

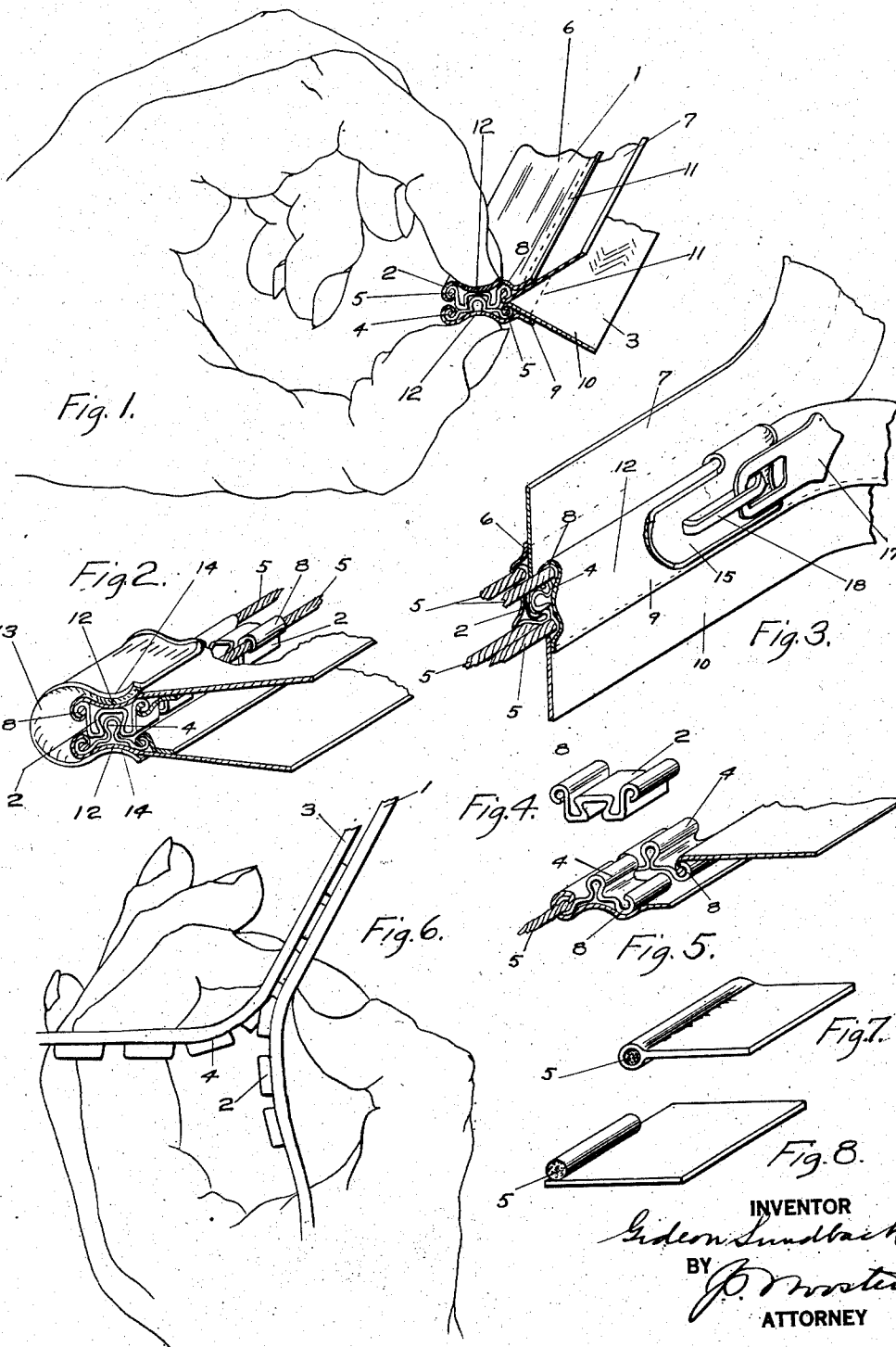
Feb. 11, 1930.

G. SUNDBACK
SEPARABLE FASTENER

1,746,565

Filed Sept. 22, 1926

4 Sheets-Sheet 1



INVENTOR

Gideon Sundback

BY

J. M. Mott

ATTORNEY

Feb. 11, 1930.

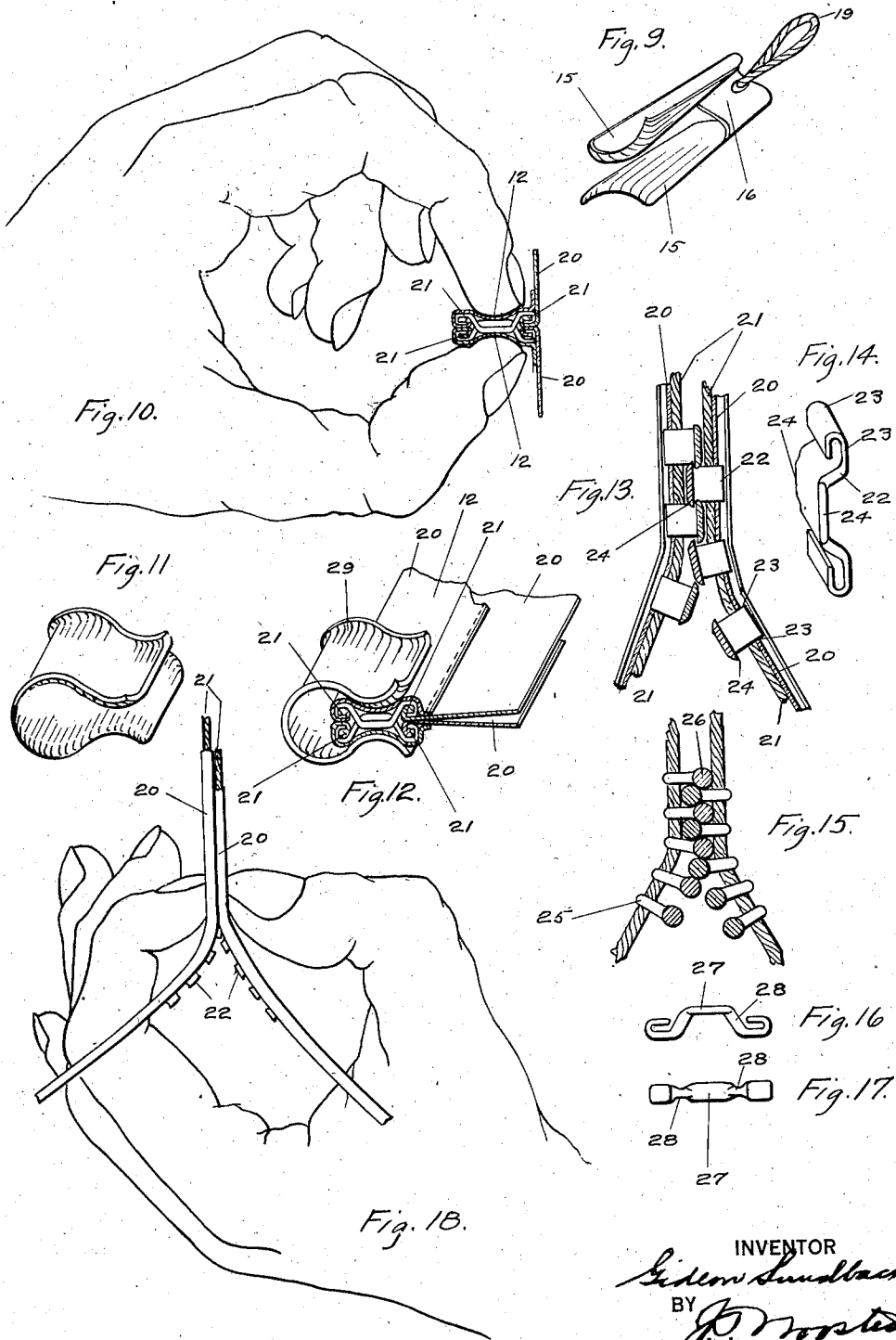
G. SUNDBACK

1,746,565

SEPARABLE FASTENER

Filed Sept. 22, 1926

4 Sheets-Sheet 2



INVENTOR
Gideon Sundback
BY *J. D. Norton*
ATTORNEY

Feb. 11, 1930.

G. SUNDBACK

1,746,565

SEPARABLE FASTENER

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4 Sheets-Sheet 3

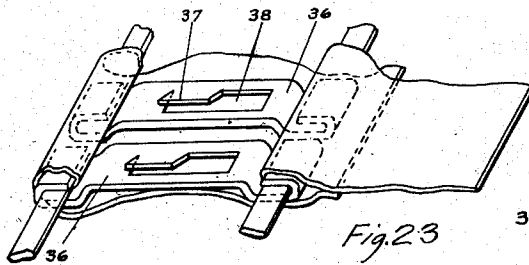


Fig. 23

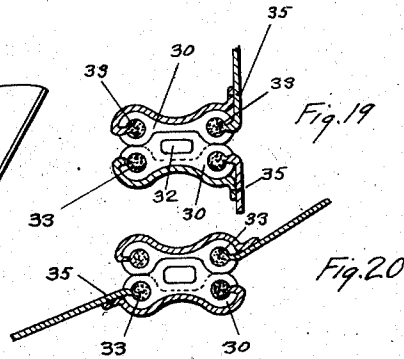


Fig. 19

Fig. 20

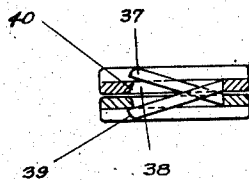


Fig. 24

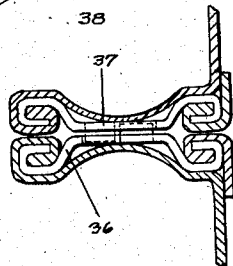


Fig. 25

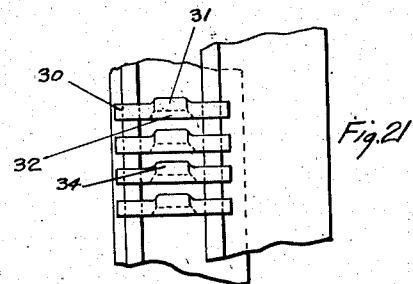


Fig. 21

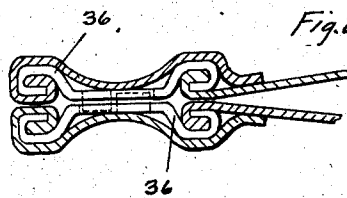


Fig. 26

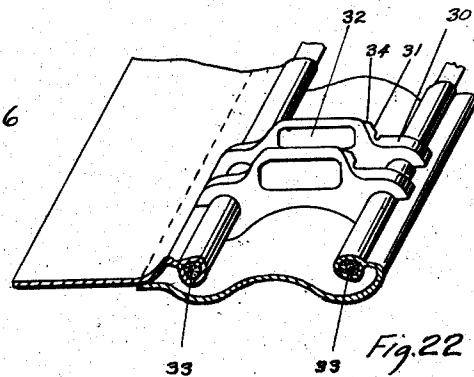


Fig. 22

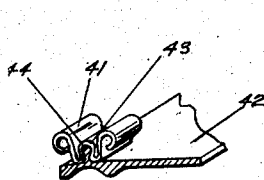


Fig. 27

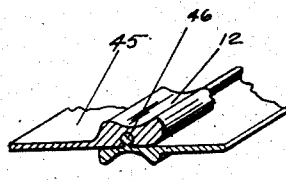


Fig. 28

INVENTOR
Gideon Sundback
BY *J. V. Mott*
ATTORNEY

Feb. 11, 1930.

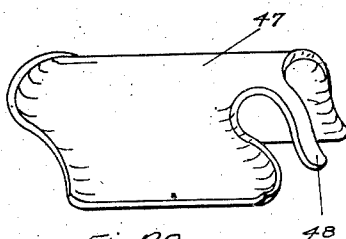
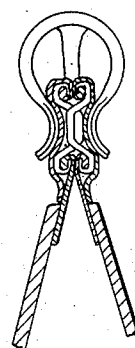
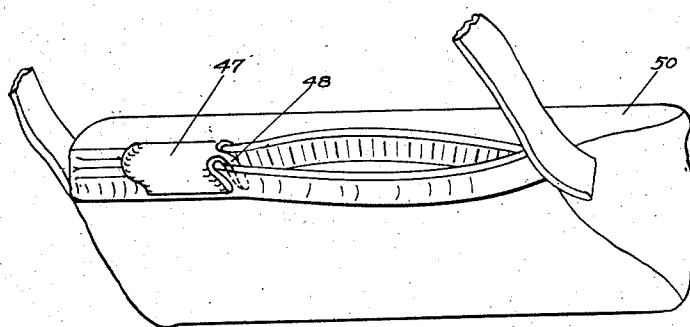
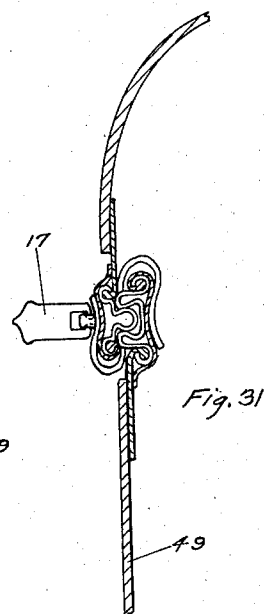
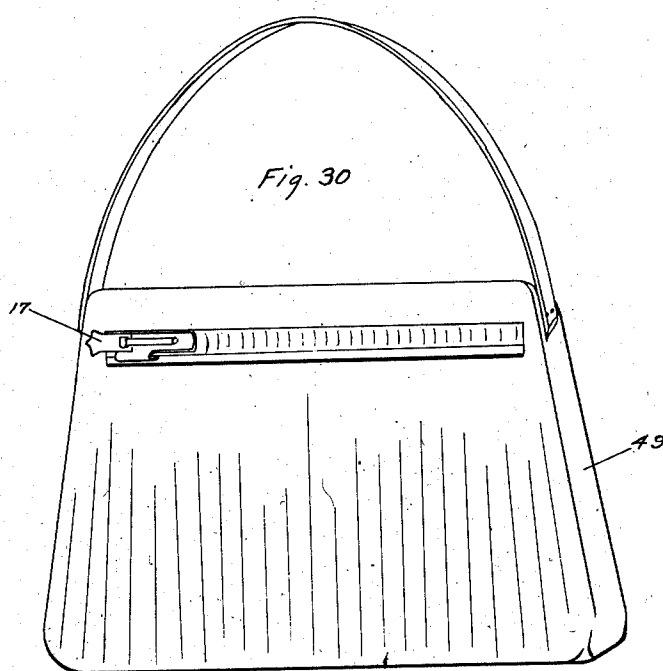
G. SUNDBACK

1,746,565

SEPARABLE FASTENER

Filed Sept. 22, 1926

4 Sheets-Sheet 4



INVENTOR
Gideon Sundback
BY *J. O. M. M. M.*
ATTORNEY

UNITED STATES PATENT OFFICE

GIDEON SUNDBACK, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO HOOKLESS FASTENER COMPANY, OF MEADVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

SEPARABLE FASTENER

Application filed September 22, 1926. Serial No. 137,018.

This invention relates to separable interlocking fasteners, and has for its object to provide a novel system of interlocking members for overlapping stringers, whereby the use of a slider for locking and unlocking becomes unnecessary, because the members are so formed as to interlock by being pressed between the fingers and when interlocked resist separation under lateral strain tending to separate the stringers. When the members are to be unlocked, one stringer may be progressively flexed to progressively disengage the interlock. Although in its broad aspect the invention does away with the slider as now commonly employed in separable edge-wise interlocking fasteners, in some forms a novel construction of slider may be conveniently employed.

According to this invention, locking members are secured to the face and preferably inwardly of, rather than at, the stringer edge, and the engagement is preferably between overlapping and substantially parallel faces of a stringer. When locking members are secured to the face of the stringer inwardly of the edge, two instead of one securing means are generally preferred, one on each side of the interlocking portion of the members. Actuation of the locking members to facilitate engagement can be accomplished by a slider, or the operator's thumb and forefinger can be moved along the stringers to engage said locking members; a channel being formed longitudinally of the stringer on each locking member so as to guide the closing means whether it be a slider or the operator's fingers. The locking members may be in various forms. They may have a projection and recess somewhat like the construction shown in my prior Patent 1,219,881 except that the elongation of the recess and projection is parallel to the planes of the stringers instead of normal thereto, or each locking member may be of the wire type having diverging projections with a space between these projections and the stringer to receive the cooperating projections of members on the opposite stringer, or the locking members on one stringer may be dissimilar to those on the other, or the locking members

may be arranged oppositely or in staggered relation on the two stringers.

Referring to the drawings:

Fig. 1 is a perspective of one form of fastener made according to this invention,

Fig. 2 shows the fastener of Fig. 1 operated by a slider instead of the fingers,

Fig. 3 shows this same type fastener operated by a different type slider,

Fig. 4 is a detail of one of the recess members,

Fig. 5 is a detail of the projection members,

Fig. 6 is a side view illustrating the method of closing the fastener by the fingers,

Fig. 7 is a detail of the tape construction,

Fig. 8 is a detail of another form of tape construction,

Fig. 9 shows a slider of the same general type as that shown in Fig. 3, but of somewhat different construction,

Fig. 10 is an end view of another type of fastener,

Fig. 11 is a detail of a slider capable of operating any of the fasteners of this invention,

Fig. 12 shows the fastener of Fig. 10 being operated by a slider instead of the fingers,

Fig. 13 is a longitudinal section of the fastener of Fig. 10,

Fig. 14 is a detail of one of the locking members of this fastener,

Fig. 15 shows a modified form of fastener,

Figs. 16 and 17 are details of modified locking members engaging after the manner of Fig. 13,

Fig. 18 is a side view of the fastener of Fig. 13 being closed by the fingers,

Fig. 19 is a section through another type of fastener,

Fig. 20 is a view similar to Fig. 19 except that the stringers are differently arranged,

Fig. 21 is a side view of the locking members on one stringer,

Fig. 22 is a perspective of the same locking members,

Fig. 23 illustrates the locking members mounted on a stringer of another form of this invention,

Fig. 24 is a longitudinal section through

two locking members like that shown in Fig. 23 while in engagement,

Fig. 25 is a transverse section through the fastener of Fig. 23,

Fig. 26 is a view similar to Fig. 25 except that the stringers are differently arranged,

Fig. 27 is a detail of a modified fastener,

Fig. 28 is a detail of a still further embodiment of the invention,

Fig. 29 shows a slider provided with an opening projection,

Fig. 30 illustrates an application of the fastener to a handbag,

Fig. 31 is a section through the fastener on the handbag of Fig. 30,

Fig. 32 illustrates another manner of application of a fastener of this invention to a handbag,

Fig. 33 is a section through the fastener of Fig. 32.

Referring to the embodiment of this invention shown in Figs. 1 to 6 inclusive, the stringers 1 and 3 are provided with locking members arranged on their faces. The recess locking members 2 are arranged on one stringer for cooperation with the projection locking members 4 on the opposite stringer. These locking members are oppositely arranged, and either or both are made yieldable to facilitate their engagement. A detail of the recess member is shown in Fig. 4 while Fig. 5 illustrates the projection member in detail. Securing means 8 are provided on either side of the interlocking portion, and the corded edges 5 of the tapes are inserted within the securing means and then firmly held by bending over said securing means. Each stringer consists of the tape 6 longitudinally stitched at 11 to the tape 7, and each of the tapes 6 and 7 is provided with a corded edge 5; tape 6 extends over and covers the back of the locking members as shown in Fig. 1. The opposite stringer is similarly made of two pieces of tape 9 and 10 sewed together along the seam 11.

Each locking member is so shaped as to form a groove longitudinally of the stringer and between the securing means. This groove constitutes a finger guide means 12 in closing the fastener, and the tape covering the groove and locking members provides a substantially smooth continuous path for the fingers over the spaced locking members.

On each side of the interlocking portions are abutting surfaces which prevent the locking members twisting and which facilitate engagement. The fastener in Fig. 1 shows the stringers diverging at an acute angle while in Fig. 3 the stringers extend in opposite directions from the fastener. In both of these constructions and in other arrangements of the stringers, the fastener is adapted to stay closed under strain. While the locking members in Figs. 1 to 6 have been illustrated as being of the same length, nevertheless either

the recess or projection members may be made much longer than the other, or if desired one may be made substantially contiguous and stiff, depending on the flexibility of the opposite stringer to engage the locking members.

In Fig. 2 the slider 13 is of a general U-shape comprising the wings 14 laterally connected by the bend as shown to provide a uniform unobstructed channel through which the stringers pass. The wings of the slider are bowed inwardly so that they fit and slide in the finger guide grooves 12. The ends of the slider are turned up as illustrated so that smooth travel is insured and there is no danger of the end of the slider catching against an end portion of a locking member. The slider of Fig. 2 is adapted only to close the locking members but not open them. To open the fastener the stringers are spread apart by separating their overlapping portions.

In Fig. 3 the fastener of Fig. 1 is shown as being provided with a slider of a still different type comprising overlying wings 15 inwardly bowed as before to fit within the fastener guide grooves 12, but the connecting portion is between the wings instead of being disposed laterally thereof and is inclined in a manner more clearly illustrated in Fig. 9. Actuation of the slider is by means of the pull device 17 attached to the lug 18 on one of the wings.

Figs. 7 and 8 show details of the tapes and their corded edges. Each tape may comprise a corded edge 5 completely enclosed by the fabric of the tape as shown in Fig. 7, the edge of the tape being wound around the corded edge and stitched or otherwise held in place. In Fig. 8 the corded edge is shown as being secured to the fabric by stitching but the corded edge is not enclosed by the fabric in this embodiment.

In Fig. 9 is shown a slider of the same general construction as that shown in Fig. 3 except that a flexible loop 19 is provided in place of the pull device 17, the loop 19 being secured to the connecting portion 16. The slider of Fig. 9 is only adapted for closing the fastener, opening the fastener being accomplished by spreading the stringers as previously described. In Fig. 3 on the other hand, the slider is adapted for either opening or closing movement, the pull device 17 being slidable from one end of the lug 18 to the other, according to the direction of movement.

In Figs. 10 and 12 to 14 inclusive the fastener comprises the usual stringers 20 having corded edges 21 as shown secured at each end of the locking members 22 by means of the bent over securing portions 23. In this embodiment each locking member comprises two projections 24 diverging in opposite directions and adapted to be held between a

projection on an opposite locking member and the stringer, as illustrated in Fig. 13. The projections 24 each have an inner flat surface overhanging the stringer which holds the projection of the opposed locking member when engaged. The diverging surfaces of the projections facilitate progressive interlocking by progressively overlapping the stringers as shown in Fig. 18. A desirable feature of this embodiment resides in the locking members being rigid and not yieldable as was the case in Fig. 1, and also the locking members are all the same, making production cost less. The locking members are arranged in staggered relation as shown in Fig. 13. It will be seen from Figs. 10, 12 and 14 that the grooves in the locking members of each series form continuous guide grooves or tracks 12, the tapes passing over and covering said guide grooves.

The slider shown in Figs. 11 and 12 is the same as that shown in Fig. 2, and is capable of operation on any of the fasteners of this invention to close the same but not to open them.

In Fig. 15 is shown a modification of the fastener as shown in Fig. 13, the interlocking portion comprising enlarged parts 26 having rounded cross section as shown and elongated in a direction parallel to the stringer planes. Each locking member 25 has the usual securing means and tape covers and is in this respect like the locking members of Figs. 12 to 14.

In Figs. 16 and 17 are shown locking members 27 constructed to engage in the manner of the locking members of Fig. 13, but differing by being relatively shallow longitudinally of the stringer, thus increasing the flexibility of the fastener. The connecting portion or shank 28 between the interlocking projections and each securing means enables these locking members to be arranged relatively close together and yet capable of engagement with members on the opposite stringer. In Figs. 12 to 18 the projections are rounded or bevelled to form guiding surfaces for facilitating engagement. When locked, the projections 24 or 26 overlap and fit in between the shanks of the cooperating locking members, as shown in Figs. 12, 13 and 15, preventing them from coming apart transversely as viewed in Fig. 12. To unlock the fastener one or both stringers may be progressively flexed or curled apart to progressively disengage the interlock.

In Figs. 19 to 22 inclusive, each locking member 30 is similar in shape as in Figs. 12 to 18, but instead of engaging in the same manner each locking member comprises a recess or socket portion 32, and a projection 31 from which it will be seen that these locking members are somewhat like those shown in my prior Patent 1,219,881, the recess and projection in each case being elongated, but

in the present instance the elongation is in the direction of the stringer planes instead of transverse thereto. The sides of the projections 31 are tapered or rounded as at 34 to produce guiding surfaces facilitating engagement of the locking members. In Figs. 19 to 22 each stringer comprises the two portions of tape stitched together at 35 and each having corded edges 33. Instead of the securing means being in the form shown in Figs. 1 to 5, or 12 and 14 for example, the securing means in Figs. 19 to 22 include pairs of clamping jaws oppositely extending on each side of the interlocking portion of the locking member and in substantially the same plane. As in the other embodiments of this invention, the locking members of Figs. 19 to 22 are shaped to provide the finger guide grooves covered by the tape. Another distinction between the locking member of Figs. 19 to 22 and those of my prior patent mentioned include the location of these locking members on the face or faces of the stringers and not on their edges, and this is true regardless of whether the second tape covering the locking members be used.

In Figs. 23 to 26 is shown another embodiment of this invention in which the locking members 36 comprise projections 37 and recesses 38 all stamped and bent from a flat sheet of material. The ends of the projections are rounded as at 39, to provide guiding surfaces aiding in the cooperation of the locking members. Each of the recess portions 38 engaged by the projection of the opposite locking member is also rounded as at 40, see Fig. 24 to provide the desired guiding surfaces. In order to give the projection 37 its requisite length, after stamping out so that it may engage the opposite member and yet all locking members be alike, this projection may either be elongated as by further stamping or the sides of the recess portion may be brought closer together under compression. As shown in Fig. 24, it is necessary that the projection extend over the edge of the opposite recess a sufficient amount to hold the locking members in engagement. As shown in the drawings, securing means are provided on each side of the locking portions. Figs. 25 and 26 illustrate how the stringers may be differently arranged and yet the fastener remain closed.

In Fig. 27 is illustrated a modified form of this invention in which the projection member 42 is substantially continuous and not made up of short lengths, as are the recess members 41. In Fig. 27 the projection portion is preferably a strip of flexible material, such, for example, as rubber, so that either or both the interlocking projection 43 and the cooperating recess 44 may be yieldable. If desired, the projecting portion 42 and its projection 43 might be rigid, the flexibility

and yieldability being confined to the opposite stringer and its locking members.

In Fig. 28 is illustrated the modification where the projection and recess portions are both substantially continuous, and each is of yieldable material such as rubber. To increase the life of such a fastener, the material of the recess and projecting portions 45 and 46 respectively may be reinforced as by thin metal wires for example applied in the molding process. Where the stringers for the locking portions are substantially continuous, as in Figs. 27 and 28, no fabric covering is necessary to insure a smooth travel for the fingers or a slider, but it will be noticed that in each of these figures the finger guide grooves 12 have also been provided.

In Fig. 29 is shown a modified type of slider somewhat like that shown in Fig. 11 except that at the connecting portion 47 is an opening projection 48, extending into the space between the wings and serving to separate the locking members so that with such a slider a fastener may be either opened or closed.

In Figs. 30 and 31 is shown a fastener of the type of Figs. 1 to 5 for example applied to a handbag 49, the fastener being opened and closed by a slider of the type shown in Fig. 3. In Figs. 32 and 33 the handbag 50 has a fastener of the type shown in Figs. 12 to 14 arranged along the top and controlled by a slider of the type shown in Fig. 29. The use of fasteners having engaging means on opposite faces of the stringer instead of their edges precludes the necessity of a sharper bend in the stringers or material of the bag in the construction shown in Fig. 32.

The invention of the present fastener is different from that shown and described in the patent to Statham #1,480,027 dated January 8, 1924, who shows a number of snap fasteners intended to be controlled by a slider having yieldable sides. The present invention distinguishes in many ways from the Statham construction such as by the presence of guide grooves facilitating manipulation by the fingers, by the provision of spaced securing means or clamping jaws on either side of the interlocking portion, by the fabric covering making for smoother travel of fingers or a slider, the elongation of the recess and projection portions, the shape of the interlocking portions so that the progressive engagement of each portion of the locking members facilitates the engagement of the next succeeding portion and the shape of the locking members enabling them to be closely spaced and having the fastener flexible.

Among the advantages of this invention may be mentioned that no slider is necessary and the fastener may be closed progressively by the fingers, opening occurring by spreading the stringers apart. When closed, the stringers may extend in different directions

and yet the fastener remain closed. The presence of abutting surfaces on either side of the interlocking portion facilitates engagement by the prevention of twisting. The guide grooves serve as a track for the fingers or slider, and the fabric covering is conducive to smooth travel of either the fingers or slider. This fastener is adapted for location where an edgewise fastener is not preferable or suitable.

I claim:

1. A separable fastener comprising a pair of overlapping flexible stringers having locking members arranged in staggered relation on their adjacent faces, and projections on said members interlocking with projections of adjacent members on the opposite stringers.

2. A separable fastener comprising a pair of overlapping flexible stringers having cooperating interlocking members arranged in staggered relation on their adjacent faces, projections on said members having engaging portions overhanging the stringer to overlap and hold the projections of locking members on the opposite stringer when engaged, and diverging guiding surfaces on said projections to facilitate interlocking engagement by progressively overlapping said stringers.

3. A separable fastener comprising a pair of overlapping flexible stringers, locking members each having spaced shanks connecting them to adjacent faces of said stringers, and projections on each of said locking members adapted to be held between adjacent projections and shanks of locking members on the opposite stringer.

4. A separable fastener comprising a pair of overlapping flexible stringers, cooperating series of interlocking members arranged in staggered relation on adjacent faces of said stringers, each interlocking member having projections spaced from the face of the stringer and shanks connecting the projections to the stringer, said projections being adapted to overlap the projections of adjacent interlocking members on the opposite stringer and fitting between the shanks thereof.

5. A separable fastener comprising a pair of overlapping flexible stringers, cooperating series of interlocking members arranged in staggered relation on adjacent faces of said stringers adapted to be progressively engaged and disengaged by progressively lapping or spreading the stringers apart, each interlocking member having projections with diverging guiding surfaces spaced from the face of the stringer and spaced shanks connecting the projections to the stringer, said projections being adapted to overlap the projections of adjacent opposite interlocking members and contact with the shanks thereof to prevent separation.

6. A separable fastener comprising a pair

of overlapping stringers, locking members each having spaced securing means attached to adjacent faces of said stringers, and means on each of said members joining the spaced securing means and adapted to interlock with the members on the opposite stringer.

7. A separable fastener comprising a pair of overlapping stringers each having a spaced pair of corded edges on their adjacent faces, locking members having spaced securing means attached to said corded edges, and locking portions between the securing means of each locking member for engagement with locking members on the opposite stringer.

8. A separable fastener comprising a pair of overlapping stringers having contiguous outer edges, locking members arranged in staggered relation on adjacent faces of said stringers and projections on each locking member transverse to the edge of the stringer for interlocking engagement with projections of locking members on the opposite stringer.

9. A separable fastener comprising a pair of overlapping stringers each having a spaced pair of corded edges, locking members having their ends bent over said corded edges to secure them to said stringers, and cooperating locking portions intermediate the ends of said members.

10. A separable fastener comprising a pair of overlapping stringers, cooperating series of locking members on overlapping portions of said stringers, and longitudinal grooves in said locking members adjacent the stringers forming tracks for guiding operating means.

11. A separable fastener comprising a pair of overlapping stringers, cooperating series of locking members secured to and partly covered by said stringers, and longitudinal grooves in portions of the locking members covered by the stringers forming continuous tracks for guiding operating means.

12. A separable fastener comprising a pair of overlapping stringers, cooperating series of locking members each having spaced securing means attached to a stringer and an intermediate portion covered by the stringer, and a longitudinal groove in the intermediate portion of each locking member covered by the stringer forming continuous tracks for guiding operating means.

13. A separable fastener comprising a pair of overlapping stringers, cooperating series of locking members on overlapping portions of said stringers, longitudinal grooves in said locking members adjacent the stringers, and a slider having wings tracking in said grooves to engage said locking members.

14. A separable fastener comprising a pair of overlapping strings, cooperating series of locking members secured to and partly covered by said stringers, a longitudinal groove in a portion of each locking member covered by the stringer forming continuous

tracks therein, and a slider movable along said tracks to engage said locking members.

15. A separable fastener comprising a pair of overlapping stringers, cooperating interlocking members on adjacent faces of said stringers, longitudinal grooves in said interlocking members adjacent the stringers, and a U-shaped slider having overlying wings tracking in said grooves to engage said interlocking members.

Signed at Meadville, in the county of Crawford and State of Pennsylvania, this 18th day of September, A. D. 1926.

GIDEON SUNDBACK.