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2,622,633

EDGE BINDING FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES

Original Filed Sept. 8, 1950

2 SHEETS—SHEET 1

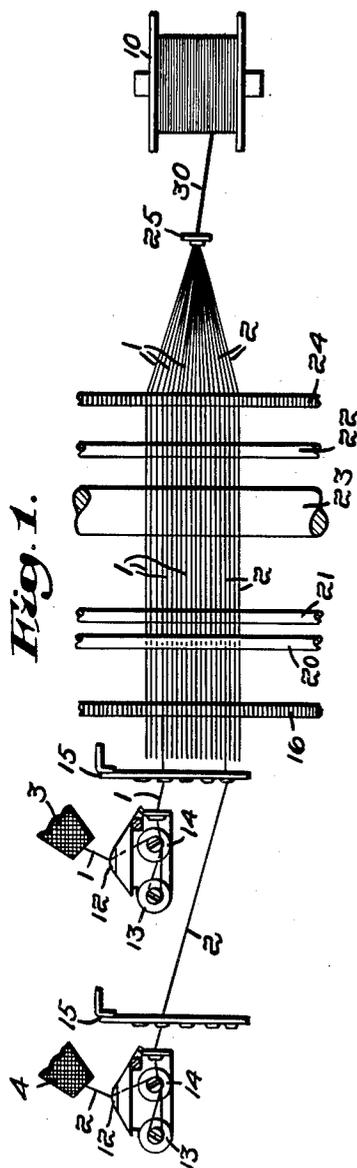


Fig. 1.

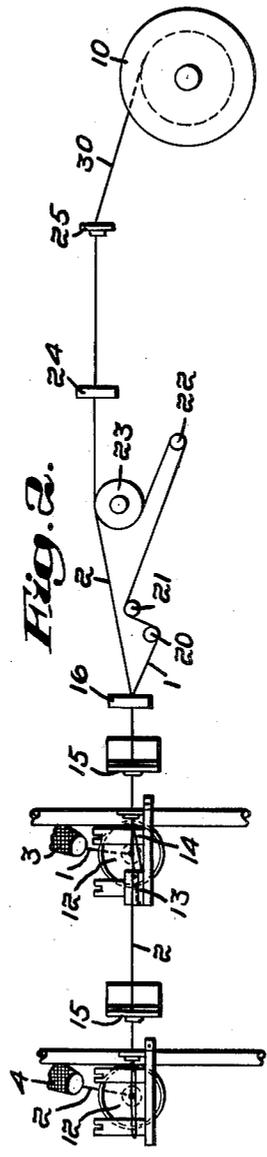


Fig. 2.

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2 SHEETS—SHEET 2

Fig. 3.

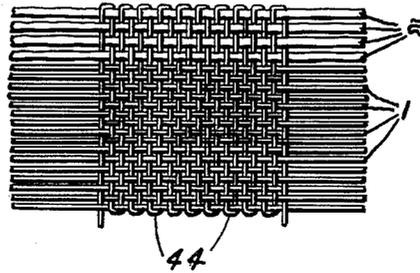
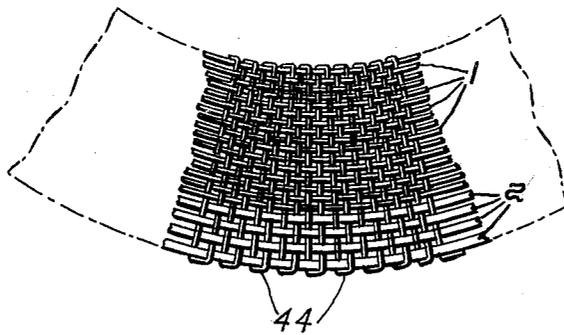


Fig. 4.



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UNITED STATES PATENT OFFICE

2,622,633

EDGE BINDING FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES

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Original application September 8, 1950, Serial No. No. 183,831, now Patent No. 2,595,778, dated May 6, 1952. Divided and this application November 14, 1951, Serial No. 256,274

4 Claims. (Cl. 139--421)

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The present invention is a divisional of my prior and co-pending application Ser. No. 183,831, filed September 8, 1950, now Patent No. 2,595,778, for improvements in "Fabric Weaving with Groups of Elastic and Relatively Inelastic Warps and Improved Article Made Thereby." I have elected to claim the method of manufacture in said application Ser. No. 183,831; and in the present divisional application I have elected to claim the novel article.

In my development of the art of improving narrow fabrics such as French cord binding for use in the manufacture of boots and shoes, as explained in my said prior Pat. No. 2,500,668, issued March 14, 1950, I have illustrated a binding tape having a body portion and one selvage edge formed of relative inelastic warp threads, with the opposite edge portion comprised of relatively elastic threads whereby the binding can be snugly fitted around curved contours, such as the vamp of a shoe upper, and which will lay flat independently of cutting, snipping, pinking, or otherwise weakening the tape.

Thus the elastic warp portion would stretch around the curve of greater radius than the body portion and opposite edge, or, conversely, could be compressed while the entire tape was united to the upper in an ornamental flat and finished state. I have coined the name "Nosnip" as nomenclature for this type of French cord binding.

In my said parent and co-pending application Ser. No. 183,831, now Pat. No. 2,595,778, I have illustrated, described, and claimed a method of making such binding wherein a novel method of preparing, handling, and weaving the inelastic and elastic warp threads in a widthwise fabric structure is set forth.

Heretofore it has been found to be extremely difficult to properly combine and weave a binding which includes elastic warp threads as all such warp threads, both elastic and non-elastic, were woven under tension or strain and, consequently, the completed article would wrinkle along the portion including the elastic warp threads as the elastic members would "snap back" after the weaving was completed and the tension released, thus distorting the appearance, finish, and desirability of the fabric as a whole and rendering same objectionable and commercially unusable as a finishing binding strip for boot and shoe uppers.

Such customary weaving of elastic warp threads under tension is well known and is set forth, for example, in U. S. Patents Nos. 2,267,540, dated December 23, 1941, and 2,500,668, dated March 14, 1950.

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My said process in Patent No. 2,595,778 illustrates a novel and efficient method of commercially weaving the inelastic threads under the usual necessary standard tension involved in the weaving operation and handling the elastic thread portions untensioned or tensionless and, in effect, at complete rest so that there was no "snap back" after the weaving was completed and also the full benefit of the stretch factor of the elastic warps was available in applying the binding around curved contours of any radius within the range required in boot and shoe manufacture.

One method which I have found to be satisfactory, and as explained in said parent application 183,831, consists in preparing the non-elastic warp threads and the elastic warp threads by winding on separate spools and, thereupon, in a warping action unwinding the same wherein all the pull or tension during warping is exerted on the inelastic threads, thus feeding in the elastic warp threads while at rest or in non-stretched or tensionless condition. As the inelastic threads constitute the main widthwise portion of such binding tape, viz. from two-thirds to three-fourths widthwise, and include one selvage edge and the middle or body portion; while the elastic warp threads were relatively few in number and would ordinarily include one-third or one-fourth only widthwise of the tape, it will be appreciated that the weaving is effected without difficulty and resulted in my improved article of manufacture having the greater widthwise portion of the binding tape of tensioned inelastic warp threads, and the narrow edge portion of untensioned elastic warp threads.

Such elastic warp threads could be of rubber, rubber-covered, or plastic material, and the inelastic warp threads of cotton, rayon, or any other blends of relatively inelastic textile material desired, which latter took up all the unwinding tension during weaving with the weft or filler also of inelastic threads.

Consequently I have produced a novel article in the form of a narrow binding particularly designed for French cord binding with all the advantages incident to its attachment without snipping or pinking and with the stitching going thru the inelastic woven portion, and the outer edge capable of being stretched around a greater radius than the body and stitched edge while laying flat and in smooth finished contact with the upper to which it is secured.

I wish to claim this improved article herein broadly.

Referring to the drawings illustrating one

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method of making my improved articles as explained in said parent application:

Fig. 1 is a view of the warping operation, viz., where a plurality of elastic warp threads and a plurality of inelastic warp are conducted under varying tensions to and wound upon the warp spool or reel simultaneously, for subsequent unwinding during the weaving operation;

Fig. 2 is a corresponding diagrammatic side view;

Fig. 3 is a fragmentary view of the resultant fabric on an enlarged scale, and

Fig. 4 is also a fragmentary view of the fabric in curved position with the elastic edge portion stretched along a curve of greater radius than the rest of the tape, as around the throat of the vamp of a shoe upper.

It will be appreciated that I may utilize any desired number of elastic or rubber threads for the marginal portion, and a corresponding desired number of inelastic threads for the body portion of the fabric, and while I have designed and intended the invention to be utilized in the making of narrow fabric for trimming on boots and shoes as a French cord and to be flat around curves without pinking, my invention can be utilized for other purposes.

Referring to Figs. 1 and 2, I have designated a series of inelastic threads, outlining one of the same for clarity in the drawings which I have indicated as 1, and a set of elastic threads also showing the line of travel of one of the same, as indicated at 2, the inelastic thread 1 being fed off a cop 3, and the elastic thread from a cop 4, being arranged in proximity and with a cop for each of the series of warp threads in adjacent alignment; all to be conducted to and wound on the warp spool 10.

Following the line of travel of each warp thread, the same would be first conducted around the usual center guide 12 and thence around rolls 13 and 14, thru eyelets in frames 15—15, and thru openings in guide frame 16, this being a usual and standard construction. From then on, however, I conduct the elastic series of warp threads 1 around tension bars 20, 21, 22, and 23, and thence thru a guide frame 24 and an eyelet 25 to and onto the warp spool 10, which is being rotated at appropriate speed, drawing all the warp threads together, and thru the eyelet 25.

The elastic or rubber-covered series of warp threads 2 are led to the spool 10 without conducting threads around tension bars but also thru the gathering eyelet 25, which thus assembles the entire series of warp threads, as indicated at 30, winding the same onto the warp spool 10.

In the diagrammatic views of Figs. 1 and 2, I have illustrated only a portion of the elastic and inelastic threads, the series of elastic or rubber-coated threads being indicated as the uppermost six outlined in Fig. 1. A usual French cord binding tape, for example, may comprise twelve elastic threads and forty-four inelastic threads for the suitable weaving, with the weft or filler of the narrow fabric, six of such elastic threads being subsequently led thru one set of harnesses, and the other six thru a corresponding harness during the weaving operation, as indicated in said parent application, and the cooperating forty-four threads of inelastic warp members being similarly divided between the weaving harnesses.

As thus explained and illustrated, the winding of the warp spool 10 winds the set of inelastic

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threads 1 under the tension accorded by leading the same around several tension bars 20, 21, 22, and 23; whereas the elastic series of warp threads 2 are conducted to the spool 10 substantially without any friction, being thus wound untensioned or tensionless and completely at rest so far as stretch is concerned.

The resultant fabric is indicated in Fig. 3, wherein the typical fabric structure is disclosed with the weft or filler 44 but without the full number of elastic and inelastic threads being shown, a reduced number being for clarity in the drawing.

Thus the strain and tension during both the warping operation and the weaving operation is effectually taken by the inelastic warp threads, leaving the elastic threads to be woven at substantially complete rest and without being stretched. This untensioned, or substantially complete, condition of rest of the elastic threads is obtained without any "binders" or "gut threads" and, hence, the elastic warps exerted no shrinking, contracting, or wrinkling tendency on the complete fabric, as would be the case if the elastic warp threads were also under stretch or tension.

This feature is one of the important characteristics of my present process and the resultant article constituting my invention.

Fig. 4 is a diagrammatic view illustrating how the binding will lay flat when applied around a curved contour, with the elastic threads on the outermost edge.

I claim:

1. As a new article of manufacture, a woven fabric tape of the kind described, having its body portion formed of tensioned warp threads, in combination with an edge portion woven with non-tensioned elastic warp threads.

2. As a new article of manufacture, a woven fabric tape of the kind described, having its body portion formed of tensioned warp threads, in combination with an edge portion woven with non-tensioned elastic warp threads, said inelastic portion being substantially two-thirds of the width of the tape, and the non-tensioned elastic portion approximately one-third of the width at one edge of the tape.

3. As a new article of manufacture, a woven fabric tape of the kind described, having an inelastic widthwise body portion of tensioned warp threads and one elastic widthwise portion of untensioned warp threads.

4. A woven French cord fabric tape of the kind described, having one edge and the body portion of tensioned inelastic warp threads, the opposite edge portion of non-tensioned elastic warp threads, said tensioned inelastic part extending from one edge to and approximately two-thirds the width of the binding, and the elastic non-tensioned portion including the opposite edge.

MAXWELL E. DUCKOFF.

REFERENCES CITED

The following references are of record in the file of this patent:

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