Nov. 4, 1941. H. B. GRANT 2,261,133

SLIDE FASTENER

Filed Sept. 14, 1940

Fig. 1.

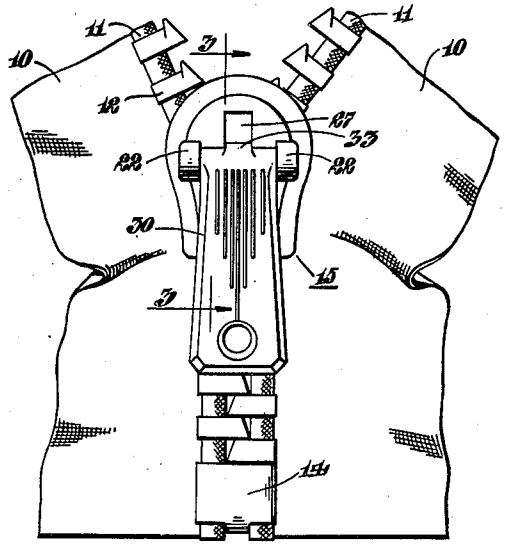


Fig. 3.

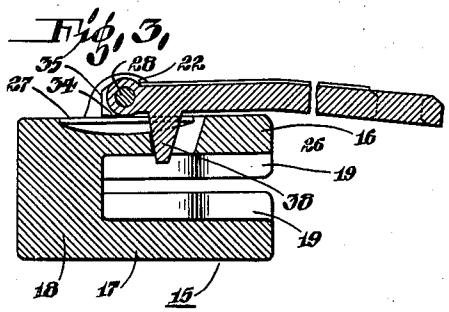


Fig. 2.

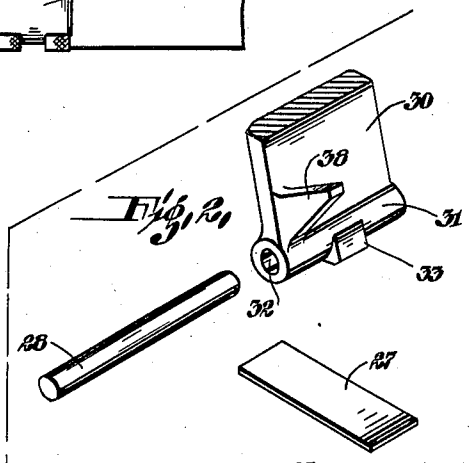
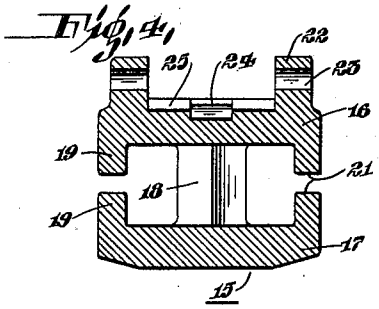


Fig. 4.



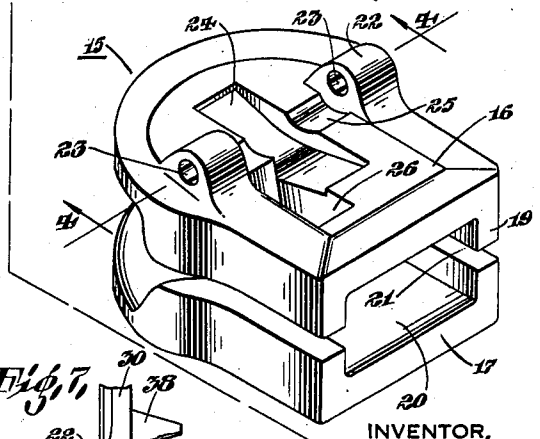


Fig. 5.

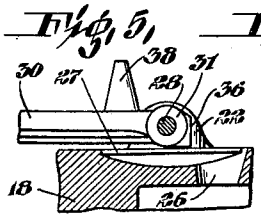


Fig. 6.

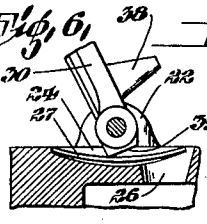
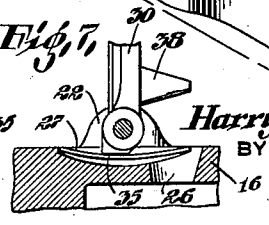


Fig. 7.



INVENTOR.
Harry Bertram Grant,
BY
R. S. Kelley.
ATTORNEY.

Patented Nov. 4, 1941 2,261,133

UNITED STATES PATENT OFFICE

2,261,133

SLIDE FASTENER

Harry Bertram Grant, Sutton Coldfield, England, assignor to Talon, Inc., a corporation of Pennsylvania

Application September 14, 1940, Serial No. 356,790
In Great Britain November 3, 1939

3 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 an improved slider for slide fasteners of the pin locking type, particularly adapting it for use in conjunction with molded sliders for slide fasteners embodying interlocking fastener members of small size.

Slide fastener sliders have been provided with locking prongs or locking pins integral with, or fixed to, a swingable pull tab, which prongs or pins are manually engageable between adjacent interlocking fastener members of the fastener to lock the slider by preventing endwise movement thereof with respect to the rows of interlocking fastener members of the fastener. Such locking sliders have many advantages and have been used widely. Their construction is simple and they are very durable. When in locking position they provide a positive lock. They have, however, certain disadvantages which this invention aims to overcome in an improved manner. They may fall accidentally into locking position and when a tearing stress is applied on the fastener when the user does not intend that it be locked, something may be broken or some of the fastener members may be moved out of proper position on the tapes. Sometimes also when the pull tab is merely dropped after closing the fastener it will strike upon one of the fastener members instead of coming into locking position in the space between fastener members and thus a quick tearing movement will very likely allow the fastener to be opened without locking.

According to the principles of this invention, all of the advantages of the simple and durable pin lock slider construction are retained and the above disadvantages are obviated by the provision of a relatively simple device which will maintain the pull tab in various predetermined positions thereby preventing accidental locking when not desired, and furthermore, prevents accidental withdrawal of the locking pin from locking position at times when it is desired that the slider be locked. The above advantages together with the advantage of improved appearance and compactness make my improved slider especially adaptable for small molded sliders. The improved appearance is especially important in sliders of plastic material. Furthermore, when the pull tab is of plastic material, it is relatively light and the need for an improved retaining device is especially great.

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 fragmentary plan view of a known form of slide fastener provided with a slider constructed according to this invention;

Fig. 2 is an exploded view, in perspective, of the slider of Fig. 1 with a part of the pull tab omitted in the interest of clearness of disclosure;

Fig. 3 is a longitudinal section taken substantially on the line 3—3 of Fig. 1, with the pull tab in locking position;

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

Fig. 5 is a fragmentary view similar to Fig. 3, but showing the pull tab in unlocked position, flat against the body of the slider;

Fig. 6 is a view similar to Fig. 5, but showing the pull tab "on dead center", between one of two predetermined unlocked positions; and

Fig. 7 is a view similar to Figs. 5 and 6, but showing the pull tab retained in one predetermined unlocked position, wherein it is disposed substantially perpendicular to the body of the slider.

Referring to the drawing in detail, the slide fastener shown in Fig. 1 includes a pair of stringers, each of which comprises a tape 10 having a reinforced edge 11, upon which edge is secured, in known manner, a row of predeterminedly spaced interlocking fastener members 12. The lower ends of the reinforced edges 11 of the tapes 10 are secured together by a bottom stop 14 of conventional form secured to and between the tapes 10 in known manner.

The slider, which is generally designated 15, is manually moved longitudinally with respect to the rows of interlocking fastener members 12, upwardly for progressively engaging the interlocking fastener members 12 to close the fastener, and downwardly for progressively disengaging the interlocking fastener members 12 to open the fastener.

The body of the slider comprises a front wing member 16 and a rear wing member 17 connected at their upper ends by the wedge or neck member 18. The wing members 16 or 17 are each provided with a pair of similar marginal side flanges 19 which cooperate with the wedge or neck 18 to form between connected wing members 16 and 17 an upwardly diverging fastener member guide channel 20 having at each side a tape guide slot

21 through which the stringer tapes 10 extend outwardly at opposite sides, as shown in Fig. 1. While the wing members 16 and 17 are of the same general form, the outer surface of the front wing member 16 is provided with a pair of laterally spaced upstanding or outwardly extending pull tab supporting lugs 22 each provided with a transverse pin-receiving bore 23.

Arranged substantially equidistantly between these pull tab supporting lugs 22 is a longitudinal spring-supporting recess 24 having an arcuate inner wall. Disposed transversely of the slider body between each of the lugs 22 and the adjacent side of the spring-supporting recess 24 is an arcuate pull tab bearing recess 25.

At one side of the spring supporting recess 24, is a locking pin-receiving opening or aperture 26 which extends inwardly from the outer surface of the front wing member 16 to the fastener member guide channel in the slider 15.

The slider body is of extremely simple design, particularly adapted for production by molding and die-casting methods from metal and, preferably, from non-metallic plastic material and by dies of simple, uncomplicated nature.

Supported in the longitudinal spring-supporting recess 24 is a leaf spring member 27 which is of substantially the same length as the recess 24 and which fits snugly therein with its outer surface substantially flush with the adjacent outer surfaces of the front wing member 16 when the spring member 27 is unstressed, as shown in Figs. 3, 5 and 7.

A pivot pin 28 extends through the aligned transverse pin-receiving bores 23 of the pull tab supporting lugs 22 in order to provide a support for the pull tab 30. The pull tab member 30 is of plate-like form, having its outer end slightly inclined inwardly, as shown in Fig. 3, in order to lie snug against the interlocking fastener members 12 of the fastener when in locking position. At its inner end, the pull tab member 30 is provided with an enlarged substantially cylindrical portion 31 which rests in the bearing recesses 25. A transverse pivot pin-receiving bore 32 extends through the portion 31 from side to side of the pull tab member and is aligned with the above-described pin-receiving bores 23 by the pivot pin 28 which extends through these aligned bores.

For cooperation with the leaf spring member 27 to define the various predetermined positions of the pull tab 30 is a cam member 33 having a flattened surface 34 disposed substantially parallel with the main portion of the pull tab member 30 and lying flat against the leaf spring member 27 in the locked position of the slider, as shown in Fig. 3, to define the locked position.

Extending from the outer end of this locking position defining surface 34 and disposed substantially perpendicular thereto is a second flattened surface 35 which lies flat against the leaf spring member 27, as shown in Fig. 7, to maintain the pull tab substantially perpendicular to the bottom of the slider 15.

A third flattened surface 36 extends from the intermediate flattened surface 35 in substantial parallellism with the first-mentioned flattened surface 34, which flattened surface 36 lies flat against the spring member 27 to define a second unlocked position of the pull tab member 30, wherein it is flat against the body of the slider 15, as shown in Fig. 5.

As shown in Fig. 7, the leaf spring member 27 is partially compressed when the pull tab is in its intermediate position, and, as shown in Figs. 3 and 5, respectively, it is substantially uncompressed in the flat locked position of the pull tab member 30 and the flat unlocked position thereof.

The projections formed respectively between the flattened surfaces 35 and 36 and between the flattened surfaces 34 and 35, upon encountering the leaf spring member 27 during pivotal movement of the pull tab member 30 cause substantial compression of the leaf spring member 27, as shown in Fig. 6, whereby the leaf spring member 27 biases or urges the pull tab member 30 to the nearest of its predetermined positions. Thus accidental movement from such positions is effectively prevented.

Extending inwardly from one side of the pull tab member 30 adjacent its inner end and the enlarged cylindrical portion 31 thereof is the locking pin member 38 which is adapted, in the locked position of the slider, to project through the locking pin-receiving opening or aperture 26 into the interlocking fastener member guide channel disposed between the wing members 16 and 17. In this position of the locking pin 38, as shown in Fig. 3, it is adapted to extend into the spaces between adjacent interlocking fastener members 12 of the fastener. It is retained in such position by the abutment of the spring member 27 with the above-described flat surface 34. This effectively prevents accidental unlocking of the slider.

When it is desired to operate the slider, the pull tab member 30 is swung upwardly from the position of Fig. 3 toward the position of Fig. 7. When the pull tab member 30 has more nearly approached the position of Fig. 7 than the position of Fig. 3, release of the pull tab member 30 will permit the spring member 27 partially to decompress to bring the pull tab member 30 to the position of Fig. 7, wherein the spring member 27 engages the flat surface 35. The pull tab member 30 is thus yieldingly maintained in this intermediate unlocked position, wherein it may be most readily manually grasped to move the slider 15 longitudinally of the rows of interlocking fastener members of the fastener.

Upon further upward swinging movement of the pull tab member 30, it passes the dead center position of Fig. 6 to reach the unlocked flat position of the pull tab member 30, wherein the spring member 27 engages the above-described flat surface 36, as shown in Fig. 5.

It will thus be seen that the pull tab member 30 is provided with a cam defining a plurality of predetermined positions and is constantly yieldingly biased or urged toward the nearest of these positions by the biasing spring member 27. Likewise, when the pull tab member 30 is placed in any of these predetermined positions, it is yieldingly maintained in such position against accidental removal therefrom, by the cooperation of the biasing leaf spring member 27 with the appropriate flat surface of the cam member 33.

Like the slider body, the pull tab member 30 with its integral cam member 33 and locking pin member 38 are particularly adapted for production by molding and die-casting methods from metal and, particularly, from non-metallic plastic material and by dies of simple uncomplicated nature. When the body of the slider is formed of non-metallic plastic material, the formation of the pull tab member 30 of the same material constitutes a great advantage, because the locking pin member 38, when formed of non-metallic plastic material, effectively performs its locking operation in cooperation with interlocking fas-

tener members 12 of similar non-metallic plastic material with obviation of the great wear and destructive effect upon the interlocking fastener members 12 which was formerly experienced by the use of metallic locking pin with non-metallic plastic interlocking fastener members.

From the above description, it will readily appear that the slider construction of this invention may be fully adapted to slide fasteners of non-metallic plastic material by forming the body 15 and pull tab member 30 of non-metallic plastic material similar to the material from which the interlocking fastener members 12 of the fastener are formed, the only metallic parts of such slider comprising the biasing spring member 27 and pivot pin member 28 which have no contact whatsoever with the interlocking fastener members 12 of the fastener.

It is, of course, to be understood that the above description is merely illustrative and in nowise limiting and that I desire to comprehend within my invention such modifications as are included within the scope of the following claims.

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

1. A slider for slide fasteners comprising a pair of connected wings forming a fastener member guide channel between them, a pull tab pivotally connected to one wing and having a locking pin adjacent the pivotal axis adapted to extend through an opening in the slider into the slider channel to lock the slider when the pull tab is swung into said locking position against the slider, said wing carrying the pull tab having a recess under the pivotal axis of the pull tab, a spring mounted in said recess under said pull tab, and cams on the pull tab adjacent its pivotal axis cooperating with said spring to retain said pull tab against accidental movement in its forward locking position or in an upstanding unlocked position.

2. In a slider for slide fasteners, a slider body having a fastener member guide channel therein and an opening extending from one side thereof into said channel, a pull member pivoted to said last-named side of said slider body, a locking prong on said pull member swingable with said pull member into and out of said channel through said opening for locking and unlocking said slider, a leaf spring substantially flush with the adjacent outer surfaces of the slider body and acting between said slider body and said pull member, and cam means on said pull member engaging said resilient means and cooperating therewith to define predetermined locking and unlocking positions of said pull member, and said resilient means urging said pull member to the nearest of said predetermined positions from any other position and maintaining said pull member in any of said predetermined positions defined by said cam means after the pull member is placed in such position.

3. In a slider for slide fasteners, a slider body having a fastener member guide channel therein and an opening extending from one side thereof into said channel and having a pair of laterally spaced lugs at said side, a pivot pin extending between said lugs, a pull member pivotally supported on said pivot pin, a locking prong on said pull member swingable with said pull member into and out of said channel through said opening for locking and unlocking said slider, a recess in said slider body between said lugs, a leaf spring in said recess acting between said slider body and said pull member, and cam means on said pull member overlying said recess, said cam means engaging said leaf spring and cooperating therewith to define a plurality of predetermined positions of said pull member, and said leaf spring automatically urging said pull member to the nearest of said predetermined positions from any other position and maintaining said pull member in any of said predetermined positions after the pull member is brought to such position.

HARRY BERTRAM GRANT.