Feb. 6, 1951 P. S. KELLUM 2,540,485

LOCK SLIDER

Filed Dec. 20, 1946

Fig. 1.

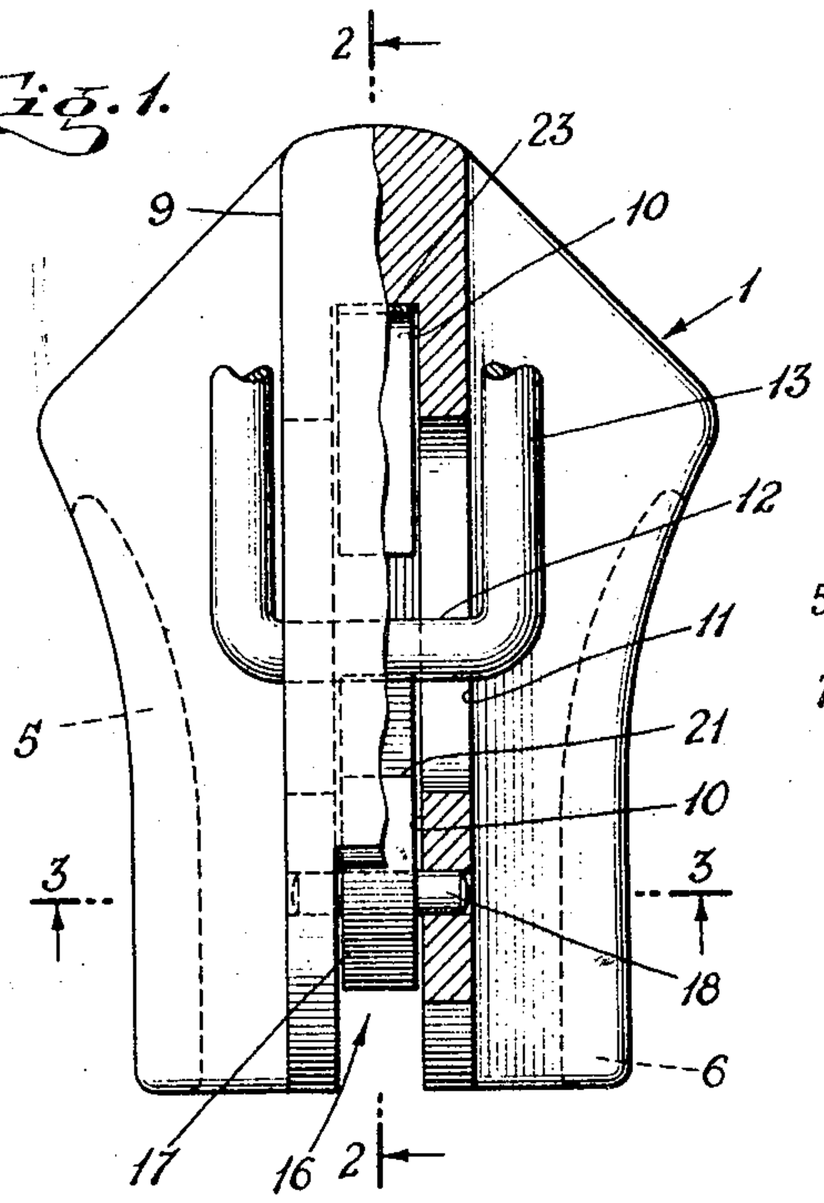


Fig. 3.

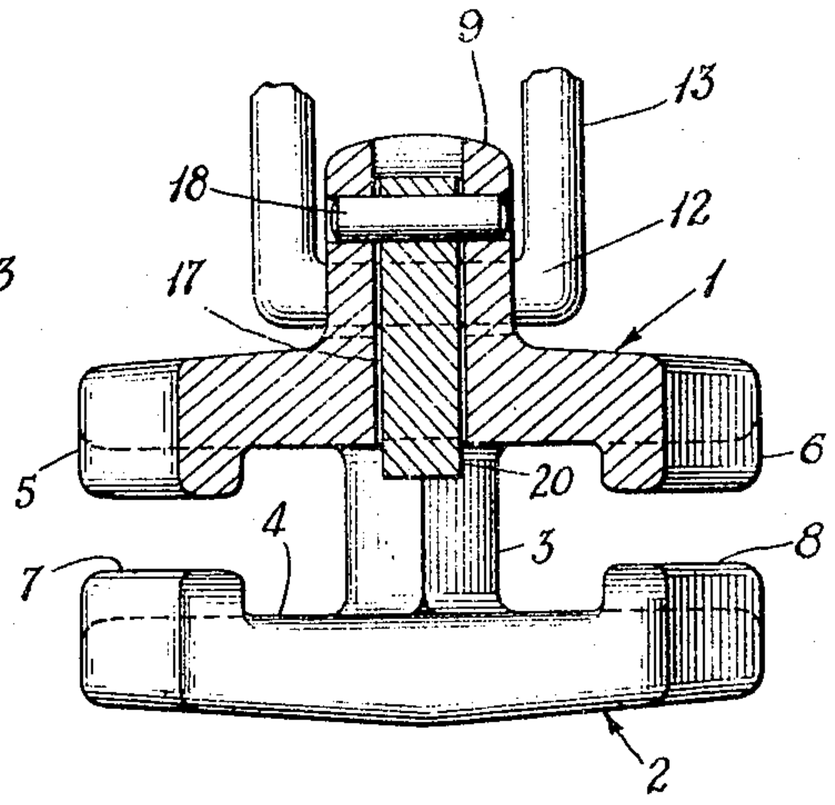


Fig. 2.

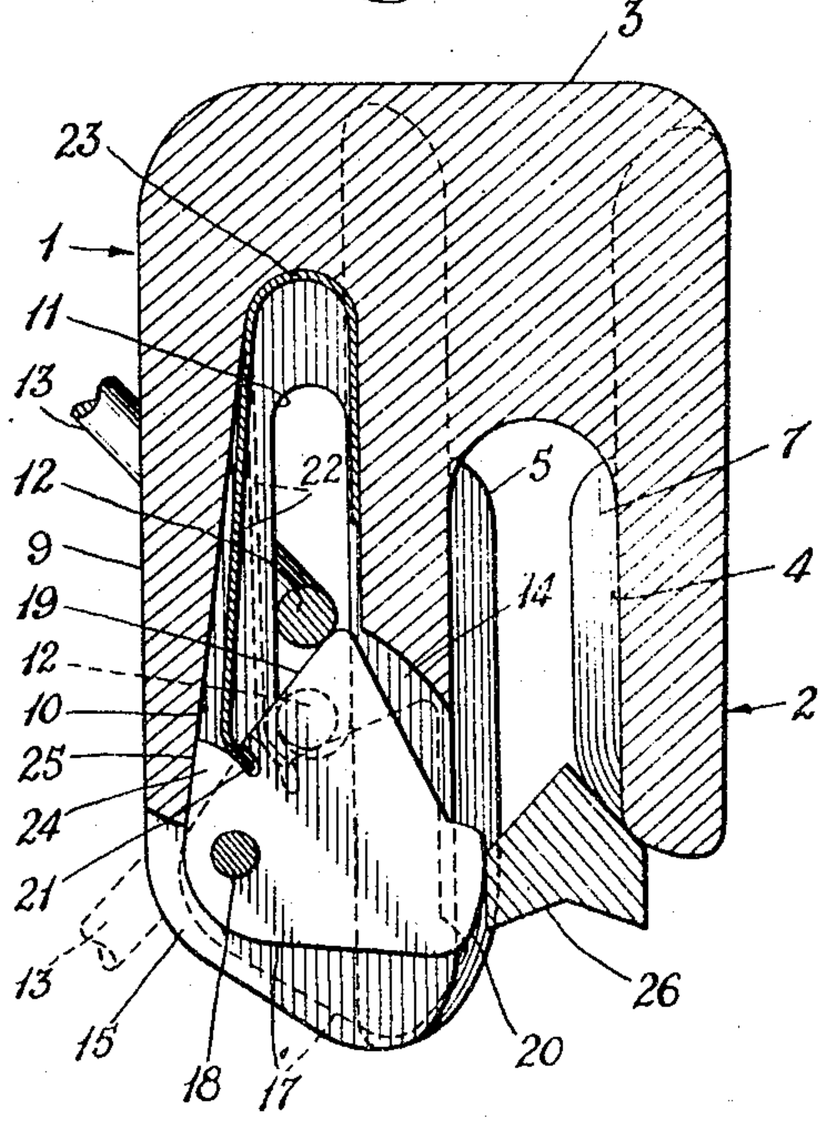
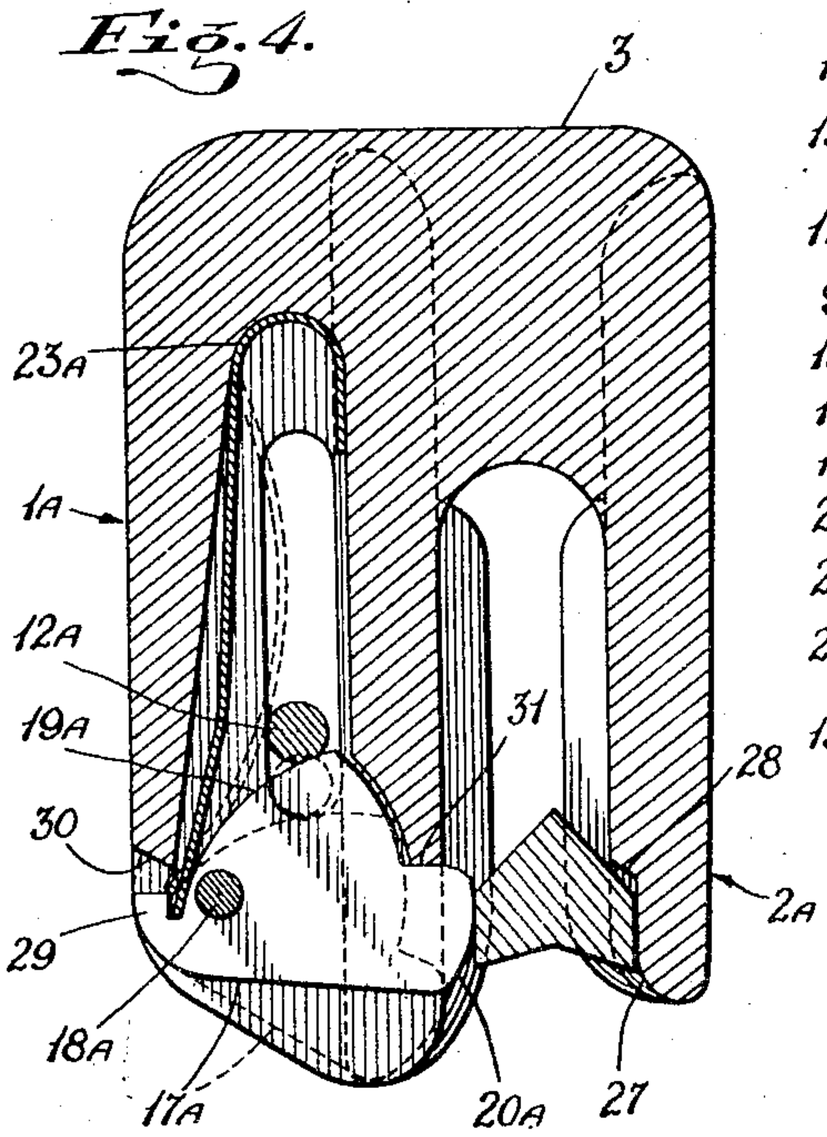


Fig. 4.



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LOCK SLIDER

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10 Claims. (Cl. 24—205.14)

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This invention relates to sliders for separable fasteners and more particularly to sliders having means for locking the slider against movement on the fastener stringers. The invention has for its object the provision of a self-locking slider of improved construction and appearance and, in its preferred form, having a stringer-engaging locking element disposed wholly within the contour of the slider. Other objects and advantages will become apparent hereinafter.

The invention will be understood from the accompanying drawings, of which:

Fig. 1 is a broken-out plan view of a preferred form of slider construction;

Fig. 2 is a section taken along the line 2—2 of Fig. 1;

Fig. 3 is a section taken along the line 3—3 of Fig. 1; and

Fig. 4 is a section, similar to Fig. 2, showing a modified slider construction.

Referring to the drawings, the slider is shown as including upper and lower walls or wings generally designated 1, 2, spaced apart at the head end of the slider by a web member 3. As will be apparent, the slider is of the usual type having a Y-shaped channel 4 for receiving the fastener stringers. It is to be understood, however, that the invention is not necessarily limited to a stringer channel of any particular shape. The walls are provided with the side flanges 5, 6, 7 and 8 which, as usual, confine the fastener elements within the Y channel.

According to the invention, one wing of the slider is provided with a longitudinally extending channel which is open at one end and which is intersected by a transverse opening. In the preferred form, the upper wing is provided with an upstanding bar member 9 which extends throughout the length of the slider. Penetrating the bar member from the tail end of the slider and extending forwardly in the bar member is a channel 10 which is intersected by the transverse opening 11 in which the cross-bar 12 of slider-actuating pull 13 is adapted to move. At its entrance end and throughout a portion of its length, the channel 10 penetrates the adjacent wing of the slider, as indicated at 14, and also opens through the top of the bar member, as indicated at 15. Thus, at the tail end of the slider, the channel entrance takes the form of a slot, as indicated at 16 in Fig. 1.

The slider is provided with a locking element 17 of a spring-actuated type for movement in the channel 10 toward and from the fastener elements passing through the channel 4. As

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illustrated, the locking element can be readily disposed wholly within the contour of the slider, such construction serving to improve the appearance of the slider and to eliminate the snagging sometimes encountered with exposed locking elements. As shown in Fig. 2, the locking element is pivotally mounted by means of pin 18 on the bar member 9 within channel 10 adjacent the tail end of the slider, the locking element swinging within the slot-entrance of the channel. So organized, the locking element can be a simple planiform member, such as a sheet metal stamping, suitably apertured to receive pin 18, which latter can be a push fit in either the locking element of the bar member.

The locking element has a cam-like portion 19 extending across the transverse opening 11 for engagement by the pull 13 and a locking portion 20 movable into and out of the space between the slider walls. Locking element 17 is slotted, as at 21, for engagement by one arm 22 of U-shaped spring 23 which is seated in and abuts the far end of channel 10. Spring 23 is so biased that its arms tend to spread, with the result that the locking element is normally held in the full line position shown in Fig. 2, with the locking portion 20 extending into the channel 4, and stop portion 24 in contact with the adjacent wall of channel 10, as indicated at 25.

According to the invention, the locking element in its normally operative or locking position is adapted to depress at least one of the fastener elements below the plane of the inner surface of the lower wall of the slider for engagement with an abutment which serves to block the slider against movement along the stringers. In a preferred form of the invention this effect may be accomplished by providing a slider, as illustrated by the slider of Fig. 2, which has a lower short wall and an upper longer wall. Thus, when the slider is at rest upon the stringers, the locking element 17 is urged by spring 23 against the meshed fastener elements therein, one of which is shown at 26, and depresses the same below the plane of the inner surface of the lower short wall for engagement with the end face of said wall, thereby locking the slider against "downward" movement, that is, in a direction to uncouple the stringers. The slider may, however, be moved freely in either direction by means of the pull 13, the travel of which is limited by the length of the transverse opening 11.

By drawing the pull downwardly or toward the tail end of the slider, as shown in Fig. 2 by the dotted outline of the pull, the cross-bar 12 of

the pull engages the cam-like portion 19 of the locking element and rotates the latter about the axis of pin 18 to the position indicated by the dotted outline, in which position the portion 20 is clear of the channel 4 and out of contact with the fastener elements therein. The latter then resume their position for normal travel through the slider. When the pull is drawn upwardly, or in the coupling direction, the locking element ratchets over the fastener elements. It will be noted that the locking element remains at all times within the contour or general outline of the slider.

In a modified form of the invention, as shown in Fig. 4, a recess or depression 27, formed in the wall 2*a* and extending inwardly from the tail end of the slider a distance roughly equal to the thickness of a fastener element, terminates in a shoulder or abutment 28 for engagement with a fastener element displaced by the locking element 17*a*.

The locking element 17*a* of the modified slider is somewhat differently shaped from that of the slider of Fig. 2, having a stop portion 29 which serves to limit the movement of the locking element about the pin 18*a* by engaging the shoulder 30 of the bar member. It will be observed that at the limit of such movement, as a result of drawing the cross-bar 12*a* of the pull against the cam-like portion 19*a*, the locking element is still within the contour of the slider, as indicated by the dotted outline of the locking element. As in the previous form, spring 23*a* normally tends to urge the locking element to its full line position in the drawing, and the resiliency of the spring is such as to maintain the locking portion 20*a* of the locking element in firm contact with the shoulder 31.

The remaining features of the slider of Fig. 4 are substantially the same as those of the Fig. 2 slider, and hence will not be described further. Similarly, the operation of both sliders is substantially the same and no further description is believed to be required.

It is to be understood that the sliders above described represent preferred embodiments capable of modification without departing from the scope of the invention.

I claim:

1. A slider of the kind having upper and lower spaced wings united adjacent the head end of the slider, the upper wing having an upstanding longitudinally extending bar member having a transverse opening to receive a slider-actuating pull, characterized by the provision of a channel penetrating the bar member from the tail end of the slider and intersected by said transverse opening, the channel entrance incorporating a slot penetrating the adjacent slider wing for a distance less than the length of the channel, a planiform locking element pivotally mounted in said slot, said element having a fastener element locking portion movable through the wing slot and an actuating portion projecting into the channel and across the said transverse opening, said actuating portion of the element being engageable by said pull to move the locking element out of locking position.

2. A slider of the kind having upper and lower spaced wings united adjacent the head end of the slider, the upper wing having an upstanding longitudinally extending bar member having a transverse opening to receive a slider-actuating pull, characterized by the provision of a channel penetrating the bar member from the tail end of the slider and intersected by said transverse opening, the channel entrance incorporating a slot penetrating the adjacent slider wing for a distance less than the length of the channel, a planiform locking element pivotally mounted in said slot, said element having a fastener element locking portion movable through the wing slot and an actuating portion projecting into the channel and across the said transverse opening, and a locking element spring housed within the channel, for normally maintaining said element in a locking position, said actuating portion of the locking element being engageable by said pull to move the element out of locking position.

3. A slider of the kind having upper and lower spaced wings united adjacent the head end of the slider, the upper wing having an upstanding longitudinally extending bar member having a transverse opening to receive a slider-actuating pull, characterized by the provision of a channel penetrating said upper wing and bar member from the tail end of the slider and intersected by said transverse opening, a locking element pivotally mounted on said bar member within the channel adjacent the tail end of the slider, said locking element having a portion extending across said transverse opening for engagement by a pull therein and a locking portion movable within the space between the slider wings, and means in said channel for normally maintaining said element in a locking position.

4. A slider of the kind having upper and lower spaced wings united adjacent the head end of the slider, the upper wing having an upstanding longitudinally extending bar member having a transverse opening to receive a slider-actuating pull, characterized by the provision of a channel penetrating said upper wing and bar member from the tail end of the slider and opening into said transverse opening, a locking element pivotally mounted on said bar member within the channel adjacent the tail end of the slider, said locking element having a portion extending across said transverse opening for engagement by a pull therein and a locking portion movable within the space between the slider wings, said locking element being disposed within the contour of the slider, and means in said channel for normally maintaining said element in a locking position.

5. In a slider for separable fastener stringers comprising web-connected upper and lower walls having a channel therebetween for receiving fastener stringers, the combination of an upper wall having an elongated channel which opens through one end thereof and also transversely thereof, a pull adapted for movement in said transverse opening, a locking element mounted in said elongated channel at the open end thereof and having a portion normally extending into said stringer channel of said slider, means in said elongated channel for normally maintaining said element in a locking position, said locking element also having a cam portion engageable by said pull whereby to displace said first-mentioned portion of the locking element from said stringer channel, said locking element being disposed wholly within the contour of said slider.

6. In a channeled slider for separable fastener stringers having a forward end and a tail end, the improvement comprising a lower short wing and an overhanging upper longer wing, a centrally located slot in the rear portion of the upper wing and opening through the tail end thereof, and a locking element mounted on the slider

and movable in said slot, said locking element being movable into the channel of the slider to engage and depress fastener elements therein, said locking element being positioned within the overhang of the upper wing during movement of the same.

7. In a channeled slider for separable fastener stringers having a forward end and a tail end, the improvement comprising a lower short wing and an overhanging upper longer wing, a slot in the rear portion of the upper wing and opening through the tail end thereof, a locking element mounted on the slider and movable in said slot, said locking element being movable into the channel of the slider to engage and depress fastener elements therein, said locking element being positioned within the overhang of the upper wing during movement of the same, and a pull movable as a whole both forwardly and rearwardly of the slider.

8. In a channeled slider for separable fastener stringers having a forward end and a tail end, the improvement comprising a lower short wing and an overhanging upper longer wing, a slot in the rear portion of the upper wing and opening through the tail end thereof, a locking element mounted on the slider and movable in said slot, said locking element being movable into the channel of the slider to engage and depress fastener elements therein, said locking element being positioned within the overhang of the upper wing during movement of the same, and a pull movable as a whole both forwardly and rearwardly of the slider and being engageable with the locking element when moved rearwardly.

9. In a channeled slider for separable fastener stringers having a forward end and a tail end, the improvement comprising a lower short wing and an overhanging upper longer wing, a slot in the upper wing opening through the tail end thereof, a locking element mounted on the slider and movable in said slot, said locking element being movable into the channel of the slider to engage and depress fastener elements therein, said locking element being positioned within the overhang of the upper wing during movement of the same, a pull movable both forwardly and rearwardlp of the slider and engageable with the locking element, and a recess in the tail end portion of the inner side of the lower wing for receiving a fastener element depressed by the locking element.

10. In a channeled slider for separable fastener stringers having a forward end and a tail end, the improvement comprising a lower short wing and an overhanging upper longer wing, a slot in the upper wing opening through the tail end thereof, a locking element mounted on the slider and movable in said slot, said locking element being movable into the channel of the slider to engage and depress fastener elements therein, said locking element being positioned within the overhang of the upper wing during movement of the same, and a recess in the tail end portion of the lower wing for receiving a fastener element depressed by the locking element, said recess terminating in a shoulder inwardly of said tail end of the slider.

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