M. C. DODGE.

MARKING DEVICE FOR ROPES.

APPLICATION FILED OCT. 7, 1915.

1,216,964. Patented Feb. 20, 1917.

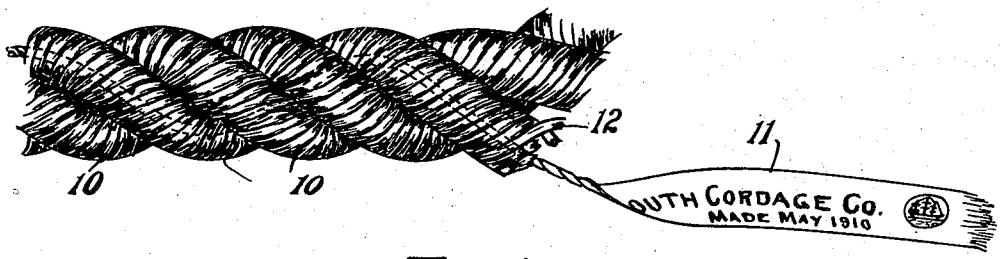


FIG. 1

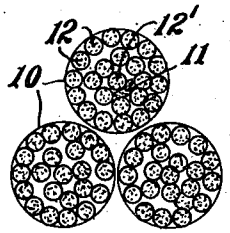


FIG. 2

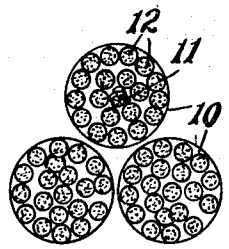


FIG. 3

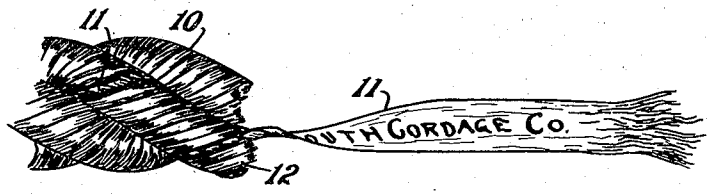


FIG. 4

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MARKING DEVICE FOR ROPES.

1,216,964. Specification of Letters Patent. Patented Feb. 20, 1917.

Application filed October 7, 1915. Serial No. 54,645.

To all whom it may concern:

Be it known that I, MILO C. DODGE, a citizen of the United States, residing at Plymouth, in the county of Plymouth and State of Massachusetts, have invented new and useful Improvements in Marking Devices for Ropes, of which the following is a specification.

This invention relates to improvements in devices for marking ropes and the like. In my co-pending application for patent, Serial No. 766,035, I have disclosed and claimed a device for permanently marking a rope by incorporating therein a strip of material bearing legible marks, whereby information is permanently associated with rope, the strip and its marking being protected by the material of the rope itself from the abrasion which affects all surfaces of a rope when in use; I disclosed a specific form of the invention in which the marking strip is laid centrally through the rope and is made of ribbon-like material which is flexible transversely; and in particular I showed such a strip made of a fabric of parallel threads glued together, laid along the convexly curved surface of the core of a strand of the rope. When so laid the threads may become separated, by splitting of the marker, according to the exigencies of space available between the strands, but can be reassembled so as to make the information legible when the strands are unlaid. The present specification discloses a combination of marker with rope, in which the marker is compacted together, preferably by being twisted upon itself. It thus constitutes a single thread, within the interior of which the matter printed on one of its sides is protected by the material which constitutes the marker. Any abrasion which occurs while it is twisted is applied to the back side of the marker. Thus the form of marker resists any deteriorating agency that may work upon it during the long life of a rope, because of its concentration, and its organization with an exterior armor protecting the information. The possibility of doing this results from the flexibility or collapsibility of the originally-flat ribbon-like marker in the transverse direction. The twisting may be loose enough so that the marker can be compressed, out of the round form which it naturally assumes when twisted, into any shape which it finds available between the threads of rope material, so that it does not interfere materially with the regular rope structure nor with the form thereof. This concentration of the material constituting the marker permits cheaper and more fragile material to be used. In fact it provides in a particularly advantageous manner for the use of paper for the marker. The method is to print the desired information on thin paper tape, twist the paper into a twine, and run it in with a rope thread, preferably an inner or the central thread of the strand. When so twisted and compacted the exposed surface of the marker becomes of minimum area. Its own outer parts protect its inner parts; and because all portions of the tape lie so close to the axis of the tape, when twisted, the tendency for the tape to become torn or broken when the rope as a whole is bent sharply, is minimized. Any harm which may come from the action of moisture in softening a paper marker and making it more liable to pull apart is thus minimized, and this can of course be further minimized by selecting paper of grade and kind suitable for resisting moisture, if it be found by experience that ordinary commercial paper and printer's ink prove insufficiently resistant. It is intended to cover by suitable expression in the claims appended hereto whatever features of patentable novelty exist in the disclosure herein so far as the same are not covered in the said co-pending application for patent.

In the accompanying drawing:—

Figure 1 is a side elevation of a rope embodying the invention, with the strands broken away at one end so that the constituent parts of the rope are seen, and a twisted paper marker;

Fig. 2 is a section across the rope having the strands and threads indicated conventionally as being circular, with the marker beside the central thread;

Fig. 3 is a section through another rope, having no central thread, with the strands likewise indicated conventionally, with the marker in place of the central thread;

Fig. 4 is a marker of cotton threads, twisted.

Referring to the drawings, 10, 10 indicate strands of a rope, each strand being com-

posed of threads 12. The marking strip 11 is a piece of suitable paper, printed with suitable ink, twisted into a more or less round form, and run into one of the strands 10 at the time of its manufacture, this strand being later united with others to make the rope. While a marking strip may be placed in each of the strands, it is ordinarily sufficient to put it in one of them. In the form represented in Fig. 2 it is run in alongside of the central thread 12', or wound around it.

In the form represented in Fig. 3 the strand has no central thread, strictly speaking, and the twisted strip is run into the strand in the place where such a thread would be if it were present.

In both of these figures the shape of the thread is represented conventionally by circles. In wire rope the maintenance of the circular form of the individual wires leaves a space within which the marker may find room for itself between wires next to the central thread, the marker being more or less deformed by the pressure of the wires upon it, so that it fits whatever shape of space is available. With hemp rope the threads of hemp do not maintain their original more or less circular shape, and the marker thread finds a place among them as the strand is formed in the machine. The size of the marker is somewhat exaggerated in the drawing, and also the size of the circles, for the sake of clearly conveying the two ideas of arrangement.

In Fig. 4 a marker is illustrated which may be arranged either like that of Fig. 2 or Fig. 3, but which is illustrated as being one of the regular threads of the strand of the rope. If this be a cotton tape formed of parallel threads glued together as illustrated in my said co-pending application it would not be sufficiently strong to resist the wear to which the surface of the rope is subject. Such a marker may be found more suitable for use with wire rope, being put in the interior as in Figs. 2 or 3. However used, it is somewhat thicker than the paper, and the face which carries the ink is backed by a thicker body of material, and twisted material at that. Hence when the tape is twisted, with its printed matter inside, the marks which constitute the printing are pretty well protected, and are better protected than if the marker be merely made of paper, against any effects of abrasion which may occur during the life of the rope due to the slight movement of rope threads on each other when the rope is bent. The corded tape also has a larger body of material to receive water-proofing or wear-existing material of any kind, if such be employed. If a sufficiently strong or wear-resisting material be employed, in place of cotton, or if the cotton marker be in a cotton rope, the marker might with advantage constitute one of the regular threads of a strand, and would thus become subject to substantially the same conditions of stretching and shrinking and wear as the rest of the rope; and would endure till the body of the marker is worn away, which might not be until after the other exterior threads had become so much worn that the useful life of the rope is ended.

In ordinary cases, such as wire or hemp rope, with the marker arranged as in Fig. 2 or Fig. 3, it will be understood that no reliance is placed upon the strip as contributing strength to the rope. Doubtless a marker might be used which contributes to the strength, but the character of the invention is best understood by perceiving that in its essential aspect it does not form any part of the material incorporated for the regular function which the strands in the ropes serve. Indeed it is quite different. The marking strip, being a half inch in width, more or less, and being flat in its normal state, is capable of receiving printed matter such as the name of the manufacturer, the date of manufacture, the formula or materials from which the rope is made, or a symbol representing the formula, the particular purchasers for whom made, or any other information. In fact a great quantity of information can be placed upon the marker, and then concealed and protected within it by the body of the marker itself, in addition to the protection which the whole marker receives from the material of the rope structure. It may be twisted at the time it is run into its strand or previously. Settling into place, it can lie along the side of a thread of the strand, in which case it will probably be more or less flattened against it and curved laterally around it by the pressure of the surrounding threads upon it and the thread along which or around which it lies; or it can preserve its status independently, very much as a thread among other threads. The details of its ultimate form depend somewhat upon how loosely it is twisted. It is, however, preferred that it be kept within the interior of the rope, and not be subject to recurring appearance on the surface of the rope as are the threads of a strand. Although paper and cotton threads have been particularly mentioned herein, being the materials which are least expensive and best adapted for taking the permanent impression of ink from type, so far as I know, it is obvious that any other material might be substituted. If the material were strong enough, or were of such texture that it did not fray when subjected to abrasion and wear, such as the surface of a rope receives, the marker with its information concealed and protected within it might be incorporated as one of the regular strands of the

rope which appear and reappear on the surface as indicated in Fig. 4; but a strip made of ordinary materials would soon become broken on the surface and so I prefer to arrange the strand wholly within the rope where it is entirely protected by the structure of the rope.

I claim as my invention:

1. Means associating information with a rope comprising a flat strip of flexible material bearing legible marks, twisted and incorporated in the rope, and capable of being untwisted when freed, thereby rendering its marks accessible for reading.

2. Means associating information with a rope comprising a flat strip of flexible material, additional to the regular rope structure, bearing legible marks upon one side, twisted and incorporated in the rope structure, the twist being of such a degree of pitch and tightness that the marked side is fully wrapped in the inside of the twisted strip, its marks being thereby protected and preserved and being accessible for reading when the strip has been freed and untwisted.

3. Means associating information with a rope comprising a strip of material extending close to the center through a strand of the rope, bearing legible marks, twisted upon itself, surrounded and protected by the material of the rope, and capable of being freed and untwisted to disclose said marks.

4. A means for identifying rope or twine or the products thereof, consisting of a strip of paper or like flexible material bearing identification marks and twisted and incorporated in the rope or twine as a strand thereof, said twisted strip being capable of being unwound so as to reveal the identification marks placed thereon.

Signed by me at Plymouth, Mass., this 4th day of October, 1915.

MILO C. DODGE.

Witnesses:

HARVEY A. SOULE,

FRED A. HALL.