Oct. 17, 1961 M. WEISER 3,004,318

SLIDE FASTENER ASSEMBLY

Filed May 8, 1959 2 Sheets-Sheet 1

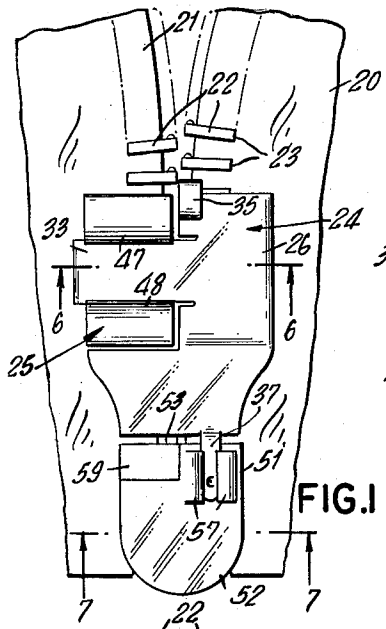


FIG. 1

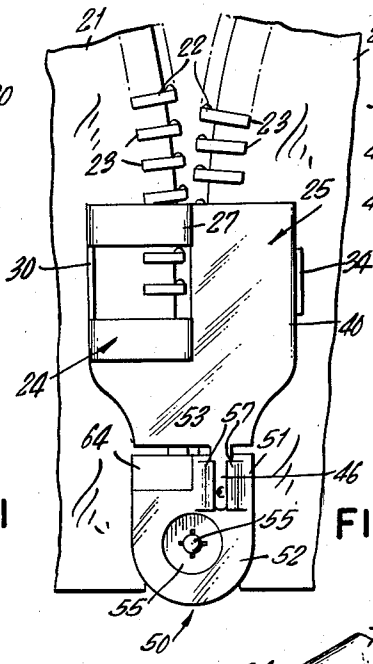


FIG. 2

FIG. 6

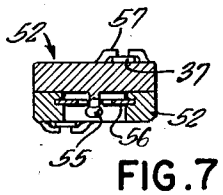


FIG. 7

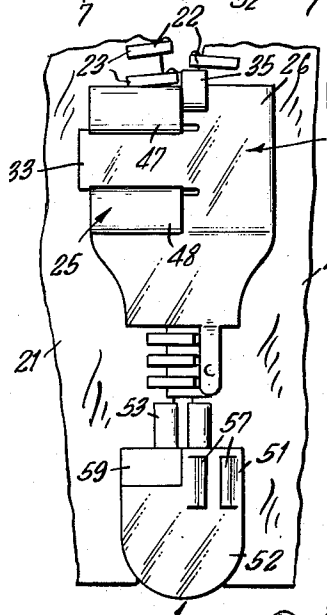


FIG. 3

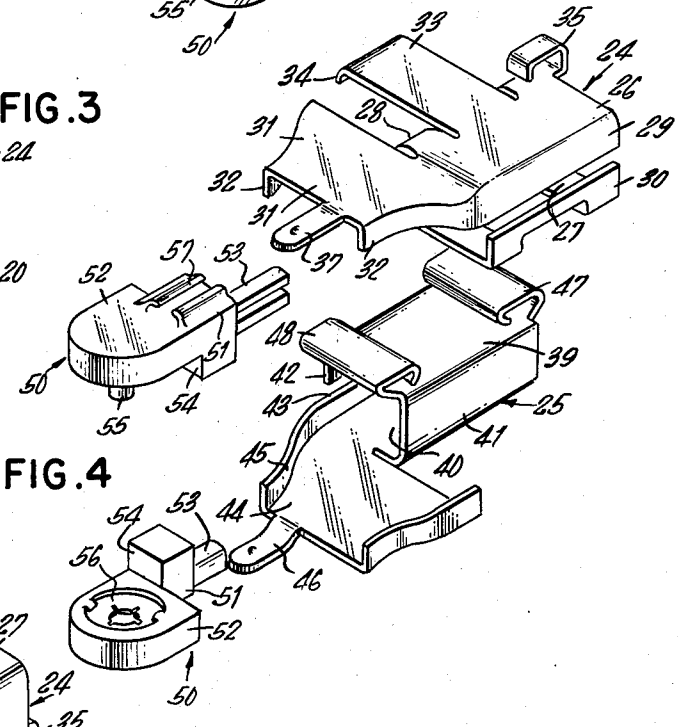


FIG. 4

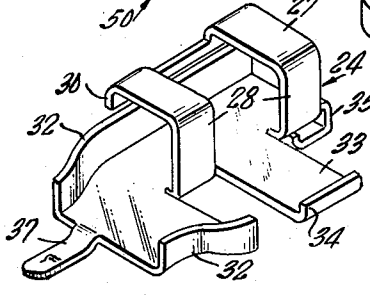


FIG. 5

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SLIDE FASTENER ASSEMBLY

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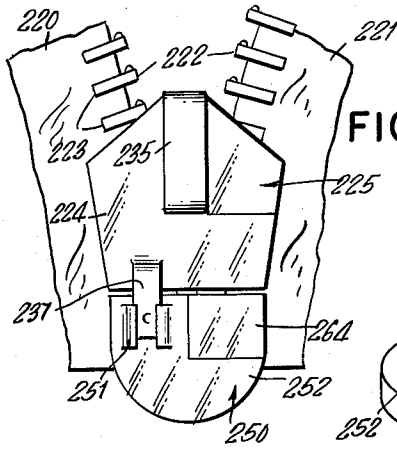


FIG. 8

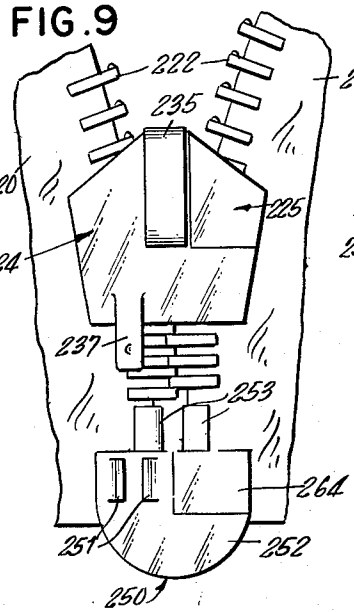


FIG. 9

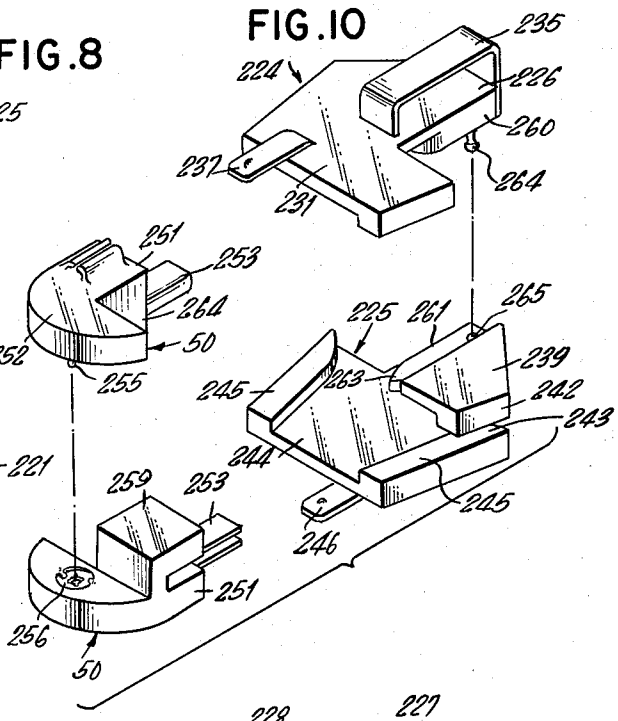


FIG. 10

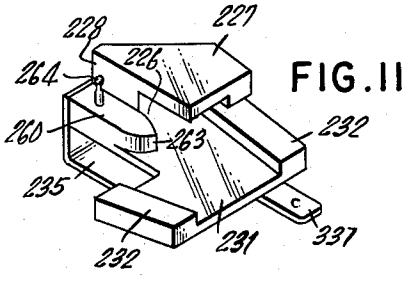


FIG. 11

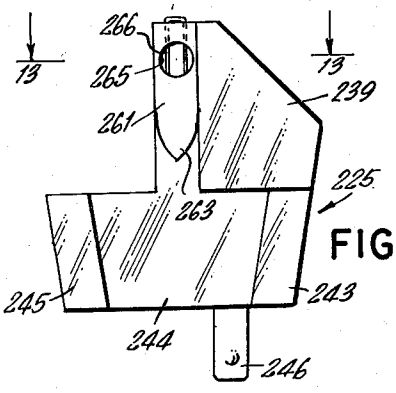


FIG. 12

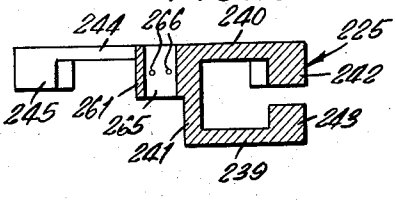


FIG. 13

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3,004,318

SLIDE FASTENER ASSEMBLY

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11 Claims. (Cl. 24—205.15)

The present invention relates to slide fasteners of the type in which spaced fastener elements strung on the facing edges of a pair of tapes or stringers are interengaged and disengaged by the movement of a slider or key which is held and reciprocably guided over the rows of elements. More particularly, the present invention relates to such slide fasteners in which the element-holding tapes or stringers are completely separable, as in slide fasteners used for the front closures of jackets or the like.

The present invention is particularly directed to the key or slider for such slide fasteners, and it has for its object the provision of a key or slider formed in two separable sections, each held on the row of fastener elements of one of the slide fastener stringers, and which are so formed that the slider sections may be separated at any point along the slide fastener length, to open the same, as in cases of emergency or snagging, without the need of completely moving the slider to open position in the first instance, or of engaging in difficult manipulation for freeing the snag.

It is also an object of the present invention to provide a slider for slide fasteners of the character described whose two parts may be re-engaged on one another at any point along the fastener without the need for returning them to their initial or terminal position for that purpose.

It is a particular object of the present invention to provide a slide fastener of the type described in which the separable ends of the stringers may be alined and separably interconnected with great ease and facility and without any fumbling or searching, and, when so interconnected, the elements and slider are substantially automatically accurately disposed for interconnection of the slider section and for the closing of the fastener to thereby make the use of such slide fastener highly advantageous and convenient, even for small children.

It is a further object of the present invention to provide slide fasteners and sliders of the character described which are of strong and sturdy construction and will not readily come apart or separate except by positive manual action.

It is still a further object of the present invention to provide slide fasteners and sliders therefor which are of relatively simple construction and which work smoothly, surely, safely and accurately.

The foregoing and other objects and advantages of the slide fasteners and sliders of the present invention will become more readily apparent to those skilled in the art from the several embodiments shown in the drawings and from the description following. It is to be understood, however, that such embodiments are shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible, without any intent of limiting the invention to the specific details shown therein.

In the drawings:

FIG. 1 is a fragmentary plan view showing one embodiment of the slide fastener and slider assembly of the present invention, with the slider shown in initial position, as seen from the outer or slider-gripping side;

FIG. 2 is a plan view of the slide fastener and slider assembly of FIG. 1, as seen from the inner side;

FIG. 3 is a view similar to that of FIG. 1, with the slider shown as moved from its initial position to close a section of the fastener;

FIG. 4 is an exploded view of the two separable sections of the slider shown in FIGS. 1 to 3, and of their terminal stops;

FIG. 5 is an inner, perspective view of the outer slider section shown in FIG. 4;

FIG. 6 is a section taken on line 6—6 of FIG. 1;

FIG. 7 is a section taken on line 7—7 of FIG. 1;

FIG. 8 is a fragmentary plan view of the outer side of an assembly of a slide fastener with a modified embodiment of a slider of the invention, the slider being shown in initial position on the stringers;

FIG. 9 is a view similar to that of FIG. 8, with the slider shown as moved from initial position to partly close the slide fastener;

FIG. 10 is an exploded, perspective view of the slide fastener sections and their terminal stops shown in FIGS. 8 and 9;

FIG. 11 is a perspective view of the inner side of the outer slider section shown in FIG. 10;

FIG. 12 is a plan view of the inner side of the inner slider section of FIG. 10; and

FIG. 13 is a section taken on line 13—13 of FIG. 12.

Generally stated, the present invention consists of a slide fastener assembly having a slider formed of two separably connected sections, both of substantially identical operative structure. Each of the slider sections comprises a channel-shaped portion that is engaged and guided over the row of fastener elements of one of the stringers, and is formed with a flat, outwardly and laterally directed flanged extension, whose flanges encompass the fastener elements of both the stringers, on one side of the stringers, for interlocking them at its tapered end. The facing, juxtaposed walls of the channel portions of the two sections serve to separate the elements as the slider is moved in the opposed direction. The two slider sections are provided with cooperating separable fastening means by which they may be associated for operative purposes.

Referring now with greater particularity to the embodiment of the invention illustrated in FIGS. 1 to 7, inclusive, the same shows a slider preferably formed by die stamping from sheet metal, mounted over a pair of slide fastener stringers, **20** and **21**, each having strung on its conventional beaded edge, facing the other, a row of spaced fastener elements, **22**, which may be of any conventional type, formed with flattened slider-engaging ends, **23**, and secured in place by their forked stems in the conventional manner.

To engage and disengage the fastener elements **22**, I provide a slider formed in two separable sections, one of which (the one carrying a loop engageable by a manipulating tongue), hereafter referred to as the outer section and generally designated as **24**, is mounted on the stringer **20**, and the other of which, referred to as the inner section and generally designated as **25**, is mounted on the stringer **21**.

The outer slider section **24** comprises a channel part formed by an outer wall, **26**, and an inner wall, **27**, whose longitudinal edges, on one side, are connected by a spacing wall, **28**, and whose other longitudinal edges have facing and registering retaining flanges, **29** and **30**, respectively, which are spaced from one another to form a slot through which the stringer **20** passes when the slider section **24** is mounted in place; the flanges **29** and **30** engaging against the flattened ends **23** of the fastener elements **22** mounted thereon. The outer wall **26** of the channel portion is formed with a rear extension, **31**, of greater width than the top wall **26** so that said extension **31** also extends laterally in the direction of and beyond the connecting wall **28**, and is adapted to overlie the fastener elements **22** of the companion stringer **21**, when the two stringers are juxtaposed. The rear extension **31** tapers rearwardly and is formed with a depending flange,

32, on each longitudinal edge thereof, which, on the slotted side of the channel part, is co-extensive and continuous with the flange 29. Such flanges engage the inner ends 23 of the fastener elements 22 on the outer side of both stringers 20 and 21, to gradually interfit them in fastening position, as the slider is moved forwardly on the stringers. The outer wall 26 is provided with one fastening element which is a lateral extension, 33, preferably struck out from the connecting wall 28, the inner wall 27, and from a portion of the outer wall flange 30, to form a laterally-extending lock tongue continuous with the surface of the outer wall 26 and formed with a depending lip, 34.

The outer wall 26 may be provided at its forward end with a loop, 35, which may preferably be formed by an extension of such wall that is upwardly, rearwardly and downwardly bent; such loop serving to have a conventional slider-moving fingerpiece engaged thereon. The outer wall extension 32 may be provided with a rearwardly extending lug, 37, which may project from its rear edge, in relatively closer proximity to the slotted channel side of the section, whose purpose will hereafter be made clear.

The inner slider section 25 likewise comprises a forward channel part, substantially identical in size and shape with the channel part of section 24, and consisting of an outer wall, 39, an inner wall, 40, and a spacing wall, 41, connecting the outer and inner walls along one of their longitudinal edges. The other longuitudinal edges of the walls 39 and 40 are each formed with a flange, 42 and 43, respectively, each facing the other and terminating short of one another to provide a slotted passage for the stringer 21 over whose elements 22 the slider section 25 is engaged by the channel part thereof.

The inner wall 40 of the channel part of the inner slider section 25 is formed with a rear extension 44, which also extends laterally in a manner to underlie the stringer 20 when the section 25 is mounted by the channel part thereof over the elements 22 of the stringer 21; such rear extension being of the same size and shape as the extension 31 of the section 24, tapering rearwardly and being provided with upright flanges, 45, on its longitudinal edges. The rear end of the tapered extension 44 is of a width to encompass between the flanges thereof the elements of the two stringers 20 and 21, when in interfitted, locked-together position. The extension 44 is formed with a lug, 46, projecting rearwardly from its rear edge, opposite the channel part of the section 25, for a purpose which will hereafter be made clear.

The outer wall 39 of the channel part of the slider section 25 is formed with end extensions, 47 and 48, each of which is bent or curved toward the other, in slightly spaced relation to the wall 39, to provide resilient detents past which the tongue 33 of the slider section 24 may be snapped, to interengage the two sections against vertical displacement relative to one another; the flange 34 of the tongue 33 serving to inhibit their lateral displacement relative to one another by engagement against the flange 42 of the outer wall 39 of the inner slider section 25.

The slide fastener assembly of the invention is also provided with terminal means on each stringer 20 and 21 for separably interengaging their corresponding ends with their respective fastening elements 22, in staggered arrangement, for interfitting and interlocking by the slider; such terminal means also serving, when interengaged, to align the rear ends of the slider sections 24 and 25, in position for their interengagement of the slider sections with one another.

In the embodiment of FIGS. 1 to 7 of the drawings, the stringer-interengaging and slider-section-alining means comprise a pair of generally L-shaped plates of substantially identical size and shape, each generally designated as 50, and each comprising a longitudinally extending leg 51, and a transversely extending leg, 52. The longitudinal leg 51 is formed with a straight and flat forward end face from which extends, longitudinally, a channel-shaped clamp portion, 53, which may be clamped over the beaded edge of a stringer, immediately adjacent its terminal fastener element 22, to secure the plate 50 in place. The leg 51 of each plate 50 is of greater thickness than the leg 52 thereof, as twice the thickness of the latter, and has one surface thereof, its outwardly facing surface, co-extensive with that of the associated transverse leg 52, so that it projects beyond the other or inner surface of the latter as a rectangular projection, 54.

The transverse leg 52 of each of the plates 50 is provided on its inner surface with one element of a pair of co-operating fastening elements. Thus, one of the plates 50 may have the head or male element, 55, of a pair of cooperating snap fastener elements, and the other of the plates 50 the perforated disc, 56, forming the female snap fastener element, set thereinto.

It will be apparent that when each of the plates 50 is secured by its clamp 53 to the beaded edge of one of the tapes 20 and 21, their inner surfaces will face one another, in position to have their co-operating snap fastener elements interengaged; and the projections 54 of each of the plates 50 will fit snugly into the angle between the legs 51 and 52 of the associated plate 50, to maintain the two interengaged plates in juxtaposed position.

Each of the plates 50 is provided on its outer surface, over the leg 51, with a pair of facing guideways, 57, forming a socket to receive either the lug 37 or 46, of the slider sections 24 and 25, as the case may be, to hold said sections in alinement for interengagement with one another and in proper vertically and laterally alined relation for initiating the closing of the slide fastener.

This completes the description of one embodiment of a slide fastener assembly of the present invention. Its operation will be obvious. Thus, slide fastener section 24 may be engaged by its channel part over the fastener elements 22 of the stringer 20, in the conventional manner, and slider section 25 similarly engaged over the fastener elements 22 of the stringer 21. Both of the slider sections 24 and 25 are slid rearwardly over their respective supporting stringers until their lug extensions 37 and 46, respectively, are engaged in the sockets of the respective end pieces 50 of the stringers on which they are mounted. The two end pieces 50 are then interengaged. This alines the co-operating fastener elements of the slider sections for interengagement, and also alines the fastener elements of the two stringers for interfitting. The slider sections 24 and 25 are then interengaged and moved forwardly to close the slide fastener, in the conventional manner.

Because the two slider sections of the invention do not have any interfitted parts whose separation is inhibited by the interfitted fastener element of the supporting stringers, as in similar sliders of the prior art, the slider of the present invention may have its sections separated and interengaged at any point along the length of the stringers, and need not be returned, for that purpose, to the stringer terminals.

In FIGS. 8 to 13 of the accompanying drawings, there is illustrated a modified embodiment of the slide fastener assembly of the invention, the parts of which corresponding to the parts of the embodiment of FIGS. 1 to 7 are identified by the same reference numerals, each preceded by the additional numeral "2." This embodiment has slider sections 224 and 225 that are modified in their shape and also in the means of their interengagement. The slider sections 224 and 225 of this embodiment are thicker walled and are more suitable for production by a molding or casting process. These slider sections also differ in shape from those of the embodiment of FIGS. 1 to 7 and, when combined, comprise a slider of roughly pentagon shape. The slider sections 224 and 225 of this embodiment are also provided with modified separable interengaging means.

Thus, the spacing and connecting walls 228 and 241,

respectively, of the channel parts of the slider sections **224** and **225** are rearwardly foreshortened and do not extend the full length of the channel part, and the respective inner and outer walls **226** and **227** and **239** and **240** of the two channel parts of the sections **224** and **225** are generally smooth-surfaced and unbroken, and devoid of the connecting tongue and springs provided in the embodiment of FIGS. 1 to 7.

The separable connecting means of the slider sections **224** and **225** are provided by a pair of ledges or elongated studs **260** and **261** formed along the outer surfaces of each of the connecting walls **228** and **241** of the slider sections **224** and **225**, repectively. The stud **260** of the slider section **224** is formed on the inner face of a lateral extension of the inner channel wall **227** thereof, and the stud **261** of the slider section **225** is formed on the inner face of a lateral extension of its inner wall **240**; each such stud extending half the thickness of the adjacent channel part so as to substantially contact one another when the two slider sections **224** and **225** are interfitted. Each of the studs **260** and **261** is provided with a tapered inner end, **263**, which ends serve to separate the fastener elements of a pair of connected stringers when the slider is moved into opening position.

The studs **260** and **261** serve as means for mounting the co-operating separable fastening elements of this embodiment of the slider. Thus, one of the studs, as **260**, may carry on its inner surface the male element or knob, **264**, of a separable snap fastener, and the other of the studs, as **261**, may be formed with an opening into which project two parallel arms of a U-shaped spring wire, **265**, that may be inserted through a slotted recess, **266**, opening into the forward edge of the stud **261**.

The embodiment of FIGS. 8 to 13, inclusive, may also have modified terminal pieces in which the channel of the clamp **253** is also extended into the outer edge portion of the longitudinal leg **251** of the terminal piece **250**, as at **267**.

It will be apparent that the sliders of the slide fasteners of the present invention are of relatively simple construction; relatively easy to fabricate, and simple and easy to assemble and use, and that they will operate as well as any other slider, with the additional advantages that they can be disassembled and re-assembled at any point along the slider length.

It will be further apparent that numerous modifications and variations of the slide fastener assemblies of the present invention may be made by anyone skilled in the art, in accordance with the principles of the invention hereinabove set forth, and without the exercise of any inventive ingenuity. I desire, therefore, to be protected for any and all such modifications and variations that may be made within the spirit of the present invention and the scope of the claims hereto appended.

It will also be apparent that the interconnecting of the ends of the stringers of the slide fasteners of the present invention is a very simple and easy procedure that can be quickly accomplished even by young children, without difficulty or fumbling, and that, once the stringer ends are connected, the slider sections and the fastener elements of the stringers are substantially automatically alined for interengagement and for interfitting.

What I claim is:

1. In a slide fastener comprising a pair of stringers each having a row of spaced fastener elements secured thereto along an edge thereof and adapted to be interfitted and interengaged with the fastener elements of the other of said stringer, said elements each including a forked end portion whereby it is clamped to said stringer in straddling position thereon, a slider for interfitting and separating said elements to close and open said slide fastener, said slider comprising a pair of separably interengageable sections, each of said sections comprising a channel-shaped portion slidably engageable over the row of fastener elements on one of said stringers, such channel-shaped portion including a pair of parallel walls, said walls connected to one another along one of their longitudinal edges by a spacing wall, and each having along its other longitudinal edge a flange facing the flange of the companion wall thereof and terminating short of the flange of said companion wall, one of said parallel walls of said channel-shaped portion having an extension at one free end thereof extending outwardly and laterally to the side of said spacing wall, said extension having a width at its point of connection to said wall not less than the combined length of a pair of said fastener elements and tapering to a width substantially equal to the combined length of a pair of interfitted fastener elements, said extension having a flange on each of its longitudinal edges facing in the direction of the flange of the wall from which it extends, each of said sections having cooperating fastening means at their channel portions adapted to separably interengage said sections when said sections are each slidably mounted on one of said stringers, with their connecting walls in juxtaposed relation and their extensions in overlying relation to one another.

2. The slider of claim 1, wherein said cooperating separable fastening means of each of said slider sections is associated with one of its said parallel side walls.

3. The slider of claim 1, wherein said cooperating separable fastening means comprise upwardly and inwardly folded extensions on the free ends of the other of the parallel walls of one of said sections, and an extension of said first wall of the other of said sections adapted to overhang said second wall of said first-named section and be resiliently engaged between said folded extensions thereof.

4. The slider of claim 1, wherein said cooperating fastening means comprises resilient detent means on one of said parallel walls of one of said sections thereof and an extension formed on a corresponding one of the parallel walls of the other of said sections releasably engageable by said resilient detent means.

5. The slider of claim 1, wherein said cooperating separable fastening means on said slider sections are each associated with said spacing wall thereof.

6. The slider of claim 1, wherein each of said slider sections is formed with a lateral extension adjacent said connecting wall thereof, said extension extending a portion of the height of said spacing wall, and wherein said cooperating separable fastening means is provided on said extension.

7. A slide fastener comprising, in combination, a pair of stringers each having a row of spaced fastener elements secured thereto along an edge thereof and adapted to be interfitted and interengaged with the fastener elements of the other, said stringers separable their entire length, said fastener elements each including a forked end portion whereby it is clamped over an edge of said stringer, cooperating means at one end of each of said stringers interengageable for interconnecting said stringers at said end when said elements are in separated position and a slider for interfitting and separating said elements to close and open the said slide fastener when said stringer ends are interengaged, said slider comprising a pair of separably interengageable sections, each of said sections comprising a channel-shaped portion slidably engageable over the row of fastener elements on one of said stringers, such channel-shaped portion including a pair of parallel walls, said walls connected to one another along one of their longitudinal edges by a spacing wall and each having along its longitudinal edge a flange facing the flange of the companion wall thereof and terminating short of the flange of said companion wall, said flanges each enagageable against the end of one of the fork arms of said elements, one of said parallel walls of said channel-shaped portion having an extension at one free end thereof extending outwardly and laterally to the side of said spacing wall, said extension having a width at its point of connection to said wall not less than the com-

bined length of a pair of said fastener elements and tapering outwardly to a width substantially equal to the combined length of a pair of interfitted fastener elements, said extension having a flange on each of its longitudinal edges facing in the direction of the flange of the wall from which it extends, each of said sections having cooperating fastening means at their channel portions adapted to separably interengage said sections when said sections are each slidably mounted on one of said stringers, with their spacing walls in juxtaposed relation and their extensions in spaced overlying relation to one another.

8. The slide fastener of claim 7, wherein said separable stringer interconnecting means comprise a pair of L-shaped members, each of said members comprising a first leg having a U-shaped longitudinally extending clamping element alongside one edge thereof at one end thereof engaged over an edge portion of one of said stringers, and a second leg at the other end of said first leg extending in a direction opposite to the open side of said clamping element, and cooperating separable fastening means on the facing sides of said second legs of said members when said members are each clamped over an edge of one of said stringers.

9. The slide fastener of claim 7, wherein said separable stringer interconnecting means comprises a pair of L-shaped members of substantially the same size and shape, each of said members comprising a first leg having a U-shaped longitudinally extending clamping means at one end thereof along its outer edge, said member secured by said clamping means over an edge portion of one of said stringers, and a second leg at the other end of said first leg, extending in a direction opposite to the open side of said clamping means, and cooperating separable fastening elements on the facing sides of said second legs when said members are each clamped over one of said stringers, each of said first legs including a projection on the side facing the other fitting into the angle formed by the legs of the other member.

10. The slide fastener of claim 7, wherein said separable stringer interconnecting means comprises a pair of L-shaped members having their inner edges at substantially right angles to one another, one of said legs being of greater thickness than the other and projecting to one side thereof, said thicker leg having securing means associated therewith for securing the same to an edge portion of a stringer with said second leg extending laterally away from said stringer, the second leg of each of said members having a cooperating separable fastener element on the face thereof facing the projecting portion of said first leg.

11. The slide fastener of claim 7, wherein said stringer interconnecting means comprises a pair of L-shaped members having the inner edges of their legs at substantially right angles to one another, one of said legs of each of said members being thickened to project above the surface of the adjacent leg on the side, said thickened leg secured against the edge portion of one of said stringers with said other leg extending outwardly away from said stringer, each of said second legs having a cooperating separable fastener element on its face on the side of the thickened portion of said first leg, each of said slider sections having a lug extending outwardly from the end edge of the extension thereof, each of said members having means on its continuous surface to receive and guide said lug extension of the slider section mounted on the stringer to which it is secured.

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