

UNITED STATES PATENT OFFICE

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MANUFACTURE OF CORDAGE

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2 Claims. (Cl. 19—66)

This invention relates to improvements in the manufacture of cordage of all kinds, including ropes, cords, twines and lines, and whilst it is more particularly applicable to cordage made from sisal, it is also applicable to cordage made from other varieties of hemp, jute, cotton and coir and other vegetable fibres, and has for its objects increasing the strength, flexibility and durability of cordage manufactured from such vegetable fibres. As is well known, for heavy cordage, i. e. ropes, hemp or manila hemp has been hitherto the vegetable fibre most generally used, and in order to prevent decay in ropes which are frequently exposed to water, it was formerly usual to soak the yarns, from which the strands composing the rope were made, in tar, usually wood tar, but it was found that tarring seriously diminished the strength of the rope, so that this treatment is not now so extensively practiced as formerly, particularly as it was found that manila hemp was better able to withstand decay. Within recent years more attention has been paid to the use of sisal for manufacturing cordage. Sisal enjoys certain advantages as a material for cordage, but has the drawback, in cords and twines, of not being particularly flexible or pliable, and when employed for ropes has the almost inseparable disadvantage of absorbing so great a quantity of water when immersed therein as to very considerably increase its diameter with a natural increase in weight.

Although such ropes when dried out return to practically their normal diameter, it has been found that the constant expansion or swelling, due to wetting, and the subsequent retraction or shrinkage, due to drying, ultimately impairs their original strength, and the primary object of the present invention is to overcome this drawback.

The present invention comprises the treatment of cordage after manufacture or the treatment of the fibres or strands before or during manufacture with sulphonated oil—preferably an electrically ionized sulphonated oil—or an aqueous solution thereof with or without the addition of wax, resin or other waterproofing material and/or a fireproofing material.

In one method of carrying this invention into practice, the vegetable fibres during heckling or batching are sprinkled with an aqueous solution of a sulphonated oil—preferably an electrically ionized sulphonated oil—in admixture with a wax, such as carnauba or japan wax. The yarn is then spun, the strands are formed and are laid into ropes in the known manner.

In another method, the cordage is formed in known manner and after manufacture is immersed in a bath of sulphonated oil—preferably neutral sulphonated castor oil treated to an electric ionization process—water and wax.

In the first described method of carrying this invention into practice, for example, about 15 parts of a vegetable wax, such as carnauba or japan wax, or a mixture of waxes are dissolved in about 75 parts of sulphonated oil—preferably neutralized sulphonated oil or oils treated to an electric ionization process as described in patent specification No. 1,913,202, and having a pH value of not less than 7 when diluted with 10 times its volume of water—the wax and oil is then intimately mixed with from 350 to 500 parts of water and the resultant solution is used for sprinkling the fibres before being spun into yarn. Alternatively, the fibres may be immersed in the solution before being spread or spun, in which case the solution is preferably heated to a temperature of from 32° C. to 94° C. In this method the fibres may be drained, squeezed, or hydro extracted and used without the necessity of batching or oiling.

When the cordage has been already manufactured, it may be treated for example by immersion in a bath composed of from 10 to 20 parts of the aforementioned wax or waxes dissolved in about 70 to 80 parts of sulphonated oil or oils—preferably electrically ionized sulphonated oils having the aforementioned characteristics—the mixture being diluted with about 350 to 650 parts of water, according to the degree of absorbency of the fibres to be treated.

It has been found that sisal cordage treated according to this invention materially increases in diameter, which it retains in use without impairing its original strength, does not absorb water when immersed therein, and is rendered extremely flexible or pliable as compared with untreated cordage of a corresponding diameter and strength.

I declare that what I claim and desire to secure by Letters Patent is:—

1. In the manufacture of cordage from sisal fibres, a process consisting in sprinkling the sisal fibres during heckling or batching with an aqueous solution of a vegetable wax dissolved in a neutralized sulphonated oil treated to an electric ionization process, spinning said treated yarn and forming the strands into cordage in known manner, as set forth.

2. In the manufacture of cordage from sisal fibres, a process consisting in immersing the sisal fibres in a bath consisting of about 15 parts of a vegetable wax dissolved in about 75 parts of a neutralized sulphonated oil treated to an electric ionization process and diluted with about 500 parts of water, spinning said treated yarn and forming the strands into cordage in known manner, as set forth.

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