

F. W. ROEBLING.

WIRE-ROPE.

No. 171,634.

Patented Dec. 28, 1875.

Fig. 1.

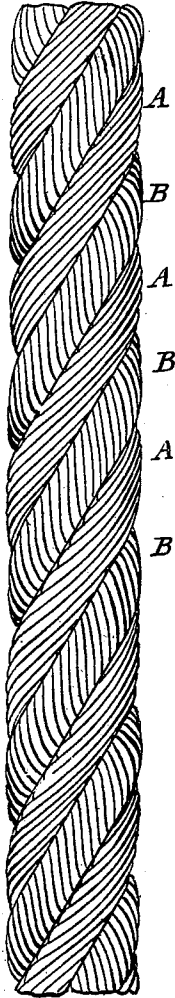


Fig. 2.



Fig. 3.



Witnesses:

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FERDINAND W. ROEBLING, OF TRENTON, NEW JERSEY, ASSIGNOR TO JOHN A. ROEBLING'S SONS.

IMPROVEMENT IN WIRE-ROPE.

Specification forming part of Letters Patent No. **171,634**, dated December 28, 1875; application filed October 12, 1875.

To all whom it may concern:

Be it known that I, FERDINAND W. ROEBLING, of Trenton, in the county of Mercer and State of New Jersey, have invented an Improvement in the Art of Manufacturing Wire-Rope, of which the following is a specification:

This invention consists of a wire-rope of any desired number of strands, which strands, composed of any desired number of individual wires, are all twisted in the same direction, thus constituting the "lay" of the rope, while the individual wires, composing the said strands, are twisted in two directions—that is, in one or more of the whole number of said strands the individual wires are twisted to the right, and in the remaining number of strands the individual wires are twisted to the left; thus in some one or more of the strands the individual wires are twisted in the same direction as the lay of the rope, and in the remaining strands the individual wires are twisted in a direction contrary to the lay of the rope.

In all ropes of whatever material heretofore made the twist of all the fibers composing the strands is invariably the reverse of the lay of the rope. It is this fact which enables the rope to hold together, and prevents it from untwisting when used as a working rope—in other words, which makes it neutral.

Wire-rope, in general, is composed of a central strand or core, surrounded by a number of strands, usually six in number. These outer strands are not necessarily of the same size as the central strand, and they may contain any number of wires, usually seven or nineteen. The material composing wire-rope may also vary. The central strand may be made of either iron or steel, or of some softer material, such as manila or hemp, and some of the wires in the outer strands may be replaced by hemp. The lay of the rope may also be either right lay or left lay, and the lay itself may be either long or short, and all of the strands may have the wires composing them twisted either all to the right or all to the left. All wire-ropes, however, possess one dangerous quality, that of kinking. These kinks will destroy a rope in a very short time, and no method of forming a rope has hereto-

fore been invented by which such kinks can be entirely prevented.

The object, therefore, of making a wire-rope of wires having contrary twists, as above described, is in order that said contrary twists shall completely neutralize any tendency in the rope to either kink, twist, or untwist. Wire-rope thus laid up is particularly useful for drill-ropes in artesian and oil wells, or in other earth-borings.

Such rope may also be used for guide-ropes in shafts or pits where no guides are used, in order to prevent the buckets or cages from revolving.

In the drawing, forming part of this specification, A A A represent one set of the strands composing the rope forming the subject of this invention, the wires of which strands are twisted in one direction, and B B B represent the remaining strands, the wires of which are twisted in a direction opposite to the twist given to the wires in the strands A A A, the whole, when laid up, forming a rope whose strands are laid in but one direction; but having all the wires, composing some of said strands, twisted in the same direction as the lay of the rope itself, and all the wires, composing the remaining strands, twisted in a direction contrary to the lay of the rope, and of course contrary also to the twist of the other wires, whose twist corresponds with the lay of the rope. These contrary twists in the wires composing the strands, some coinciding with and others opposing the lay of the rope, so neutralize each other's action as to fully produce in the rope the qualities desired for the objects intended to be accomplished, as hereinbefore set forth.

Having thus fully described this improved wire-rope as of my invention, I claim—

As an article of manufacture a wire rope, composed of strands, one or more of which strands have a right-hand twist, and the remainder a left-hand twist, said strands being laid up into a rope, in the manner and for the purposes set forth.

FERDINAND W. ROEBLING.

Witnesses:

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