March 25, 1952 S. J. LACKRITZ 2,590,107

HOOKLESS FASTENER DEVICE

Filed Oct. 20, 1948 2 SHEETS—SHEET 1

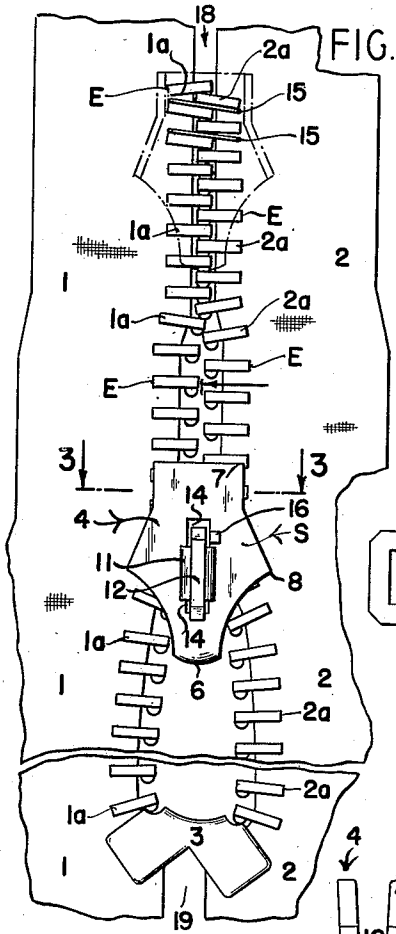


FIG. 1.

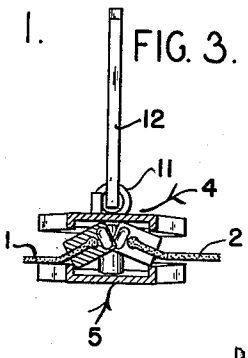


FIG. 3.

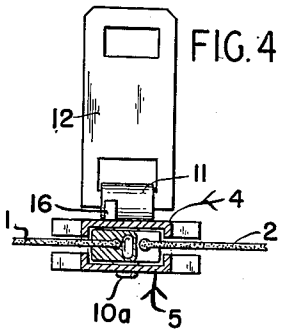


FIG. 4.

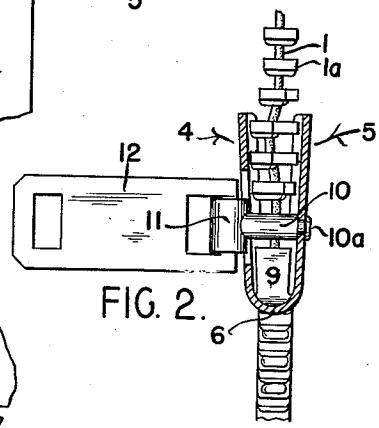


FIG. 2.

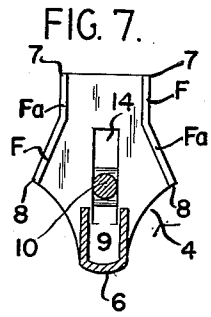


FIG. 7.

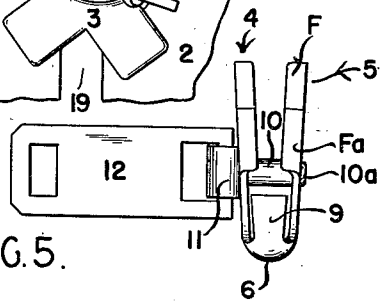


FIG. 5.

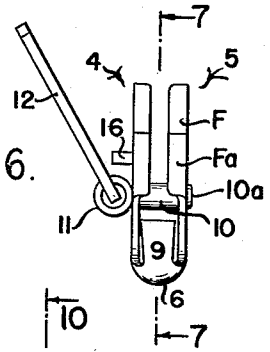


FIG. 6.

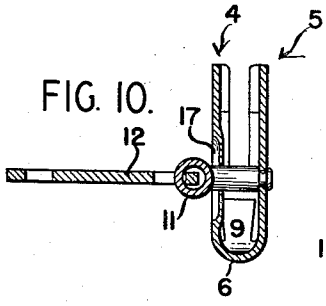


FIG. 10.

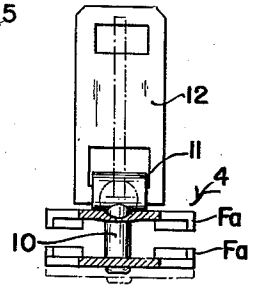


FIG. 9.

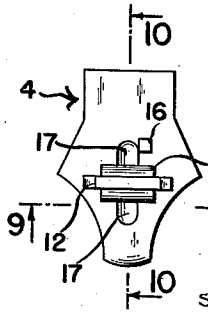


FIG. 8.

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FIG. 11.

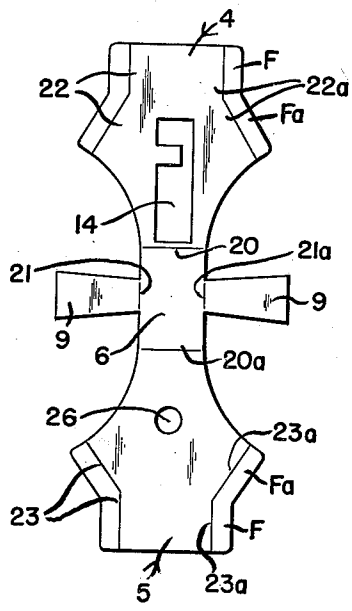


FIG. 12.

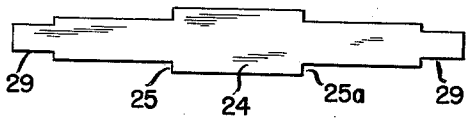
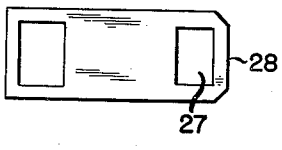


FIG. 13.



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2,590,107

HOOKLESS FASTENER DEVICE

Samuel J. Lackritz, New York, N. Y., assignor to Kee Zipper Corporation, New York, N. Y., a corporation of New York

Application October 20, 1948, Serial No. 55,480

3 Claims. (Cl. 24—205.15)

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My invention relates to a new and improved zipper or hookless fastener device. The invention also includes a new and improved slide for operating the elements of such device.

This application is a continuation-in-part of my application Ser. No. 668,678, filed May 10, 1946.

The objects and advantages of my invention are stated in the annexed description and drawings, which disclose preferred embodiments thereof.

Fig. 1 is a vertical elevation of the improved device.

Figs. 2 and 3 are respectively sectional views on the line 2 and the line 3—3 of Fig. 1. In these figures, the locking member of the slide is shown in its longitudinal release or non-operating position.

Fig. 4 is similar to Fig. 3, showing said locking member in its lateral locking or operating position.

Fig. 5 is a side elevation of the improved slide of Fig. 1, with the locking member in the longitudinal release or non-operating position.

Fig. 6 is similar to Fig. 5, showing the locking member in lateral locking or operating position.

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

Fig. 8 is a top plan view of a modified slide, showing the locking member in lateral locking or operating position.

Figs. 9 and 10 are respectively sections on the lines 9—9 and 10—10 of Fig. 8.

Fig. 11 is a plan view of the blank which is used for making the body of the slide.

Fig. 12 is a plan view of the blank which is used to make the control pin.

Fig. 13 is a plan view of the blank which is used for making the finger piece.

The invention includes the improved slide as a separate element.

The drawings show a pair of conventional longitudinal stringers 1 and 2, which may be made of flexible fabric or any material. The stringers 1 and 2 may be connected to or they may be replaced by the walls of the opening of a garment. In such case, the end 19 of the device may be the upper end or the lower end of the opening of the garment. When the slide S is moved longitudinally in the direction from end 19 towards end 18, the elements 1*a* and 2*a* of the hookless fastener are disengaged or unlocked. When slide S is moved in the direction from end 18 towards end 19, and said slide S is operating in the usual manner, the releasable hookless fastener elements 1*a* and 2*a* are interengaged or interlocked.

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The structure of the hookless fastener elements 1*a* and 2*a* is not disclosed in detail, because said elements 1*a* and 2*a* may be of any slide-controlled type. These hookless fastener elements 1*a* and 2*a* have base ends E, which are suitably fixed to the stringers 1 and 2.

For convenience, the end 18 is designated as the rear end of the device, and the end 19 is designated as the front end thereof. Fig. 1 shows that the front ends of the stringers 1 and 2 are connected permanently by a staple 3, which may be omitted. Thus, if the hookless fastener device is applied to the vertical fly of a pair of trousers, the end 18 will be the bottom end or rear end of the hookless fastener device, and the staple 3 will be omitted.

The slide S has the usual opposed longitudinal outer and inner walls 4 and 5, between which the elements 1*a* and 2*a* pass when slide S is moved longitudinally relative to elements 1*a* and 2*a*. Said walls 4 and 5 are integral with a transverse flexible and resilient front web 6.

Between its points 7 and 8, each wall 4 and 5 is provided with a pair of longitudinal and parallel guide flanges F, and a pair of throat flanges F*a* which converge rearwardly.

These throat flanges F*a* provide a rearwardly tapered throat for moving the elements 1*a* and 2*a* laterally towards each other to interengage such elements 1*a* and 2*a*, when the slide S is normally operating, and said slide S is moved longitudinally towards end 19 in its forward locking movement. When thus interengaged, the releasable elements 1*a* and 2*a* are lateral and parallel to each other, and the parallel rear flanges F slidably abut the base ends E of the releasable elements 1*a* and 2*a*, with an optional slight clearance to enable easy movement of slide S.

The slide S is made from a single blank or piece of metal or other material which provides a bendable and resilient transverse connecting web 6 for the longitudinal walls 4 and 5. This blank is bent into final shape by suitable dies and tools.

The transverse connecting web 6 is integral with longitudinally directed and transverse tongues 9, which are spaced transversely from the front end-portions of walls 4 and 5. These tongues 9 are also spaced longitudinally from flanges F*a*. These tongues 9 limit the transverse movement of walls 4 and 5 towards each other, when said walls 4 and 5 are pressed towards each other.

As shown in Fig. 6, the tongues 9 remain spaced from walls 4 and 5 when said walls 4 and 5 are in operating position. If excessive transverse pres-

sure is applied to walls 4 and 5, said tongues 9 prevent the web 6 from being permanently distorted, because the walls 4 and 5 are then moved to contact the rigid tongues 9.

A transverse cylindrical control pin 10 is turnably connected to inner longitudinal wall 5 by an enlarged rivet-like head 10*a*, so that pin 10 can turn around its longitudinal axis, which is transverse relative to the longitudinal walls 4 and 5. As shown in Fig. 2, the pin 10 has a reduced shank which fits closely and turnably in a bore of wall 5.

In the first embodiment, the outer longitudinal or cam wall 4 is provided with a longitudinal slot 14, through which pin 10 extends. Outwardly of wall 4, pin 10 is fixed to a locking member 11. For convenience, but without limitation, this member 11 has a hollow cylindrical shape. A finger piece 12 is turnably connected to locking member 11.

The resilience of transverse connecting web 6 biases the walls 4 and 5 to move to the respective positions shown in Fig. 5, in which said walls 4 and 5 are inclined to each other, so that the flanges F*a* will then not cause the interlocking of the disengaged elements 1*a* and 2*a*, when slide S is moved forwardly in the locking direction towards end 19.

Ordinarily, a jam occurs because a thread or a piece of cloth of the garment becomes caught between the hookless fasteners. In such case, when the slide S is moved to disengage the hookless fastener elements 1*a* and 2*a*, the walls 4 and 5 catch upon the thread or piece of cloth, if said walls 4 and 5 are in their normal position of Fig. 6.

If the walls 4 and 5 are permitted to move to their inclined positions of Fig. 5, said walls 4 and 5 clear the obstruction, so that the cylindrical shank of pin 10 can disengage the hookless fasteners 1*a* and 2*a*. The positions of walls 4 and 5 in which said walls can pass over such an obstruction is designated as the clearing positions of walls 4 and 5.

When the locking member 11 is longitudinally disposed in its release position as shown in Figs. 1, 2, 3, and 5, said locking member is longitudinaly aligned with the longitudinal slot or opening 14 of wall 4. The resilient web 6 is then free to move the walls 4 and 5 to their respective positions shown in Fig. 5. When the walls 4 and 5 are in their non-operating positions shown in Fig. 5, the locking member 11 is partially located in slot 14.

When locking member 11 is in its said longitudinal release position, its ends are intermediate the front and rear ends of slot 14, as shown in Fig. 1. The longitudinal edges of slot 14 may then abut the locking member 11 or be spaced from locking member 11.

When locking member 11 is in the lateral locking or operating position of Figs. 4 and 6, the slide S functions in the normal manner to interlock the tongues 1*a* and 2*a*, when slide S is moved in the locking direction towards end 19. Said locking member 11 then abuts wall 4.

At the rear end 18 of the device, the stringers are fixed to each other by one or more staples 15, in order to maintain two or more adjacent pairs of elements 1*a* and 2*a* permanently interlocked and inclined to each other instead of being parallel and releasable from each other, so that the lateral distance between the base ends E of said tongues 1*a* and 2*a* is less at the rear end 18 of the device, than in the elements

which are releasable and which are interlocked in parallel lateral relation.

The wall 4 is provided with a transverse integral stop-lug 16 adjacent an edge of the slot or opening 14.

When the locking member 11 is in its longitudinal release position of Fig. 1, the base of finger-piece 12 abuts this stop-lug 16. As viewed in Fig. 1, the locking member 11 must be turned counterclockwise to move it to its transverse locking position, and it must be turned clockwise to turn it from transverse locking position to longitudinal release position.

When the slide S is moved rearwardly towards end 18, the cylindrical control pin 10 tilts the releasable and engaged elements 1*a* and 2*a* away from each other at their interengaging ends, so as to disengage said releasable elements 1*a* and 2*a*.

It is well-known that these hookless fastener devices frequently jam, often because the releasable and interengaged elements catch on the fabric of the garment or on the fabric of an undergarment. Such jam usually occurs between the ends 18 and 19, and between the slide S and rear end 18.

In such case, the locking member 11 is turned to its longitudinal release position, and the slide S is then moved towards front end 19. Since the throat-flanges F*a* now sufficiently and operatively clear the base ends E of the elements 1*a* and 2*a* which are located forwardly of the parallel flanges F, and since the flanges F may now operatively clear the base ends E of said elements 1*a* and 2*a*, the slide S can be moved in its normal locking movement without interengaging said forwardly located elements 1*a* and 2*a*. The jammed or caught releasable elements 1*a* and 2*a* can then be easily separated.

Preferably, while the locking member 11 is held in its longitudinal release position, the slide S is pushed to the inclined elements 1*a* and 2*a* at rear end 18. The longitudinal zone of said inclined elements 1*a* and 2*a* may be equal to or less than or even greater than the longitudinal zone of the parallel guide flanges F.

The lateral space between the base ends E is of reduced width at and adjacent rear end 18, thus providing ample clearance between said base ends E and the parallel guide flanges F.

When thus located at rear end 18, the locking member 11 may easily be turned back to its lateral locking position, thus forcing the flanges F and F*a* to their positions of Fig. 6, without danger of bending the walls 4 and 5.

Due to its cylindrical shape, the locking member 11 acts as a cam to force the walls 4 and 5 transversely towards each other, when locking member 11 is turned together with pin 10 from the longitudinal release position of locking member 11 to its lateral locking position.

In the embodiment of Figs. 8–10, the slot 14 of wall 4 is replaced by a recess 17 which is imperforate save where the pin 10 extends turnably through a bore of the wall of said recess 17. The pin 10 fits substantially closely in said bore, thus providing an additional bearing for said pin 10 and preventing it from being bent out of transverse position. When locking member 11 of the second embodiment is turned to its longitudinal release position, a part of said locking member 11 interfits with recess 17.

The second embodiment has the same operation as the first embodiment, but it is stronger because both walls 4 and 5 are substantially

imperforate, and because the wide part of pin 11 fits fairly closely in the perforation of recess 17, with sufficient clearance to permit the walls 4 and 5 to assume the respective positions of Figs. 5 and 6.

In the second embodiment, when locking member 11 is in its longitudinal release position, the longitudinal edges of recess 17 may abut longitudinal surface elements of locking member 11, or the proximate part of locking member 11 may interfit with recess 17. Due to the flanges F and F*a*, the walls 4 and 5 are rigid or substantially rigid.

In order to make the body of the slide from the blank shown in Fig. 11, the body is bent between the lateral lines 20 and 20*a*, to provide the longitudinal walls 4 and 5. The part of the blank between the lines 20 and 20*a* provides the web 6. The blank is bent along the longitudinal lines 21 and 21*a* to provide the tongues 9. The lug 16 is bent transversely.

The heads of the blank are bent along the lines 22—22*a* and 23—23*a* to provide the flanges F and F*a*.

The control pin 10 is made from the blank of Fig. 12 by bending it at the lines 25—25*a* and shaping its intermediate part 24 to provide the locking member 11 and shaping its shank into cylindrical form. The locking member 11 is thus integral with the shank of control pin 10. This finished cylindrical control pin 10 is longitudinally split. Its reduced end parts 29 fit closely in the bore 26 of wall 5, and the head 10*a* is formed by upsetting said end parts 25 externally to wall 5. The integral locking member 11 of the split control pin 10 is intermeshed with the finger piece 12 at the opening 27, so that said locking member 11 embraces the continuous end bar 28 of the finger piece 12. This provides a very secure and easily assembled connection between locking member 11 and finger piece 12.

The cylindrical or substantially cylindrical cam-operating locking member 11 is of greater width than slot 14 or recess 17. Hence, said locking member 11 may act as a stop to limit the transverse movement of walls 4 and 5 away from each other under the spring action of resilient web 6.

For convenience, the end of slide S at which web 6 is located is designated as the front end of said slide.

In each embodiment, the locking member is located at least partially in wall 4 when said locking member is in release position, thus permitting the web 6 to hold the throat flanges F*a* in non-operating positions.

For convenience, the wall 5 is designated as the bearing wall, because the shank of pin 10 is pivotally connected to said wall 5.

For convenience, the wall 4 is designated as the cam wall, because its slotted or recessed reentrant portion is shaped to cooperate with the locking member 11 to produce the desired cam action when locking member 11 is turned to lateral locking position. The locking member 11 is thus located at least partially in the cam wall 4 when locking member 11 is in its release position. By thus utilizing one or both edges of an entrant portion of cam wall 4, namely, a slotted or recessed part thereof, I eliminate the necessity of providing said cam wall 4 with an outwardly projecting lug or lugs for securing the desired cam action.

Since the blank shown in Fig. 11 is made of thin and resilient metal or other suitable material, in order to provide a resilient arched web 6, this slotted or recessed construction of wall 4 is highly desirable, because an outwardly directed lug would be easily distorted.

I have described preferred embodiments of my invention, but numerous changes and omissions and additions can be made without departing from its scope.

I claim:

1. A slide for longitudinally disposed hookless fasteners, said slide having longitudinal top and bottom walls, said walls having front and rear ends, said rear ends being integral with a resilient rear transverse yoke which biases said walls transversely away from each other to selected separated positions, said walls having flange means which are operative and located to slidably engage and interlock the hookless fasteners when said slide is moved longitudinally rearwardly relative to said hookless fasteners, a transverse pin turnably connected to the bottom wall of said slide and extending through an opening of said top wall and being turnable about its axis relative to both walls, said pin having an enlarged head, the bottom portion of said head being cam-shaped, said head abutting the upper face of said top wall in a first turned position of said pin to force said longitudinal walls toward each other from said selected separated positions to selected proximate positions, said cam portion of said head being positioned within said top wall hole in a second turned position of said pin to release said walls to permit them to move to said selected separated positions, said walls being closer to each other in said selected proximate positions than in said selected separated positions, said cam portion of said head and said top wall hole being cooperatively shaped whereby said pin may be moved from its second turned position to its first turned position by exerting a force of rotation on said head about the axis of said pin, said pin being located and operative to separate said hookless fasteners when said slide is moved longitudinally forwardly.

2. A slide for longitudinally disposed hookless fasteners, said slide having longitudinal top and bottom walls, said walls having front and rear ends, said rear ends being integral with a resilient rear transverse yoke which biases said walls transversely away from each other to selected separated positions, said walls having flange means which are operative and located to slidably engage and interlock the hookless fasteners when said slide is moved longitudinally rearwardly relative to said hookless fasteners, a transverse pin turnably connected to the bottom wall of said slide and extending through an opening of said top wall and being turnable about its axis relative to both walls, said pin having an enlarged head, said head abutting the upper face of said top wall in a first turned position of said pin to force said longitudinal walls toward each other from said selected separated positions to selected proximate positions, said head being cylindrical in shape with its axis transverse to the axis of said pin and with said axis of said pin extending through the center of said head, the bottom portion of said head being positioned within said top wall hole in a second turned position of said pin to release said walls to permit them to move to said selected separated positions, said walls being closer to each other in said selected proximate positions than in said selected separated positions, said bottom portion of said head being removable from said top wall hole by

exerting a force of rotation on said head about the axis of said pin, said pin being located and operative to separate said hookless fasteners when said slide is moved longitudinally forwardly.

3. A slide for longitudinally disposed hookless fasteners, said slide having longitudinal top and bottom walls, said walls having front and rear ends, said rear ends being integral with a resilient rear transverse yoke which biases said walls transversely away from each other to selected separated positions, said walls having flange means which are operative and located to slidably engage and interlock the hookless fasteners when said slide is moved longitudinally rearwardly relative to said hookless fasteners, a transverse pin turnably connected to the bottom wall of said slide and extending through an opening of said top wall and being turnable about its axis relative to both walls, said pin having an enlarged head, said head abutting the upper face of said top wall in a first turned position of said pin to force said longitudinal walls toward each other from said selected separated positions to selected proximate positions, said head being cylindrical in shape with its axis transverse to the axis of said pin and with said axis of said pin extending through the center of said head, said top wall having longitudinal grooves in the top surface thereof respectively located forwardly and rearwardly of and communicating with said top wall opening, the bottom portions of said head being

respectively positioned within said respective grooves in a second turned position of said pin to release said walls to permit them to move to said selected separated positions, said walls being closer to each other in said selected proximate positions than in said selected separated positions, said bottom portions of said head being removable from said grooves by exerting a force of rotation on said head about the axis of said pin, said pin being located and operative to separate said hookless fasteners when said slide is moved longitudinally forwardly.

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