Nov. 26, 1940. N. J. POUX 2,222,988

SLIDER FOR SLIDE FASTENERS

Filed Aug. 5, 1938

Fig. 1.

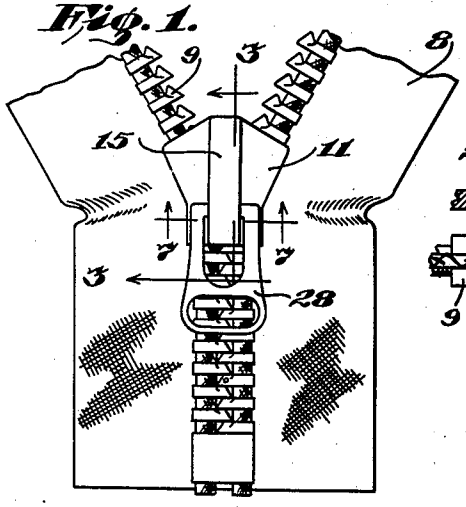
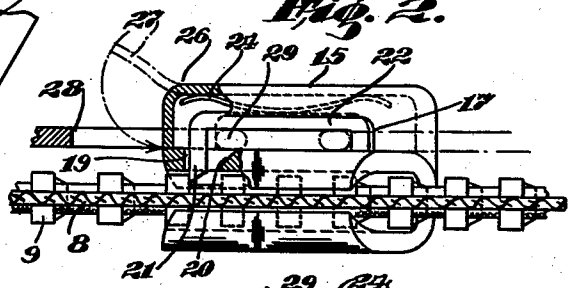


Fig. 2.



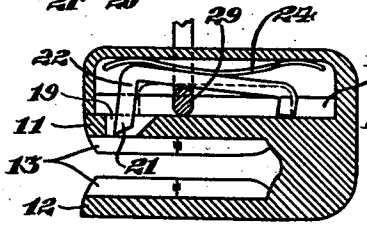
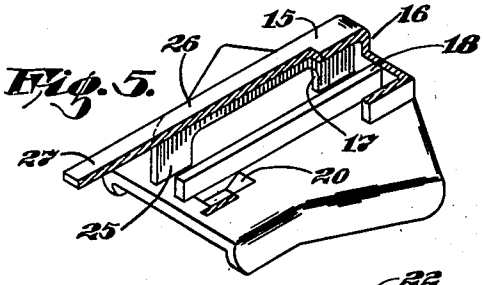


Fig. 3.

Fig. 5.



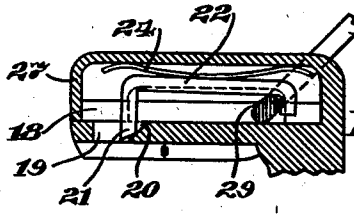
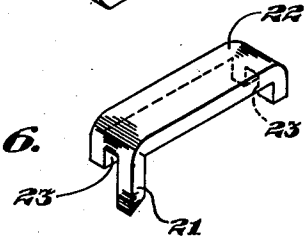


Fig. 4.

Fig. 6.



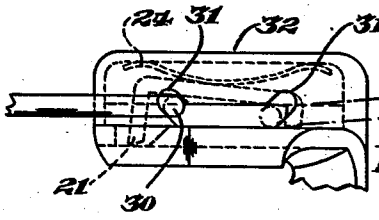


Fig. 8.

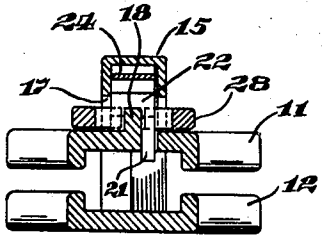


Fig. 7.

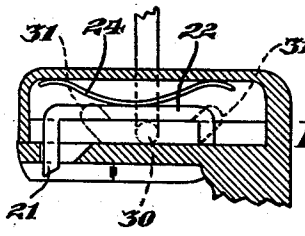


Fig. 9.

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Patented Nov. 26, 1940 2,222,988

UNITED STATES PATENT OFFICE

2,222,988

SLIDER FOR SLIDE FASTENERS

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Application August 5, 1938, Serial No. 223,288

2 Claims. (Cl. 24—205.5)

This invention relates to improvements in automatic lock sliders for separable interlocking fasteners, and is especially concerned with providing a slider of this type which will be more easily manufactured and very reliable in operation.

In the present invention it is an object to provide an automatic slider in which the locking arm is not fixed at any certain bearing, but which is free to slide out of locking engagement and to provide for the locking arm to be protected by a cap, such cap receiving the main force transmitted by the pull tab.

Another object is to provide a positive means to disengage the locking arm automatically by longitudinal pull on the pull tab.

Still another object is to eliminate the tendency for the locking device to ratchet over the fastener elements.

A still further object is to provide a design whereby all delicate bearings will be eliminated and the whole structure will be small and compact, yet extremely strong.

A further object is to provide in a slider of this type an arrangement of parts such that the assembly will be extremely simplified, and one that can be manufactured easily by molding.

With these and other objects in view, I have devised the arrangement embodying my invention as described in the following specification and illustrated in the accompanying drawing of which,

Fig. 1 is a plan view of a part of a separable fastener showing one of my improved sliders thereon;

Fig. 2 is a side view of the slider on a section of fastener with parts broken away to facilitate illustration and shows the device in locked position;

Fig. 3 is a cross-sectional view on the line 3—3 of Fig. 1, showing the locking arm in unlocked position;

Fig. 4 is a cross-section showing the upper portion of the slider with the locking arm in its backward and unlocked position and positively relieved from any possible engagement with the fastener elements;

Fig. 5 is a perspective view illustrating the structure of the top slider body;

Fig. 6 is a perspective view of the locking arm;

Fig. 7 is a cross-section on the line 7—7 of Fig. 1;

Fig. 8 shows a modification of the present invention and illustrates the upper portion of the slider body; and

Fig. 9 is a longitudinal cross-section of Fig. 8.

The slider is formed of any known material, and in any suitable size and shape to fit the fastener on which it is used. The fastener illustrated is of well-known type comprising fabric tapes 8, having closely spaced interlocking fastener elements 9, attached to the adjacent edges of the tapes. The slider body comprises upper and lower plates 11 and 12 respectively, with side flanges 13 for guiding the fastener elements into engagement.

In forming the upper slider plate 11, a cap 15 is formed integral with said plate and extends lengthwise of the slider body in a central position. The cap comprises a closed end 16, with recesses 17 formed on either side to be engaged by the slider pull tab bearings. Also centrally located and integral with said slider body and cap is formed a guide rail 18 extending the full length of the slider cap. Near the front end of the rail 18 under the slider cap is an opening 19 in the slider body. This opening 19 extends along said rail a suitable distance and is substantially greater in length than width and formed at its rearward termination with an inclined surface 20. The opening receives the locking projection 21 of the locking arm 22. The term "rearward" or its equivalent "backward," as used herein and in the appended claims, has reference to the direction extending toward that end of the fastener to which the slider is moved when the fastener is closed, that is, the wide end of the slider would be its rear end and when it is moved to close the fastener, it is moved backwardly.

The locking arm 22 shown in Fig. 6 is made preferably of a flat piece of material bent over at both ends at approximately 90° or less. The entire length of the arm will be considerably less than the length of the slider cap 15 which is to receive the locking arm. At each end of the turned-down portion of the locking arm there are cut out notches 23 to fit over the rail 18 and permit the locking arm to move freely thereon. Said locking arm will be held in position by a flat spring 24 riding freely against the locking arm and the upper interior surface of the slider cap 15. The slider in conjunction with rail 18 is of proper proportions to accommodate these parts.

It will be observed that the entire slider body may easily be made by molding or die-casting, the cores for the cap being drawn endwise from the slider body.

Assembling the locking means is accomplished by introducing the parts through the open end 25 of the slider cap. The locking arm 22 slides

freely over the rail 18 and the locking projection 20 protrudes through the opening 19 in the slider body. The spring 24 is assembled at this time and serves to hold the locking arm in proper position, as illustrated. The final step in assembly of the locking means is to bend down at point 26 the portion of material 27 left for this purpose as shown in Figs. 2 and 5.

The pull device for the slider body may be of any convenient form and the one shown herein comprises a metal tab 28 bifurcated at one end to embrace the locking arm and slider cap. The trunnions or bearings are formed not of usual shape, but in shape of cams 29. The width of such cams is slightly less than the height of the slider cap recess 17. This arrangement permits the slider cap to carry the main force of the pull rather than the locking means.

In the operation of this improved lock slider it is evident that any upward swinging movement on the pull tab 28 will affect the cam 29 and lift the locking arm upward and out of locked position. Any further movement will bring the pull tab bearings into contact with the side recesses 17 of the slider cap and from that instant the main force of the pull will be directed to the sides of the slider cap. The slider will be held by spring 24 in locked position when cam 29 lies parallel to the plane of the slider body, as shown in Fig. 2, and in unlocked position, as shown in Fig. 3. As shown in Fig. 3 any force operating to open the fastener will act on the locking member until the locking projection is raised clear of the fastener elements. The fact that the main force of the pull is carried on the slider cap 15 relieves not only heavy strain from the locking arm but likewise prevents positioning spring 24 from being squeezed to the point of weakening or losing its set.

In closing movement, shown in Fig. 4, the pull tab trunnions engage the locking member, and pull it backward until it rides over the inclined surface 20. Thus the lock point is held out of engagement with the fastener elements instead of ratcheting over them.

Figs. 8 and 9 show a modified form of my invention. In this form the cam bearings on the pull tab may be replaced by regular trunnions such as plain round bearings. To lift the locking means from engagement with the fastener elements there are properly spaced inclined notches 31 formed within the sides of the slider cap 32. These notches serve to direct the pull tab bearing 30 to lift the locking means 21 out of engagement. The same inclined surface 20 prevents ratcheting of the locking means in closing the fastener.

In this modified form the slider is in locked position at all times except when the pull tab is urged to travel in the inclined notches 31. In the unlocked position when the pull tab is released, spring 24 immediately urges locking means to move again into engagement with the fastener elements.

From the above description it will be understood that the aims and objects of my invention have been accomplished, and while I have shown two embodiments of my invention, it is understood they were shown only for purposes of illustration and description and that various other forms may be devised within the scope of my invention as defined in the appended claims.

What I claim as my invention is:

1. A slider for slide fasteners comprising a slider body having a recessed cap, a locking member loosely mounted in said cap and shiftable longitudinally therein, cooperating cam surfaces on the slider body and locking member to lift the locking member out of locking engagement upon backward movement of the locking member, and a pull tab operatively connected to the slider body and locking member for moving the locking member backwardly and for moving the slider as a whole.

2. A slider for slide fasteners comprising a slider body having a fastener member receiving channel therein and having an opening through the slider body extending into the slider channel adjacent the forward end thereof, said slider body also having an upstanding cap member extending longitudinally thereof and over said opening, said cap member being hollow to provide a recess therein, a locking member substantially shorter than said recess and movable longitudinally in said recess, said locking member being movable vertically also in said recess and having a locking projection at its forward end disposed directly opposite said opening in the forward position of said locking member, a spring normally urging said locking member inwardly of said slider toward locking position, the rear wall of said opening being inclined backwardly and outwardly, said cap member having slots in its side walls, a pull member having trunnions extending through said slots, and means on said locking member engaged by said trunnions upon rearward movement of the pull member to effect backward sliding movement of the locking member, whereby the locking projection is slidably drawn out of locking position when the pull is moved backwardly to close the fastener, said locking member also having means adjacent its forward end engaged by said trunnions to lift the locking projection out of locking position upon exertion of outward pull on the locking member to open the fastener.

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