Aug. 13, 1946. C. D. GOULD 2,405,883

REVERSIBLE AUTOMATIC LOCK SLIDER

Filed Sept. 23, 1944

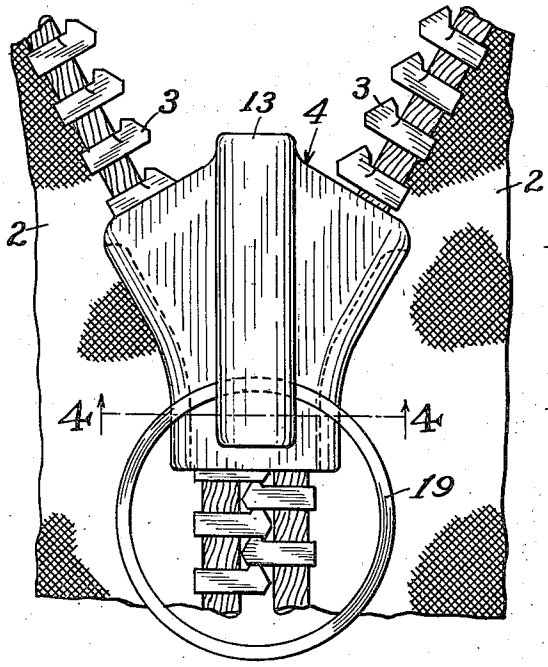


Fig. 1.

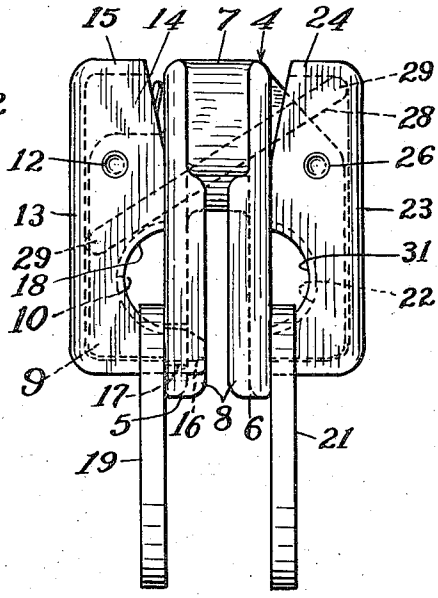


Fig. 2.

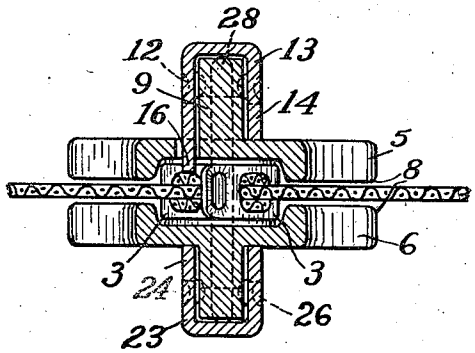


Fig. 4.

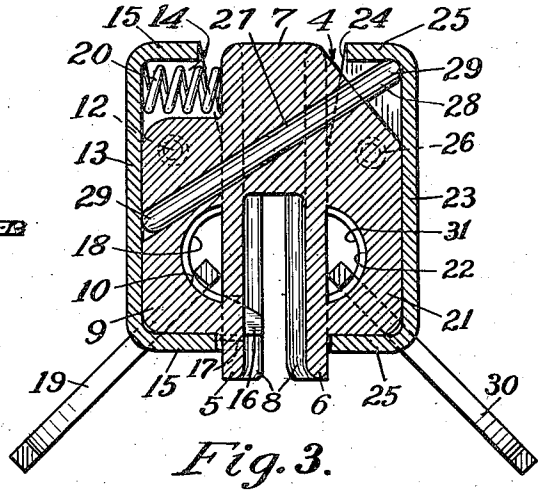


Fig. 3.

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Patented Aug. 13, 1946

2,405,883

UNITED STATES PATENT OFFICE

2,405,883

REVERSIBLE AUTOMATIC LOCK SLIDER

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Application September 23, 1944, Serial No. 555,412

8 Claims. (Cl. 24—205.5)

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This invention relates to slide fasteners, and particularly, to an improved reversible or double-acting automatic lock slider therefor.

In the patent to S. H. Norton et al., No. 1,966,457, dated July 17, 1934, there is disclosed an automatic lock slider including a cap member having a locking prong integrally arranged therewith, with the cap member pivotally attached to a lug arranged on one wing of the slider body and having a spring for normally retaining the locking prong in locking position in the channel of the slider. There is attached to the cap member a pull for manipulating the slider from that side of the same. While such automatic lock sliders of the type as disclosed in this patent, have proven satisfactory in service, they are limited in their application, due to the fact that the pull or slider actuating means is accessible from one side of the slider only.

While various types of reversible or double-acting automatic lock sliders, i. e., a slider having a pull or actuating means arranged on either side of the slider so that the fastener can be operated from both sides, have been heretofore suggested and used, they have been in most cases neither satisfactory nor practical. In some cases, such sliders were bulky and fragile, and consisted of a multiplicity of parts which were relatively difficult to fabricate and assemble. In other cases, while such sliders would operate satisfactorily from one side of the slider, the locking means would stick or bind and not operate properly when manipulated by means from the opposite side thereof.

According to the present invention, there is provided a reversible or double-acting automatic lock slider which is strong, rugged and compact in its construction, with the parts thereof being so constructed and arranged that they can be conveniently fabricated and assembled.

It is one of the objects of the present invention to provide an improved lock slider for slide fasteners which can be easily manipulated and unlocked manually from either side thereof so as to provide a reversible or double-acting lock slider.

It is anothe robject of the invention to provide an improved automatic lock slider of the reversible or double-acting type which consists of a minimum number of relatively inexpensive parts which can be easily and quickly assembled.

It is a further object of this invention to provide an improved reversible or double-acting lock slider which is more positive in its action than other such sliders heretofore suggested and used,

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whereby the locking means can be effectively unlocked from either side of the slider and, at the same time, will be effectively locked automatically at any point along the fastener.

Various other objects and advantages of this invention will be more apparent in the course of the following specification and will be particularly pointed out in the appended claims.

In the accompanying drawing, there is shown for the purpose of illustration, one embodiment which my invention may assume in practice.

In the drawing:

Fig. 1 is a plan view of a slide fastener having the improved slider of my invention incorporated therewith;

Fig. 2 is a side elevational view of my improved slider;

Fig. 3 is a longitudinal sectional view thereof; and

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1 not showing the pull members.

Referring more particularly to the drawing, there is shown in Fig. 1 a conventional type slide fastener comprising tapes or stringers 2, having a series of spaced-apart interlocking fastener elements 3 arranged along the opposed beaded edges thereof. There is arranged on the fastener elements for longitudinal movement therealong, a slider, generally designated at 4, comprising a hollow one-piece channelled body member having spaced upper and lower wing portions 5 and 6, respectively, which are connected at one end thereof by means of a neck portion 7. There are carried by the wing portions 5 and 6 at either side thereof, inwardly extending flange portions 8 for guiding the fastener elements through the Y-shaped channel of the slider body. The slider is adapted to be moved along the fastener elements in either direction to open or close the fastener, in a manner well-known to those skilled in the art.

According to the present invention, as more clearly shown in Fig. 3 of the drawing, there is arranged on the outer surface of one of the wing portions, namely, the upper wing portion 5, in the present instance, an elongated lug or loop 9 which is arranged integrally with the slider body centrally thereof and has a transverse aperture 10 arranged therein. There is mounted on and substantially enclosing the lug 9 and pivotally attached thereto as at 12 at one end thereof, a locking cap member 13 having opposed side flange portions 14 and end flange portions 15. There is carried preferably by one of the side flange portions 14, a locking prong or pin 16 which ex-

tends through an opening 17 in the wing portion 5 of the slider body, and projects normally into the Y-shaped channel thereof. Intermediate the length of each of the side flanges 14 forwardly of the pivotal connection at 12 there are arranged opposed recesses 18, which are in alignment with each other and with the transverse aperture 10 in the lug 9. There is disposed in and extending through the recesses 18 in both of the side flanges 14 and the transverse aperture 10, the pivotal portion of trunnion of a pull member 19, whereby the same is pivotally attached to the slider for actuating the same in a well-known manner. Rearwardly of the pivotal connection 12 of the cap member 13 with the lug 9, there is positioned a resilient member, preferably in the form of a compression coil spring 20, having one end thereof resting on the outer surface of the wing portion, with the other end thereof abutting the under side of the cap member 13 and cooperating therewith, tending to move the cap member about its pivotal connection so as to move and maintain the locking pin or prong 16 in the channel of the slider body.

On the outer surface of the other wing portion 6 on the opposite side of the slider body, there is mounted centrally thereof and integrally therewith, another elongated lug or loop portion 21 similar to the lug or loop 9, having a transverse aperture 22 arranged therein directly opposite the aperture 10 in the lug 9. There is likewise mounted on this lug and substantially enclosing the same, a similar elongated cap member 23 having side flange portions 24 and end flange portions 25. The cap member 23 is pivotally attached as at 26, intermediate the length thereof, to the lug, preferably at a point directly opposite the pivotal connection 12 of the cap member 13, with its respective lug. It will be seen that both of the cap members 13 and 23 are substantially the same except that the locking cap member 13 has a locking pin or prong 16 arranged thereon.

There is positioned in an angularly or diagonally arranged hole or opening 27 in the neck portion 7 of the slider body, preferably an elongated cylindrical pin-like member 28 which extends through the lugs 9 and 21 to the underside of the cap members 13 and 23. The ends of the pin-like member 28 are preferably rounded, as at 29, so as to provide a better bearing surface and the pin-like member is of such length that it will just contact the underside of the cap members when they assume their normal positions, as shown in Fig. 3 of the drawing. It will be seen that one end of the pin-like member 28 contacts the locking cap member 13 on one side or forwardly of its pivotal connection at 12, and that the other end of the pin-like member contacts the underside of the cap member 23 at a point on the opposite side or rearwardly of its pivotal connection at 26, and preferably is lodged in the corner formed by the end flange portion 25 and the top wall of the cap member at the rear end thereof. It will be understood that the pin-like member 28 is loosely positioned in the diagonal hole 27 so that it can move reciprocably therein.

There is likewise pivotally attached to the lug 21, a pull member 30 with the pivotal or trunnion portion thereof extending through the transverse aperture 22 in the lug 21 and through the recesses 31 in both of the side flanges 24 of the cap 23. It will be understood that both the recesses 18 and 31 in the side flanges 14 and 24 of the

cap members 13 and 23, respectively, are slightly smaller than the respective transverse apertures 10 and 22 in the lugs 9 and 21, respectively, so that the pivotal bar trunnion portions of the respective pull members 19 and 30 will contact first the side flanges of the cap members and move the same about their respective pivotal connections when a pulling force is exerted on either of the pull members to move the slider along the fastener elements. It will be seen that the outer wall of the transverse openings 10 and 22 will limit the outward movement of the respective pull members, thereby tending to limit the outward movement of the cap members 13 and 23 when an excessive amount of force is exerted on the pull members.

The improved slider of my invention functions in the following manner. When the slider is actuated by means of the pull 19 from that side of the fastener, it will be seen that the pull will move the locking cap member 13 about its pivotal connection at 12 against the action of the coil spring 20, thereby moving the locking pin or prong 16 carried thereby out of the slider channel and accordingly, out of engagement with the fastener elements therein. When the slider is manipulated by the pull member 30 from the opposite side of the fastener, it will be seen that the cap member 23 is moved about its pivotal connection at 26, thereby forcing the pin-like member 28 toward the cap member 13 on the opposite side of the slider, which is moved thereby about its pivotal connection at 12 against the action of the coil spring 20, so as to move the locking pin or prong 16 out of locking engagement with the fastener elements. When the pulling force on either of the pull members 19 and 30 is released, it will be seen that the locking cap member 20 is moved automatically to locking position in the channel of the slider, due to the action of the coil spring 20. The action of this spring also moves the pin-like member 28, together with the cap member 23, to its initial or normal position.

As a result of my invention, it will be seen that there is provided a reverse or double-acting automatic lock slider having a slider body which can be conveniently die-cast, thereby reducing to a minimum, the cost of such a slider. It will be seen also that the cap members 13 and 23, together with the coil spring 20 and the pin-like member 28, can be conveniently and quickly assembled on the slider body with relatively inexpensive tools and without the need necessarily of any special assembling tools or equipment.

While I have shown and described one embodiment of my invention, it will be understood that this embodiment is merely for the purpose 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. In a lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, a locking member arranged on one of said wing portions and being movably connected thereto, said locking member having a locking projection carried thereby which extends normally into the channel of said slider body, a member arranged on the other of said wing portions on the opposite side of said slider body and being movably connected thereto, and movable means extending through said slider body between said

locking member and said last mentioned member with one end of said means contacting and cooperating with the locking member to one side of its connection with said slider body, and with the opposite end of said means contacting and cooperating with said last mentioned member on the opposite side of its connection with said slider body whereby when either the locking member or the last mentioned member is moved about its respective connection with said slider body, the locking projection will be moved out of said slider channel to unlocked position.

2. In a lock slider of the class described, the combination defined in claim 1, wherein the movable means extending through the slider body between the locking member and the last mentioned member consists of a pin-like member loosely and reciprocably disposed in an opening extending through the neck portion of the slider body with the opposed ends of said member contacting the locking member and the last mentioned member.

3. In a lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, a locking member arranged on one of said wing portions and being pivotally attached thereto, said locking member having a locking projection carried thereby which extends normally into the channel of said slider body, a member arranged on the other of said wing portions on the opposite side of said slider body and being pivotally attached thereto, a pull member pivotally connected to each of said locking member and said last mentioned member so that a pull is disposed on either side of the slider, and an elongated member extending through said slider body and arranged for limited reciprocable movement therein, said member extending between said locking member and said last mentioned member with one end thereof contacting the locking member forwardly of its pivotal connection and with the opposite end contacting the last mentioned member rearwardly of its pivotal connection whereby when either the locking member or the last mentioned member is moved by its respective pull member about its respective pivotal connection the locking projection will be moved out of said slider channel to unlocked position.

4. In an automatic lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, a longitudinally extending locking member arranged on one of the wing portions centrally thereof and being pivotally attached thereto intermediate its length, said locking member having a locking projection carried thereby on one end thereof which extends in one position into the channel of said slider body for locking the slider, resilient means cooperating with said locking member for urging and maintaining the locking projection carried thereby normally in locked position in said slider channel, a longitudinally extending member, similar to said locking member, arranged on the other of said wing portions centrally thereof on the opposite side of said slider body and being pivotally attached thereto intermediate its length, a pull member pivotally connected to each of said locking member and said last mentioned member so that a pull is disposed on either side of the slider, and an elongated member extending through said slider body and arranged for limited reciprocable movement therein, said member extending between said locking member and said last mentioned member with one end thereof contacting the locking member forwardly of its pivotal connection and with the opposite end contacting the last mentioned member rearwardly of its pivotal connection whereby when either the locking member or the last mentioned member is moved by its respective pull member about its respective pivotal connection against the action of said resilient means, the locking projection will be moved out of the slider channel to unlocked position.

5. In an automatic lock slider of the class described, the combination as defined in claim 4, wherein the elongated reciprocable member extending through the slider body contacting both the locking member and the last mentioned member consists of a pin-like member which is loosely disposed in an angularly arranged hole in the neck portion of the slider body.

6. In an automatic lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, an elongated lug arranged centrally of each of said wing portions and projecting outwardly therefrom, a longitudinally extending locking cap member arranged on one of said lugs so as substantially to enclose the same, said locking cap member being pivotally attached intermediate the length thereof to said lug and having a locking projection arranged on one end thereof which extends in one position into the channel of said slider body, resilient means cooperating with said locking member for urging and maintaining the locking projection carried thereby normally in locked position in said slider channel, a similar longitudinally extending cap member arranged on the lug on the opposite side of said slider body substantially enclosing said lug and being pivotally attached thereto intermediate its length at a point substantially opposite the pivotal connection of said locking cap member, a pull member pivotally connected to each of said cap members so that a pull member is disposed on either side of said slider, and an elongated movable member extending through the neck portion of said slider body between said cap members and engaging the locking cap member to one side of its pivotal connection and engaging the last mentioned cap member on the opposite side of its pivotal connection whereby when either of the cap members is moved by its respective pull member about its respective pivotal connection against the action of said resilient means, the locking projection will be moved out of the channel of the slider body to unlocked position.

7. In an automatic lock slider of the class described, the combination as defined in claim 6, wherein the elongated movable member extending through the neck portion of the slider body between the cap members consists of a pin-like member loosely arranged in a hole extending angularly through said neck portion centrally thereof with one end of said member contacting the under side of the locking cap member forwardly of its pivotal connection and with the opposite end of said member contacting the under side of the last mentioned cap member rearwardly of its pivotal connection.

8. In an automatic lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, an elongated lug arranged centrally of each of said wing portions and projecting outwardly therefrom, a longitudinally extending locking cap member arranged in one of said lugs

so as substantially to enclose the same, said locking cap member being pivotally attached intermediate the length thereof to said lug and having a locking projection arranged on one end thereof which extends in one position into the channel of said slider body, resilient means arranged between said slider body and said locking cap member rearwardly of its pivotal connection and cooperating therewith for urging and maintaining the locking projection carried thereby normally in locked position in the channel of said slider body, a similar longitudinally extending cap member arranged on the lug on the opposite side of said slider body substantially enclosing said lug and being pivotally attached thereto intermediate its length at a point substantially opposite the pivotal connection of said locking cap member, a pull member pivotally connected

to each of said cap members so that a pull is disposed on either side of the slider, and a pin-like member reciprocably arranged in an angularly disposed opening in said neck portion and extending between said cap members, said pin-like member having one end thereof contacting the underside of the locking cap member forwardly of its pivotal connection with the opposite end thereof contacting the last mentioned cap member rearwardly of its pivotal connection whereby when either of the cap members is moved about its respective pivotal connection by its respective pull member against the action of said resilient means, the locking projection will be moved out of the slider channel to unlocked position.

CLARENCE D. GOULD.