Sept. 29, 1942. A. P. BLOXSOM 2,296,831

SAFETY SLIDE FASTENER

Filed Jan. 14, 1941

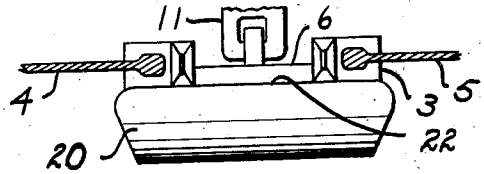



Fig. 4.

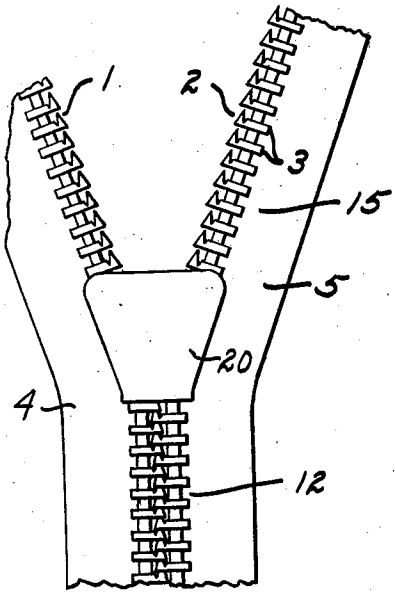



Fig. 1.

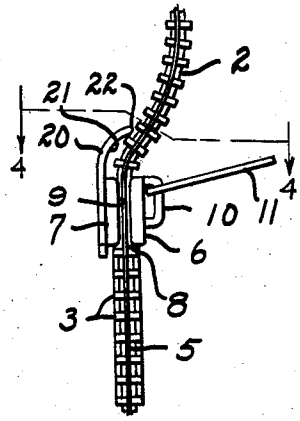



Fig. 2.

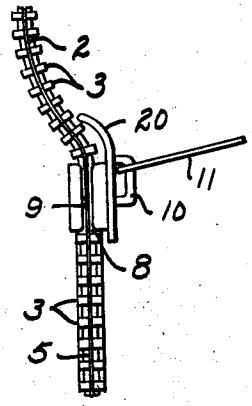



Fig. 3.

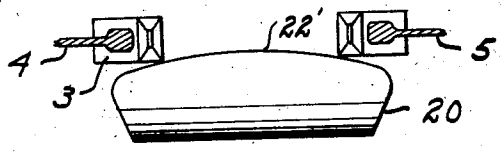



Fig. 5.

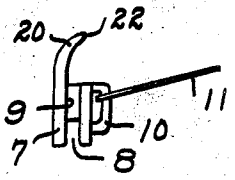



Fig. 7.

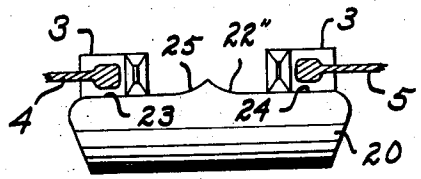



Fig. 6.

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## SAFETY SLIDE FASTENER

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5 Claims. (Cl. 24—205)

This invention relates to automatic slide fasteners and more particularly to a fastener of this type which is so constructed as to eliminate the possibility of material entering and obstructing the closure of the fastener as the slide is moved relative to the fastener elements.

A primary object of the invention is to provide a simple and reliable construction for closing rows of fastener elements and at the same time for displacing from the path of travel of the slider any material that would tend to enter the closing fastener and obstruct movement of the slide.

A further object is to provide the fastener slide with a guard which engages the rows of fastener elements and prevents obstructing material from entering between such rows of elements.

Still another object is to provide a closure guard which engages the rows of closure fasteners and displaces such fasteners from the line of movement of the closure slide.

The foregoing are primary objects and will, together with other objects, be more fully apparent from the following description considered in connection with the accompanying drawing in which:

Fig. 1 is a rear elevation of a fastener and slide embodying the invention;

Fig. 2 is a side elevation of the fastener shown in Fig. 1;

Fig. 3 is a side elevation similar to that shown in Fig. 2 but illustrating an alternative embodiment of the invention;

Fig. 4 is a plan view of the guard plate shown as provided with a straight forward edge;

Fig. 5 is a plan view similar to that shown in Fig. 4 but showing the guard plate provided with a continuously curved forward edge;

Fig. 6 is similar to Figs. 4 and 5 but illustrates the use of a forward edge which is symmetrically contoured at opposite sides of a medial plane through the guard;

Fig. 7 is a side elevational view of the slide and guard assembly showing the guard member formed integral with the body of the slide.

In the drawing there is shown a fastener comprising rows 1 and 2 of fastener elements 3. These fastener elements are secured to tapes 4 and 5 by means of which the composite fastener may be attached to the portions of any two pieces of material between which it is desired to form a closure.

As best seen in Figs. 1 and 2 the rows 1 and 2 of the fastener elements 3 pass through the converging passages in the slide 6 which comprises a body 7 having open side passages 8 for the fastener elements 3, the opening 9 permitting passage of the tapes 4 and 5 as the slide is moved longitudinally of the rows 1 and 2.

The body 7 is provided with a loop 10 on its forward face and a link 11 is secured in such loop. The link 11 is adapted to be clasped by the hand to effect movement of the slide assembly longitudinally of the rows 1 and 2 whereby a closure is effected between the tapes 4 and 5 as indicated at 12 below the slide while such fastener elements are disengaged above the slide as indicated at 15.

Difficulty is frequently experienced when closing a fastener of this type by the entry of material between the rows 1 and 2 proximate the point of convergence within the slide 6. This feature results not only in rendering the fastener inoperative but also is frequently destructive to the fabric or other material which enters the fastener.

In order to avoid the difficulty to which reference has just been made, a guard member 20 is secured to the slide 6 in any suitable manner or it seems apparent that such guard member may be formed integral with the body 7 as illustrated in Fig. 7 of the drawing. The guard member 20 is shown as trapezoidal in shape but it is to be understood that any suitable shape may be utilized. An important feature of the guard member, however, resides in the fact that it is curved at 21 toward the rows of fastener members 1 and 2, the forward edge 22 lying approximately in the plane of the opening 9 in the passage 8 in the slide 6. The edge 22 therefore engages one face of the fasteners 3, as shown in the disclosed embodiment, and in this manner displaces the rows 1 and 2 across such plane so that the rows enter the slide at an angle to the line of movement of the slide. This actual contact of the edge 22 with the fastener elements affirmatively prevents material from entering between the guard and such elements and hence from entering between the elements at their point of convergence within the slide 6.

In Figs. 1 and 2 the guard member 20 is shown as secured to the rear of the slide 6 so that the guard is instrumental in displacing the fastener elements forwardly, the contact with the elements being instrumental in effectively displacing obstructing material from between 1 and 2 as the slide is moved to closed position. It is apparent however that the guard member may be secured to the front side of the slide 6 in the manner illustrated in Fig. 3. In this case the

rows 1 and 2 of the fastener elements 3 are displaced rearwardly by the guard. This construction functions in the same manner as above described to displace obstructing material from between the rows of fasteners.

As illustrated in Figs. 1 to 4 the edge 22 of the guard 20 may be straight. Hence the displacement pressure exerted upon the fastener elements 3 will be substantially the same regardless of the position of such elements along the edge 22.

In the modified form of guard shown in Fig. 5 the edge 22' is shown as curved. The curvature of the edge 22' not only displaces the fasteners 3 from the line of movement of the slide 6 but also tends to maintain the rows 1 and 2 more widely separated as they approach the point of convergence within the slide 6. Accordingly the angle of convergence when this construction is used will be somewhat greater than when using the construction as shown in Fig. 4.

In Fig. 6 the guard 20 is shown as provided with a forward edge having substantially straight portions 23 and 24 there being a small rib 25 substantially in the medial plane through the guard member. This construction operates in a manner very similar to that shown in Fig. 4 except that the rib 25 tends to move obstructing material toward the edges of the guard which, by virtue of its engagement with the surface of the fastener elements 3 displaces such material from within the closing portions of the rows 1 and 2.

In operating the fastener embodying the invention, the slider 6 is moved in the desired direction by means of the link 11. When closing the fastener the slide 6 is moved upwardly as viewed in Figs. 1 to 3 and the rows 1 and 2 of fasteners 3 move toward the point of convergence in the slide 6. The edge of the guard 20 is in constant engagement with the rows 1 and 2 proximate the slide 6 and displaces the rows from the plane of movement of the slide. This tends to move the closing fasteners from material that tends to obstruct closure and at the same time the contact of the fasteners by the edge of the guide prevents obstructing material from entering between the guide and the respective rows.

When the slider 6 is moved in the opposite direction the guide 20 deflects the fasteners and tends to enhance the divergence of the rows 1 and 2 as the elements 3 are progressively moved from interlocking position. During this movement the guard has no other function to perform as there is little likelihood of adjacent material interfering with or being injured by the movement of the slide.

While a specific embodiment of the invention has been shown it is to be understood that the invention is not confined to such specific embodiment since the invention broadly contemplates a simple and reliable construction for closing rows of fastener elements and for displacing from the path of travel of the slider of the fastener any material that might be injured thereby or that might obstruct in the operation of the fastener.

What is claimed is:

1. A closure device comprising opposed rows of separable fastener members, a fastening slide provided with passageways for guiding the fastener members into interlocking relationship when the slide is moved in one direction and for unlocking the elements when moved in the opposite direction, and a curved plate secured to and movable with said slide and in engagement with the rows of fastener members in advance of the slide to direct the fastener members into the slide along a curved path and into the plane of movement of the slide.

2. A closure device comprising opposed rows of separable fastener members, a fastening slide provided with passageways for guiding the fastener members into interlocking relationship when the slide is moved in one direction and for unlocking the elements when moved in the opposite direction, and a curved plate secured to and movable with said slide and in engagement with the rows of fastener members in advance of the slide to direct the fastener members into the slide along a curved path and into the plane of movement of the slide, said curved plate having a substantially straight edge in engagement with one of the outer faces of the fastener members.

3. A closure device comprising opposed rows of separable fastener members, a fastener slide for controlling said rows of fastener members, and a plate of substantially uniform thickness secured to and movable with said slide and of a width to underlie the rows of members proximate their point of convergence, said plate being trapezoidal in shape and curved transversely of the rows of members and having its wider and leading base at all times in engagement with the members to direct such members across the plane of movement of the fastener slide so that the fasteners enter the slide at a gradual curvature and the guide forcibly displaces obstructing material from the fastener members entering the slide.

4. A slide for use in connecting rows of fastener elements comprising, a body having converging passages therein for the rows of elements, a guard plate of substantially uniform thickness secured to and extending outwardly from the slide in the direction of the open rows of elements, said guard plate being curved toward the rows of elements and having its forward edge lying substantially in the plane of movement of the slide to engage said elements proximate the slide and displace the elements across the plane of movement and thereby remove obstructing material from the fastener elements entering the slide.

5. A slide for use with rows of cooperating fastener elements, a body having converging passages therein for guiding the fastener elements convergingly into interlocking engagement as the slide is moved longitudinally of the rows, a plate secured to and movable with said body and extending toward the open portion of said rows of elements, said plate being of substantially uniform thickness curved toward the line of movement of the body to engage both rows of elements proximate the body to displace obstructing material and to guide the fastener elements into the body along a line of curvature which gradually merges into the plane of movement of the body.

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