing movement of a slider in the operation of coupling the stringers and wherein quick pull apart of the stringers is made possible by a forceable movement of the slider with respect to said normal checking means. 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 a plan view of the upper end portion of a pair of stringers, showing a slider in section in the normal stopped position of the slider, and also showing in dotted lines the position of the slider in the pull apart position of said end of the stringers.

Fig. 1a is a section through 1a—1a of Fig. 1.

Fig. 2 is a section on the line 2—2 of Fig. 1, and omitting parts of the structure on the stringers for sake of clarity.

Fig. 3 is a view similar to Fig. 1, showing another adaptation of the invention.

Fig. 4 is a plan view of the structure shown in Fig. 3 on a reduced scale, and showing the slider in the position assumed thereby in the pull apart position of the end of the stringers; and

Fig. 5 is a section through 5—5 of Fig. 3 with part of the slider structure broken away and also in section.

This application comprises a continuation in part of the structure disclosed in my prior application Serial Number 493,965, filed July 9, 1943, now Patent No. 2,423,202, issued July 1, 1947. In the present illustration, the showing has been limited to the upper end of the stringers, but it will be understood that the invention is adaptable for use in connection with stringers having the detachable end couplings at the other end thereof, as is taught in the prior application referred to and also as well known in the art.

In Figs. 1 and 2 of the drawing I have shown at 10 and 11 portions of two stringers upon the beaded edges 12 and 13 of which are attached links or scoops 14. Secured to the beaded edge 12 of the stringer 10 is a suitable end stop 15, whereas no such stop is employed on the stringer 11, and in fact, a lesser number of scoops 14 are provided on the beaded edge 13 of the stringer

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11. In other words, the stringer 11 has an end link 16 beyond which the stringer 10 has a plurality of links, part of which are designated by the reference character 17. This construction provides the necessary clearance space on the stringer 11 for reception of a supplemental stop 18 which provides the stripping or detachment of the stringer 11 from the stringer 10 through one side of a slider 19.

The stop 18 is in the form of an elongated bar arranged on the beaded edge 13 beyond the end link 16. The central portion 20 of the bar will be of such thickness as to pass freely between inturned flanges 21 at one side of the slider. The flanges 21 are the normal flanges employed to engage the scoops 14 in coupling the same together and are also included on the other side of the slider, as will clearly appear from a consideration of Fig. 2 of the drawing. This slider construction is more or less conventional with a flared end 25 and a narrow end 25'.

The ends of the stop 18 have enlarged portions 22 and 23, the latter including upwardly and downwardly directed cylindrical bearing portions 24 adapted to strike and ride over the bevelled wall portions of the flared end 25 of the slider, as will clearly appear from a consideration of Fig. 5 of the drawing.

The enlargement 22 is of such thickness as to pass freely into the channel 26 of the slider, and includes an outwardly directed tongue portion 27 which serves to maintain the slider in coupled relationship with the stringer 11 to the limit of reaching its stopped position and before the pull apart separation of the stringers as is diagrammatically illustrated in Fig. 4 of the drawing, in which figure the outermost or tip end 28 is still shown to be in engagement with the slider. This position of the parts is also indicated in dotted lines in Fig. 1 of the drawing.

Secured to one wall of the slider 19, the lower wall 29 in the construction shown, is a yielding means or spring member 30 having a curved end portion 31 which extends beyond the flange 21 of the wall 29, note Fig. 2, and serves to engage the central portion 20 of the stop to check outward displacement of the stop through the slider. In other words, the spring 30 in combination with the projecting cylindrical bearings 24 check normal closing movement of the slider or retain it in the position shown in full lines in Fig. 1 of the drawing with the slider in spaced relation to the stop 15. However, by forceably moving the slider into the dotted line position, the bar like stop 18 will be forced out

through the side opening of the slider between the flanges 21, displacing the spring arm 30 in this operation, and upon completion of this movement of the slider, the stringers 10 and 11 are free for pull apart separation in quickly detaching the stringers as will be apparent.

The lip end 28 of the enlargement 22 serves to prevent a falling apart of the stringers 10 and 11 when the slider is moved into the dotted line position while at the same time permitting a free and controlled pull apart separation of the stringers. In some instances, and particularly if the operator is holding the stringer side 11 of an article in the hand, this final opening movement of the slider would automatically cause the two stringers to be pulled apart. In other words, the combined pull upon the slider which is retained against displacement from the stringer 10 and the pull upon the stringer 11 would produce this result.

The construction shown in Figs. 3 and 5 of the drawing differs from the disclosure in Figs. 1 and 2, only in the construction of the slider. For this reason, like references will designate like parts in connection with the stringers 10 and 11 and the associated parts thereof. In these figures, 32 represents a slider of the same general form as the slider 19, excepting that the spring arm or member 30 has been dispensed with and instead, the inturned flanges 33 on opposed top and bottom walls 34 and 35 of the slider include at one side and at the contracted end thereof inwardly projecting members 36 which are spaced apart a distance slightly less than the thickness of the central portion 20 of the bar stop 18, thus producing the same checking effect as the spring arm 30 or its curved end 31. With the construction shown in Figs. 3 and 5 of the drawing the stop 18 is forceably removed through the side of the slider 32 and between the projecting members 36 by springing the walls 34 and 35 apart. In this operation of forceably moving the slider 32 into the final position, checked by the stop 18, the cylindrical projections 24 ride over the edges 37 of the walls 34 and 35 until these members 24 extend beyond the surfaces 37 and move into the position as illustrated in Fig. 4 of the drawing.

In Fig. 4, the end 28 of the projecting member 22 is still shown in engagement with the projecting members 36. Further, the two stringers 10 and 11 may be pulled apart, as is clearly explained above. From this standpoint, the illustration in Fig. 4, while being applied to the structure of the slider shown in Figs. 3 and 5, is also applicable to the structure shown in Figs. 1 and 2.

The bar or rod like stop members 18 are in the form of die castings, and the central portions 20 preferably include apertures 38 which expose the tapes or parts of the beads of the tapes therethrough. This tends to establish a keying action which will aid in retaining the stop against movement or displacement on the stringer.

It will be understood that the outward extension 27 on the enlargement 22 serves to guide the slider in its forceable movement into the final stop position, and thus produces a smoother action in the quick pull apart separation of the stringers. Further, this extension maintains the coupled relationship between the stringers until the slider has reached its final stop position. Furthermore, the enlargement 22 also includes an inward projection 39 which is adapted to fit between adjacent scoops of an opposed stringer, as will clearly appear from the accompanying drawing. This extension further maintains the

alined relationship between the stringers and guards against jamming which might occur if the stringers were strained apart before the slider had reached its final stop.

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

1. The combination with separable fastener stringers employing a slider movable along the stringers to couple and uncouple the links thereof, of a pull apart separator at one end of the stringers, said separator comprising a bar on the end of one stringer beyond an end link of the stringer, enlarged portions at both ends of the bar, the slider having inturned and spaced side flanges, the thickness of said bar between said enlarged portions being less than the spacing between the flanges of said slider to permit lateral displacement of the bar from said slider, the enlarged portion at the outer end of the bar including oppositely directed cylindrical bearing members adapted to engage one end of the slider in guiding the bar in said lateral displacement from the slider, the enlarged portion at the inner end of the bar having extending tongue portions adapted to engage the flanges at the other end of the slider in guiding the bar laterally through the slider in the pull apart separation of the stringers, and the other stringer having a stop adapted to check the slider against displacement therefrom only after said pull apart separation of the stringers has started.

2. The combination with separable fastener stringers employing a slider movable along the stringers to couple and uncouple the links thereof, of a pull apart separator at one end of the stringers, said separator comprising a bar on the end of one stringer beyond an end link of the stringer, enlarged portions at both ends of the bar, the slider having inturned and spaced side flanges, the thickness of said bar between said enlarged portions being less than the spacing between the flanges of said slider to permit lateral displacement of the bar from said slider, the enlarged portion at the outer end of the bar including oppositely directed cylindrical bearing members adapted to engage one end of the slider in guiding the bar in said lateral displacement from the slider, the enlarged portion at the inner end of the bar having extending tongue portions adapted to engage the flanges at the other end of the slider in guiding the bar laterally through the slider in the pull apart separation of the stringers, the other stringer having a stop checking the slider against displacement therefrom in said pull apart separation of the stringers, and yielding means on said slider controlling lateral displacement of the separator from said slider.

3. The combination with separable fastener stringers employing a slider movable along the stringers to couple and uncouple the links thereof, of a pull apart separator at one end of the stringers, said separator comprising a bar on the end of one stringer beyond an end link of the stringer, enlarged portions at both ends of the bar, the slider having inturned and spaced side flanges, the thickness of said bar between said enlarged portions being less than the spacing between the flanges of said slider to permit lateral displacement of the bar from said slider, the enlarged portion at the outer end of the bar including oppositely directed cylindrical bearing members adapted to engage one end of the slider in guiding the bar in said lateral displacement from the slider, the enlarged portion at the in-

ner end of the bar having extending tongue portions adapted to engage the flanges at the other end of the slider in guiding the bar laterally through the slider in the pull apart separation of the stringers, the other stringer having a stop checking the slider against displacement therefrom in said pull apart separation of the stringers, yielding means on said slider controlling lateral displacement of the separator from said slider, and said means comprising a spring plate on one wall of the slider and engaging said bar in retaining the same against accidental lateral displacement from the slider.

4. The combination with separable fastener stringers employing a slider movable along the stringers to couple and uncouple the links thereof, of a pull apart separator at one end of the stringers, said separator comprising a bar on the end of one stringer beyond an end link of the stringer, enlarged portions at both ends of the bar, the slider having inturned and spaced side flanges, the thickness of said bar between said enlarged portions being less than the spacing between the flanges of said slider to permit lateral displacement of the bar from said slider, the enlarged portion at the outer end of the bar including oppositely directed cylindrical bearing members adapted to engage one end of the slider in guiding the bar in said lateral displacement from the slider, the enlarged portion at the inner end of the bar having extending tongue portions adapted to engage the flanges at the other end of the slider in guiding the bar laterally through the slider in the pull apart separation of the stringers, the other stringer having a stop checking the slider against displacement therefrom in said pull apart separation of the stringers, yielding means on said slider controlling lateral displacement of the separator from said slider, said means comprising projections on the flanges of said slider and engaging the bar intermediate said enlarged ends, and the walls of the slider being adapted to yield in the forceable displacement of the bar from the slider.

5. In separable fasteners of the class described employing stringers with a slider movable along the stringers to couple and uncouple the same, means at one end of the stringers adapted to permit pull apart separation of the stringers with the slider adjacent said end, said means comprising a bar like member on said end of one stringer, said member having means checking normal movement of the slider at said end of the stringers, means on the slider engaging said member to retain the same against accidental displacement from the slider, and said last named means being yieldable in the forceable pull apart separation of the stringer and in displacing the bar member laterally through one side of the slider.

6. In separable fasteners of the class described employing stringers with a slider movable along the stringers to couple and uncouple the same, means at one end of the stringers providing pull apart separation of the stringers with the slider adjacent said end, said means comprising a bar like member on said end of one stringer, said member having means checking normal movement of the slider at said end of the stringers, means on the slider engaging said member to retain the same against accidental displacement from the slider, said last named means being yieldable in the forceable pull apart separation of the stringer and in displacing the bar member laterally through one side of the slider, and means at end portions of the bar member for

guiding said member and slider one with respect to the other in lateral separation thereof.

7. In separable fasteners of the class described employing stringers with a slider movable along the stringers to couple and uncouple the same, means at one end of the stringers providing pull apart separation of the stringers with the slider adjacent said end, said means comprising a bar like member on said end of one stringer, said member having means checking normal movement of the slider at said end of the stringers, means on the slider engaging said member to retain the same against accidental displacement from the slider, said last named means being yieldable in the forceable pull apart separation of the stringer and in displacing the bar member laterally through one side of the slider, means at end portions of the bar member for guiding said member and slider one with respect to the other in lateral separation thereof, and said bar retaining means comprising a spring plate on one wall of the slider having a lip portion engaging the outer edge of said member.

8. In separable fasteners of the class described employing stringers with a slider movable along the stringers to couple and uncouple the same, means at one end of the stringers providing pull apart separation of the stringers with the slider adjacent said end, said means comprising a bar like member on said end of one stringer, said member having means checking normal movement of the slider at said end of the stringers, means on the slider engaging said member to retain the same against accidental displacement from the slider, said last named means being yieldable in the forceable pull apart separation of the stringer and in displacing the bar member laterally through one side of the slider, means at end portions of the bar member for guiding said member and slider one with respect to the other in lateral separation thereof, said bar retaining means comprising projections on the slider, and that part of the slider supporting said projections being adapted to yield in lateral displacement of the member from said slider.

9. A pull apart separator for separable fastener stringers employing a slider movable along the stringers to couple and uncouple the same, the slider comprising a channelled body defined by spaced walls having inturned side flanges, said body having a contracted single channelled end and a flared double channelled end, the last named end having laterally diverging edges, the separator comprising an elongated member at the end of one stringer, said member having enlarged end portions, the inner enlarged end portion of said member fitting within the channel of said slider body, the outer enlarged end having projecting members adapted to engage the diverging edges at one side of the slider body, and means on said slider engaging said member to check free movement of the member laterally from the slider.

10. In separable fastener stringers employing a slider movable along the stringers to couple and uncouple the same, means on one stringer for checking closing movement of a slider along the stringers, the slider comprising a channelled body defined by opposed walls having inturned side flanges, means on the flange of at least one wall of the slider engaging said first named means, and the walls of the slider yielding in the forceable movement of the last named means over the first named means in the pull apart separation of said stringers.

11. In separable fastener stringers employing a slider movable along the stringers to couple and uncouple the same, means on one stringer for checking closing movement of a slider along the stringers, the slider comprising a channelled body defined by opposed walls having inturned side flanges; means on the flange of at least one wall of the slider engaging said first named means, the walls of the slider yielding in the forceable movement of the last named means over the first named means in the pull apart separation of said stringers, and said first named means having spaced parts engaging the slider in guiding the same in its movement there-over.

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