Oct. 27, 1942. P. S. KELLUM 2,300,369

SEPARABLE SLIDE FASTENER

Filed Aug. 12, 1941 2 Sheets-Sheet 1

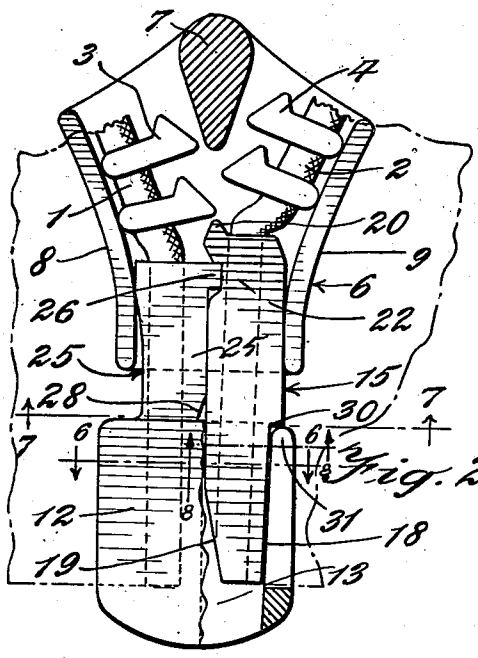


Fig. 2.

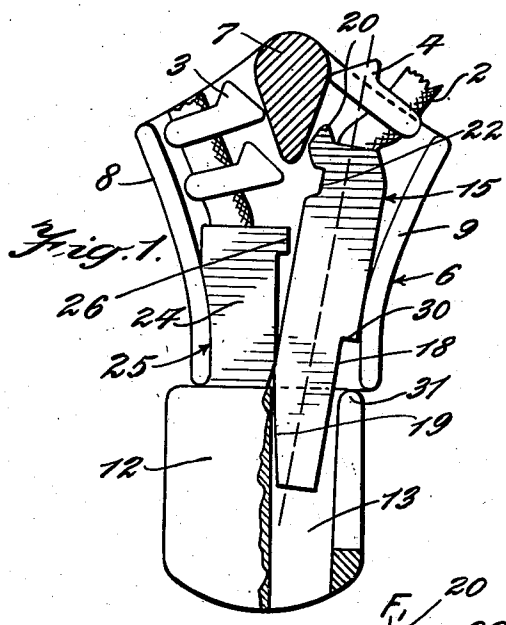


Fig. 1.

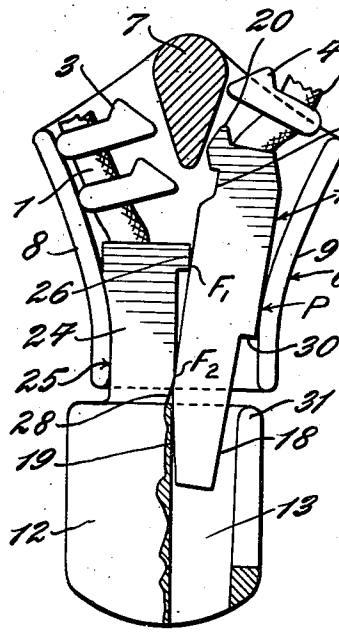


Fig. 3.

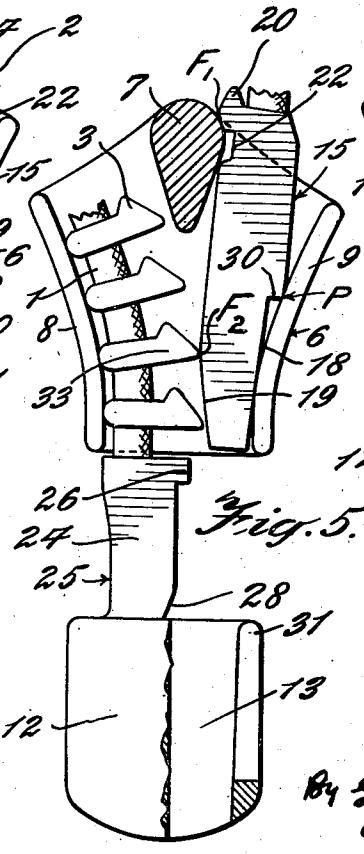


Fig. 5.

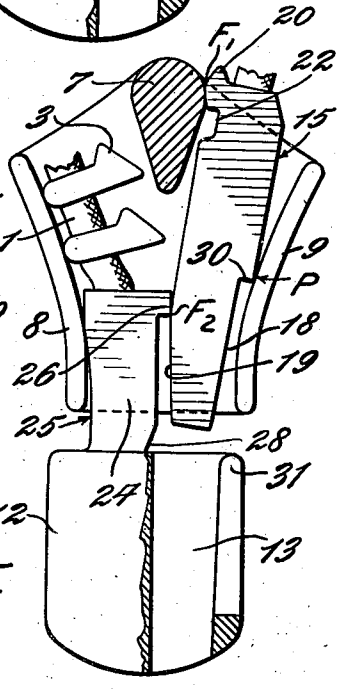


Fig. 4.

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Oct. 27, 1942. P. S. KELLUM 2,300,369

SEPARABLE SLIDE FASTENER

Filed Aug. 12, 1941 2 Sheets-Sheet 2

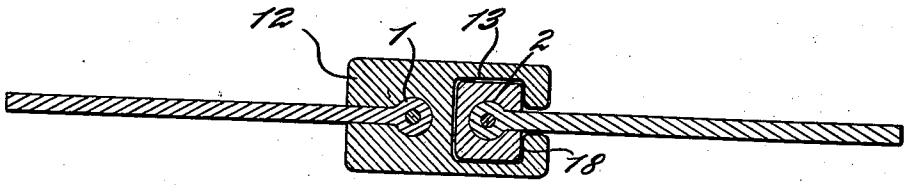


Fig. 6.

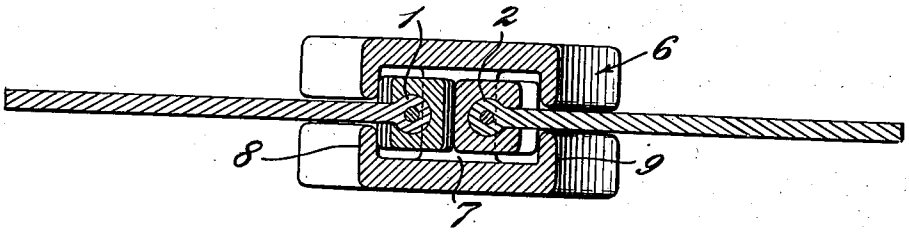


Fig. 7.

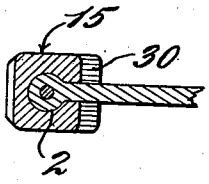


Fig. 8.

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UNITED STATES PATENT OFFICE

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SEPARABLE SLIDE FASTENER

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Application August 12, 1941, Serial No. 406,446

3 Claims. (Cl. 24—205)

This invention relates to separable slide fasteners of the type in which a separable end connection is provided. The purpose of the separable end connection is to enable the stringers carrying the fastener elements to be completely separated. Such devices are commonly employed where complete separation of the parts of a garment are required as, for example, in the case of coats, jackets and the like. With such devices mismeshing of the fastener elements occurs unless the elements are properly realigned after separation.

The principal object of the present invention is to provide improved structure to prevent mismeshing.

The principles of the invention will be defined in the claims ultimately appended hereto and will be illustrated by the following description taken in conjunction with the drawings, in which:

Fig. 1 shows the slide in engagement with the box member for entry of the pin into the socket of said box member;

Fig. 2 shows the pin in locking engagement with the box member and the slide moved a short distance away from the box;

Fig. 3 shows the pin out of engagement with the box and pivoted in the slide;

Fig. 4 shows another view where the pin is out of engagement with the box and pivoted in the slide;

Fig. 5 shows still another view where the pin is out of engagement with the box and pivoted in the slide;

Figs. 3 to 5 inclusive show the slide in different positions in relation to the box;

Fig. 6 is a section on the line 6—6 of Fig. 2;

Fig. 7 is a section on the line 7—7 of Fig. 2;

Fig. 8 is a transverse section through the pin on one of the tapes, on the line 8—8 of Fig. 2.

The invention employs certain conventional elements including a pair of stringers or tapes having beaded edges 1, 2, carrying fastener elements or scoops 3, 4. The slide 6 may have the conventional structure shown and it therefore will suffice to state that it has a constricted throat portion and diverging channels defined by top and bottom wings and a pair of flared side walls 8, 9, the wings being connected by a web or frog 7. Each of the side walls 8, 9, comprises two parts separated by a slot to permit the movement of the stringers or tapes therethrough. The separable end connection includes a stop member or box 12 which serves to limit movement of the slide in one direction and is provided with a socket 13.

In accordance with the invention, a pin 15 is connected to one of the stringers. The pin has a pivot portion P which pivots in contact with one of the walls of the slide, as will be subsequently more fully explained. In accordance with the invention the pin 15 also has a tapered portion which may be formed as shown, by providing a recess 18 on one side and a bevelled portion 19 on the other side, and at the end opposite the tapered portion the pin is provided with a projection 20 which preferably is in the form of a fastening element or scoop, rigidly and preferably integrally joined to the pin 15. In accordance with the invention a recess 22 is provided adjacent said projection 20 to receive a complementary projection 26 on the stud 24. It will thus be seen that the pivot portion P of the pin is intermediate the ends thereof and is adapted to pivotally and slidably engage the side wall 9 of the slide, which wall is preferably curved or arcuate, as shown.

In accordance with the invention the stop member 12 carries a stud 24 to which the beaded edge 1 of the stringer is connected. The stud 24 is provided on one side with a recess 25 complementary to (and adapted to receive) a portion of the side wall 8 of the slide 6, and on the other side of the stud 24 there is a lateral projection 26 adapted to engage the recess 22 in the pin 15. The stud 24 preferably has a bevelled portion 28 adjacent the socket 13 in the stop.

Fig. 1 shows the slide in place at the box or stop 12 for proper entry of the pin 15 to engage the socket 13. With the parts in this position it will be noted that the wall 8 of the slide engages the recess 25 in the stud 24 thereby causing the slide to be displaced to the right as shown, thus increasing the clearance between the stud 24 and the wall 9 of the slide and facilitating proper entry of the pin 15 into the socket 13. Owing to this clearance and the bevelled portion 19 of the pin 15 and the recess 18 on the pin adjacent the pivot portion P of the pin, the latter slidably pivots in contact with the wall 9 of the slide and makes proper engagement with the socket 13, the shoulder 30 of the pin engaging the upper edge 31 of the wall of the socket 13.

Fig. 2 shows the pin 15 in proper engagement with the stop 12 and socket 13. With the parts in this position no mismeshing can occur. Fig. 2 also shows the slide drawn part way up and just starting to cause meshing of the interlocking members or scoops 4. It will be noted that the

wall 8 of the slide rides over the cam surface of the recess 25 and that the slide thereby moves to the left. The width of the throat or neck of the slide is equal to or very slightly greater than the total maximum width of the stud 24 and pin 15 when properly engaged as shown in Fig. 2, so that the slide properly clears the stud and pin and acts to cause proper meshing of the fastener elements 4 one of which 20, as already stated, is preferably integrally joined to the pin.

Figs. 3, 4 and 5 show the slide in various positions when the pin has not properly engaged the socket and illustrate typical positions where mismeshing may occur which, however, is prevented in accordance with the present invention.

Fig. 3 shows the slide draw slightly away from the box or stop 12 but still in contact with the stud 24. In this case the clearance between the stud 24 and the wall 9 of the slide is not sufficient to permit proper entry of the pin 15 into the socket 13. If an attempt is made to move the slide upwardly the pin contacts the projection 26 on the stud at the point F_1 and a leverage action then occurs, the pin acting as a lever or pivot about the pivot point P, thus causing the pin to contact the stud not only at the point F_1 but also at the point F_2 so that upward movement of the slide with the pin stationary or downward movement of the pin with the slide stationary is prevented. The slide can be moved downwardly to the position shown in Fig. 1 for proper entry of the pin into the socket.

Fig. 4 shows the slide moved away from the stop a further distance but still in contact with the stud. If an attempt is made to move the slide upwardly with the pin stationary and in the position shown, or to move the pin downwardly with the slide stationary in the position shown, the action to prevent mismeshing is as follows: The pin contacts the slide wall 9 at the point P, then the projection 26 at point F_2 and the force at this point acting on the pin functioning as a lever causes the pin to contact the frog 7 at point F_1. The slide and pin thus become releasably locked in the position shown since the forces applied at F_1 and F_2 are in equilibrium. The slide can however be moved downwardly to the position shown in Fig. 1 to permit proper engagement of the pin with the socket 13.

Fig. 5 shows the slide still further removed from the stop and out of contact with the stud. If an attempt is made to move the slide upwardly with the pin stationary and in the position shown or to move the pin downwardly with the slide stationary and in the position shown, the action to prevent mismeshing is as follows: Upon entry of the pin into the channel of the slide as shown contact is made with one of the links or scoops 33 at point F_2 and with the slide wall 9 at point P. The force applied at F_2 then causes the pin to act pivotally about the portion P whereby the projection or link 20 contacts the frog 7 at point F_1. The pin and slide are thus releasably locked in the position shown and no mismeshing can occur. The slide can however be moved downwardly to the position shown in Fig. 1, for proper entry of the pin into the socket 13.

In all the cases specifically illustrated in Figs. 3 to 5, inclusive, it will be noted that movement of the slide upwardly with the pin stationary or movement of the pin downwardly with the slide stationary cannot occur because the longitudinal axis of the pin is angularly displaced in relation to an axis passing through the center of the throat and the center of the frog. The result of this angular displacement is to give the pin and stud (see Figs. 3 and 4) or the pin and fastener elements (see Fig. 5) an effective maximum width greater than the width of the throat portion of the slide and thus prevent mismeshing by preventing movement of the kind described.

The invention provides means to pivot the pin within the slide to cause said angular displacement of the longitudinal axis of the pin. This means includes the pivot portion P of the pin and the tapered portion thereof. It may also include the stud 24 with its lateral projection 26 as shown in Figs. 3 and 4. It may also include the projection or integral link 20 functioning as shown in Figs. 4 and 5. It may also include the projection or link 20 and a fastener element 33, functioning as shown in Fig. 5.

I claim:

1. In a device of the class described having a pair of stringers carrying fastener elements, a slide having a constricted throat portion and diverging channels defined by top and bottom wings and a pair of flared side walls connected by a frog, each side wall comprising two parts separated by a slot to permit the movement of the stringers, said device also having a separable end connection for said stringers including a stop member to limit movement of the slide in one direction and a socket therein; the improvement providing means to prevent mismeshing of said fastener elements, said means comprising a pin joined to one of said stringers and adapted to pass through one of the channels of the slide, said pin being tapered at one end to facilitate engagement of said pin with the socket, said pin having a pivot portion intermediate the ends thereof adapted to engage one side wall of the slide and a fastener element rigidly joined to said pin at the end thereof opposite the tapered portion and on that side of the pin opposite the pivot portion; and a stud carried by the stop member and adjacent the socket thereof and attached to the other of said stringers, said stud having a recess on one side thereof adapted to receive a portion of the other side wall of the slide and a lateral projection on the other side of said stud.

2. In a device of the class described having a pair of stringers carrying fastener elements, a slide having a constricted throat portion and diverging channels defined by top and bottom wings and a pair of flared side walls connected by a frog, each side wall comprising two parts separated by a slot to permit the movement of the stringers, said device also having a separable end connection for said stringers including a stop member to limit movement of the slide in one direction and a socket therein; the improvement providing means to prevent mismeshing of said fastener elements, said means comprising a pin joined to one of said stringers and adapted to pass through one of the channels of the slide, said pin having a tapered portion at one end thereof and an enlarged pivot portion intermediate between said tapered portion and the other end of the pin to prevent relative movement of the pin within the slide when the latter is not in contact with said stop.

3. In a device of the class described having a pair of stringers carrying fastener elements, a slide having a constricted throat portion and diverging channels defined by top and bottom wings and a pair of flared side walls connected by a frog, each side wall comprising two parts

separated by a slot to permit the movement of the stringers, said device also having a separable end connection for said stringers including a stop member to limit movement of the slide in one direction and a socket therein; the improvement comprising a pin joined to one of said stringers and adapted to pass through one of the channels of the slide and to slidably pivot therein; a stud carried by said stop member and attached to the other of said stringers, said stud having a recess therein which in operation of the device receives a portion of one wall of said slide and thereby effects a lateral shifting of the slide to facilitate said pivoting of the pin and engagement thereof with the socket.

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