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FABRIC FRICTION PACING

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FABRIC FRICTION FACING

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This invention relates to an improvement in fabric rings and particularly to fabric friction rings, such, for instance, as clutch facings, brake facings, etc., though not so limited.

Hereinafter, in the manufacture of rings of the class referred to, it has been the most general practice to first produce, by weaving or the like, a substantially-straight strip of fabric of substantially-uniform body mass throughout its width and to subsequently helically wind the same, while wet, edgerize upon a mandrel.

The resultant helical curl in fact a distorted strip, and hence upon being cut into rings, the latter have a marked and objectionable tendency to revert to their previous state. Obviously, a strip of uniform body mass when curled edgewise as described must compress at its inner diameter and stretch at its outer diameter, thereby setting up undesirable stresses in the material.

One of the objects of the present invention is to provide a fabric ring of the class referred to having superior capacity for retaining its shape.

Another object is to provide a superior ring-like member of the class referred to having substantially-uniform body mass throughout its width.

A further object is to provide a ring-like friction facing having substantially the same body mass adjacent its inner edge as it has adjacent its outer edge.

A still further object is to provide a superior ring-like member of fabric in which internal stresses and strains are minimized.

Other objects and advantages will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawings and the appended claims.

In the accompanying drawings:

Fig. 1 is a face view of one form of the present invention;

Fig. 2 is an edge view thereof;

Fig. 3 is an edge view of a helical strip of fabric which may be severed into individual rings embodying the present invention;

Fig. 4 is a broken schematic face view illustrating one of the differential weaves of the present invention;

Fig. 5 is a similar view of slightly different weave; and

Fig. 6 is a similar view of still another form of the present invention.

The fabric rings of the present invention may be woven or otherwise produced from strands of a wide variety of textile materials, but for the purpose of illustrating the present invention, a clutch facing 10 woven from asbestos strands has been chosen.

Preferably, a strip of material is woven into the helical form illustrated in Fig. 3 and subsequently cut along a radial line to produce the rings 10 having their abutting edges secured together in any approved manner, such for instance, as by metallic staples 11.

Fig. 4 schematically illustrates a curvilinear weave comprising a series of longitudinal or warp strands 12 interspersed among which are two (more or less) so-called "catch strands" 13 and 14 extending in a curvilinear path substantially longitudinal of the material and serving as anchors for certain of the weft or filling-picks, as will more fully hereinafter appear.

The weft picks as shown (Fig. 4) are in a sense grouped in twos in such manner that each successive pair of picks is of graduated length. Thus, the weft picks 15—15 extend across the full width of the fabric from its inner to its outer edge; the next adjacent weft picks 16—16 extend from the outer edge of the fabric inward substantially two-thirds of the distance toward its inner edge; the next succeeding pair of weft picks 17—17 extend as shown inwardly from the outer edge of the fabric substantially halfway to the inner edge thereof; the next pair of weft picks 18—18 correspond in length to the weft picks 16—16 before referred to and extend from the outer edge of the fabric substantially two-thirds of the distance inward toward the inner edge thereof. Beyond this point, the cycle repeats itself, starting again with a pair of corresponding weft picks 15—15, and so on indefinitely.

The weft picks 15—15 are looped at their inner ends over the innermost of the warp strands 12 as at 19. In a similar manner, the weft picks 16—16 are looped as at 20 over the innermost one of the so-called "catch strands" 13. The joining inner ends of the shortest weft picks 17—17 and 18—18 are in a similar manner looped as at 21 and 21a respectively over the outermost catch strand 14 which is located about midway the width of the fabric. The outer joining portions of the various weft picks just referred to are looped as at 22 over the outermost warp strand or group of strands 12, as clearly shown in Fig. 4.

When asbestos or other low-tensile-strength strands are employed as in the manufacture of certain types of clutch facings, it is preferred to provide both warp, weft and catch strands with cores 22a of brass wire or other material of relatively-high tensile strength.
The schematic showing of Fig. 4 is illustrative of but one ply of fabric and it will be fully appreciated by those skilled in the art that multiple plies bound together in the recognized manner of multiple-ply fabrics.

As thus produced with weft picks of differential length, the fabric has, when in the desired curved form, substantially-uniform body mass and tension throughout its width and hence has but a negligible tendency to distort.

In Fig. 5 is represented a slightly modified weave in which but one catch strand 23 is employed, which is located at a distance about two-thirds inwardly from the outer edge of the fabric and is flanked on either side by warp strands 24. In the weave now being described, the weft picks may be considered in alternating pairs 25—25 and 26—26, all of which at their joining outer ends are looped as at 27 over the outermost warp strand 24 or a group thereof. At their joining inner ends, each of the weft picks 25—26 are looped as at 28 over the catch strand 23, and in a similar manner, the joining inner ends of the weft picks 26—26 are looped as at 28 over the innermost warp strand 24 or group thereof as may be desired.

Preferably, the fabric is initially woven or otherwise fabricated along a curved path, in the form illustrated in Fig. 3, but it will be apparent to those skilled in the art that the differential weave may be incorporated into a straight strip of fabric (Fig. 6) which may, after weaving, etc., be subsequently formed into the helix shown in Fig. 3, inasmuch as the disposition of the strands permits this procedure without setting up such stresses and strains as would unduly tend to distort the resultant rings.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are therefore to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A discontinuous fabric clutch-friction-facing ring having a substantially-uniform body mass of substantially-uniform thickness throughout the face width of the ring produced by longitudinal and transverse interlaced strands, the transverse strands being less in number adjacent the inner edges of the ring than adjacent the outer edge thereof, and having opposed terminal-edges secured together.

2. A discontinuous woven fabric clutch-friction-facing ring having a substantially-uniform body mass of substantially-uniform thickness throughout the face width of the ring produced by longitudinal strands and weft picks interlaced therewith, the said weft picks being of differential length and certain thereof being looped about one or more of the said longitudinal strands at a point intermediate the inner and outer edges of the ring and others of the said weft picks extending substantially to the inner edge of the ring; the ring having opposed terminal-edges secured together.

3. A discontinuous fabric clutch-friction-facing ring formed of wire-cored strands and having a substantially-uniform body mass of substantially-uniform thickness throughout the face width of the ring produced by a plurality of warp strands, one or more longitudinal catch strands and interlaced weft picks, the said weft picks being of differential length and certain thereof being looped about the said catch strands and certain of the others thereof extending substantially across the entire face width of the ring; the said ring having opposed terminal-edges secured together.

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