Nov. 17, 1942. L. H. MORIN 2,302,339

SEPARATING FASTENER

Filed July 12, 1941

Fig. 1.

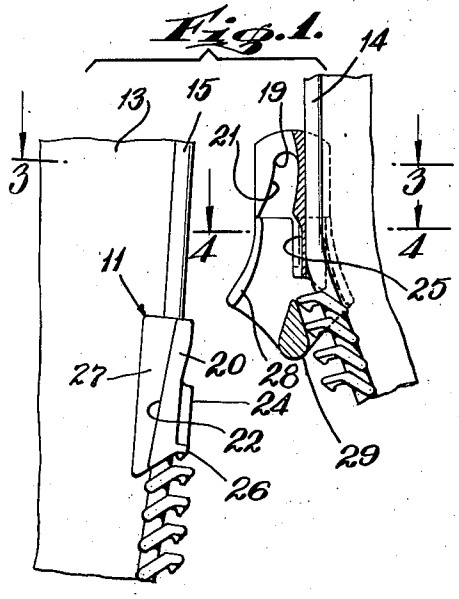


Fig. 2.

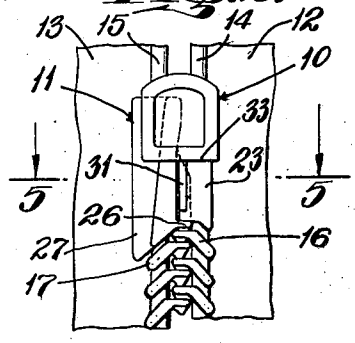


Fig. 3

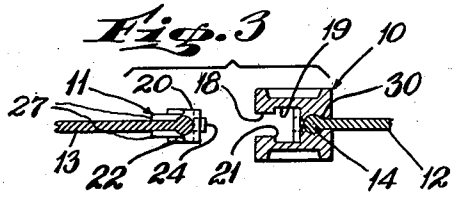


Fig. 6.

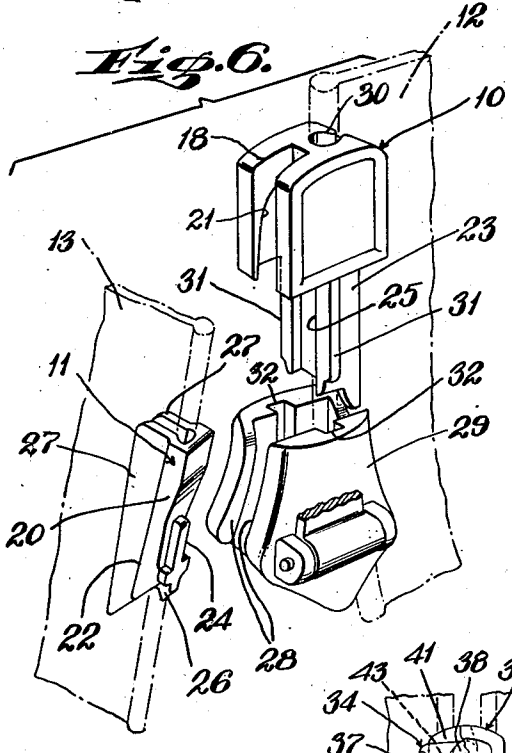


Fig. 4.

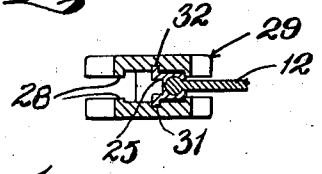


Fig. 5.



Fig. 7.

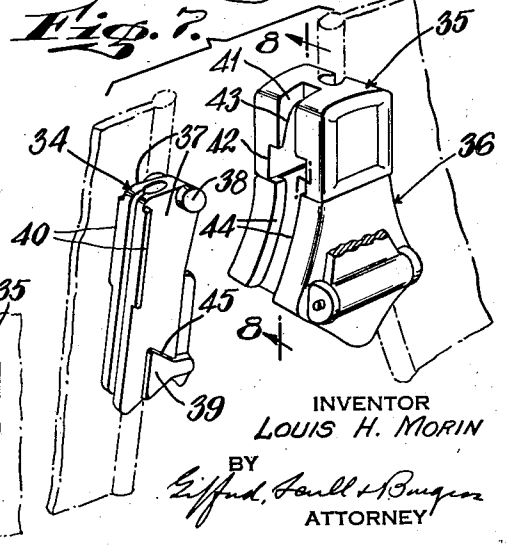
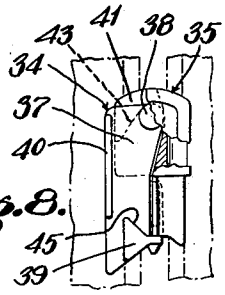


Fig. 8.



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UNITED STATES PATENT OFFICE

2,302,339

SEPARATING FASTENER

Louis H. Morin, Bronx, N. Y., assignor, by mesne assignments, of one-half to said Louis H. Morin and one-half to Davis Marinsky, Bronx, N. Y.

Application July 12, 1941, Serial No. 402,051

19 Claims. (Cl. 24—205)

This invention relates to slide fasteners of the type and kind generally referred to as separating fasteners where the stringers are completely detachable one with respect to the other, adapting the fastener for uses where the two parts united by the fastener may be completely separated. More particularly, the invention relates to devices of this class wherein insertion and removal of the pin part is materially simplified, particularly with respect to the ease of coupling and uncoupling the pin and box parts, and further in providing on the pin part a bearing surface over which the slider passes to eliminate wear upon the tape at the point of coupling and uncoupling the fasteners. 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 side and sectional view of one end portion of fastener stringers showing the same detached.

Fig. 2 is a view similar to Fig. 1 indicating the stringers coupled together, omitting the slider and its position on the stringers.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 2.

Fig. 6 is a perspective view of the coupling and slider parts of the stringers in separated position.

Fig. 7 is a view similar to Fig. 6 showing another adaptation of the invention; and,

Fig. 8 is a broken section substantially on the line 8—8 of Fig. 7 indicating two of the parts in coupled relationship with the slider removed.

In separating fasteners of the type under consideration employing what have been commonly referred to as detachably coupled end stops of the pin and box construction, considerable difficulty has been experienced in providing end stops which could be coupled and uncoupled in a simple easy manner without inconveniencing or annoying the operator. It has been quite commonly experienced that in mounting a windbreaker or other garment employing fasteners of the type under consideration, the original coupling of the fasteners through the medium of the box and pin has caused much annoyance to the user in mismeshing the stringers or improperly inserting the pin part. It is one of the purposes of my invention to provide a detachably coupled end stop structure including box and pin parts which literally fall together and fall apart in the coupling and uncoupling of the stringers. At the same time means is provided to reinforce that portion of the tape to which the pin part is attached to provide bearings upon which the slider is free to slide, thus eliminating the frictional engagement of the tape with the slider flanges and box part flanges thereby providing the smooth and substantially frictionless relative movement of the parts which brings about the free coupling and uncoupling thereof.

Another feature of the structure which simplifies coupling and uncoupling of the parts resides in the fact that both slider and box part have sufficiently wide spacing between the flanges thereof to provide free passage of the enlarged or beaded edge of the tape laterally through the slider and box part, thereby contributing also to the free coupling and uncoupling of the parts. A further feature of my present end stop construction resides in the provision of means on the extended pin portion of the box part for keying the slider thereon, maintaining predetermined alinement of the slider and box parts one with respect to the other.

A further adaptation of the invention includes the provision of a detachable end stop and slider structure wherein the pin part is insertable laterally through the slider and through the box part in coupling and uncoupling said parts.

In Figs. 1 to 6 inclusive, I have shown a detachable end stop coupling comprising a box part 10 and a pin part 11. In the construction shown, these parts are illustrated in the form of die castings which can be directly cast upon the supporting tapes 12 and 13 respectively at the beaded edges 14 and 15 thereof adjacent the end links 16 and 17, which links in the construction shown, are of the Chevron construction rather than the older straight-link form.

The box part 10 projects beyond the beaded edge 14, and this projection has a vertical passage 18 extending therethrough, inner surfaces of the side walls of the extension being recessed as seen at 19 to receive the enlarged and beveled edge portion 20 of the pin part 11. The curved flange walls 21 formed by the recess 19 engages the beveled or tapered edge 22 of the enlargement 20 in drawing the pin part in the direction of a projecting pin portion 23 of the box part so as to place a projecting rib 24 on the inner surface of the pin part in a corresponding recess 25 in the adjacent surface of the pin portion 23. This tongue and groove or key construction serves to aline the parts throughout substantially

the full length thereof. At the lower or inner end of the rib 24, the pin part includes an integral link portion 26 which is adapted to engage the end link 16 as will clearly appear in Fig. 2 of the drawing.

The pin part 11 includes wide inwardly extending supporting and bearing flanges 27 which extend well onto the tape 13 and provide on upper and lower surfaces of the tape bearing surfaces over which the side inturned flanges 28 of a slider 29 are adapted to operate as the pin part is passed through the slider and into the box part. These wide bearing flanges 27 prevent the wear of the tape 13 and are made sufficiently heavy to provide a durable bearing surface. This necessitates the wider separation of the flanges 28, and it will thus be apparent that the structure of the links will be correspondingly enlarged to insure engagement of the flanges 28 therewith. This enlargement of the spacing of the flanges 28 also provides for a free passage of the beaded edge 15 of the tape laterally through the slider and the box part 10 when the parts are coupled and uncoupled, thereby materially reducing frictional engagement between the parts.

The box part 10 is also channeled at its attached side as seen at 30 for engagement with the beaded edge 14 of the tape 12 in the customary manner. The pin portion 23 of the box part 10 is provided on upper and lower surfaces with outwardly projecting key ribs 31 adapted to enter corresponding grooves or channels 32 formed centrally of inner opposed surfaces of the walls of the slider. This construction serves to key and maintain the slider in predetermined alinement on the box part thereby facilitating accurate and simplified coupling and uncoupling of the pin part therewith.

With the device as shown in Figs. 1 to 6 inclusive in the operation of coupling the stringers, the slider is first brought into the position as indicated in Fig. 1, after which the pin part 11 may be passed into the channel of the slider inwardly of the flanges 28 substantially in the relative position of these parts as seen in Fig. 1. The pin part may then be moved in the direction of the channel 19, this movement being checked by engagement of the enlargement 20 with the end wall of the recess 19, after which the slider may be moved along the stringers to couple the same, the result of which is partly illustrated in Fig. 2 of the drawing. In the aforesaid engagement of the pin part, the tapered wall or flange 22 moves over the flanges 28, and the flanges 21, in drawing the pin part into engagement with the pin portion 23 for purposes heretofore stated. It will also appear that in uncoupling the parts, the slider 29 is brought into engagement with the stop wall 33 on the box part 10, the pin part becomes free and will easily slip through the box part and slider. As a matter of fact, the stringers actually fall apart in the normal opening movement of the fastener and in the engagement of the slider 29 with the box part.

In the construction shown in Figs. 7 and 8 of the drawing the primary difference over the structure shown in the other figures lies in the fact that the pin part 34 is modified in its structure, as is also the box part 35, to provide side entrance of the pin part in the box part and in the slider 36 thereby minimizing the longitudinal movement of the pin part with respect to the parts 35 and 36 in coupling these parts together.

To simplify the description, the features which are not common to the features of the other figures only will be described. The pin part, instead of having the enlargement 20 which provided the shoulders or flanges 22, has flat opposed bearing surfaces 37 terminating in the upper inner corners in outwardly projecting cylindrical pivots 38, and in the lower inner corners in substantially triangular guide section 39, and at outer upper edge portions with projecting flanges 40. The box part or the channeled side 41 thereof has enlarged entrance notches 42 at the inner ends thereof to receive cylindrical bearings 38, these bearings being adapted to extend into the channels 43 similar to the channels 19. The spacing between the flanges 44 of the slider 36 is slightly greater than the distance between the flat side surfaces 37 of the pin part so that the pin part is free to enter through the side thereof with the guide sections 39 entering the channel portion of the slider below the lower or inner ends of the flanges 44. The flanges 40 simply check inward movement of the pivot ends 38 upon insertion of the pin part into the box part. It will appear from a consideration of Fig. 7 of the drawing that the cylindrical bearings 38 protrude beyond the surface 37 greater than do the guides 39, and to such an extent that the entrance of the pin part through the inner end of the channel of the slider is not made possible, and the only method of attaching and detaching the pin and box parts is by movement of the bearings 38 through the recesses 42 of the box part.

The separable end stop structure of this type and kind minimizes the amount of sliding movement necessary to couple and uncouple the stringers. By minimizing this movement the danger of faulty engagement of the pin and box parts is substantially eliminated. It will also be apparent that in that the channel 41 of the box part is sufficiently wide to receive the surfaces 37 of the pin part which are above the beaded edge of the tape, this beaded edge is also free to enter the box part through the side thereof.

As above stated, aside from the structures described, the pin and box parts and slider parts will include the other elements and structure of the corresponding parts as shown in Figs. 1 to 6 inclusive for keying the pin and box parts and the slider and box parts. Attention is also directed to the fact that the beveled wall 45 at the upper edge of the guide segments 39 operate upon the flanges 44 of the slider in guiding the lower portion of the pin part into the channel of the slider in the operation of inserting the bearings 38 into the box part.

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

1. In separable fasteners employing stringers, means secured to adjacent beaded edges of the stringers for detachably couping the same, said means comprising a box part on one stringer and a pin part on the other stringer, the box part having a channeled portion projecting beyond the beaded edge of its stringer, said pin part being insertable into and removable from the slider and channel of the box part in coupling and uncoupling the stringers, means on the box part and pin part retaining said parts against separation when the stringers are coupled, and the opening of the channel of the box part being sufficiently large to receive side entrance of the bead of the pin part stringer in the coupling and uncoupling of the pin and box parts.

2. In separable fasteners employing stringers, means secured to adjacent beaded edges of the

stringers for detachably coupling the same, said means comprising a box part on one stringer and a pin part on the other stringer, the box part having a channeled portion projecting beyond the beaded edge of its stringers, said pin part being insertable into and removable from the slider and channel of the box part in coupling and uncoupling the stringers, means on the box part and pin part retaining said parts against separation when the stringers are coupled, a slider for coupling the stringers, the slider having spaced inturned flanges engaging the pin part, and the spacing of said slider flanges and the opening of the channel of said box part being sufficiently large to provide side entrance of the beaded edge of the pin part stringer in coupling and uncoupling the pin and box parts.

3. In separable fasteners employing stringers, means at one end of the stringers providing complete separation of the stringers, said means comprising a box part secured to the beaded edge of one stringer adjacent an end link thereon, an elongated pin part secured to the beaded edge of the companion stringer adjacent an end link thereon, the box part having a channel portion projecting beyond the beaded edge of its stringer, the pin part having an enlarged outer edge portion and the channel of the box part a recess receiving the large portion of the pin part in keying the pin and box parts against lateral separation, the pin part having wide bearing portions extending onto the opposed surfaces of the stringer tape throughout the length of the pin part, a slider for coupling the stringers, and the slider operating upon said bearing portions in providing free coupling and uncoupling of the pin and box parts in the passage of the pin part through the slider and said box part.

4. In separable fasteners employing stringers, means at one end of the stringers providing complete separation of the stringers, said means comprising a box part secured to the beaded edge of one stringer adjacent an end link thereon, an elongated pin part secured to the beaded edge of the companion stringer adjacent an end link thereon, the box part having a channel portion projecting beyond the beaded edge of its stringer, the pin part having an enlarged outer edge portion and the channel of the box part a recess receiving the large portion of the pin part in keying the pin and box parts against lateral separation, the pin part having wide bearing portions extending onto the opposed surfaces of the stringer tape throughout the length of the pin part, a slider for coupling the stringers, the slider operating upon said bearing portions in providing free coupling and uncoupling of the pin and box parts in the passage of the pin part through the slider and said box part, and said box part and pin part having elongated interengaging key portions alining said parts one with respect to the other when coupled together.

5. In separable fasteners employing stringers, means at one end of the stringers providing complete separation of the stringers, said means comprising a box part secured to the beaded edge of one stringer adjacent an end link thereon, an elongated pin part secured to the beaded edge of the companion stringer adjacent an end link thereon, the box part having a channel portion projecting beyond the beaded edge of its stringer, the pin part having an enlarged outer edge portion and the channel of the box part a recess receiving the large portion of the pin part in keying the pin and box parts against lateral separation, the pin part having wide bearing portions extending onto the opposed surfaces of the stringer tape throughout the length of the pin part, a slider for coupling the stringers, the slider operating upon said bearing portions in providing free coupling and uncoupling of the pin and box parts in the passage of the pin part through the slider and said box part, and said box part having elongated key members engaging the corresponding key ways in the slider to maintain the slider in alinement on the box part in coupling and uncoupling the pin and box parts.

6. In separable fasteners employing stringers adapted to be coupled and uncoupled by a slider movable along the stringers, a box part at one end of one stringer and a pin part at the corresponding end of the beaded edge of the companion stringer, the slider being movable onto the box part and alined with respect thereto in coupling and uncoupling said stringers, said slider and box part collectively presenting an elongated channel for receiving the pin part, the outer edges of the channel of the slider and box part each having inturned flanges engaging projecting portions on the pin part in guiding the pin part into the channel and in keying the pin part against displacement from the box part, and the spacing of said flanges being sufficiently wide to provide side entrance of the bead of the pin part stringer into the channel of the slider and box part.

7. In separable fasteners employing stringers adapted to be coupled and uncoupled by a slider movable along the stringers, a box part at one end of one stringer and a pin part at the corresponding end of the beaded edge of the companion stringer, the slider being movable onto the box part and alined with respect thereto in coupling and uncoupling said stringers, said slider and box part collectively presenting an elongated channel for receiving the pin part, the outer edges of the channel of the slider and box part each having inturned flanges engaging projecting portions on the pin part in guiding the pin part into the channel and in keying the pin part against displacement from the box part, the spacing of said flanges being sufficiently wide to provide side entrance of the bead of the pin part stringer into the channel of the slider and box part, and said pin part having wide bearing portions extending throughout the length thereof providing free and substantially frictionless movement of the flanges of the slider with respect to the pin part in uniting and separating the stringers.

8. In separable fasteners employing stringers adapted to be coupled and uncoupled by a slider movable along the stringers, a box part at one end of one stringer and a pin part at the corresponding end of the beaded edge of the companion stringer, the slider being movable onto the box part and alined with respect thereto in coupling and uncoupling said stringers, said slider and box part collectively presenting an elongated channel for receiving the pin part, the outer edges of the channel of the slider and box part each having inturned flanges, the spacing of said flanges being sufficiently wide to provide side entrance of the bead of the pin part stringer into the channel of the slider and box part, said pin part having wide bearing portions extending throughout the length thereof providing free and substantially frictionless movement of the flanges of the slider with respect to the pin part in uniting and separating the stringers, and said

pin part and box part having cooperating cam surfaces drawing said parts together in coupling the same.

9. In separable fasteners employing stringers adapted to be coupled and uncoupled by a slider movable along the stringers, a box part at one end of one stringer and a pin part at the corresponding end of the beaded edge of the companion stringer, the slider being movable onto the box part and alined with respect thereto in coupling and uncoupling said stringers, said slider and box part collectively presenting an elongated channel for receiving the pin part, the outer edges of the channel of the slider and box part each having inturned flanges, the spacing of said flanges being sufficiently wide to provide side entrance of the bead of the pin part stringer into the channel of the slider and box part, said pin part having wide bearing portions extending throughout the length thereof providing free and substantially frictionless movement of the flanges of the slider with respect to the pin part in uniting and separating the stringers, said pin part and box part having cooperating cam surfaces drawing said parts together in coupling the same, and other means extending longitudinally of the pin and box parts for keying said parts together.

10. In a coupling for completely separating fastener stringers of the character described, said coupling comprising a box part and a pin part insertable into and removable from the box part, said pin part being arranged upon and extending longitudinally of the beaded edge of one stringer tape and having an enlarged outer edge portion to engage the box part to prevent lateral separation therefrom when the parts are coupled, and said pin part having wide bearing portions extending throughout the full length of the pin part on opposed surfaces of the tape.

11. In a coupling for completely separating fastener stringers of the character described, said coupling comprising a box part and a pin part insertable into and removable from the box part, said pin part being arranged upon and extending longitudinally of the beaded edge of one stringer tape and having an enlarged outer edge portion to engage the box part to prevent lateral separation therefrom when the parts are coupled, said pin part having wide bearing portions extending throughout the full length of the pin part on opposed surfaces of the tape, and the box part having an enlarged opening in the outer wall thereof providing side entrance of the projection of the pin part in coupling said pin and box parts.

12. In a coupling for completely separating fastener stringers of the character described, said coupling comprising a box part and a pin part insertable into and removable from the box part, said pin part being arranged upon and extending longitudinally of the beaded edge of one stringer tape and having an enlarged outer edge portion to engage the box part to prevent lateral separation therefrom when the parts are coupled, said pin part having wide bearing portions extending throughout the full length of the pin part on opposed surfaces of the tape, the box part having an enlarged opening in the outer wall thereof providing side entrance of the portion of the pin part in coupling said pin and box parts, and projecting means on the opposed surfaces of the pin part for guiding said part in coupling the same with the box part.

13. In a pin and box coupling for completely separating separable fastener stringers, comprising a pin part secured to the beaded edge of one stringer and a box part secured to the beaded edge of the companion stringer, said box part having a channel portion projecting from the beaded edge of its stringer for receiving said pin part, and said channel having a side opening through the box part of sufficient width to provide free passage of the beaded edge of the tape of the pin part laterally into and out of the channel of said box part.

14. The combination with a pin and box coupling for completely separating separable fastener stringers, of a slider cooperating with the coupling in controlling the operation thereof, said coupling comprising a pin part secured to the beaded edge of one stringer and a box part secured to the beaded edge of the companion stringer, means keying the slider in predetermined position upon the box part, said slider outwardly of the box part having inturned flanges spaced sufficiently to provide free passage of the beaded edge of the pin part stringer laterally through the slider in coupling and uncoupling said pin and box parts.

15. In a separable fastener of the character described having stringers provided with links, a channeled slide for engaging and disengaging the same and a separable end connection comprising a box part on one stringer having a socket therein and a pin part secured to the other stringer for engagement and disengagement with said socket, said pin part having a predetermined maximum thickness in a direction perpendicular to the stringer secured thereto, the improvement which comprises a box part having walls defining a channel opening through a side wall thereof, said walls being spaced apart a distance sufficiently greater than the thickness of the pin part to permit insertion of said pin part laterally through said channel opening, said box and pin parts having complementary parts providing releasable locking engagement of the pin with the box.

16. In a separable fastener of the character described having stringers provided with links, a channeled slide for engaging and disengaging the same and a separable end connection comprising a box part on one stringer having a socket therein and a pin part secured to the other stringer for engagement and disengagement with said socket, said pin part having a predetermined maximum thickness in a direction perpendicular to the stringer secured thereto, the improvement which comprises a box part having walls defining a channel opening through a side wall thereof, said walls being spaced apart a distance sufficiently greater than the thickness of the pin part to permit insertion of said pin part laterally through said channed opening, a key portion on the pin part and a corresponding keyway in the box part preventing lateral separation of the box and pin parts and providing releaseable inter-engagement thereof.

17. In a separable fastener of the character described having stringers provided with links, a channeled slide for engaging and disengaging the same and a separable end connection comprising a box part on one stringer having a socket therein and a pin part secured to the other stringer for engagement and disengagement with said socket, said pin part having a predetermined maximum thickness in a direction perpendicular to the stringer secured thereto, the improvement which comprises a slide having walls defining a channel opening through a side

wall thereof, said walls being spaced apart a distance sufficiently greater than the thickness of the pin part to permit insertion of said pin part laterally through said channel opening, said box and pin parts having complementary parts providing releaseable locking engagement of the pin with the box.

18. In a separable fastener of the character described having stringers provided with links, a channeled slide for engaging and disengaging the same and a separable end connection comprising a box part on one stringer having a socket therein and a pin part secured to the other stringer for engagement and disengagement with said socket, said pin part having a predetermined maximum thickness in a direction perpendicular to the stringer secured thereto, the improvement which comprises a box part having walls defining a channel opening through a side wall thereof, a slide having walls defining a channel opening through a side wall thereof, the said walls of the slide and box part, respectively, being spaced apart a distance sufficiently greater than the thickness of the pin part to permit insertion of said pin part laterally through the channel openings of the box and slide, said box and pin parts having complementary parts providing releaseable locking engagement of the pin with the box.

19. In a separable fastener of the character described having stringers provided with links, a channeled slide for engaging and disengaging the same and a separable end connection comprising a box part on one stringer having a socket therein and a pin part secured to the other stringer for engagement and disengagement with said socket, said pin part having a predetermined maximum thickness in a direction perpendicular to the stringer secured thereto, the improvement which comprises a box part having walls defining a channel opening through a side wall thereof, a slide having walls defining a channel opening through a side wall thereof, the said walls of the slide and box part, respectively, being spaced apart a distance sufficiently greater than the thickness of the pin part to permit insertion of said pin part laterally through the channel openings of the box and slide, said box and pin parts having complementary parts providing releasable locking engagement of the pin with the box, said box part having elongated key members and said slide having corresponding key ways to engage said key parts to maintain the slide in alignment on the box part.

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