

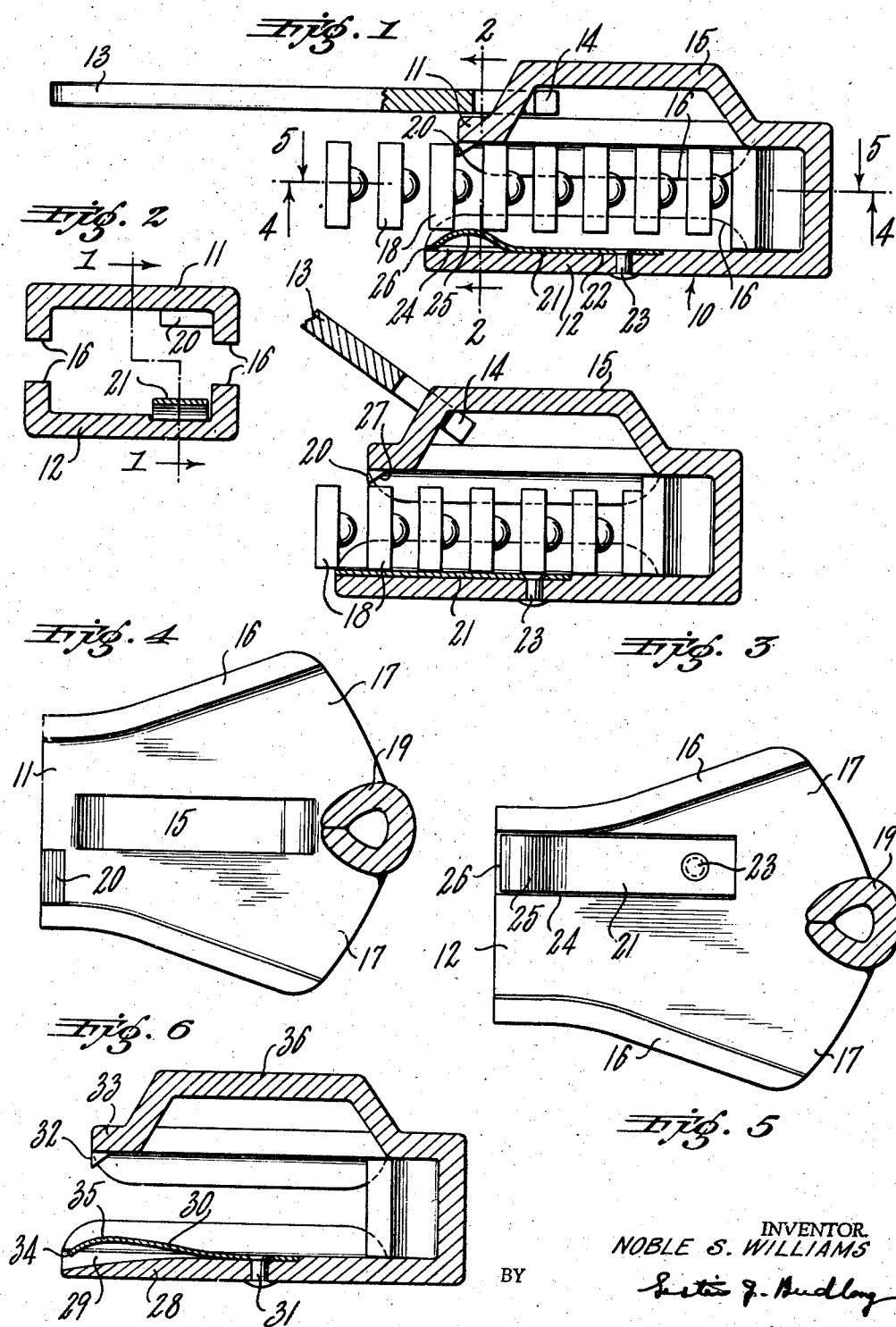
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SLIDER FOR SEPARABLE FASTENERS

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SLIDER FOR SEPARABLE FASTENERS

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This invention relates to an improved slider for separable fasteners having an improved means for automatically locking the slider against unintentional movement in at least one direction along the fastener elements when a pull member associated therewith is released.

Heretofore sliders have been provided with means for automatically locking the slider on the fastener elements regardless of the particular position in which the pull member for operating the slider may be when it is released. In such constructions the locking projection has been movable with respect to the wings of the slider and has been actuated by a spring to hold it in locking engagement with the fastener elements, and this locking projection has been actuated to its non-locking position by the pull member cooperating with a cam surface associated with the projection.

In accordance with the present invention the construction of the locking means is simplified by fixing the locking projection to the top wing of the slider, and a spring normally resiliently retaining the fastener elements in locking engagement with or in position to be engaged by the locking projection is secured to the bottom wing of the slider. The locking projection is disengaged from the fastener elements by manually pulling the pull member so that the bottom wing of the slider and the spring carried thereby are forced against the bottom surfaces of the fastener elements, which thereby depresses the spring and moves the locking projection relatively to the fastener elements and to a position out of engagement with the fastener elements. When the pull is so operated, the slider may be moved along the fastener elements in a direction to disengage these elements and open the fastener which is referred to hereinafter as the rearward direction of the slider. When it is desired to interlock the fastener elements, thereby closing the fastener, the pull member is actuated in the opposite or forward direction along the fastener elements, either with or without an outward component of force by the pull member sufficient to move the bottom wing against the bottom surfaces of the fastener elements.

The above objects and other advantages of this invention will be more readily understood by referring to the following description and the accompanying drawing, in which:

Fig. 1 is a longitudinal sectional view of a slider embodying this invention taken along line 1—1 of Fig. 2, and showing the cooperation between the fastener elements and the locking

projection when the projection is in locking position with respect thereto;

Fig. 2 is a transverse cross-sectional view of the slider taken on line 2—2 of Fig. 1;

Fig. 3 is a view similar to that in Fig. 1 but showing the locking projection disengaged from the fastener elements and in position to permit rearward movement of the slider when the pull is moved in the rearward direction;

Figs. 4 and 5 are cross-sectional views taken on lines 4—4 and 5—5 respectively, in Fig. 1, and showing the inner surfaces, respectively, of the top and bottom wings of the slider; and

Fig. 6 is a longitudinal cross-sectional view of a modified form of the slider shown in Fig. 1.

Referring to the drawing in detail the slider 10 is provided with spaced top and bottom wings 11 and 12, respectively, and is operated by a pull member 13 having its end 14 slidably connected to a bail 15 which is struck up from the top wing 11 in the usual manner. The wings 11 and 12 are provided with downwardly extending side flanges 16 which form diverging channels 17 through which the rows of fastener elements 18 are adapted to slide relatively in respect to the slider. The slider is provided with the usual type of spreader 19 connecting the wings 11 and 12 at the forward end of the slider, which spreader in conjunction with the channels 17 cause the fastener elements to be separated and to be interlocked with one another as the slider is moved therealong.

The top wing 11 of the slider is provided with a locking projection 20, which may be punched up from the wing material, or which may be formed of harder material brazed onto, or inserted in the wing. As shown in Fig. 1, the locking projection 20 is positioned in respect to the fastener elements 18 so that it projects between the elements 18, and such relationship between the elements and the projection is normally maintained by a spring 21 having its front end 22 secured to the bottom wing 12 of the slider by a rivet 23, or by other suitable means such as welding or soldering. The spring 21 is located in a groove 24, and its rear end is provided with an upwardly curved portion 25 which is substantially opposite the locking projection 20 and resiliently contacts with the bottom surfaces of the fastener elements 18 so as to normally maintain the fastener elements in position to be engaged by the locking projection 20 when the slider 10 is urged in either direction. The extreme rear end 26 of the spring 21 is curved down-

wardly and is slidably supported by the surface of the bottom wing 12.

When the locking projection 20 is in the position shown in Fig. 1, the slider 10 cannot be moved rearwardly along the fastener elements 18, excepting when the bottom of the slider is pulled toward the elements 18 and the spring is depressed, as shown in Fig. 3. The spring 21 is depressed by pulling the pull member 13 upwardly away from the fastener elements, and in order to move the slider 10 along the elements for disengaging same, the pull 13 is at the same time moved rearwardly in the direction in which it is inclined as shown in Fig. 3. When it is desired to close the fastener, that is interlock elements with one another, the end 14 of the pull 13 is moved forwardly along the bail 15 and into contact with the forward end of the bail. The force exerted by the end 14 on the bail 15 may be either parallel to the plane of the top wing 11, or the force may have a component away from the fastener elements 18 in order to depress the spring 21 and move the locking projection 20 from its locking position with respect to the fastener elements. It is not necessary, however, to apply such component of force away from the elements, because the locking projection 20 is provided with a beveled surface 27 which projects downwardly and rearwardly from the top wing 11, and the surface 27 will ride over the top edges of the fastener elements and permit the slider to be operated in the forward direction without such outward component of force being applied by the pull member 13.

A modified form of the invention is shown in Fig. 6, in which the bottom wing 28 is provided with a longitudinal groove 29 having a spring 30 secured therein by a rivet 31. The spring 30 is adapted to resiliently contact with the bottom surface of the fastener elements 18 and normally retain the fastener elements in position to be engaged by the locking projection 32 affixed to the lower face of the top wing 33. The groove 29 has a greater depth at its rear end than at its front end so that the rear end 34 of the spring may be depressed into the groove a sufficient distance to permit the locking projection to be moved out of its locking position in respect to the fastener elements 18 without the end 34 contacting with the bottom of the groove 29 until the top surface of the curved portion 35 of the spring 30 is substantially flush with the top of the groove. The slider is provided with a pull, not shown, which is slidably connected to the bail 36 in a manner similar to the pull 13 shown in Fig. 1, so that the slider may be operated in the same manner as the slider of Fig. 1.

While I have shown preferred forms of my invention, it will be understood that changes in the details may be made therein without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A slider for separable fasteners having interlocking fastener elements comprising a top and a bottom wing secured together at their front ends, a locking projection fixed to the rear end of the top wing and extending towards said bottom wing, a spring fixed to said bottom wing and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, a pull member attached to said top wing for operating

said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to fastener elements, and permitting said slider to be operated to separate the fastener elements.

2. A slider for separable fasteners having interlocking fastener elements comprising a top and a bottom wing secured together at their front ends, a locking projection formed of harder material than the wing material fixed to the rear end of the top wing and extending towards said bottom wing, a spring fixed to said bottom wing and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, a pull member attached to said top wing for operating said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to fastener elements, and permitting said slider to be operated to separate the fastener elements.

3. A slider for separable fasteners having interlocking fastener elements comprising a top and a bottom wing secured together at their front ends, a locking projection fixed to the rear end of the top wing and extending towards said bottom wing, a spring fixed to said bottom wing and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, a pull member operatively attached to a bail on said top wing for operating said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to fastener elements, and permitting said slider to be operated to separate the fastener elements, and said locking projection being adapted to extend between the fastener elements and provided with a beveled end inclined rearwardly and towards said bottom wing so that it may depress said spring and slide over the fastener elements when the force applied by the pull is exerted against the front end of said bail and with or without pulling said bottom wing towards the fastener elements.

4. A slider for separable fasteners having interlocked fastener elements comprising a top and a bottom wing secured together at their front ends, a locking projection fixed to the rear end of the top wing and extending towards said bottom wing, a spring fixed to said bottom wing and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, said spring being fixed at its forward end to the bottom wing and having its rear end curved upwardly towards said top wing and adapted to resiliently engage the bottom of the fastener elements substantially opposite said locking projection, a pull member attached to said top wing for operating said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to said fastener elements, and permitting said slider to be operated to separate the fastener elements.

5. A slider for separable fasteners having interlocking fastener elements comprising a top and a bottom wing secured together at their front

ends, a locking projection fixed to the rear end of the top wing and extending towards said bottom wing, a spring fixed to said bottom wing and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, said bottom wing having a recess into which said spring is located and secured at the forward end of said spring, said spring having its rear end curved upwardly towards said top wing and adapted to resiliently contact with the bottom of the fastener elements substantially opposite said projection while the extreme rear end of said spring is curved downwardly and is supported by said bottom wing in said recess, a pull member attached to said top wing for operating said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to fastener elements, and permitting said slider to be operated to separate the fastener elements.

6. A slider for separable fasteners having interlocking fastener elements comprising a top 25

and a bottom wing secured together at their front ends, a locking projection fixed to the rear end of the top wing and extending towards said bottom wing, said bottom wing having a longitudinal groove formed in its upper surface, a spring secured at its front end in said groove, said spring having its rear end curved upwardly and adapted to normally retain the fastener elements resiliently in position to be engaged by said locking projection and thereby lock said slider against movement in one direction, said rear end of said spring being spaced from said bottom wing when the elements are in position to be engaged by said projection and said end being supported by said bottom wing when it has been depressed so that the top of the curved portion is flush with the upper edge of said groove, a pull member attached to said top wing for operating said slider and pulling said bottom wing towards said fastener elements and thereby moving said locking projection from said locking position in respect to said fastener elements, and permitting said slider to be operated to separate the fastener elements.

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