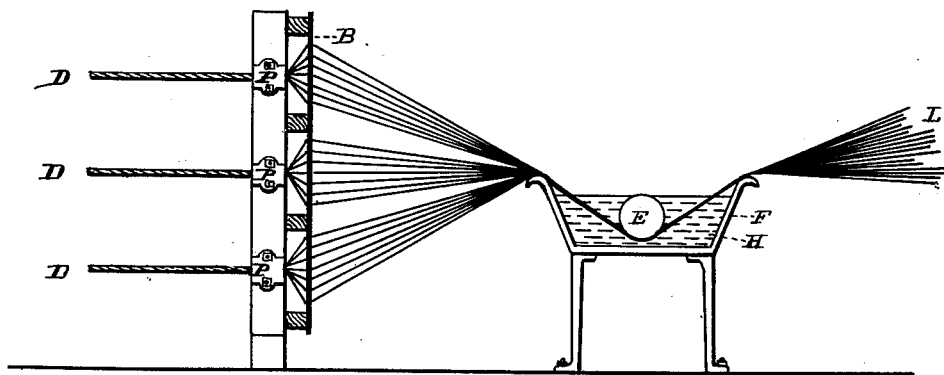


C. W. HUNT.
Hoisting-Rope.

No. 214,148.

Patented April 8, 1879.



Witnesses.

H. H. Bush
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UNITED STATES PATENT OFFICE

CHARLES W. HUNT, OF WEST NEW BRIGHTON, NEW YORK.

IMPROVEMENT IN HOISTING-ROPES.

Specification forming part of Letters Patent No. **214,148**, dated April 8, 1879; application filed December 14, 1878.

To all whom it may concern:

Be it known that I, CHARLES W. HUNT, of West New Brighton, county of Richmond, and State of New York, have invented new and useful Improvements relating to Ropes for Hoisting and analogous purposes, of which the following is a specification.

The object of this improvement is to produce a rope of manila, hemp, jute, or other fiber, that will wear much longer and offer less resistance to bending than is usual with rope of such material. I will describe it as manila.

When a piece of such rope is bent over a sheave the relative positions of the fibers are changed. The side of the rope farthest from the center of the sheave is longer than the side nearest the sheave. This necessitates each fiber moving slightly more or less than those contiguous to it. This causes friction, that is wearing to the fibers, and a loss of power in using the rope.

To get fibers of the requisite fineness the material is subdivided by violent mechanical means. Whether this subdivision is by splitting the cells from end to end or by separating them from each other the surface of the fiber is left rough and uneven. Under a microscope the surface is clearly seen analogous to the surface of pine wood when split. These rough surfaces are under pressure from their spiral position due to the twisting and the strain on the rope, and when the rope is bent and straightened are compelled to slide upon each other. The result is shown by any rope running over pulleys by untwisting the strands. A fine dust is found, caused by the wear of the fibers in sliding upon each other.

I apply finely-divided plumbago to the several fibers of the rope in the process of manufacture. When the rope is in use the fibers sliding upon each other cause the plumbago to lodge in broken cells and the bottoms of uneven places, making them much smoother and less liable for the broken cells to catch and tear them from their natural position; or, in other words, the lubricating properties of the plumbago make the fibers slide easier upon each other. This makes the rope slightly weak when new, but increases its durability when bending over sheaves, which is the object of this invention.

The fibers are stronger when slightly softened than when very dry. I soften the fibers and assist in conveying the plumbago into the interstices and holding it there by combining with the plumbago oil or grease, preferably a mixture applied hot. I prevent the oil or grease from becoming rancid by adding carbolic acid.

The accompanying drawing forms a part of this specification. It is a side elevation, partly in section, showing the apparatus for applying the previously-mingled grease, plumbago, and carbolic acid to the yarns. The threads L are shown as they come from the spools. (Not shown.)

The threads or yarns L pass separately over the edge of the vat F, and under the roller E, through the plumbago compound, kept properly warmed, then out of the compound, over the edge of the vat, to the draw-plates B, and thence through the eyes P. In this passage they are subject to compression, and any surplus material is pressed out. Leaving the eyes P, they are twisted into the strands D D D, and afterward the strands D D D are twisted into the rope by any ordinary or suitable machinery.

The tank is heated by steam-pipes or other means. (Not represented.) The contents should be thin and ready to permeate minute spaces between the fibers; but, by reason of the compound being applied to the parts separately before the rope is laid or the parts applied together, the distance which it has thus to traverse is slight. I find that the plumbago can by this process be carried very uniformly into all the parts of the rope.

The proportions that I have found to be useful and to accomplish the desired effect with manila fiber are ten thousand parts of beef-tallow, one thousand parts of whale-oil, one thousand parts of finely-divided plumbago, and one part of commercial carbolic acid. Other proportions can, however, be used to suit the particular fiber or the use for which the rope is intended.

Modifications may be made in the form of the apparatus. When proper apparatus is not available the process can be worked and my improved rope manufactured with a little more labor with common rope machinery alone by

simply warming the mixture of plumbago-grease and carbolic acid to a somewhat plastic state and applying it by hand to the threads as they pass through the draw-plates B.

My experiments indicate that the heat caused by the compression and friction in passing through the eyes P will liquefy the compound and saturate the threads with tolerable success.

What I claim as my invention is—

1. The process of treating fiber in the manufacture of rope, consisting in applying plum-

bago, with oil or grease and carbolic acid, to the yarns before the rope is laid, as and for the purpose set forth.

2. As a new article of manufacture, a rope made from fibers saturated with plumbago and oil or grease and carbolic acid, adapted to serve as herein specified.

CHARLES W. HUNT.

Witnesses:

J. W. ANDREAS,

JOS. VAN NOSTRAND.