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PREPARATION OF KNITTED FABRICS FOR USE.

APPLICATION FILED MAY 3, 1919.

1,401,501. Patented Dec. 27, 1921.

Fig. 1.

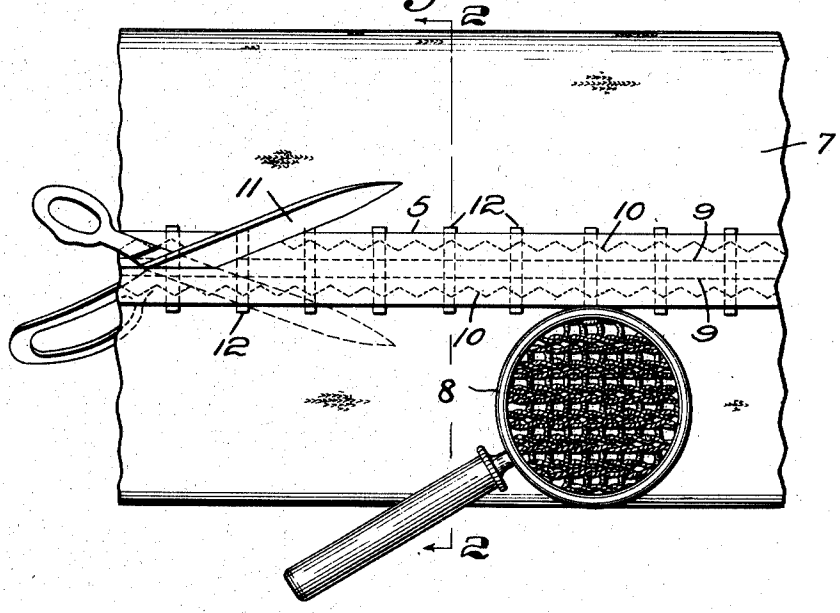


Fig. 2.

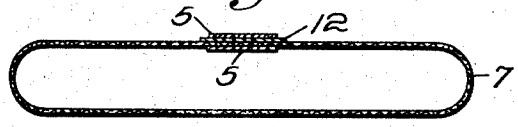
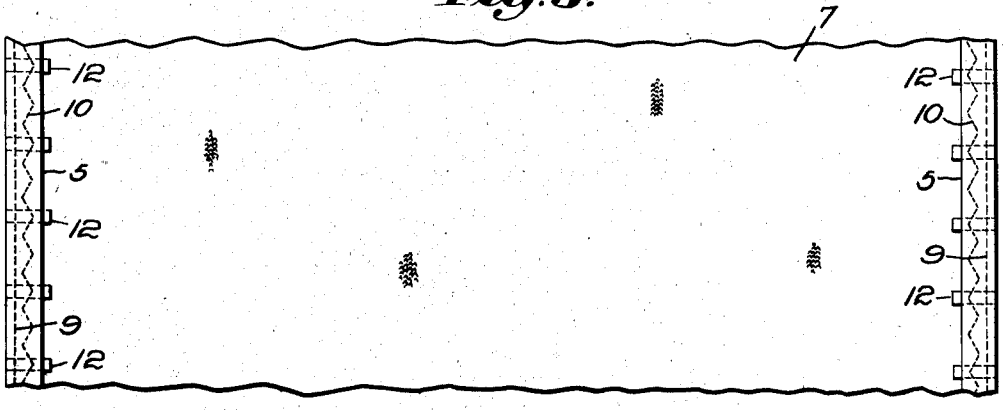


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PREPARATION OF KNITTED FABRICS FOR USE.

1,401,501. Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed May 3, 1919. Serial No. 294,471.

To all whom it may concern:

Be it known that I, CHARLES E. SHAW, a citizen of the United States, and a resident of East Weymouth, in the county of Norfolk and State of Massachusetts, have invented an Improvement in the Preparation of Knitted Fabrics for Use, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to knitted fabrics and more particularly to a means of preparing the same whereby they may be readily handled in various processes incident to the final utilization thereof.

My invention will best be understood by reference to the following description taken in connection with the accompanying drawings more or less diagrammatically showing a specific illustrative embodiment of my invention and wherein:

Figure 1 is a plan view of a tubular knitted fabric in course of preparation by means illustrating my invention;

Fig. 2 is a transverse section on the line 2—2 of Fig. 1; and

Fig 3 is a plan view of the final fabric after preparation.

Knitted fabrics are utilized extensively in the arts because of their superior elasticity as compared to woven fabrics. As an example I may mention the preparation of linings and reinforcements for rubber footwear. The knitted fabrics so utilized are usually prepared on a tubular knitting machine and take the form of a knitted tube of indefinite length.

The fabrics so prepared have to be handled in the piece and go through various processes before their final utilization. For example, when they are intended for use with rubber footwear, it is necessary to dye the same and in certain instances to coat them with rubber to provide a friction fabric. The elasticity and flexibility of the knitted fabric cause considerable difficulty in carrying out these processes. If left in tubular form, the fabrics are inconvenient to handle and some processes, such as frictioning, cannot be applied to the tubular fabric as such. If the tube is slit open the edge curls up immediately, rendering the tube when spread out to flattened form inconvenient to handle and entailing a wastage of the cloth. Furthermore, in processes where the knitted fabric is fed along in the piece, it is subject to irregular tension, will not feed evenly and distorts in shape.

My invention more particularly relates to means whereby the tubular fabric as a piece can be brought into a flattened sheet-like form of indefinite length without the waste due to curling of the edges and whereby a strip is provided which can be handled without distortion and which will maintain a substantially uniform width throughout its length and will have straight edges.

For this purpose I may treat a longitudinal zone of the strip in such manner as to relatively position the threads along that zone, more or less completely neutralizing their tendency to shifting movement under strains of use. This may be effected in any desired manner but conveniently I utilize one or more relatively inextensible bands 5 of which I have herein shown two, one at the interior of the tube and one at the exterior. These bands may conveniently be bias tape for a reason hereinafter to be referred to. In the drawing I have indicated diagrammatically that the fabric 7 is knitted by showing a portion as if magnified by a glass 8. The bands 5 are secured longitudinally to the fabric 7. Herein I have shown this effected by stitching the same with spaced seams of any suitable sort, and for purposes of illustration have shown four such seams, two inner seams 9 which may be straight and outer seams 10 which may conveniently be zigzag to insure a more intimate contact of the knit fabric with the bands 5 throughout the width of the latter. Both fabric 7 and bands 5 are then divided longitudinally along the zone as by cutting them between the spaced seams 9, as indicated diagrammatically in Fig. 1 by the representation of a pair of scissors 11.

The tube may then be spread open to form a flat strip, as shown in Fig. 3, along each border of which is a stay binding formed by the half of the band or bands 5, which binding holds the margin of the strip and prevents it from rolling over and by virtue of its relatively inextensible quality prevents distortion of the strip as a whole. The flat fabric produced then consists of separate threads knitted together and unselvaged but held by the stay bindings 5. It will be noted that the threads along the

margins are immobilized before they are in any way freed by cutting, and consequently the stay binding may readily be applied as distinguished from attempting to provide any sort of a hem or binding on the margin of the strip after the tube is cut open and the ends of the threads have been freed to move relatively. Furthermore, the procedure permits the regular application of the stay binding with even tension without any initial or irregular distortion of the knitted fabric along the two edges of the flattened strip shown in Fig. 3.

In certain instances I may provide for increased lateral stiffness of the reinforced zone provided by the attached bands 5, as for instance, by providing a multiple thickness at intervals. Such a multiple thickness might, for example, be provided by plaiting the applied bands 5 transversely at intervals or, as herein shown, by securing separate transverse strips 12 at intervals, which strips are divided when the fabric is longitudinally slit and form reinforcements at the edges of the flattened fabric as indicated in Fig. 3.

In instances where I utilize one or more bands of a different type of fabric secured in position as above described, I may preferably utilize bias tape because when slit longitudinally as described it will not form a raw edge likely to ravel.

While I have herein described the band as attached by seams, other attaching means may be provided or the threads along the longitudinal zone may be relativelv positioned in other ways. For example, for certain purposes I might stiffen the fabric along this zone by the application of a suitable pyroxylin compound, the zone treated by this compound being thereafter longitudinally divided. In the use of such a compound for fabrics evidently to be used in rubber footwear, a compound would be chosen which would not be affected by the dyes in the dye vat but which might dissolve and disappear in the final vulcanization process which the fabric would undergo.

Having thus described a particular embodiment of my invention, the principles exemplified thereby which I claim as new and desire to secure by Letters Patent I shall express in the following claims:—

1. A method of preparing tubular knitted fabrics for handling comprising securing a relatively inextensible band longitudinally thereto and dividing fabric and band lengthwise.

2. A method of preparing tubular knitted fabrics for handling comprising securing a relatively inextensible band longitudinally thereto by spaced seams and cutting fabric and band lengthwise between the seams.

3. A method of preparing tubular knitted fabrics for handling comprising applying stiffening means along a relatively narrow zone of the fabric lengthwise thereof to position the threads along that zone against relative movement and dividing the fabric lengthwise of the zone.

4. A method of preparing tubular knitted fabrics for handling comprising reinforcing a longitudinal zone thereof by means positioning the threads in the zone against relative movement and longitudinally slitting the fabric along said zone.

5. A method of preparing tubular knitted fabrics for handling comprising securing relatively inextensible bands in substantial registry internally and exteriorly of the tube and lengthwise thereof and dividing bands and fabric longitudinally.

6. A method of preparing tubular knitted fabrics for handling comprising securing a relatively inextensible band lengthwise thereof by zigzag stitching and dividing band and fabric longitudinally.

7. The method of preparing tubular knitted fabrics for handling comprising securing longitudinally thereof a relatively inextensible band by inner straight seams and outer zigzag seams and dividing band and fabric lengthwise.

8. The method of preparing tubular knitted fabrics for handling comprising securing longitudinally thereof a relatively inextensible band having at intervals portions of greater thickness extending transversely thereof and providing lateral stiffness to prevent subsequent curling and longitudinally dividing band and fabric.

9. The method of preparing tubular knitted fabrics for handling comprising securing longitudinally thereof a relatively inextensible band and spaced transverse strips at intervals therealong to provide lateral stiffness to prevent subsequent curling and longitudinally dividing band and fabric.

In testimony whereof, I have signed my name to this specification.

CHARLES E. SHAW.