Jan. 19, 1937. D. MARINSKY 2,068,503

LOCK SLIDER FOR SEPARABLE FASTENERS

Filed July 1, 1936

Fig. 1.

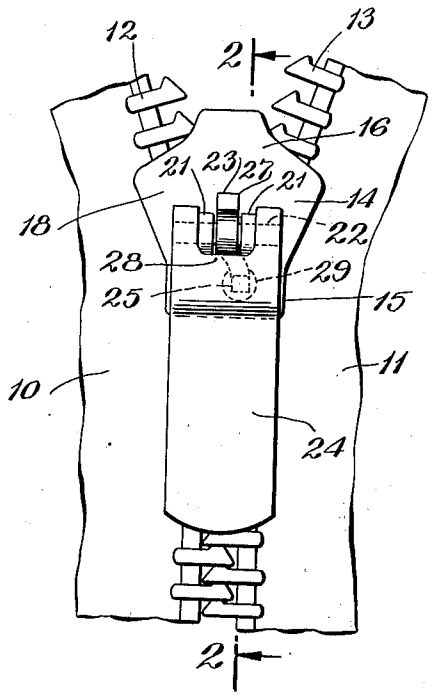


Fig. 2.

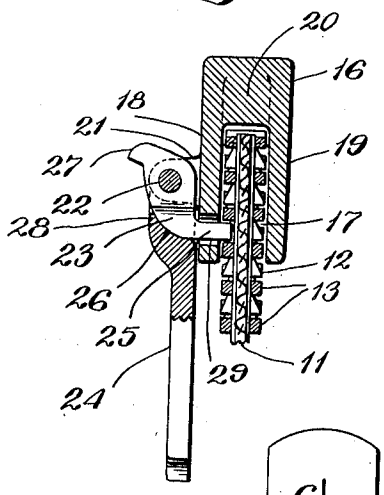


Fig. 5

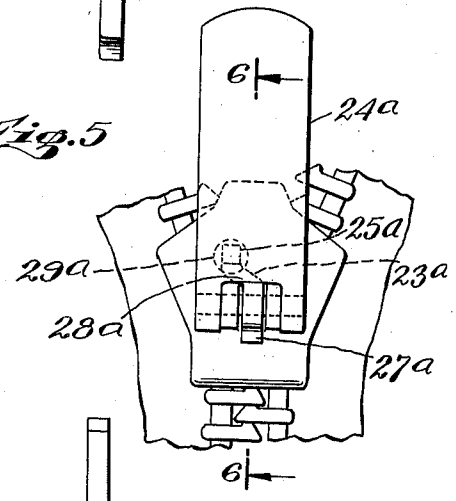


Fig. 3.

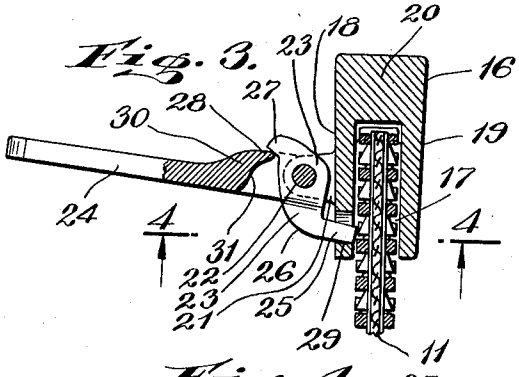
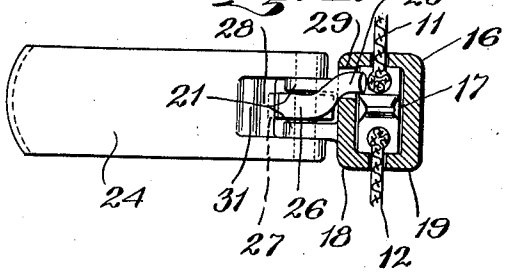


Fig. 4.



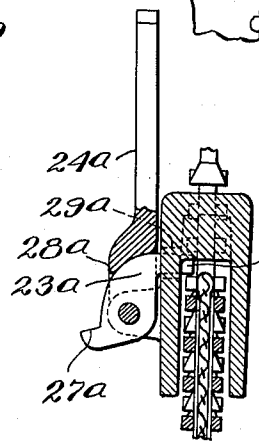


Fig. 6.

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LOCK SLIDER FOR SEPARABLE FASTENERS

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Application July 1, 1936, Serial No. 88,371

20 Claims. (Cl. 24—205)

This invention relates to separable fasteners employing stringers with a slider movable longitudinally of the stringers to couple and uncouple the same and particularly, to improved means for retaining the slider against movement on the stringers in one or more positions thereof so as to retain the stringers against separation and prevent movement of the slider in one direction on the stringers; and the object of the invention is to provide a slider of the class described having a pivoted gravity actuated pawl or locking element adapted to automatically move into operative position; a further object being to provide a finger piece or pull on the slider movably supported thereon and cooperating with the pawl or lock element to aid in supporting said element in operative position, and further, to provide means for moving said element into inoperative position; a still further object being to provide the finger piece or pull of the slider with a curved or beveled seat adapted to engage the pawl or lock member and snugly fit thereon when said pawl is in closed position and the finger piece is arranged longitudinally of the stringers, the pawl and finger piece having interengaging projecting elements adapted to be brought into engagement in the operation of raising the finger piece or pull into position to move the slider longitudinally of the stringers; a still further object being to provide a pawl or lock element having means for retaining the slider against movement in both directions, depending upon the arrangement of the finger piece and pull on the slider; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a plan view of a part of a separable fastener showing one of my improved sliders thereon.

Fig. 2 is a partial section on the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2 showing parts in a different position.

Fig. 4 is a partial section on the line 4—4 of Fig. 3.

Fig. 5 is a view similar to Fig. 1 showing a modification; and,

Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

In Fig. 1 of the drawing, I have indicated a part of a separable fastener employing stringers, the tapes of which are shown at 10 and 11, to one beaded edge of which are attached coupling links or scoops 12 and 13. At 14, I have shown a slider movable along the stringers to couple and uncouple the links 12 and 13. The slider consists of a narrow end portion 15 and a wide end portion 16, a channel 17 being formed between the side plates 18 and 19 in the usual manner to receive the links 12 and 13. This channel diverges at the wide end 16 of the slider and is separated by the central partition 20. The side plate 18 constitutes the upper or outer side plate, and this plate is provided centrally thereof with outwardly projecting ears or bearings 21 for a pivot pin 22, which pin also passes through a pawl or lock member 23 and the forked end of a finger piece or pull 24 so as to provide a pivotal mounting of the pawl 23 and finger piece or pull 24 in connection with the slider. The pawl 23 has a projecting lock pin 25 which is offset with respect to the body portion of the pawl in the manner clearly seen in Figs. 2 and 3 of the drawing and joins said body portion in a curved outer surface 26. The other end portion of the pawl is provided with an outwardly projecting lip or flange 27 adapted to be engaged by a projection 28 on the finger piece 24 to move the pin 25 out of engagement with the links of the separable fasteners, for example, the links 13, in the operation of manually moving the slider longitudinally of the stringers.

The top wall 18 of the slider is provided with an opening 29 through which the pin 25 passes for movement into engagement with the links of the fastener. The pin is shown in operative position in Fig. 2, and in a withdrawn or inoperative position in Fig. 3. It is also preferred that the pin 25 be so constructed as to engage the wall of the opening 29 to limit outward movement of said pin and at the same time check the swinging movement of the pawl 23 as well as the finger piece or pull 24. The crosshead 30 of the forked end of the finger piece or pull is provided with a curved surface 31 which is adapted to conform with and fit upon the curved surface 26 of the pawl so as to aid in urging the pin 25 of the pawl into operative position when the finger piece is arranged longitudinally of the stringers or substantially so as

is indicated in Fig. 2 of the drawing, in other words, in the normal hanging position of said finger piece. In this connection, it will be understood, however, that the pawl **23** will automatically drop by gravity from the position shown in Fig. 3 to that shown in Fig. 2 without the assistance of the finger piece **24**, assuming that said finger piece is released to permit free operation of the pawl. On the other hand, the finger piece aids in this gravity movement of the pawl and also materially assists in maintaining the pawl in operative position against accidental displacement, it being understood that in order to displace the pawl by stress or strain applied to the stringers in the operation of separating the same, it is necessary to swing the entire finger piece as well as the pawl on the pivot **22** and the operation of one of these swinging members will check the other to provide a substantially fool-proof lock or latching means.

In this connection, it is well to point out that in devices of the kind under consideration, it has been commonly experienced that the locking or latching means usually employed when subjected to intermittent stresses or strains, vibration or agitation, become unlatched and the fastener will open. These difficulties and objectionable features are largely if not entirely overcome in my present construction. The swinging movement of the finger piece or pull from the position shown in Fig. 2 to a position substantially at right angles to the outer surface of the slider will not in any way affect or be transmitted to the pawl or lock member employed. However, in continuing the outward swinging movement beyond this degree, the member **28** on the finger piece will engage the projecting lip or flange **27** and swing the pawl on its pivot in the manner shown in Fig. 3 of the drawing. By changing the position of the projecting tongue or flange **27** on the pawl, the degree of swinging movement of the finger piece necessary to operate said pawl may be controlled and regulated.

Upon a consideration of Figs. 1 and 4 of the drawing, it will be noted that the aperture **29** is arranged at one side of the longitudinal center of the slider so as to bring the pin **25** in position to register between the links **13**. This arrangement may be reversed so as to bring the pin **25** in position to register with the links **12**.

Upon considering Figs. 5 and 6 of the drawing, it will appear that by simply reversing the position of the pawl and finger piece upon the slider and arranging the aperture **29***a* at the wide end portion of the slider, the slider may be locked against movement in the opposite direction, which result is desirable in some uses of separable fasteners of the kind under consideration. In Figs. 5 and 6, the pawl is shown at **23***a*, the finger piece at **24***a*, the pin at **25***a*, the projecting lip at **27***a* and the projection on the finger piece at **28***a*, and other parts or elements of the pawl **23***a* and finger piece **14***a* will be the same as that shown in Figs. 1 to 4 inclusive. The pivot pin is shown at **22***a* and the ears or bearings at **21***a*. In other words, with the structure shown in Figs. 5 and 6, the parts are simply reversed on the slider and the slider is modified simply by changing the position or location of the aperture **29***a* therein.

In the construction shown, the slider is shown as being formed from a unitary die cast body, but my improved locking means may be applied to sliders of any form and construction, and the pawl and finger piece may also be cast or formed in any other desired manner, and the shape and contour of these parts may be varied to suit the different uses and adaptations thereof.

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

1. In a separable fastener employing stringers with a slider movable longitudinally of the stringers to couple and uncouple the same, means for retaining the slider against movement in one direction on the stringers, said means comprising a pawl pivoted to the slider and adapted to engage the links of the stringers in retaining the slider against movement thereon, and means independently movable on said slider and swinging about a relatively fixed pivot, and cooperating with said pawl to control the movement thereof.

2. In a separable fastener employing stringers with a slider movable longitudinally of the stringers to couple and uncouple the same, means for retaining the slider against movement in one direction on the stringers, said means comprising a pawl pivoted to the slider and adapted to engage the links of the stringers in retaining the slider against movement thereon, and means movable on the pivot of said pawl and independently movable on said slider cooperating with said pawl to control the movement thereof, said last named means positively engaging said pawl in one position thereof to move the pawl out of engagement with the links of the stringers to permit free movement of the slider thereon.

3. A slider for separable fasteners of the class described comprising a finger piece or pull supported and movable on a fixed pivot on the slider, a member movably supported on the slider at the pivot of said pull and movable thereon independent of the movement of said pull, and said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction.

4. A slider for separable fasteners of the class described comprising a finger piece or pull supported and movable on a fixed pivot on the slider, a member movably supported on the slider at the pivot of said pull and movable thereon independently of the movement of said pull, said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction, and said pull and member having interengaging surfaces whereby the pull will aid in supporting said member in operative position.

5. A slider for separable fasteners of the class described comprising a finger piece or pull supported and movable on a fixed pivot on the slider, a member movably supported on the slider at the pivot of said pull and movable thereon independently of the movement of said pull, said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction, said pull and member having interengaging surfaces whereby the pull will aid in supporting said member in operative position, and other interengaging means on the pull and member for moving said member into inoperative position in the swinging movement of said pull with respect to the slider.

6. A slider for separable fasteners of the class described comprising a finger piece or pull piv-

otally supported on the slider, a member movably supported on the slider and movable thereon independently of the movement of said pull, said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction, said pull and member having interengaging surfaces whereby the pull will aid in supporting said member in operative position, other interengaging means on the pull and member for moving said member into inoperative position in the swinging movement of said pull with respect to the slider, and means for checking the movement of the pull and member with respect to said slider.

7. A slider for separable fasteners of the class described comprising a finger piece or pull pivotally supported on the slider, a member movably supported on the slider and movable thereon independently of the movement of said pull, said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction, said pull and member having interengaging surfaces whereby the pull will aid in supporting said member in operative position, other interengaging means on the pull and member for moving said member into inoperative position in the swinging movement of said pull with respect to the slider, means for checking the movement of the pull and member with respect to said slider, and said member being mounted to swing upon the pivot of the pull on said slider.

8. A slider for separable fasteners of the class described comprising a finger piece or pull pivotally supported on the slider, a member movably supported on the slider and movable thereon independently of the movement of said pull, said member having a projecting part adapted to engage a link of the fastener in one position of said member to retain the slider against movement longitudinally of the fastener in one direction, said pull and member having interengaging surfaces whereby the pull will aid in supporting said member in operative position, other interengaging means on the pull and member for moving said member into inoperative position in the swinging movement of said pull with respect to the slider, means for checking the movement of the pull and member with respect to said slider, said member being mounted to swing upon the pivot of the pull on said slider, and the slider having an aperture in one wall thereof into and through which the pin of said member operates.

9. The herein described means for controlling the operation of the sliders of separable fasteners of the class described, said means comprising two independently movable elements pivoted to and adapted to swing about a substantially fixed axis on a slider, one of said elements having a projecting lock pin and the other a finger piece portion.

10. The herein described means for controlling the operation of the sliders of separable fasteners of the class described, said means comprising two independently movable elements pivoted to and adapted to swing about a substantially fixed axis on a slider, one of said elements having a projecting lock pin and the other a finger piece portion, and said elements having interengaging portions brought into operative relationship with each other in two different angular positions of the second named element with respect to the first named element.

11. The herein described means for controlling the operation of the sliders of separable fasteners of the class described, said means comprising two independently movable elements adapted to be supported to move about a substantially fixed axis on a slider, one of said elements having a projecting lock pin and the other a finger piece portion, and said elements having interengaging portions brought into operative relationship with each other in two different angular positions of the second named element with respect to the first named element whereby in one position of the second named element, the pin of the first named element is supported in operative position and in the other position thereof, said pin is moved into inoperative position.

12. The combination with the slider of a separable fastener having a pivot pin arranged outwardly of one side wall thereof and an aperture formed in said wall adjacent said pin, of a lock element movably mounted on said pin and including a part adapted to extend into and through the aperture in said slider to support the slider against movement in one direction on a fastener stringer, and a finger piece having a fixed pivotal support in connection with said slider adjacent said element and movable independently of said lock element.

13. The combination with the slider of a separable fastener having a pivot pin arranged outwardly of one side wall thereof and an aperture formed in said wall adjacent said pin, of a lock element movably mounted on said pin and including a part adapted to extend into and through the aperature in said slider to support the slider against movement in one direction on a fastener stringer, a finger piece pivotally supported in connection with said slider and movable independently of said lock element, said element having a projection adapted to be engaged by said finger piece to move the extending part of said element into inoperative position in the swinging movement of the finger piece on said slider.

14. The combination with the slider of a separable fastener having a pivot pin arranged outwardly of one side wall thereof and an aperture formed in said wall adjacent said pin, of a lock element movably mounted on said pin and including a part adapted to extend into and through the aperture in said slider to support the slider against movement in one direction on a fastener stringer, a finger piece pivotally supported in connection with said slider and movable independently of said lock element, said element having a projection adapted to be engaged by said finger piece to move the extending part of said element into inoperative position in the swinging movement of the finger piece on said slider, and said element and finger piece having interengaging surfaces in operative engagement with each other when the finger piece is in normal depending or hanging position on the slider.

15. The combination with a slider for coupling and uncoupling the stringers of separable fasteners, of a lock pawl pivotally supported in connection with one side wall of the slider, said pawl having a projecting part adapted to extend into position to retain the slider against movement on the stringers in one direction, and another projecting lip part arranged externally of the slider and by means of which said pawl

may be swung on its pivot to move the first named pin part into inoperative position.

16. The combination with a slider for coupling and uncoupling the stringers of separable fasteners, of a lock pawl pivotally supported in connection with one side wall of the slider, said pawl having a part adapted to extend into position to retain the slider against movement on the stringers in one direction, another projecting part arranged externally of the slider and by means of which the first named part may be moved into inoperative position, and a member independent of said pawl movably supported on the slider and cooperating with the second named part thereof to move and support said pawl in inoperative position.

17. The combination with a slider for coupling and uncoupling the stringers of separable fasteners, of a lock pawl pivotally supported in connection with one side wall of the slider, said pawl having a part adapted to extend into position to retain the slider against movement on the stringers in one direction, another projecting part arranged externally of the slider and by means of which the first named part may be moved into inoperative position, a member independent of said pawl movably supported on the slider and cooperating with the second named part thereof to move and support said pawl in inoperative position, and said member including a finger piece portion.

18. The combination with a channeled slider for coupling and uncoupling the stringers of separable fasteners, one side plate of the slider having an aperture opening into the channeled portion thereof and a pull pivotally supported on said side plate of the slider adjacent said aperture for operating the slider longitudinally of the stringers, of a retaining member movably supported on the side plate of said slider adjacent the pivot of said pull and movable independently of said finger piece and through said aperture for retaining the slider against movement in one direction on the fastener stringers.

19. The combination with a channeled slider for coupling and uncoupling the stringers of separable fasteners, one side plate of the slider having an aperture opening into the channeled portion thereof and a pull pivotally supported on said side plate of the slider adjacent said aperture for operating the slider longitudinally of the stringers, of a retaining member movably supported on the side plate of said slider adjacent the pivot of said pull and movable independently of said finger piece and through said aperture for retaining the slider against movement in one direction on the fastener stringers, and said pull and member having interengaging curved surfaces of similar contour adapted to be brought into engagement in one relative position of said parts.

20. The combination with a channeled slider for coupling and uncoupling the stringers of separable fasteners, one side plate of the slider having an aperture opening into the channeled portion thereof and a pull pivotally supported on said side plate of the slider adjacent said aperture for operating the slider longitudinally of the stringers, of a retaining member movably supported on the side plate of said slider adjacent the pivot of said pull and movable independently of said finger piece and through said aperture for retaining the slider against movement in one direction on the fastener stringers, and said member and pull being each provided with projecting portions adapted to be brought into engagement with each other in one swinging movement of the pull on said slider to move said member into inoperative position.

DAVIS MARINSKY.