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ROPE CONSTRUCTION

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Fig. 1

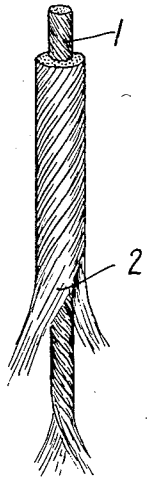
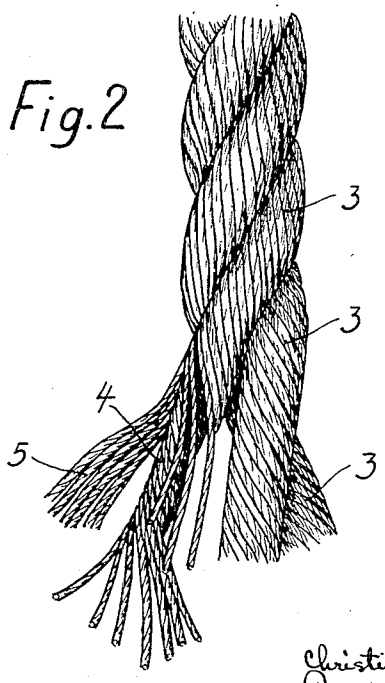


Fig. 2



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ROPE CONSTRUCTION

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3 Claims. (Cl. 117—52)

In the manufacture of ropes by the method now commonly used, hardly more than 50 or 60% of the bearing strength of the individual yarns is utilized. Various constructions have been suggested for the purpose of obtaining a better utilization of the bearing capacity, i. e. of using the fibres in the rope in such way that they are subjected to the least possible torsion and shearing tensions. The suggested methods, however, either are not practicable at all, or they require new machinery not usually found in rope factories.

The subject matter of the present invention is a new kind of rope yarn and a new construction of rope wholly or partly made of such yarn and which to a high degree utilizes the bearing capacity of the material and at the same time provides a rope which is flexible, resistant to wear and which is unkinkable. All parts of this rope can be produced by means of known machinery.

By the method now commonly used in the manufacture of ropes the strands are made by twisting of yarn, i. e. twisting without simultaneously giving the yarn any rotation about its axis. By this method very compact strands are obtained with the yarns laid in parallel spirals with a comparatively small pitch of the individual yarn, whereby considerable torsion and shearing stresses of the yarn occur in the finished rope, and the rope has such a tendency to kink that it is ill suited for many purposes.

The yarn according to the present invention consists of two or more components spun together, and may be advantageously produced by passing one or more right-hand twisted yarns through a spinning machine and overspinning the same with hemp to form a left-hand twisted cover, or vice versa. By combining yarn in this way it is possible to remove the tendency of the usual yarn to untwist, which leads to kinking of the rope.

Reference is made to the accompanying drawing in which

Figure 1 illustrates a compound yarn formed in accordance with the principles of the invention, on an enlarged scale; and

Figure 2 illustrates a preferred form of rope construction, of which the individual yarns are constructed as shown in Figure 1.

It will be observed that in Figure 1 of the drawing, the reference numeral 1 designates the core of the compound yarn and consists of fibers to which a left-hand twist has been imparted. The cover or sheath 2 of hemp is spun over this core in a right-hand direction.

The rope shown in Figure 2 consists of three or more strands 3, each comprising a core 4 and a cover 5. The core 4 is twisted of yarn, which in turn consists of two or more components 1 and 2 spun together as above described.

This new construction chiefly consisting of combined yarns as above mentioned, is, if properly laid with a proper pitch, and because of its being unkinkable, so strong and has so little tendency to expand that the metallic insert will not be subjected to any undue stress within the bearing capacity of the rope.

By using yarn combined in the said way it is possible to remove the tendency of the rope yarn to untwist which leads to kinking of the rope. The core preferably is twisted loosely, i. e. with a larger pitch than usual for ropes whereby the fibres are disposed as far as possible parallel to the axis of the core.

The cover may either (1) be twisted of ordinary rope yarn or (2) be twisted of combined yarn as used in the core as above mentioned or (3) plaited of combined yarn as used in the core.

The characteristic of the twisting in the cover is that the cover is always twisted in the direction opposite to the twisting of the yarn and that the cover is laid or plaited in such a way that the direction of the twisting is opposite to the direction of the twisting in the core and that the twisting or plaiting is as hard as possible so that the cover is kept in its position in such way that the fibres cannot become more parallel to the axis than the cover permits.

The present rope construction is especially fit for a combination with an insertion of plaited metal wire, either for the purpose of increasing the strength of the rope, or for the special purpose of transmitting an electric current. The metal insertion or cable may be arranged in the centre of one or more of the strands, or, especially if the rope consists of more than three strands, as a core in the centre of the rope and may consist wholly of plaited metal wire, or of a plaiting of metal wire in combination with combined yarn of the same kind as used in the core or cover of the strand. The hardness of the plaiting may be varied according to the degree of expansive capacity desired for the rope.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A rope made of strands comprising a core and a cover, the said core being made of yarn comprising an inner component of twisted yarn over-

spun with hemp to form an outer component twisted in the opposite direction to the twisting of the inner yarn, enabling a loose twisting in such a way that the fibres in the rope may lie as far as possible parallel to the axis of the strand, the cover of the strand being made of usual yarn.

2. A rope made of strands comprising a core and a cover, the said core and cover being made of yarn comprising an inner component of twisted yarn over-spun with hemp to form an outer component twisted in the opposite direction to the twisting of the inner yarn.

3. The method of forming an individual rope yarn which comprises twisting a plurality of individual fibers to provide a core, and thereafter spinning hemp over the core thus formed in a direction opposite to the direction of twist of the core to form a sheath.

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