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STRANDED ROPE OF ENDLESS FULLY SYNTHETIC PLASTIC FILAMENTS

Filed Aug. 18, 1961

2 Sheets-Sheet 1

FIG. 1

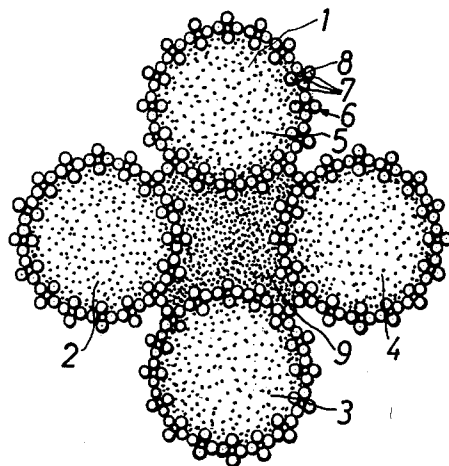


FIG. 2

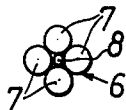
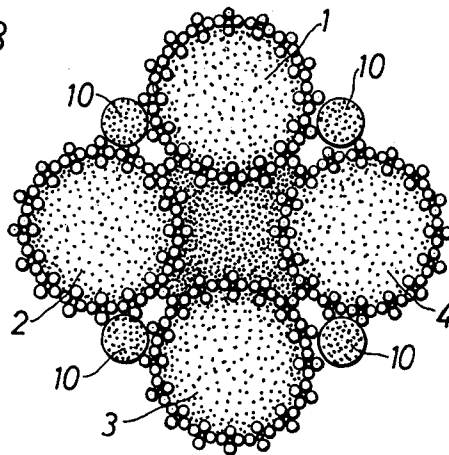


FIG. 3



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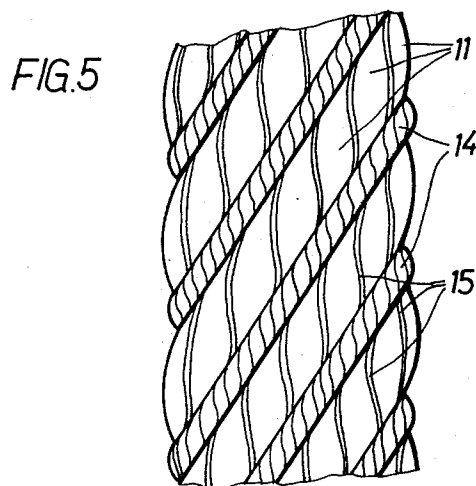
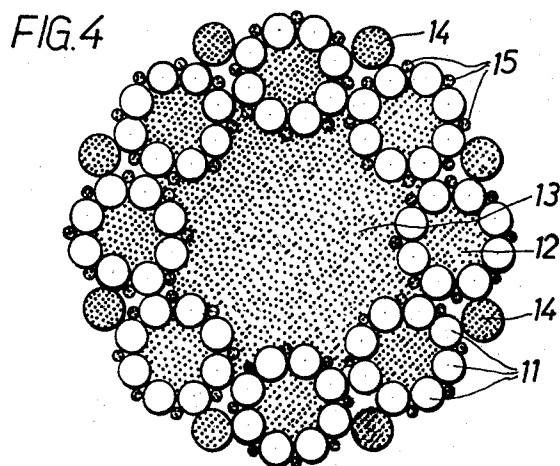
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1

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STRANDED ROPE OF ENDLESS FULLY SYNTHETIC PLASTIC FILAMENTS

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Claims priority, application Germany Aug. 23, 1960

9 Claims. (Cl. 57-144)

The invention relates to a stranded rope of endless fully synthetic plastic filaments, in which the strands consist of plastic filaments laid without any inherent twisting helically around a core formed of parallel elementary plastic filaments and with which several strands thus formed are laid with twisting around their own longitudinal axis on the stranded core.

In order to be able to fabricate stranded ropes having extremely large diameters without having to use the building-up method of cable laying, each separate plastic filament of the strands is replaced according to the invention by a strand which, in its turn, consists in a manner known per se of plastic filaments laid without any inherent twisting and helically around a core. Such strands, which can be designated as preliminary strands, form the surface layer for each rope strand instead of the individual filaments and are produced in the direction of twisting corresponding to the rope strand.

With the choice of the filament thickness and/or the number of the filaments of the preliminary strand, it is readily possible without any technical difficulties to build-up rope strands of extremely large diameter. These rope strands are then laid in known manner and with twisting about their own longitudinal axis to form a stranded rope.

In order to increase still further the tensile strength of the stranded ropes produced from the rope strands by the twisting thereof about their longitudinal axis, bundles or strands of endless elementary plastic filaments are introduced according to the invention at the periphery of the rope, into the gaps existing between the individual strands and, at the periphery of each strand, into the outer gaps between the filaments of the strands. In this way, the bearing surface of the rope on for example rope pulleys or bollards is increased. As a result, the resistance to abrasion and thus the effective life of the stranded rope is increased.

Constructional examples of the invention are shown diagrammatically in the drawing wherein:

FIG. 1 is a cross section through a stranded rope, in which the separate filaments of the strands are replaced by preliminary strands.

FIGURE 2 shows the cross-section through such a preliminary strand, which is a built-up element of the rope strands 1, 2, 3 and 4.

FIGURE 3 shows the cross-section through a stranded rope according to FIGURE 1, but with bundles of elementary plastic filaments arranged on the periphery of the rope in the gaps between the strands.

FIGURE 4 illustrates the cross-section through a stranded rope with bundles or strands of elementary plastic filaments introduced into the external gaps between the strands and into the external gaps between the separate filaments of the strands.

FIGURE 5 is an elevation of the rope.

According to FIGURES 1 and 2, each separate rope strand 1, 2, 3 and 4 has a core 5, which is formed of endless, parallel disposed elementary plastic filaments or of plastic filaments. Laid helically and without any twisting about their own axis around the core 5 are preliminary strands 6. These preliminary strands in their

2

turn consist of four separate filaments, which are also laid without being twisted about their own longitudinal axis around their untwisted core 8 in helical form (FIG. 2).

The rope strands 1, 2, 3 and 4 on the surface layer of which consists of 16 preliminary strands 6 and the core 5 of a thick bundle of elementary plastic filaments, are laid around a main core 9, which likewise consists of a thick bundle of elementary plastic filaments, with twisting about their own longitudinal axis to form the finished stranded rope. The direction of laying the rope is directed opposite to the direction of twist of the preliminary strands 6 laid helically around the core 5 of the strands.

FIGURE 1 shows the main core 9 of the rope in the deformation produced by the rope pressure of the strands 1, 2, 3 and 4. In the example illustrated, the main core 9 consists of a bundle of elementary plastic filaments. However, it can also consist of plastic filaments or of a stranded or rope construction. Referring to FIGURE 3, bundles of elementary plastic filaments are arranged in the gaps between the individual strands and are indicated at 10.

Referring to FIGURES 4 and 5, which respectively show a stranded rope in cross-section and in elevation, and with which, instead of using the preliminary strands consisting of plastic filaments, merely the individual filaments 11 are wound helically and without any twisting about their own longitudinal axis for forming the strands without twisting about their own longitudinal axis. The core 12 consists of endless parallel elementary plastic filaments. Bundles or strands 15 of elementary plastic filaments are arranged in the external gaps between the filaments 11 of the separate strands.

Bundles 14 of endless and preferably parallel disposed elementary plastic filaments are inserted at the periphery of the stranded cable into the gaps between the strands. The cable core 13 can be formed of endless and preferably parallel disposed elementary plastic filaments and of plastic filaments.

We claim:

1. Rope, cable, and the like of endless synthetic plastic filaments which comprises a plurality of rope strands helically disposed about a main rope core, said rope strands being twisted about their individual longitudinal axes as well as about said main core, each rope strand being composed of a plurality of preliminary strands helically disposed about a rope strand core of endless parallel elementary plastic filaments, said preliminary strands being maintained untwisted about their individual longitudinal axes, and each preliminary strand being composed of a plurality of separate plastic filaments helically disposed about a single central untwisted plastic filament core, said separate filaments being maintained untwisted with respect to their individual longitudinal axes.

2. Improvement according to claim 1 wherein the rope main core consists of parallel disposed endless plastic filaments.

3. Improvement according to claim 1 wherein the rope main core consists of a further rope strand.

4. Improvement according to claim 1 wherein the direction of twist of the separate filaments forming each preliminary strand and the direction of twist of the preliminary strands forming each rope strand are the same, such direction being opposite to the direction of twist of the rope strands forming the rope.

5. Improvement according to claim 1 wherein bundles of endless elementary plastic filaments are disposed in the helical gaps formed between adjacent peripheral portions of the individual rope strands.

6. Improvement according to claim 1 wherein strands

3

of endless elementary plastic filaments are disposed in the helical gaps formed between adjacent peripheral portions of the individual rope strands.

7. Improvement according to claim 1 wherein bundles of endless elementary plastic filaments are disposed in the helical gaps formed between adjacent peripheral portions of the individual preliminary strands.

8. Improvement according to claim 1 wherein strands of endless elementary plastic filaments are disposed in the helical gaps formed between adjacent peripheral portions of the individual preliminary strands.

9. Rope, cable, and the like of endless synthetic plastic filaments which comprises four rope strands helically disposed about a main rope core, said rope strands being twisted about their individual longitudinal axes as well as about said main core, each rope strand being composed of sixteen preliminary strands helically disposed about a rope strand core of endless parallel elementary plastic filaments, said preliminary strands being

4

maintained untwisted about their individual longitudinal axes, and each preliminary strand being composed of four separate plastic filaments helically disposed about a single central untwisted plastic filament core, said separate filaments being maintained untwisted with respect to their individual longitudinal axes.

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