

PATENT SPECIFICATION

996,627

DRAWINGS ATTACHED.

Date of Application and filing Complete Specification:
July 31, 1962. No. 29433/62.

Application made in Japan (No. 39493) on Aug. 2, 1961.

Complete Specification Published: June 30, 1965.

© Crown Copyright 1965.



Index at Acceptance:—E2 S1A3A.

Int. Cl.:—A 44 b 19/26.

COMPLETE SPECIFICATION.

Self-Locking Slider.

We, YOSHIDA KOGYO K.K., a body corporate organised under the Laws of Japan, of 11 Nihonbashi - Bakurocho - 4 - chome, Shuo-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:—

The present invention relates to self-locking sliders for sliding clasp fasteners.

According to the present invention, there is provided a self-locking slider for a sliding clasp fastener comprising a slider body including upper and lower body portions defining therebetween a guide space through which the rows of interengaging element of the fastener pass the upper body portion having on its top surface longitudinally spaced lugs which have curved recesses in their opposed faces to loosely receive between them a transverse rod portion formed at one end of an operating piece, and a rocker element rockably mounted on the top of the upper body portion and provided with depending detent fingers which are adapted to extend through at least one cut out portion in one end of the upper body portion and into the guide space thereby to engage and lock the slider against movement with respect to the elements of the fastener but to be withdrawn therefrom when the rocker element is rocked by the operating piece, the lug remote from the cut out portion or portions having an integral resilient projection extending outwardly therefrom and arranged to co-operate with the rocker element to bias the detent fingers thereof into the guide space.

The invention may be carried into practice in various ways but two specific embodiments will now be described by way

[Price 4s. 6d.]

of example with reference to the accompanying drawings, in which:—

Figure 1 is a top plan view of a self-locking slider according to the invention; Figure 2 is a cross-sectional view taken substantially along the line II—II of Figure 1;

Figure 3 is a detached perspective view of the slider body shown in Figures 1 and 2;

Figure 4 is a view similar to Figure 3 of the rocker element as viewed from the underside thereof;

Figure 5 is a view similar to Figure 1 of another embodiment of the present invention;

Figure 6 is a cross-sectional view taken substantially along the line VI—VI of Figure 5;

Figure 7 is a view similar to Figure 3 of the slider body shown in Figure 5 and 6; and

Figure 8 is a view of the rocker element of the self-locking slider shown in Figures 5 and 6.

Referring first to Figures 1 to 4, the self-locking slider shown herein includes a slider body 1, a rocker element 15 and an operating piece 17. The slider body includes upper and lower body portions defining therebetween a guide space through which the rows of interengaging elements, not shown, of the sliding clasp fastener are passed. As shown the slider body 1 is formed on opposite sides between the upper and lower body portions with slots serving as guideways for the respective stringer tapes carrying the rows of the interengaging elements. The upper portion of the slider body 1 is formed medially and on top thereof with longitudinally spaced integral lugs 4 and 5, the opposed faces of which are formed with curved

recesses 2 and 3, respectively. The upper portion of the slider body is also formed at one end on opposite sides of the lugs with cut out portions in the form of slots 6 and 6¹ of different length. An integral planar projection 7 extends outwardly from the other lug 4 substantially parallel to the top surface of the upper body portion. Extending sideways from opposite sides of the lug 4 are aligned integral studs 9 and 9¹ the top extremities of which are beveled at 8 and 8¹.

Referring now particularly to Figure 4, the rocker element 15 generally takes the form of an open-bottom box having opposite side walls the spacing of which is substantially equal to the transverse width of the lugs 4 and 5. The opposite side walls of the rocker element are formed at one end with slightly staggered depending detent fingers 10 and 10¹ with the adjacent end wall of the rocker element cut open. Formed in the opposite side walls are bearing apertures 12 and 12¹ for accommodating the studs 9 and 9¹ formed on the lug 4 of the slider body 1. Formed on the inside of the side wall of the rocker element 15 are vertical recesses 11 and 11¹ which terminate at the bottom in the bottom edges of the respective side walls and communicate at the top with the respective bearing apertures 12 and 12¹. The bottom edges of the side walls are each notched at 13 and 13¹ between the detent fingers 10, 10¹ and the bearing apertures 12, 12¹.

The operating piece 17 takes the form of an elongated strap serving as a finger grip for operating the slider along the stringers to which the slider is attached. The operating piece 17 is formed adjacent one end with a rectangular opening to define a transversely extending rod portion 16 as seen in Figures 1 and 2.

In assembling the slider, the operating piece 17 is first placed on top of the upper body portion of the slider body with the rod portion 16 loosely fitted in the space between the lugs 4 and 5 of the slider body 1 (Figure 2) and then the rocker element 15 is placed on top of the upper portion of the slider body with the studs 9 and 9¹ fitted in the vertical recesses 11 and 11¹ to overlie the operating piece. As the rocker element 15 is depressed relatively to the slider body 1, the side studs 9 and 9¹ are slid vertically along the recesses 11 and 11¹ until they are finally received in the bearing apertures 12 and 12¹, respectively.

In order to ensure that the studs 9 and 9¹ are held in place in the respective bearing apertures 12 and 12¹, each of the studs has a length substantially corresponding to the thickness of the associated side wall of the rocker element 15. Therefore, the

side walls are required to have a sufficient resiliency to allow the side walls to expand outwardly as the studs 9 and 9¹ are slid along the vertical recesses formed in the rocker element and to be restored to the normal position when the studs are finally slid into the respective bearing apertures 12 and 12¹. To meet this requirement, the rocker element may for example be formed of a resilient synthetic resin material.

Figure 2 illustrates in solid lines the slider as finally assembled with the rocker element 15 mounted on the slider body 1. In this assembled position, the rod 16 of the operating piece 17 is received in a clearance space defined by the opposed recessed surfaces of the lugs 4 and 5 formed on the slider body 1 and the notched edges 13 and 13¹ of the opposite side walls of the rocker element 15 and thus cannot be released accidentally from the rocking element nor from the slider body.

In use, the self-locking slider is operated as follows. When the sliding clasp fastener is to be opened, the operating piece 17 is turned until it assumes the position A relatively to the slider body 1 as shown in the chain lines in Figure 2. In pulling the operating piece downwards in the general direction A, the rod portion 16 of the operating piece 17 is first brought into abutting engagement with thrust surfaces formed by those portions of the edges of the notches 13 and 13¹ of the rocker element 15 which are adjacent to the detent fingers 10 and 10¹ to force the edge portions upwardly relative to the slider body 1. Thus, the rocker element 15 is rocked about pivots formed by the studs 9 and 9¹ on the slider body in a clockwise direction as viewed in Figure 2 to assume the position shown in the chain lines. At the same time, that end of the rocker element which is remote from the detent fingers 10 and 10¹ acts to depress the planar projection 7 formed on the adjacent lug 4 so that the projection is resiliently bent toward the adjacent surface of the slider body. When this happens the rod portion 16 of the operating piece 17 comes into contact with the recess 3 of the lug 5 so that the pulling force applied to the operating piece 17 is transmitted to the slider body 1 by way of the lug 5 thereon to cause the slider to slide along the length of the stringers in a direction to open the fastener.

When the slider is released from the pulling force as applied thereto by way of the operating piece 17, it will be apparent that the planar projection 7 is restored to its normal position under its own resiliency while returning the rocker element 15 to its normal position.

When the fastener is to be closed, the operating piece 17 is turned to the general

position B as shown in the chain lines in Figure 2, and drawn upwards. In this case the rod portion 16 of the operating piece 17 is first brought into abutting engagement with those thrust portions of the edges of the notches 13 and 13¹ which are adjacent to the bearing apertures 12 and 12¹ to rock the rocker element 15 about the studs 9 and 9¹ on the slider body to the same position shown in the chain lines in Figure 2 as assumed when the operating piece is pulled downwards. As the force pulling the operating piece is removed, the rocker element 15 regains its normal position as shown in the solid lines; as will readily be understood.

With this self-locking slider, the rocker element 15 is rockable relatively to the slider body 1 with the detent fingers 10 and 10¹ extending through the respective slots 6 and 6¹ formed in the slider body so that the extremities of the detent fingers project into or are withdrawn from the guide space defined in the slider body between the upper and lower portions thereof. It is to be understood that the rows of interengaging elements are slidably received in the guide space in the slider body. When the rocker element is restored to its normal position under the resilience of the planar projection 7 so that the detent fingers 10 and 10¹ on the rocker element extend through the slots 6 and 6¹ into the guide space in the slider body, the extremities of the detent fingers are each forced into the spacing between the adjacent interengaging elements in each row to positively lock the slider in place on the stringers. It will be appreciated that any inadvertent displacement of the slider relative to the stringers is thus effectively prevented eliminating the danger that the fastener be accidentally opened.

Figures 5 to 8 illustrate another embodiment of the present invention. This embodiment is substantially similar to the slider shown in Figures 1 to 4.

As shown in Figures 5 to 8, the modified form of the self-locking slider also includes a slider body 101 having an upper and a lower portions defining therebetween a guide space through which the rows of interengaging elements of stringers to which the slider is to be attached are passed. The upper body portion is formed on its top surface with longitudinally spaced integral lugs 104 and 105, the opposed faces of which are formed with curved recesses 102 and 103 respectively. Extending sideways from opposite sides of the lug 104 are aligned integral studs 109 and 109¹ the top extremities of which are beveled at 108 and 108¹. An integral planar projection 107 extends outwardly from the lug 104.

The upper portion of the slider body 101 on the opposite side of the other lug 105 is cut away to provide cut-out portion 106 (Figure 7). The cut-out portion is not necessarily formed symmetrically with respect to said lug 105, but may have a region 106¹ of a different axial length as shown in Figure 7.

A rocker element 115 is provided to cooperate with the slider body 101 in a manner such as to facilitate the mounting of an operating piece 117 and to enable the slider to be automatically locked in various positions along the length of the slide fastener. The rocker element 115 generally takes the form of an open-bottom box having opposite side walls formed with respective slightly staggered detent fingers 110 and 110¹ adjacent one end thereof. The bottom edges of the side walls are each notched intermediate the ends at 113 and 113¹. Bearing apertures 112 and 112¹ are formed in the respective side walls adjacent one end of said notches 113, 113¹ in transverse alignment with each other. Vertical recesses 111 and 111¹ are formed on the insides of the respective side walls of the rocker element 115 to extend from the bottom wall edges to the bearing apertures 112 and 112¹. The bearing apertures 112 and 112¹ have substantially the same diameter as that of the studs 109 and 109¹ to snugly receive the latter. It is to be understood that the spacing between the opposite side walls of the rocker element 115 is substantially equal to or slightly larger than the width of the lugs 104 and 105. The operating piece 117 is formed adjacent one end thereof with a rectangular opening to define a transversely extending rod portion 116.

In assembling, the operating piece 117 is first mounted on the slider body 101 before the rocker element 115 is attached thereto. In other words, the operating piece is mounted at the start of the assembly operation on the slider body 101 with the rod portion 116 of the operating piece positioned between the opposed curved recesses 102 and 103 of the respective lugs 104 and 105. Then the rocker element 115 is placed on the slider body 101 to overlie the operating piece 117 adjacent its end carrying the rod 116 (Figure 6). By pressing the rocker element 115 downwardly to the slider body, the studs 109 and 109¹ on the lug 104 are fitted into the bearing apertures 112 and 112¹ in the rocker element 115, which is thus supported on the slider body rockably about the axis of studs 109 and 109¹.

It will be understood that the self-locking slider shown in Figures 5 to 8 operates in the same manner as the embodiment shown in Figures 1 to 4.

WHAT WE CLAIM IS:—

1. A self locking slider for a sliding clasp fastener comprising a slider body including upper and lower body portions defining therebetween a guide space through which the rows of interengaging elements of the fastener pass, the upper body portion having on its top surface longitudinally spaced lugs which have curved recesses in their opposed faces to loosely receive between them a transverse rod portion formed at one end of an operating piece, and a rocker element rockably mounted on the top of the upper body portion and provided with depending detent fingers which are adapted to extend through at least one cut out portion in one end of the upper body portion and into the guide space thereby to engage and lock the slider against movement with respect to the elements of the fastener but to be withdrawn therefrom when the rocker element is rocked by the operating piece, the lug remote from the cut out portion or portions having an integral resilient projection extending outwardly therefrom and arranged to co-operate with the rocker element to bias the detent fingers thereof into the guide space.
2. A slider as claimed in Claim 1 in which the operating piece has a part which, when drawn in either a closing or an opening direction, causes the rocker element to move to a position in which the

locking fingers are clear of the path of the interengaging elements. 35

3. A slider as claimed in Claim 2 in which the transverse rod portion of the operating piece passes between a pair of opposed thrust surfaces on the rocker element, the arrangement being such that the application of a load to the operating piece in either direction of movement of the slider, causes the rod first to engage one of the thrust surfaces to rock the rocker element and thereafter engage one of the curved recesses to transfer the load to the body. 40 45

4. A slider as claimed in any one of the preceding claims in which one lug has studs extending from opposite sides to form pivots for the rocker element. 50

5. A slider as claimed in any one of the preceding claims in which the locking fingers extend through slots in the body, which slots afford said cut out portions. 55

6. A slider for a sliding clasp fastener substantially as specifically described herein with reference to the accompanying drawings. 60

7. A sliding clasp fastener incorporating a slider as claimed in any one of the preceding claims.

KILBURN & STRODE,
Chartered Patent Agents,
Agents for the Applicants.

Abingdon: Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1965.
Published at The Patent Office, 25 Southampton Buildings, London, W.C.2,
from which copies may be obtained.



* C L M S *