July 14, 1942. D. MARINSKY 2,289,585

LOCK SLIDER FOR SEPARABLE FASTENERS

Filed June 4, 1940

Fig. 1.

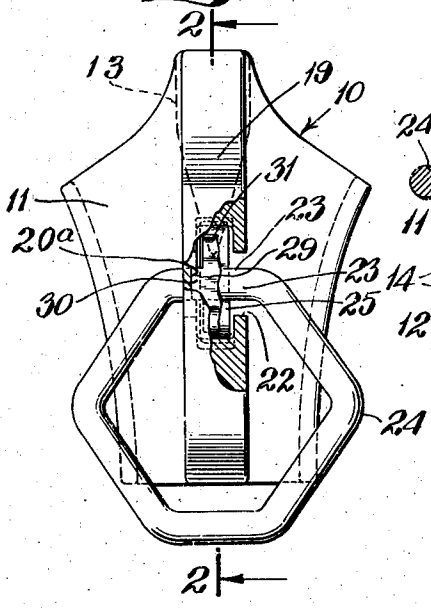


Fig. 2.

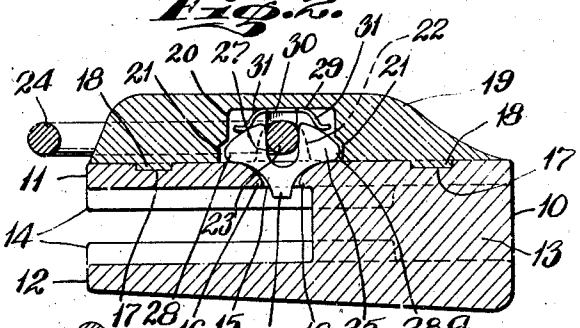


Fig. 3.

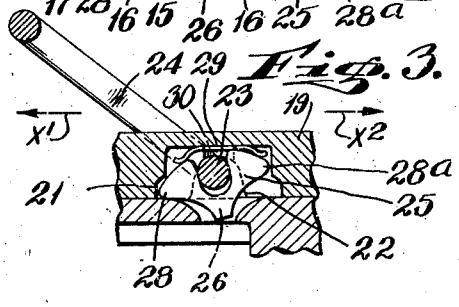


Fig. 4.

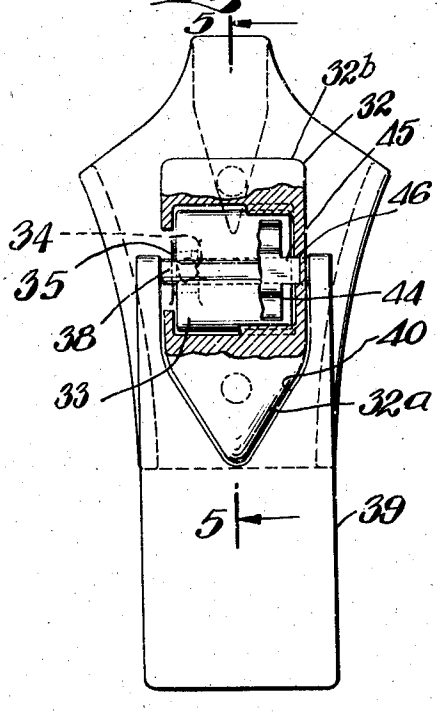


Fig. 5.

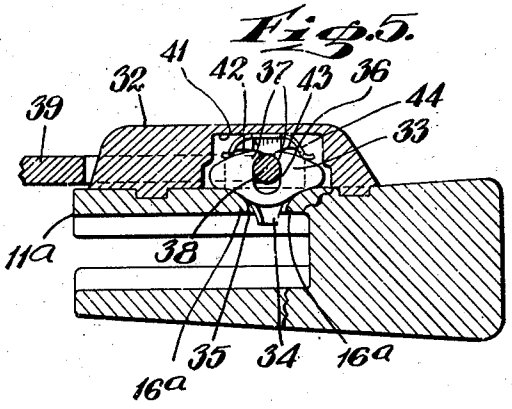
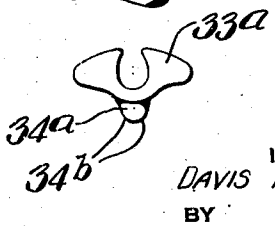


Fig. 6.



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LOCK SLIDER FOR SEPARABLE FASTENERS

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

Application June 4, 1940, Serial No. 338,705

11 Claims. (Cl. 24—205.5)

This invention relates to lock sliders for separable fasteners employing stringers wherein the slider may be positively and yieldably retained against movement longitudinally of the stringers with a pull engaging a spring actuated lock element to release the element in operating the slider in both directions on the stringers. More particularly the invention relates to a lock slider employing what might be termed a rocker lock element having a spring normally supporting the lock pin of the element in operating position with cooperating means between the pull and the element to rock said element into raised or inoperative position in moving the slider in both directions on the stringer. 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 one form of slider with parts of the construction broken away and in section.

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

Fig. 3 is a view similar to Fig. 2, showing only a part of the construction with parts in a different position.

Fig. 4 is a view similar to Fig. 1 showing another adaptation of the invention.

Fig. 5 is a section on the broken line 5—5 of Fig. 4; and

Fig. 6 is a detail view of a modified form of lock element which I employ.

In the accompanying drawing, the invention is shown applied to the plastic type of sliders composed of such materials for example as cellulose acetate, wherein the parts may be die cast in accordance with known processes. It will be understood, however, that the invention is applicable to the metallic type of fastener, in which latter event, certain changes will be made adapting the device to sliders composed of metallic materials. Considering the slider from the standpoint of the plastic construction, it will readily appear that several parts are of simple and sturdy construction, and sufficient clearances are provided between the operative and interengaging parts to provide free action of the parts at all times regardless of any variations in the contour of the parts, particularly when subjected to different temperatures, which might cause swelling or distortion to the parts. In other words, the objectionable features to the more conventional fixed pivots are obviated in the present construction.

Still further, a slider of the class described will render long life and service by reason of the simple and yet sturdy construction of the parts, and particularly the lock element employed. Further, it will appear that by employing a rocker-like element, the slider is adaptable for locking engagement in retaining the slider against movement in both directions on the stringer, thus providing a slider which may be utilized as what is commonly termed a reversible lock slider, suitable for use on leggings, and other articles.

In Figs. 1 to 3 inclusive is shown one adaptation of the invention. In these figures, 10 represents a slider body which, in the structure shown, is formed from die cast plastic material. The body comprises a top wall 11 and bottom wall 12. These walls are spaced apart at the wide end by the connecting web 13 which divides the wide end of the body into two channels which converge into a single channel at the narrow end. Both top and bottom walls have the usual inturned flanges 14 which guide the links or scoops of the stringers into and through the slider as is now well known in this art.

The top wall of the slider is provided centrally and in close proximity to the inner end of the web 13 with a transverse aperture 15 which flares outwardly through the outer surface of the wall 11 as clearly seen in Fig. 2 of the drawing, thus forming at the inner surface of the wall 11 relatively contracted corners 16. The outer surface of the wall 11 is also provided, at longitudinally spaced intervals centrally of the slider, with recesses 17 for receiving projecting key lugs 18 on a pivot hood 19 which extends centrally and longitudinally of the wall 11 of the slider.

The hood 19 is cemented to the wall 11 and the key lugs 18 simply serve to locate the hood in proper position while at the same time forming keys which give greater strength to the bonding between the parts as will be apparent. The hood 19 has centrally thereof a large recess 20 opening through the lower surface of the hood to register with the aperture 15. The recess 20 is enlarged adjacent the wall 11 and at the ends thereof to form sockets 21. The side walls of the recessed portion 20 of the hood 19 are provided with large pivot apertures 22 for receiving the transverse pivot pin or other part 23 of a pull 24. In the construction shown in Fig. 1, the pull 24 is in the form of a hexagonal ring. It will be apparent that pulls of the type substantially similar to that shown in Fig. 4 may also be employed.

At 25 is disclosed the lock element which, for purposes of description, may be termed a rocker element by reason of the fact that this element rocks upon the wall 11 within the recess 20—21 in controlling engagement and disengagement of the stringers. The element 25 is more or less in a form of an elliptical block, the elliptical contour being modified solely by the downwardly projecting pin or bar portion 26 for engaging the links of the stringers passing through the channels of the slider body, and by a pivot aperture 27 formed centrally and transversely of the element in opening through the upper surface thereof. The elliptical formation of the element 25 forms rounded ends 28, 28a which, in the rocking movement of the element, are adapted to enter the sockets 21 in the manner illustrated in Fig. 3 of the drawing.

Arranged within the recess 20 is a cross-shaped spring 29, the central portion of which has laterally extending ends 30, one of which is shown in Fig. 1 of the drawing. The ends 30 are adapted to seat in vertical slots 20a formed in inner surfaces of the side walls of the hood 19 or the recessed portion 20 thereof. The spring 29 also includes longitudinally extending curved spring arms 31 of the general contour seen in Fig. 2 of the drawing, which rest upon the upper rounded surfaces of the element 25 and serve to normally urge the pin portion 26 into the channel of the slider, as will be apparent.

The pivot portion 23 operates freely within the aperture 27 of the element 25. In other words, the element 25 is free to move vertically against the action of the spring 29. In the use of the slider when the pull is raised to move the slider longitudinally of the stringers substantially in the manner indicated in Fig. 3, a pull in the direction of the arrow x1, Fig. 3, will cause the element 25 to be rocked or tilted into the position shown in Fig. 3, moving the pin 26 out of the channel of the slider as will be apparent. In operating the slider in the opposite direction, as indicated by the arrow x2, Fig. 3, the pull will naturally be extended in this direction on the slider and the element 25 rocked or tilted in the opposite direction to that shown, accomplishing the same result.

It will be apparent that a tendency to move the slider along the stringers in either direction without engaging or operating the pull, and particularly the normal tendency to move the slider in the direction of the arrow x1 when a stress or strain is placed on the stringers tending to separate the same, will be checked by movement of the pin or bar 26 by one of the stringer links into engagement with the corner 16, or the corner 15, when the pull is moved in the direction of the arrow x2. Thus the progress of the slider is checked. However, in certain adaptations of the invention where positive locking engagement against any force is undesirable, the member 26 may be rounded in the manner illustrated in Fig. 6 of the drawing so that in such cases when excessive stresses or strains prevail, the lock element may be forced outwardly against the action of the spring to permit the slider to move longitudinally of the stringers. In such cases, however, the tension of the spring will be made to suit the particular uses for which the slider is intended. In other words, in some instances, light tension springs will be used and in other instances, heavier tension springs.

In Figs. 4 and 5 of the drawing I have shown slight modifications of the structure as seen in Figs. 1 to 3 inclusive. These changes consist primarily in providing a shorter but wider hood 32 which terminates short of the wide end of the slider and is contracted or pointed at the narrow end of the slider as seen at 32a. In this construction a lock element 33 is employed which differs from the element 25 primarily in having the lock pin portion 34 disposed at one side only of the element, namely the left side as indicated in dotted lines in Fig. 4 of the drawing so as to pass through an aperture 35 formed in the top wall 11a of the slider to engage the links of the left-hand stringer only.

Another distinction in the construction of the element 33 lies in the fact that the upper end of the apertured portion 36 thereof has inturned members 37 which are turned inwardly after the pivot 38 of the pull 39 has been inserted in the aperture, thus retaining the element 33 against displacement from the pull and thus insuring positive relationship of the parts 33, 36 at all times. The pull 39 is of the more conventional form and the end portion thereof adjacent the pivot pin 38 is apertured as seen at 40 to fit freely over the pointed end portion 32a of the hood 32, while at the same time being so shaped as to allow the pull to drop over the other end portion 32b of the hood when the slider is used in the reverse position.

The hood 32 is provided with a recess 41 much the same as the recess 20, but instead of providing large semi-circular apertures 22 in the side walls of the recessed portion of the hood the apertures are made wider and arched as indicated at 42, 43, to form recessed portions into which the pivot 38 can pass in moving the slider longitudinally of the stringers in both directions. In other words, when the slider is moved by the pull 39 in the direction similar to the arrow x1 of Fig. 3, the pivot 38 moves into the arched portion 42, whereas when moved in the opposite direction, the pivot 38 moves into the arched portion 43. The hood 32 is secured in position the same as with the structure shown in Figs. 1 and 2, therefore, further description in this regard is unnecessary.

A spring 44 substantially similar to the spring 29 is employed, being provided at each side with terminal extensions 45, one of which is shown in Fig. 4, entering the vertical recesses 46 similar to the recesses 20a. It will be understood that in both instances the recesses 20a, 46 open through the lower surface of the side walls of the hood so as to provide free mounting of the springs in the hood. However, these springs may be snapped into socket portions, if desired, so as to be retained against accidental displacement from the hoods.

The operation of the structure shown in Figs. 4 and 5 will be substantially the same as that described in connection with Figs. 1 to 3 inclusive. With regard to the yieldable movement of the slider when subjected to excessive stresses and strains, a lock element such as shown at 33a in Fig. 6 will be employed. This element differs from the element shown in Figs. 5 and 6 in rounding the lower portion of the pin 34a as seen at 34b. These rounded corners will allow the fastener links to cam over the lower corners 16a, thus preventing a positive locking engagement of the slider. However, this camming action must resist the tension of the spring which is employed to normally urge the lock element in its operative position. In both forms of construction, it will appear that sufficient clearance is

provided in the lock element 33 below the pivots 23, 38 to allow for the free movement of the lock elements as described, without disturbing the pivots of the pull, or in other words, without transmitting any appreciable movement to the pull.

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

1. In a lock slider of the class described comprising a channeled slider body having a hood portion on one wall thereof, a lock element for free tiltable movement on the slider wall within said hood portion, said element comprising a substantially elliptical member having a thick central portion with reduced rounded ends, the central portion having a projection forming a pin element for entering the channel of the slider body, and said central portion having a transverse aperture therein to receive a pull member.

2. In a lock slider of the class described comprising a channeled slider body having a hood portion on one wall thereof, a lock element for free tiltable movement on the slider wall within said hood portion, said element comprising a substantially elliptical member having a thick central portion with reduced rounded ends, the central portion having a projection forming a pin element for entering the channel of the slider body, and a transverse aperture therein to receive a pull member, the pin portion of said member being disposed at one side only thereof.

3. A slider of the class described comprising a channeled slider body having an aperture in one wall thereof opening into the channel of said body, a hood mounted on said wall, said hood having a socket portion in registering alinement with the aperture in the slider wall, said socket having enlarged pivot portions at the ends thereof, a tiltable lock element arranged in said socket, a pin portion on said element projecting into the channel of said body through said aperture, said element having rounded ends adapted to be moved into the pivot portions of said hood in the tilting movement of said element, a spring having oppositely extending spring arms arranged in said socket with the arms engaging the end portions of said element to normally support the element in locked position, and a pull having a pivot portion passed through said hood and in operative engagement with said element to tilt the same into inoperative position in moving the slider in either of two directions by said pull.

4. A slider of the class described comprising a channeled slider body having an aperture in one wall thereof opening into the channel of said body, a hood mounted on said wall, said hood having side walls and a top and provided with apertures in the side walls and having a socket portion in registering alinement with the aperture in the slider wall, said socket having enlarged pivot portions at the ends thereof, a tiltable lock element arranged in said socket and provided with a bearing portion, a pin portion on said element projecting into the channel of said body through said aperture, said element having rounded ends adapted to be moved into the pivot portions of said hood in the tilting movement of said element, a spring having oppositely extending spring arms arranged in said socket with the arms engaging the end portions of said element to normally support the element in locked position, a pull having a pivot portion extending through said apertures in the side walls of the hood and in pivotal engagement with the bearing portion of said element to tilt the same into inoperative position in moving the slider in either of two directions by said pull, and means for maintaining said spring against displacement in said hood.

5. A slider of the class described comprising a channeled slider body having an aperture in one wall thereof opening into the channel of said body, a hood mounted on said wall, said hood having a socket portion in registering alinement with the aperture in the slider wall, said socket having enlarged pivot portions at the ends thereof, a tiltable lock element arranged in said socket and provided with a bearing portion, a pin portion on said element projecting into the channel of said body through said aperture, said element having rounded ends adapted to be moved into the pivot portions of said hood in the tilting movement of said element, a spring having oppositely extending spring arms arranged in said socket with the arms engaging the end portions of said element to normally support the element in locked position, a pull having a pivot portion extending through the apertures in the side walls of said hood and in pivotal engagement with the bearing portion of said element to tilt the same into inoperative position in moving the slider in either of two directions by said pull, means for maintaining said spring against displacement in said hood, and bearing means on the element for retaining the pivot of said pull against displacement from said element.

6. A slider of the class described comprising a channeled slider body having an aperture in one wall thereof opening into the channel of said body, a hood mounted on said wall, said hood having a socket portion in registering alinement with the aperture in the slider wall, said socket having enlarged pivot portions at the ends thereof, a tiltable lock element arranged in said socket, and provided with a bearing portion, a pin portion on said element projecting into the channel of said body through said aperture, said element having rounded ends adapted to be moved into the pivot portions of said hood in the tilting movement of said element, a spring having oppositely extending spring arms arranged in said socket with the arms engaging the end portions of said element to normally support the element in locked position, a pull having a pivot portion extending through the apertures in the side walls of said hood and in pivotal engagement with the bearing portion of said element to tilt the same into inoperative position in moving the slider in either of two directions by said pull, and means on the spring providing outward movement of said element against the action of said spring on the pivot of said pull.

7. A lock slider for separable fasteners of the class described comprising a channel partly defined by a bottom wall and a top wall; said top wall supporting a hood portion and having an aperture registering with said channel and aligned with a recess in the hood portion; the recess and aperture forming a chamber receiving a rocking lock element having a central portion and end portions; said rocking element having rocking surfaces located between the ends and central portion thereof and a pin projecting from said central portion and extending through said aperture to engage the links of said fasteners; said aperture having edges supporting the said rocking surfaces, respectively, and forming bearings on which said rocking element is adapted to rock; resilient means in said chamber normally

holding said lock element with the pin projection thereon engaging the links and pull means pivoted on said element to rock it and thereby disengage the pin projection from engagement with the links.

8. A lock slider for separable fasteners of the class described comprising a channel partly defined by a bottom wall and a top wall; said top wall supporting a hood portion and having an aperture registering with said channel and aligned with a recess in the hood portion; the recess and aperture forming a chamber receiving a rocking lock element having a central portion and contracted ends; said rocking element having rocking surfaces located between the ends and central portion thereof, said rocking surfaces partly defining a pin projection, on the said element, extending through said aperture to engage the links of said fasteners; said aperture having edges complementary to the said rocking surfaces, respectively, and forming bearings on which said rocking element is adapted to rock; resilient means in said chamber normally holding said lock element with the pin projection thereon engaging the links and pull means pivotally mounted on said lock element to rock said element against the action of said resilient means and thereby disengage the pin projection from engagement with the links.

9. A lock spider for separable fasteners of the class described comprising a channel partly defined by a bottom wall and a top wall; said top wall supporting a hood portion and having an aperture registering with said channel and aligned with a recess in the hood portion; the recess and aperture forming a chamber receiving a rocking lock element having a central portion and contracted ends; said rocking element having rocking surfaces located between the ends and central portion thereof, said rocking surfaces partly defining a pin projection, on the said element, extending through said aperture to engage the links of said fasteners, said rocking element also having spring-engaging surfaces between the ends and central portion thereof and in oppositely disposed relation to said rocking surfaces; said aperture having edges complementary to the said rocking surfaces, respectively, and forming bearings on which said rocking element is adapted to rock; spring means in said chamber engaging the spring-engaging surfaces of the rocking element and normally holding said lock element with the pin projection thereon engaging the links, and pull means pivotally mounted on said lock element to rock said element and thereby disengage the pin projection from engagement with the links.

10. A lock slider for separable fasteners of the class described comprising a channel partly defined by a bottom wall and a top wall; said top wall supporting a hood portion and having an aperture registering with said channel and aligned with a recess in the hood portion; the recess and aperture forming a chamber receiving a lock element having a section which is generally that of an ellipse having a long and short axis; said lock element having arcuately-shaped surfaces, concave toward said aperture, which surfaces partly define a pin projection on said element, extending through said aperture in the direction of the said short axis and adapted to engage the links of said fasteners; said aperture having arcuately-shaped edges convex toward said element, complementary to the concave surfaces of said locking element and forming bearing surfaces on which the said element is adapted to rock; resilient means in said chamber normally holding said lock element with the pin projection thereon engaging the links; and means to rock the lock element against the action of said resilient means to disengage the pin from engagement with the links.

11. A lock slider for separable fasteners of the class described comprising a channel partly defined by a bottom wall and a top wall; said top wall supporting a hood portion and having an aperture registering with said channel and aligned with a recess in the hood portion, the recess and aperture forming a chamber receiving a lock element having a section which is generally that of an ellipse having a long and short axis; said lock element having arcuately-shaped surfaces, concave toward said aperture, which surfaces partly define a pin projection on said element, extending through said aperture in the direction of the said short axis and adapted to engage the links of said fasteners; said aperture having arcuately-shaped edges convex toward said element, complementary, respectively, to the concave surfaces of said locking element and forming bearing surfaces on which the said element is adapted to rock; resilient means in said chamber normally holding said lock element with the pin projection thereon engaging the links; and pull means pivotally mounted on said lock element to rock said element and thereby disengage the pin projection from engagement with the links.

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