Oct. 17, 1950 J. BOLTEN, JR 2,526,600

DOUBLE-ACTING SLIDING CLASP FASTENER

Filed Feb. 26, 1946

Fig. 1.

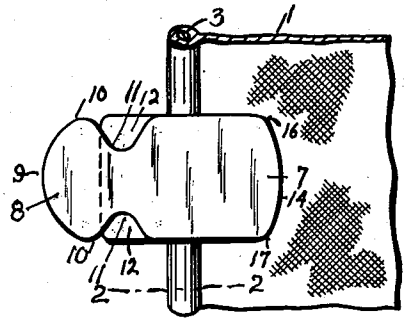


Fig. 2.

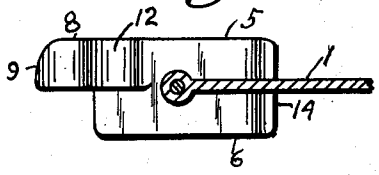


Fig. 3.

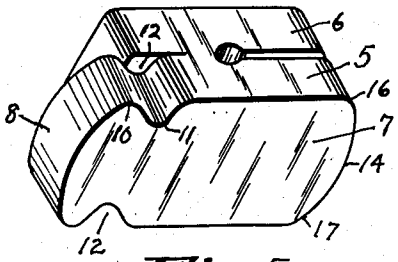


Fig. 4.

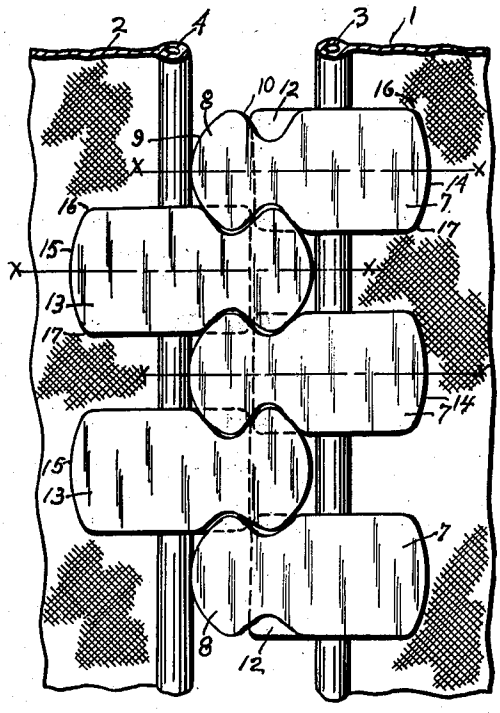
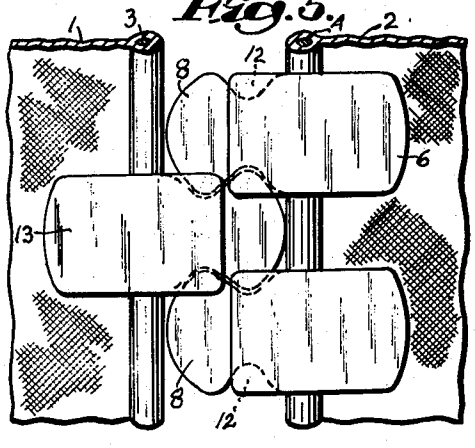


Fig. 5.



Inventors:
John Bolten Jr.
By Heard Smith & Dumont
Attorneys

Patented Oct. 17, 1950 2,526,600

UNITED STATES PATENT OFFICE

2,526,600

DOUBLE-ACTING SLIDING CLASP FASTENER

John Bolten, Jr., Andover, Mass., assignor to The Bolta Company, Lawrence, Mass., a corporation of Massachusetts

Application February 26, 1946, Serial No. 650,327

4 Claims. (Cl. 24—205.13)

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This invention relates to improvements in double-acting sliding clasp fasteners and one of the objects of the invention is to provide a sliding clasp fastener comprising a pair of stringers having suitably spaced complementary interlocking fastener elements fixedly mounted upon the edges of the respective stringers so constructed as to enable the stringers to be coupled by the longitudinal movement of a slider in either direction and to be disengaged by the longitudinal movement of the slider in a reverse direction to said coupling movement.

There are many instances in which it is desirable to have two or more sliders upon the same pair of complementary stringers having interlocking elements, and the purpose of the invention is to provide a construction which will enable one slider when moved in one direction to bring the elements into interlocking engagement and to move another slider from the initial position of the first slider in the opposite direction to couple the interlocking elements engaged thereby, each of the sliders of course being able to uncouple the interlocking elements when moved in a direction reverse to that for coupling the interlocking elements.

A further advantage of such double-acting sliding clasp fastener constructions results from the fact that the stringers may be applied to articles irrespective of the direction of the coupling movement of the slider, whereas in usual types of sliding clasp fasteners coupling movement of the slider can be accomplished by its movement only in a single direction.

A further object of the invention is to provide the stringers with interlocking fastener elements the ends of which are rounded or provided with rounded corners to permit the slider to move more easily by simulating the action of ball bearings on the inside of the slider.

Another object of the invention is to provide interlocking fastener elements which can be simultaneously injection molded or die cast upon a pair of stringers thereby greatly facilitating the manufacture of sliding clasp fasteners and economizing the cost of their production.

A further feature of the invention consists in providing stringers with interlocking elements of the character above described in which the leg portions of the elements upon one side of the respective stringers may be of shorter length than those upon the other side, thereby enabling the exposed sides of the interlocking elements to present a narrower and less objectionable appearance when used for coupling the edges of portions of dresses and the like.

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These and other objects and features of the invention will more fully appear from the following description and the accompanying drawings and will be particularly pointed out in the claims.

Preferred embodiments of the invention are illustrated in the accompanying drawing, in which,

Fig. 1 illustrates one of the interlocking elements embodying the invention as applied to the beaded edge of a section of a stringer;

Fig. 2 is a sectional view on line 2—2 of Fig. 1, viewed upwardly;

Fig. 3 is a perspective view of one of the interlocking elements adapted to be applied to either stringer;

Fig. 4 is a view of sections of stringers having interlocking elements embodying the invention shown in coupled relation; and,

Fig. 5 is a similar view of the reverse side of the assembled stringers shown in Fig. 4, the shortened legs of the interlocking elements being indicated by dotted lines as would appear upon the reverse face of the assembled stringers.

The sliding clasp fastener comprises a pair of stringers each of which is provided with a series of suitably spaced interlocking fastener elements adapted to be moved to and from interlocking position by a suitable slider as in usual sliding clasp fastener constructions, and inasmuch as the invention relates to the interlocking elements illustration of the slider is unnecessary.

The preferred construction illustrated in the drawing comprises a pair of stringers 1 and 2 which desirably, but not necessarily, are provided with beaded edges 3 and 4 and the interlocking fastener elements are secured to the edge portions of the respective stringers at suitably spaced intervals. In order to provide a double-acting sliding clasp fastener construction in which the complementary heads of the elements of the respective stringers may be coupled by the movement of a slider in either direction longitudinally of the stringer and separated by longitudinal movement of the slider in the reverse direction to the coupling movement, the interlocking members of the respective elements of both stringers are of like construction, but the elements of one stringer secured thereto in like position relatively to those of the other stringer.

The preferred form of interlocking elements which are shown singly in Figs. 1, 2, and 3, comprise a body of preferably thermoplastic mold-

able material comprising a body of preferably rectangular form having legs 5 and 6 adapted to embrace and preferably to impregnate the material of the stringer. Each of the interlocking fastener elements desirably extends axially perpendicular to the edge of the stringer to which it is attached as indicated by the axial line X—X Fig. 4. Each of the interlocking elements 7, which is secured to the stringer 1, projects beyond the edge of the stringer, and the part thereof that is located on one side of the plane of the stringer is provided with a head 8 having a rounded arcuate end 9 merging at the sides of the head into reverse curves 10 and 11, thereby forming recesses symmetrical with respect to the axis of the fastener element, said recesses providing between them a neck portion.

The other part of the interlocking fastener element which is located on the other side of the plane of the stringer is preferably of rectangular form and has parallel top and bottom sides connected by a flat end which is substantially perpendicular to the sides. This other part of the interlocking fastener is shorter than the first named part that has the head formation, but it is long enough to overlap the recesses 10 and 11, thereby presenting portions 12 exposed at said recesses.

The complementary interlocking fastener elements 13, which are secured in suitably spaced relation upon the stringer 2, preferably are of identical construction to those which are secured to the stringer 1, and are arranged in the same relation with respect thereto. By reason of this construction the heads of the interlocking elements of one stringer will upon movement of the slider in a predetermined direction engage the neck recesses of the interlocking elements of the other stringer, as illustrated in Fig. 4, and upon movement of the slider in the other direction the interlocking elements will be disengaged in the usual manner.

When the fastener elements on two opposed stringers are interlocked with each other, as shown in Figs. 4 and 5, the heads 8 of the fastener elements on one stringer occupy recesses 10 and 11 with which the fastener elements on the other stringer are provided, thereby locking the two stringers together. Furthermore, the side face of the head 8 of each fastener element on one stringer engages the exposed portions 12 on the corresponding fastener elements on the other stringer and by this means the fastener elements are prevented from relative movement in a direction at right angles to the plane of the stringers.

Furthermore, the length of the shorter part of the extended portion of each fastener element is such that when the fastener elements of two stringers are interlocked together, as shown in Fig. 4, the flat ends of the shorter parts of the fastener elements on one stringer are closely adjacent the flat ends of the shorter part of the fastener elements on the other stringer, as clearly shown in Figs. 4 and 5.

In order to facilitate the movement of the slider the interlocking elements are provided respectively with arcuate ends 14 and 15 symmetrical with respect to the axis of the element and with rounded corners 16 and 17 merging into the respective edges of the element, thereby providing a construction which will simulate the anti-friction action of a ball bearing as the slider is moved toward and from interlocking position.

If desired the legs of the interlocking elements

may be shortened preferably upon the portions of the element having the heads and the slider so constructed as to engage the ends of the longer and shorter legs respectively so that the exposed face of the respective elements will present a narrow and more pleasing appearance.

By reason of the symmetrical character of the interlocking elements series of any desired length of interlocking elements can be simultaneously formed and injection molded upon both stringers by providing the molds with a runner intermediate of the cavities for the respective elements and with gates preferably extending from the runner to the cavities of the molds preferably to axial portions of the heads of the element. When the complementary series of interlocking elements are thus molded or cast upon the respective stringers the runner and gate sections of the material may be broken away and the ends of the heads carefully surfaced to arcuate form thereby facilitating the manufacture and cheapening the cost of production thereof.

It will be understood that the particular embodiment of the invention disclosed herein is of an illustrative character and is not restrictive and that various modifications may be made within the spirit and scope of the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. Interengaging elements, for a double-acting sliding clasp fastener construction having a pair of fabric stringers each provided with a series of suitably spaced like interengaging elements each of which elements comprises a rectangular body with parallel edges having legs embracing and impregnating the fabric of the edge portion of the stringer and an extension projecting beyond the edge of the stringer axially perpendicular thereto, each extension having at one side of the plane of the stringer a head having a rounded end and like recesses symmetrical with respect to its axis providing a neck and upon the other side of the plane of the stringer a relatively short rectangular portion underlying said recesses, the interlocking elements of one stringer being on the same side as those of the other to enable the rounded heads of the elements of one stringer to engage the complementary necks of the other stringer and thereby to be coupled by the movement of a slider in either direction longitudinally of the stringer and to be separated by longitudinal movement of the slider in the reverse direction to said coupling movement.

2. A double-acting sliding clasp fastener construction comprising a pair of stringers each provided with a series of suitably spaced like interengaging elements each of which elements has an integral body provided with legs embracing and impregnating the edge portion of the stringer and extending in perpendicular relation to the edge thereof and having rounded ends to facilitate the movement of the slider, each of said elements having an integral extension projecting beyond the edge of the stringer axially perpendicular thereto, each extension having at one side of the plane of the stringer a rounded end and having symmetrically reversely curved edges forming like recesses symmetrical with respect to its axis forming a neck and upon the other side of the plane of the stringer a relatively short rectangular portion underlying the recesses forming the neck, the interlocking elements of

one stringer being on the same side as those of the other to enable the rounded heads of the elements of one stringer to engage the complementary necks of the other stringer and to be coupled by the movement of a slider in either direction longitudinally of the stringers and to be separated by longitudinal movement of the slider in the reverse direction to said coupling movement.

3. An interlocking fastener element for a sliding clasp fastener of the type having a pair of stringers each provided with a series of spaced fastener elements which are adapted to be interlocked with similar elements on the other stringer, each fastener element having a body portion provided with means for securing it to the edge portion of a stringer, said body portion extending beyond the edge of the stringer axially perpendicular thereto, the part of the extended body portion of each fastener element which is located on one side of the plane of the stringer having at its outer end an elliptically-shaped head and also having a recess on both the top and bottom faces thereof situated between the head and the edge of the stringer, said recesses forming between them a neck portion which connects the head to the body of the fastener element, which recesses are constructed to receive parts of the heads of similar fastener elements secured to a companion stringer, thereby to secure said stringers together, the other part of the extended portion of each fastener element that is located on the other side of the plane of the stringer having parallel top and bottom faces and being the full width of the body portion of the fastener element throughout its entire length, and also being shorter than the first named part having the head but of sufficient length to overlap said recesses, thereby to present portions that are exposed at said recesses and are adapted to engage the side face of the head portions of interlocking fastener elements on a companion stringer that occupy said recesses and thereby prevent displacement of the interlocked fastener elements in a direction at right angles to the plane of the stringer.

4. An interlocking fastener element for a sliding clasp fastener of the type having a pair of stringers each provided with a series of spaced fastener elements which are adapted to be interlocked with similar elements on the other

stringer, each fastener element having a body portion provided with means for securing it to the edge portion of a stringer, said body portion extending beyond the edge of the stringer axially perpendicular thereto, the part of the extended body portion of each fastener element which is located on one side of the plane of the stringer having at its outer end an elliptically-shaped head and also having a recess on both the top and bottom faces thereof situated between the head and the edge of the stringer, said recesses forming between them a neck portion which connects the head to the body of the fastener element, which recesses are constructed to receive parts of the heads of similar fastener elements secured to a companion stringer, thereby to secure said stringers together, the other part of the extended portion of each fastener element that is located on the other side of the plane of the stringer having parallel top and bottom faces and a flat end face perpendicular to the top and bottom faces, said other part being the full width of the body portion throughout its entire length and also being shorter than the part having the head but of sufficient length to overlap said recesses and to extend substantially to the end of the corresponding part of an interlocking fastener element on a companion stringer, said shorter extended part of the stringer presenting portions that are exposed at said recesses and are adapted to engage the side face of the head portions of interlocking fastener elements on a companion stringer, and thereby prevent displacement of the interlocked fastener elements in a direction at right angles to the plane of the stringer.

JOHN BOLTEN, JR.

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