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PATENT SPECIFICATION

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(54) SLIDER HOLDER FOR THE ASSEMBLAGE OF SLIDING CLASP FASTENER

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumicho, 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:—

10 This invention relates generally to sliding clasp fasteners and more specifically to a device for holding a slider for the assemblage therethrough of a sliding clasp fastener chain or a pair of fastener stringers. Still more specifically, the invention is directed to a slider holder of the character defined which is particularly well suited for holding a slider having an elongated pull tab.

20 As is well known, sliding clasp fasteners having sliders with elongated pull tabs are being used extensively to provide convenient closure means for openings in bags, tents and various other articles. In spite of the widespread use of this type of sliding clasp fasteners, however, the slider holders heretofore developed and used in the industry are designed almost unexceptionally for holding sliders having pull tabs of usual length, such that they are not easily adaptable for holding sliders having pull tabs of extended length.

35 In order to expedite the manipulation of fastener stringers, especially those already attached to parts of a desired article, through a slider locked in position on the slider rest, it is necessary that the upper end portion of the support structure be made as slender as possible.

40 The present invention seeks to provide a slider holder particularly well adapted for holding a slider having an elongated pull tab, such that the slider can be retained in position on the slider holder against practically any possibility of displacement during assemblage of a fastener chain there-
45 through.

The invention further seeks to provide a slider holder which is extremely compact in size even though it is expressly designed for holding a slider having an elongated pull tab. 50

The invention further seeks to provide a slider holder including a support structure or frame with its upper end portion substantially minimized in width to facilitate the manipulation of a fastener chain through the slider retained in position on the top of the support structure. 55

60 According to the invention, there is provided a device for holding a slider for the assemblage of a fastener chain therethrough, wherein said slider includes a channelled body and a pull tab, said pull tab having an opening therein loosely receiving a lug formed on said channelled body, said device comprising in combination: an upright support structure having a slider rest formed on its top, said support structure further including a slit extending downwardly from said slider rest to telescopically receive said pull tab of said slider when the same is placed upside down on said slider rest, and vertically extending hollow space substantially crosswise with said slit; a locking lever accommodated in said hollow space of said support structure, said locking lever being pivotally supported at a point intermediate between both ends thereof so as to be turnable between an operative and an inoperative position; a detent formed at the top end of said locking lever, said detent being adapted to engage said opening in said pull tab when said locking lever is in said operative position and to disengage said opening when said locking lever is in said inoperative position; an abutment formed at the bottom end of said locking lever, said abutment being adapted to cause said locking lever to turn from said inoperative toward said operative position when said pull tab is telescopically inserted into said slit of said support structure; a cam portion also formed at the bottom end of said locking 80
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lever; and resilient actuating means co-operative with said cam portion to urge said locking lever toward and away from said operative position.

As will be seen from the foregoing summary of the invention, the detent and the abutment are located at the top and bottom ends, respectively, of the locking lever, so that the distance therebetween can be maximized to suit the length of the slider pull tab without unduly increasing the length of the locking lever itself. Furthermore, since the cam portion is also located at the bottom end of the locking lever, the upper end portion of the support structure can be minimized in width. It will therefore be understood that the slider holder as a whole is of highly compact and streamlined configuration.

The features which are believed to be novel and characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and mode of operation, together with the further objects and advantages thereof, will be best understood from the following description of a preferred embodiment when taken together with the accompanying drawings in which like reference characters denote corresponding parts of the several views, and wherein.

Figure 1 is a front elevational view of a slider holder constructed in accordance with the concepts of this invention, in which a slider is also shown in a position before being locked on a slider rest;

Figure 2 is a vertical sectional view taken along the central longitudinal axis of the slider holder as shown in Figure 1;

Figure 3 is a horizontal sectional view taken along the plane of line III—III in Figure 2 and looking in the direction of the arrows;

Figure 4 is a view similar to Figure 2 but showing the slider locked on the slider rest; and

Figure 5 is a horizontal sectional view taken along the plane of line V—V in Figure 4 and looking in the direction of the arrows.

With particular reference to Figures 1 to 3, the slider holder illustrated therein by way of a preferred embodiment of the invention includes an upright support structure or frame 10 having a slider rest 11 formed on its top. A slit 12 extends vertically downwardly from the top of the support structure 10 to telescopically receive the elongated pull tab P of a slider S mounted in upside-down disposition on the slider rest 11. A hollow 13 also extends vertically through the support structure 10 in generally crosswise arrangement with the slit 12. It will be noted from Figures 1 and 2 that the hollow 13 is made open not only through the top of the support

structure 10 but through its bottom; as indicated by the numeral 14 in the drawings, in order to preclude any possibility of dust accumulation within the support structure.

As best illustrated in Figure 2, there is accommodated in the hollow 13 of the support structure 10 a locking lever 15 which is pivotally mounted on a pin 16 extending horizontally between a pair of confronting side walls 17. The locking lever 15 has a tapering detent 18 formed at its top end in offset relationship to the major portion of the locking lever, which detent is adapted to be thrust into and out of an opening Po in the pull tab P loosely receiving the L on the usual channelled body B of the slider S. The locking lever 15 further includes an offset abutment 19 formed at its bottom end. The abutment 19 is arranged on the same side of the locking lever 15 as the aforesaid detent 18. Since the locking lever 15 is pivotally supported by the pin 16 at the point intermediate between both ends thereof, the detent 18 and the abutment 19 will alternately travel back and forth past the slit 12 as the locking lever turns about the pin.

As will be seen from Figures 2 and 3, the bottom end of the locking lever 15 is cammed out on both of its lateral sides, as generally designated by the numeral 20 in Figure 2. The cam portion 20 on each lateral side of the locking lever 15 is of substantially triangular shape as viewed cross sectionally as in Figure 3, consisting of a ridge 21 and first and second sloping cam surfaces 22 and 23 on the opposite sides of the ridge. Alternatively, the cam contour on each lateral side of the locking lever 15 may be defined by a similarly curved surface.

The confronting side walls 17 of the hollow 13 have a pair of aligned bores 24 formed therethrough respectively, and a pair of ball members 25 of steel or similarly rigid material are fitted in the respective bores 24 with substantial clearance. These ball members 25 are yieldably urged against the respective cam portions 20 by leaf springs 26, respectively, that are screwed at 27 to the support structure 10.

Normally, that is, when the slider S is not locked in position on the slider rest 11, the ball members 25 abut on the respective first cam surfaces 22 on both lateral sides of the locking lever 15 as shown in Figure 3. Thus, by the forces of the leaf springs 26, the abutment 19 at the bottom end of the locking lever 15 is then energized to and held in its advanced position across the slit 12. With the abutment 19 thus held in its advanced position, the detent 18 at the top end of the locking lever 15 is held in its retracted position away from but sufficiently close to the slit 12 as shown in Figure 2. It may be noted that the foregoing description of

Figures 2 and 3 generally represents the inoperative or standby condition of the slider holder according to the invention.

For the assemblage of a fastener chain through the slider S by use of the slider holder constructed as hereinbefore described, the pull tab P of the slider may first be telescopically inserted into the slit 12 extending vertically downwardly from the slider rest 11, until the tip of the pull tab rests on the abutment 19 at the bottom end of the locking lever 15. With the pull tab P thus resting on the abutment 19 in its advanced position, the channelled body B of the slider S is still held slightly above the slider rest 11, as will be seen from Figure 2.

The slider body B may then be manually depressed further toward the slider rest 11, whereupon the tip of the pull tab P will slide down the abutment 19 thereby causing the locking lever 15 to turn counterclockwise as viewed in Figures 2 to 4. During this counterclockwise turn of the locking lever 15, the ball members 25, which have been urged against the respective first cam surfaces 22 as previously mentioned, ride onto the second cam surfaces 23 over the ridges 21 respectively. The manual depression of the slider body B becomes unnecessary as the ball members 25 ride over the respective ridges 21 of the cam portions 20, because then the counterclockwise turn of the locking lever 15 to its operative position is effected by the forces of the leaf springs 26 acting on the respective ball members, as will be seen from Figure 5.

The abutment 19 at the bottom end of the locking lever 15 thus moves to its retracted position away from the slit 12, while the detent 18 at the locking lever top end moves to its advanced position through the opening Po in the slider pull tab P which has been incompletely received in the slit 12. The detent 18 thus forced into the pull tab opening Po is effective to pull slider S down to its proper assembly position on the slider rest 11 as illustrated in Figure 4.

It should be noted that even after the slider S has been locked in position on the slider rest 11, the locking lever 15 is held energized in the counterclockwise direction by the leaf springs 26 via the ball members 25 riding on the respective second cam surfaces 23. As a consequence, the sloping lower edge of the detent 18 slidably engaging the pull tab opening Po exerts a force tending to pull the slider S downwardly, so that the slider can be retained substantially immovably on the slider rest 11.

The fastener chain F may now be manipulated in the usual manner through the guide channels in the slider body B. In order to release the slider S following the assemblage of the fastener chain F there-

through, the slider may be manually raised away from the slider rest 11 against the influence of the spring-urged locking lever 15. The locking lever 15 is thus caused to turn clockwise via the detent 18 until the ball members 25 ride over the ridges 21 back onto the first cam surface 22 respectively. The clockwise turn of the locking lever 15 back to its inoperative position shown in Figure 2 is thereafter effected by the forces of the leaf springs 26. Since the detent 18 withdraws from within the pull tab opening Po substantially simultaneously when the ball members 25 ride back onto the respective first cam surfaces 22, the slider S can now be easily removed from over the slider rest together with the assembled fastener chain F.

While a preferred form of the slider holder according to this invention has been shown and described hereinbefore, it is obvious that the invention itself is not to be restricted thereto and that changes may be made in the arrangement and form of the parts as herein disclosed. For example, the locking lever 15 may be provided with the cam portion 20 only on one of its lateral sides, along with only one ball member 25 and one leaf spring 26 cooperating therewith. All such modifications or changes within the usual knowledge of those skilled in the art are intended in the foregoing disclosure. It is therefore appropriate that the invention be construed broadly and in a manner consistent with the proper scope of the following claims.

In our Patent Specification No. 1,289,661 there is claimed a slide holder for holding a slider having a pull tab and an opening therein in position for threading of the slider relatively through a fastener chain, which holder comprises a supporting frame having a slider rest for receiving the slider thereon; an elongate slot within the frame for receiving therein the pull tab of the slider; a cavity communicating with said slot; a pivotally supported lever means accommodated in said cavity, said lever means having a first projection movable into and out of said slot for engagement with the opening in said pull tab and a second projection for abutting engagement with the free end of said pull tab; and a resilient means for urging said lever means into and out of an operative position in which the slider is held down on said slider rest.

WHAT WE CLAIM IS:—

1. A device for holding a slider for the assemblage of a fastener chain there-through, wherein said slider includes a channelled body and a pull tab, said pull tab having an opening therein loosely receiving a lug formed on said channelled body, said device comprising in combination:



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Figures 2 and 3 generally represents the inoperative or standby condition of the slider holder according to the invention.

For the assemblage of a fastener chain through the slider S by use of the slider holder constructed as hereinbefore described, the pull tab P of the slider may first be telescopically inserted into the slit 12 extending vertically downwardly from the slider rest 11, until the tip of the pull tab rests on the abutment 19 at the bottom end of the locking lever 15. With the pull tab P thus resting on the abutment 19 in its advanced position, the channelled body B of the slider S is still held slightly above the slider rest 11, as will be seen from Figure 2.

The slider body B may then be manually depressed further toward the slider rest 11, whereupon the tip of the pull tab P will slide down the abutment 19 thereby causing the locking lever 15 to turn counterclockwise as viewed in Figures 2 to 4. During this counterclockwise turn of the locking lever 15, the ball members 25, which have been urged against the respective first cam surfaces 22 as previously mentioned, ride onto the second cam surfaces 23 over the ridges 21 respectively. The manual depression of the slider body B becomes unnecessary as the ball members 25 ride over the respective ridges 21 of the cam portions 20, because then the counterclockwise turn of the locking lever 15 to its operative position is effected by the forces of the leaf springs 26 acting on the respective ball members, as will be seen from Figure 5.

The abutment 19 at the bottom end of the locking lever 15 thus moves to its retracted position away from the slit 12, while the detent 18 at the locking lever top end moves to its advanced position through the opening Po in the slider pull tab P which has been incompletely received in the slit 12. The detent 18 thus forced into the pull tab opening Po is effective to pull slider S down to its proper assembly position on the slider rest 11 as illustrated in Figure 4.

It should be noted that even after the slider S has been locked in position on the slider rest 11, the locking lever 15 is held energized in the counterclockwise direction by the leaf springs 26 via the ball members 25 riding on the respective second cam surfaces 23. As a consequence, the sloping lower edge of the detent 18 slidably engaging the pull tab opening Po exerts a force tending to pull the slider S downwardly, so that the slider can be retained substantially immovably on the slider rest 11.

The fastener chain F may now be manipulated in the usual manner through the guide channels in the slider body B. In order to release the slider S following the assemblage of the fastener chain F there-

through, the slider may be manually raised away from the slider rest 11 against the influence of the spring-urged locking lever 15. The locking lever 15 is thus caused to turn clockwise via the detent 18 until the ball members 25 ride over the ridges 21 back onto the first cam surface 22 respectively. The clockwise turn of the locking lever 15 back to its inoperative position shown in Figure 2 is thereafter effected by the forces of the leaf springs 26. Since the detent 18 withdraws from within the pull tab opening Po substantially simultaneously when the ball members 25 ride back onto the respective first cam surfaces 22, the slider S can now be easily removed from over the slider rest together with the assembled fastener chain F.

While a preferred form of the slider holder according to this invention has been shown and described hereinbefore, it is obvious that the invention itself is not to be restricted thereto and that changes may be made in the arrangement and form of the parts as herein disclosed. For example, the locking lever 15 may be provided with the cam portion 20 only on one of its lateral sides, along with only one ball member 25 and one leaf spring 26 cooperating therewith. All such modifications or changes within the usual knowledge of those skilled in the art are intended in the foregoing disclosure. It is therefore appropriate that the invention be construed broadly and in a manner consistent with the proper scope of the following claims.

In our Patent Specification No. 1,289,661 there is claimed a slide holder for holding a slider having a pull tab and an opening therein in position for threading of the slider relatively through a fastener chain, which holder comprises a supporting frame having a slider rest for receiving the slider thereon; an elongate slot within the frame for receiving therein the pull tab of the slider; a cavity communicating with said slot; a pivotally supported lever means accommodated in said cavity, said lever means having a first projection movable into and out of said slot for engagement with the opening in said pull tab and a second projection for abutting engagement with the free end of said pull tab; and a resilient means for urging said lever means into and out of an operative position in which the slider is held down on said slider rest.

WHAT WE CLAIM IS:—

1. A device for holding a slider for the assemblage of a fastener chain there-through, wherein said slider includes a channelled body and a pull tab, said pull tab having an opening therein loosely receiving a lug formed on said channelled body, said device comprising in combination:

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an upright support structure having a slider rest formed on its top, said support structure further including a slit extending downwardly from said slider rest to telescopically receive said pull tab of said slider when the same is placed upside down on said slider rest, and a vertically extending hollow space substantially crosswise with said slit;

5 a locking lever accommodated in said hollow space of said support structure, said locking lever being pivotally supported at a point intermediate between both ends thereof so as to be turnable between an operative and an inoperative position;

10 a detent formed at the top end of said locking lever, said detent being adapted to engage said opening in said pull tab when said locking lever is in said operative position and to disengage said opening when said locking lever is in said inoperative position;

15 an abutment formed at the bottom end of said locking lever, said abutment being adapted to cause said locking lever to turn from said inoperative toward said operative position when said pull tab is telescopically inserted into said slit of said support structure;

20 a cam portion also formed at the bottom end of said locking lever; and

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resilient actuating means cooperative with said cam portion to urge said locking lever toward and away from said operative position.

35 2. The device as recited in claim 1, wherein said hollow space extends vertically all the way through said upright support structure.

40 3. The device as recited in claim 1, wherein said resilient actuating means includes a ball member of rigid material which is urged against said cam portion by spring means.

45 4. The device as recited in claim 1, wherein said cam portion includes a ridge and a first and a second cam surface on the opposite sides of said ridge, said locking lever being urged toward said inoperative position when said ball member is riding on said first cam surface and toward said operative position when said ball member is riding on said second cam surface.

50 5. The device as recited in claim 3, wherein said spring means is a leaf spring.

55 6. The device substantially as herein described with reference to and as illustrated in the accompanying drawings.

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