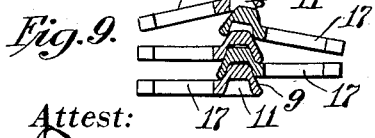
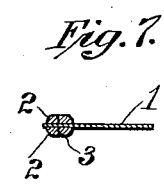
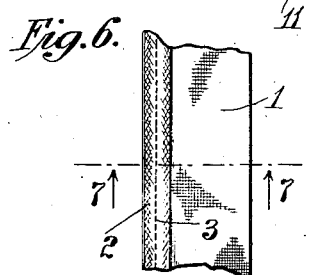
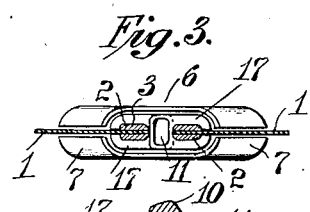
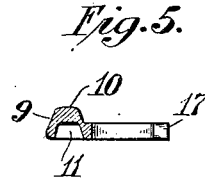
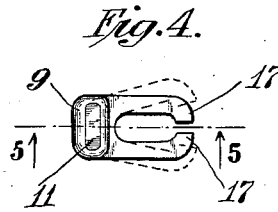
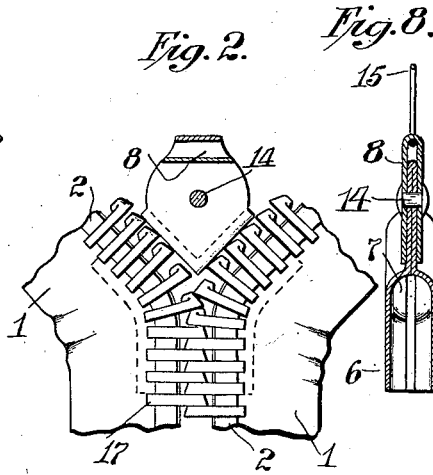
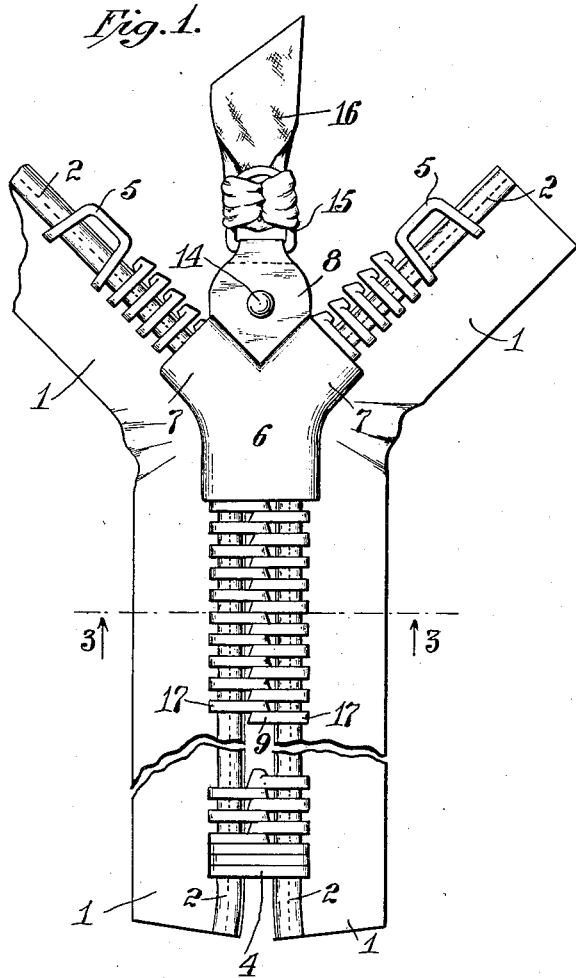


G. SUNDBACK.
SEPARABLE FASTENER.
APPLICATION FILED AUG. 27, 1914.

1,219,881.

Patented Mar. 20, 1917.



Attest:
J. D. Connolly, Jr.

Inventor:
Gideon Sundback,
by *Edwards, Lager Wooster*
Attys.

UNITED STATES PATENT OFFICE.

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

SEPARABLE FASTENER.

1,219,881.

Specification of Letters Patent.

Patented Mar. 20, 1917.

Application filed August 27, 1914. Serial No. 858,848.

To all whom it may concern:

Be it known that I, GIDEON SUNDBACK, a subject of the King of Sweden, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Separable Fasteners, of which the following is a full, clear, and exact specification.

This invention relates to separable fasteners, and has particular reference to that type of fastener for garments and other purposes, where two flexible stringers are locked and unlocked by a sliding cam device mounted on both members, the locking being effected by movement in one direction and unlocking by an opposite movement.

The objects of the present invention are to decrease the weight and bulk, to increase the flexibility and security of locking, and to provide one form of locking member for both stringers, so constructed and arranged that when properly positioned relatively to each other on the stringers they lock and unlock upon proper movement of the cam sliding device. A further object of the invention is to simplify the cam sliding device, which is possible owing to the reduction of locking members to one form for both stringers, instead of the different forms heretofore employed on the respective stringers.

According to the present invention, the stringers are alike, as in some prior types of this fastener, preferably consisting as herein shown of a fabric tape provided with a beaded or corded edge, upon which the locking members are clamped. The locking members are all alike, and therefore interchangeable, and in general form consist of contractible jaw portions which are clamped upon the tape and projecting locking portions of elongated cup shape, so that the outside of one member nests within the recess of an adjoining member when in locked relation. Consequently, it will be seen that the members on one stringer alternate with those on the other, so that when the sliding operating device is moved back and forth, the locking members will be engaged and disengaged according to the direction of movement. A further feature of the invention resides in the shape and configuration of the locking members, these being as shown in enlarged scale on the

drawings, provided with exterior and interior rounded surfaces, and are somewhat elongated transversely. Thereby, a snug fit is obtained and at the same time ample provision is given for movement of one on the other without coming out when the fastener is flexed transversely. At the same time this construction gives facility for relative longitudinal movement without disengagement.

In the accompanying drawings:

Figure 1 is a perspective view on an enlarged scale of a fastener embodying the invention;

Fig. 2 is a detail view showing the manner of locking and unlocking;

Fig. 3 is a cross section on the line 3—3 of Fig. 1;

Fig. 4 is a detail view of one of the locking members showing the recess;

Fig. 5 is a cross section thereof on the line 5—5 of Fig. 4;

Fig. 6 is a detail view of one of the stringers.

Fig. 7 is a cross section thereof on the line 7—7 of Fig. 6;

Fig. 8 is a cross section of the slider, and

Fig. 9 is an enlarged detail of the locking members.

1—1 represent stringers which preferably will be made of woven tape having sewed thereto on opposite sides cords 2—2 to form a beaded edge. 3 represents the line of stitching as employed in the preferred construction. Each of these stringers may be secured together at one end by fastening links 4, and will have at the opposite end a stop member 5. These stop members 5 pass into the slider and limit the locking movement of the slider when they strike each other, because it will be seen from the drawings that the total heights of the stop members 5 when they are in contact with each other is greater than the total width of the channel at the bottom of the slider. 6 represents the sliding cam operating device, which consists of two stamped sides 7 each having a Y-shaped channel forming a tongue, with their sides separated to permit passage of the tape portion of the stringers 1. 8 represents a cap having a point to fit between the diverging channels, and secured to the slider by a rivet 14. 15 is a ring in which may be placed an operating tape or bow 16. The stampings 7 may be integral and doubled over or they may be

separate, in either event a rigid structure being provided when the cap 8 is applied thereto and the rivet 14 set.

Fig. 4 represents one of the locking members, which consists of jaws 17—17 having a base portion 9 which is stamped or otherwise formed to provide an external locking projection 10 and an internal recess 11. These members, as well as the locking members 4 and the stamp members 5 are stamped out of flat metal, and the jaws 17, 17 of the locking members are spread apart as shown in dotted lines in Fig. 4 so as to pass over the corded edges 2 of the stringers. Then the jaws are set by a die press or other suitable means, the jaws thereby becoming firmly clamped to the stringers by the compression of the corded edges 2. This will be seen in Fig. 3, where the corded edges have been distorted by the setting of the locking members thereon so as to completely fill the slot in the locking members, and the jaws 17, 17 engaging firmly on the tape immediately behind the corded edges.

From the assembly in Fig. 1, it will be seen that the members 17 on one stringer alternate with those on the other stringer, and consequently it is possible to make the members on both stringers alike and cause them to lock and unlock readily, and remain locked even while the fastener is almost doubled on itself. At the same time, owing to the rounded and transversely elongated shape of the projections and recesses, the fastener is very flexible without being loose. Flexibility is also increased by reason of the relatively large number of locking members provided, which is possible because these members are thin and their projections and recesses can be proportioned so that one will not touch another when the fastener is bent transversely. This is an important consideration in fasteners of this type. Thus it will be seen that the shape of the projections and recesses is such that when engaged, the stringers have practically no movement of separation, but yet the engagement is secure without being stiff, because the locking members on one stringer can rock or oscillate freely relatively to those on the other stringer without disengagement.

By the present invention, an improved fastener has been produced which is much more simple and cheap to manufacture than others heretofore invented, because both stringers as well as the respective members thereon, are alike, and the members themselves can all be made by simple die operations from flat material. The only assembling operations are those required to attach the members to the tapes. The finishing of the locking members such as smoothing or tumbling is very simple, because all are alike and the dies can be so designed as not to

require much subsequent finishing of these members. It will be understood that the connecting members 4 and the stop members 5 may have jaws 17 on each end similar to those of the locking members, which are only on one end. As shown herein, it will be seen that the locking members are of a rounded truncated conical shape, the tops being cut off and rounded so as not to leave projecting edges which would interfere with their engagement and disengagement.

The novel features of the interlocking and stop members, together with the novel stringer construction, are separately claimed in my application continuous herewith Serial No. 19,474 filed April 6, 1915.

Having thus described my invention, what I declare as new and desire to secure by Letters Patent of the United States is:—

1. A fastener comprising a pair of flexible stringers, interlocking members secured at one end thereto in staggered relation, each member having at the free end a rounded recess on one side and a corresponding projection on the opposite side, the recessed side and the end surface of the projection of each member meeting in an edge and constituting guiding means enabling said members to ride one on the other in interlocking.

2. A fastener comprising a pair of flexible stringers, interlocking members secured at one end thereto in staggered relation, each member having at the free end a transversely elongated rounded recess on one side and a transversely elongated rounded projection on the opposite side, the recessed side and the transversely elongated end surface of the projection of each member meeting in an edge and constituting guiding means enabling said members to ride one on the other in interlocking.

3. A fastener comprising a pair of flexible stringers, interlocking members secured thereto in staggered relation, each member having a recess on one side and a projection of similar shape on the other, said projections having inclined ends continuous with the recessed side of the member to engage and guide the cooperating member over and into engagement therewith.

4. A fastener comprising a pair of like fabric stringers, a series of like interlocking members secured to the abutting edges of each stringer, those on one stringer alternating with those on the other and having interlocking projections, means sliding on both stringers for actuating said members to lock and unlock according to its direction of movement, a double jaw stop member connecting both stringers at one end, and a separate stop member adapted to pass into said actuating means on at least one stringer at the other end.

5. In a fastener comprising two stringers, 130

a sliding operating device mounted thereon composed of two plates having diverging channels therein, a doubled cap between the diverging channels, a fastening passing through said plates and said cap, and a pulling means carried by said cap.

6. A fastener comprising a pair of like fabric stringers, a series of like interlocking members secured to the abutting edges of each stringer, those on one stringer alternating with those on the other and having transversely rounded interlocking projections, means sliding on both stringers for actuating said members to lock and unlock according to its direction of movement, a double jaw stop member connecting both stringers at one end, and a separate stop member on at least one stringer at the other end.

7. An opening and closing device for shoes, corsets, and other articles of wear, comprising interlocking members on the parts of the articles to be fastened together, a manually controlled slide having a chamber open at one end for the passage of the interlocking members, the side walls of said chamber having inclined faces, the slide having a tongue centrally disposed in said chamber and adapted to engage the said interlocking members on moving the slide in one direction to unlock and open the said members, the said slide when moved in the opposite direction closing the said members, stopping means at one end of the interlocking members to limit the opening movement of the slide, and stopping members at the other end of the interlocking members and adapted to abut against each other, the outer ends of the last mentioned stopping members engaging the inclined faces of the side walls of said chamber to limit the closing movement of the slide.

8. An opening and closing device for shoes, corsets and other articles of wear, comprising interlocking members on the parts of the article to be fastened together, and a manually controlled opener adapted to engage the said interlocking members on moving the opener in one direction to unlock and open the said members, and on moving the opener in the opposite direction to close the said members, stopping means at one end of the interlocking members for engaging the opener to limit the opening movement thereof, stopping members at the other end of the interlocking members and adapted to abut against each other, the said opener being provided with inclined surfaces adapted to be engaged by said stopping members to limit the closing movement of the opener.

9. An opening and closing device comprising flexible carriers adapted to be se-

cured to the parts to be opened and closed, interlocking members attached alternately to the said carriers, a manually controlled slide having a chamber open at one end for the passage of the interlocking members, the sides of said chamber having slots for the passage of the carrier, a tongue disposed in said chamber near the other end of the slide and separating the chamber into sidewise extending branch channels, open at the sides for the passage of the interlocking members, the side walls of said chamber having inclined faces, and abutting members secured to the carriers at one end thereof and adapted to engage the inclined faces of the side wall of said chamber to prevent the slide from disengagement with the interlocking members.

10. An opening and closing device, comprising flexible carriers adapted to be secured along their outer edges to the parts to be opened and closed, interlocking members attached alternately to the free edges of the said carriers, each interlocking member having a pin, a recess, the pin of an interlocking member on one carrier being adapted to engage the recess of the adjacent interlocking member on the other carrier, a manually controlled slide mounted to slide on the said carriers and provided with a chamber, the side walls of said chamber having inclined faces, the said slide having a separating tongue adapted to engage the free ends of the said interlocking members to separate and unlock the members on moving the slide in one direction, the said slide when moved in the opposite direction moving the said interlocking members into interlocking engagement, and a pair of stopping members on the beginning ends of the said carriers and adapted to abut against each other adjacent the point of the said tongue to limit the closing movement of the said slide, the outer ends of said stopping members abutting against the inclined faces of the side walls of the said chamber.

11. The combination in a fastener with a pair of stringers carrying interlocking members, and a sliding operating device, of means at one end of said stringers for limiting the opening movement of said operating device and a member on the other end of each stringer adapted to pass into said operating device and to engage with the other end member to limit closing movement of said sliding operating device.

In testimony whereof I affix my signature in presence of two witnesses.

GIDEON SUNDBACK.

Witnesses:

LEWIS C. BELL,
MAUDE HARPER.

DISCLAIMER

1,219,881.—*Gideon Sundback*, Meadville, Pa. SEPARABLE FASTENER. Patent dated March 20, 1917. Disclaimer filed April 6, 1932, by the assignee, *Hookless Fastener Company*.

Therefore disclaims: From the scope of each of claims 1, 2 and 3, any fastener except one in which the longitudinal thickness of the interlocking members and the distances, if any, between the sides of the members and the sides of the recesses and projections, are so slight as to enable the fastener to be bent sharply transversely of its length without opening automatically.

(*Official Gazette April 26, 1932.*)