

Description

This invention relates to a method of and apparatus for applying end stops to slide fasteners and more particularly to such a method and apparatus for selectively applying top end stops one at a time from a strip containing a succession of serially interconnected prospective end stops.

FR-A- 2 437 800 discloses a method for applying end stops to a slide fastener chain, comprising the steps of providing a strip of prospective end stops; advancing said strip by a pitch corresponding to one of the end stops; cutting a leading one of said end stops from said strip; folding the thus cut leading end stop; transferring the thus folded leading end stop to an end stop applying station; and clamping the same astride over one longitudinal edge of a slide fastener tape.

End stops made of a synthetic plastic material and having different styles and colours are well known as a means of restricting the movement of a slider on a slide fastener. A multiplicity of end stops are supplied from a parts feeder such as a hopper and fed through a chute connected to the parts feeder to an applying station at which the end stops are applied one at a time to an end portion of the slide fastener. When it is desired to change or switch between one batch of end stops of a given style or colour and another batch of a different style or colour, it was necessary to evacuate the parts feeder and the chute for replacement of the end stops. Alternatively, it was necessary to provide a plurality of parts feeders and chutes to cope with the switching operation, which would literally require increased floor space in the manufacturing facilities of slide fasteners. It was thus inefficient, if not difficult, with the conventional practice to selectively feed and apply slide fastener end stops of varying characters.

The present invention seeks to provide a method of feeding and applying slide fastener end stops selectively with maximum of efficiency and accuracy.

The present invention further seeks to provide an apparatus which will carry the above method into practice and which is relatively simple and compact in construction.

Briefly stated, the method of the invention comprises the steps of winding upon a cartridge-type reel an elongated strip formed from a synthetic plastic material and having a succession of serially interconnected prospective end stops and a plurality of flexible connecting cords interconnecting adjacent ones of the end stops in spaced apart relation; advancing the strip by a pitch corresponding to one of the end stops; cutting a leading one of the end stops from the strip across the connecting cords; folding the thus cut leading end stop

centrally about its longitudinal axis; transferring the thus folded leading end stop to an end stop applying station; and clamping the same astride over one longitudinal edge of a slide fastener tape.

An apparatus for reducing the method of the invention into practice is characterized in claim 2 of the appended claims. An apparatus according to the preamble of claim 2 is disclosed in FR-A-2 437 800.

The above and other objects and features of the invention will appear manifest from reading the following detailed description taken in conjunction with the accompanying drawings which illustrate by way of example some preferred embodiments.

Figure 1 is a diagrammatic front elevational, partly sectional, view of an apparatus according to a preferred form of the invention;

Figure 2 is a diagrammatic side elevational, partly sectional, view of a portion of the apparatus of Figure 1;

Figure 3 is a perspective view of a stocker constituting part of the apparatus of Figure 1;

Figure 4 is a diagrammatic view illustrating the step of feeding end stops in an interconnected row from the stocker of Figure 3 to a feed table; Figure 5 is a diagrammatic view illustrating the step of cutting one of the end stops on the table;

Figure 6 is a diagrammatic view illustrating the step of bending or folding and transferring the end stop that has been cut;

Figure 7 is a diagrammatic view illustrating the step of moving the folded end stop into an end stop holder;

Figure 8 is a front elevation, partly sectional, view of a portion of apparatus according to another form of the invention;

Figure 9 is a side elevational, partly sectional, view of the apparatus of Figure 8;

Figure 10 is a diagrammatic perspective view of a portion of the apparatus of Figure 8 illustrating the step of applying an end stop to a slide fastener stringer;

Figure 11 is a fragmentary plan view on enlarged scale of a strip having a succession of serially interconnected end stops;

Figure 12 is a cross-sectional view taken on the line XII - XII of Figure 11;

Figure 13 is a cross-sectional view of an individual end stop showing the same folded for attachment onto a slide fastener type;

Figure 14 is a cross-sectional view of the end stop shown attached to the tape; and

Figure 15 is a fragmentary perspective view on enlarged scale showing the end stop attached to an end portion of the stringer tape.

Referring to the drawings and firstly Figure 11, there is shown an elongated strip 100 formed from

a synthetic plastic material and having a succession of serially interconnected prospective end stop members 101, which strip is the subject-matter described and claimed in Japanese Patent Application No. 2-110099 assigned to the present assignee. Adjacent end stop members 101 are spaced apart by a small distance and interconnected by a pair of flexible connecting cords 102 such as of a textile yarn thread, a synthetic plastic monofilament or other flexible or pliable materials, the cords 102 extending in parallel longitudinally through opposite outer edges of the strip 100. Each of the prospective end stop members 101 has a pair of identical legs 103, 103 which are adapted to fold across the width of the strip 100 in a manner hereinafter described. Each end stop member 101 is notched from opposite ends along a central longitudinal line of the strip 100 to provide a pair of inwardly expanded oblong bights 104 confronting each other across a bridge 105 formed centrally between the legs 103, 103. The edges 104' of each bight 104 merge with rounded-off inner peripheral edges 103', 103' of the respective legs 103, 103. The bridge 105 is reduced in thickness as better shown in Figure 12 to serve as a hinge about which the end stop member 101 can be accurately and easily folded to bring the two legs 103, 103 in superimposed relation for mounting astride of a tape edge as depicted in Figure 13, in which instance the rounded peripheral edges 103', 103' of the legs 103, 103 protrude outwardly beyond the bridge 105 as shown in Figure 15.

As better shown in Figure 12, the legs 103, 103 of the end stop member 101 each have an arcuate groove 106 extending adjacently along their respective outer longitudinal edges and configured to fit snugly over a beaded edge 107 of a slide fastener stringer tape T which is usually cross-sectionally round.

The elongated end stop forming strip 100 thus constructed is cut transversely along a line L extending transversely across the connecting cords 102 between adjacent prospective end stop members 101 to provide an individual end stop 101. This end stop 101 is shown attached with heat and pressure as by means of the arrangement of a supersonic horn 109 and an anvil 200 schematically shown in Figure 14 onto a top end portion of a slide fastener stringer F which as shown in Figure 15 comprises a support tape T and a row of coupling elements E secured thereto.

The end stops 101 carried on the strip 100 of the above construction are fed and applied to a slide fastener stringer F by the method of the present invention which comprises the steps of winding an elongated strip 101 having a succession of serially interconnected prospective end stops upon a cartridge-type reel; advancing the strip 100

by a pitch corresponding to one of the end stops 101; cutting a leading one 101a of the end stops 101 from the strip 100; folding the thus cut leading end stop 101a centrally about its longitudinal axis; transferring the thus folded leading end stop 101a to an end stop applying station; and clamping the same astride over one longitudinal edge 107 of a slide fastener tape T.

Turning now to Figure 1, there is shown an apparatus 10 which reduces the above method to practice and which essentially comprises a reel stocker unit 11, a transfer table unit 30 and a parts applying unit 40.

The reel stocker unit 11 includes a plurality of reels 12 each having wound thereon a length of elongated strip 100 having a multiplicity of serially interconnected prospective end stops 101 which are presently illustrated as ones for attachment to a top or upper end of a slide fastener stringer F and a reel stand or stocker 13 on which the reel 12 is releasably mounted. The reel stocker 13, as better shown in Figure 3, includes an upper vertical leg portion 14 and a lower vertical leg portion 15 connected integrally thereto by a horizontal portion 16 having a strip guide surface 16'. Connected at one end to and extending horizontally from the upper vertical portion 14 of the stocker 13 is a bracket 17 having an aperture 18 in the opposite end for receiving a reel shaft 19 of the reel 12. The stocker 13 further includes a hook portion 20 extending horizontally from the upper leg portion 15 in a direction opposite to the bracket 17. A spring-biased check ball 21 is provided on the upper leg portion 15 below the hook portion 20. The lower leg portion 15 is made hollow to define a guide channel 22 through which the strip 100 passes to transfer the prospective end stops 101 one at a time in timed response to the cycle of operation of the apparatus 10 which is hereafter described.

Designated at 23 and as shown in Figures 1 and 2 there are a pair of reel stocker holders 23 which are connected by a transverse beam 25 for releasably holding the reel stockers 13 symmetrically in horizontally spaced parallel relation to define therebetween a space for installing a slider supply chute later described and which are mounted slidably on respective guide rods 24, 24 and movable therealong in a direction parallel to the path of a stringer chain C. Each of the stocker holders 23, 23 is provided in its upper surface with a plurality of grooves 26 each for receiving the hook portion 20 of the respective reel stocker 13 and in one of its side surfaces with a plurality of dimples 27 each for receiving the check ball 21 of the stocker 13, so that the stocker 13 can be snapped into fitting engagement with corresponding stocker holder 23.

The stocker holders 23 are arranged to move reciprocally along the guide rods 24 by means of a piston rod 28 of a pneumatically actuated cylinder not shown which is operatively connected to the transverse beam 25 as shown in Figure 2. They reciprocate toward and away from the transfer table unit 30 so to bring thereonto a selected one of the reel stockers 13 in a manner hereafter to be described.

In the illustrated embodiment of the invention, the stocker holders 23 are spaced apart to accommodate therebetween a slider supply chute 29 indicated by phantom lines in Figure 1 for supplying sliders S for application concurrently with the end stops 101 to the slide fastener chain C but may be brought closer to each other, if the slider attachment is omitted, so as to make the apparatus more compact.

The transfer table unit 30 includes a pair of transfer tables 31, 31 for transferring the end stops 101 from the reel stockers 13 to the parts applying unit 40, the transfer tables 31, 31 being located in symmetrically opposed relation across the path of stringer chain C, i.e. the position of a parts applying holder later described. Each of the tables 31, 31 has a vertical guide slit 32 dimensioned to receive one end stop 101 in vertically depending posture from the reel stocker 13 and communicating with a horizontal guide groove 33 extending centrally longitudinally of the table 31. The guide slit 32 has a width corresponding to that of the end stop 101 and is contiguous to a guide wall 34 tapering toward an outlet end 31a of the table 31. The end stops 101 in the strip 100 are transferred one at a time from the reel stocker 13 by means of a transfer finger 35 which is movable horizontally as well as vertically with respect to the table 31 as shown in Figures 4 and 5. The transfer finger 35 moves horizontally toward the reel stocker 13 and engages the connecting cords 102 of the strip 100 as shown in Figure 4, followed by its downward movement to bring a leading end stop 101a down onto the table 31 through the guide slit 32 as shown in Figure 5.

The transfer finger 35 then moves upward back to its initial position indicated by solid line in Figure 4 and stands by for the next end stop 101b. Designated at 36 is a cutter movable horizontally reciprocally by means of a piston rod 37 along a line registering with the position of the connecting cords 102 of the strip 100 which interconnect the leading end stop 101a with the ensuing end stop 101b as shown in Figure 5. The cutter 36 moves forwardly toward and across the guide slit 32 and severs the connecting cords 102, leaving the leading end stop 101a in the guide groove 33 of the table 31. The cutter 36 thereafter moves backwardly away from the guide slit 32 and returns to

its stand-by position. A pusher rod 38 having a reduced head 38' is movable horizontally reciprocally in and along the guide groove 33. A forward stroke of the pusher 38 causes the head 38' to engage the bridge 105 of the leading end stop 101a in the guide groove 33 registering with the guide slit 32 and pushes the end stop 101a forwardly toward the parts applying unit 40 along the tapered guide wall 34, whereupon the end stop 101a is progressively folded about its longitudinal axis to bring the opposed legs 103, 103 substantially in superimposed relation to each other as shown in Figure 6. The leading end stop 101a is thus carried further forward until it reaches an outlet end 31a of the table 31 at which it is received by the parts applying unit 40 as shown in Figure 7, whereupon the pusher 38 returns to its stand-by position indicated by solid lines in Figure 6.

The parts applying unit 40 comprises a parts holder 41 located centrally between the oppositely disposed rows of reel stockers 13 and rotatably mounted on a shaft 42. The holder 41 is movable arcuately about 90° toward and away from the path of the stringer chain F, i.e. between a horizontal position in which it receives the end stop 101 and a vertical position in which it transfers the end stop 101 onto the stringer chain F as schematically illustrated in Figure 2. The parts holder 41 has a pair of pockets 43, 43 each adapted to receive the leading end stop 101a from the respective transfer table 31 and may, if desired, include an additional pocket 44 for receiving the slider S from the slider supply chute 29 as is well known for application concurrently with the end stops 101 onto the stringer chain C. The parts holder 41 is otherwise similar to ones already known and hence no further detailed explanation will be required.

The apparatus 10 thus constructed performs the following cycle of operation associated with one of the paired operating parts which are structurally identical and geometrically symmetrical.

The piston rod 28 is actuated to move the stocker holder 23 to bring any desired pair of reel stockers 13, 13 selectively over to a position in which the guide channel 22 of the reel stocker 13 registers with the guide slit 32 of the respective transfer table 31. This is followed by advancing movement of the transfer finger 35 to introduce the leading end stop 101a through the guide slit 32 onto the transfer table 31 as shown in Figure 5. The cutter 36 advances and cuts off the leading end stop 101a through the connecting cords 102 of the strip 100. The pusher 38 then makes a forward stroke, urging the leading end stop 101a to fold during movement along the guide wall 34 in the table 31 as shown in Figure 6. Upon arrival of the end stop 101a at the outlet end 31a of the table 31, the parts holder 41 swings upwardly, receives the

end stop 101a into its pocket 43 and swings downwardly into the path of the stringer chain C, whereupon the end stop 101a is mounted with its legs 103, 103 astride the beaded edge 107 of the stringer tape T. Subsequent to return of the parts holder 41 away from the path of the chain C, the end stop 101a on the tape T is clamped in place with heat and pressure by the arrangement of a supersonic horn 109 and an anvil 200 as shown in Figure 14.

Figures 8 - 10 inclusive illustrate a modified embodiment of the invention which provides an apparatus 10a comprising a single set of operating units 11, 30 and 40 and designed to feed and apply the end stops 101 one at a time to only one of a pair of stringers F. This arrangement is advantageous in that the apparatus 10a is extremely compact and can be expeditiously put to use at the option of garment manufacturers and suppliers who can freely select the style and color of the end stops 101 as stored in the removable reels 12.

Claims

1. A method of feeding and applying end stops (101) to a slide fastener chain (C) which comprises the steps of winding upon a cartridge-type reel, an elongated strip (100) formed from a synthetic plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting adjacent ones of said end stops (101) in spaced apart relation; advancing said strip (100) by a pitch corresponding to one of the end stops (101); cutting a leading one (101a) of said end stops (101) from said strip (100) across said connecting cords (102); folding the thus cut leading end stop (101a) centrally about its longitudinal axis; transferring the thus folded leading end stop (101a) to an end stop applying station; and clamping the same astride over one longitudinal edge (107) of a slide fastener tape (T).

2. An apparatus (10) for feeding and applying end stops (101) to a slide fastener chain comprising means for advancing an elongated strip of prospective end stops to a cutting station; cutting means for cutting off a leading portion of said strip; means for folding said leading portion into a U-shaped end stop, means for transferring said folded end stop onto the slide fastener chain; and means for clamping said folded end stop onto a beaded edge of a slide fastener tape, characterized by

(a) a reel stocker unit (11) including at least one reel (12) having wound thereon an elongated strip (100) formed from a synthetic

plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting adjacent ones of said end stops (101) in spaced apart relation; a reel stocker (13) releasably mounting said reel (12) thereon and having a vertical guide channel (22) for the passage of said strip (100); a reel stocker holder (23) releasably holding said reel stocker (13) thereon and movable horizontally reciprocally toward and away from a predetermined position;

(b) a transfer table unit (30) including a table (31) having a vertical guide slit (32) dimensioned to receive one end stop (101) from said reel stocker (13), and a horizontal guide groove (33) communicating with said guide slit (32) and extending longitudinally of said table (31); a transfer finger (35) reciprocally movable horizontally to engage said connecting cords (102) of said strip (100) and vertically to bring a leading end stop (101a) onto said table (31); a cutter (36) movable reciprocally horizontally for cutting off said leading end stop (101a) across said connecting cords (102); and a pusher (38) movable reciprocally horizontally in and along said guide groove (33) and adapted to cause said leading end stop (101a) to fold about its longitudinal axis;

(c) a parts applying unit (40) including a parts holder (41) movable arcuately toward and away from the path of the slide fastener chain (C) and having a pocket (43) for receiving said end stop (101a), which has been folded, from said table (31) and transferring the same onto slide fastener chain (C); and

(d) a means (109, 200) for clamping said folded end stop (101a) onto a beaded edge (107) of a slide fastener tape (T) with heat and pressure.

3. An apparatus (10) according to claim 2 characterized in that said table (31) has a tapered guide wall (34) contiguous to said guide slit (32) along which said leading end stop (101a) is moved by said pusher (38) to fold progressively about its longitudinal axis.

4. An apparatus according to claims 2 or 3, characterized by a plurality of reels (12) each having wound thereon an elongated strip (100) formed from a synthetic plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting



end stop 101a into its pocket 43 and swings downwardly into the path of the stringer chain C, whereupon the end stop 101a is mounted with its legs 103, 103 astride the beaded edge 107 of the stringer tape T. Subsequent to return of the parts holder 41 away from the path of the chain C, the end stop 101a on the tape T is clamped in place with heat and pressure by the arrangement of a supersonic horn 109 and an anvil 200 as shown in Figure 14.

Figures 8 - 10 inclusive illustrate a modified embodiment of the invention which provides an apparatus 10a comprising a single set of operating units 11, 30 and 40 and designed to feed and apply the end stops 101 one at a time to only one of a pair of stringers F. This arrangement is advantageous in that the apparatus 10a is extremely compact and can be expeditiously put to use at the option of garment manufacturers and suppliers who can freely select the style and color of the end stops 101 as stored in the removable reels 12.

Claims

1. A method of feeding and applying end stops (101) to a slide fastener chain (C) which comprises the steps of winding upon a cartridge-type reel, an elongated strip (100) formed from a synthetic plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting adjacent ones of said end stops (101) in spaced apart relation; advancing said strip (100) by a pitch corresponding to one of the end stops (101); cutting a leading one (101a) of said end stops (101) from said strip (100) across said connecting cords (102); folding the thus cut leading end stop (101a) centrally about its longitudinal axis; transferring the thus folded leading end stop (101a) to an end stop applying station; and clamping the same astride over one longitudinal edge (107) of a slide fastener tape (T).

2. An apparatus (10) for feeding and applying end stops (101) to a slide fastener chain comprising means for advancing an elongated strip of prospective end stops to a cutting station; cutting means for cutting off a leading portion of said strip; means for folding said leading portion into a U-shaped end stop, means for transferring said folded end stop onto the slide fastener chain; and means for clamping said folded end stop onto a beaded edge of a slide fastener tape, characterized by

(a) a reel stocker unit (11) including at least one reel (12) having wound thereon an elongated strip (100) formed from a synthetic

plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting adjacent ones of said end stops (101) in spaced apart relation; a reel stocker (13) releasably mounting said reel (12) thereon and having a vertical guide channel (22) for the passage of said strip (100); a reel stocker holder (23) releasably holding said reel stocker (13) thereon and movable horizontally reciprocally toward and away from a predetermined position;

(b) a transfer table unit (30) including a table (31) having a vertical guide slit (32) dimensioned to receive one end stop (101) from said reel stocker (13), and a horizontal guide groove (33) communicating with said guide slit (32) and extending longitudinally of said table (31); a transfer finger (35) reciprocally movable horizontally to engage said connecting cords (102) of said strip (100) and vertically to bring a leading end stop (101a) onto said table (31); a cutter (36) movable reciprocally horizontally for cutting off said leading end stop (101a) across said connecting cords (102); and a pusher (38) movable reciprocally horizontally in and along said guide groove (33) and adapted to cause said leading end stop (101a) to fold about its longitudinal axis;

(c) a parts applying unit (40) including a parts holder (41) movable arcuately toward and away from the path of the slide fastener chain (C) and having a pocket (43) for receiving said end stop (101a), which has been folded, from said table (31) and transferring the same onto slide fastener chain (C); and

(d) a means (109, 200) for clamping said folded end stop (101a) onto a beaded edge (107) of a slide fastener tape (T) with heat and pressure.

3. An apparatus (10) according to claim 2 characterized in that said table (31) has a tapered guide wall (34) contiguous to said guide slit (32) along which said leading end stop (101a) is moved by said pusher (38) to fold progressively about its longitudinal axis.

4. An apparatus according to claims 2 or 3, characterized by a plurality of reels (12) each having wound thereon an elongated strip (100) formed from a synthetic plastic material and having a succession of serially interconnected prospective end stops (101) and a plurality of flexible connecting cords (102) interconnecting



adjacent ones of said end stops (101) in spaced apart relation; a plurality of reel stockers (13) each releasably mounting said reel (12) thereon and having a vertical guide channel (22) for the passage of said strip (100); a pair of stocker holders (23) releasably holding said reel stockers (13) thereon symmetrically in horizontally spaced parallel relation and movable horizontally reciprocally toward and away from a predetermined position; said parts holder (41) having a pair of pockets (43) each for receiving said end stops (101a).

5. An apparatus (10) according to claim 4 characterized in that said parts holder (41) is located between said pair of reel stockers (23) for transferring sliders (8) concurrently with said end stops (101) onto said slide fastener chain (C).
6. An apparatus (10) according to claim 2 characterized in that said means comprises a superimposed horn (109) and an anvil (200).

Patentansprüche

1. Verfahren zum Zuführen und Anbringen von Begrenzungsteilen (101) an einer Reißverschlußkette (C), umfassend die Schritte: Aufwickeln eines langgestreckten Bandes (100), das aus Kunststoff gebildet ist und eine Folge von miteinander verbundenen zukünftigen Begrenzungsteilen (101) und mehrere flexible Verbindungsschnüre (102) aufweist, die benachbarte Begrenzungsteile (101) im gegenseitigen Abstand miteinander verbinden, auf eine magazinartige Spule; Vorwärtsbewegen des Bandes (100) um eine Schrittweite, die einem der Begrenzungsteile (101) entspricht; Abtrennen eines vorderen (101a) der Begrenzungsteile (101) von dem Band (100) quer zu den Verbindungsschnüren (102); Umfalten des abgeschnittenen vorderen Begrenzungsteils (101a) mittig um seine Längsachse; Überführen des gefalteten vorderen Begrenzungsteils (101a) zu einer Begrenzungsteilanbringstation; und Ankleben desselben rittlings an einem Längsrand (107) eines Tragbandes (T).
2. Vorrichtung (10) zum Zuführen und Anbringen von Begrenzungsteilen (101) an einer Reißverschlußkette, umfassend Mittel zum Zuführen eines langgestreckten Bandes aus zukünftigen Begrenzungsteilen zu einer Schneidstation; Schneidmittel zum Abschneiden eines vorderen Bereichs des Bandes; Mittel zum Falten dieses vorderen Bereichs in ein U-förmiges Begrenzungsteil; Mittel zum Überführen des

gefalteten Begrenzungsteils auf die Reißverschlußkette; und Mittel zum Ankleben des gefalteten Begrenzungsteils an einen Wulstrand eines Tragbandes, gekennzeichnet durch

- (a) eine Spulenmagazineinheit (11), die mindestens eine Spule (12) aufweist, auf die ein langgestrecktes Band (100) aufgewickelt ist, das aus Kunststoff gebildet ist und eine Folge von miteinander verbundenen zukünftigen Begrenzungsteilen (101) und mehrere flexible Verbindungsschnüre (102) aufweist, die benachbarte Begrenzungsteile (101) im gegenseitigen Abstand miteinander verbinden; einen Spulenständer (13), auf dem die Spule (12) lösbar gelagert ist und der einen vertikalen Führungskanal (22) für den Durchgang des Bandes (100) hat; einen Spulenständerhalter (23), der den Spulenständer (13) lösbar abstützt und der aus einer vorgegebenen Stellung horizontal hin- und herbewegbar ist;
- (b) eine Überführungstischeinheit (30) mit einem Tisch (31), der einen vertikalen Führungsschlitz (32) hat, der so bemessen ist, um ein Begrenzungsteil (101) von dem Spulenständer (13) aufzunehmen, und eine horizontale Führungsnut (33) hat, die mit dem Führungsschlitz (32) in Verbindung steht und in Längsrichtung des Tisches (31) verläuft; einen Überführungsfinger (35), der horizontal hin- und herbewegbar ist, um die Verbindungsschnüre (102) des Bandes (100) zu erfassen, und vertikal hin- und herbewegbar ist, um ein vorderes Begrenzungsteil (101a) auf den Tisch (31) zu bringen; ein Schneidwerkzeug (36), das horizontal hin- und herbewegbar ist, um das vordere Begrenzungsteil (101a) quer zu den Verbindungsschnüren (102) zu durchtrennen; und mit einem Schieber (38), der in und entlang der Führungsnut (33) horizontal hin- und herbewegbar ist, und der das vordere Begrenzungsteil (101a) um seine Längsachse falten kann;
- (c) eine Teileanbringeinheit (40) mit einem Teilehalter (41), der gegenüber der Bahn der Reißverschlußkette (C) bogenförmig vor und zurückbewegbar ist und eine Tasche (43) aufweist, um ein gefaltetes Begrenzungsteil (101a) von dem Tisch (31) aufzunehmen und auf die Reißverschlußkette (C) zu überführen; und
- (d) eine Einrichtung (109, 200) zum Ankleben des gefalteten Begrenzungsteils (101a) an einen Wulstrand (107) des Tragbandes (T) mit Hitze und Druck.



3. Vorrichtung (10) nach Anspruch 2, dadurch **gekennzeichnet**, daß der Tisch (31) eine an den Führungsschlitz (32) angrenzende schräge Führungswand (34) hat, an der das vordere Begrenzungsteil (101a) von dem Schieber (38) entlangbewegt wird, um es zunehmend um seine Längsachse zu falten.
4. Vorrichtung nach Anspruch 2 oder 3, **gekennzeichnet** durch mehrere Spulen (12), auf die ein langgestrecktes Band (100) aufgewickelt ist, das aus Kunststoff gebildet ist und eine Folge von miteinander verbundenen zukünftigen Begrenzungsteilen (101) und mehrere flexible Verbindungsschnüre (102) aufweist, die benachbarte Begrenzungsteile (101) im gegenseitigen Abstand miteinander verbinden; mehrere Spulenständer (13), auf denen jeweils die Spule (12) lösbar gelagert ist und die einen vertikalen Führungskanal (22) für den Durchgang des Bandes (100) haben; zwei Spulenständerhalter (23), die die Spulenständer (13) symmetrisch im horizontalen Abstand in paralleler Beziehung lösbar abstützen und die von einer vorgegebenen Stellung horizontal vor und zurückbewegbar sind, wobei der Teilehalter (41) zwei Taschen (43) zur Aufnahme der Begrenzungsteile (101a) hat.
5. Vorrichtung (10) nach Anspruch 4, dadurch **gekennzeichnet**, daß der Teilehalter (41) zwischen den beiden Spulenständerhaltern (43) angeordnet ist, um Schieber (8) gleichzeitig mit den Begrenzungsteilen (101) auf die Reißverschlussschleife (C) zu überführen.
6. Vorrichtung (10) nach Anspruch 2, dadurch **gekennzeichnet**, daß die besagte Einrichtung einen Ultraschallgenerator (109) und einen Amboss (200) umfaßt.

Revendications

1. Procédé d'amener et de fixation de butées d'extrémité (101) sur une chaîne (C) de fermeture à glissière, ce procédé comprenant les étapes consistant: à enrouler sur un dévidoir du type cartouche une longue bande (100) formée à partir d'une matière plastique synthétique et comportant une succession de butées d'extrémité (101) à fixer, reliées les unes aux autres en série, et une pluralité de cordons (102) de raccordement flexible raccordant mutuellement celles adjacentes desdites butées d'extrémité (101) dans une disposition espacée les unes des autres; à avancer ladite bande (100) d'un pas correspondant à une des butées d'extrémité (101); à couper de ladite ban-

de (100), en travers desdits cordons de raccordement (102), la butée avant (101a) desdites butées d'extrémité (101); à plier centralement autour de son axe longitudinal la butée d'extrémité avant (101a) ainsi coupée; à transférer la butée d'extrémité avant ainsi pliée (101a) jusqu'à un poste de fixation de butée d'extrémité; et à serrer cette butée à cheval sur un bord longitudinal (107) d'un ruban (T) de fermeture à glissière.

2. Appareil (10) pour amener et fixer des butées d'extrémité (101) sur une chaîne de fermeture à glissière, cet appareil comprenant un moyen pour avancer jusqu'à un poste de coupe une longue bande de butées d'extrémité à fixer; un moyen de coupe pour séparer par tranchage une partie avant de ladite bande; un moyen pour plier ladite partie avant sous forme d'une butée d'extrémité à profil en U, un moyen pour transférer ladite butée d'extrémité pliée jusque sur la chaîne de fermeture à glissière; et un moyen pour serrer sur le bord un bourrelet d'un ruban de fermeture à glissière ladite butée d'extrémité pliée, caractérisé par:

a) un banc (11) de dévidoir comprenant au moins un dévidoir (12) sur lequel est enroulée une longue bande (100) formée à partir d'une matière plastique synthétique et comportant une succession de butées d'extrémité (101) à fixer, reliées les unes aux autres en série, et une pluralité de cordons de raccordement flexibles (102) raccordant mutuellement celles adjacentes desdites butées d'extrémité (101) dans une disposition espacées les unes des autres; un porte-dévidoir (13) supportant de façon libérable ledit dévidoir (12) et comportant un canal de guidage vertical (22) pour le passage de ladite bande (100); un support (23) de porte-dévidoir supportant de façon libérable ledit porte-dévidoir (13) et pouvant être déplacé horizontalement en va-et-vient vers et depuis une position prédéterminée;

b) un dispositif (30) à table de transfert comprenant une table (31) comportant une fente de guidage verticale (32) dimensionnée de manière à recevoir une butée d'extrémité (101) en provenance du porte-dévidoir (13), et une rainure de guidage horizontale (33) communiquant avec ladite fente de guidage (32) et s'étendant dans le sens longitudinal de ladite table (31); un doigt de transfert (35) pouvant être déplacé en va-et-vient horizontalement, de manière à rencontrer lesdits cordons de raccordement (102) de ladite bande (100), et verticalement, de manière à amener une butée d'extrémité



avant (101a) jusque sur ladite table (31); un élément de coupe (36) pouvant être déplacé en va-et-vient horizontalement pour sectionner ladite butée d'extrémité avant (101a) en travers desdits cordons de raccordement (102); et un poussoir (38) pouvant être déplacé en va-et-vient horizontalement dans et le long de ladite rainure de guidage (33) et adapté pour provoquer le pliage de ladite butée d'extrémité avant (101a) autour de son axe longitudinal;

c) un dispositif (40) de fixation de pièces comprenant un porte-pièce (41) pouvant être déplacé de façon curviligne vers et depuis le trajet de la chaîne (C) de fermeture à glissière et comportant une cavité (43) destinée à recevoir ladite butée d'extrémité (101a) qui a été pliée et qui arrive de ladite table (31) et pour transférer cette butée jusque sur la chaîne (C) de fermeture à glissière et

d) un moyen (109, 200) pour serrer ladite butée d'extrémité pliée (101a) sur un bord à bourrelet (107) d'un ruban (T) de fermeture à glissière en présence de chaleur et d'une pression.

3. Appareil (10) selon la revendication 2, caractérisé en ce que ladite table (31) comporte une paroi de guidage inclinée (34) contigue à ladite fente de guidage (32) le long de laquelle ladite butée d'extrémité avant (101a) est déplacée par ledit poussoir (38) de manière à la plier progressivement autour de son axe longitudinal.

4. Appareil selon la revendication 2 ou 3, caractérisé par une pluralité de dévidoirs (12) sur chacun desquels est enroulée une longue bande (100) formée à partir d'une matière plastique synthétique et comportant une succession de butées d'extrémité (101) à fixer, reliées les unes aux autres en série, et une pluralité de cordons de raccordement flexibles (102) raccordant mutuellement celles adjacentes desdites butées d'extrémité (101) dans une disposition espacée ; une pluralité de porte-dévidoirs (13) dont chacun supporte de façon libérable un dévidoir (12) et comporte un canal de guidage vertical (22) pour le passage de ladite bande (100); une paire de supports (23) de porte-dévidoirs supportant de façon libérable lesdits porte-dévidoirs (13) symétriquement dans une disposition parallèle espacée horizontalement et pouvant être déplacée horizontalement en va-et-vient vers et depuis une position prédéterminée; ledit porte-pièce (41) comportant une paire de cavités (43) destinées

chacune à recevoir lesdites butées d'extrémité (101a).

5. Appareil (10) selon la revendication 4, caractérisé en ce que ledit porte-pièce (41) est situé entre ladite paire de porte-dévidoirs (23) pour transférer des curseurs (8) conjointement avec lesdites butées d'extrémité (101) jusqu'à ladite chaîne (C) de fermeture à glissière.
6. Appareil (10) selon la revendication 2, caractérisé en ce que lesdits moyens comprennent un cornet (109) à ultrasons et une enclume (200).