

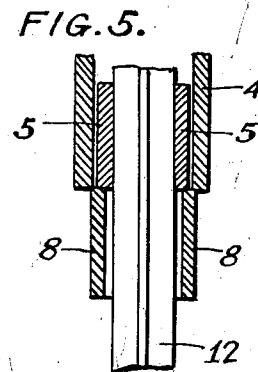
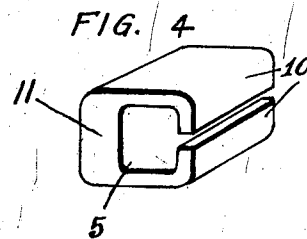
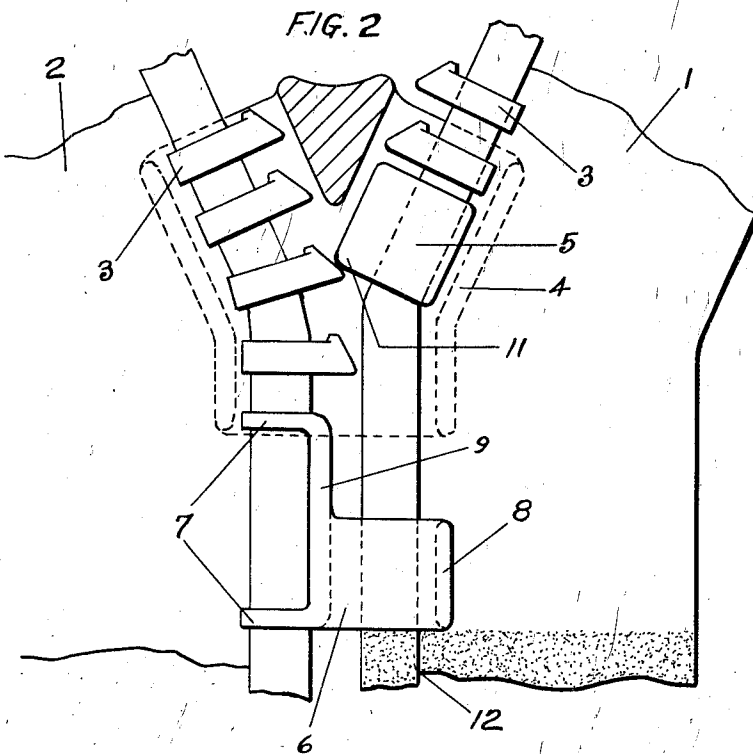
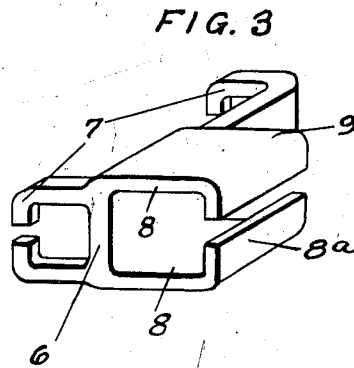
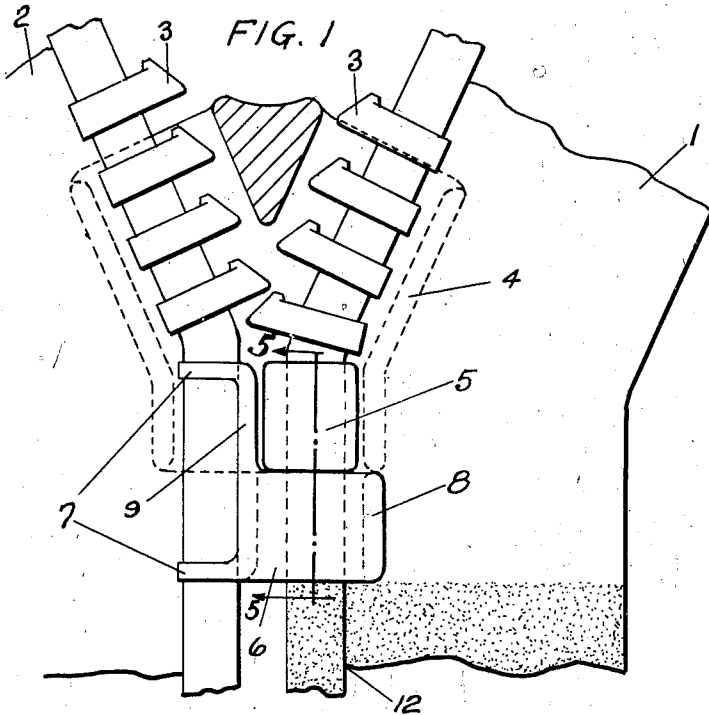
July 7, 1931.

G. SUNDBACK

1,813,433

SEPARABLE FASTENER

Original Filed March 16, 1927



INVENTOR.

Gideon Sundback

BY

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UNITED STATES PATENT OFFICE

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SEPARABLE FASTENER

Original application filed March 16, 1927, Serial No. 175,664. Divided and this application filed January 16, 1928. Serial No. 247,044.

This invention relates to separable interlocking fasteners and has for its object to provide improved means for separating fastener stringers at both ends, and for facilitating reengagement with the interlocking members in their proper relative positions.

This application is a division of application Serial No. 175,664, filed March 16, 1927.

According to this invention the fastener stringers are provided adjacent their lower ends with cooperating members which can be instantly separated without unhooking or other special manipulation, permitting the stringers to be completely separated, and when brought together serve to start the interlocking members on the stringers into engagement in the proper sequence. The member on one stringer is provided with a sheath or socket which receives the lower edge of the other stringer, thereby connecting the stringers together and preventing separation under transverse strain. This member also acts as a stop for the slider and serves to maintain the slider and socket in the proper positions to receive the detached stringer when the parts are to be connected together after separation. The cooperating member on the second or detachable stringer is formed so that it can be drawn through the slider, and is provided with an obstructing portion which interferes with the interlocking members on the opposed stringer and prevents the fastener from being closed except when the parts are brought together in the proper starting position. The lower portion of this detachable stringer is preferably treated with stiffening material to facilitate threading through the slider and the socket of the opposed connecting member.

The invention will be described in connection with the accompanying drawings in which similar reference characters designate corresponding parts in the several views, and in which:

Fig. 1 is a plan view of a separable fastener embodying the invention;

Fig. 2 is a view similar to Fig. 1 with the stringers in a relative position incapable of being closed;

Fig. 3 is an isometric view showing the connecting member of one of the stringers; and

Fig. 4 is an isometric view showing the cooperating member of the opposite stringer.

Fig. 5 is a detail sectional view on line 5—5 of Fig. 1.

In Figs. 1 and 2, flexible stringers 1 and 2 are provided with the usual corded edges carrying interlocking members 3 arranged in staggered relation. The slider 4 having diverging channels is movable up and down along the stringers by means of any suitable pull member (not shown) to engage or disengage the opposed interlocking members.

Cooperating members 5 and 6 are mounted at the lower ends of the stringers 1 and 2 respectively, adjacent the lowermost interlocking members thereof. The connecting member 6, shown in detail in Fig. 3, comprises spaced pairs of clamping jaws 7 for clamping the corded edge of the stringer 2, side plates 8 intermediate the pairs of clamping jaws and having inturned edges 8^a and forming a socket or sheath with an opening in the outer edge parallel to the edge of the stringer 2 for receiving the corded edge of the stringer 1, and a portion 9 the purpose of which is hereinafter described. The member 5 shown in detail in Fig. 4 comprises clamping jaws 10 for clamping the corded edge of the stringer 1, and a thickened portion 11, the purpose of which is hereinafter described.

When the slider 4 is moved upwardly to close the fastener the member 5 rests on the edges of the side plates 8 as seen in Fig. 5. With the members 5 and 6 in the position shown in Fig. 1 the stringers 1 and 2 are

arranged in the proper vertical position to insure the engagement of the opposed interlocking members 3 in the proper order. Furthermore, when the fastener is closed the socket formed by the side plates 8 and edges 8^a of the member 6 partially surround the corded edge of the stringer 1 thereby preventing the fastener from being opened at the bottom when a transverse strain is applied to the fastener. The thickened edge of the stringer 1 is stiffened at the point where it is engaged by the side plates 8, as described below. The lower end 12, below the point where lateral strain is applied, is also stiffened and acts as a guide for threading the stringer 1 into the slider and the socket of the member 6.

When the slider reaches the lowermost limit of its travel and the opposed interlocking members 3 are disengaged, as shown in Fig. 1, the stringer 1 may readily be drawn up through the split edge of the slider and the side plates 8 of the connecting member 6 and thus be completely disengaged from the rest of the fastener. The side plates 8 of the member 6, however, act as a stop for the slider as seen in Fig. 5 so that the slider will always remain on the stringer 2. When the slider is in its lowermost position resting against the side plates 8 of the member 6 the portion 9 of member 6 extends into the slider and is so shaped as to provide edge guiding surfaces which prevent the member from twisting out of the vertical plane of the slider. Thus the socket formed by the side plates 8 will always be in alignment with the slider and in a position to receive the corded edge of stringer 1 when it is inserted therein through the slider.

When it is again desired to close the fastener, the lower free end of the stringer 1 is slipped through the slider and the sheath of the member 6 until the member 5 contacts with the edges of the side plates 8 of member 6, as shown in Fig. 1. If the slider, starting at the bottom, is now moved upwardly along the stringers, the first opposing interlocking members 3 will be drawn together in the proper manner thereby insuring the subsequent engagement of the other interlocking members in proper sequence.

The thickened portion 11 of the member 5 acts as a stop to prevent the fastener from being closed except when the stringers are in the proper vertical position shown in Fig. 1 with the members 5 and 6 contacting. The action of the member 5 in preventing the fastener from closing in one situation is illustrated in Fig. 2. It will be seen that the thickened portion 11 of the member 5 interferes with the interlocking members 3 of the stringer 2, preventing the slider 4 from being drawn up when the several elements of

the fastener are not in the proper starting position.

The free end of the stringer 1 which extends below the member 5 is preferably treated, either across the width of the stringer or only at the thickened edge, with a substance which renders this part of the stringer stiff, yet sufficiently flexible, in order to facilitate its entering into the sheath of the member 6. The stiffening material employed for this purpose may be rubber, shellac, collodion or any other suitable sizing which stiffens in drying, and afterwards retains a certain amount of flexibility. If desired, celluloid may be pressed upon the stringer in a mould and heat applied to amalgamate it with the fabric in the desired shape. The stiffening at the edge of the stringer 1 immediately below the member 5 prevents it from buckling under lateral strain at this point where it is engaged by the intumed edges of the side plates 8.

It will be obvious that the invention is not to be restricted to the precise construction herein shown and described. Many of the details, such as the structure of the stringers, interlocking members and slider will necessarily vary according to the particular uses for which the fastener is designed. The construction of the cooperating end connecting members may also vary widely within the scope of the appended claims.

The invention claimed is:

1. A separable fastener comprising a pair of stringers having opposed series of interlocking members, a slider movable along said stringers to engage and disengage said members, and a separable bottom connection including a member on one stringer having a socket for receiving the edge of the second stringer and a member on said second stringer adapted to engage the end of said socket nearest the interlocking members to limit the movement of the second stringer in one direction.

2. A separable fastener comprising a pair of stringers having opposed series of interlocking members, a slider movable along said stringers to engage and disengage said members, a member on one stringer including a socket for receiving the edge of the second stringer, and a member on said second stringer insertable through said slider into engagement with the end of said socket nearest the interlocking members to limit the movement of the second stringer in one direction.

3. A separable fastener comprising a pair of stringers having opposed series of interlocking members, a slider movable along said stringers to engage and disengage said members, a connecting member on one stringer adapted to limit the movement of said slider in one direction, a member on the other stringer insertable longitudinally

through said slider and cooperating with said connecting member to align the opposed series of interlocking members in the proper sequence, said cooperating member having side portions engaging the stringer and a front portion thicker than the side portions to interfere with at least one of the interlocking members of the opposed stringer to prevent closing the fastener except when the parts are in the proper starting position.

4. A separable fastener comprising a pair of stringers having opposed series of interlocking members, a slider movable along said stringers to engage and disengage said members, a connecting member on one stringer including a socket for receiving the edge of the second stringer to prevent lateral movement of the stringer from the socket, a cooperating member on said second stringer insertable through said slider into engagement with said socket to limit the movement of the second stringer in one direction and to align the opposed series of interlocking members in the proper sequence, and a projecting portion on the second mentioned member adapted to interfere with at least one of the interlocking members of the opposed stringer to prevent closing the fastener except when the parts are in the proper starting position.

5. A separable fastener comprising a pair of flexible stringers, opposed series of interlocking members secured to the adjacent edges of said stringers, a slider movable along said stringers to engage and disengage said members, a separable end connection comprising a connecting member on one stringer having a socket with an opening in its outer edge along the entire length, said socket being adapted to receive the adjacent edge of the second stringer with the body portion of said stringer projecting through said opening, cooperating means provided by the walls of said socket and said edge of the stringers to prevent lateral separation of said stringers, and stiffening means provided on the lower end of said second stringer to facilitate insertion of said connecting member into the socket.

6. A separable fastener comprising a pair of flexible stringers, opposed series of interlocking members secured to the adjacent edges of said stringers, a slider movable along said stringers to engage and disengage said members, a separable end connection for said stringers including a connecting member on one stringer having a socket opening along the entire length of its outer edge through a narrow slot, said socket being adapted to receive the adjacent outer edge of the second stringer with the body portion of said stringer projecting through said slot, means provided by the walls of said socket and said edge to prevent lateral separation of said stringers, and stiffening means pro-

vided on the edge of said second stringer at the point where it is engaged by said socket to prevent buckling under lateral strain.

7. A separable fastener comprising a pair of flexible stringers, opposed series of interlocking members secured to the adjacent edges of said stringers, a slider movable along said stringers to engage and disengage said members, a separable end connection including a connecting member on one stringer having a socket opening along the entire length of its outer edge through a narrow slot, said socket being adapted to receive the adjacent edge of the second stringer with the body portion of said stringer projecting through said slot, and means on said second stringer providing shoulders for engagement with the walls of said socket to prevent lateral separation of said stringers, a portion of said second stringer being treated with liquid stiffening material to facilitate threading into said socket.

8. A separable fastener comprising a pair of stringers having opposed series of interlocking members, a slider movable along said stringers to engage and disengage said members, a connecting member on one stringer including a socket for receiving the edge of the second stringer to prevent lateral movement thereof, a cooperating member on said second stringer adapted to engage the end of said socket nearest the interlocking members to limit the movement of the second stringer in one direction, and a stiffened portion on said second stringer below said cooperating member to facilitate threading said stringer through said socket.

9. A connecting member for the stringers of a separable fastener comprising spaced pairs of clamping jaws for securing same to the edge of a stringer, and a socket between said pairs of jaws opening through its outer edge along its entire length, said socket being adapted to receive an edge of an opposite stringer with the body portion of said stringer projecting through said opening, the walls of said socket adjacent said opening being formed to prevent lateral separation therefrom of a stringer engaged therein.

10. A connecting member for the stringers of a separable fastener comprising spaced pairs of clamping jaws for securing same to the edge of a stringer, and side plates intermediate said pairs of clamping jaws having intumed edges, said side plates with intumed edges forming a socket for receiving the edge of an opposite stringer, said intumed edges engaging said stringer edge to prevent lateral separation therefrom.

11. A separable fastener comprising a pair of stringers having corded edges, opposed series of interlocking members on said corded edges, a slider movable along said stringers to engage and disengage said members, and a separable connecting member

having spaced pairs of jaws for clamping same to the corded edge of a stringer and side plates intermediate said pairs of jaws to stop said slider, said side plates having
 5 intumed edges forming a socket to permit the corded edge of the opposite stringer to be inserted lengthwise therethrough and to prevent lateral separation.

12. A separable fastener comprising a
 10 pair of stringers having opposed series of interlocking members on their adjacent edges, a slider for engaging and disengaging said members, and a separable end connection for said stringers comprising a socket
 15 member on one stringer having attaching portions for securing it on the stringer, and a socket-forming portion comprising a pair of spaced parallel side plates having intumed free ends, and the other stringer having
 20 an enlarged edge received in said socket and held therein from lateral separation by said intumed ends.

13. A separable fastener comprising a pair of stringers having opposed series of
 25 interlocking members on their adjacent edges, a slider for engaging and disengaging said members, and a separable end connection for said stringers at one end of said series of members, comprising a socket member
 30 on one stringer and an enlarged stiffened portion on the other stringer for insertion through the channel of said slider said stringers having cooperating stop means attached thereto for limiting insertion of said
 35 stiffened portion, into said socket, and an obstruction on said second stringer adapted to engage the endmost interlocking member on the first stringer and prevent movement of the slider to close the fastener until said
 40 stiffened portion has been inserted to substantially its limiting position.

14. A separable fastener comprising a pair of flexible stringers, opposed series of
 45 interlocking members secured to the adjacent edges of said stringers, and a separable end connection for said stringers including a connecting member on one stringer having attaching portions for securing it to the
 50 stringer, a pair of spaced side plates projecting outwardly in a lateral direction from the attaching portions and separated at their outer edges, said second stringer having a portion disposed between said side plates when the stringers are connected and cooperating means on said side plates and said
 55 portion of the second stringer for preventing lateral separation of said second stringer from said member.

15. The combination with two completely
 60 separable stringers provided upon their opposed edges with coupling elements adapted to be interengaged and disengaged by operation of a slider, of an eye secured to the edge of one of said stringers, the edge of the
 65 other stringer being arranged to pass

through said eye to hold the two stringers together adjacent their ends, said other stringer carrying a stop adapted to abut the edge of said eye nearest the slider to locate the coupling elements of said other
 70 stringer in position to be interengaged with the coupling elements of the eye carrying stringer upon operation of said slider.

Signed at Meadville, in the county of Crawford, and State of Pennsylvania, this
 75 10th day of January, A. D. 1928.

GIDEON SUNDBACK.

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CERTIFICATE OF CORRECTION.

Patent No. 1,813,433.

Granted July 7, 1931, to

GIDEON SUNDBACK.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, line 32, claim 13, after the word "slider" insert the words and into said socket, and in line 35, same claim, strike out the words and comma "into said socket,"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of December, A. D. 1931.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

DISCLAIMER

1,813,433.—*Gideon Sundback*, Meadville, Pa. SEPARABLE FASTENER. Patent dated July 7, 1931. Disclaimer filed June 16, 1934, by the assignee, *Hookless Fastener Company*.

Disclaims, from the scope of the said Letters Patent, claims numbered 5 and 6 in toto.

[*Official Gazette July 10, 1934.*]