TAPE AND SLIDE ASSEMBLY

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This application is a continuation-in-part of application Serial No. 331,822, filed December 19, 1963 and now abandoned.

The invention relates to a tape and slide assembly, especially for thin, lightweight tapes or ribbons, such as are used for the shoulder straps of undergarments.

In the manufacture of a slip or like lingerie, it is customary to provide the same with shoulder straps of adjustable length. For this purpose, a reversely folded ribbon passes through a slide which may be used to shorten or lengthen the doubled portion. That, in turn, is connected through a link and a short loop of ribbon to the garment.

The general object of the present invention is to improve such a tape and slide assembly. Another object is to devise a tape and slide assembly using components which are adapted for assembly in automatic or semi-automatic machines, thereby eliminating not only sewing, but also lengthwise threading of ribbon through the slide.

A still further object is to provide such an assembly which is adapted to be utilized with tape or ribbon made of any desired textile material. For example, heat-sealing has been suggested instead of sewing, but that procedure is useful only with a ribbon made of a thread such as nylon which can be welded by heat.

In any threading process with a machine, it is practically essential that the slide have an interrupted center bar, or in other words, two tabs extending from the ends of the slide. The present improvement is directed only to assemblies where the slide has such an interrupted center bar.

In accordance with our invention, the means for securing the folded end of the tape to the underside of the slide is a fastener which can be inserted and easily assembled by machine with the folded end of the tape.

More particularly, the fastener means for the tape end provides for secure anchorage of the side edges of the tape so as to prevent any twisting relative to the slide.

A further object is to provide such a fastening means which will be substantially concealed, and which will not have any objectionable bulk.

A still further object is to provide such a fastener, which in addition to its other functions, will add strength to the interrupted center bar, bridge the gap and provide resistance to pull all the way across the tape. It gives the advantages of a solid center bar in a slide which can be threaded easily in an automatic machine.

Other objects and advantages of the invention will hereinafter more fully appear.

In the accompanying drawing, we have shown for purposes of illustration, one embodiment of which the invention may serve as an example. In the drawing:

FIG. 1 is a partial plan view of a shoulder strap assembly embodying our invention;
FIG. 2 is a scale view of slide and link in section;
FIG. 3 is a perspective view showing the link, slide and fastener ready for the assembly operation;
FIG. 4 indicates the position of the parts during assembly;
FIG. 5 is a schematic view of the slide and tape assembly;
FIG. 6 is a cross-section through the central portion of the slide; and

FIG. 7 shows in different stages, A, B, C and D, fragmentary schematic vertical sections to indicate the operations of an automatic machine assembly.

Referring to the drawing, and more particularly to FIGS. 1 and 2, the adjustable shoulder strap assembly shown comprises a main tape 12 with selvage edges 13, which extends off to the right for a substantial additional distance to reach the back of the garment. What is shown is the adjustable portion, usually located at the front. There is a slide 14 which may be moved along the tape to adjust the length of the loop 15. This loop 15 of the main tape is connected to a short loop of tape 16 by a link 18.

Referring now to FIG. 3, the link comprises a center bar 20, a side bar 22, and an interrupted side bar 24 on the other side of the center bar 20. The link is stamped out of sheet material, usually, but not necessarily, metal.

Slide 14 is also stamped out of sheet material so as to provide a thin flat body with two spaced side bars 26 and 28, and an interrupted center bar consisting of two short tabs 27 and 28 which project inwardly toward each other, leaving a gap between their inner ends which is wide enough so that an intermediate portion of the tape 12 may be pushed between them in threading the machine, as shown in FIG. 4. The end portions of the slide between the side bars 25 and 26 may be of any desired shape and as herein shown, take the form of two curved sections designated 29 at one end and 30 at the other end. These sections of the end portions merge into the tabs 27 and 28, or stated another way, the tabs project inwardly from the end portions.

Extending through the end portions are the notches 31 and 32, and these notches extend far enough so that their inner edges are in substantial alignment with the ends of the slots between the side bars and the center bar. The notches are in alignment with the tabs 27 and 28 and preferably extend slightly into these tabs.

The tape 12 has the intermediate portion or loop 33 which has been threaded through the slide, extending through the slots in the slide and overlying the interrupted center bar or tabs 27 and 28. The tape 12 extends from the slide in the form of a loop 15 and has an end portion 34 reversely folded to underlie the central portion of the slide. This tape is substantially as wide as the length of the slots in the slide so that the selvage edges 13 will register with the ends of the notches 31 and 32, and may even overlap the notches to some extent.

The staple-like fastener, generally designated 35, may be of round cross-section or the rectangular shape shown in the drawings. It has a central bar portion 36 extending through the fold of the tape end 34 and leg portions 37 and 38 which fit in the notches 31 and 32, and which are bent over the tabs 27 and 28 to clamp the side edge portions of the tape firmly against the underside of the tabs.

The selvage edges 13 which are somewhat thicker than the body portion of the tape, will thus be pinched tightly by the strongest portion of the fastener immediately inside the bends. The legs 37 and 38 may be long enough to extend into the space between the tabs and may be bent over as indicated at 39 and 40 against the central portion of the tape.

It will be apparent that when the fastener is made of relatively thin material so that it is more or less like wire, with the tapes fitted snugly inside the bends of the fastener, the overlying intermediate portion 33 of the tape will substantially cover the fastener and to all intents and purposes, conceal it from view.

An important advantage of the present tape and slide assembly is that it is well adapted for manufacture in high-speed automatic machinery. One possible method uses successive steps, some of which are illustrated in FIG. 7. The slide body 14, the fastener 35 and the link 18 may
be initially positioned somewhat as shown in FIG. 7A, at which time, one end 34 of the main tape 12 may be fed between the fastener 35 and the slide 14, as shown. The tape then may be subjected to the action of a pusher which pushes the tape upward through the body 14 in the form of the loop 33. The pusher is not shown, but it will be understood, especially from FIG. 4, that it is primarily because of the use of an interrupted center bar or tabs that it becomes possible to simply push the tape upward instead of threading it upward and then downward around the interrupted center bar or tabs 27 and 28. At this time, the end 34 of the tape is passed through the link 18. A second pusher which moves downward or other means, may be employed for this purpose.

In FIG. 7C, the end 34 has been turned upward and leftward to a position between the fastener 35 and the interrupted center bar (tabs 27 and 28). A suitable anvil or clenching bar 44 moves into the loop 33 above the tabs 27 and 28. At this time, or later, the end of the tape loop 16 may be pushed or threaded through the link 18. In FIG. 7D, the fastener has been closed or clenched. For this purpose, a driver beneath the fastener (not shown) may move upward, thereby bending the legs inward against the anvil 44, as indicated in FIG. 7D. Alternatively, the anvil 44 could be forced downward against a stationary element supporting the fastener 35, but then the slide body must also be movable downward. Another step which may be taken before, during or after the clenching step is to push the upper part of the tape 16 downward through the opening between the ends of the interrupted bar 24 of the link 18, as shown in FIG. 7D. The assembly of the four parts of the shoulder strap is then complete.

A manufacturer may make the shoulder strap assemblies and ship the same to undergarment manufacturers. It is primarily for that reason that the link 18 is provided with the interrupted bar 24, because said bar adds friction and helps retain the loop in position ready for stitching to the front of the garment. It is possible to provide serrations on the right edge of the center bar 20 of the link to help prevent twisting or side slip of the ribbon in the link. We prefer not to use such serrations and usually they are not necessary when the extra interrupted bar 24 is provided. However, both the bar and the serrations may be used for a particularly slippery ribbon.

What is claimed is:

1. A tape and slide assembly comprising (a) a slide which is a unitary body of sheet material of generally rectangular outline having spaced side bars, end portions integrally joining the side bars, and an interrupted center bar consisting of two short tabs projecting inwardly toward each other from said end portions providing a pair of spaced tab receiving slots between the center bar and side bars, the gap between the inner ends of said tabs being wide enough so that a tape intermediate portion may be pushed between them in threading the buckle, said end portions having notches in alignment with said tabs, the inner edges of said notches being in substantial alignment with the ends of said slots;

(b) a tape having an intermediate portion extending through said slots and overlying said interrupted center bar and an end portion reversely folded to underlie the central portion of said slide, said tape being of substantially the same width as the length of each of said slots; and

(c) a staple-like fastener having a central bar portion extending through the fold of said tape end, and leg portion extending through said slots and bent over said tabs to clamp the side edges of said tape end against said tabs.

2. A tape and slide assembly as defined in claim 1 wherein the tape has selvage edges of greater thickness than the main portion of the tape, which side edges fit snugly against said leg portions of said fastener so that they are securely held by the bends of said leg portions.

3. A tape and slide assembly as defined in claim 1 wherein said folded-over leg portions of the fastener are substantially completely covered by said intermediate portion of the tape which overlies said interrupted center bar.

4. A tape and slide assembly as defined in claim 1 wherein the leg portions of said fastener fit tightly against the inner ends of said notches whereby the fastener is of substantially the same width as said tape so as to be substantially concealed.

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