

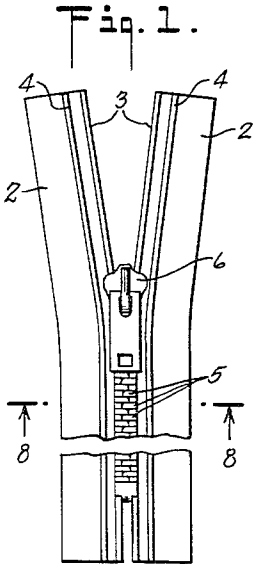
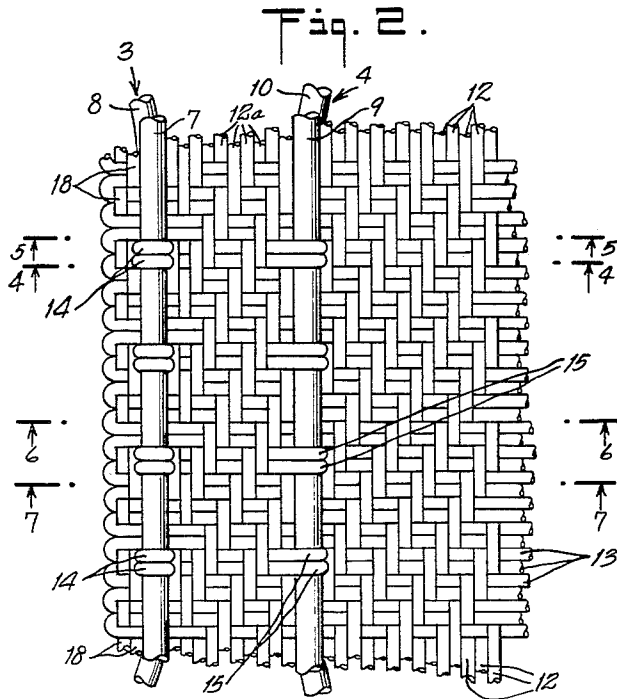
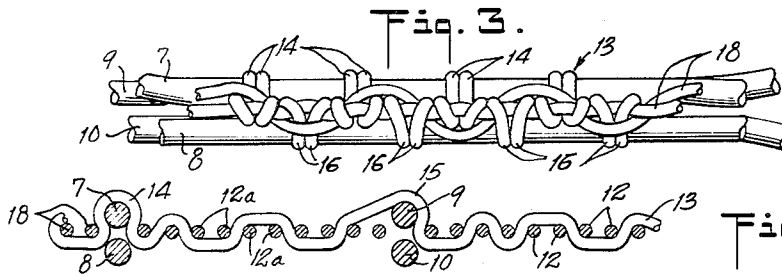
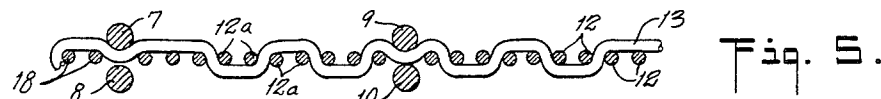
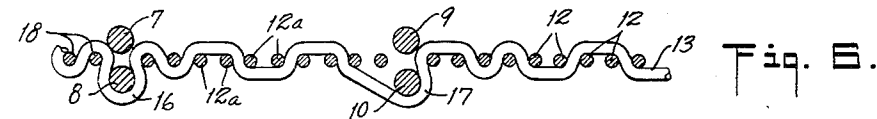
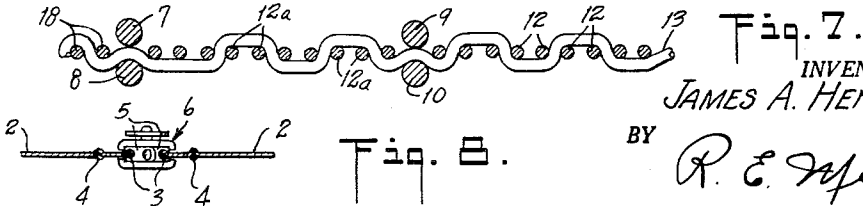
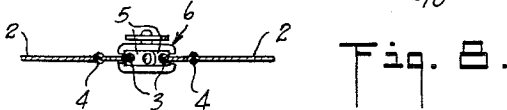
June 14, 1960

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2,940,478

SLIDE FASTENER AND TAPE THEREFOR

Filed June 13, 1956



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2,940,478

SLIDE FASTENER AND TAPE THEREFOR

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Filed June 13, 1956, Ser. No. 591,120

8 Claims. (Cl. 139—384)

This invention relates to slide fasteners and tapes therefor and more particularly to a new and improved woven beaded edge tape having an intermediate woven beaded portion in the web portion thereof.

In the conventional slide fastener, there is provided a pair of beaded edge stringer tapes having a series of spaced-apart interlocking fastener elements attached to the beaded edges thereof with a slide arranged on the fastener elements for longitudinal movement therealong for engaging and disengaging the fastener elements in a manner well known to those skilled in the art. Oftentimes foreign materials, usually flimsy materials become caught in the fastener when the slider is moved therealong to open and close the fastener, i.e., between the slider flanges and/or between the fastener elements and the slider wings, which naturally is undesirable in that it interferes with the function of the fastener and the movement of the slider along the elements. It is to an improved tape construction to prevent such catching and snagging that the present invention relates.

In accordance with the present invention, there is provided a woven tape construction which not only has a beaded edge integrally woven therewith for the attachment of the fastener elements thereto but in addition has an intermediate beaded portion spaced inwardly from the beaded edge and extending substantially parallel thereto. This intermediate beaded portion is positioned a slight distance from the ends of the clamping leg portions of the fastener elements, that is, adjacent the slider flanges and to the outer side thereof. Such an intermediate beaded portion results in providing a raised portion in the web of the stringer tape to either side of the slider and fastener elements and on both sides of the stringer tapes. These raised portions tend to act as guards along the flanges of the slider so as to prevent any foreign materials from becoming disposed in the path of the slider. In other words, these raised portions tend to deflect any such material that might tend to become caught in the fastener or between the slider flanges.

Accordingly, it is the general object of the present invention to provide an improved tape for slide fasteners having a beaded portion arranged longitudinally therealong intermediate the width thereof at a spaced distance from the fastener elements.

It is another object of the invention to provide an improved integrally woven beaded edge tape for slide fasteners having an intermediate beaded portion integrally woven with the tape.

It is a further object of the present invention to provide a slide fastener having stringer tapes with a beaded edge arranged along the opposed edges of each of them and an intermediate beaded or raised portion spaced from the beaded edge and the fastener elements carried thereby so as to provide a portion adjacent the fastener elements which is not in the same plane as the remaining web portion of the stringer tapes which beaded portions act as a deflecting means for foreign materials.

It is a more specific object of this invention to pro-

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vide an integrally woven beaded edge tape wherein a pair of cords are interwoven with double picks of the weft thread at the edge of the tape and a pair of cords are also interwoven with double picks at a point intermediate the width of the tape whereby the tape may easily and conveniently be woven on a shuttleless or needle loom.

Various other objects and advantages of this invention will be more apparent in the course of the following specification, and will be particularly pointed out in the appended claims.

In the accompanying drawings, there is shown for the purpose of illustration, an embodiment which my invention may assume in practice.

In the drawings:

Fig. 1 is a plan view of a slide fastener having stringer tapes constructed in accordance with the present invention,

Fig. 2 is an enlarged diagrammatic plan view of a fragment of stringer tape constructed in accordance with my invention,

Fig. 3 is an enlarged edge view of the stringer tape as shown in Figure 2,

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2 showing the first pick or course of weave,

Fig. 5 is a sectional view taken on line 5—5 of Fig. 2, showing the next succeeding pick,

Fig. 6 is a sectional view taken on line 6—6 of Fig. 2, showing the next pick.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2 showing the next succeeding pick in the construction, and Fig. 8 is a sectional view taken on line 8—8 of Fig. 1.

In Fig. 1 of the drawings, there is illustrated a slide fastener comprising a pair of stringer tapes 2 having an outer beaded edge 3 and an intermediate beaded portion 4 constructed in accordance with the present invention. There is attached to the outer beaded edge 3 of the tapes 2, a series of spaced-apart interlocking fastener elements 5 on which there is arranged a slider 6 for longitudinal movement therealong for engaging and disengaging the fastener elements 5 in a well known manner.

According to the present invention, and referring now to Figs. 2 through 7 of the drawings, the outer beaded edge 3 consists of a pair of longitudinally extending relatively soft, preferably twisted cords 7 and 8 with one disposed on either side of the tape. It is preferable that these cords be twisted in opposite directions to one another for a purpose well known to those skilled in the art in order to obtain a flat and straight stringer. At a predetermined spaced distance from the beaded edge 3 intermediate the width of the tape and in the body thereof, there is provided another pair of longitudinally extending, relatively soft cords 9 and 10 with one disposed on either side of the tape as before.

The body of the tape is of a conventional twill design or weave and consists of a plurality of warp threads 12 and 12a interwoven with a weft or filler thread 13. The weave of each of the picks as shown, is generally over two and under two of the warp threads throughout the tape, but, if desired, the two warp ends 12a nearest the outer cords 7 and 8 may be over one and under one of the warps.

Both the cords 7 and 9 are held in position by the loops 14 and 15, respectively, of the weft thread on one side of the tape and the cords 8 and 10 are held in position by the loops 16 and 17, respectively, of the weft thread on the opposite side thereof. On the outer side of the two cords 7 and 8 at the outer edge of the tape, there is arranged a pair of longitudinally extending warp threads 18 which aid in anchoring the weft threads in position and which are interwoven therewith in a manner presently to be described. It will be noted that the loops

14 and 15 on one side of the tape alternate with or are staggered relative to the loops 16 and 17 on the opposite side thereof. It will also be seen that each of the weft loops 14, 15, 16 and 17 is a double pick and that this tape has been designed primarily to be woven on a so-called needle or shuttleless loom but is not necessarily limited thereto.

In the tape construction as shown, the tape is woven from a continuous weft thread 13 with a double pick passing through the warp threads and cords as the tape is woven. As shown in Fig. 4, the first double pick of the thread 13 passes through the body or web portion of the tape under and over the warps 12, over and partially around the cord 9, then over and under the warps 12a to the beaded edge of the tape. The weft thread then passes over and around cord 7 to the inner edge of the tape where it is disposed around both of the warp threads 18. The second double pick of the weft thread 13, as shown in Fig. 5, passes under and over the warps 12 of the web portion of the tape, between the cords 9 and 10, under and over the warps 12a to the beaded edge, between the cords 7 and 8 at the beaded edge, and around both of the warp threads 18.

As shown in Fig. 6, the next double pick of the weft thread 13 passes under and over the warps 12 of the web portion, under and partially around the cord 10, under and over the warps 12a to the beaded edge, under and around the cord 8 to the inner edge of the tape where it is disposed between and around the warp threads 18.

The last pick of the weft thread 13, as shown in Fig. 7, passes through thereof under and over the warps 12 of the web portion at the outer side thereof, between the cords 9 and 10, under and over the warps 12a to the beaded edge, between the cords 7 and 8 to the inner edge of the tape where it is disposed between and around the warp threads 18. This completes one cycle of the weaving operation.

It will be understood that the weft thread is interwoven securely with the binder or warp threads 18 at the outer edge of the tape and that these warp threads are crowded between the outer cords 7 and 8 as to be protected against abrasion from the legs of the fastener elements 5 when they are attached thereto.

It will also be understood that when the fastener elements 5 are attached to the outer beaded edge 3 of the stringers, as shown in Fig. 1, that the inner ends of the fastener elements are spaced a slight distance from the intermediate beaded portion 4 formed by the two cords 9. That is to say, this intermediate beaded portion 4 is spaced from the inner ends of the fastener element 5 a distance slightly greater than the thickness of the flanges of the slider 6 so as to permit free movement of the slider along the stringers, as more clearly shown in Fig. 8. It is the purpose of these intermediate beaded portions 4 formed by the cords 9 and 10 on each of the stringers 2 to deflect any flimsy materials that might be disposed in the path of the slider in its movement along the stringers so as to prevent such flimsy material from being caught between the fastener elements and between the flanges of the slider.

As a result of my invention, it will be seen that there is provided a tape constructed so as to prevent foreign materials from becoming lodged between the flanges or in the channel of the slider. By the use of such a tape construction, a conventional slider is used thereby eliminating the need for special expensive sliders of the so-called catch or snag proof type. The tape itself due to its construction, tends to prevent any material from becoming caught in the slider thereby eliminating the need for any such special slider. Thus, it will be seen that the applicant has provided an improved tape which tends to be a solution to the snagging or catching problem or at least tends to reduce such catching or snagging to a minimum.

While I have shown and described an embodiment

which my invention may assume in practice, it will be understood that this embodiment is merely for the purpose of illustration and description, and that other forms may be devised within the scope of my invention as defined in the appended claims.

What I claim as my invention is:

1. In a tape for slide fastener stringers of the class described, a plurality of longitudinally extending warp threads, a continuous weft thread interwoven back and forth over, under and through said warp threads so as to provide a woven web, a beaded edge arranged along one edge of said tape formed by at least two relatively large soft cords, one cord being disposed on each side of the tape, a plurality of longitudinally extending warp threads arranged on the outer side of said cords, another longitudinally extending beaded portion arranged at a spaced distance from said beaded edge intermediate the width of said tape also formed by at least two oppositely disposed, relatively large soft cords with one cord being disposed on each side of the tape, each lay of the weft thread being a double pick and successive lays extending over and around one or the other of said cords or therebetween and over and under said last mentioned warp threads.

2. In a tape for slide fasteners of the class described, a plurality of longitudinally extending warp threads, a continuous weft thread interwoven back and forth over and under said warp threads so as to provide a woven web, a beaded edge arranged along the inner edge of said tape formed by two relatively large soft cords, one cord being disposed on each side of the tape, another longitudinally extending beaded portion arranged at a spaced distance from said beaded edge intermediate the width of said tape also formed by two relatively large soft cords with one cord being disposed on each side of the tape, each lay of the weft thread being a double pick, said weft thread passing under and over the warps at the outer side of the tape, over and partially around one of the cords of the intermediate beaded portion, under and over the warps positioned on the inner side thereof toward the beaded edge, over and around one of the cords at the beaded edge, back between the cords at said edge, under and over the warps positioned between the two beaded portions, between the cords of the intermediate beaded portion, then under and over the remaining warp threads to the outer edge of the tape, then back through the web, under and over the warp threads in the outer portion of the tape, under and partially around the other of the cords of the intermediate beaded portion, under and over the warps on the inner side of the intermediate beaded portion toward the beaded edge portion, under and around the other of said cords of the beaded edge portion, back between the cords of the beaded edge portion, under and over the warp threads positioned between the two beaded portions, between the cords of the intermediate beaded portion, under and over the remaining warp threads to the outer edge of the tape, and then back under, over and around the warps and cords as before.

3. In a tape for slide fastener stringers of the class described, the combination as defined in claim 2, including a pair of longitudinally extending warp threads arranged on the outer side of said first mentioned cords at the inner edge of the tape over and under and around which each double pick of the weft thread is disposed.

4. In a slide fastener having a pair of stringer tapes with a series of spaced-apart interlocking fastener elements arranged along the opposed beaded edges thereof and a slider arranged on the elements for longitudinal movement therealong for engaging and disengaging the same, each of said stringer tapes consisting of a plurality of longitudinally extending warp threads, a beaded edge arranged along the inner edge of said tape formed by two relatively large soft cords to which beaded edge the fastener elements are attached with one cord being disposed on each side of the tape, another longitudinally

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extending beaded portion arranged at a spaced distance from said beaded edge of each of said tapes intermediate the width thereof immediately beyond the outer edge of said slider, said intermediate beaded portion also formed of two relatively large soft cords with one cord being disposed on each side of the tape, and a continuous weft thread interwoven back and forth under, over and around said warp threads and said cords.

5. In a slide fastener having a pair of stringer tapes with a series of spaced-apart interlocking fastener elements arranged along the opposed beaded edges thereof and a slider arranged on the elements for longitudinal movement therealong for engaging and disengaging the same, each of said stringer tapes consisting of a plurality of longitudinally extending warp threads, a continuous weft thread interwoven back and forth, over and under said warp threads so as to provide a woven web, a beaded edge arranged along the inner edge of said tape formed by two relatively large soft cords to which beaded edge the fastener elements are attached, with one cord being disposed on each side of the tape, another longitudinally extending beaded portion arranged at a spaced distance from said beaded edge of each of said tapes intermediate the width thereof immediately beyond the outer edge of said slider, said intermediate beaded portion also formed of two relatively large soft cords with one cord being disposed on each side of the tape, said weft thread passing under and over the warps at the outer side of the tape, over and partially around one of the cords of the intermediate beaded portion, under and over the warps positioned on the inner side thereof toward the beaded edge, over and around one of the cords at the beaded edge, back between the cords at said edge, under and over the warps positioned between the two beaded portions, between the cords of the intermediate beaded portion, then under and over the remaining warp threads to the outer edge of the tape, then back through the web, under and over the warp threads in the outer portion of the tape, under and partially around the other of the cords of the intermediate beaded portion, under and over the warps positioned on the inner side of the intermediate beaded portion toward the beaded edge portion, around the other of said cords of the beaded edge portion, back between the cords of the beaded edge portion, under and over the warp threads positioned between the two beaded portions, between the cords of the intermediate beaded portion, then finally under and over the remaining warp threads to the outer edge of the tape to complete one cycle of the weaving of the weft with the warps which cycle is then repeated throughout the weaving of the tape.

6. In a tape for slide fastener stringers of the class described, the combination as defined in claim 5, including a pair of longitudinally extending warp threads arranged on the outer side of said first mentioned cords at the inner edge of the tape over and under and around which the weft thread passes.

7. In a slide fastener having a pair of stringer tapes with a series of spaced-apart interlocking fastener elements arranged along the opposed beaded edges thereof

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and a slider arranged on the elements for longitudinal movement therealong for engaging and disengaging the same, each of said stringer tapes consisting of a plurality of longitudinally extending warp threads, a continuous weft thread interwoven back and forth, over and under said warp threads so as to provide a woven web, a beaded edge arranged along the inner edge of said tape formed by two relatively large soft cords to which beaded edge the fastener elements are attached with one cord being disposed on each side of the tape, another longitudinally extending beaded portion arranged at a spaced distance from said beaded edge of each of said tapes intermediate the width thereof immediately beyond the outer edge of said slider, said intermediate beaded portion also formed of two relatively large soft cords with one cord being disposed on each side of the tape, each lay of the weft thread being a double pick, one of the double picks being disposed under and over the warps at the outer side of the tape, over and partially around one of the cords of the intermediate beaded portion, under and over the warps positioned on the inner side thereof toward the beaded edge portion, and over and around one of the cords at said edge, the next double pick being disposed under and over the warps at the outer web portion of the tape, between the cords of the intermediate beaded portion, under and over the warps positioned on the inner side of the intermediate beaded portion toward the beaded edge portion and between the cords at the beaded edge, the next successive double pick being disposed under and over the warps at the outer web portion of the tape, under and partially around the other cord of the intermediate beaded portion, under and over the warps positioned on the inner side thereof toward the beaded edge and under and around the other cord at the beaded edge, the last double pick of the weft thread being disposed under and over the warps at the outer web portion, between the cords at the intermediate beaded portion, under and over the warps positioned on the inner side thereof, toward the beaded edge and between the cords at the beaded edge so as to provide one complete cycle of the weaving operation.

8. In a tape for slide fastener stringers of the class described, the combination as defined in claim 7, including a pair of longitudinally extending warp threads arranged on the outer side of said first mentioned cords at the inner edge of the tape over and under and around which each double pick of the weft thread is disposed.

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