March 3, 1942. L. H. MORIN 2,274,723

AUTOMATIC LOCK SLIDER

Filed Jan. 12, 1940

Fig. 1.

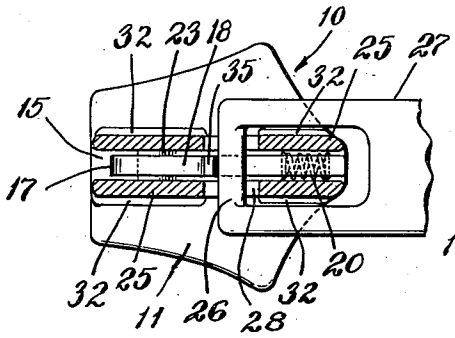


Fig. 2.

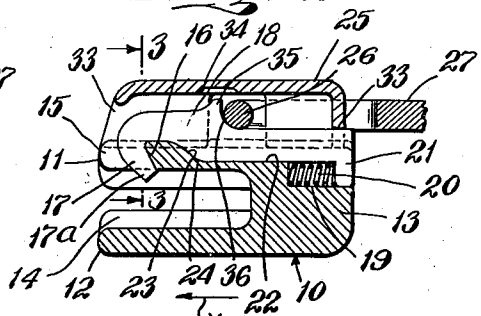


Fig. 3.

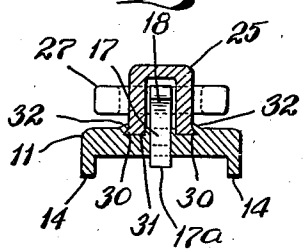
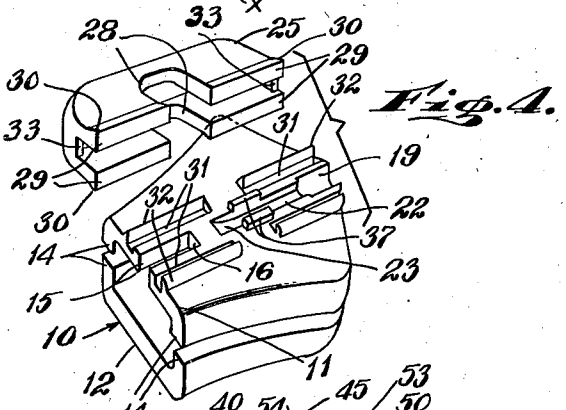


Fig. 4.



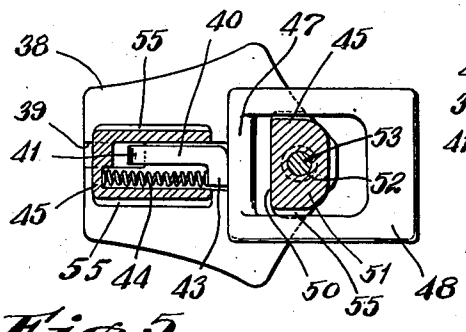


Fig. 5.

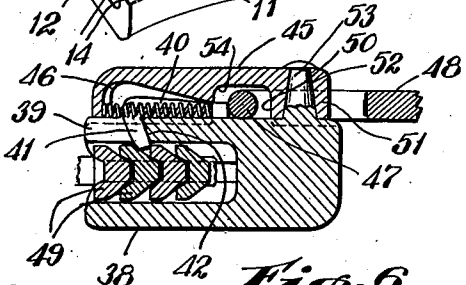
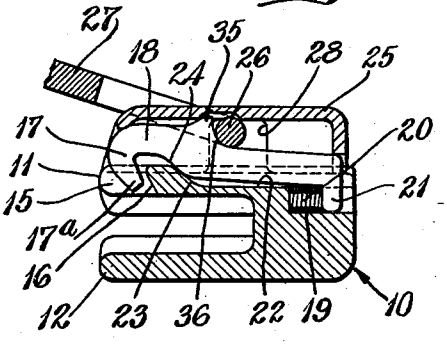


Fig. 6.

Fig. 7.



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AUTOMATIC LOCK SLIDER

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Application January 12, 1940, Serial No. 313,472

8 Claims. (Cl. 24—205.5)

This invention relates to sliders for separable fastener stringers. More particularly the invention relates to an automatic locking slider having a wedge-like lock element normally urged into operative position by tensional means and moved into inoperative position in operating the slider through the medium of a finger piece or pull. The novel features of the invention will be best understood from the following description and annexed 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 plan view of a slider made according to my invention.

Fig. 2 is a longitudinal sectional view through the slider as seen in Fig. 1.

Fig. 3 is a partial section on the line 3—3 of Fig. 2.

Fig. 4 shows perspective views of two slider parts prior to assemblage of the parts.

Fig. 5 is a view similar to Fig. 1 showing a modification.

Fig. 6 is a longitudinal sectional view of the slider as seen in Fig. 5; and

Fig. 7 is a view similar to Fig. 2 showing the lock element moved into raised position by the pull.

In the patent to Marinsky, #1,966,255, granted July 10, 1934, is shown and claimed a slider having a certain type of locking element, and the present application covers an arrangement for actuating or controlling that type of locking element so that the slider will be of the class sometimes called automatically locking.

In Figs. 1 to 4 inclusive, I have shown one adaptation of the invention. In these figures, 10 represents a slider body having a top wall 11, bottom wall 12. The walls are spaced apart and joined by a connecting web 13 centrally of the wide end of the slider, as in conventional slider structures. Each of the walls 11 and 12 have at their side edges inturned flanges as at 14. The body 10 preferably, but not necessarily, is made as a die casting from metal or metal alloys or from thermoplastic materials. The top wall 11 of the slider is formed with a recess 15 opening through the narrow end of the wall and terminating in a beveled wall 16, note Fig. 2, which forms a seat against which the wedge-shaped end 17 of a lock element 18 is adapted to seat in retaining the slider body 10 against movement in the direction of the arrow *x*, Fig. 2, on the stringers of a separable fastener. As these fastener stringers are well known, they are omitted for sake of clarity, although an illustration of part of the links of stringers is shown in Fig. 6, where a modified adaptation of the invention is illustrated. The wedge end 17 may also be termed a hook end on the element 18, and this end operates in the recess 15 as will be apparent.

Centrally of the wide end portion of the wall 11 is another recess 19 forming a socket for receiving a coil spring 20 which operates in connection with a downwardly directed extension 21 on the element 18 in normally supporting said element in operative position; or in other words, with the wedge 17 engaging the surface 16, as seen in Fig. 2.

Extending between the recesses 15, 19 is a shallow recess or key-way 22 in which the body portion of the element 18 seats to retain the element against shifting movement. This recess has an inclined surface 23 operating upon a rounded or cam surface 24 on the element 18 to guide the element in an upward direction to lift the wedge end 17 out of the channel of the slider, or in other words, out of engagement with the links of the stringer.

At 25 is shown a cap or housing, also preferably formed by die casting. This housing forms a cover or guard for the element 18 and also provides a pivotal mounting for the pivot end 26 of a pull or finger piece 27. The housing 25 is in the form of a hollow or channeled body having large recesses 28 on opposed side walls forming loose pivot apertures for the pivot end 26 of the pull. The recesses or apertures 28 divide the side walls of the hood 25 into two pair of elongated feet 29. Each foot has outwardly extending beveled side surfaces 30. The feet 29 are adapted to seat in sockets or recesses 31 formed in the top wall 11 and at outer sides of these recesses are raised ribs 32 which are adapted to engage the beveled surfaces 30 in the manner illustrated in Fig. 3 in permanently securing the hood 25 upon the top wall 11 of the slider.

In producing the slider from thermoplastic materials, it will be necessary in some instances to heat the slider body sufficiently to permit the forming operation with respect to the members 32. At this time it is well to understand, however, that the use of the members 32 is not absolutely essential in the thermoplastic type of devices, as cement may be utilized to adhere the parts together. In referring to the thermoplastic type of sliders, it will be understood that all of the parts 10, 25, 27, may be composed of one

color, or the parts 10, 25 of one color and the part 27 of a contrasting color, or all the parts may be composed of contrasting colors.

The hood 25 is recessed at both ends as seen at 33 to receive and provide free movement of the element 18 as will be apparent. The undersurface of the top of the hood 25 may also be recessed as seen at 34 to clear an upwardly extending portion 35 on the element 16 adjacent the shoulder portion 36. This shoulder portion is normally disposed within the path of the transverse apertures 28 of the hood to be engaged by the pivot end 26 of the pull 27, so that when the pull is moved in the direction of the arrow x in moving the slider along the stringers to separate the stringers, the lock element 18 will be moved forwardly causing the wedge end 17 to be raised out of the channel of the slider to provide free passage of the links of the stringers through the slider. This raised position of the element 18 is shown in Fig. 7 of the drawing. However, in moving the slider in the opposite direction, that is to say, in coupling two stringers, the pivot end 26 of the pull is moved out of engagement with the shoulder 36, leaving the element 18 free to move vertically in the housing 25. The wedge end 17 ratchets over the links in this operation. In this connection it will be understood that a light spring 20 is all that is essential, as the function of this spring is only to move the element 18 into the position shown in Fig. 2. Locking the slider against movement in the direction of the arrow x on the stringers is caused by the wedging of the end 17 between a link and the beveled surface 16 of the slider which in turn will cause the end 17 to engage the links of the fastener in the manner described in said Marinsky patent. The top wall 11 of the slider is also preferably provided with raised posts or bearing surfaces 37 to support the pivot end 26 of the pull in spaced relation to the outer surface of the wall 11 of the slider.

It will be understood that by reason of the simplicity in the construction of the several parts of the slider and the fact that all of the parts may be die cast, a very economical form of lock slider construction is provided. Furthermore, the problem of assembling sliders of the type and kind under consideration is materially simplified since all drilling, tapping, and other machining operations are dispensed with. Still further, sliders that are constructed in accordance with my invention, composed of metal, may be easily plated or coated to provide the desired finish thereon.

In Figs. 5 and 6 of the drawing, I have shown another adaptation of my invention which differentiates from the structure shown in Figs. 1 to 4 inclusive, primarily in the shape and contour of the lock element and the location of the spring supporting the lock element in operative position. In this construction the slider body 38 has a recess 39 in the top wall thereof substantially similar to the recess 15. At 40 is shown a lock element having a hock-shaped wedge end 41 for engaging the beveled surface 42 at the base of the recess 39. The element 40 is mounted at one side of the longitudinal center of the slider as will readily appear in Fig. 5 of the drawing. The element 40 has at its inner end a laterally offset part 43 forming a seat upon which one end of a spring 44 rests. The other end of the spring seats in a hood portion 45.

The hood portion 45 is recessed at one end as seen at 46 to receive the hook end 41 of the lock element when raised to inoperative position in the movement of the slider longitudinally of the stringers. In operating the slider to uncouple the stringers, the lock element is moved out of engagement with the beveled surface 42 against the tension of the spring 44 by the action of the pull, and when thus disengaged from the surface 42, it will be apparent that the hook end 41 of the lock element is free to cam over the beveled surfaces of the links 49 in ratchet fashion. Likewise, in the movement of the slider to couple the stringers, the beveled surface of the end of the lock element will bear against the links 49 sufficiently to move the lock element out of engagement with the surface 42 against the action of the spring thereby providing for the ratchet movement of the lock element over the links 49. In the last operation the pivot end portion of the pull moves into engagement with the surface 50 of a block 51 on the hood 45. The block 51 has an aperture 52 to receive a rivet stud 53 protruding through the upper surface of the slider. The stud is riveted over in securing the hood 45 in position. The hood 45 is recessed as seen at 54 to provide free movement of the pivot 47 of the pull. Opposite the recess or aperture 54, the hood has feet 29 seating in recesses formed in the upper surface of the slider, as with the construction shown in Figs. 1 to 4 inclusive, being retained in position by inturned members 55 in Fig. 5. These members are similar to the members 32.

It will be understood that other adaptations of the invention as herein disclosed may be made in the provision of what might be termed an automatic wedge lock. While the use of a housing for covering and concealing the lock element is preferred, from a standpoint of appearance, the lock element might be exposed. This is especially true in a structure similar to that shown in Figs. 1 to 4 inclusive.

The wedge 17 has a V-shaped end 17a for engagement with the links of the fastener stringers. The same structure is provided in the end 41 of the element 40, as clearly seen in Fig. 6 of the drawing.

It will also be understood that the particular location of the surfaces 16, 42 is really immaterial, as these surfaces may be positioned at any point along the slider but preferably arranged at or adjacent the contracted end thereof. It may be said that the wedge parts 17, 41 constitute extensions of the surfaces 16 and 42, which extensions are movable into and out of the path of the links traveling through the channel of the slider.

It will be apparent that the hoods 25 and 45 in addition to shielding the lock element and the pivot of the pull, is also extended sufficiently to form a guard to take any stress or strain to which the slider may be subjected in laundering or otherwise, and produces what is commonly referred to as a non-crush slider.

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

1. A lock slider comprising a channeled slider body having a pull and a lock element supported for independent movement with respect to said slider body by a hood fixedly secured thereto, said lock element comprising an elongated member having downwardly extending hook parts at opposed ends thereof, one hook part operatively extending through a recess formed in one wall of said slider and registering with an inwardly beveled wall of said recess, resilient means between said slider body and the other hook end of said lock element for normally supporting the

first-named hook end thereof in engagement with the beveled surface of said recess, and an upwardly extending shoulder on said lock element intermediate the hook parts thereof adapted to be engaged by said pull in moving said lock element longitudinally against the action of said resilient means.

2. A lock slider comprising a channeled slider body having a pull and a lock element supported for independent movement with respect to said slider body by a hook fixedly secured thereto, said lock element comprising an elongated member having downwardly extending hook parts at opposed ends thereof, one hook part operatively extending through a recess formed in one wall of said slider and registering with an inwardly beveled wall of said recess, resilient means between said slider body and the other hook end of said lock element for normally supporting the first-named hook end thereof in engagement with the beveled surface of said recess, an upwardly extending shoulder on said lock element intermediate the hook parts thereof adapted to be engaged by said pull in moving said lock element longitudinally against the action of said resilient means, and the lower surface of said lock element adjacent the first-named hook part thereof having a cam surface cooperating with a corresponding cam surface on said slider body for raising said hook part when the lock element is moved longitudinally by said pull in the operation of the slider.

3. A slider for separable fastener stringers comprising a channeled slider body, an elongated lock element arranged directly upon the outer surface of said body and movable longitudinally thereof, means keying said element to said body, one end of the element having an inwardly directed hook portion adapted to enter the channel of the slider, a coil spring arranged longitudinally of the slider and lock element and engaging said element to support the hook portion in operative position in said channel, a pull freely pivoted to the slider, and means on the lock element engaged by the pivot of the pull, in one directional movement of the slider by said pull, to move the lock element longitudinally of the slider against the action of said spring in the removal of the hook portion from said channel.

4. A lock slider comprising a channeled slider body, a lock element, a hood fixedly secured to said body to support said element for independent longitudinal movement with respect to said body, said element having an offset flange portion forming a spring seat, an elongated spring supported in said body and engaging the flange of said element to normally support said element in locked position, said body having a recess opening into the channel of the slider at one end thereof, the corresponding end of said element having a hook part operatively extending through said recess into the channel of said body, an upwardly extending shoulder portion on the lock element adapted to be engaged by the pull, in one directional movement of the slider, to move said element against the action of said spring and in withdrawing the hook part from said channel.

5. A lock slider comprising a channeled body, the outer wall of said body having an elongated recess, said wall having at one end an opening extending into the channel of said body, a lock element arranged in the elongated recess of said body and movable longitudinally thereof, one end of said element having a hook part operatively extending through the aperture of said body into the slider channel, a spring engaging a flange portion of said element to normally support the hook part in operative position, a pull, means forming a free pivotal mounting of the pull in connection with the slider, and means on said element adjacent the pivot of the pull adapted to be engaged by the pull, in operating the slider in one direction, to move the lock element longitudinally of the slider against the action of said spring in withdrawal of the lock part from said channel.

6. A lock slider comprising a channeled body, the outer wall of said body having an elongated recess, said wall having at one end an opening extending into the channel of said body, a lock element arranged in the elongated recess of said body and movable longitudinally thereof, one end of said element having a hook part operatively extending through the aperture of said body into the slider channel, a spring engaging a flange portion of said element to normally support the hook part in operative position, a pull, means forming a free pivotal mounting of the pull in connection with the slider, means on said element adjacent the pivot of the pull adapted to be engaged by the pull, in operating the slider in one direction, to move the lock element longitudinally of the slider against the action of said spring in withdrawal of the lock part from said channel, and said pivot forming means comprising a hood substantially enveloping said lock element.

7. In a lock slider, a channeled slider body having an aperture at one end opening into the channel of said body through one wall thereof, a pull, means on said wall of the slider forming a pivot for said pull, an elongated lock element for the most part disposed upon and slidably movable on the outer surface of said wall of the slider, one end of said element having an inwardly extending hook part operating in the aperture of said slider wall and offset a distance greater than the thickness of the slider wall to project into the channel of said slider, means yieldably supporting the hook part of said element in said operative position, and a shoulder on said element engaged by the pivot of the pull in moving said element to withdraw the hook part from the channel of the slider.

8. A lock slider for separable fastener stringers comprising a channeled body, one wall of said body having an elongated recess, a lock element seating in said recess to key the same to said slider wall, the outer end of the recess being enlarged and said element having a flange extending into the enlarged portion, a spring seating in the enlarged portion and on the flange to support the element in operative position, the other end of the slider having an aperture opening into the channel of said body, a hook part on said element operatively extending through said aperture into the channel of said body, means comprising interengaging beveled walls between said hook part and slider wall to limit movement of said element in one direction, and means whereby said element may be manually moved longitudinally of the slider body against the action of said spring to withdraw the hook part thereof from the channel of said body.

LOUIS H. MORIN.