

Oct. 30, 1951

D. RABINOW ET AL

2,573,059

RELEASING END STOP NONSEPARABLE SLIDE FASTENER

Original Filed Aug. 31, 1945

3 Sheets-Sheet 1

FIG.1

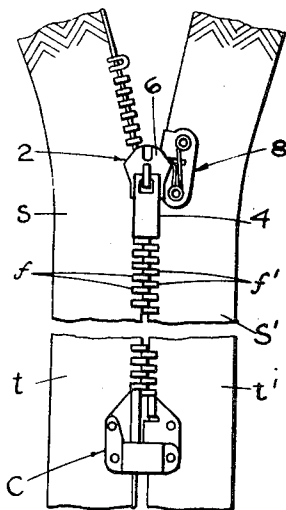


FIG.2

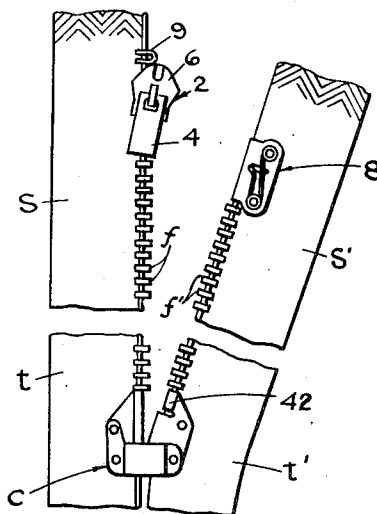


FIG.3

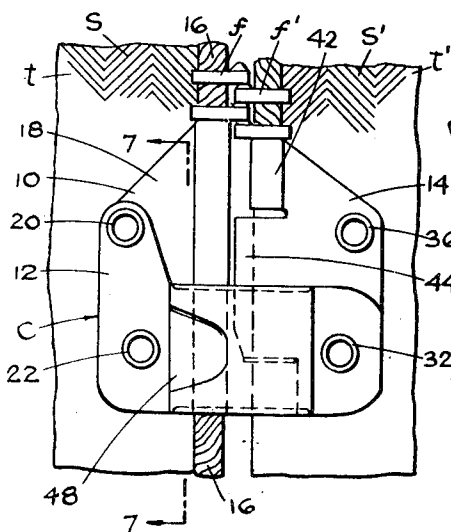
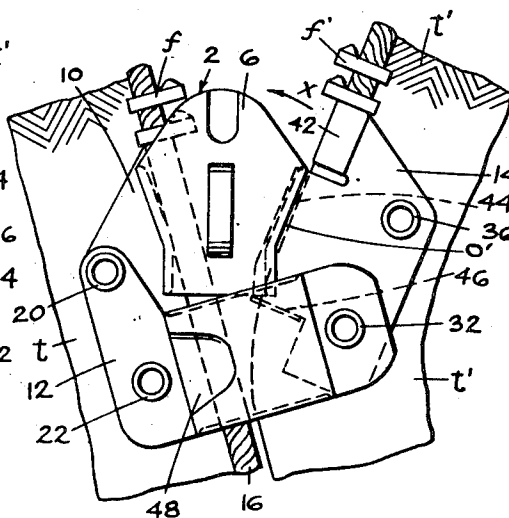


FIG.4



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FIG. 5

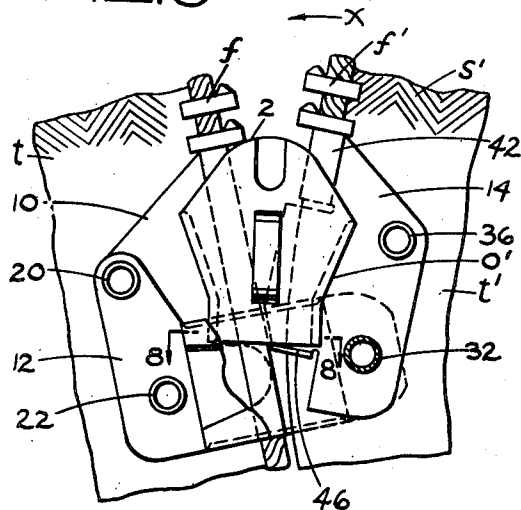


FIG. 6

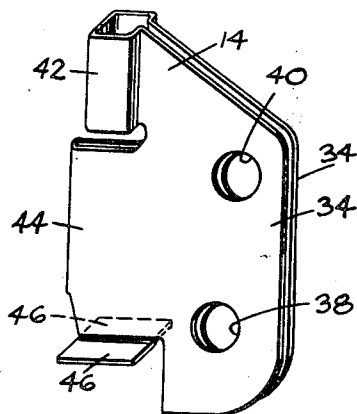


FIG. 7

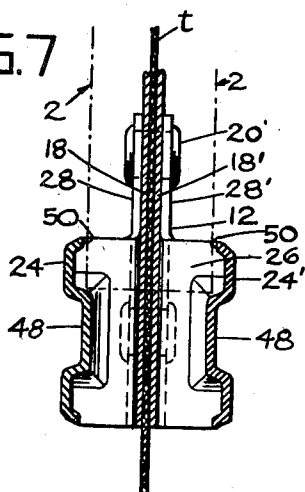


FIG. 8

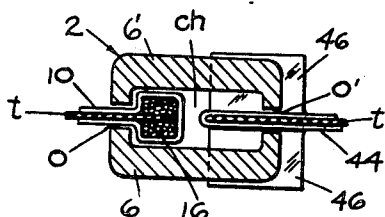
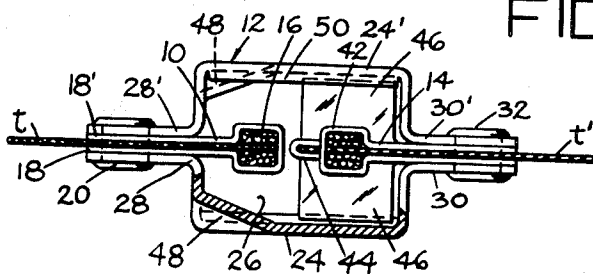


FIG. 9



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FIG. 10

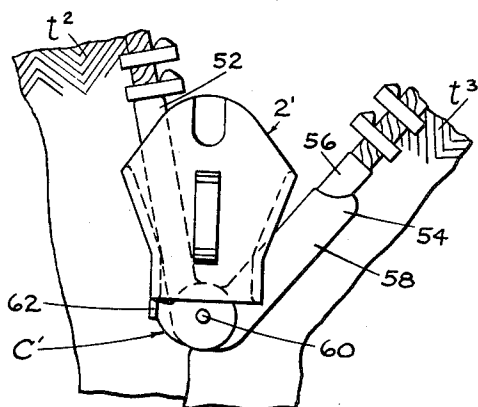


FIG. 12

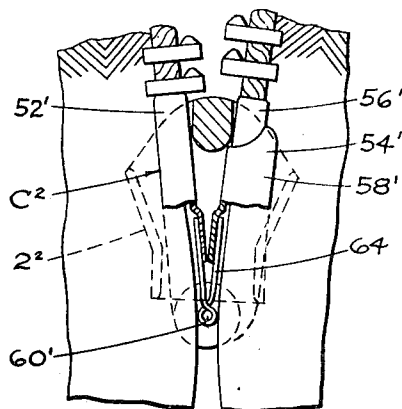


FIG. 11

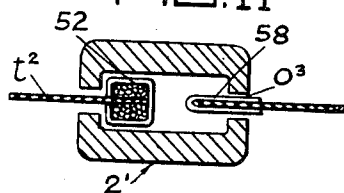


FIG. 14

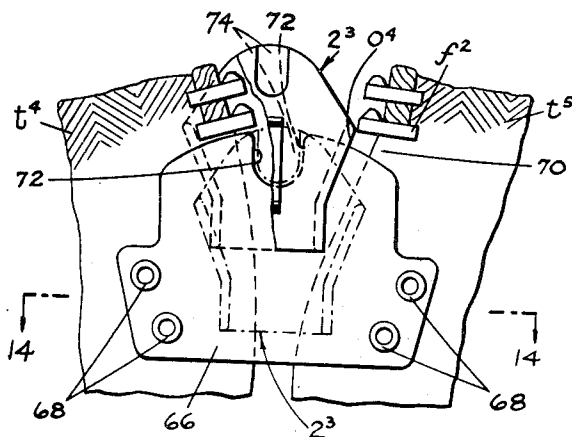
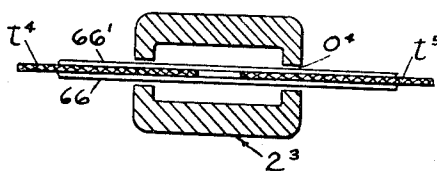


FIG. 13

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UNITED STATES PATENT OFFICE

2,573,059

RELEASING END STOP NONSEPARABLE
SLIDE FASTENER

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Original application August 31, 1945, Serial No.
613,890. Divided and this application March
28, 1951, Serial No. 217,938

2 Claims. (Cl. 24—205.11)

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This invention relates to slide fasteners, and more particularly to a non-separable slide fastener having a releasing or quick disassembly top stop.

Slide fasteners having releasing or quick disassembly top stops are known, one type of such slide fasteners being disclosed in the patent to William Mikulas, No. 2,381,359, patented August 7, 1945. These slide fasteners are of the so-called "separable" type, i. e., in which the slide fastener stringers are fully separable (disconnectable at their bottoms). The releasing top stop functions as a normal stop and operates upon exertion of a greater than normal force on the slider in the fastener closing direction to permit the slider to move past and thereby become released from the said top stop and its stringer (which latter may be referred to as the slider releasing stringer), whereupon the stringers are free to be separated by a quick stripping action. The slider is retained by the other stringer (which latter may be referred to as the slider retaining stringer). The releasing stringer in the stripping action is completely separated (due to the disconnection at the stringer bottoms) from the slider retaining stringer. The slider is then returnable along the retaining stringer to its bottom position, and the two stringers may then be re-assembled at the separable connection or union provided at the bottom of the slide fastener.

The prime object of our present invention deals with the provision of a non-separable type of slide fastener embodying a releasing top stop. In accomplishing this object, the slide fastener stringers are provided with a permanent bottom end connection (producing a non-separable slide fastener) so constructed as to allow complete disengagement of the fastener elements when the slider releasing stringer is stripped from the slider retaining stringer and which permits the re-assembling of the stripped releasing stringer to the slider when the latter is returned on the retaining stringer to starting position.

Ancillary objects of the invention include the provision of a permanent bottom end connection for the stringers in a releasing top stop slide fastener (1) in which the members making up such connection are movably related so as to permit a spreading thereof from their normal position and thereby to allow a full stripping of the slide fastener elements, and (2) in which means are provided for automatically returning these members to normal position when the slider is returned to its starting position.

To the accomplishment of these objects and

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such other objects as may hereinafter appear, our invention relates to the non-separable releasing end stop slide fastener and the elements thereof sought to be defined in the appended claims and described in the following specification taken together with the accompanying drawings in which:

Fig. 1 is an elevational view of a slide fastener equipped with a releasing or quick disassembly top stop and a permanent bottom end connection embodying the principles of our invention;

Fig. 2 is a similar view showing the slider releasing stringer stripped from the slider retaining stringer and showing the end connection in fully spread condition;

Fig. 3 is a view showing the end connection on an enlarged scale in the condition illustrated in Fig. 1;

Figs. 4 and 5 are views similar to Fig. 3 showing the end connection in different conditions and being explanatory of the function of the end connection, in the view of Fig. 5 parts being broken away;

Fig. 6 is a perspective view of a part of the end connection shown on a further enlarged scale;

Fig. 7 is a view taken in cross-section in the plane of the line 7—7 of Fig. 3;

Fig. 8 is a view taken in cross-section in the plane of the line 8—8 of Fig. 5;

Fig. 9 is a partially sectioned view showing the end connection of Fig. 3, this view being taken from above;

Fig. 10 is a fragmentary elevational view of a slide fastener showing a modified bottom connection which may be used in the slide fastener of the present invention;

Fig. 11 is a section of the slider walls and end connection of Fig. 10, with all other parts omitted, this view showing the members of the end connection in closed condition;

Fig. 12 is a fragmentary view of a slide fastener showing another modification of a bottom end connection which may be used;

Fig. 13 is a fragmentary view of a slide fastener showing a still further modified form of bottom end connection which may be used; and

Fig. 14 is a view taken in cross-section in the plane of the line 14—14 of Fig. 13.

Referring now more in detail to the drawings, reference may be had first to Figs. 1 and 2 thereof to show the general construction and arrangement of the releasing end stop non-separable slide fastener of the invention.

The slide fastener comprises the usual pair of stringers S and S' consisting of the beaded tapes

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t and t' , the tape t being provided with the slide fastener series f and the tape t' with the slide fastener series f' , each slide fastener series consisting of a plurality of spaced slide fastener elements clamped to the beaded edge of the tape, the slide fastener elements of both stringers being adapted to be moved into the interlocking condition shown in Fig. 1 and out of the interlocking condition shown in Fig. 2. The slide fastener is moved to open and closed condition in the usual way by the action of a slider generally designated as 2 provided with the usual pull 4, the said slider comprising the conventional construction which embodies a front wing 6 and a rear wing 6' (see for this Fig. 8) spacedly united to form an interior guide channel Ch for the fastener elements and open at its opposite sides o and o' (see particularly Fig. 8) between the rails or flanges of the wings so as to straddle the stringers S and S' .

This slide fastener may be provided with any known type of releasing top stop and for purposes of exemplification, the slide fastener shown is provided with a releasing top stop of the type disclosed in the aforesaid patent to William Mikulas, No. 2,381,359. The releasing end stop generally designated as 8 embodying the construction specifically disclosed in said patent is arranged at the top of the stringer S' and functions as a normal top stop for the slider after the manner shown in Fig. 1 and operates upon exertion of a greater than normal force on the slider in the fastening closing direction to permit the slider to move past and thereby become released from said end stop 8 and its stringer S' (the releasing stringer), whereupon the stringers S and S' are free to be separated by a stripping action as clearly shown in Fig. 2 of the drawings. The slider 2 is retained by the stringer S (the retaining stringer) being prevented from being removed upwardly therefrom by means of a customary form of top stop 9 at the top end of this stringer; and after the stringers are stripped one from the other as shown in Fig. 2, the slider 2 is returnable by being moved along the retaining stringer S to its bottom position for a reassembling of the parts of the slide fastener.

The stringers S and S' are connected together at their bottoms by a permanent end connection generally designated as C , thereby producing a non-separable type of slide fastener. To carry out the principles of construction of the present invention, this permanent end connecting means C connecting the stringers at their bottoms includes an element for locating the slider 2 in position below the bottommost of the slide fastener elements f and f' on both stringers, and also includes an element at the bottom of the slider releasing stringer S' below its bottommost fastener element which is movable through the opening o' at the adjacent side of the returned slider 2 to cause that side of the slider to again move astride of and straddle the slider releasing stringer S' from which it has been completely removed as shown by Fig. 2 of the drawings.

In Figs. 1 to 9 of the drawings we show one of the preferred forms of construction of the permanent end connection C which may be used. This may comprise the three members 10, 12 and 14, the members 10 and 14 being fastened respectively to the opposite stringer tapes t and t' , and the member 12 being connected to the members 10 and 14 to bridge the space between the tapes t and t' . In the embodiment shown in Figs. 1 to 9, these members are movably connected together

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so as to be operative to permit said members to spread from the normal condition shown in Figs. 1 and 3 to the condition shown in Figs. 2 and 4, so as to allow the full stripping of the fastener elements of the stringers depicted in Fig. 2 of the drawings. In this and in other modifications of the invention, means are also embodied preferably in said members for causing an automatic return of the members from the spread condition shown in Figs. 2 and 4 to the normal condition shown in Figs. 1 and 3 when the slider is returned to its bottom and starting position.

The detailed construction of these members 10, 12 and 14 is best shown in Figs. 3 to 9. The member 10 consists of a piece of sheet metal bent to U shape and clamped around the bead 16 of the tape t , the legs 18, 18' of the member 10 being riveted to the tape by means of the rivet elements 20 and 22. The member 12 comprises two elements 24 and 24' shaped to form a rectangular channel 26, these elements being flanked by the side flanges 28, 28' and 30, 30' respectively. These flanges are fastened respectively to the opposite faces of the tapes by the rivet elements 20 and 22 for the tape t and the rivet element 32 for the tape t' . The channel 26 is so dimensioned (width and depth) to accommodate the slider 2 when the latter is moved to its bottom and starting position.

The member 14 may embody a construction best shown in perspective in Fig. 6 of the drawings, the said member being bent and folded from sheet metal to provide two tape straddling legs 34 and 34' which are fastened at opposite sides to the tape t' by means of the rivet 32 mentioned, and the rivet 36, rivet holes 38 and 40 being provided for this purpose. This member 14 is provided at its upper end with a tape bead receiving box or casing section 42 at the bottom of which the tape bead terminates and is formed below the said box with a flattened part 44 which defines an element that is adapted to be moved through the opening o' of the slider 2 when the latter is returned to its starting position so as to cause that side of the slider to again move astride of and straddle the stringer t' , to carry out the operations to be described.

The members 10 and 14 are movably connected together as aforementioned so as to be operative to permit said members to spread to the position shown in Figs. 2 and 4, to allow a full stripping of the fastener elements of the stringers. This may be accomplished, for example, by making the rivet 32 a hinge pintle pivotally connecting the member 14 with the bridging member 12. Thereby, when a stripping operation occurs the slide fastener S' and its member 14 may be moved to the spread out condition shown in Figs. 2 and 4.

As mentioned, means is provided for automatically returning the members 10 and 14 to the normal position shown in Figs. 1 and 3 for the reassembling of the slide fastener parts after a stripping operation. Such means is preferably embodied in these members and particularly in the member 14 associated with the releasing stringer and the same is operated in the embodiment of Figs. 1 to 9 by the downward movement of the slider 2 to its bottom home position to effect the return of the members to the normal condition. This may be accomplished by forming the member 14 with the two laterally projecting extensions 46, 46 which are adapted to be engaged by the bottom of the slider 2 (see Figs. 4 and 5) when the slider is moved downwardly to its bottommost position. When the slider

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engages these extensions it is operative to move the member 14 in the direction indicated by the arrow X progressively through the positions shown in Fig. 4, Fig. 5 and Fig. 1, and thus from the spread back to the normal condition. The bottom end connection is also provided with an element for locating the slider in its lowermost position and for so locating it that it is below the bottommost slide fastener elements on both stringers. The channel walls 24 and 24' for this purpose may be formed with the indented wall portions 48, 48 which act internally as stops for the slider 2. From Fig. 7 it will be apparent that the channel 26 is capable of receiving the slider 2, the outer dimensions of which are indicated by dash-dotted lines. The slider enters the channel 26, by-passing the top edges 50, 50 of the member 12, and moves into the channel 26 until it is stopped by the walls of the indentations 48, 48. From Fig. 5 it will be obvious that when the slider is returned to its bottom position, it finally strikes and rests upon the indented wall portions 48, 48, and that in its movement to its home position, it operates upon the extensions 46, 46 to return the members 10, 12 and 14 to their normal positions. As shown in Fig. 9 of the drawings, the extensions 46, 46 are movable freely in the channel 26 of the member 12, but cannot be removed therefrom because of the engagement with the intumed top edges 50, 50 of the member 12.

The member 14 is constructed as above described so that when the slider 2 is returned to its bottom position and the parts are moved for a re-assembling of the slide fastener parts, the flattened part or element 44 of this member 14 is movable or moves through the opening o' at the adjacent side of the returned slider 2 to cause that side of the slider to again move astride and straddle the slide releasing stringer S'. This is best shown by the actions depicted in Figs. 4 and 5 of the drawings. When the slider is moved to the position shown in Fig. 4, the element 44 enters the opening o' between the rails of the slider wings permitting the slider wings to again move astride the stringer S' as indicated in Fig. 5 of the drawings. The tape head box 42 is thereby moved through the positions of Figs. 2 and 4 of the drawings and to the positions of Figs. 5 and 3 of the drawings, thus producing the reassembling of the slider and the stringers. Thereafter upward movement of the slider as depicted in Fig. 1 of the drawings renders the assembly again operative.

The construction provided is such that as the slider is moved or returned to its bottom position, the parts of the permanent end connection C and the parts of the slider 2 freely re-assemble.

In Figs. 10 and 11 of the drawings, we show a modified form of permanent end connection generally designated as C'. This is made to comprise two members 52 and 54, the member 52 embracing the bead of the tape t² and the member 54 having an upper portion 56 embracing the lower end of the bead of the tape t³ and provided with a body or lower portion 58 which is flattened so as to be readily receivable in the opening o³ of the slider 2', the slider embodying a construction the same as that shown in connection with Figs. 1 to 9 of the drawings. The members 52 and 54 are pivotally connected together at their bottoms as at 60. To provide a stop for the downward movement of the slider 2 and also to provide means for returning the member 54 from the spread condition shown in Fig. 10 to the normal condition, the bottom end of the portion 58 of

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the member 54 is provided with projections 62 adapted to be engaged by the lower edge walls of the slider 2' as shown in Fig. 10. This construction embodies the essential features of the construction of Figs. 1 to 9 of the drawings and the functioning and operation are, therefore, similar.

In the modification shown in Fig. 12 of the drawings, the permanent end connection generally designated as C² comprises members 52' and 54' having a construction substantially similar to the corresponding members of the modification of Figs. 10 and 11 of the drawings (and, therefore, designated by similar but primed reference characters), with the exception that instead of providing a projection 62 for causing the return of the member 54 from spread to normal or closed condition, there is provided a spring 64 arranged around the hinge pintle 60' and active against parts of the members 52' and 54' to normally urge the same into the closed condition. In this modification, the releasing stringer must be held manually in spread position, against the action of the spring, in order to be able to move the slider 2' along the retaining stringer down to its bottom position. The hinge pintle of the pivot 60' provides a stop for the downward movement of the slider. This modification otherwise functions and operates in the same ways as those described for the two previous embodiments of the invention shown in Figs. 1 to 9 and in Figs. 10 and 11.

In the further modification shown in Figs. 13 and 14, there is provided a permanent bottom end connection of which the parts are not movably related. This end connection may be made to comprise two plates 66 and 66' attached together and to the opposite sides of the stringer tapes t⁴ and t⁵ by means of rivet elements 68, 68, the two plates being so designed as to be received between the slider flanges or rails of the slider 2' at both lateral sides of the slider. In order to make it possible for the slider 2' to be brought down to its bottommost position as indicated by the dash-dotted representation thereof (Fig. 13), the bead of the releasing stringer t⁵ should be cut away below the lowermost fastener element f² as indicated at 70. The plates 66 and 66' are also provided with cutouts 72, 72 centrally thereof so as to form a locating means for the slider and a stop means therefor, the said cutouts being designed to be received by and to embrace the connecting neck or "diamond" 74 of the slider. With this construction, when the slider is returned to its lowermost position, it is guided into and located into the dash-dotted position where it is below the bottommost slide fasteners on both stringers, and the bead-free section 70 of the releasing tape t⁵, arranged as it is between the two plates 66 and 66', is led into the opening o⁴ of the returned slider as is best seen in Fig. 13 of the drawings. Thereafter, in order to straighten out the stringers into parallel relation, the tape t⁵ may, if necessary, be moved manually to the slide fastener re-assembling condition.

The manner of making and using the slide fastener of our present invention and the advantages thereof will in the main be fully apparent from the above detailed description thereof. By the provision of any of the alternative constructions shown, some of which are more preferred than others where additional functions and features are produced, a slide fastener is provided in which a releasing end stop is associated with a non-

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separable or permanent union of the slide fastener stringers.

It will be apparent that many changes may be made in the structure and arrangement of the parts of the slide fastener without departing from the spirit of the invention defined by the following claims.

The present application is a division of co-pending application, Serial Number 613,890, filed August 31, 1945.

We claim:

1. In a releasing end stop non-separable slide fastener having a slider-retaining stringer, a slider-releasing stringer, each of said stringers being formed of tape having spaced, interlockable fastener elements secured thereto, a slider movable along the stringers to open and close the fastener, the slider comprising front and rear wings spacedly united to form a guide channel for the fastener elements and open at the sides so as to straddle the stringers, a releasing end stop secured to one of said stringers near the top thereof, whereby upon movement of the slider beyond the releasing end stop the stringers may be stripped apart and the slider returned to the bottom of the fastener upon the slider-retaining stringer preparatory to reassembly of the stringers, means permanently connecting the stringers at their bottoms to produce a non-separable slide fastener, said means comprising a member fixed to the slider-retaining stringer and a member fixed to the slider-releasing stringer, said members being movably connected so that said members may be moved from a spread condition, when the stringers are stripped apart and the fastener elements are not in position to be interlocked by the slider, to a normal condition, when the fastener elements on the stringers are in position to be interlocked by the slider, resilient means for automatically returning said members to the normal condition, the member fixed to the slider-releasing stringer including a part movable through the opening at the adjacent side

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of the returned slider to cause that side of the slider to again move astride of and straddle the slider-releasing stringer as the members are returned to the normal condition.

2. In a releasing end stop non-separable slide fastener having a slider-retaining stringer, a slider-releasing stringer, each of said stringers being formed of tape having spaced, interlockable fastener elements secured thereto, a slider movable along the stringers to open and close the fastener, the slider comprising front and rear wings spacedly united to form a guide channel for the fastener elements and open at the sides so as to straddle the stringers, a releasing end stop secured to one of said stringers near the top thereof, whereby upon movement of the slider beyond the releasing end stop the stringers may be stripped apart and the slider returned to the bottom of the fastener upon the slider-retaining stringer preparatory to reassembly of the stringers, means permanently connecting the stringers at their bottoms to produce a non-separable slide fastener, said means comprising a member fixed to the slider-retaining stringer and a member fixed to the slider-releasing stringer, said members being movably connected so that said members may be moved from a spread condition, when the stringers are stripped apart and the fastener elements are not in position to be interlocked by the slider, to a normal condition, when the fastener elements on the stringers are in position to be interlocked by the slider, spring means for automatically returning said members to the normal condition, the member fixed to the slider-releasing stringer including a part movable through the opening at the adjacent side of the returned slider to cause that side of the slider to again move astride of and straddle the slider-releasing stringer as the members are returned to the normal condition.

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No references cited.