

May 7, 1935.

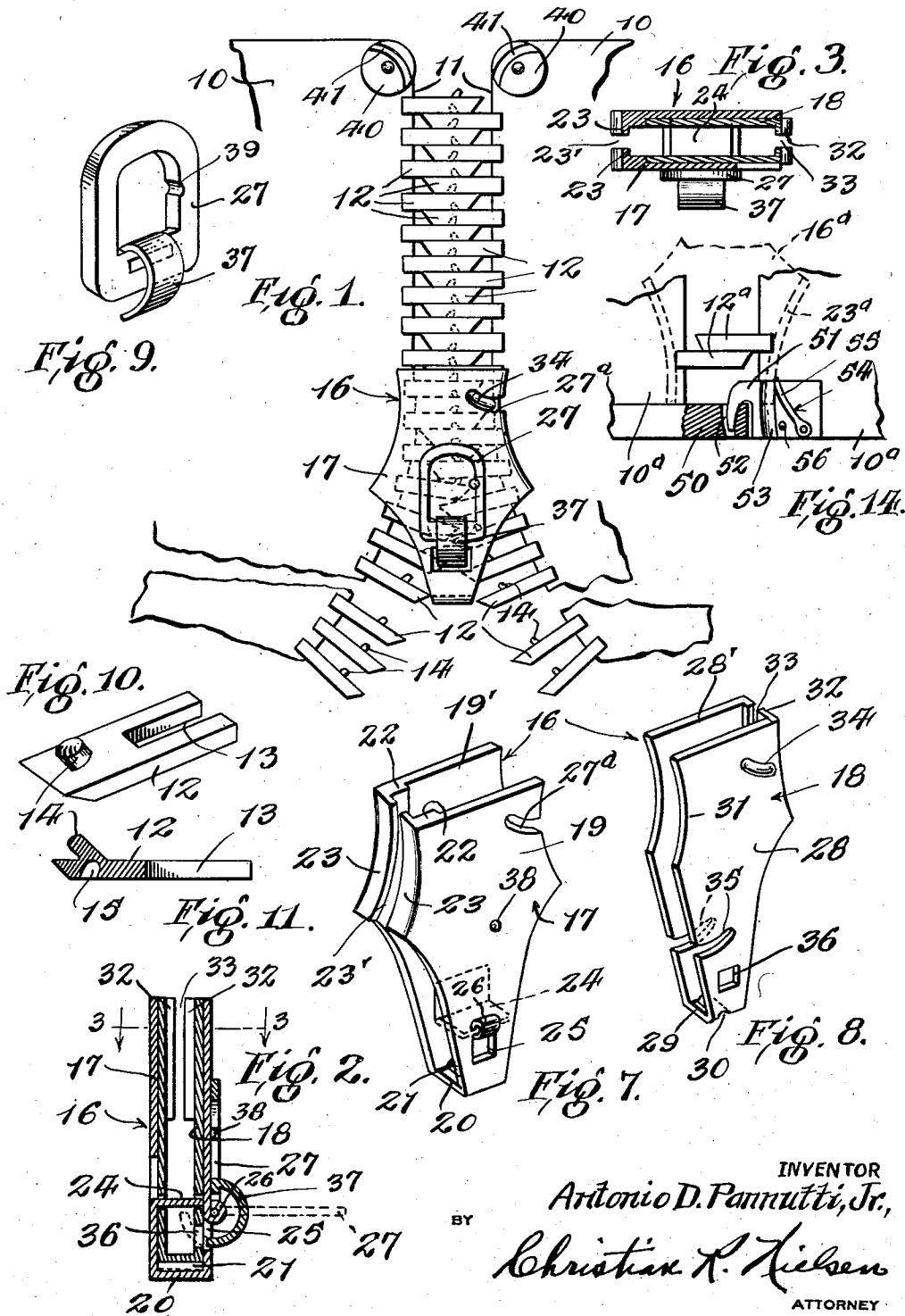
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2,000,415

SEPARABLE FASTENER

Filed Sept. 8, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

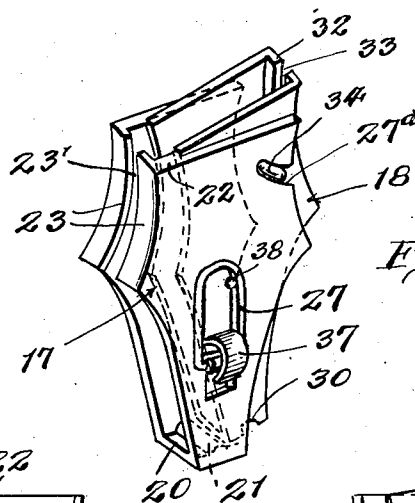


Fig. 4.

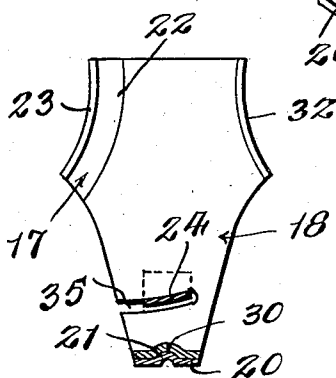


Fig. 5.

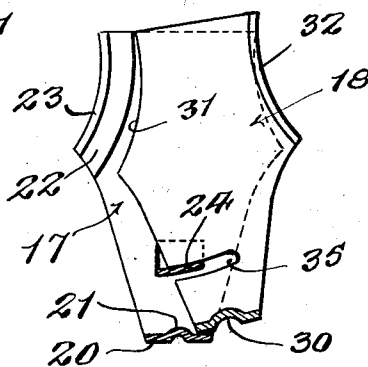


Fig. 6.

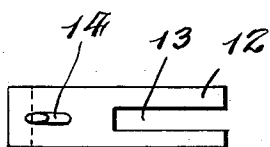


Fig. 12.

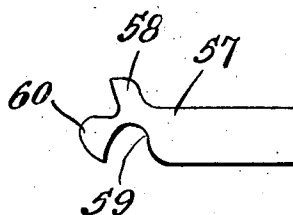


Fig. 13.

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2,000,415

SEPARABLE FASTENER

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Application September 8, 1933, Serial No. 688,653

5 Claims. (Cl. 24—205)

My invention relates to separable fasteners and more particularly to a fastener for securing together edges of parallel flexible strips of material, and it consists in the constructions, arrangements and combinations herein described and claimed.

It is a particular object of the invention to provide a fastener embodying interlocking teeth arranged in staggered relation, the teeth having such formation as to prevent disengagement of the teeth accidentally, thereby providing a fastener which may be partly fastened if desired, and yet maintain the edges of the strips secured against separation.

It is also an object of the invention to provide an operating slide which is of a separable character permitting ready separation of the slide, which is of importance where the interlocking teeth may become jammed against locking or unlocking thereof.

Also, it is an aim of the invention to provide an operating slide of a separable character which embodies a ready means for locking or unlocking of the parts thereof.

It is also an object of the invention to provide a tooth formation of unique construction which will permit a close bringing together of the edges to be secured, thereby affording an effective closure which is of neat appearance and susceptible to use in situations not heretofore found possible with prior fasteners of this type.

Additional objects, advantages and features of invention will be apparent from the following description and accompanying drawings, wherein Figure 1 is a plan view of the fastener in partly closed position.

Figure 2 is a vertical sectional view through the operating slide.

Figure 3 is a cross section on the line 3—3 of Figure 2.

Figure 4 is a perspective view of the slide in partly locked position.

Figure 5 is a vertical section thereof.

Figure 6 is a vertical section through the slide illustrating the position of the parts when in fully closed position.

Figure 7 is a detail perspective of one of the slide members.

Figure 8 is a similar view of the other slide member.

Figure 9 is a perspective view of the pull-tab for the slide member.

Figure 10 is a perspective view of a tooth embodied in my closure fastener.

Figure 11 is a sectional view thereof.

Figure 12 is a top plan view of the tooth.

Figure 13 is a modification of the tooth.

Figure 14 is an enlarged detail of a combined stop and catch employed in the fastener.

In carrying out my invention I provide a pair

of members 10 having normally parallel edges 11, each of which has secured thereto a plurality of interlocking members 12. The members 12 are secured to the members 10 in a staggered relationship, as is well understood in closures of this type.

As clearly shown in Figures 10 and 11 the interlocking members are substantially rectangular in plan view, one end thereof being slotted as at 13, for the purpose of receiving the edges 11 of the members 10 after which they are compressed to effect an attachment thereto. Upon the upper side of the members 12 there is provided an upstanding tooth 14, inclined slightly in a direction away from the slot 13. Preferably the teeth 14 have an oval formation as viewed in plan, thereby affording a tooth which will be readily engageable with a super-posed tooth aperture, as will be further explained, and in addition afford a strong connection between the member 12 and the base of the tooth.

The under sides of the interlocking members 12 are each provided with an aperture 15 the apex of which is positioned immediately below the base of the tooth 14 and in order to accommodate the tooth of an interlocking member therebeneath the aperture 15 is given an inclination corresponding to that of the tooth.

It will be noted from a consideration of Figure 1 that closure of the members 10 is effected by movement of the operating slide 16 in a downwardly direction, but it will of course be understood that the closing operation may be effected in an upwardly direction if a situation calls for such a fastener, by merely reversing the interlocking members 12 and the slide 11, and such relation of the parts is illustrated in Figure 14.

The slide 16 comprises in the present instance a pair of separable members 17 and 18, these members being constructed for slidable attachment to respective members 10. The member 17 has a pair of side plates 19—19' extended in parallel relation and connected at their bases only, by a plate 20. The side plates 19—19' and the plate 20 are preferably formed integrally, and the plate 20 also includes a raised rib 21. The rib 21 extends between the plates 19, as clearly shown in Figure 2, and functions as a locking means when the members 17 and 18 are interleaved, as will be apparent as the description proceeds.

The plates 19—19' are each provided with a raised portion 22 upon their inner faces, and the longitudinal edges of the plates 19—19' adjacent the portions 22 are bent inwardly toward each other, defining flanges 23. These flanges define a slot 23' permitting passage of the slide when engaged with the members 10. The flanges have a curvature as shown in Figures 5 and 6 which cooperate with the interlocking members 12 during opening and closing movements of the

slide 16, as will be explained in greater detail hereinafter.

The plate 19' has a tongue 24 struck therefrom bent inwardly toward and contacting the plate 19. The tongue 24 it will therefore be seen braces the plates 19—19' and further functions as a guide means for the member 18, as will be explained.

The plate 19 has an aperture 25 formed adjacent its base, the metal displaced by the formation of the aperture being recurved outwardly and upwardly forming a pivot bearing 26 for a pull-tab 27. The plate 19 further has formed therein an arcuate slot 27—a adjacent its upper end, the slot having an entrance opening upon the edge of the plate 19.

The member 18 is adapted to interleave with the member 17 and the construction thereof will now be described. The member 18 is somewhat similar to the member 17 including spaced side plates 28—28', connected by a plate 29, the latter plate having a semi-circular recess 30 formed therein adapted to receive the rib 21 of the member 17. The side plates 28—28' are spaced apart a distance to be snugly received between the plates 19—19', and when fully engaged therewithin the edges 31 will snugly abut the raised portions 22 thus stopping further inward movement of the member 18.

The member 18 is of a length slightly less than the member 17, in order that the upper edges of the side plates 28—28' will stop flush with the upper edges of the side plates 19—19'. The side plates 28—28' have portions 32 adjacent their upper ends bent inwardly toward each other, defining a slot 33. It will be understood that the slot 33 permits sliding movement of the slide member with respect to the member 10 with which it is engaged. The plate 28 includes a rib 34 located thereon in a position to be received in the arcuate slot 27a, and for this reason the rib has an arcuate formation corresponding substantially to the rib 34.

In order to accommodate the plate 24 of the member 17, the plates 28—28' are provided with arcuate slots 35, as clearly shown in Figures 5, 6 and 8. An aperture 36 is formed in the side plate 28 adapted to align with the aperture 25 of the member 17.

In assembling the slide members 17—18 the member 18 is inserted between the plates 19—19' with the rib 34 entered within the slot 27a (see Fig. 4). With the parts in this position, a light pressure inward is exerted upon the lower part of the member 18, causing this portion to move inwardly to such an extent that the recess 30 will be engaged upon the rib 21. Thus the two members 17—18 will be retained in proper relationship.

As is customary in fastenings of this type, it is essential that the operating slide be moved to effect a closing and opening of the interlocking members, and in this instance the pull tab 27 previously referred to is provided. As shown in Figures 1, 2, and 4, the tab 27 is pivotally mounted upon the bearing 26, and inasmuch as the slide members 17—18 are interlocked by virtue of the ribs 21 and 34 these members will be moved as a unit.

The pull-tab 27 includes an integrally formed arcuate shaped tongue 37 which will be moved through the apertures 25 and 36 upon movement of the tab into operative position as indicated in dotted lines in Figure 2, thereby further insuring positive locking of the slide members 17 and 18 against lateral separation.

In order that the tab 27 may be retained in its uppermost or inoperative position I provide a retainer 38 upon the side plate 19, adapted to frictionally engage within a recess 39 of the tab 27. It will be obvious that the tab 27 may be released from its engagement with the retainer, by a slight outward pull upon the upper edge of the tab.

Means are provided at the upper and lower portions of the members 10 for preventing complete withdrawal of the operating slides, and in the present instance I have illustrated buttons 40 riveted or otherwise secured to respective members. Occasion may arise where it would be desirable to remove the operating slides, and therefore the buttons 40 are provided with arcuate slots 41. In removing the slides it will be necessary to separate them from their interlocked relation, and the slides then separately moved so as to cause the flanges 23—32 as the case may be to enter the slots 41 of respective buttons. The removal of the slide 16 may be required in many instances, and especially when an article embodying my fastener is to be laundered.

The operation of my fastener will be readily apparent from the following description thereof, and attention is invited particularly to Figure 1 of the drawings.

With the slide 16 in its assembled relation as shown in Figure 1, and the pull tab 27 in its outwardly swung position as shown in Figure 2, downward movement of the slide 16 or a pull upon the tab will cause the flanges 23—32 to engage respective end portions of interlocking members 12, causing progressive upward swinging movement thereof. The tooth 14 will engage within the aperture 15 of the interlocking member 12 thereabove and such movement of the interlocking members continues so long as the slide is moved or until the desired amount of closing has been effected. It will be noted that the slide 16 may be stopped at any point desired, without liability of the interlocking members 12 becoming disengaged, since the teeth 14 of alternate interlocking members 12 are reversely inclined, thereby precluding any tendency of the interlocking members 12 from becoming accidentally disengaged from their respective apertures. The interlocking members 12 are still further retained in position by contact with a portion of the flanges 23—32.

Also, it should be noted that when the pull tab 27 is swung to its operative position the tongue 37 will have been swung to the dotted line position shown in Figure 2, and with the tongue engaged through the apertures 25 and 36 lateral separation of the members 17 and 18 is positively prevented, since the tongue 37 will engage the side walls of the respective apertures.

When it is desired to detach the slide from the portions of material 10, the pull tab 27 is retained in its position by the keeper 38, thereby maintaining the tongue free of the apertures 25—36 and by a slight outward push upon the lower portion of the slide member 18, the groove 30 will ride over the rib 21. Further opposite movements of the slides 17—18 will of course, cause separation of the ribs 34 from the slot 27a and thus the slides 17—18 will be fully disconnected from one another. The slides 17—18 may now be slid to the end of the closure, care being taken to cause the flanges 23—32, as the case may be, to encounter the slot 41 of the button 40. It will be clearly apparent that the slides may then be entirely removed from the members 10.

The manner of interleaving the slides 17—18 is clearly shown in Figures 4, 5 and 6 wherein a series of the stages of movement of the slides are indicated, and reference is now made to these figures. The slide 18 is positioned between the plates 19—19' of the slide member 17 with the rib 34 engaged within the slot 27a and the tongue 24 partly engaged within the slot 35. A slight pressure upon the lower portion of the slide 18 in the direction of the slide 17 will cause the slide 18 to rise slightly over the rib 21, the rib finally coming to rest within the groove 30, thereby holding parts 17—18 in their interleaved relation as a unit.

The closure just described performs its closing action upon a downward movement of the slide 16, but in Figure 14 I have illustrated a closure wherein an upward sliding of the slide will effect an interlocking of the closure members, and attention is now invited to this figure for an understanding of the construction and operation thereof. The reference character 10a represents the flexible strip members each of which has secured thereto interlocking members 12a. One of the members 10a has fixed at the base thereof a lug 50, while the other member 10a has fixed thereto a hook member 51 engageable within an aperture 52 of the lug 50. With the hook 51 engaged within the aperture 52 the members 10a will be effectively held together and reducing strain upon the interlocking members 12a to a minimum and further prevent disengagement of the slide 16a.

The hook 51 has an arcuate shaped groove 53, extending in a substantially vertical direction and in line to receive the flange 23a of the slide. From the foregoing it will be apparent that the slide 16a may be slid into operative engagement with the members 10a by engaging the flange 23a with the groove 53 and similarly withdrawn therefrom. In order to prevent casual disengagement of the slide, I provide a stop device 54 in the form of a swingable lever 55. The lever 55 is of a length to extend across the groove 53, and in order to limit the movement of the lever I provide a pin 56. The lever 55 is so pivoted as to fall by gravity across the groove, and in this position the slide 16a will be prevented from becoming disengaged from the members 10a. The lever 55 must be manually raised in order that the slide 16a may pass through the groove 53.

In Figure 13 I have illustrated a modification of the interlocking members and in this instance, I have shown a body 57 having a slot 13a. Upon the upper edge of the body 57 there is an upstanding inclined tooth 58, and immediately therebeneath there is a tooth aperture 59. The forward end of the body terminates in a heel portion 60. The present construction of interlocking members permits the formation of the member from a single stamping operation and one wherein the strains exerted upon the interlocking members will be distributed to those portions which will be best able to withstand any excessive strains.

While I have shown and described a preferred example of my fastener I do not confine myself to the exact construction set forth, and reserve as my own, all such modifications as fairly fall within the scope of the appended claims.

I claim:—

1. A separable fastener comprising a pair of stringer members having opposed series of interlocking members, a slide cooperable with said interlocking members, said slide comprising a pair of separably related members, one associated with each of said stringer members, each said separable members having opposed flanges disposed upon opposite sides of said stringer members, interlocking means carried by said separable members for securement as a unit, stop means at the ends of said stringer members for limiting movement of said slide, and said stop means having arcuate slots for reception of respective flanges of said separable members, whereby said separable members may be detached from said stringer members.

2. A slide for a separable fastener comprising a pair of body members having parallel side walls, an end wall connecting said parallel walls, one of said body members being adapted to interleave with said other member, a rib formed in the end wall of one of said body members, the end wall of said other body member having a groove formed therein for reception of said rib, an arcuate slot formed in a wall of one of said body members, and said other body member having an arcuate rib for engagement in said arcuate slot whereby to maintain said rib and groove in engaged relation and said body members in interlocked unitary relationship.

3. A slide for a separable fastener comprising a pair of interleaved body members, each of said body members having an end wall, a rib formed in the end wall of one body member, a groove formed in the end wall of the other body member and receiving said rib, a plate carried by one of said body members and extended in the path of movement of said other body member when moved into interleaved position, said other body member having slots for reception of said plate, a slot formed in one of said members, a rib formed on the other of said members and adapted to slidably and frictionally receive said rib, a swingable pull tab carried by one of said body members, said tab having an arcuate shaped tongue, and said body members having aligned apertures for reception of said tongue in one position of said pull tab.

4. A separable fastener comprising a pair of stringer members having opposed series of interlocking members, a slide movable along said members to engage and disengage said interlocking members, said slide comprising oppositely disposed flanges, fastening end connecting means carried by said stringers, said fastening means comprising an apertured lug member, a hook cooperable therewith, said hook having an arcuate-shaped groove for reception of a flange of said slide when being engaged with said stringers, gravity actuated detent means swingably mounted on said hook to assume a position across said groove, and a stop pin for said detent means.

5. A slide for a separable fastener comprising a pair of interleaved body members having parallel abutting side walls, said walls having complementary grooves and ribs for aligning and frictionally holding the body members in interleaved position, and manually operable means for positively locking the interleaved body members.

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