Sept. 5, 1939. D. MARINSKY 2,172,214

AUTOMATIC LOCKING SLIDER FOR SEPARABLE FASTENERS

Filed July 27, 1937

Fig. 1.

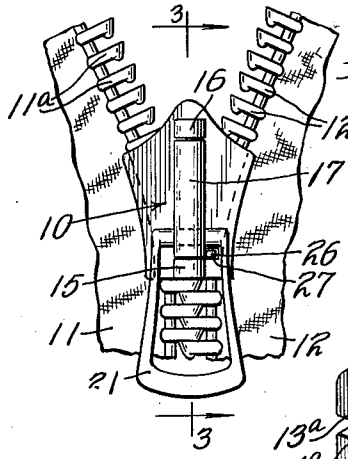


Fig. 2.

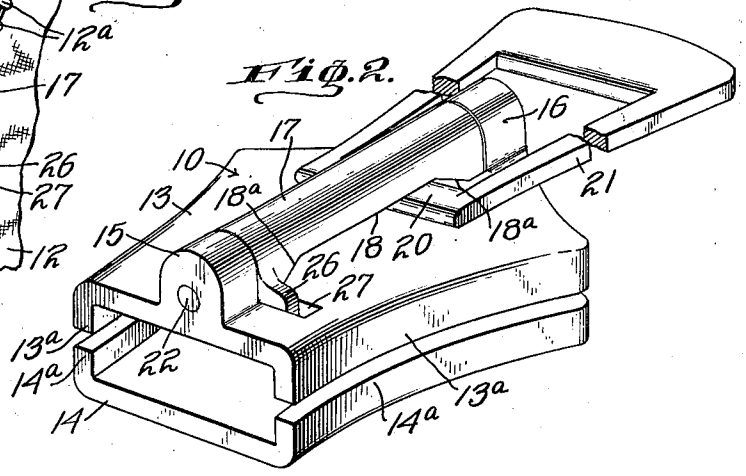


Fig. 3.

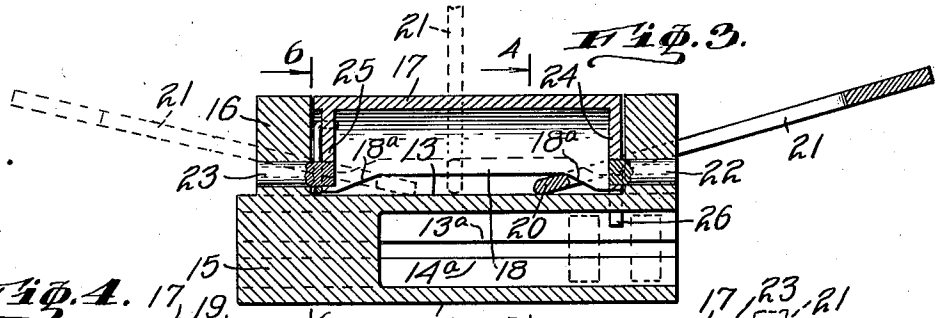


Fig. 4.

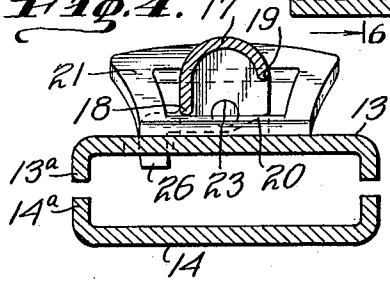


Fig. 5.

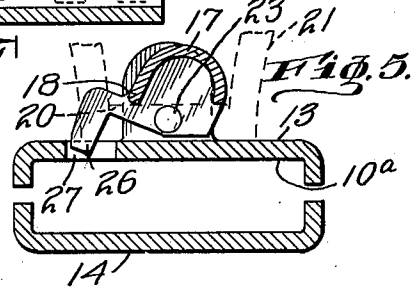


Fig. 6.

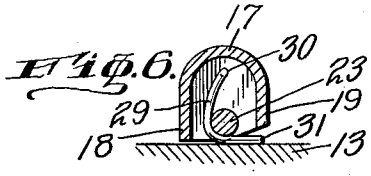
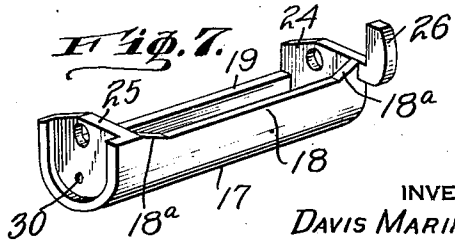


Fig. 7.



INVENTOR
DAVIS MARINSKY
BY
ATTORNEY

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AUTOMATIC LOCKING SLIDER FOR SEPARABLE FASTENERS

Davis Marinsky, Bronx, N. Y., assignor to Whitehall Patents Corporation, New York, N. Y., a corporation of New York

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12 Claims. (Cl. 24—205)

This invention relates to separable fasteners employing stringers having coupling links or scoops adapted to be coupled and uncoupled and particularly to a slider arranged upon and movable longitudinally of the stringers to couple and uncouple said links, and the object of the invention is to provide a slider of the class described having means for automatically retaining the slider against movement longitudinally of the stringers when a finger piece or pull, forming part of said slider, is disposed in an inoperative position or arranged substantially in a plane longitudinally with respect to the slider and whereby the movement of the finger piece or pull into raised or operative position will automatically unlatch said retaining means and permit movement of the slider longitudinally of the stringers, and especially wherein the latching means is in the form of an elongated bar-like element arranged to swing about a fixed axis so as to move a latching member or pawl on said element outwardly and inwardly with respect to the slider or one wall thereof in rotary or swinging movement imparted to said element in the operation of said finger piece or pull and by means of a spring; a further object being to provide a latching element of the class described in the form of an elongated bar having high and low side portions arranged outwardly with respect to the pivot or axis of said element, one of which forms a cam surface in conjunction with which the finger piece or pull operates; and still further wherein said elongated element will permit movement of the finger piece or pull longitudinally of the slider in moving the slider in both directions on the stringers; a further object being to provide one wall of the slider with spaced projecting lugs within and between which the bar-like element is disposed, the walls of said lugs being so formed as to represent continuations of said element to produce a neat and finished appearance of the complete device; a still further object being to provide a lock element of the class described composed of a hollow die cast body which is substantially semicylindrical in cross sectional form, 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 character in each of the views, and in which:

Fig. 1 is a plan view of a part of a fastener illustrating one of my improved sliders arranged thereon.

Fig. 2 is a perspective view of a slider made according to my invention detached and on an enlarged scale.

Fig. 3 is a longitudinal section on the line 3—3 of Fig. 1 showing the slider detached and on an enlarged scale.

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

Fig. 5 is a view similar to Fig. 4 showing parts in a different position with the section taken through a different portion of the slider.

Fig. 6 is a partial section on the line 6—6 of Fig. 3, and

Fig. 7 is a perspective view of one part of the device detached.

In practice I provide a slider 10 for use in coupling and uncoupling the stringers 11 and 12 of a separable fastener, the stringers having interengaging coupling links or scoops 11*a*, 12*a* as in other devices of this kind. The body structure of the slider 10 is of more or less conventional form, in other words, consists of top and bottom plates 13 and 14 joined at one wide or flared end by a connecting web 15 which forms diverging channels which join in a single channel at the other contracted end of the slider. The walls 13 and 14 have inturned side flanges 13*a*, 14*a* which engage the links, 11*a*, 12*a*, and between these flanges are spaces through which the tapes of the stringers 11 and 12 are free to pass.

To illustrate one use of my invention or one method of carrying the same into effect, I have shown the top wall 13 of the slider provided with spaced upwardly projecting lugs or bearings 15 and 16 which, in the construction shown, are disposed adjacent the contracted and flared ends of the slider. These lugs are also preferably of a contour to conform with and form continuations of an elongated bar-like lock or latch element 17.

The element 17, in the construction shown, is formed from a hollow casting preferably made from suitable die cast material which will be consistent with the material formed in the slider if the latter be a die casting. That is to say, these die castings may be of the metallic or thermoplastic groups.

The main body portion of the element 17 is substantially semicircular or cylindrical in cross sectional form, one side wall 18 being longer

than the other side wall 19 when the element is in normal or latched position, as clearly seen in Fig. 4 of the drawing, so as to dispose the free edge of the wall 18 in closer proximity to the outer surface of the top wall 13 of the slider than the edge of the wall 19. In this connection it will also appear that the normal arrangement of the element 17 is such as to provide clearance for the cross bar 20 at the end of a handle, shown in the form of a finger piece or pull 21 so that when said finger piece or pull is arranged as indicated by full and dotted lines in Fig. 3, the element 17 will maintain the position shown in Fig. 4, whereas in raising the finger piece or pull the cross bar 20 will engage the wall 18 and rock the element 17 into the position shown in Fig. 5, the wall 18 thus acting as a rocker arm.

In this operation the element 17 rotates on two pivot pins 22 and 23 preferably secured in the lugs 15—16, and extend into apertures in end walls 24 and 25 of said element. In this rocking or rotary movement imparted to the element 17, the pawl or lock pin 26 at one end of said element is moved from a position projecting into the channel 10*a* of the slider as seen in Fig. 4 upwardly through an opening 27 formed in the wall 13 and out of engagement with the channel 10*a* as seen in Fig. 5 so as to provide free movement of the links through the channel of the slider.

The latch element is provided with a recess 28 at one end thereof to receive a spring 29, one end of the spring being passed through an aperture 30 in the wall 25 and the other end 31 thereof being disposed upon the upper surface of the top wall 13 of the slider beneath the pin 23 as is clearly seen in Fig. 6 of the drawing.

The side wall 18 of the element 17 where it joins the end wall 24 and 25 is provided with cam surfaces 18*a* in connection with which the cross bar 20 of the pull 21 operates when the pull is moved in the direction of the opposite ends of the slider so as to insure the disengagement of the pawl or latch 26 from the links of the stringers. Beveled or cam surfaces 18*a* also form stops limiting the movement of the finger piece in the direction of opposite ends of the slider.

It will be understood that the spring 29 serves to normally hold the wall 18 in depressed position, or in other words to hold the pawl or latch 26 in operative position. The movement of the finger piece or pull into raised position or into engagement with one end portion of the slider will cause the element 17 to be rotated against the action of the spring 29 to move the pawl 26 into inoperative position in the manner illustrated in Fig. 5 of the drawing. However, when the pull is again released, the spring 29 will automatically return the element 17 to its normal or locked position.

It will be understood that one of the distinctive features of my invention resides in the provision of a locking or latching element which swings about a longitudinal axis and moves in a plane transversely to the longitudinal plane of the slider substantially in the manner of a conventional pawl, contrary in this respect to the usual type of latching or locking elements employed in sliders of the type under consideration which swing or move in a longitudinal plane. In other words a more definite and positive lock is provided in applicant's construction in that the latch or locking element, namely the pawl 26, is firmly supported against unlatching movement when subjected to stress or strain longitudinally of the slider.

It is not essential that the latching element employed be of any great length, and in this connection, the illustration in the accompanying drawing is only to illustrate one use of the invention. The structure of the latching element will be modified to suit various types and kinds of sliders and also various types of finger pieces or pulls and the methods of mounting the same in conjunction with a slider, and the movement of the pull longitudinally of the slider is not essential.

It will be apparent that while it is preferred to use a spring or tensional means for supporting the latching element in operative position, that the offset weight of the element itself would be sufficient to accomplish this result, especially if the pivots of the member 17 are of free action. This unbalanced weighting of the member 17 will in any event assist in the automatic locking of the device.

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

1. A slider of the class described comprising a channelled body having spaced side walls, projecting lugs at longitudinal spaced intervals on one of said walls, a member arranged longitudinally of the slider between and pivotally supported in said lugs to swing in a plane transversely to the longitudinal plane of said slider, one wall of the slider having an aperture adjacent and at one side of one of said lugs, a projecting pawl on said member adjacent said aperture in the slider wall and movable into the channel of said body through said aperture to form a lock or latching element to retain the slider against movement on the stringers of a separable fastener, and means for normally supporting said pawl in a position projecting into said channel.

2. A lock slider for separable fasteners employing stringers, said slider having spaced walls, one wall having an aperture therein, bearings arranged and spaced longitudinally of said wall of the slider, an elongated substantially semi-cylindrical member arranged longitudinally of the slider between said bearings, means forming pivotal connections between the ends of said member and said bearings to provide swinging movement of the member in a direction transverse to the longitudinal plane of the slider, a laterally projecting pawl at one side of said member and arranged in registering position with respect to the aperture in said wall of the slider, said pawl being adapted to pass through said aperture to engage one of the stringers to retain the slider against movement thereon, means engaging said member and slider for normally supporting the pawl in operative position, said member having side edges, one of said side edges being arranged closer to the first named wall of the slider than the other of said side edges when said member is in operative position, a finger piece having a part disposed between said slider wall and the edges of said member in coupling the finger piece with the slider to operate the same and to move longitudinally of the slider, and said finger piece part engaging the first named side edge of said member to automatically move the pawl into inoperative position in the operation of moving the slider through the medium of said finger piece in either direction on the stringers.

3. A lock slider for separable fasteners employing stringers, said slider having spaced walls, one wall having an aperture therein, bearings arranged and spaced longitudinally of said wall of the slider, an elongated substantially semi-cylin-

drical member arranged longitudinally of the slider between said bearings, means forming pivotal connections between the ends of said member and said bearings to provide swinging movement of the member in a direction transverse to the longitudinal plane of the slider, a laterally projecting pawl at one side of said member and arranged in registering position with respect to the aperture in said wall of the slider, said pawl being adapted to pass through said aperture to engage one of the stringers to retain the slider against movement thereon, means engaging said member and slider for normally supporting the pawl in operative position, said member having side edges, one of said side edges being arranged closer to the first named wall of the slider than the other of said side edges when said member is in operative position, a finger piece having a part disposed between said slider wall and the edges of said member in coupling the finger piece with the slider to operate the same and to move longitudinally of the slider, said finger piece part engaging the first named side edge of said member to automatically move the pawl into inoperative position in the operation of moving the slider through the medium of said finger piece in either direction on the stringers, and the first named edge of said member having downwardly bevelled end portions adapted to be engaged by said part of the finger piece when moved in the direction of the ends of said member to insure movement of the pawl of said member into inoperative position.

4. In combination with a slider for separable fasteners employing stringers coupled and uncoupled by the movement of the slider longitudinally of said stringers, of members arranged and spaced centrally and longitudinally of one wall of the slider, an elongated element having a laterally projecting pawl at one side thereof, said element being arranged within and between said members to form in spaced relation to said wall of the slider a finger piece retaining bar, a finger piece engaging said bar and movable longitudinally of the slider in the direction of the end portions thereof in the operation of said slider, means forming a pivotal connection between the ends of said element and said members to provide swinging movement of the element transversely to the longitudinal plane of the slider, said wall of the slider being apertured adjacent the pawl on said element to permit the movement of the pawl into and out of said aperture to engage and disengage one of the stringers, means normally supporting the pawl in engagement with one of the stringers to retain the slider against movement on the stringers, and means on said finger piece and on said element whereby the manual movement of the finger piece into position to operate the slider will automatically move said pawl out of engagement with the stringer permitting free movement of the slider longitudinally of the stringers.

5. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin, and a handle engaging said rocker arm to actuate the same.

6. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin, a spring urging said lock pin into locking position, and a handle engaging said rocker arm and arranged to rock the element against the action of said spring.

7. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin and having its free edge spaced from said wall of the slider, a handle having a cross bar slidably held between said free edge and said wall, said cross bar having one dimension greater than the distance between said free edge and said wall when the lock pin is in locking position and having another dimension less than said distance, whereby when said handle is turned it may rock said element to lift said pin out of locking position, and a spring urging said pin into locking position.

8. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin and having its free edge spaced from said wall of the slider, a handle having a cross bar slidably held between said free edge and said wall, said cross bar having one dimension greater than the distance between said free edge and said wall when the lock pin is in locking position and having another dimension less than said distance, whereby when said handle is turned it may rock said element to lift said pin out of locking position, and a spring urging said pin into locking position, said free edge having at opposite ends thereof cam surfaces extending towards said wall, whereby upon sliding movement of said bar lengthwise of the element said bar will engage one of said cams to rock the element.

9. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin and having its free edge spaced from said wall of the slider, a handle having a cross bar slidably held between said free edge and said wall, said free edge having at opposite ends thereof cam surfaces extending towards said wall, whereby upon sliding movement of said bar lengthwise of the element said bar will engage one of said cams to rock the element.

10. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall

of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin and having its free edge spaced from said wall of the slider, a handle having a cross bar slidably held between said free edge and said wall, said free edge having a cam surface extending towards said wall, whereby upon sliding movement of said bar into engagement with said cam surface said element will be rocked to move said pin out of locking position.

11. In a separable fastener comprising links and a slider to couple and uncouple the links, a lock element pivoted on the outside of one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock pin on said element and disposed at one side of said axis and arranged to extend through an opening in said wall into position to engage said links to lock the slider, said element having a rocker arm on the same side of the axis as the lock pin and having its free edge spaced from said wall of the slider, a handle having a cross bar slidably held between said free edge and said wall, said free edge having a cam surface extending towards said wall, whereby upon sliding movement of said bar into engagement with said cam surface said element will be rocked to move said pin out of locking position, and a spring urging said pin into locking position.

12. In a separable fastener comprising links and a channeled slider to couple and uncouple the links, a lock element pivoted on one wall of the slider, on a pivot whose axis extends lengthwise of the slider, a lock part on said element movable into the channel of the slider across and transversely of the path of movement of the links through said channel to engage said links to lock the slider, means normally urging the lock part to locked position, within said channel, said part being capable only of swinging movement with said element on said pivot, and means cooperating with said element moving and supporting said lock part out of engagement with the links in the free movement of the slider to couple and uncouple said links.

DAVIS MARINSKY.