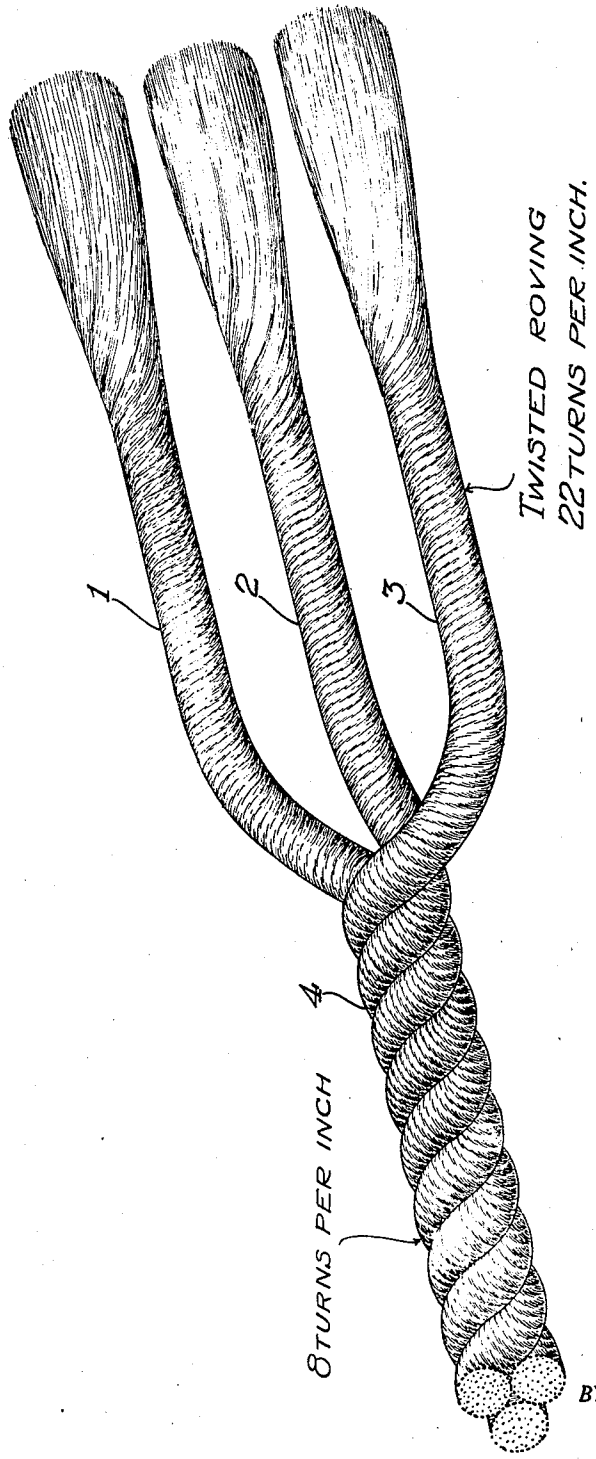
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YARN FOR PNEUMATIC TIRES, ETC

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YARN FOR PNEUMATIC TIRES, ETC.

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8 Claims. (Cl. 57—153)

Our invention relates to improvements in cords or yarns for incorporation with rubber in pneumatic tires, or other goods, and of a method of forming such cord or yarn.

Heretofore the cord or yarn commonly employed for the reinforcement of rubber articles of the above type was made from single cotton yarns, spun in the usual manner and subsequently doubled and cabled.

In our invention an economy in the production of cords or yarns for incorporation in rubber is obtained by modifying the construction and method of forming the cord, while retaining those properties necessary for its satisfactory use in tires and the like.

According to our invention, the yarn or cord, for incorporation in the rubber of tires and other rubber goods, is made by twisting a cotton roving to a high degree without drawing or draft, and subsequently twisting together a plurality of such twisted rovings.

In combining the twisted rovings, the direction of twist may be the same as, or opposite to, that of the direction of twist in the twisted rovings themselves. After the twisted rovings have been combined they may, if desired, be subsequently stretched.

Water, or solutions of wetting agents or the like, may be applied to the material at any stage in its manufacture.

As an illustrative example of a method of forming cords or yarns according to our invention, a cotton roving of 4.5 hank is made with 3.6 turns per inch, as compared with a normal twist heretofore used prior to spinning which would be about 1.8 turns per inch.

This roving is then passed through a twisting machine or doubler in which its twist is increased to 22 turns per inch. During this operation a solution of a wetting agent may be applied before the material reaches the delivery rollers of the doubler.

Three such extra twisted rovings are then passed together through a doubler and twisted together with 8 turns per inch. The three-fold yarn thus formed is then stretched by passing through a stretching frame until it has an extensibility of the order of 9% at 10 pounds.

A cord embodying the various features of the invention is illustrated by way of example in the accompanying drawing in which three strands, 1, 2 and 3, are formed of rovings twisted into strands having approximately 22 turns per inch and in which these three strands thus formed are formed into a cord 4 having approximately eight turns per inch. The rovings forming the strands 1, 2 and 3 are twisted without draft or drawing. In the particular embodiment the strands are twisted in the same direction to form the cord 4 as the rovings are individually twisted. It will be understood that they may be twisted in the opposite direction in forming the cord.

This product may then be used as a reinforcement for pneumatic tires. It is understood that this is given merely by way of example.

For example it may be modified as to count or twist, or as to both count and twist, for use in the manufacture of belting and other materials.

Having described our invention, we claim:

1. A method of manufacturing cord or yarn for reinforcing rubber goods which comprises twisting cotton rovings to a high degree without draft and subsequently twisting together a plurality of said twisted rovings.

2. A method of manufacturing cord or yarn for reinforcing rubber goods which comprises twisting cotton rovings to a high degree without draft, subsequently twisting together a plurality of said twisted rovings and stretching the combined twisted rovings.

3. A method of manufacturing cord or yarn for reinforcing rubber goods which comprises twisting cotton rovings to a high degree without draft, subsequently twisting together a plurality of said twisted rovings and applying aqueous liquids to said material while forming said yarn.

4. A method of manufacturing cord or yarn for reinforcing rubber goods which comprises twisting cotton rovings to a high degree without draft, subsequently twisting together a plurality of said twisted rovings, applying aqueous liquids to said material while forming said cord and thereafter stretching said cord.

5. The manufacture of cord or yarn for reinforcing rubber goods which comprises twisting a cotton roving of 4.5 hank with 3.6 turns per inch without draft, increasing said turns to 22 turns per inch while wetting said material with an aqueous liquid containing a wetting agent and combining three rovings thus treated by twisting together with 8 turns per inch.

6. The manufacture of cord or yarn for reinforcing rubber goods which comprises twisting a cotton roving of 4.5 hank with 3.6 turns per inch without draft, increasing said turns to 22 turns per inch while wetting said material with an aqueous liquid containing a wetting agent, combining three rovings thus treated by twisting together with 8 turns per inch and there-

after stretching the resulting cord until it has an extensibility of about 9% at 10 pounds applied force.

7. A cotton cord which comprises three rovings each of which is twisted to 22 turns per inch, said rovings being then assembled with a twist of 8 turns per inch.

8. A cord of vegetable fiber which comprises three strands each formed of a roving twisted to a high degree without draft, said rovings being subsequently twisted together to form said cord.

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