

(No Model.)

W. H. & T. LAIDLER.

WIRE ROPE OR CABLE.

No. 397,371.

Patented Feb. 5, 1889.

fig. 3.

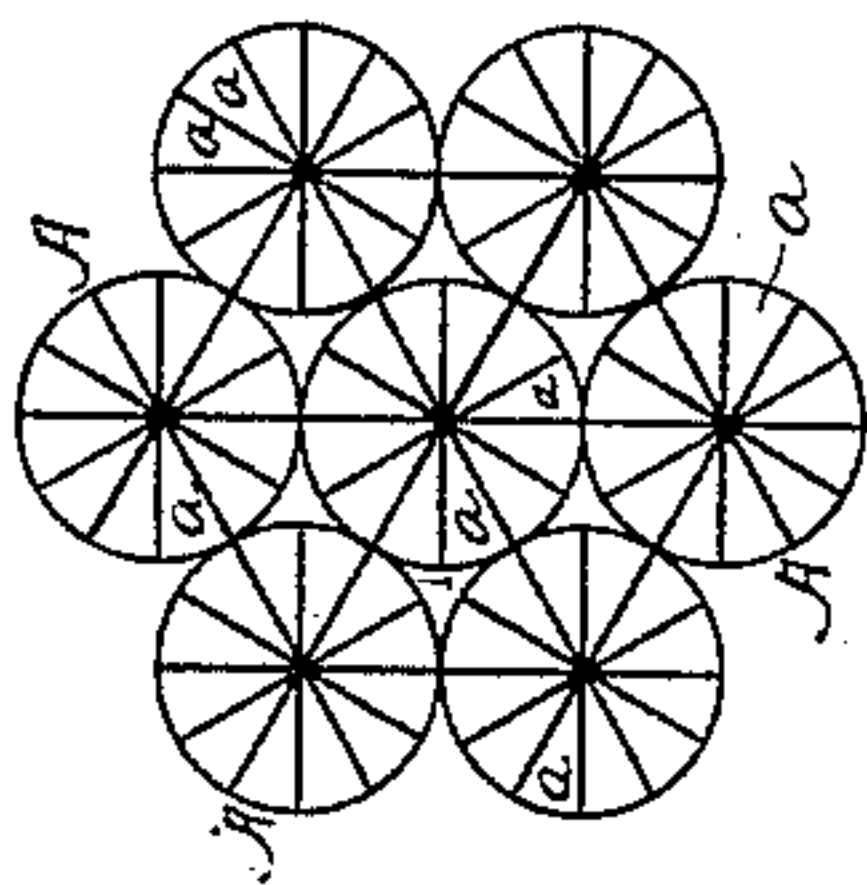


fig. 7.

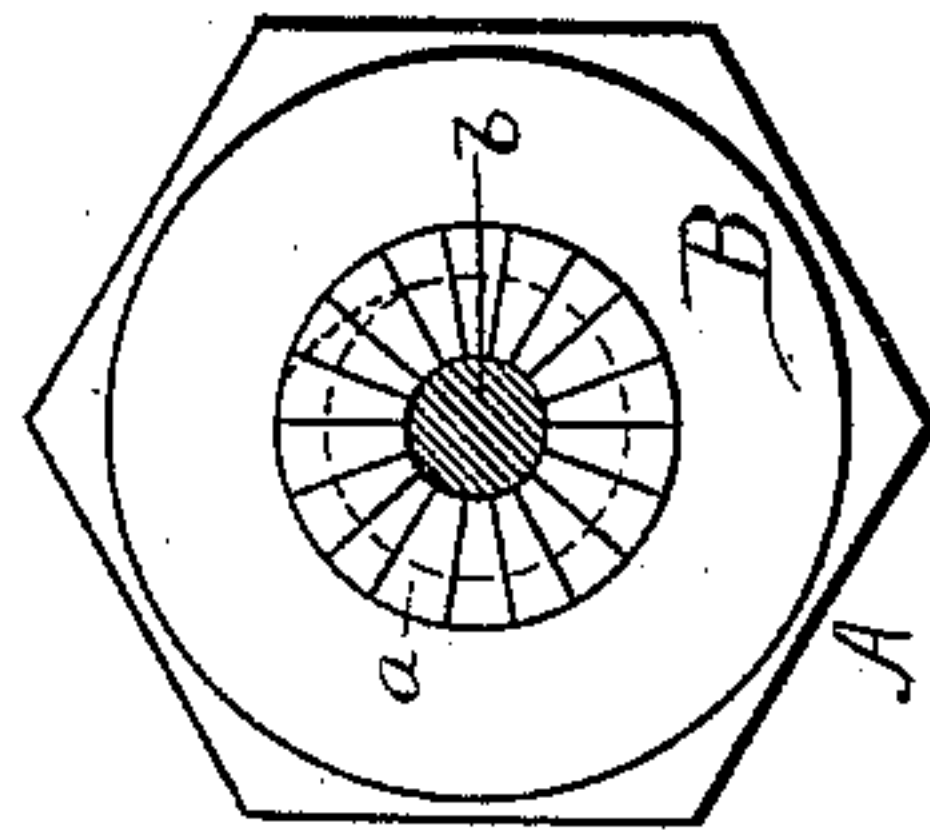


fig. 2.

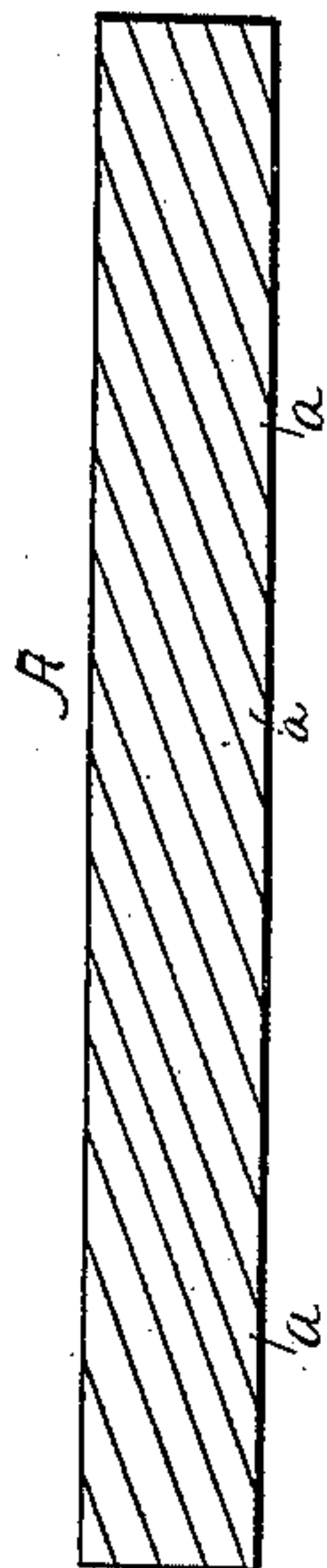


fig. 6.

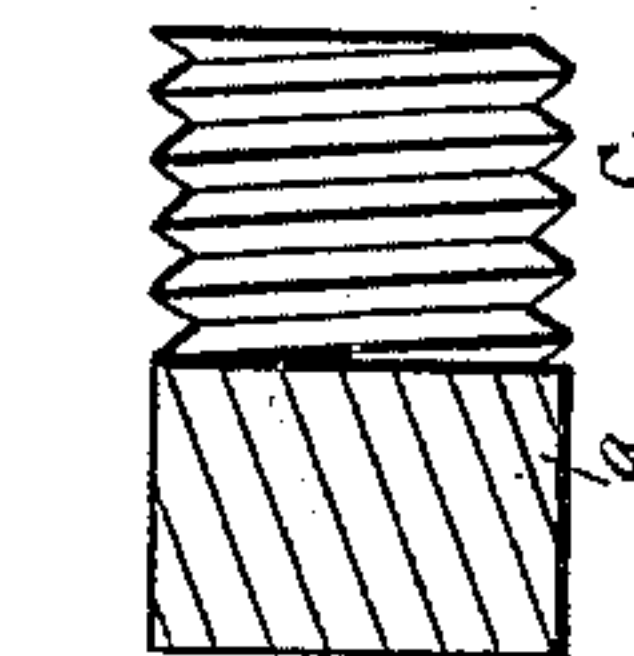


fig. 5.

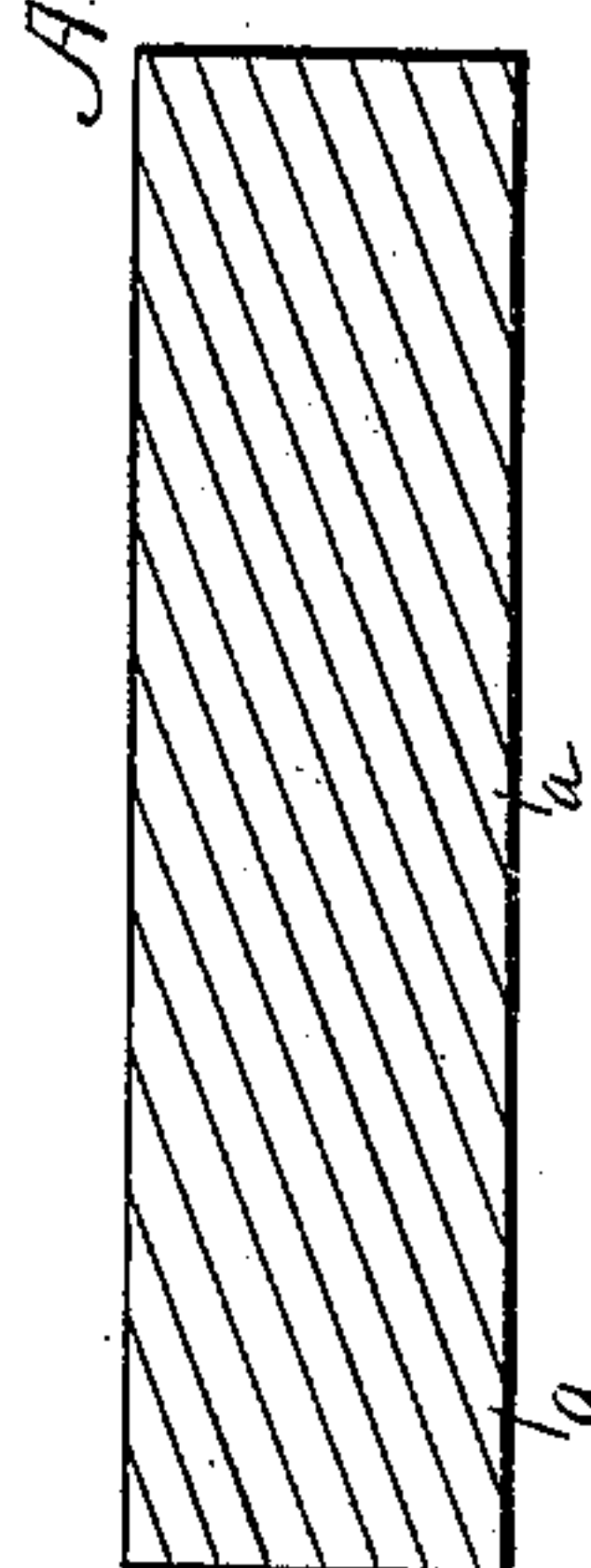


fig. 1.

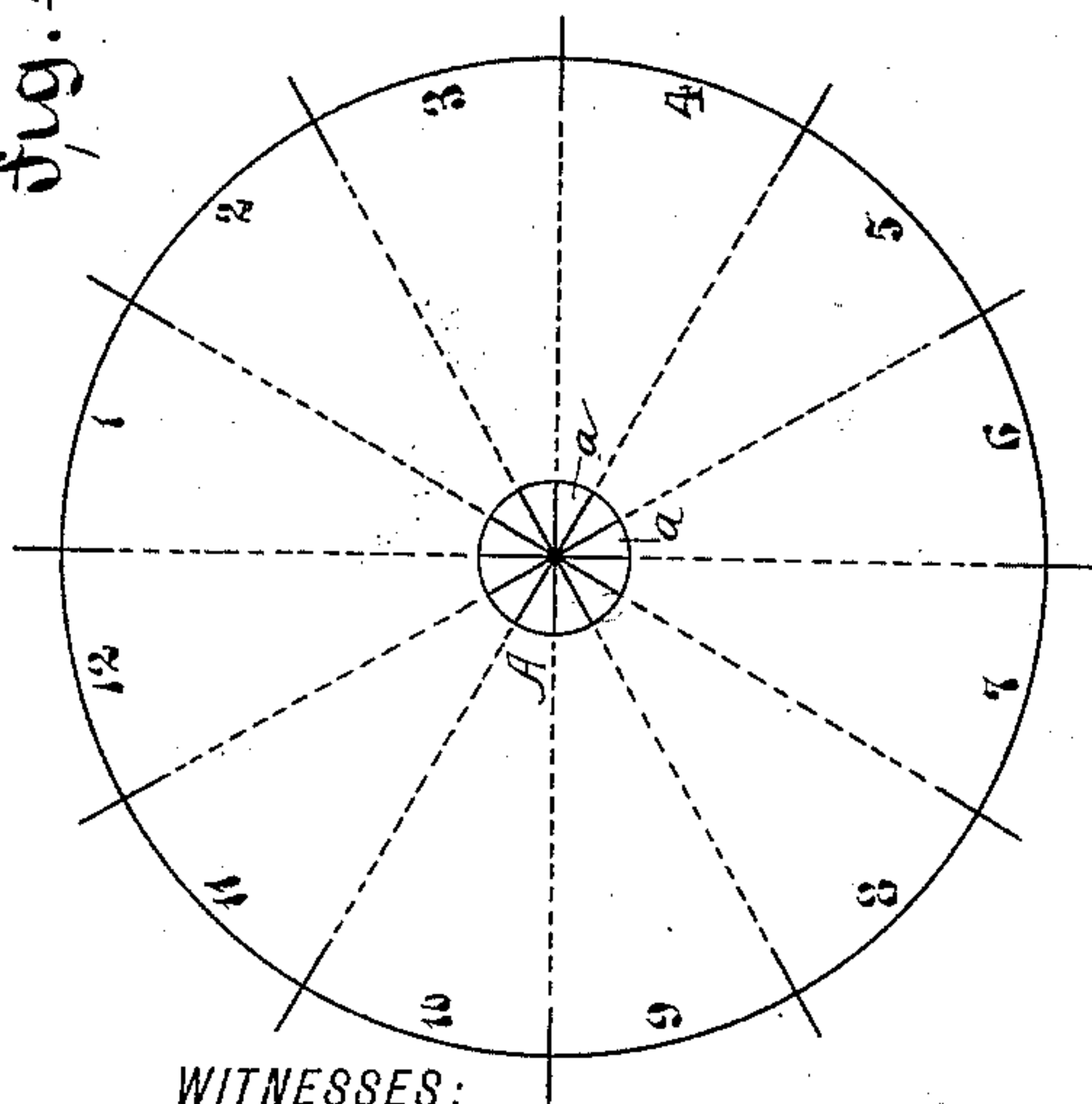
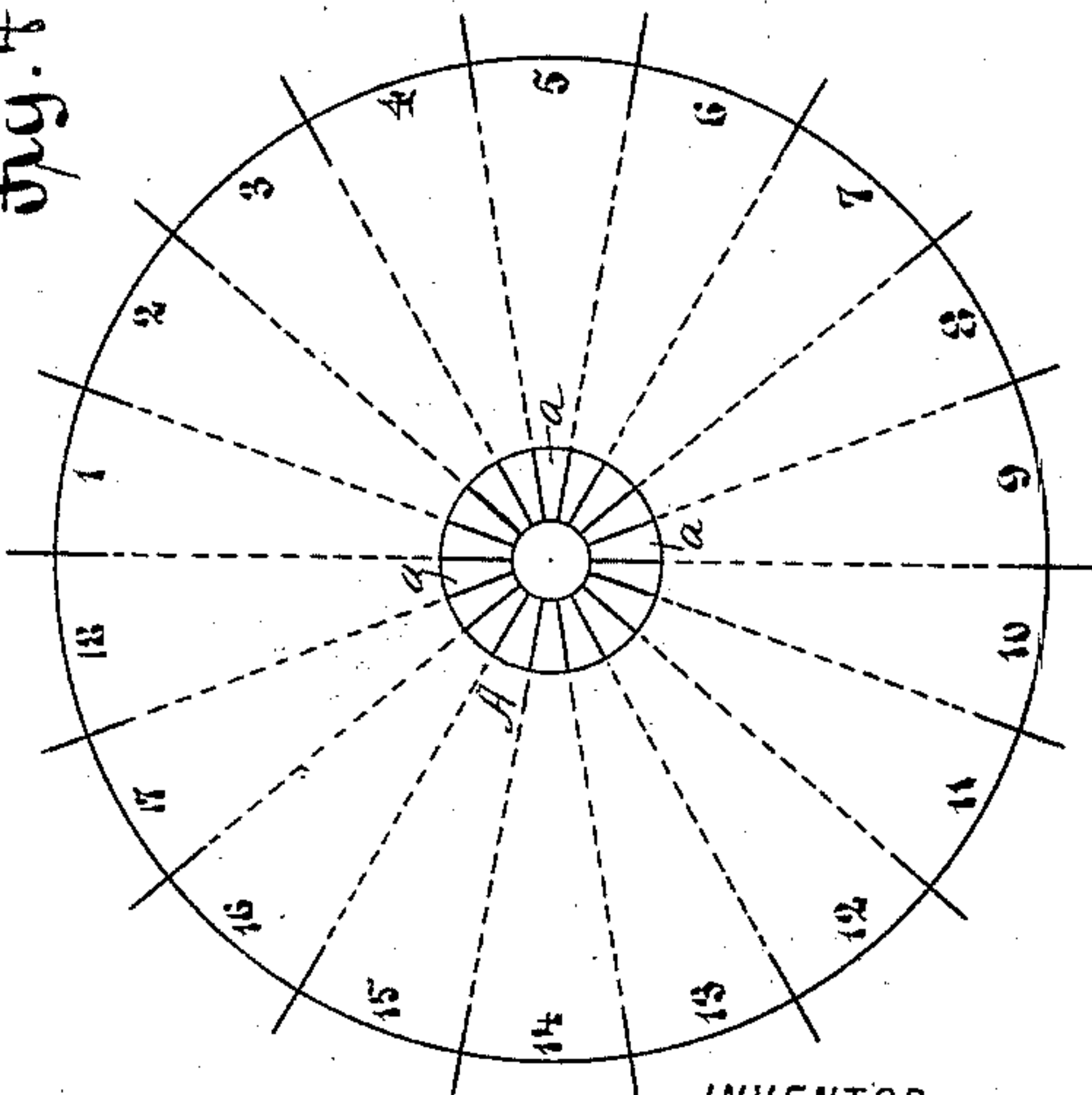


fig. 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM HENRY LAIDLER AND THOMAS LAIDLER, OF MELDON HOUSE, No. 9 LEOPOLD STREET, BURDETT ROAD, BOW, COUNTY OF MIDDLESEX, ENGLAND.

## WIRE ROPE OR CABLE.

SPECIFICATION forming part of Letters Patent No. 397,371, dated February 5, 1889.

Application filed December 9, 1886. Serial No. 221,082. (No model.) Patented in England May 9, 1885, No. 5,755; in Belgium June 11, 1886, No. 73,457, and in France September 6, 1886, No. 178,359.

*To all whom it may concern:*

Be it known that we, WILLIAM HENRY LAIDLER, engineer, manager of rope-works, and THOMAS LAIDLER, engineer, both of Meldon House, No. 9 Leopold Street, Burdett Road, Bow, in the county of Middlesex, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Wire Ropes and Cables, (for which we have obtained Letters Patent in Great Britain, No. 5,755, dated May 9, 1885; in Belgium, No. 73,457, dated June 11, 1886, and in France, No. 178,359, dated September 6, 1886,) of which the following is a specification.

This invention relates to a wire strand, rope, or cable in which the wires composing the strand, rope, or cable are in the form of sectors or truncated sectors of a circle, whereby they constitute a continuous arch, imparting great strength to resist compression, torsion, and tension, and whereby the arc-shaped outer surfaces of the wires, forming the circumference of the strand, rope, or cable, constitute a true continuous circle, or nearly so, presenting a smooth wearing-surface.

Figure 1 of the accompanying drawings is a diagram illustrating the method of laying off the sectors for a strand composed of twelve sectoral wires, the inner circle of the diagram representing the arcs of the sectors of the wires and the outer circumference of the strand to be formed. Fig. 2 is a side elevation of a strand composed of twelve twisted sectoral wires. Fig. 3 is an end view of a rope or cable composed of several strands, each strand being composed of sectoral wires. Fig. 4 is a diagram illustrating the method of laying off the sectors for a tubular strand composed of truncated sectoral wires, the innermost circle representing the truncated ends of the sectors and the intermediate circle representing the arcs of the sectors, which constitute the circumference of the strand to be formed, the strand in this case comprising eighteen sectoral wires. Fig. 5 is a side elevation of a strand composed of eighteen sectoral wires as laid off in the diagram, Fig. 4. Fig. 6 is a side elevation of a strand composed

of twisted sectoral wires and provided with a screw-thread at one end. Fig. 7 is an end elevation of a tubular strand composed of sectoral wires provided with a core and with a nut.

Similar letters of reference indicate corresponding parts in the different figures.

A strand or rope, A, constructed in accordance with this invention, comprises a number of twisted sectoral wires, *a*, each of which is drawn or made in the form of a sector of a circle, the radial sides of the wires abutting and forming a continuous circular arch, whereby the strand or rope is adapted to resist compression, tension, and torsion, and the arc-shaped outer surfaces of the wires constituting the circumference of the strand or rope, forming a smooth wearing-surface devoid of the spiral ridges or corrugations existing in strands or ropes composed of round wires. These sectoral wires may severally constitute full sectors of a circle, or they may be truncated at their inner edges. If full sectors, the wires will form a solid strand or rope, as illustrated in Figs. 1 and 3; if truncated sectors, the wires will form a tubular strand, as illustrated in Fig. 4. The sectoral wires are laid or twisted spirally into a strand or rope on any ordinary rope-machine. The sectoral wires extend inward to or approximately to the center of the strand, rope, or cable, and constitute the body thereof.

The solid sectoral wires form a comparatively rigid strand or rope, and the truncated sectoral wires form a strand or rope of comparative flexibility, the flexibility being more or less according to the degree of truncation of the sectoral wires. The flexibility also varies with the number of wires, being in inverse proportion thereto.

Tension on the strand or rope composed of these twisted sectoral wires tends to draw the wires toward the center and press them in solid contact, the wires supporting one another on their radial sides and affording resistance nearly equal to that of a solid rod, and when released from strain the rope becomes flexible.

The tubular ropes may be employed for the reception and protection of the conducting-cores of telegraph-cables.

5 The strand or rope A may be formed with a screw-thread, as *c*, Fig. 6, to which a nut, B, may be applied for attaching a coupling or a guide, or for any other purpose.

Several of the strands or ropes A may be twisted into a larger rope, C, as shown in Fig. 3.

10 We claim—

1. A wire strand, rope, or cable the body of which is composed of a number of twisted sectoral wires disposed around a common center with their radial faces abutting, said sectoral  
15 wires extending inward approximately to the center of the strand, rope, or cable, substantially as described.

2. A wire strand, rope, or cable the body of which is composed of a number of twisted

truncated sectoral wires disposed around a 20 common center, with their radial faces abutting, said sectoral wires extending inwardly approximately to the center of the strand, rope, or cable, substantially as described.

3 A wire rope or cable composed of a num- 25 ber of strands twisted together, the body of each strand being composed of a number of twisted sectoral wires disposed around a common center, with their radial faces abutting, said wires extending inward approximately to 30 said center, substantially as described.

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