

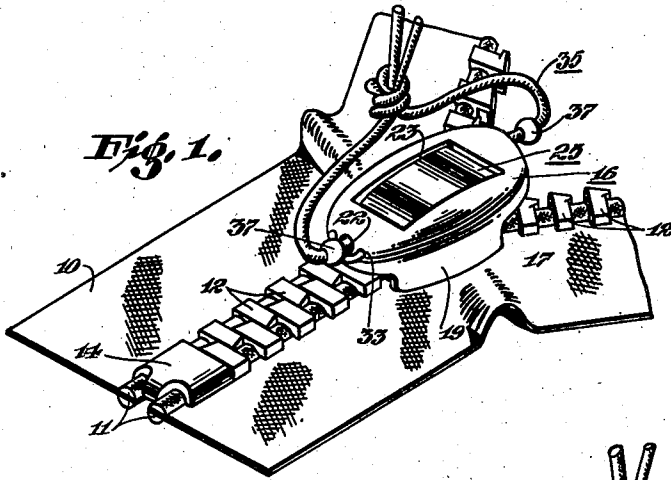
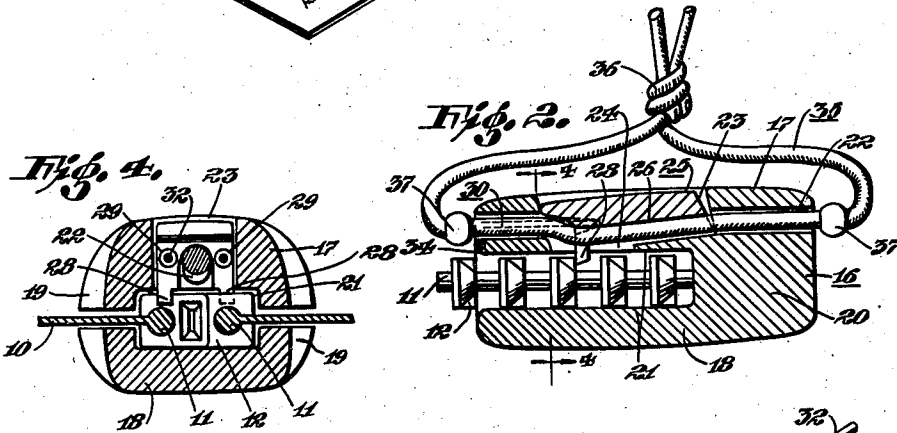
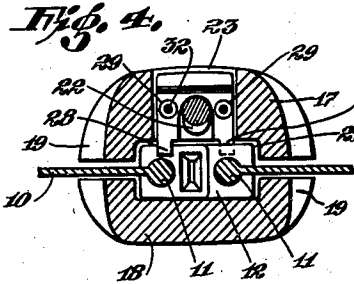
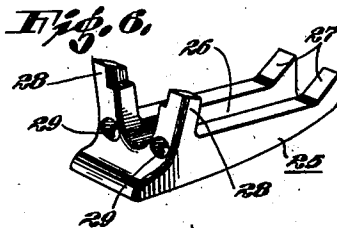
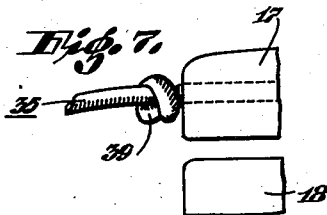
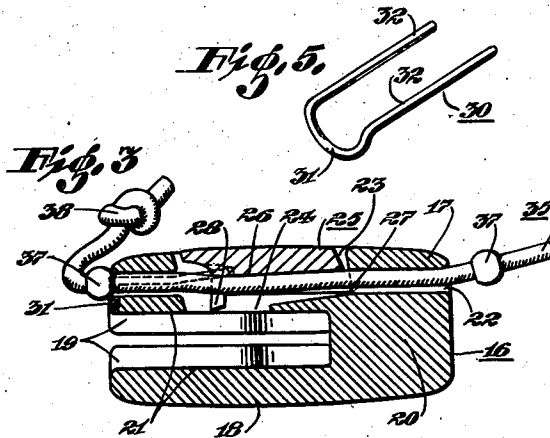
March 17, 1942.

G. SUNDBACK

2,276,676

AUTOMATIC LOCK SLIDER FOR SLIDER FASTENERS

Filed May 13, 1940



INVENTOR.
Gideon Sundback,
BY *R. S. Kelly.*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,276,676

AUTOMATIC LOCK SLIDER FOR SLIDE FASTENERS

Gideon Sundback, Meadville, Pa., assignor to
Talon, Inc., Meadville, Pa., a corporation of
Pennsylvania

Application May 13, 1940, Serial No. 334,693

11 Claims. (Cl. 24—205.5)

This invention relates to slide fasteners and, in particular, to the provision of new and improved lock sliders therefor.

It is an object of this invention to provide a new and improved automatic slide fastener lock slider which is thin, compact, and provided with smooth exterior surfaces, unobstructed by inflexible projections such as lugs, bails and the like, whereby to prevent accidental catching of the slider in clothing and other foreign materials.

It is a further object of this invention to provide such a slider construction embodying new and improved locking means which is positive in operation and which operates upon an entirely new principle.

It is a further object of this invention to provide such a slider construction wherein all dangling, depending, inflexible metal pull tabs and the like are totally obviated.

It is a further object of this invention to provide such a slider construction embodying a flexible pull member or tension member, preferably in the form of a closed loop, which is engageable manually for unlocking the slider and for imparting longitudinal movement to the slider for opening and closing the fastener.

These and other objects and advantages of the invention will appear from the following description taken in conjunction with the accompanying drawing which forms a part thereof, and will be pointed out in the appended claims.

In the drawing:

Fig. 1 is a view, in perspective, of a slide fastener slider according to this invention, as applied to one conventional form of slide fastener, of which a fragmentary showing is made;

Fig. 2 is a longitudinal central section of the slider of Fig. 1, with the slider parts shown in locking position;

Fig. 3 is a view similar to Fig. 2, but showing the slider parts in unlocked position;

Fig. 4 is a transverse section taken substantially on the line 4—4 of Fig. 2;

Fig. 5 is a perspective view of the biasing spring member forming a part of the locking means of the slider shown in Figs. 1 to 4;

Fig. 6 is an inverted perspective view of the locking member forming a part of the locking means of the slider shown in Figs. 1 to 4; and

Fig. 7 is an enlarged fragmentary detail view, in elevation, of a modification of the slider shown in Figs. 1 to 4 inclusive.

In prior art automatic locking slider constructions the locking means was generally actuated, or operated, by manual engagement of

a relatively inflexible pull tab member pivotally or otherwise loosely secured to the slider body and used also for sliding the slider body as a whole. Generally, upstruck lugs extending outwardly from the slider body proper were used to provide means for attachment of these pull tabs to the slider. The existence of these pull tab members and supporting lugs was highly objectionable, because of their tendency to become caught in materials and other foreign objects upon movement of the slider longitudinally on the fastener, for opening and closing the fastener. Furthermore, the dangling and jangling of the pull tab members was extremely objectionable, particularly in applications of slide fasteners to the sleeves of garments.

According to this invention, all of the above disadvantages of the prior art are totally obviated by the provision of an automatic locking slide fastener slider which is of cheap, simple, strong, durable and sturdy construction, which embodies an extremely compact locking mechanism and which presents a substantially continuous, or unbroken, smooth exterior surface which is necessarily highly resistant to catching of the slider in clothing and other foreign material. By the provision of a flexible cord-like tension member to actuate the locking mechanism, the convenience and desirability of the slider is substantially enhanced by the elimination of such inflexible dangling, jangling parts as conventional pull tabs.

According to the principle upon which the slider lock mechanism operates, tension in a cord-like tension member, or pull member, is utilized to overcome or overbalance the force of a biasing spring member in the locking mechanism to cause withdrawal of a normally operative locking projection from its normal locking position in the fastener member guiding channel of the slider for unlocking the slider.

Referring to the drawing in detail and with reference particularly to Fig. 1, the fastener shown in Fig. 1, which is illustrative only, includes a pair of stringers each formed of a tape 10 having a reinforced edge 11, upon which is secured, in known manner, a plurality of slide fastener interlocking members 12, the reinforced edges 11 of the tapes 10 being secured together at the lower end of the rows of interlocking fastener members 12 by means of a conventional bottom end fitting or bottom stop 14.

Slidable longitudinally of the stringers for engaging and disengaging the cooperating interlocking fastener members 12 thereof, to open and

close the fastener, is the slider, generally designated 16. The body of the slider comprises a front wing member 17 and a rear wing member 18, each provided with marginal side flanges 19 and connected in predetermined spaced relationship at their upper ends by a wedge or neck member 20, the inclined side surfaces of which cooperate with the opposed inner surfaces of the marginal side flanges 19 to form between the front and rear wing members 17 and 18 a substantially Y-shaped diverging interlocking fastener member guiding channel 21.

The front wing member 17 is traversed from end to end by a longitudinal pull member supporting bore 22. A locking member receiving recess 23, preferably of substantially rectangular form, extends inwardly from the outer surface of the front wing member 17 and terminates short of the fastener member guiding channel 21, with which it communicates through the opening or aperture 24.

Disposed in the locking member receiving recess 23 is a locking member generally designated 25. This locking member is provided with a longitudinally extending coextensive pull member receiving channel 26 which is aligned with the branches of the longitudinal pull member supporting bore 22 formed by the intersecting recess 23. At its upper end, at each side of the channel 26, the locking member 25 is provided with a pair of inwardly projecting legs or pivot projections 27 which rest upon the bottom or inner wall of the locking member receiving recess 23 at its upper end in such manner that the locking member 25 is swingably or hingedly supported in the locking member receiving recess 23.

At its lower end, the locking member 25 is provided, at each side of the channel 26, with a locking projection 28 which is projectible through the opening or aperture 24 into the fastener member guiding channel 21 of the slider body. Substantially aligned with these locking projections 28 is a pair of longitudinal upwardly extending biasing spring receiving recesses or sockets 29. These biasing spring receiving recesses or sockets 29 receive the ends or legs 32 of a bifurcated or substantially U-shaped biasing spring member 30. This biasing spring 30 has an arcuate offset end portion 31, from which the legs or end portions 32 extend. The slider body is provided with a pair of longitudinal bores 33 (Fig. 1), through which these legs 32 of the biasing spring member 30 extend into the biasing spring receiving recesses or sockets 29. The slider body, or front wing member 17 thereof, is provided, at its lower end, with an arcuate recess 34, extending between the ends of the biasing spring receiving bores 33 into which the intermediate arcuate portion 31 of the biasing spring member 30 is countersunk, as shown in Figs. 2 and 3.

As will be seen from Figs. 2 and 3, the legs 32 of the biasing spring member 30 exert an inward force upon the lower end of the locking member 25 which normally urges the locking projections 28 thereof inwardly through the opening or aperture 24 into the fastener member guiding channel 21 of the slider. These locking projections 28 are thus yieldingly urged into spaces between adjacent interlocking fastener members 12 in the channel 21 to prevent relative longitudinal movement between the slider 16 and the rows of interlocking fastener members 12 of the fastener. In the normal locking position of the locking member 25, the channel 26 thereof is inclined with respect to the straight pull member sup-

porting bore 22 of the slider body as shown in Fig. 2.

Common means is provided for manually unlocking the slider and for sliding the slider longitudinally of the rows of interlocking fastener members to open and close the fastener. This means comprises a flexible cord-like tension member or pull member 35 extending through both branches of the pull member supporting bore 22 and the intermediate channel 26 of the locking member 25, as shown in Figs. 2 and 3. Preferably, the ends of this cord-like pull member 35 are secured together by a knot 36 (Figs. 1 and 2) to form a closed loop.

As will be readily understood, the application of tension to this loop, at any part thereof, will cause the portion of the pull member 35 within the branches of the pull member supporting bore 22 and the inclined channel 26 of the locking member to become shortened and straightened. Thus, straightening of the enclosed portion of the pull member 35, causes the inclined channel 26 to seek registration with the branches of the pull member supporting bore 22 which, in turn, causes pivotal movement of the locking member 25 about the legs or pivot projections 26, whereby the locking projections 28 thereof are withdrawn through the opening or aperture 24 from the fastener member guiding channel 21, as shown in Fig. 3.

Optional stop members 37 may be secured to intermediate portions of the pull member 35, at each end of the bore 22, being spaced at slightly greater distance than the ends of the bore 22. As shown in Fig. 3, when these optional stop members 37 are provided, the ends of the cord-like pull member 35 may be left free, though preferably provided with a knot 38 or the like for facilitating manual engagement for the application of tension thereto.

When stop members 37 are provided, the application of tension to one end of the cord-like pull member 35 will cause the most remote stop member 37 to become seated at the adjacent end of the bore 22 to prevent longitudinal movement of the enclosed portion of the pull member 35 in the bore 22, whereby the tension straightens the enclosed portion of the pull member 35 to cause outward swinging movement of the lower end of the locking member 25, as shown in Fig. 3, for withdrawing the locking projections 28 from the fastener member guiding channel 21 of the slider.

While the illustrated stop members comprise annular sleeves of bead-like form fixed, in suitable manner, to the cord-like pull member 35 as shown in Figs. 1, 2 and 3, the stop members may comprise knots 39 made in the pull member 35, as shown in Fig. 7.

Likewise, either of the legs 32 of the biasing spring member 30 and/or locking projections 28 of the locking member 25 may, of course, be omitted, and the biasing spring may be in the form of a single straight spring wire or leaf spring embedded in an enclosed portion of the pull member 35, nevertheless the above-described structure is preferred, because of the efficient manner in which the bifurcated spring member 30 retains and guides the locking member 25 in the locking member receiving recess 23 of the slider body.

From the above description, it will clearly appear that I have provided a new and improved automatic slide fastener lock slider which is of extremely simple form, which may be economically manufactured, which is positive in opera-

tion and which is thin, compact, and provided with smooth exterior surfaces. It will further appear that the slider embodies an entirely new principle of operation in that the shortening of an enclosed portion of a flexible cord-like tension member or pull member performs the unlatching operation by overbalancing a normally operative biasing spring included in the compactly arranged locking mechanism of the slider.

It is, of course, to be understood that the above description is merely illustrative and in no wise limiting and that I desire to comprehend within my invention such modifications as are included within the scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a slider for slide fasteners, a slider body, locking means associated with said slider body including a locking member normally yieldingly urged toward locking position, said slider body and said locking member having channels extending therethrough and normally out of alignment, but defining the unlocked position of said locking means when substantially aligned, and a flexible pull member extending through said channels and substantially aligning said channels for unlocking said slider upon application of tension thereto.

2. In a slider for slide fasteners, a slider body, locking means associated with said slider body including a locking member and biasing means normally yieldingly urging said locking member toward locking position, said slider body and said locking member having channels extending therethrough and normally out of alignment while defining the unlocked position of said locking means when substantially aligned, and a flexible pull member extending through said channels, and substantially aligning said channels for unlocking said slider upon application of tension thereto.

3. In a slider for slide fasteners, a slider body slidable with respect to slide fastener stringers for progressively connecting and disconnecting said stringers, locking means associated with said slider body including a locking member, yielding means normally yieldingly urging said locking member toward locking position for locking said slider against movement relative to said slide fastener stringers, said slider body and said locking member having pull member receiving channels extending therethrough and normally out of alignment while defining the unlocked position of said locking means when substantially aligned, and a flexible pull member extending through said channels and substantially aligning said channels for unlocking said slider upon application of tension thereto.

4. In a slider for slide fasteners, a slider body having a fastener member guide channel therein, normally operative locking means including a locking member with a locking projection normally yieldingly projected into said guide channel for locking said slider, said slider body and said locking member having openings therethrough defining the inoperative position of said locking means when substantially aligned, said openings being out of alignment when said slider locking means is operative, and a flexible cord extending through said openings for aligning said channels to unlock said slider upon application of tension thereto.

5. In a slider for slide fasteners, a slider body having a fastener member guide channel therein,

locking means including a locking member with a locking projection, biasing means normally yieldingly urging said locking member toward locking position to project said locking projection into said guide channel, said slider body and said locking member having channels extending therethrough and defining the inoperative unlocked position of said locking means when substantially aligned, said channels being out of alignment when said slider is locked, and a flexible cord extending through said channels for aligning said channels to unlock said slider upon application of tension thereto, said cord having stop means at each side of said channels whereby tension applied longitudinally thereto from either end will cause shortening of the cord portion within said channels to cause alignment of said channels for unlocking said slider.

6. In a slider for slide fasteners, a slider body having a fastener member guide channel therein, normally operative locking means including a locking member with a locking projection normally yieldingly projected into said guide channel for locking said slider, said slider body and said locking member having openings extending therethrough and defining the inoperative position of said locking means when substantially aligned, said openings being out of alignment when said slider is locked, and a flexible cord extending through said openings for aligning said channels to unlock said slider upon application of tension thereto, said cord comprising a closed loop, whereby application of stress to any portion thereof will cause shortening of the cord portion within said openings to align said openings and unlock said slider.

7. In a slide fastener, a slider body having a fastener member guiding channel with a locking projection receiving opening communicating therewith, a locking member having a locking projection in said opening directed inwardly of said guiding channel, biasing means acting on said locking member and normally yieldingly urging said locking projection into locking position in said guiding channel, said slider body having a bore extending therethrough and interrupted by said locking member, said locking member having therein channel defining the unlocked position of said locking member when substantially aligned with said bore, and a flexible pull member extending through said bore and said channel and overbalancing said biasing means and aligning said pull member receiving channel with said pull member receiving bore upon shortening of the portion of said pull member enclosed by said bore and said channel, upon application of tension thereto.

8. In a slide fastener, a slider body having a fastener member guiding channel with a locking projection receiving opening communicating therewith, a locking member recessed in said slider body, for pivotal movement about one end, said locking member having a locking projection at its other end disposed in said opening and directed inwardly of said guiding channel, biasing means acting on said locking member normally yieldingly urging said locking projection into locking position in said guiding channel, said slider body having a pull member receiving bore extending therethrough and interrupted by said locking member, said locking member having therein a pull member receiving channel defining the unlocked position of said locking member when substantially aligned with said pull mem-

ber receiving bore, and a flexible pull member extending through said bore and said channel and overbalancing said biasing means and aligning said pull member receiving channel with said pull member receiving bore, to unlock said slider upon shortening of the portion of said pull member within said bore and said channel, upon application of tension to said pull member.

9. In a slide fastener, a slider body having a fastener member guide channel and a longitudinal locking member receiving recess spaced from said guide channel with a locking projection receiving opening extending inwardly from its lower end into said guide channel, a locking member supported within said longitudinal recess for pivotal movement about its upper end, said locking member having a locking projection at its lower end disposed in said opening and directed inwardly of said guide channel, biasing means yieldingly urging the lower end of said locking member inwardly to project said locking projection into locking position in said guide channel, said slider body having a pull member receiving bore extending therethrough, said locking member having therein a pull member receiving channel defining the unlocked position of said locking member when aligned substantially with said pull member receiving bore and a flexible pull member extending through said bore and said channel, said pull member being operative upon application thereto of tension shortening the portion of said pull member enclosed in said bore and said channel, to overbalance said biasing means and align said pull member receiving channel with said pull member receiving bore for unlocking said slider.

10. In a slide fastener, a slider body having a fastener member guide channel and a longitudinal locking member receiving recess spaced from said guide channel with a locking projection receiving opening extending inwardly from its lower end into said guide channel, a locking member supported within said longitudinal recess for pivotal movement about its upper end, said locking member having a locking projection at its lower end disposed in said opening and directed inwardly of said guide channel, biasing means comprising a spring member anchored at one end to said slider body with its free end engaging recesses in the lower end of said locking member and yieldingly urging the lower end of said locking member inwardly to project said locking pro-

jection into locking position in said guide channel, said slider body having a longitudinal pull member receiving bore extending therethrough and interrupted by said locking member receiving recess, said locking member having therein a longitudinal pull member receiving channel defining the unlocked position of said locking member when aligned substantially with said pull member receiving bore and a flexible pull member extending through said bore and said channel, said pull member being operative upon application thereto of tension shortening the portion of said pull member enclosed in said bore in said channel, to overbalance said biasing means and align said pull member receiving channel with said pull member receiving bore for unlocking said slider.

11. In a slide fastener, a slider body having a fastener member guide channel and a longitudinal locking member receiving recess spaced from said guide channel with a locking projection receiving opening extending inwardly from its lower end into said guide channel, a locking member supported within said longitudinal recess in all positions and movable pivotally about its upper end, said locking member having a locking projection at its lower end disposed in said opening and directed inwardly of said guide channel, biasing means comprising a bifurcated spring anchored to said slider body with its ends engaging and yieldingly urging the lower end of said locking member inwardly to project said locking projection into locking position in said guide channel, said slider body having a longitudinal pull member receiving bore extending therethrough and interrupted by said locking member receiving recess, said locking member having therein a longitudinal pull member receiving channel defining the unlocked position of said locking member when aligned substantially with said pull member receiving bore and a flexible cord-like pull member comprising a closed loop extending through said bore and said channel, said pull member being operative upon application thereto of tension shortening the portion of said pull member enclosed in said bore in said channel, to overbalance said spring member and align said pull member receiving channel with said pull member receiving bore for unlocking said slider by withdrawing said locking projection from said guide channel.

GIDEON SUNDBACK.