Aug. 13, 1946. A. E. CARLILE 2,405,875

REVERSIBLE AUTOMATIC LOCK SLIDER

Filed Sept. 16, 1944 2 Sheets-Sheet 1

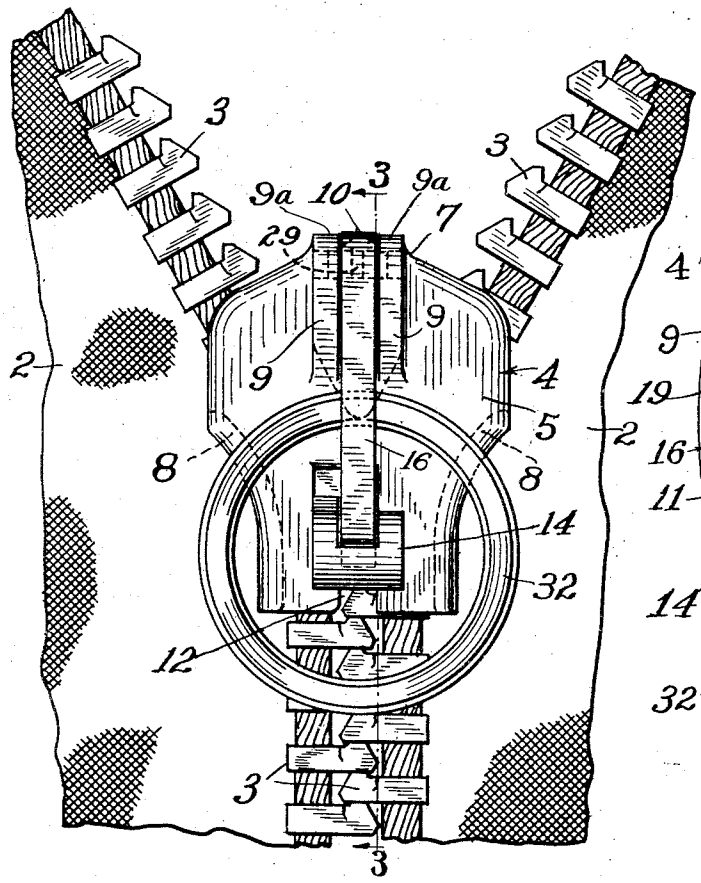


Fig. 1.

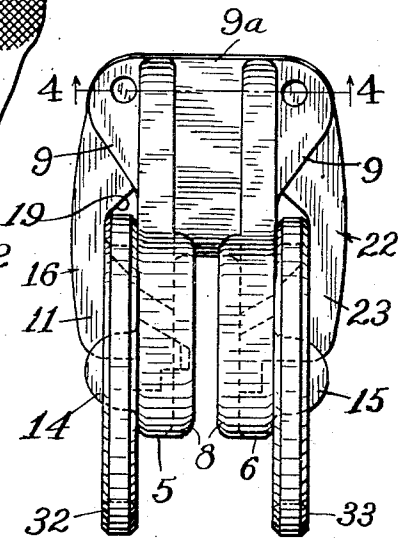


Fig. 2.

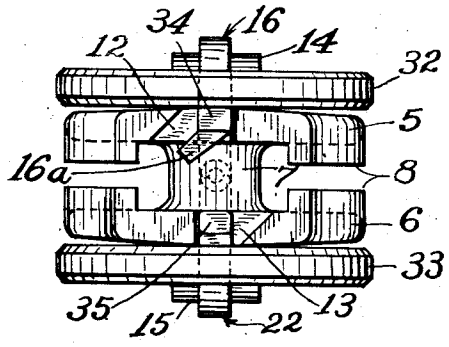


Fig. 5.

INVENTOR
Alfred E. Carlile
BY R. E. Mueck
ATTORNEY

Aug. 13, 1946. A. E. CARLILE 2,405,875

REVERSIBLE AUTOMATIC LOCK SLIDER

Filed Sept. 16, 1944 2 Sheets-Sheet 2

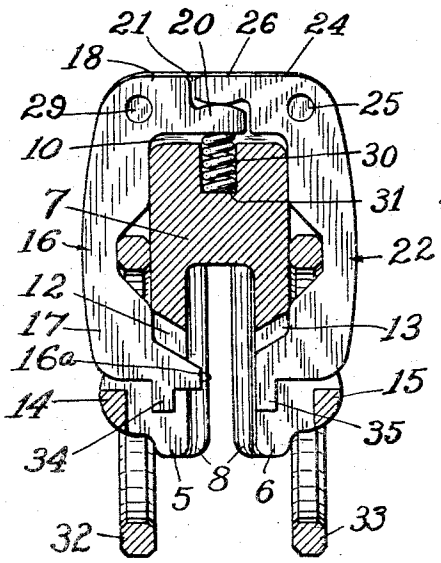


Fig. 3.

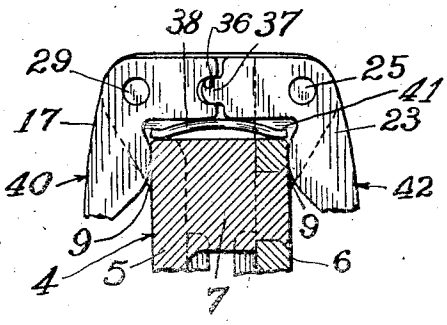


Fig. 6.

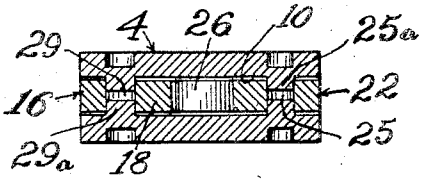


Fig. 4.

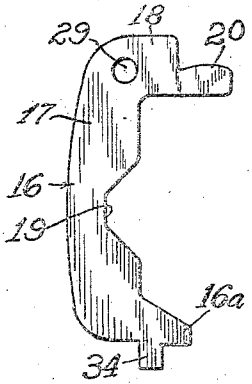


Fig. 7.

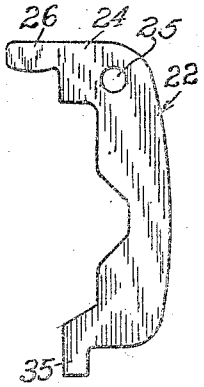


Fig. 8.

INVENTOR
Alfred E. Carlile

BY R. E. Mueck
ATTORNEY

Patented Aug. 13, 1946 2,405,875

UNITED STATES PATENT OFFICE

2,405,875

REVERSIBLE AUTOMATIC LOCK SLIDER

Alfred E. Carlile, Great Neck, N. Y., assignor to Talon, Inc., a corporation of Pennsylvania

Application September 16, 1944, Serial No. 554,389

17 Claims. (Cl. 24—205.5)

1

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

In most lock sliders, the pull or means for operating the lock and for manipulating the slider are disposed on one side thereof and, consequently, accessible from that side of the slider only, which makes such sliders limited in their application. It has been proposed heretofore, to provide a lock-actuating means or pull on each side of the slider so that the slider and locking means may be operated from either side of the fastener so as to provide a reversible or double-acting lock slider.

Various types of these reversible or double-acting automatic lock sliders have been suggested and used, but they have not been entirely satisfactory. Usually such sliders were complicated in their construction and assembly, and consequently, relatively expensive in their manufacture. Also, while such sliders would operate satisfactorily from one side, oftentimes, they would not function properly when operated from the other side, thereby defeating the primary purpose for which they were intended.

In the present invention, there is provided a reversible or double-acting automatic lock slider which is simple, compact and rugged in its construction having parts which can be easily and 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 operated from either side of the fastener, thereby providing a slider which is reversible or double-acting so that it can be manipulated and unlocked manually from both sides thereof.

It is another object of this invention to provide an improved automatic lock slider of the reversible or double-acting type which consists of a minimum number of simple parts which can be inexpensively fabricated and assembled.

It is a further object of this invention to provide an improved reversible or double-acting lock slider having an automatic locking means which can be controlled to unlock the slider from either side of the fastener, and at the same time, one which will effectively lock the slider automatically at any point along the fastener.

It is still another object of this invention to provide an improved automatic lock slider of the reversible or double-acting type having a slider body which can be easily and inexpensively die-cast from either metallic or non-metallic material.

2

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 drawings, there is shown for the purpose of illustration, an embodiment and a modification thereof which my invention may assume in practice.

In these drawings:

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

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

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1 not showing the fastener elements;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is an end view of the slider of my invention as shown in Fig. 2;

Fig. 6 is a view similar to Fig. 3, showing a modification of my invention;

Fig. 7 is a detail view of the locking arm of my improved slider; and

Fig. 8 is a detail view of the opposed arm which cooperates therewith.

Referring more particularly to the drawings, in Fig. 1 there is shown a conventional type slide fastener comprising a pair of tapes 2 having a series of spaced-apart interlocking fastener elements 3 arranged along the opposed beaded edges thereof. There is arranged on the fastening elements, a slider, generally designated at 4, for longitudinal movement therealong in either direction for opening and closing the fastener in a manner well-known to those skilled in the art. The slider comprises preferably a molded one-piece hollow slider body having spaced upper and lower wing portions 5 and 6, respectively, which are connected at one end thereof by an integral neck portion 7. There is carried by the wing portions on each side thereof, inwardly extending flange portions 8 for guiding the fastener elements through the Y-shaped channel of the slider.

According to the present invention, as more clearly shown in Figs. 2, 3 and 5 of the drawings, there is arranged on the outer surface of each of the upper and lower wing portions 5 and 6, centrally thereof, and preferably cast integral therewith, a pair of spaced apart lug portions or ears 9 which are positioned adjacent the neck portion and extend preferably to a point therebeyond and above the wing portions. Both pairs of lug portions or ears 9 are preferably integrally connected respectively with the other pair by means of rib-like portions 9a which extend across

the top portion of the slider body immediately above the neck portion 7 so as to provide a recess or slot 10, which extends between the lug portions or ears 9 and across the top of the slider body encircling the neck portion 7. The lower end of each of the wing portions 5 and 6 is preferably recessed centrally thereof, as at 12 and 13, respectively, for a purpose hereinafter to be described. Each of the recesses 12 and 13 is bridged preferably by loop portions 14 and 15, respectively, which extend above the outer surface of the respective wing portions.

The locking element of my improved slider comprises a longitudinally extending substantially inverted L-shaped member 16 having a long leg portion 17 and a relatively short leg portion 18. On the end of the longer leg portion 17, there is arranged an angular extending locking prong or projection 16a and this leg portion is preferably arched or cut away intermediate the length thereof as at 19, for the purpose of attaching a slider actuating member thereto in a manner to be described. At the junction of the leg portions 17 and 18, there is provided preferably a circular recess or indentation 29 on either side of the locking element in opposed relation for pivotally attaching the locking element to the slider body in a manner to be described. On the outer end of the shorter leg portion 18, there is arranged preferably, on the inner side thereof, a finger-like portion 20 so as to provide a notch 21 on the outer side thereof. In other words, the outer end of the shorter leg portion is scarfed.

There is provided another member 22 which also is substantially inverted L-shaped and similar to the locking element 16, having a longer leg portion 23 and a shorter leg portion 24. Likewise, on this member there is arranged at the junction of the leg portions 23 and 24 on either side thereof, preferably circular recesses or indentations 25 in opposed relation for pivotally attaching this member to the slider body in a manner hereinafter to be described. On the outer end of the shorter leg portion 24, there is arranged a finger-like portion 26 similar to the finger-like portion 20 of the locking element 16. This finger-like portion 26 is disposed preferably on the outer side of the leg portion so as to provide a notch 27 on the inner side thereof corresponding to the notch 21 of the locking element. That is to say, the outer end of the shorter leg portion 24 is scarfed opposite that of the end of the shorter leg portion 18 with which it cooperates. The longer leg portion 23 of the member 22 also is preferably arched or cut away intermediate the length thereof, as at 28, so as to provide means for attaching a slider manipulating member thereto.

It will be seen that both sides of the slider are the same and that the locking member 16 is identical with the member 22 except that the locking element has a locking projection 16a arranged on the end of the longer leg portion 17 thereof. In assembling, the locking element 16 is positioned on one side of the slider body so that the longer leg portion 17 thereof is disposed directly next to the outer surface of the wing portion 5 with the locking projection 16a positioned in the recess 12 in the lower or front end of the wing portion and extending into the channel of the slider body. There is arranged on the extreme outer end of the longer leg portion 17, preferably beyond the locking projection 16a carried thereby, a finger-like projection 34 which extends in under the loop or bridging portion 14 at the lower end

of the slider body and is provided for the purposes of limiting the outward movement of the locking element. The shorter leg portion 18 of the locking element is positioned in the recess or slot 10 between the ribs 9a at the top of the slider body, with the junction of the leg portions 18 and 17 disposed between the lugs or ears 9 on the wing portion 5. The locking element is attached pivotally to the lugs 9, preferably by means of inwardly extending projections 29a on the lugs 9 made preferably by a punch or other suitable tool which forces the metal of the lugs 9 inwardly into the recesses or indentations 29 positioned on either side of the locking element.

The member 22 is assembled on the opposite side of the slider body in substantially the same manner. That is, the shorter leg portion 24 of this member is positioned in the recess or slot 10 between the ribs 9a at the upper end of the slider body, with the finger-like portion 26 on the end thereof disposed in the notch 21 of the locking element 16 and with the finger-like portion 20 on the end of the leg portion 18 positioned in the notch 27 of the member 22. In other words, the finger-like portions 20 and 26 of the member 22 and the locking element 16, respectively, overlap each other substantially so as to provide a scarf joint therebetween, whereby they are loosely interconnected. The member 22 is attached pivotally to the pair of lugs 9 on the wing portion 6 also preferably by means of inwardly extending projections 25a struck up from the metal of the lugs, which is forced into the recesses or indentations 25 preferably by a punch or other suitable tool. There is arranged on the outer end of the longer leg portion 23, which is disposed directly next to the wing portion 6, preferably a finger-like projection 35 similar to the projection 34 on the locking element 16, which extends into the recess 13 and in under the loop or bridge portion 15 at the lower end of that wing portion.

In the upper end of the neck portion 7 centrally thereof and directly opposite the recess or slot 10 arranged therearound at the upper end of the slider body, there is arranged a hole 30 which extends longitudinally of the slider body for a substantial distance into the neck portion. There is arranged in this hole preferably, a compression coil spring 31 which has one end abutting the inner end wall of the hole 30 and the opposite end thereof preferably positioned against the finger-like portion 20 on the end of the shorter leg portion 18 of the locking element 16. It will be seen that this spring tends to force both the shorter leg portions 18 and 24 of the locking element 16 and member 22, respectively, outwardly about their pivotal connections at either side of the slider body. In such movement of the locking element 16 about its pivotal connection by the spring, it will be seen that the locking prong 16a carried thereby is moved into the channel of the slider body and it is the purpose of this spring normally to retain the locking prong in such extended position in the channel and in engagement with the fastener elements therein so as to lock the slider automatically against movement in any desired position along the fastener elements in a well-known manner.

There is disposed in the transverse aperture provided by the arched portion 19 of the locking element 16, a pull member 32 for manipulating the slider from that side of the slider body. In other words, the pivotal portion of the pull

member 32 is disposed movably between the arched portion 19 of the longer leg portion 17 of the locking element and the outer surface of the wing portion 5. On the opposite side of the slider body there is mounted a similar pull member 33 with the pivotal portion thereof disposed movably between the arched portion 28 of the longer leg portion 23 of the member 22 and the outer surface of the wing portion 6. Thus, it will be seen that there is provided a pull member on either side of the slider so that the slider may be moved along the fastener elements from either side of the fastener.

It will be seen that when the slider is actuated by means of the pull member 32, the locking element 16 will be moved automatically about its pivotal connection 29 against the action of the coil spring 31, so that the locking projection 16a will be moved out of the channel and out of engagement with the fastener elements 3. When the slider is manipulated by the pull member 33 on the opposite side of the slider, it will be seen that the member 22 will be moved about its pivotal connection at 25 with the finger-like portion 26 carried thereby striking the finger-like portion 20 of the locking element 16, thereby moving it about its pivotal connection at 29 against the action of the coil spring 31, thereby moving the locking projection 16a out of the channel of the slider body. After either of the pull members 32 or 33 has been released, it will be seen that the coil spring 31 will again move both the locking element 16 and the member 22, due to the interconnection therebetween, about their respective pivotal connections, thereby returning both of them to their normal positions. In other words, it will be seen that the respective pivotal connections of the locking element 16 and the member 22 together with the interconnection or scarf joint therebetween constitutes a toggle joint, whereby if either of the members is moved about its pivotal connection, the other member is likewise moved about its respective pivotal connection.

While I have shown a scarf joint for connecting together the outer ends of the shorter leg portions 18 and 24 of the locking element 16 and member 22, respectively, it will be understood that any suitable universal connection therebetween may be provided. For example, in the modification shown in Fig. 6 of the drawings, there is provided a ball and socket arrangement, i. e., on the end of one of the shorter leg portions there is provided a socket 36 in which a ball portion 37 arranged on the end of the shorter leg portion of the other member, is loosely disposed. Also, instead of using a coil spring for moving the locking element 40 to locked position, any other suitable resilient means may be employed, such as a leaf spring 38, as shown in Fig. 6. In such case, the spring is arranged loosely in the bottom of the recess or slot 41 between the neck portion 7 and the interconnected shorter leg portions of the locking element 40 and member 42. A slider made in accordance with this modified construction would function substantially the same is in the preferred form.

As a result of my invention it will be seen that there is provided a reversible or double-acting automatic lock slider for slide fasteners, having a slider body which can be conveniently die-cast either from metallic or non-metallic material. Also, it will be seen that there is provided a double-acting or reversible automatic lock slider wherein the opposite sides of the slider body are identical, thereby making it extremely convenient for assembling the parts thereon. In other words, the locking element 16 or the member 22 also being substantially identical, can be assembled on either side of the slider body.

While I have shown and described an embodiment and a modification thereof which my invention may assume in practice, it will be understood that these embodiments are merely for the purpose of illustration and description, and that 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 element having a locking projection carried thereby which extends normally into the channel of said slider body for locking the slider, said locking element being pivotally attached to one of the wing portions of said slider body, a member pivotally arranged on the opposed wing portion on the opposite side of said slider body, a pull member connected to each of said locking element and said last mentioned member so that a pull is disposed on either side of the slider for manipulating the same, and means extending between said wing portions interconnecting said locking element and said last mentioned member whereby when either the locking element or last mentioned member, or both, is moved by its respective pull member about its pivotal connection the locking element will be moved to unlocked position.

2. 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 element arranged on one of said wing portions having a locking projection carried thereby which extends normally into the channel of said slider body for locking the slider, said locking element being pivotally attached to said slider body adjacent the neck portion thereof, a member arranged on the opposed wing portion on the opposite side of said slider body and being pivotally attached thereto adjacent said neck portion, a pull member connected to each of said locking element and said last mentioned member so that a pull is disposed on either side of the slider for manipulating the same, and means extending between said wing portions adjacent said neck portion interconnecting said locking element and said last mentioned member whereby when either one or the other of said locking element or last mentioned member is moved by its respective pull member about its pivotal connection the locking element will be moved to unlocked position.

3. In a reversible lock slider of the class described, a channeled slider body having spaced wing portions connected at one end by a neck portion, a locking element arranged on one of the wing portions of said slider body, said locking element having a locking projection arranged on one end thereof which extends in one position into the channel of the slider body to lock the same against movement, said locking element being pivotally attached to said slider body at the other end thereof adjacent said neck portion, resilient means for urging and maintaining said locking projection normally in locked position, a member similar to said locking element arranged on the other wing of said slider body on the opposite side thereof and being pivotally attached

thereto at one end thereof, both said locking element and said last mentioned member having arranged on one end thereof opposite their respective pivotal connection means which cooperates with the slider body to limit the outward movement of the respective members, a pull member connected to each of said locking element and said last mentioned member so that a pull is disposed on either side of the slider for manipulating the same, and means extending between said wing portions adjacent said neck portion interconnecting said locking element and said last mentioned member between the pivotal connections thereof whereby when either one or the other of the locking element or last mentioned member is moved by its respective pull member about its pivotal connection the locking element will be moved to unlocked position against the action of said resilient means.

4. In a reversible lock slider of the class described, the combination as defined in claim 3, wherein the resilient means is mounted on the neck portion of the slider body and cooperates with either the locking element or the last mentioned member, or both, adjacent the interconnecting means arranged therebetween.

5. In a reversible lock slider of the class described, the combination as defined in claim 3, wherein the resilient means consists of a coil spring positioned in a recess in the neck portion and which cooperates with either the locking element or the last mentioned member, or both, adjacent the interconnecting means arranged therebetween.

6. In a slider of the class described, a slider body having therein normally operative locking means, said locking means including substantially an L-shaped locking element having a locking projection arranged on the end of one of the leg portions thereof, yieldable means normally urging said locking projection toward locking position, said locking element being disposed on one side of said slider body and pivotally attached thereto substantially at the junction of the leg portions of the L-shaped locking element, a member arranged on the opposite side of said slider body and pivotally attached thereto intermediate the length thereof, and means arranged between the end of the other leg portion of said L-shaped locking element and said last-mentioned member interconnecting the same whereby said locking projection is moved toward unlocking position when either the locking element or the last mentioned member, or both, is moved about its pivotal connection against the action of said yieldable means.

7. In a slider of the class described, a slider body having therein normally operative locking means, said locking means including substantially an L-shaped locking element having a locking projection arranged on the end of one of the leg portions thereof, yieldable means normally urging said locking projection toward locking position, said locking element being disposed on one side of said slider body and pivotally attached thereto substantially at the junction of the leg portions of the locking element, another similar substantially L-shaped member arranged on the opposite side of said slider body and being pivotally attached thereto substantially at the junction of the leg portions of said member, and means arranged on the end of the leg portion of the locking element opposite that from said locking projection and on the end of one of the leg portions of said last mentioned member interconnecting said locking element and said last mentioned member whereby said locking projection is moved toward unlocking position when either the locking element or the last mentioned member, or both, is moved about its pivotal connection against the action of said yieldable means.

8. In a slider of the class described, the combination as defined in claim 7, including a pull member pivotally connected to both the locking element and the last mentioned member for manipulating the locking element and the slider from either side thereof.

9. In a slider of the class described, the construction as defined in claim 7, wherein there is arranged in one of the leg portions intermediate the length thereof of both the locking element and the last mentioned member, an arched portion so as to provide a transverse opening between both the leg portion of the locking element and the slider body on one side thereof and the leg portion of the last mentioned member and the slider body on the opposite side thereof, by means of which a pull member is pivotally attached to each member so as to provide a pull member on either side of the slider body.

10. 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, locking means including a pair of similar substantially L-shaped members, one of said members arranged on one wing of said slider with one of the leg portions thereof disposed in one position directly next to the wing portion and having a locking projection arranged on the end of that leg portion which projects normally into the channel of the slider body for locking the same, resilient means normally urging said locking projection toward locking position, the other of said L-shaped members arranged on the opposite side of the slider with one of the leg portions disposed in one position directly next to the wing portion thereof, the other leg portions of each of said members extending toward each other and encircling the neck portion of said slider body at the upper end thereof, means arranged on the ends of these last mentioned leg portions of said L-shaped members interconnecting the same, both of said L-shaped members being pivotally connected to the respective sides of the slider body substantially at the junction of the leg portions of the respective members so as to provide a toggle arrangement, whereby the locking projection will be moved to unlocked position against the action of said resilient means when either one or both of said L-shaped members is moved about its pivotal connection, and a pull member pivotally connected to each of said L-shaped members and disposed to either side of the slider body for manipulating the same.

11. In an automatic lock slider of the class described, the combination as defined in claim 10, wherein the resilient means consists of a spring mounted in the neck portion of the slider body which cooperates with either one or both of said L-shaped members adjacent the connection therebetween urging the members about their respective pivotal connections so that the locking projection on the one of them is maintained normally in locked position.

12. In an automatic lock slider of the class described, the combination as defined in claim 10, wherein the resilient means consists of a coil spring arranged in a recess in the outer end of the neck portion which cooperates with either one

or both of said L-shaped members adjacent the connection therebetween urging the members about their respective pivotal connections so that the locking projection on the one of them is maintained normally in locked position.

13. In a lock slider of the class described, locking means comprising a pair of similar substantially L-shaped members with one of the leg portions of each of said members disposed on either side of the slider, a locking projection arranged on the end of one of the leg portions of at least one of said members, means arranged intermediate the length of each of said members for pivotally attaching the respective members to the slider, and means arranged on the ends of the other leg portions of said members interconnecting the same.

14. In a lock slider of the class described, locking means comprising a pair of similar substantially L-shaped members with one leg portion of each of said members disposed on either side of the slider, a locking projection arranged on the end of one of the leg portions of at least one of said members, means arranged substantially at the junction of the leg portions of each of said members for pivotally attaching the respective members to the slider, and means arranged on the ends of the other leg portions of said members interconnecting the same.

15. A lock slider of the class described comprising a channeled slider body consisting of spaced-apart wing portions connected by a neck portion, means arranged integral with said slider body on the outer side of each of said wing portions adjacent the neck portion for pivotally attaching a member thereto, a longitudinally extending locking element pivotally attached to one of said attaching means so as to be disposed on one side of said slider body, said locking element having a locking projection arranged on one end thereof which extends through an aperture in the wing portion on which it is disposed into the channel of said slider body, and which is disposed normally in locked position, a longitudinally extending member disposed on the opposite wing of said slider body and being pivotally attached to the attaching means positioned on that wing,

means connected to said locking element and said last mentioned member for actuating the slider on either side thereof, and means extending between said wing portions interconnecting said locking element and said last mentioned member whereby when either the locking element or last mentioned member, or both, is moved about its pivotal connection by said actuating means, the locking element will be moved to unlocked position.

16. An automatic lock slider of the class described comprising a channeled slider body consisting of spaced-apart wing portions connected by a neck portion, means arranged integral with said slider body on the outer side of each of said wing portions adjacent the neck portion for pivotally attaching a member thereto, a longitudinally extending locking element pivotally attached to one of said attaching means so as to be disposed on one side of said slider body, said locking element having a locking projection arranged on one end thereof which extends through an aperture in the wing portion on which it is disposed into the channel of said slider body, resilient means for urging and maintaining said locking projection normally in locked position in said channel, a longitudinally extending member disposed on the opposite wing of said slider body and pivotally attached to the attaching means positioned on that wing, means connected to said locking element and said last mentioned member for actuating the slider on either side thereof, and means extending between said wing portions interconnecting said locking element and said last-mentioned member whereby when either the locking element or last mentioned member, or both, is moved about its pivotal connection against the action of said resilient means by said actuating means, the locking element will be moved to unlocked position.

17. An automatic lock slider as defined in claim 16, including means arranged integral with the slider body on each of the wing portions for limiting the outward movement of the locking element and the last mentioned member disposed on the respective wing portions.

ALFRED E. CARLILE.