T. GORE.

WIRE ROPE.

APPLICATION FILED JUNE 24, 1908.

922,417. Patented May 18, 1909.

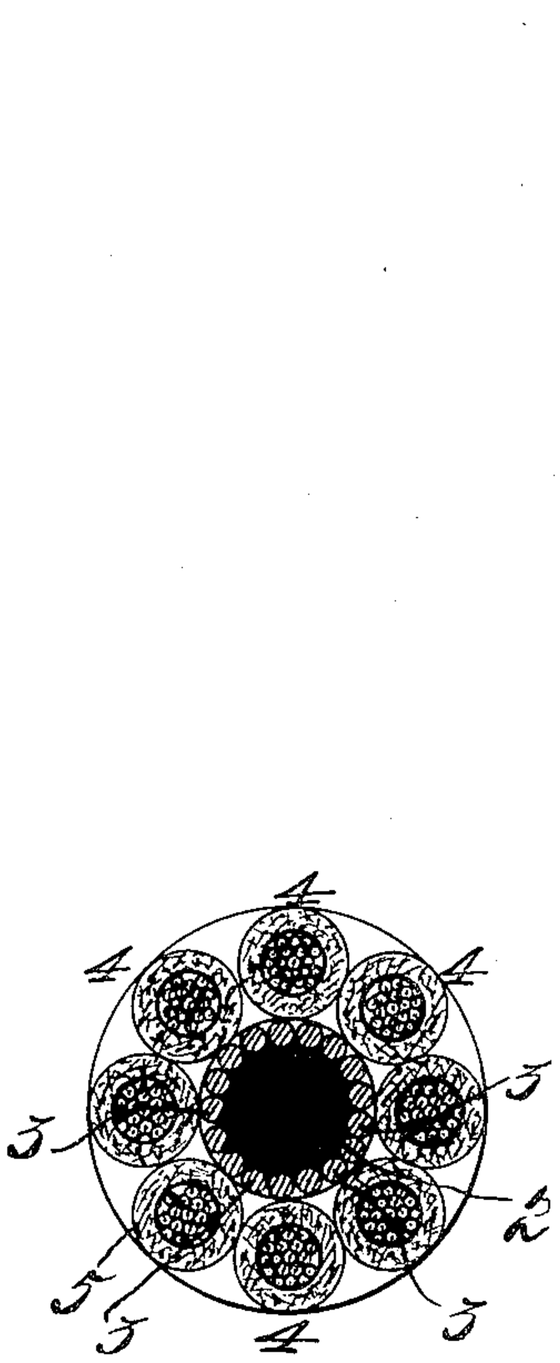

Fig. 4.

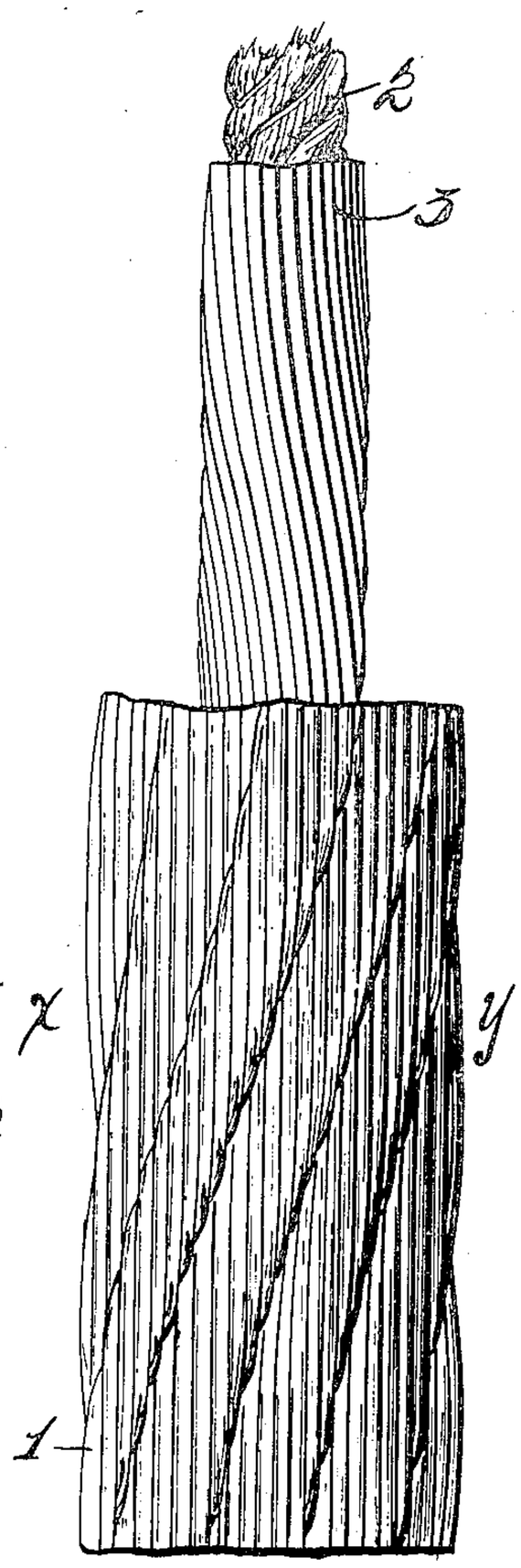

Fig. 1.

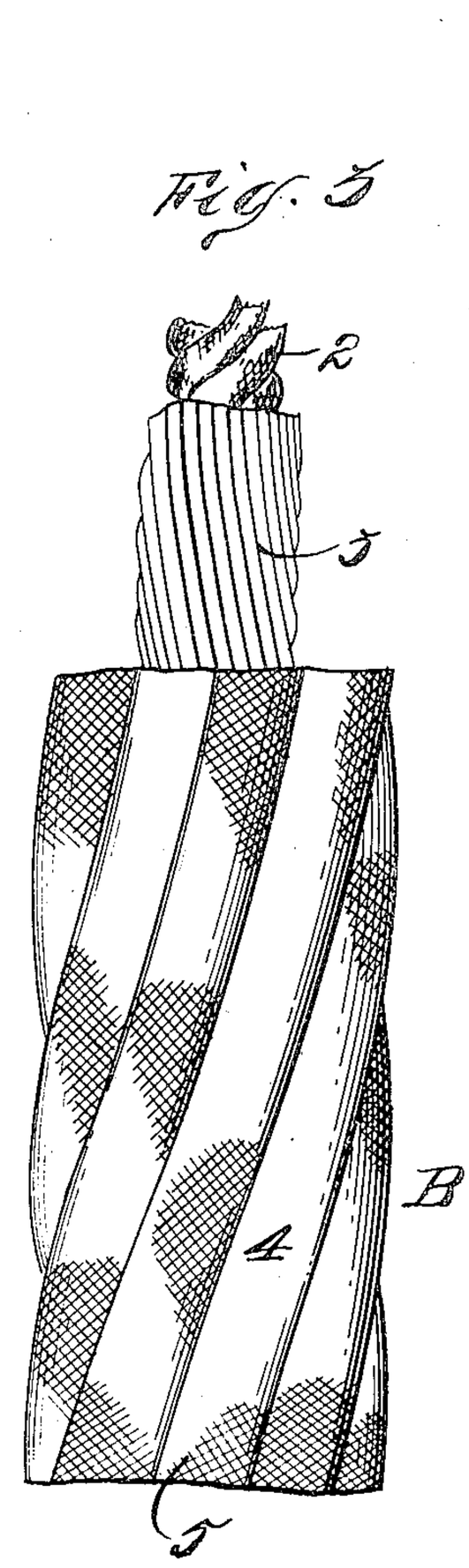

Fig. 3

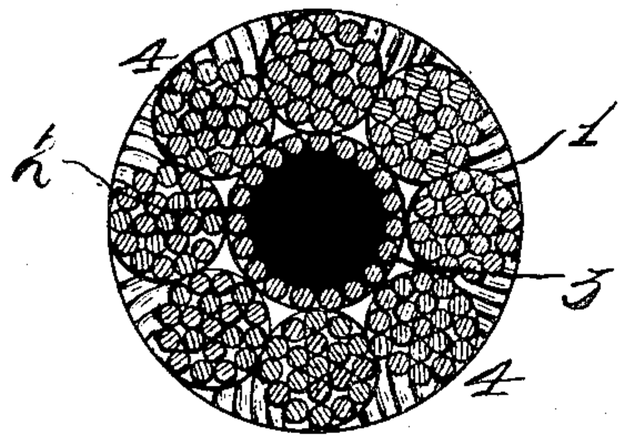

Fig. 2.

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UNITED STATES PATENT OFFICE.

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WIRE ROPE.

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To all whom it may concern:

Be it known that I, THOMAS GORE, a citizen of the United States, residing at Brooklyn, New York, have invented certain new and useful Improvements in Wire Ropes, of which the following is a clear, full, and exact description.

My invention relates to wire ropes. When the ordinary rope (such, for instance, as shown in the patents to Hammond No. 608,673 and Moxham No. 337,513) is used for hoisting purposes, for instance for hoisting a freely suspended weight, the rope tends to untwist, or unlay, as it is called, which would cause the weight to spin. This is undesirable, and various constructions have been tried to accomplish a non-rotating effect.

It is the object of my invention to provide a construction of rope by which a non-rotating effect may be obtained, or at least approximated, and which will have other advantages.

Various ropes have been designed to avoid this untwisting effect, such, for instance, as the rope of the Tangring patent No. 883,759, in which there are shown two layers of wires each of said layers being composed of a series of strands, the strands of one layer being "laid" or wound spirally in a direction opposite to the lay of the other strands. In order to produce a complete counterbalancing effect between the two layers of wires, the unlaying or rotating effect of the two layers should exactly counterbalance each other, but as the cross sectional area of the outer layer is greater than that of the inner layer, the outer layer will have a greater tendency to unlay than will the inner layer, and this must be counteracted in some way. By my invention I have provided a construction of wire rope in which this non-rotating or non-spinning effect may be obtained or approximated.

In the drawings which show two preferred forms of my invention; Figure 1 is a plan view; Fig. 2 a section on the line X—Y; Fig. 3 is a plan view; and Fig. 4 a section on the line A—B of a preferred modification.

Referring to Figs. 1 and 2, I have provided a core 2 of fibrous material, such as hemp or the like, which is surrounded by a layer of wires which may be in the form of individual wires 3 laid around the same with the desired twist. An outer layer of wires is also provided, such outer wires being assembled into a series of strands 4, 4, which are laid around the inner layer in the opposite direction, that is, in Fig. 1 the inner wires 3 are laid to the left and the outer strands are laid to the right.

In Figs. 3 and 4 I have shown a modified construction in which the core and inner layer 3 is the same as before, but the strands of the outer layer are made smaller than are shown in Fig. 2 and are preferably separated somewhat from each other and from the inner layer 3. The intervening spaces may be filled up by fibrous material, and I have preferably accomplished this by winding fibrous material around each strand, such as by serving or braiding the covering 5 around the same. The fibrous material is preferably soaked with tar or other lubricant which, after the rope has been used for some time, will present a rubberlike outer surface for the entire rope, will prevent chafing between the two layers and will accomplish other advantageous results.

Obviously the cross sectional area of the outer layer of strands is shown as somewhat greater than that of the inner layer, but this may be counteracted if desired by giving the inner layer 3 a shorter or quicker twist or lay than that of the strands of the outer layer.

In the construction illustrated in Figs. 3 and 4, it will be obvious that the cross sectional area of any one strand 4 is less than the cross sectional area of that strand and the fibrous covering, and as it is obviously desirable in such a rope that the outer strands shall completely cover the rope, the combined cross sectional areas, and therefore the unlaying effect of the outer series, is less than would be the case if the cross sectional areas were increased. A further advantage of my rope shown in Figs. 3 and 4 is that the spinning tendency of the outer layer may be decreased or increased without varying the size of the rope, by decreasing or increasing the size of the strands and with a corresponding increase or decrease of the thickness of the covering material. By varying these features and the twist of the inner series as desired, a rope may be obtained which is practically without unlaying effect or which may approximate that result to the extent desired.

It will be observed that in Fig. 4 the wire strands are less in number than would be sufficient to completely surround the inner layer 3 if the strands alone (that is, without

the covering) were placed in contact with the inner layer and with their axes parallel to that of the core.

Although I have shown in the drawings the interior core covered with a single layer of individual wires, I do not desire to be limited in all cases to this feature and I am aware that various modifications of my invention may be made without departing from the spirit of my invention as set forth in the claims. I therefore do not limit myself to the constructions illustrated and described.

What I claim is:

1. A wire rope having an outer series of strands laid in one direction, each strand composed of a series of wires twisted tightly together, a central core of fibrous material for said wire rope, said core being covered with an inner series of individual wires laid around the same in a direction opposite to the lay of said outer series.

2. In a wire rope, a core of fibrous material, a layer of wires laid around said core in one direction, an outer layer of wires made up into a series of strands which are laid in the opposite direction, each of said strands having a covering of fibrous material wound around the same, each of said coverings touching the adjacent coverings and the first-mentioned layer of wires, whereby, if the thickness of the fibrous coverings are increased or decreased, the size of said strands may be decreased or increased without varying the size of the rope.

3. A wire rope having an outer series of strands laid in one direction, each strand composed of a series of wires twisted tightly together, each of said strands being separately covered with a fibrous material, a central core of fibrous material for said wire rope, said core being covered with an inner series of individual wires laid around the same in a direction opposite to the lay of said outer series.

4. A wire rope having an outer series of strands laid in one direction, each strand composed of a series of wires twisted tightly together, each of said strands being separately covered with a fibrous material, a central core of fibrous material for said wire rope, said core being covered with a single layer of individual wires laid around the same in a direction opposite to the lay of said outer series.

5. In a wire rope, a core of fibrous material, a layer of wires laid around said core in one direction, an outer layer of wires made up into a series of strands which are laid in the opposite direction, each of said strands being separated from each other and from said first-mentioned layer by fibrous material, said strands being less in number than would be sufficient to surround said first-mentioned layer if said strands alone were placed in contact with said inner layer with their axes parallel to that of the core.

6. In a wire rope, a core of fibrous material, a layer of wires laid around said core in one direction, an outer layer of wires made up into a series of strands which are laid in the opposite direction, each of said strands being separated from each other and from said first-mentioned layer by fibrous material wound around each strand, said strands being less in number than would be sufficient to surround said first-mentioned layer if said strands alone were placed in contact with said inner layer with their axes parallel to that of the core.

7. In a wire rope, a core of fibrous material, a layer of wires laid around said core in one direction, an outer layer of wires made up into a series of strands which are laid in the opposite direction, each of said strands being separated from the others when so laid, and fibrous material wound around said strands and filling the resulting spaces, whereby, if the thickness of the fibrous coverings are increased or decreased, the size of said strands may be decreased or increased without varying the size of the rope.

Signed at New York city, this 17th day of June, 1908.

THOMAS GORE.

Witnesses:

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