March 19, 1946. L. CAMPBELL 2,396,912

STRINGER TAPE FOR SLIDE FASTENERS

Original Filed Dec. 22, 1943

Fig. 1.

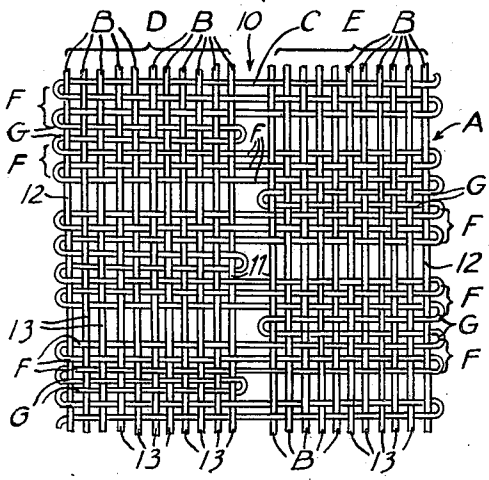


Fig. 2.

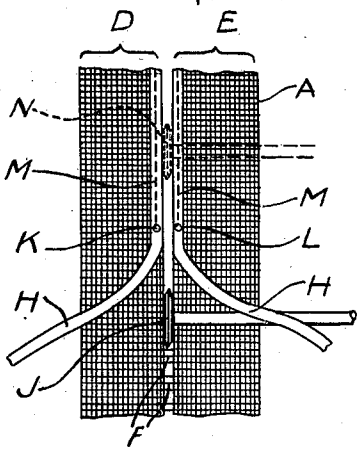


Fig. 3.

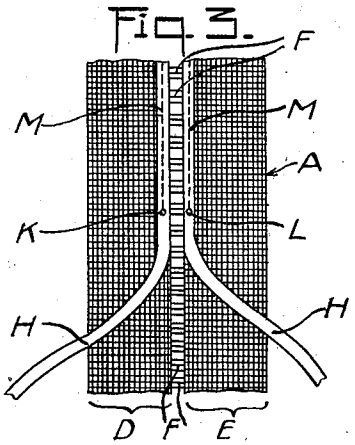


Fig. 4.

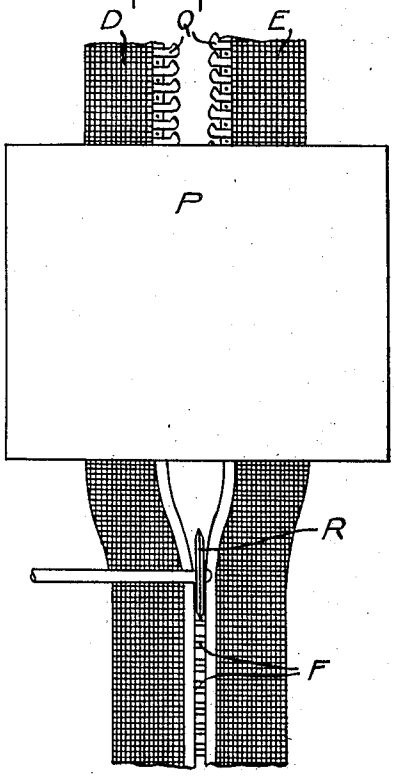


Fig. 5.

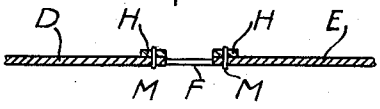
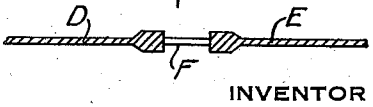


Fig. 6.



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STRINGER TAPE FOR SLIDE FASTENERS

Lee Campbell, Hackensack, N. J.

Original application December 22, 1943, Serial No. 515,256. Divided and this application May 8, 1945, Serial No. 592,654

2 Claims. (Cl. 139—384)

This invention relates to slide fasteners and has more particular reference to an improvement in stringer tapes therefor, the present application being a division of Letters Patent No. 2,380,939 dated August 7, 1945.

In this art, each slide fastener includes a pair of mating stringer tapes usually made up of lengths of textile material which are woven, braided or otherwise produced and each of which tapes has one edge portion of greater thickness than the main body of the tape, said thicker edge portion being variously produced either by weaving or by applying and securing thereto a cord, bead or other equivalent edging so as to afford the necessary thickness for the proper attachment of the interlocking metallic elements of the fastener to the tape. Heretofore, it has been the usual practice to produce the pairs of stringer tapes as separate or individual lengths of strip material which is dyed and to one edge of which the edging is secured by a form of chain stitching after which the interlocking metallic fastener elements are applied, the strips being then cut into the desired lengths and the lengths of strips assembled together with the slide member to produce the finished slide fastener device.

In contradistinction to this mode of production, the present invention comprehends the production of woven strip material for slide fastener stringer tapes which embodies the weaving of said strip in a novel manner so that the same is of such a width as to make provision for a pair of stringer tape defining areas lying side-by-side in closely spaced relation joined by longitudinally spaced groups of weft or filling threads. In this manner of weaving the strip, the remote or outermost edges of the tapes have a full selvage edge while the inner connected edges are only partially selvaged. The woven strip of material thus produced is then dyed and subsequently fed through a suitable double needle sewing machine for applying and securing the bead forming edging simultaneously to the inner edges of the stringer tape defining areas which are severed or cut apart either as they approach the needles or after they leave the machine. Obviously when the edging is thus applied it serves as a binding for the partially selvaged inner edges while providing a pair of matched stringer tapes which are identical as to color and shade.

From the foregoing it is apparent that in addition to producing stringer tapes for slide fasteners which match exactly as to color and shade, as increase in production is attained both in the weaving of the tape and in the application of the beaded edging thereto.

With the above recited and other objects in view, the invention is set forth in greater detail in the following specification, particularly pointed out in the appended claims and illustrated in the accompanying drawing, in which:

Fig. 1 is an enlarged diagrammatic view of a woven strip of material from which stringer tapes are produced.

Fig. 2 is a diagrammatic plan view illustrating the manner of applying the edging to a strip of stringer tape forming material woven in accordance with the invention.

Fig. 3 is a similar view illustrating a modification of the manner in which the edging is applied to the strip.

Fig. 4 is a diagrammatic view illustrating the severing and applying of the interengageable fastener elements to the stringer tape forming strip.

Fig. 5 is an enlarged diagrammatic cross-sectional view through the stringer tape forming strip with the edging stitched thereto.

Fig. 6 is a similar view illustrating a stringer tape forming strip having a woven edging showing a modification of the invention.

Referring to the drawing and particularly to the strip of woven textile fabric A diagrammatically shown in Fig. 1 with the threads thereof spaced apart for the sake of clearness, the said strip includes longitudinally extending warp threads designated generally by the reference characters B and a weft or filling thread C, the leads of which extend transversely of and are interwoven with the warp threads B. As shown, the warp threads B are arranged as a pair of coextensive groups D and E which are slightly spaced apart laterally of the strip so as to provide a space 10 throughout the length of the strip at the center thereof and which space is defined between the innermost warp threads 11 of the groups D and E, the outer edges of the strip A being bounded by the outermost marginal threads 12, between which lie the intermediate threads 13 of each group.

In weaving the strip A, the weft thread C is shot completely across the warp, around the outermost warp threads 12 and back thereacross a predetermined number of times, three shots having been taken as shown by way of illustration, although it is to be understood that any desired number may be utilized within the scope of the invention. After the selected number of threads have been laid, the weft thread C is then shot partially across the warp from the outer-

most thread 12 of one group D and around the innermost adjacent warp thread 11 or the innermost thread of said group D, the weft thread lead being then brought back and around the outermost warp thread 12 of the group D. The weft thread C is then shot completely across the warp and around the outermost thread 12 of the other group E, thence back and completely across all of the warp threads and around the outermost warp thread 12 of group D and then back and around the outermost warp thread 12 of group E. The next shot of the weft thread C is carried only partially across the warp to and around the innermost warp thread 11 of group E thence back to the warp thread 12 of group E, thus completing a weaving cycle which is repeated throughout the length of the strip.

The strip of textile fabric A thus produced, includes a pair of longitudinally extending groups of warp threads D and E which are spaced apart laterally at the center of the strip with a weft thread which is so interwoven with the warp threads as to provide groups of leads F which extend completely across all of the warp threads and across the space 10 and around the outermost or marginal warp threads 12 at the opposite sides of the strip, thus providing the strip with completely selvaged outer edges. This, combined with the weft thread leads G extending only partially across the width of the strip A alternately from the opposite side edges thereof, provides a woven strip of material having a pair of slide fastener stringer tape defining areas lying in side-by-side closely spaced relation joined by the longitudinally spaced groups of weft thread leads F which are adapted to be subsequently severed to provide a pair of mating stringer tapes. The strip A, thus produced, is designed to be dyed so that the mating stringer tape defining areas will match exactly as to color and shade.

The manner of utilizing the strip thus produced for the manufacture of slide fastener stringer tapes and the ultimate production of slide fasteners may vary but several preferred methods are disclosed herein, one of which consists in first dyeing the strip, then severing the same as it is fed into a double needle sewing machine which applies and secures bead forming edgings H to the inner edges of the stringer tape defining areas of the strip A. In lieu of severing the groups of connecting weft thread leads F as the strip A is fed into or enters the sewing machine, the said groups of connecting weft thread leads may be severed as they emerge from the machine after the stitching operation. This method presupposes that the bead forming edging H has been previously dyed and is matched as closely as possible with the strip A with reference to the color and shade thereof. It should be here noted that the bead forming edging H which is preferably applied and secured to the inner edges of the stringer tape defining areas constitutes a means for binding said edges which are only partially selvaged, thereby precluding the tendency of said edges to ravel.

Obviously after the beaded edging H has been applied and the strip A severed into a pair of mating stringer tapes, the pair should be kept together until the interlocking fastener elements are applied, the tapes cut into lengths and the slides associated therewith to produce the finished slide fasteners.

It is also proposed to apply the undyed bead forming edging H to the undyed strip A by running the same through a double needle sewing machine and then dyeing the assemblage so that the strip and its beaded edging match perfectly as to color and shade. In this instance, the strip A is not longitudinally severed until the time it is fed into the machine for applying the fastener elements thereto, thus insuring slide fastening devices provided with stringer tapes which are perfectly matched as to color and shade.

As shown in Fig. 2 of the drawing, the strip A woven in accordance with the invention as shown in Fig. 1, is fed through a double needle sewing machine together with the edging H. As illustrated in full lines a rotary cutter J severs the connecting weft threads F as the strip enters the machine and the needles K and L stitch the edging H to the inner edges of the tape defining areas D and E by lines of stitching M. It is of course apparent that in lieu of severing the connecting weft threads F as the strip enters the machine, said connecting weft threads may be severed after the stitching of the edging thereto and as the strip is fed from the machine, the rotary cutter being shown in broken lines by the reference character N.

As an alternate way in which slide fastener may be produced from the strip A, the same may be fed to the sewing machine as illustrated in Fig. 3 of the drawing, together with the edging H, the strip A and the edging being undyed. The undyed strip A together with the undyed edging are then dyed simultaneously to obtain a perfect match and the assemblage is then fed through a machine P for applying the interengageable metallic fastening elements Q, to the tape defining areas D and E, it being understood that the groups of connecting weft threads F will be severed by a rotary cutter R as the strip enters the machine P.

What is claimed is:

1. A strip of woven textile fabric adapted to be longitudinally severed at the transverse center thereof to provide a pair of mating slide fastener stringer tapes, said strip being so woven as to define a pair of stringer tape forming areas lying in side-by-side closely spaced relation joined together by longitudinally spaced groups of weft thread leads which extend completely across the strip, an elongated strip extending longitudinally along the inner edge of each tape forming area defining an edging and means continuously securing said strips to said tape forming areas forming bindings therefor when the tape forming areas are separated.

2. A strip of textile fabric adapted to be longitudinally severed at the transverse center thereof to provide a pair of mating slide fastener stringer tapes, said strip being so woven as to provide a pair of stringer tape defining areas disposed in side-by-side closely spaced relation, joined by longitudinally spaced groups of weft thread leads which extend completely across the strip in bridging relation to the spacing therebetween and having fully selvaged outer edges and partially selvaged inner edges, an elongated strip extending longitudinally along the inner edge of each tape forming area defining an edging and means continuously securing said strips to said tape forming areas forming bindings therefor when the tape forming areas are separated.

LEE CAMPBELL.