

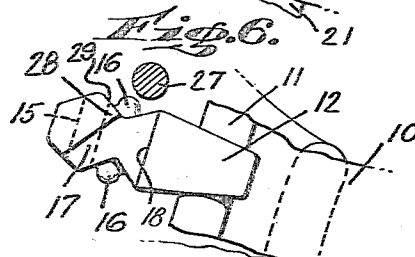
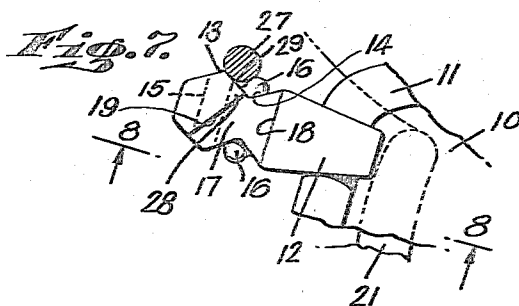
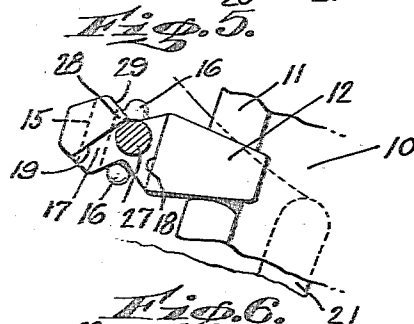
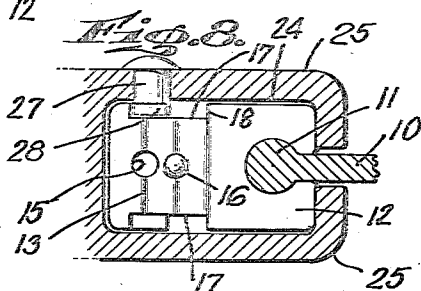
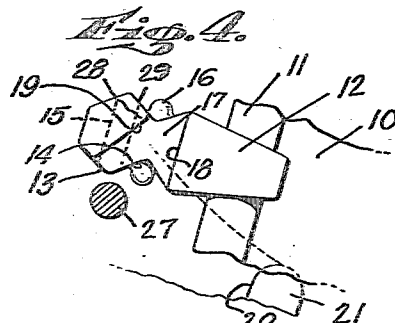
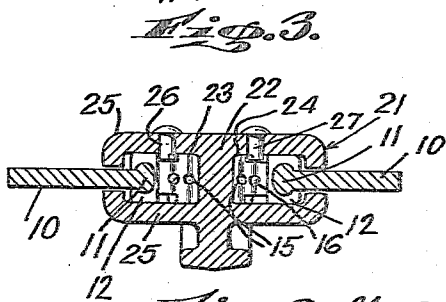
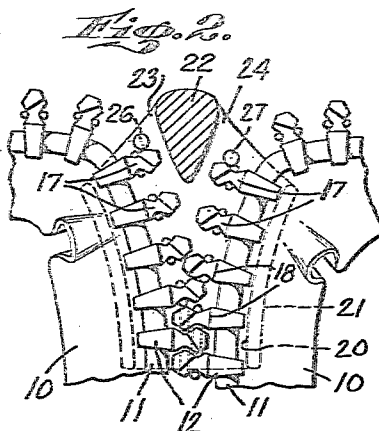
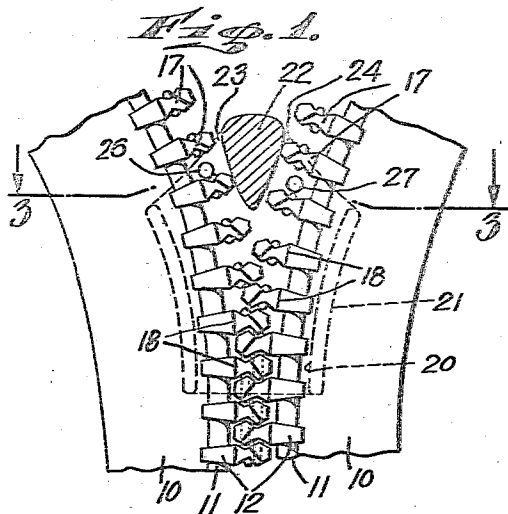
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LOCK SLIDER

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LOCK SLIDER

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14 Claims. (Cl. 24-205)

This invention relates to separable fasteners employing stringers with a slider movable on the stringers to couple and uncouple the same. More particularly, the invention relates to fasteners of this kind having means on the links of the stringers and on the slider to automatically lock the slider against opening movement on the stringers, when the stringers are strained laterally tending to separate the same. 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 sectional detailed view of a pair of stringers showing the slider thereon, and illustrating our invention.

Fig. 2 is a view similar to Fig. 1 showing the slider in locked position.

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

Fig. 4 is a diagrammatic view showing one link preparatory to engagement with a lock pin.

Fig. 5 is a view similar to Fig. 4 showing the pin in a groove or channel in the link.

Fig. 6 is a view similar to Figs. 4 and 5 showing the next position of the link.

Fig. 7 is a view similar to Fig. 6 showing the link engaging the stop pin in checking movement of the slider.

Fig. 8 is a partial section on the line 8-8 of Fig. 7.

In separable fasteners many types and kinds of locks have been provided to check or retain a slider against movement on the stringers. Some of these locks have been provided between the slider and end stops, commonly referred to as top stops, whereas, in other instances movable pin and similar lock elements have been provided on the slider to engage the links in checking opening movement of the slider. In the latter cases the pin or lock element has usually been controlled or moved into an inoperative position by a finger piece or pull employed to operate the slider on the stringers.

Our present slider lock construction provides a simple, economical form of lock which will automatically operate to check movement of the slider, with the slider in any position along the stringers, that is to say, movement is checked if the stringers are strained laterally tending to separate the same. However, normal movement

of the slider along the stringers to couple and uncouple same is not interfered with.

In the accompanying drawing, the invention is shown in combination with a link of specific structure but this is simply to illustrate one adaptation of the invention. In Figs. 1 and 2, parts of two stringers are shown, Fig. 1 illustrating a normal position of the stringers and the slider thereon. Fig. 2 illustrates the strained position of the stringers with the slider locked or retained against movement thereon.

In Figs. 1 and 2, 10 represents stringer tapes to the beaded edges 11 of which are attached links or scoops 12. Each link or scoop is of the same construction and the brief description of one will apply to all. In this connection, note Fig. 4 which shows one scoop on a large scale. The outer coupling ends of the scoop has a V shape projection 13 on opposed surfaces thereof of inwardly of which are V shaped notches or recesses 14, the latter receiving the projections 13 of the scoops of an opposed stringer as clearly indicated in Figs. 1 and 2.

Extending vertically through the end of the scoop having the projections 13 is an aperture 15 adapted to receive projecting coupling knobs or elements 16 central of the recesses 14. This construction keys the links or scoops against transverse separation. Links or scoops of this general structure are defined as double acting scoops, in that they may be coupled and uncoupled with sliders arranged in any position on the stringers, thus adapting the stringers for the use of two sliders where such uses are desirable.

With the type of link or scoop described we provide on opposite side surfaces thereof channels or grooves 17 bounded at the inner mounting end portion of the scoop by straight walls 18 and at the outer coupling end by beveled walls 19 which flare outwardly in the direction of the narrow single channelled end 20 of a slider 21.

The slider 21 is of more or less conventional design having a substantially triangular connection web 22 central of the wide end of the slider which divides this end into two channels 23 and 24. The links or scoops of opposed stringers enter these channels in coupling the same together as they pass through the contracted single channel end 20 of the slider.

Mounted in one or both side walls 25 of the slider are lock pins 26 and 27, the pin 26 entering the channel 23, whereas the pin 27 enters the channel 24. The extent of projection of the

pins 26 and 27 into the channels is sufficient to pass freely through the recesses 17 in normal operations of the slider, while being sufficiently long to engage the projecting members 26 formed at the outer coupled ends of the scoops by the recesses 17, as clearly illustrated in Figure 8 of the drawing. It will be noted upon a consideration of Figures 1 and 2 that the pins 26 and 27 are staggered in order to substantially simultaneously engage links on both stringers.

In normal movement of the slider along the stringers the pins 26 and 27 will move freely through the recesses or channels 17 on the side surfaces of the links or scoops. However, when the stringer tapes are strained laterally as indicated in Fig. 2, tending to separate the stringers, the slider will become automatically locked on the stringers in substantially the following manner.

In Figs. 4 to 6 inclusive, four stages of the passage of the complete lock pin through the channels of the links or scoops are shown. In Figure 4 it will be assumed that the lock pin 27 is just below one of the links. As the slider moves in the direction of this link, the pin enters the channel 17 and rides over the surface 19, particularly if at this time slight lateral strain prevails on the stringer. This position of the parts is shown in Fig. 5. As progress of the slider continues, the pin 27 passes out of the channel 17 as indicated in Fig. 6 of the drawing, and if a lateral strain is then applied to the stringer, the beveled wall 29 of the projection 28 will be moved into engagement with the pin 27 as seen in Fig. 7 of the drawing in which position the slider will be locked against opening movement on the stringers.

When the strain is applied to the stringers, should the lock pins 26, 27 be within the channels 17 of two links, these pins will be moved into engagement with the next adjacent links in blocking or checking further opening movement of the slider, or in other words in checking further separation of the stringers. It is also pointed out that in normal movement of the slider along the stringers to separate the same, the pins 26 and 27 will move freely through the channels 17, and may in some instances be guided by the beveled walls 29. The beveling of the walls 19 is to assist the closing movement of the slider, particularly if slight strains should prevail on the stringers, for example, in the presence of a relatively tight garment. With some types of links or scoops beveled walls as of 29 would not be needed, but some form of projection would be provided on the coupling end of the link which could engage the pin to lock the slider, and any arrangement of slots or channels can be provided on the links for free passage of the pins.

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

1. A separable fastener comprising stringers having scoops along adjacent edges thereof adapted to be coupled and uncoupled by a slider movable along the stringers, the slider comprising a channelled body with diverging channels at one end thereof, pin members on the slider projecting into the diverging channels thereof, each of the scoops having a recess therein to provide normal free passage of the scoops through the channels of said slider, said recesses being positioned on the scoop to cause a part of the scoop to engage a pin member when the stringer

is strained laterally, whereby opening movement of the slider due to the lateral strain is checked.

2. A separable fastener comprising stringers having scoops along adjacent edges thereof adapted to be coupled and uncoupled by a slider movable along the stringers, the slider comprising a channelled body with diverging channels at one end thereof, pin members on the slider projecting into the diverging channels thereof, each of the scoops having a recess therein to provide normal free passage of the scoops through the channels of said slider, said recesses being positioned on the scoop to cause a part of the scoop to engage a pin member when the stringer is strained laterally, whereby opening movement of the slider due to the lateral strain is checked, and one boundary wall of the recess in each scoop being angular to the other boundary wall of said recess.

3. In separable fasteners employing stringers and a slider movable along the stringer to couple and uncouple the same, each stringer having scoops spaced longitudinally of one end portion thereof for inter-locking engagement with the scoops of a companion stringer, said slider comprising a channelled body, means projecting into the channel of said body and engaging the stringer scoops to retain the slider against movement on the stringers when the stringers are strained in a manner tending to separate the same, said means comprising a pin element blocking passage of the stringer scoops through the slider channel, and the stringer scoops having recesses to receive said pin in normal coupling and uncoupling of the stringers by said slider.

4. In separable fasteners employing stringers and a channelled slider movable along the stringers to couple and uncouple the same, the slider having a blocking element projecting into the channel thereof, a pair of stringers, each stringer having scoops spaced longitudinally of one edge thereof, said scoops having coupling elements retaining coupled stringers against separation from each other, and at least one side surface of each scoop of one stringer having a channel extending across the scoop and longitudinally of the stringer to clear the blocking element on the slider in normal coupling and uncoupling of the stringers.

5. In separable fasteners employing stringers and a channelled slider movable along the stringers to couple and uncouple the same, the slider having a blocking element projecting into the channel thereof, a pair of stringers, each stringer having scoops spaced longitudinally of one edge thereof, said scoops having coupling elements retaining coupled stringers against separation from each other, and at least one side surface of each scoop of one stringer having a channel extending across the scoop and longitudinally of the stringer to clear the blocking element on the slider in normal coupling and uncoupling of the stringers, and one boundary wall of the channel of said scoops being substantially parallel to the longitudinal line of the stringer and the opposed boundary wall extending angularly to said first named wall.

6. The combination with separable fasteners employing stringers, scoops thereon and a slider movable along the stringers to couple and uncouple the same, of a rigid blocking element on the slider engaging the scoops of the stringers for automatically checking movement of the stringers through the slider when the stringers are strained in a direction tending to separate

the same, and said stringer scoops having recesses providing free passage of the blocking element of the slider in the coupling and uncoupling of said stringers.

7. The combination with separable fasteners employing stringers with scoops thereon movable through diverging channels of a slider in coupling and uncoupling the stringers, of a blocking element projecting substantially centrally into one channel of said slider to engage the scoops of one stringer in checking movement of the slider in one direction of the stringers, the scoops of said stringer having recess means providing free normal passage of the scoops past said blocking element.

8. A slider for separable fasteners, said slider comprising a body having wide and narrow ends defined by spaced walls joined at the wide end by a connecting web dividing said body into diverging channels at said wide end and converging to one channel at the narrow end of said body, said channels being partially formed by intumed flanges at side edges of said walls, and a blocking element extending into each diverging channel intermediate the web and said flanges and nearer the web than said flanges.

9. A slider for separable fasteners, said slider comprising a body having wide and narrow ends defined by spaced walls joined at the wide end by a connecting web dividing said body into diverging channels at said wide end and converging to one channel at the narrow end of said body, said channels being partially formed by intumed flanges at side edges of said walls, a blocking element extending into each diverging channel intermediate the web and said flanges and nearer the web than said flanges, and the blocking element of one channel being offset longitudinally of said slider body with respect to the blocking element of the other channel.

10. In separable fasteners comprising stringers having scoops along adjacent edges thereof and a slider movable along the stringers, said slider comprising spaced walls, partly defining a pair of diverging channels, the locking improvement which comprises a blocking element mounted within at least one of said channels and adapted to engage scoops to prevent movement of the slider when the stringers are strained in a manner tending to separate the same, each of the scoops engaging said blocking element having recess means providing free normal passage of said blocking element.

11. In separable fasteners comprising stringers having scoops along adjacent edges thereof and a slider movable along the stringers, said slider comprising spaced walls, partly defining a pair of diverging channels, the locking improvement which comprises a blocking element mounted within at least one of said channels and adapted to engage scoops to prevent movement of the slider when the stringers are strained in a manner tending to separate the same, each of the scoops engaging said blocking element having recess means providing free normal passage of said blocking element, said recess comprising a channel defined by walls at least one of which has a configuration providing a cammed relation to said blocking element.

12. A scoop for separable fasteners of the type having scoops along adjacent edges thereof and a slider movable along the stringers, said slider comprising spaced walls partly defining a pair of channels, said scoop having opposed surfaces adapted for sliding movement in relation to said slider walls and other opposed surfaces having similar male and female coupling portions, at least one of the first named surfaces having a channel therein adapted for the free passage therethrough of a blocking element mounted within a channel of said slider.

13. A scoop for separable fasteners of the type having scoops along adjacent edges thereof and a slider movable along the stringers, said slider comprising spaced walls partly defining a pair of channels, said scoop having opposed surfaces adapted for sliding movement in relation to said slider walls, at least one of said surfaces having a channel therein adapted for the free passage therethrough of a blocking element mounted within a channel of said slider.

14. A scoop for separable fasteners of the type having scoops along adjacent edges thereof and a slider movable along the stringers, said slider comprising spaced walls partly defining a pair of channels, said scoop having opposed surfaces adapted for sliding movement in relation to said slider walls and other opposed surfaces having coupling portions, at least one of the first named surfaces having a channel therein adapted for the free normal passage therethrough of a blocking element mounted within a channel of said slider, a part of at least one of the second named surfaces being adapted for engagement with said blocking element to check movement of the slider.

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