

Aug. 3, 1943.

E. SAMSTEGMAN

2,325,709

SLIDING CLASP FASTENER

Filed March 5, 1942

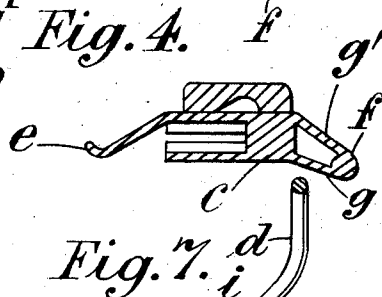
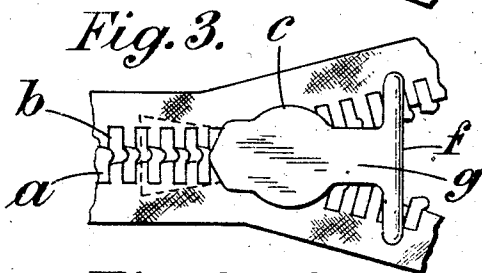
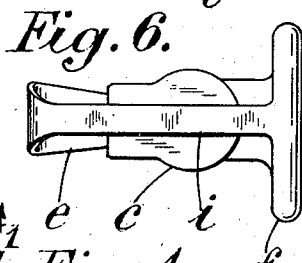
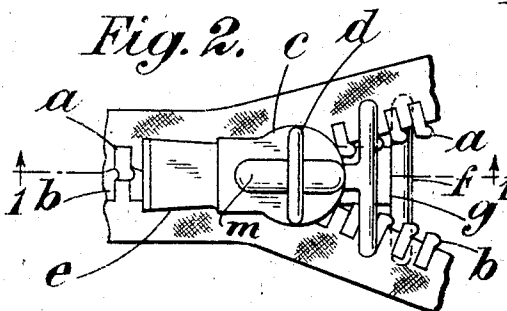
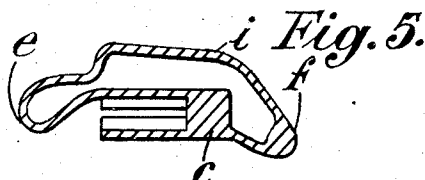
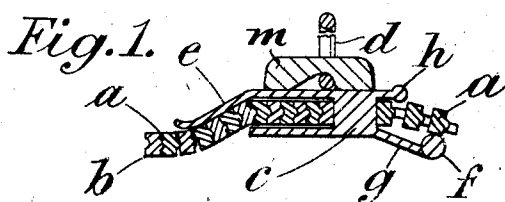


Fig. 8.

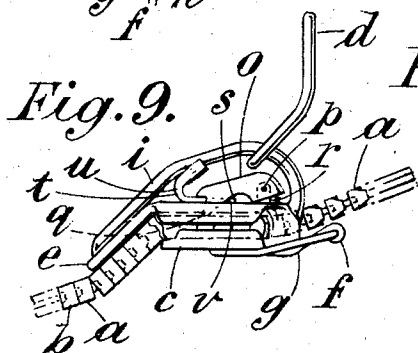
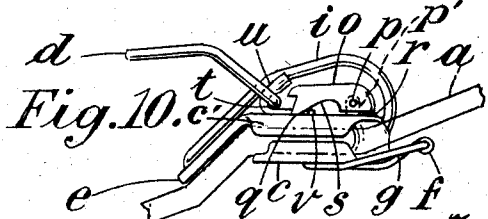
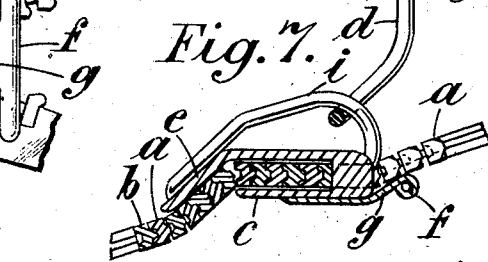
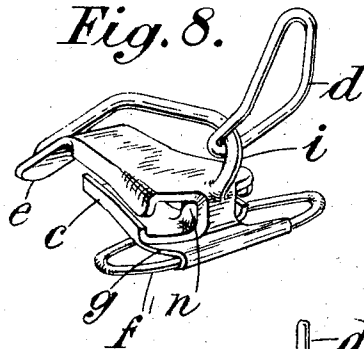
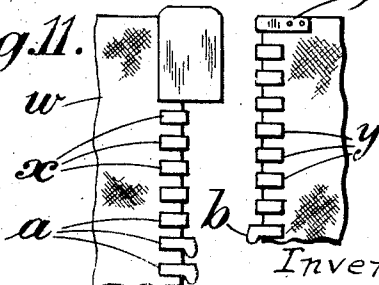


Fig. 11.



Inventor:
Ewel Samstegman
By Young, Ewing & Thompson Attys.

UNITED STATES PATENT OFFICE

2,325,709

SLIDING CLASP FASTENER

Ewel Samstegman, London, England

Application March 5, 1942, Serial No. 433,497
In Great Britain March 6, 1941

15 Claims. (Cl. 24—205)

This invention consists in improvements in or relating to fasteners of the kind known commercially as zip fasteners, that is to say, fasteners comprising two parallel series of small interlocking tongues constituting two fastener elements which are brought into interlocking position or opened apart by means of a slider having a shaped throughway. Hereinafter and in the appended claims such a fastener will be referred to as "a fastener of the kind specified."

In fasteners of this type of which the interlocking clasp elements are made of metal, or other material, especially when they are used for closing handbags, umbrella cases and the like or articles of dress, there is a known disadvantage that during the operation of the slider the co-operating clasp elements are liable to contact and pick up or pinch any material of the contents with which they may come in contact. If such material gets between the clasp elements or between them and the slider, jamming results, not only arresting the opening or closing of the fastener but resulting often in the tearing or damaging of the contents.

The term "contents" employed herein is used for the sake of brevity to denote the contents of any bag or other enclosure in which the fastener is employed, or anything lying beneath a cover that is opened and closed by such a fastener, as for instance the skin of a human body when the fastener is employed on articles of clothing.

In order to minimise this disadvantage it has been proposed to employ an underlying strip of material secured to one edge of the opening to which the fastener is applied so that this band will lie between the slider and the contents, but it often occurs that this band itself causes similar difficulties, particularly if the contents of a bag, for instance, tend by their bulk to prevent a ready closing of the fastener.

An object of the present invention is to overcome these difficulties and according thereto there is provided, in or for a fastener of the kind specified, a slider having a throughway passage for the interlocking clasp elements and guard members extending beyond the entrance of the throughway to press or move the contents to a position clear of the entrances to the throughway.

Preferably, the guard member for that entrance of the throughway which is the leading entrance during opening of the fastener serves to depress the clasp elements and also the contents to a position removed from the level of that entrance; that is to say, to depress the fastener elements and the contents to a position beyond

that wall of the entrance that is adjacent the contents.

Conveniently, for the entrance of the slider which is the leading entrance during closing, the guard extends from that wall of the entrance which is adjacent the contents and extends laterally on both sides of the throughway entrance and also forwardly thereof considered in the direction of movement when closing.

In order that the invention may be more clearly understood, some preferred forms of the invention will now be described with the aid of the accompanying drawing, in which—

Figure 1 is a longitudinal section through a fastener and slider constructed in accordance with the present invention and is a section on the line 1—1 of Figure 2;

Figure 2 is a plan looking from above in Figure 1;

Figure 3 is a plan looking from the under side in Figure 1;

Figures 4 and 5 show in section similar to Figure 1 two modified forms of slider;

Figure 6 is a plan view of Figure 5;

Figure 7 shows in section similar to that of Figure 1, a still further modification of the invention;

Figure 8 is a perspective view of the slider illustrated in Figure 7;

Figure 9 is a side elevation of a modified form of the invention similar to that shown in Figure 7 but having provision for locking the fastener in its closed position;

Figure 10 is a view similar to Figure 9 showing the manner in which the lock is released, and

Figure 11 illustrates an improved form for the extremity of fastener elements when it is necessary fully to open a garment to disconnect those elements entirely.

Like reference characters indicate like parts in the several figures of the drawing.

In the construction according to Figures 1 to 3, *a* and *b* represent the co-operating fastener elements each comprising a series of tongues which interlock with the tongues of the companion series, the slider is indicated generally by the reference character *c* and a swinging loop-like handle *d* is engaged within a recess in an upper extension *m* of the slider. The slider in known form is provided with a throughway passage which has a flared mouth at the right-hand end as viewed in Figure 1 which at the entrance is constituted by two channels formed by the provision of an inner member *n* which tapers rearwardly as shown in Figure 8 so that the two en-

trance channels merge into a single channel or passage at the opposite end, the width of the passage at that end being substantially equal to the combined widths of the two fastener elements *a* and *b* when they are closed.

In this respect the slider is similar to that ordinarily employed. It differs, however, according to the present invention in that the upper portion of the slider is formed with a guard or extension *e* at the narrow end of the channel or throughway passage and this guard extends towards the opposite wall of the passage so as to depress the flexible fastener elements and the contents below that opposite wall thus steering the contents clear of the entrance to the throughway passage as the slider is moved in either direction, particularly during an opening movement. The extension *e* is preferably made wider than the combined widths of the fastener elements and may, if desired, be banked over at the sides to overlap the fastener elements in order to exert a pressure on the material to which the fastener elements are secured so as to depress the material still further below the opposite wall of the passage.

The extension *e* serves to push away from the line of movement of the slider any material beneath it and to force the fastener elements into a position which serves to close over the lower edge of the channel. This latter effect is enhanced still further if the portion *c* is tapered towards the interlocking or medial position of the fastener elements as shown in Figure 3. This has the effect of slightly turning the fastener elements inwardly where they are interconnected or interlocked and more effectively therefore to close the gap between the fastener element and the opposite wall of the passage. The material of the contents is likely to slide off more readily from such slanting edges towards the sides than it would be in the case of the form shown in Figures 1 and 2.

In order to afford similar advantages during the closing operation, the opposite end of the slider is formed with a forward projection *g* which may be plane or convex and is extended laterally in a part *f* to underlie both of the opened fastener elements as shown clearly in Figures 2 and 3. For this purpose a cross-bar *f* is secured in the extension *g* and the cross-bar *f* is preferably of circular or oval cross-section and may be made of sheet metal rolled into tubular form or it may be a solid rod. Between the slider *c* and the cross-bar *f*, or as shown in Figures 1 and 2 above the cross-bar, there is a further cross-bar *h* of any preferred cross-section and form.

If desired, it is within the invention to omit cross-bar *h* and utilise only cross-bar *f*.

The purpose of these cross-bars, particularly the cross-bar *f* is to cover the gap formed by the opened portions of the fastener elements and to prevent the contents reaching the gap and so prevent entry of the material of the contents into the nip between the fastener elements.

The cross-bars *f* and *h* or either one of them may be straight or curved and of whatever length is desired but preferably for the sake of compactness they will not be made longer than is necessary to cover the opening between the fastener elements. The extremities of these cross-bars, particularly the cross-bar *f* should be tapered or rounded in order to afford a smooth sliding engagement with the contents; or additionally the ends of the cross-bar *h* may be bent downwardly

so as to overhang the fastener elements in order to restrict the gap between them.

In Figure 4 another form of slider is shown in which the equivalent of cross-bar *f* is provided in a hollow or open frame-like nose portion *g*, *g'*. The portion *g'* may be so shaped or may be provided with projections such as to limit not only the opening apart but also the approach of the fastener elements as the slider is moved.

In Figures 5 and 6 the cross-bar *f* and the rear extension *e* are interconnected by a bridge *i*, which bridge may constitute the loop on which operating handle *d* can slide and turn.

In the construction illustrated in Figures 7 and 8, which is a construction that is the most preferred in practice, the extension *g* instead of being inclined relatively to the body *c* in the same direction as is extension *e* in the foregoing constructions, is now inclined in the reverse direction so that the cross-bar *f* or the equivalent of this cross-bar now shown in the form of a loop, tends to lift the fastener elements away from the contents. Moreover, the bridge piece *i* is now in the form of a circular rod-like element bent to shape instead of the flat bar shown in Figures 5 and 6. This construction works best if, when opening, the handle *d* is slightly lifted. It will be seen that in all the examples the bridge piece allows the handle *d* to slide to one end or the other thereof so that, automatically, in both movements the tendency will be to lift the leading edge of the slider.

In Figure 9, the construction of the slider is in all essentials similar to that shown in Figures 7 and 8 but in addition there is a lock constituted by a member *o* that is pivoted at *p* on an up-standing bracket *p'* integral with the slider and has two spurs *q* arranged side by side to pass through slots in the slider to engage the fastener elements in order to prevent the slider moving in the opening direction. A spring *r* normally turns the member *o* about its pivot in a direction normally to hold the spurs *q* in engagement with the fastener elements. So far the lock is of known form and normally a loop or operating handle lying within a recess on the under side of the member *o* engages a sloping or cam surface *s* so that when the loop is drawn in a direction to open the fastener, engagement of the loop will co-operate with the cam surface *s* to lift the spurs clear of the fastener elements and at the same time compress spring *r*. In this case, however, a V-shaped element *t*, which is conveniently formed from wire of circular cross-section, has one arm which slides on the surface *c'* of the slider *c* and has another arm *u* of channelled form to engage partially around the material of the bridge piece *i* at all times to prevent lateral displacement of the member *t*. Arms from this member indicated at *v* are engaged within the recess on the under side of the lock *o* so that when the member *t* is moved left, that is, in a direction to open the fastener, the reaction of the intumed portion *v* with the cam surface *s* serves to lift the spurs out of engagement with the fastener elements, as shown clearly in Figure 10. In order to effect this movement it will be seen that the operating handle or loop *d* will engage the element *t* and in doing so passes over the arm *u* into the loop or angle portion of the member *t* so that when the handle *d* is pulled to open the fastener the lock will at the same time be released as above described.

The part of member *t* which slides on the surface *c'* of *c* may be extended right beyond arms

v to prevent tilting of member t and further to ensure against its accidental displacement.

In the form illustrated in Figures 7 and 8 in which the cross-bar is in the form of an open loop or frame an advantage is obtained in that this frame operates over a greater distance from front to back considered in the direction of movement of the slider than is the case with a simple cross-bar f as shown in the other constructions. The extremities of the loop or wing f of Figures 7 and 8 can be upturned, that is to say, turned slightly in a direction towards the fastener elements so as to engage and lift the material adjacent the fastener elements to which they are secured and also the elements themselves and thereby more adequately to remove the fastener elements from any chance of engaging with and nipping between them the material of the contents.

The handle d is bent as shown in order that it can lie over the tail portion e when not required for use and thus lie more neatly than will be the case if it is not so bent in its length as, for instance, in the form shown in Figure 1.

In Figure 11 there is illustrated the extremities of the fastener elements designed to suit the present construction of slider when it is desirable, as for example in the case of garments known as golf jackets, to disconnect entirely the fastener elements to complete the opening of the edges of the garment which are interconnected by the fastener. Ordinarily, the edge which is to be disconnected terminates in a rigid extension beyond the fastener elements so that this can be threaded and unthreaded from the appropriate channel of the slider. Such rigid extensions, however, would not work with the present invention owing to the presence of the guards which are inclined with respect to the throughway axis of the channel at each end of the slider. Consequently, as shown in Figure 11, that fastener element on which the slider will remain terminates in a short, rigid piece or stop w which underlies the inclined leading extension such as e of Figures 7 and 8 and behind this what has hitherto been a rigid continuation is now made up of a number of sections x which render that edge flexible to permit its passage through the channel of the slider. On the other side the entire length of what was hitherto a rigid portion is now made flexible by sections y, the section at the extreme end being extended laterally at z and, if necessary, furnished with holes for stitching on to the material to which the fastener is attached. By making the whole of the extension beyond the interlocking tongues a and b flexible in this manner, the end can be threaded through the slider when it is desired to reunite the fastener elements.

I claim:

1. In or for a fastener of the kind specified, a slider having a throughway passage for the interlocking clasp elements, and guard members engaging said elements and extending beyond the entrances of the throughway to press or move the contents to a position clear of the entrances to the throughway, the guard member for that entrance of the throughway which is the leading entrance during opening of the fastener being inclined obliquely across and outwardly from said entrance thereby to depress the clasp elements and also the contents to a position removed from the level of that entrance.

2. A fastener according to claim 1 in which the guard member for that entrance of the slider

which is the leading entrance during closing extends from that wall of the entrance which is adjacent the contents and extends laterally on both sides of the throughway entrance and also forwardly thereof considered in the direction of movement when closing.

3. A fastener according to claim 1 in which the guard member for that entrance which is the leading entrance during closing is directed upwardly, that is to say, towards what will be the outside of the fastener elements and extends from the inner wall or base of the throughway.

4. A fastener according to claim 1 in which the two guard members are inclined relatively to the slider in the same direction.

5. A fastener according to claim 1 in which the guard members are oppositely inclined relatively to the slider, that is to say, one upwardly and one downwardly.

6. A fastener according to claim 1 in which the guard member at the narrow end of the throughway where the fastener elements are closed is formed to press against the fastener elements at their junction, for the purpose specified.

7. A fastener according to claim 1 in which the guard member at the narrow entrance of the throughway passage is formed to overhang the fastener elements, for the purpose specified.

8. A fastener according to claim 1 in which the guard for the wide end of the throughway passage is in the form of a cross-bar or loop situated on the inner side of the fastener with or without an additional transverse guard on the same or the opposite side of the slider and nearer to the entrance to the passage through the latter.

9. A fastener according to claim 1 having on what will be the outer surface of the fastener a loop or bridge extending lengthwise of the fastener, and an operating handle that can slide along this bridge or loop from one end to the other so that when the operating handle is manipulated the tendency will be to lift the leading edge of the slider in either direction of movement.

10. A fastener according to claim 1 having on what will be the outer surface of the fastener a loop or bridge extending lengthwise of the fastener, and an operating handle that can slide along this bridge or loop from one end to the other so that when the operating handle is manipulated the tendency will be to lift the leading edge of the slider in either direction of movement, and in which the loop or bridge is constructed from a metal rod of circular cross-section.

11. A fastener according to claim 1 in which the underside of that end of the slider which is the trailing end when closing is tapered towards the interlocking or medial position of the fastener elements, for the purpose described.

12. A fastener according to claim 1 having on what will be the outer surface of the fastener a loop or bridge extending lengthwise of the fastener, and an operating handle that can slide along this bridge or loop from one end to the other so that when the operating handle is manipulated the tendency will be to lift the leading edge of the slider in either direction of movement, and having a hinged locking member mounted on the slider in combination with an unlocking member itself slidable on the slider and having a part to engage and lift the lock and another part which engages the bridge with necessary freedom for movement and which is itself engageable by the operating handle, for the purpose described.

13. A fastener according to claim 1 in which for the purpose of completely disconnecting the fastener elements the end of that element of the fastener which extends beyond the interlocking clasp elements and is to be threaded into the slider is made flexible, for the purpose described.

14. A fastener according to claim 1 in which for the purpose of completely disconnecting the fastener elements the end of that element of the fastener which extends beyond the interlocking clasp elements and is to be threaded into the slider is made flexible, for the purpose described, and in which the end portion of the fastener to which the slider will remain permanently at-

tached is constituted, beyond the interlocking tongues, by a flexible part terminating in a stop.

15. A fastener according to claim 1 in which for the purpose of completely disconnecting the fastener elements the end of that element of the fastener which extends beyond the interlocking clasp elements and is to be threaded into the slider is made flexible, for the purpose described, and in which the flexible portions are constituted by a plurality of separate sections each of a cross-section conformable to the shape of the channels in the slider into which they are to be threaded.

EWEL SAMSTEGMAN.