Nov. 28, 1939. D. MARINSKY 2,181,142

THERMOPLASTIC SLIDER

Filed March 6, 1937 2 Sheets-Sheet 1

Fig. 1.

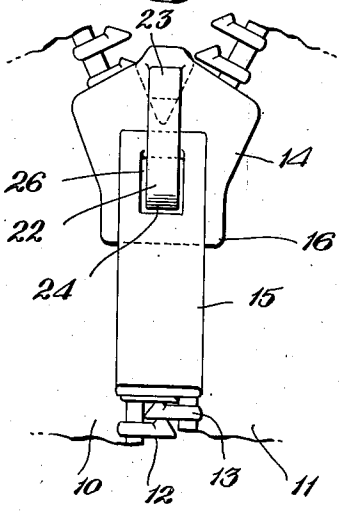


Fig. 2.

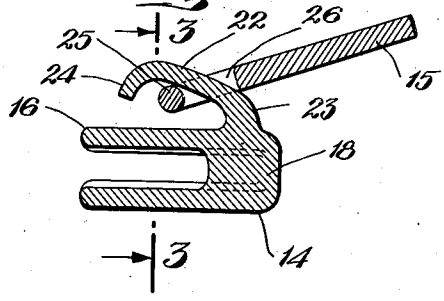


Fig. 3

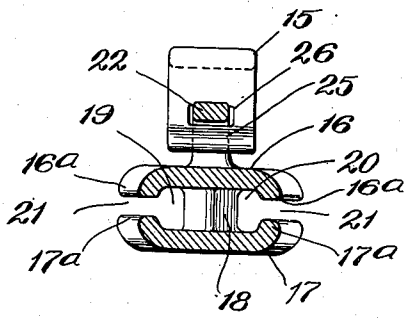


Fig. 4.

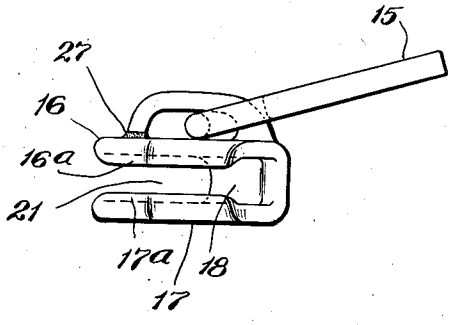


Fig. 5.

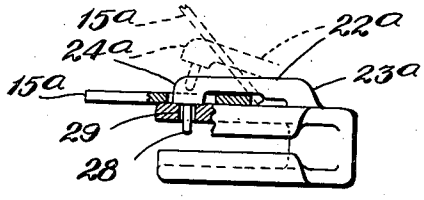
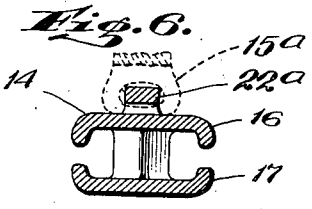


Fig. 6.



INVENTOR
DAVIS MARINSKY
BY
Howard C. Thompson
ATTORNEY

Nov. 28, 1939. D. MARINSKY 2,181,142

THERMOPLASTIC SLIDER

Filed March 6, 1937 2 Sheets-Sheet 2

Fig. 7.

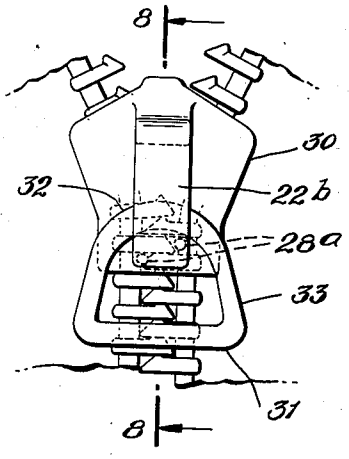


Fig. 8.

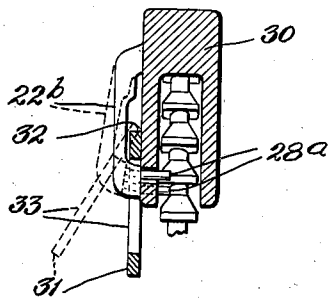


Fig. 10.

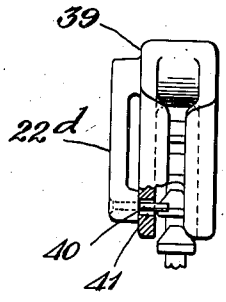


Fig. 9.

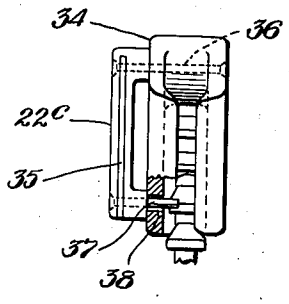


Fig. 14.

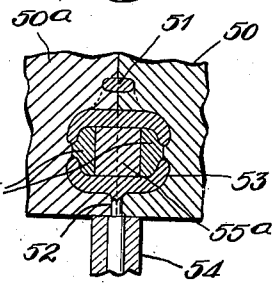


Fig. 13.

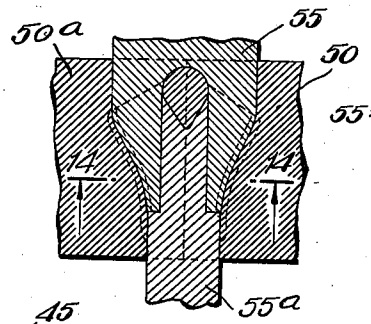


Fig. 11.

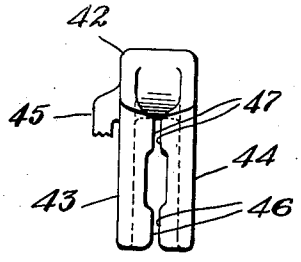
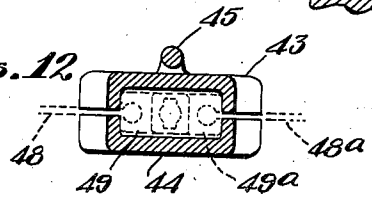


Fig. 12.



INVENTOR
DAVIS MARINSKY
BY
ATTORNEY

Patented Nov. 28, 1939

2,181,142

UNITED STATES PATENT OFFICE

2,181,142

THERMOPLASTIC SLIDER

Davis Marinsky, Bronx, N. Y., assignor to Whitehall Patents Corporation, Bronx, N. Y., a corporation of New York

Application March 6, 1937, Serial No. 129,319

7 Claims. (Cl. 24—205)

This invention relates to sliders on what are known as separable fasteners employing stringers having interlocking links whereby the stringers may be coupled and uncoupled by longitudinal movement of the slider on said stringers or the coupling links thereof, and the object of the invention is to provide a slider adapted primarily for use on separable fasteners employing plastic or thermoplastic coupling links, thus providing a slider formed from plastic or thermoplastic material and particularly to the manner in which the slider is originally formed to facilitate detachment of the finger piece or pull; a further object being to provide a slider formed from a resilient or springy material, such for example as cellulose acetate, whereby the pull supporting part of the slider may be provided with a locking element and be movable relatively to one side wall of the slider; a still further object being to provide a pull having a rounded part engaging the supporting or locking elements of the slider to control the movement of said element into locked and unlocked position; and with these and other objects in view the invention consists in a slider made according to the method more fully hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a plan view of a separable fastener showing one of my improved sliders thereon.

Fig. 2 is a longitudinal sectional view through a slider as formed from the dies and prior to the completion of the formation thereof.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a side view of the device shown in Fig. 2 completely formed.

Fig. 5 is a view similar to Fig. 4 showing a modification.

Fig. 6 is a section on the line 6—6 of Fig. 5, showing parts in different positions.

Fig. 7 is a view similar to Fig. 1 showing a modification.

Fig. 8 is a section on the line 8—8 of Fig. 7.

Fig. 9 is a side and sectional view of another form of slider which I employ.

Fig. 10 is a view similar to Fig. 9 of another form of construction.

Fig. 11 is a side view of a slider with part of the construction broken away and showing another form of construction.

Fig. 12 is a cross sectional view through the slider shown in Fig. 11 illustrating its arrangement on the stringers of a separable fastener,

Fig. 13 is a sectional view diagrammatically illustrating the type of cores employed in the dies in forming the slider; and,

Fig. 14 is a section substantially on the line 14—14 of Fig. 13.

In Fig. 1 of the drawings I have shown for the purpose of illustrating the use of my invention parts of two separable fastener stringers 10 and 11, each having coupling links 12 and 13 attached to one enlarged or beaded edge thereof, the links being preferably made of plastic or thermoplastic material, such for example as cellulose acetate, and at 14, I have shown a slider also preferably made of plastic material, such for example as cellulose acetate which is also true of the finger-piece or pull 15, which is coupled with the slider to facilitate the movement thereof, longitudinally of the stringers, to couple and uncouple the same as in other devices of this kind.

The slider, in the construction shown in Figs. 1 to 4 inclusive, consists of upper and lower side plates or walls 16 and 17 which are flared at one end and contracted at the other end, the walls being joined centrally of the flared end in a substantially V-shaped connecting web 18 which divides said end of the slider into independent channels 19 and 20, note Fig. 3. These channels converge at the contracted end of the slider forwardly of the web 18 as is the common practice in other devices of this kind. The side edges of the walls 16 and 17 are provided with inturned flanges 16a and 17a between which are openings 21 to receive the tapes of the stringers 10 and 11, whereas said flanges engage the links to move the same toward each other in the operation of interlocking the links of opposed stringers.

The slider 14, as will appear, is formed from a single unitary die-cast body and in casting this body, an elongated lug 22 is formed integral with the top wall 16 at the flared end of the slider or, in other words, above the web 18, and this lug extends forwardly and upwardly joining the wall 18 in a curved portion 23 and terminating at its free end in a downwardly or inwardly curved end 24, which is normally arranged above the upper surface of the wall 16, as seen in Fig. 2 of the drawings. That is to say, in casting or molding the slider portion the same is shaped, as shown in Fig. 2, it being understood that the cross sectional form of the lug 22 as well as the length thereof may be varied to suit the desires of the manufacturers, or to meet the requirements of a person.

By originally forming the slider in the manner shown in Fig. 2 of the drawings, the operation of attaching the finger piece or pull 15 therewith is facilitated. When said pull is composed of such material as cellulose acetate, it is desirable to provide a closed end wall or crosshead 25 thereon adjacent the aperture 26 in which the

lug 22 is disposed in order to give the desired strength and rigidity to the pull. It will thus be seen that the closed end of the pull may be passed over the lug 22, as shown in Fig. 2 of the drawings, and when so attached, the lug 22 is moved into engagement with the upper surface of the wall 16 and glued or cemented thereto as indicated at 27. By using such material as acetone, a substantial weld is provided at the point 27 which will securely retain the member or lug 22 in position. In the above described operation, the curved end 23 of the lug may be heated sufficiently to facilitate the movement of the member 22 from the position shown in Fig. 2 to that shown in Fig. 4. However, in some cases, this heating operation will not be essential as the member 22 may be sprung into this position.

The slider shown in Fig. 5 of the drawings is substantially of the same construction as that shown in the other figures, with the exception that the lug 22*a* has a downwardly projecting lug, pin or finger 28 on the downwardly turned or extended end 24*a* thereof, which is adapted to pass through a relatively small opening 29 in the top wall of the slider to normally engage the links, or at least one of the links of a separable fastener, such for example, as the links 12, 13, in retaining the slider against longitudinal movement on the stringers. With this construction, the lug 22*a* will be formed in the same manner as forming the lug 22 in Fig. 2 of the drawings. The finger piece or pull 15*a* will be provided with a crosshead 25*a*, which will operate to raise the lug 22*a* now in the form of a spring arm to move the pin or finger 28 into inoperative position as the finger piece or pull is raised from the full line position shown in Fig. 5 to the dotted line position in said figure. It will appear from a consideration of Fig. 6 of the drawings that the crosshead 25*a* will act in the manner of a cam between the top wall of the slider and the spring lug 22*a* to force the latter outwardly.

In forming the arm 22*a*, the curved end portion 23*a* thereof is heated in moving the same from an elevated position similar to that shown in Fig. 2 to the full line position shown in Fig. 5 and held in the full line position during the chilling or setting of the arm, which will serve to support the arm at all times in the depressed or full line position, whereas said arm may be sprung or forced upwardly as above stated. This is especially true in constructing the slider from cellulose acetate, which has these resilient properties, and by providing the required uniting of the arm with the slider through the curved portion 23*a* thereof. It will be understood that the size of the aperture 29 through which the pin 28 passes is only sufficient to permit free movement of the pin therethrough but otherwise restricted in its dimensions. In like manner, it will appear that aside from the small aperture provided, the wall of the slider including the arm 22*a* is unbroken. In fact, in the normal position of the arm 22*a*, the aperture 29 is covered or concealed externally of the slider.

In Figs. 7 and 8 of the drawings, I have shown a slight modification of the construction shown in Figs. 5 and 6, wherein the slider 30 is provided with an arm 22*b* similar to the arm 22*a* but instead of being provided with one pin 28 to engage one stringer, the free end portion of the arm 22*b* is provided with two longitudinally and transversely spaced pins 28*a* to engage both stringers or to seat between the links of opposed stringers. In this construction, I have also shown a fingerpiece or pull 31, of what might be termed triangular form, the rounded portion 32 of which cooperates with the arm 22*b* to raise and lower the same, whereas the cross portion or bar 31 of which forms a common finger grip.

In Fig. 9 of the drawings, I have shown another modification wherein the slider 34 is provided with an arm 22*c*, similar to the arms 22*a* and 22*b*, and included in the arm 22*c* is a longitudinal metal plate 35 which may be cast therein to give added strength and spring properties to the arm, or this plate may be secured in position by a rivet pin 36 passed through one end portion thereof and by one or two pins 37 at the free end of the arm, the latter also forming lock pins of the slider and extending through an aperture 38 in the top wall of the slider.

In Fig. 10 of the drawings I have shown another form of construction which may be employed and, in this figure, 39 represents the slider and 22*d* the arm and, with this construction, a lock pin 40 is secured to or cast in the free end portion of the arm to project from the lower surface thereof through an aperture 41 in the slider 39.

In Figs. 11 and 12 of the drawings, I have shown another form of construction which may be applicable to any of the other sliders herein disclosed. In these figures, I have shown at 42 a slider, the inwardly extended flange of top and bottom walls 43 and 44 of which are cut out centrally as seen in Fig. 11 to form projecting bearing portions 46 and 47 at both ends of said flanges which are so formed as to frictionally engage the tapes 48 and 48*a* of the separable fastener stringers adjacent the links 49—49*a* attached thereto. With this construction the top and bottom walls 43—44 of the slider would be arranged in spaced relation to the upper and lower surfaces of the links to avoid contact therewith. With this type of construction the spring properties of a cellulose acetate slider will permit firm engagement with the tapes 48—48*a* to frictionally support the slider in different positions of adjustment on the stringers, while at the same time permitting free movement of the slider longitudinally of the stringers. The top wall of the slider 42 is also provided with a finger piece supporting part 45 partially illustrated in Fig. 11 and shown in section in Fig. 12.

In Figs. 13 and 14, I have diagrammatically illustrated the arrangement of dies and core members for the dies in die-casting the sliders shown in the other figures and, in Fig. 14, I have shown in section the two die parts 50—50*a* which are movable toward and from each other, the parting line of the die parts being indicated at 51, at which parting line is a gate passage 52 through which the casting material may be introduced into the impression 53 of the die from a suitable nozzle 54.

Arranged within and movable transversely of the movement of the die parts 50—50*a* are core parts 55—55*a* which are of the general contour shown in Fig. 13 of the drawings. It will, of course, be understood that the shape of the die parts and the core members will be modified to suit various types of sliders to be formed, and those diagrammatically illustrated in Figs. 13 and 14 of the drawings are only to demonstrate the general construction and arrangement of the several molded parts employed in casting sliders of the type under consideration, it being understood that the arms 22*a* of the sliders are formed in

the manner illustrated in Fig. 2 of the drawings and later brought into the desired relationship between the adjacent walls of the slider as previously set forth.

Having fully described my invention, what I claim as new and desired to secure by Letters Patent, is:

1. A thermoplastic slider of the character described having spaced side walls, an outwardly projecting freely flexing elongated lug integral with one side wall of the slider adjacent one end thereof and extending from the surface of said wall within peripheral edges thereof, the free end of said lug extending inwardly and being normally separated from said wall, a finger piece coupled with said lug by movement over the free end thereof, said inturned end of the lug being moved into juxtaposition to said side wall of the slider in forming on said wall of the slider a substantially closed elongated loop retaining the finger piece against accidental displacement from the slider, a projection on the free end of said lug normally projecting through an aperture in said wall of the slider, said lug having spring properties whereby the free end portion thereof is movable toward and from said wall of the slider in moving said projection into operative and inoperative position, and means on said finger piece cooperating with the lug to flex the lug outwardly in the operation of grasping said finger piece.

2. A thermoplastic slider of the character described having spaced side walls, an outwardly projecting freely flexing elongated lug integral with one side wall of the slider adjacent one end thereof, the free end of said lug being arranged adjacent said wall, and forming a substantially closed loop, a finger piece movably mounted on said loop, projections on the free end of said lug normally projecting through apertures in said wall of the slider, said lug having spring properties whereby the free end portion thereof is movable toward and from said wall of the slider in moving said projections into operative and inoperative position, means on said finger piece cooperating with the lug to flex the lug outwardly in the operation of grasping said finger piece, and said projections being disposed at opposite sides of said lug.

3. A thermoplastic slider of the character described having spaced side walls, an outwardly projecting freely flexing elongated lug integral with one side wall of the slider adjacent one end thereof, the free end of said lug being arranged adjacent said wall, and forming a substantially closed loop, a finger piece movably mounted on said loop, a projection on the free end of said lug normally projecting through an aperture in said wall of the slider, said lug having spring properties whereby the free end portion thereof is movable toward and from said wall of the slider in moving said projection into operative and inoperative position, means on said finger piece cooperating with the lug to flex the lug outwardly in the operation of grasping said finger piece, and the projection on said lug comprising a metallic pin secured in the free end portion of said lug.

4. A slider for separable fastener stringers of the class described, said slider comprising a die cast body of thermosplastic material consisting of spaced wall members, one wall member including an outwardly projecting arm one end of which is integral with the outer surface of said member at one end thereof, said arm having resilient properties normally supporting the free end portion thereof in juxtaposition to said member while permitting flexure of the free end of the arm away from said member, said wall member being apertured adjacent the free end of said arm, and the free end of said arm having a part projecting through the aperture in said wall member to engage at least one of the fastener stringers to retain the slider against movement thereon.

5. The combination with a cellulose acetate slider for separable fastener stringers of the character described, of a cellulose acetate arm fixedly attached at one end to the outer surface of one wall of the slider adjacent one end thereof, said arm extending longitudinally of the slider, the other end of said arm being free and movable toward and from said surface of the slider by reason of the resilient properties of the material employed in said arm, the free end of the arm being directed inwardly and disposed adjacent said surface of the slider and forming in conjunction with said surface a substantially closed elongated finger piece supporting loop, a lock pin on the free end of said arm adapted to project through an aperture in the slider to engage one of the stringers to retain the slider against movement thereon, and means having a swinging and sliding movement on said arm and cooperating with the slider and arm to move said pin out of engagement with said stringer.

6. A slider for separable fastener stringers employing stringer tapes having interengaging coupling links adapted to be coupled and uncoupled by the longitudinal movement of the slider on said stringers, said slider comprising spaced wall members having inturned flanges forming channels through which the links of the stringers are adapted to pass, said slider comprising a body of cellulose acetate, one wall of the slider having a cellulose acetate arm arranged longitudinally thereof, one end of the arm being fixedly attached to the outer surface of said wall member, the other end of the arm being free and movable toward and from said wall member by virtue of the yieldable and resilient properties of the material employed in said arm, said wall members by reason of the yieldable and resilient properties of the material employed therein being movable toward and from each other to yieldably engage the stringers in the movement of the slider longitudinally thereof, and the inturned flanges of the wall members of the slider being recessed intermediate the ends thereof to reduce the bearing surfaces of the flanges upon said stringer tapes.

7. A slider for separable fasteners of the class described, said slider comprising a body of thermosplastic material having resilient properties, said body having spaced side walls and an outwardly projecting elongated lug integral with one side wall of the slider adjacent one end thereof and extending from the surface of said wall within peripheral edges thereof, said lug having a long straight portion arranged in spaced parallel relation to said wall, an inwardly extending integral part at the free end of said lug arranged in abutting relationship to said wall forming thereof an elongated finger piece retaining loop, and said lug by reason of the inherent properties of said thermoplastic material being resilient and freely movable toward and from said wall thereby facilitating the attachment of a finger piece with the lug of said slider.

DAVIS MARINSKY.