

PATENT SPECIFICATION

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(54) AN AUTOMATICALLY LOCKING SLIDER FOR SLIDING CLASP FASTENERS

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumi-cho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an automatically locking slider for sliding clasp fasteners. By the automatically locking slider is meant a slider having means for automatically holding it in locked position on the sliding clasp fastener when its pull tab is released after the fastener has been closed.

There have hitherto been proposed a number of automatically locking sliders of which construction basically includes a slider body constituted by an upper and a lower shield, a cap-like yoke attached to the slider body, a pull tab movably connected to the yoke and a resilient locking member accommodated in the yoke and operatively associated with the pull tab in such a manner that lifting the pull tab causes the locking member to disengage from a sliding clasp fastener stringer and flipping the pull tab flat against the slider body allows the locking member to restore by its own tension and engage with the fastener stringer to lock the slider thereon. With such construction wherein the locking member is disposed for free movement within the yoke in a direction in which the pull tab is manipulated, the locking member is liable to shift out of the correct path of its operative movement relative to the fastener stringer.

According to the invention there is provided an automatically locking slider for sliding clasp fasteners which comprises a body including an upper shield and a lower shield connected in spaced parallel relation to define therebetween a channel for the passage of two opposed sliding clasp fastener stringers carrying rows of in-

terlocking elements, a yoke attached to said body and having a laterally extending opening, a pull tab having a pivotal end to hinge in said opening, said upper shield having a first through aperture and a second through aperture, both apertures communicating with said channel, and locking means centrally bent into a U-shaped structure consisting of two arms and accommodated in said yoke and adapted to releasably lock the slider in position on the sliding clasp fastener stringers, said locking means having a support lug perpendicularly extending from one of the said arms adjacent the U-bent portion and engageable in said first aperture and a locking prong extending from said one arm and adapted to pass through said second aperture for engagement with the fastener stringers, said support lug being adapted to abut against one end wall of said first aperture when the pull tab is manipulated in one direction and against an opposite end wall of said first aperture when the pull tab is manipulated in the other direction thereby restricting free longitudinal movement of said locking means.

The invention will be described by way of example with reference to the accompanying drawings which illustrate by way of example a preferred embodiment which the invention may assume in practice and in which like reference numerals denote like parts throughout the several views, and wherein;

Figure 1 is a longitudinal cross-sectional view of an automatically locking slider constructed in accordance with the invention, showing the same in locked position;

Figure 2 is a view similar to Figure 1 but showing the slider in unlocked position with its pull tab lifted and leaned in one direction;

Figure 3 is a view similar to Figure 2 but showing the pull tab lifted and leaned in one direction;

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Figure 3 is a view similar to Figure 2 but showing the pull tab lifted and leaned in another direction;

Figure 4 is a perspective view of a locking means incorporated in the slider of the invention said means being shown upside down; and

Figure 5 is an exploded, perspective view of the slider of Figure 1, better illustrating the construction of the same.

Referring now to the drawings and to Figure 5 in particular which illustrates the general construction of a preferred automatically locking slider according to the invention, it will be seen that the slider 10 includes a slider body 11 including a flanged upper shield 12 and a flanged lower shield 13. The upper and lower shields 12 and 13 are joined at one end by a neck 14 and spaced apart parallel to each other to form a channel 15 for the guided passage of sliding clasp fastener stringers (not shown). To the body 11, above the upper shield 12, is attached a cap-like yoke 16 which has at one end a downwardly extending elongated portion 17 adapted to fit into a recess 18 formed in the neck 14 and at the other a horizontally bent portion 19 (Figures 1, 2 and 3) anchored to an end of the upper shield 12 opposite to the neck 14.

Designated at 20 is a pull tab pivotally attached to the yoke 16 and having a square aperture 20a and a pivotal end 21 adapted to hinge in an opening 22 formed in and extending laterally of the yoke 16.

The upper shield 12 of the body 11 of the slider 10 is provided for purposes hereafter explained with a first pair of laterally spaced through apertures 23 at a forward end adjacent the neck 14 and a second pair of similar through apertures 25 at the opposite or rearward end, all of which apertures 23 and 24 communicate with the channel 15 through which the fastener stringers are guidedly moved.

Illustrated in Figure 4 in particular is locking means 25 operatively associated with the pull tab 20 for releasably locking the slider 10 in position on the fastener stringers. The locking means 25 is made of a suitable resilient material such as for example a leaf spring or similar plate member which is bent substantially into a U-shaped structure, as shown. The locking means 25 has two arms 26 and 27 interconnected by an arcuate neck 28. The first or upper arm 26 is provided with a reduced-width portion 26a and a substantially square portion 26b adjoining the arcuate neck 28, both portions being disposed for abutment against the inner wall of the yoke 16. The second or lower arm 27 is slightly downwardly bent centrally thereof relative to the first arm 26. The second arm 27 is provided with a pair of laterally spaced,

downwardly projecting support lugs 29 at one end immediately adjacent the arcuate neck 28 and at the other or opposite end with a locking prong 30 projecting downwardly from one longitudinal edge of the arm 27 and a supporting post 31 similarly projecting downwardly from the opposite longitudinal edge. The second arm 27 is further provided with a central elongated opening 32 which is slightly wider than the reduced-width portion 26a of the first arm 26 such that the portion 26a can partly enter into the opening 32 when the locking means 25 is compressed by lifting the pull tab 20 as shown in Figures 2 and 3.

It will be seen that the pair of support lugs 29 which have a rounded tip contour, extend substantially perpendicular to the plane of the flat stem portion 27a of the second arm 27, but are disposed at an angle slightly inclined relative to the plane of the upper shield 12 of the slider body 11 when the locking means 25 is accommodated within the yoke 16 as shown in Figures 2 and 3. The locking means 25 thus constructed is mounted in place with the lugs 29 freely engaged in the first respective apertures 23 and with the locking prong 30 and post 31 passed through the square aperture 20a of the pull tab 20 into the second respective apertures 24 in the upper shield 12.

The operation of the automatically locking slider 10 will now be described, reference being made to Figures 1 through 3 inclusive. Figure 1 illustrates the slider 10 as in locked position wherein the pull tab 20 is flipped down flat against the upper shield 12 with the locking prong 30 urged by the tension in the resilient locking means 25 into the channel 15 to engage with the fastener stringer so that the slider 10 is locked into position on the fastener.

Figure 2 illustrates the slider 10 as in unlocked position wherein the pull tab 20 is lifted against the tension of the locking means 25, pulling the locking prong 30 out of engagement with the fastener stringer, whereby the slider 10 is allowed to move along the fastener elements. In this posture of the pull tab 20, the slider 10 is pulled in a direction to close the fastener.

Figure 3 illustrates the slider 10 similarly as in unlocked position but with the pull tab 20 disposed for manipulation to open the fastener in the well known manner.

The path of movement of the locking prong 30 into and out of the channel 15 through the corresponding aperture 24 of the upper shield 12 is held substantially invariable so as to accomplish the proper locking function without being affected by the pulling action of the pull tab 20 which would otherwise tend to shift the locking prong 30 out of position. This is achieved by the provision of the support lugs 29 which

are integral with the second arm 27 and which are disposed in the respective apertures 23 in such a manner that when the locking means 25 is pulled by the pull tab 20 in a direction to close the fastener as shown in Figure 2, the support lugs 29 will abut against a front end wall 23a of each of the apertures 23 thereby restricting free longitudinal movement of the locking means 25 relative to the slider body 11. Conversely when the locking means 25 is pulled in a direction to open the fastener as shown in Figure 3, the support lugs 29 will abut against a rear end wall 23b of each of the respective apertures 23 and serve to stop further longitudinal movement of the locking prong 30 regardless of the pull action of the tab 20.

While the invention has been disclosed as to one specific embodiment which it may assume in practice, it will be understood that the invention is not to be limited to the precise form and construction illustrated but various changes may be made therein without departing from the scope of the appended claims.

WHAT WE CLAIM:—

1. An automatically locking slider for sliding clasp fasteners which comprises a body including an upper shield and a lower shield connected in spaced parallel relation to define therebetween a channel for the passage of two opposed sliding clasp fastener stringers carrying rows of interlocking elements, a yoke attached to said

body and having a laterally extending opening, said upper shield having a first through aperture and a second through aperture, both apertures communicating with said channel, and locking means centrally bent into a U-shaped structure consisting of two arms and accommodated in said yoke and adapted to releasably lock the slider in position on the sliding clasp fastener stringers, said locking means having a support lug perpendicularly extending from one of the said arms adjacent the U-bent portion and engageable in said first aperture and a locking prong extending from said one arm and adapted to pass through said second aperture for engagement with the fastener stringers, said support lug being adapted to abut against one end wall of said first aperture when the pull tab is manipulated in one direction and against an opposite end wall of said first aperture when the pull tab is manipulated in the other direction thereby restricting free longitudinal movement of said locking means.

2. An automatically locking slider substantially as herein described with reference to and as illustrated in the accompanying drawings.

MARKS & CLERK,
Chartered Patent Agents,
57—60 Lincoln's Inn Fields,
London, WC2A 3LS,
Agents for the Applicants.



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