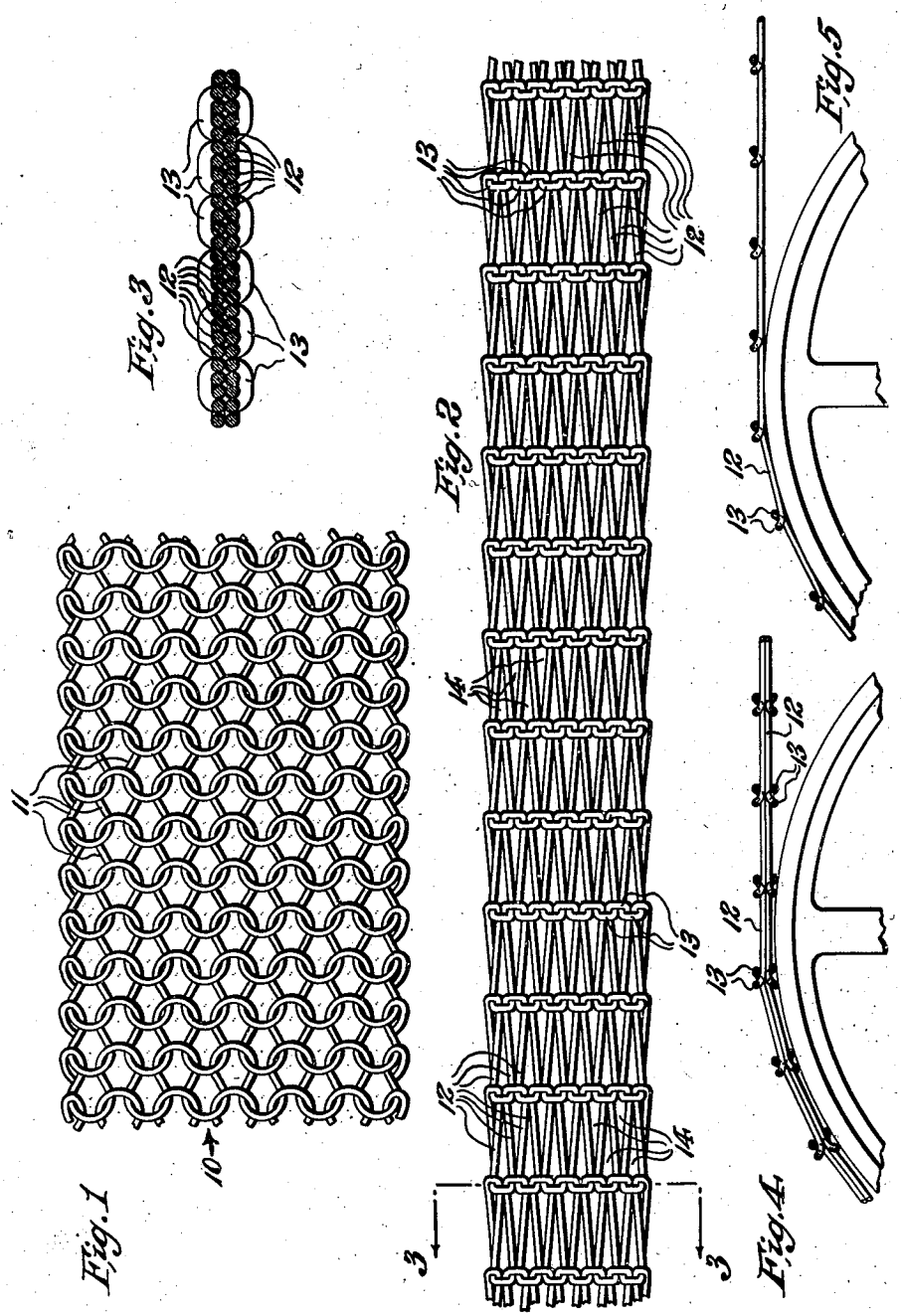
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KNITTED METALLIC FABRIC FOR BELTING AND OTHER USES

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KNITTED METALLIC FABRIC FOR BELTING AND OTHER USES

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4 Claims. (Cl. 66—202)

This invention relates to improvements in material for belting and other uses; and the invention has reference, more particularly, to a novel construction of metallic fabric formed from knitted wire.

The invention has for an object to provide a strong, flexible and non-stretching metallic fabric formed from knitted wire, said fabric being adapted to serve various uses, and being especially well adapted for the production of metallic belting from which endless belts of any desired width and length may be produced; such belting being adapted to provide belts suitable for many purposes, such e. g. as conveyer belts, screening belts, Fourdrinier belts for paper making machinery, and belts for general use.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

Illustrative embodiments of this invention are shown in the accompanying drawing, in which:

Fig. 1 is a face view of a tubular knit metallic base fabric from which the novel belting or material for other purposes is produced; Fig. 2 is a face view of the base fabric after it has been processed to produce the novel belting or other material according to this invention; and Fig. 3 is a transverse sectional view of the belting or other material, taken on line 3—3 in Fig. 2, but drawn on an enlarged scale.

Fig. 4 is a fragmentary longitudinal sectional view of a double ply metallic belting made from the material shown in Figs. 2 and 3; and Fig. 5 is a fragmentary longitudinal sectional view of a single ply metallic belting according to this invention.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

The novel fabric of this invention is produced from knitted wire of selected gauge according to the requirements of the particular use which a given belt or other ultimate product produced therefrom is to serve; i. e. the base fabric may be knitted from fine, medium or coarse wire as may be best suited to a given purpose for which a belt or other product produced therefrom is to be used.

Illustrative of one method of producing the novel belting or other material, wire of suitable gauge is knitted into a comparatively loose knit tubular base fabric 10 by suitable circular knitting machinery adapted to produce a diameter thereof which, when flattened and processed as hereinafter described, will provide a belting or other material of desired predetermined width. Inasmuch as the circular knitting machinery is adapted to produce any desired continuous length of tubular knit base fabric 10, it follows that there is no limit to the length of belting or other material possible to be made.

The tubular base fabric 10 comprises the usual interknit or interlinked open loops 11, which may be selectively varied as to size by adjustment or selection of knitting machinery upon which said base fabric is produced.

A suitable length of base fabric 10 having been produced, the same is removed from the knitting machinery, and thereupon processed to form it into the ultimate flexible and non-stretching belting or other material. To this end, the length of base fabric 10 is subjected, by suitable agencies, to a longitudinal stretching. Such stretching is continued to the point, or preferably somewhat beyond the point, of the elastic limit of the fabric. The result of such stretching necessarily both lengthens and narrows the fabric, but the primary object thereof is to elongate the interknit or interlinked loops 11 thereof in such manner as to bring the wire strands forming the legs 12 of the same into lateral abutment one upon another at points closely adjacent to the interlinked bights 13 of said loops; whereby the loop straddling and loop embraced wire strands continuously abut throughout the width of the fabric body. By thus bringing the legs 12 of adjacent loops into such mutual abutment, the loops are caused to mutually interbrace each other laterally, thus reducing the fabric to the limit of lateral contraction with the added effect of likewise limiting any further elongation or longitudinal expansion of the loops. In this manner a knitted metallic fabric of fixed width and length, free from tendency to stretch, yield or otherwise deform either longitudinally or laterally is obtained, while at the same time, owing to the interlinking of the bights 13 of the loops, a degree of hinging or pivotal action between longitudinally adjoining loops is retained, sufficient to assure longitudinal flexibility of the fabric.

The fabric resulting from the described processing will not only be sufficiently flexible for belting and like purposes necessitating flexibility, but will also withstand very considerable stress in the direction of its length, which is likewise a necessary characteristic of belting material.

When the processed fabric is used for belting, endless belts of any desired length and width within reason may be readily produced therefrom,

the meeting ends of which may be operatively joined by brazing, welding or by otherwise mechanically coupling the same. The novel belting thus provided, being of metallic material, will be sturdy and long wearing. Furthermore, owing to its interstitial or open mesh character, by reason of the symmetrically disposed openings 14 provided between the legs 12 of the interlinked loops composing the same, the belting is admirably adapted for use in conveyer belts, especially where a non-dust collecting belt surface is desired; and, for the same reason, is also well adapted to provide belts of screening character in cases where a belt of screening or filtering function is required. In the latter class of belts are Fourdrinier aprons or belts for paper making machines, and the processed knitted fabric of this invention is well adapted to serve in such connection, in which case the fabric would be knitted from very fine wire, and would be used with the loop bight side thereof at its underside.

When the belting fabric is made from flattened tubular knit base fabric, the belting or other material produced therefrom is of two-ply character, which renders the same exceedingly strong and durable. However, the processed fabric or finished belting or other material may likewise be produced in a single ply form, as indicated in Fig. 5, and, in such case, the base fabric may be of flat or warp knit character in single ply, or a tubular knit base fabric may be split and the raw edges suitably secured against raveling; such single ply base fabrics being processed by stretching in suitable manner and by suitable agencies to and preferably somewhat beyond the limit of its longitudinal elasticity.

While the use of the novel knitted fabric for belting has been emphasized, it will be obvious that there are many other uses to which the same may be put wherein the requirement is for a flexible and non-stretching metallic fabric sheet or strip, and especially a sheet or strip of interstitial or mesh characteristic.

Although it is believed that the preferable method of producing the novel belting or other material is by stretching a loose knit base fabric in the manner above set forth, it is nevertheless recognized that the same may possibly be produced by a direct knitting operation, or by a combination of loose knitting with subsequent loop stretching by agencies incorporated in the knitting machinery per se.

Having now described my invention, what I claim is:

1. A metallic fabric for the purposes described comprising, a body of knitted wire wherein the knitted loops thereof have been stretched lengthwise to their elastic limit to provide the same with straight taut legs disposed in lateral abutment one upon another at points closely adjacent to the interlinked bights of longitudinally connected loops, whereby the loop straddling and loop embraced wire strands are disposed in continuous and laterally aligned abutment throughout the width of the fabric body so as to limit both lateral contraction and longitudinal stretch of the fabric.

2. A metallic fabric for the purposes described comprising, a body of initially loosely knitted wire, which body has been stretched lengthwise to its elastic limit, and wherein the knitted loops thereof have their legs permanently disposed in lateral abutment one upon another at points closely adjacent to the interlinked bights of longitudinally connected loops so that the loop straddling and loop embraced wire strands continuously abut throughout the width of the body to limit both lateral contraction and longitudinal stretch of the latter.

3. A flattened tubular body of initially loosely knitted wire, which body has been stretched lengthwise to its elastic limit, and wherein the interlinked bights of transverse rows of the knitted loops thereof have their sides in mutually abutting relation so as to interbrace each other laterally throughout the width of the body, to thereby limit both lateral contraction and longitudinal stretch of the latter.

4. A flattened tubular body of initially loosely knitted wire, which body has been stretched lengthwise to its elastic limit whereby the knitted loops thereof have their legs disposed in lateral abutment one upon another at points closely adjacent to the interlinked bights of longitudinally adjoining loops and throughout the width of the body, to thereby limit both lateral contraction and longitudinal stretch of said body.

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