Feb. 20, 1934. N. WARSHAW 1,948,406

ZIPPER TAPE

Filed May 16, 1933

Fig. 1.

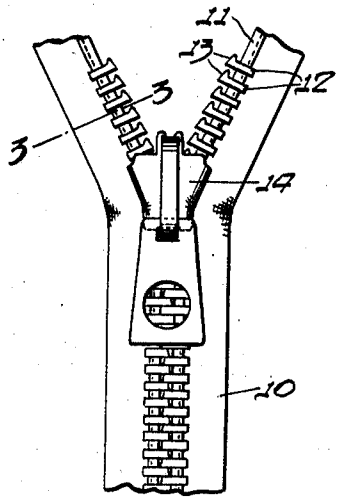


Fig. 2.

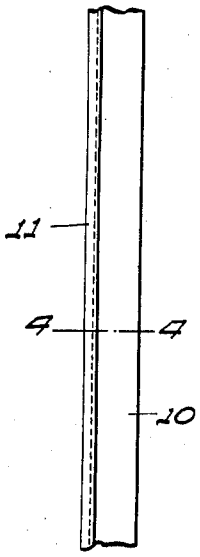


Fig. 3.

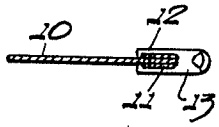


Fig. 6.

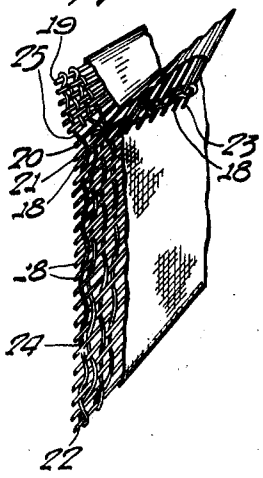


Fig. 5.

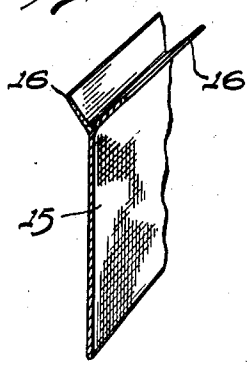
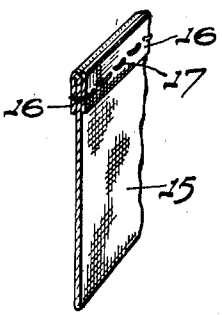


Fig. 4.



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1,948,406

ZIPPER TAPE

Nathan Warshaw, Brooklyn, N. Y.

Application May 16, 1933. Serial No. 671,381

10 Claims. (Cl. 24—205)

The invention relates to improvements in flexible closures, known as "zippers" having two flexible strips, stringers or tapes carrying interlocking fastening devices which are operated by a sliding cam device.

It is well known that in this type of closure the interlocking fastening devices are mounted upon flexible strips, tapes or stringers which are formed with beaded inner edges. It is also known that in certain constructions of this type the beaded or thickened edges are provided by means of cords about which the material of the tape or strip is brought and sewed down. It is also a well known practice to provide this thickened edge or bead by the expedient of folding a tape or strip in a predetermined manner in order that there will be the necessary increased thickness at the edge. An objection to the use of a sewed-in cord or a multiple folded edge is that there is an excessive amount of stiffness which detracts from the efficiency and attractiveness of the finished product as it renders it more or less cumbersome and unwieldy.

It is with the above facts in view that I have devised the present invention which has for its principal object the provision of a novel "zipper" or flexible closure tape which is woven in a peculiar manner to provide integral portions which may be folded back and stitched down in order to define the proper and necessary base onto which the cam actuated securing elements or interengaging fastening members are clamped.

An important object of the invention is to provide a foundation tape or strip, or stringer, whichever term is preferred, which is in one piece and which avoids any necessity for a back and forth folding or for the employment of a contained or enclosed cord and which will consequently be extremely flexible.

Another object is to provide a flexible closure tape of this character which is woven so as to possess a more or less peculiar cross section and which will, when folded upon itself and stitched down, provide the necessary thickness at the edge of the tape or stringer for mounting the interengaging fastening elements upon it.

A further object is to provide a tape, stringer or strip of this character woven in such manner that threads are dropped at a certain location to render the strip or tape thinnest along a certain line adjacent the beginning of the thickened edge so that the flexibility will be increased to a materially greater degree and the efficiency consequently improved.

An additional object is to provide a tape or strip of this character which will be very simple and inexpensive to make, easy to finish preparatory to the mounting of the interengaging fastening elements thereon, and which will moreover be highly efficient and durable in use as well as a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing in which:

Figure 1 is a plan view of a so-called "zipper" or flexible closure constructed in accordance with my invention,

Figure 2 is a plan view of one of the tapes alone,

Figure 3 is a detail cross sectional view taken on the line 3—3 of Figure 1 showing the folding of the strip and the manner in which the interengaging fasteners are clamped in place,

Figure 4 is a perspective detail section taken on the line 4—4 of Figure 2,

Figure 5 is a perspective cross section through the tape alone, and

Figure 6 is a similar view on a larger scale showing the exact manner in which the tape is woven.

At the very outset it is of course understood that in this type of closure there are provided two flexible stringers or tapes having suitable interlocking fastening devices and secured to the adjacent edges of any article so as to present the fastening members in operative relation, the fastening members being interengaged by the action of a sliding cam.

Referring more particularly to the drawing, the numeral 10 designates, as a whole, or generally, the tapes or strips which are located at the edges of a garment or any other article to be fastened. These strips or tapes are provided at their confronting edges with beaded or thickened portions 11, formed in a manner to be specifically described, upon which are clamped the U-shaped jaws 12 of the interlocking fastening devices 13 which have the customary coacting projections and recesses and which are actuated by an appropriate slider shown at 14.

As mentioned above, the essence of the present invention lies not in the fastening devices themselves but in the original formation of the tape or stringer upon which the fastening devices are clamped. In accordance with my invention this tape is initially woven in a Y-shape, as well illustrated in Figures 5 and 6. the main or body

portion being indicated at 15 and the head of the Y being defined by oppositely directed flange portions 16, all of this being a single integral woven structure. The oppositely directed or extending flange portions 16 are intended and adapted to be folded back onto the main portion 15, as shown in Figure 4, and secured thereto as by a line of stitching indicated at 17.

Broadly considered, the invention comprises this original or initial Y-shape of the tape but in order that a clear understanding may be had of the mode of weaving, reference should be had to Figure 6 of the drawing wherein is disclosed the exact manner in which the warp and woof threads are interengaged or interlaced to bring about the desired result.

Referring to Figure 6 the longitudinal or warp threads are indicated by the numerals 18, 19, 20, 21, 22 and 23 and it will be observed that considered generally they are arranged in a Y-shape to conform to what is shown in Figure 5. The woof or weft thread, indicated at 24, is interlaced with these warp threads so as to define the finished fabric of the tape. Taking the first course of the woof or weft thread, and beginning at the point 25, which is near the center of the head of the Y, it is woven under, above and then under and above the successive warp threads 18 to the edge of the head of the Y and is then brought back under the endmost warp thread 19, over the next, under the next, over the next and so on and then over the warp threads 20 and 21 and the thread 18 immediately below the latter, under the next two, over the next two and so on until it reaches the lowermost warp thread 22 of the body or shank of the Y, from which point the weft or woof thread is brought around and interlaced with successive pairs of the warp threads in staggered relation to the first course. When the weft thread is continued in this manner and reaches the warp thread 21 it is brought up over it then under the adjacent thread 18, over the next, under the next and so on and is brought under and around the endmost warp thread 23 at the side opposite the thread 19 and then interlaced with the successive warp threads 18 and again brought down over the thread 21 and interlaced with the successive warp threads 18 therebelow. This mode of weaving is continued throughout the length of the tape and it will be observed that there is a dropping of the weft thread at the point where the head of the Y branches out, thereby reducing the thickness of the fabric of the tape at this specific location.

Assuming that the tape has been woven in this or an equivalent manner so that it will be the desired Y-shape in cross section, in order to prepare it for the reception of the interengaging fastening elements 13 which are to be applied thereto, it is merely necessary to fold down or back the two oppositely extending flange portions 16 so that they will lie flatly upon the major or body portion 15 and then stitch them down by the line of stitching 17 indicated in Figure 4. The U-shaped jaws 12 of the clamping members 13 are then engaged upon the resulting bead 11 and are clamped or clipped into place as is customary. As mentioned above, the present invention is not concerned with the details of construction of these fastening elements nor of the slider 14 which cooperates therewith. It will be seen that when the tape is formed in the manner set forth the folding back of the flanges 16 of the Y-shaped head will define the necessary thickness which will provide the bead on which the U-shaped clamping members are fastened. In view of the fact that there is no inserted cord or other extraneous or auxiliary element there will be no undue stiffness to interfere with the highly desirable flexibility of this type of closure. Moreover as the tape is woven in one piece there is no objectionable feature such as fastening together a plurality of separate elements to build up the desired finished structure. The peculiar manner of weaving, in that it drops a thread at the bend of the divergent flanges of the head of the Y produces a reduction in thickness at this point and this, coupled with the other details of the mode of weaving, will insure maximum flexibility while at the same time adequate thickness is provided for the support of the fastening elements. Clearly, the tape is easy to weave and is consequently inexpensive to manufacture and to finish as nothing is involved other than folding back the integral flange portions and stitching them.

It will be observed that throughout the description the strip has been referred to as Y-shaped in cross section. However, this should not be considered a limitation as the exact cross sectional configuration might be varied or described in different language. In other words, the point is that the strip is so woven that one longitudinal edge thereof will be bifurcated to define divergent flaps or extensions adapted to be folded back onto opposite sides of the body portion of the strip and stitched or otherwise secured thereto.

It is thought from the above description and a study of the drawing that the construction and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention and have set forth in detail the exact mode of weaving of the weft threads with respect to the warp threads, it should be understood that this disclosure is merely an exemplification of the principles involved and that the right is reserved to make all such changes in the sequence of interlacing of the transverse and longitudinal threads, or in fact any other details, as will not constitute any departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, I claim:

1. A tape for flexible closures or fasteners comprising a strip of flexible material woven in Y-shape in cross section to define oppositely directed flange portions, said flange portions being folded back upon the body of the tape to form a fastener-retaining thickened edge, in combination with fastening members formed with U-shaped jaws embracing and clamped upon the said thickened edge.

2. A tape for flexible closures or fasteners comprising a strip of flexible material woven in Y-shape in cross section to define oppositely directed flange portions, said flange portions being folded back upon the body of the tape to form a fastener-retaining thickened edge of more than double thickness of the material, in combination with fastening members formed with U-shaped jaws embracing and clamped upon the said thickened edge.

3. A tape for flexible closures or fasteners comprising a strip of flexible material of Y-shape in cross section, the oppositely directed portions of the head of the Y being folded back upon the shank of the Y and secured thereto to define a thickened edge, in combination with fastening members formed with U-shaped jaws embracing and clamped upon the said thickened edge.

4. A foundation tape for flexible closures or fasteners comprising a strip of flexible material initially of Y-shape in cross section to possess substantially oppositely directed flange portions, said flange portions being folded back onto the body of the tape and secured thereto and to each other to define a beaded edge for the reception of fastening members formed with U-shaped jaws adapted for embracing and clamping engagement upon said beaded edge.

5. A tape for flexible closures or fasteners comprising a strip of flexible material formed of substantially Y-shape in cross section to define oppositely extending flange portions at an edge of the tape, said flange portions being folded back onto the body portion of the tape, a line of stitching securing said folded back flange portions to each other and to the body of the tape, whereby there will be defined a beaded edge adapted for the reception of U-shaped fastener elements embracingly engaged and clamped thereupon.

6. A foundation tape for flexible closures or fasteners comprising a woven strip of flexible material substantially Y-shaped in cross section providing oppositely directed flange portions, said flange portions being folded back onto the major portion of the strip and stitched thereto and to each other for defining a thickened edge.

7. A foundation strip for flexible closures or fasteners comprising a woven strip of flexible material including warp threads and a weft thread interlaced therewith for defining a body substantially Y-shaped in cross section providing oppositely extending flange portions, said flange portions being folded back and secured to the body portion of the strip and to each other for forming a thickened edge to receive U-shaped fastener elements embracingly engaged thereupon and clamped thereto.

8. A foundation strip for flexible closures or fasteners comprising a woven strip of flexible material including warp threads and a weft thread interlaced therewith for defining a body substantially Y-shaped in cross section providing oppositely extending flange portions, said flange portions being folded back upon the body portion of the strip, means for securing the folded back flanges to the body portion and to each other for forming a beaded edge to receive U-shaped fastener elements embracingly engaged thereupon and clamped thereto, a warp thread being dropped at the juncture of the major portion of the flexible strip with the divergent flange portions thereof.

9. A flexible closure comprising the combination of an elongated strip having one longitudinal edge bifurcated to define divergent lateral extensions, said extensions being folded back onto the opposite sides of the body portion of the strip and secured thereto to define a thickened edge, and U-shaped fastening elements embracingly engaged and clamped upon said thickened edge.

10. A flexible tape to serve as a mounting for fastening elements, said tape comprising an elongated fabric strip woven to define divergent lateral extensions at one longitudinal edge, said extensions being folded back onto the opposite sides of the body of the strip and secured thereto to define a thickened edge.

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