A. ELTON.

Wire-Rope Ladders.

No. 199,967. **Patented Feb. 5, 1878.**

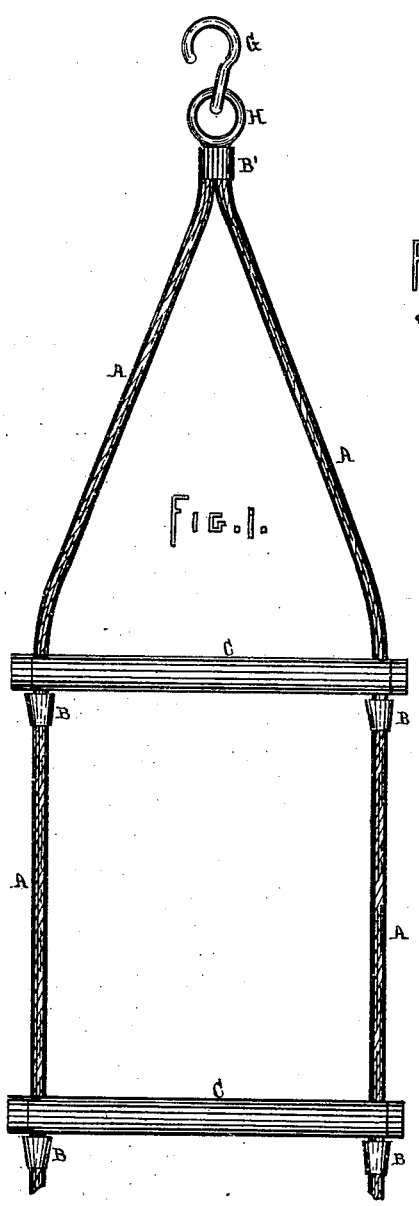

FIG. I.

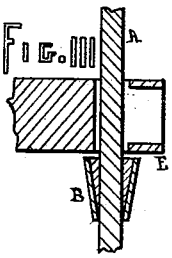

FIG. III.

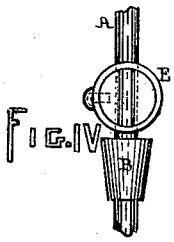

FIG. IV.

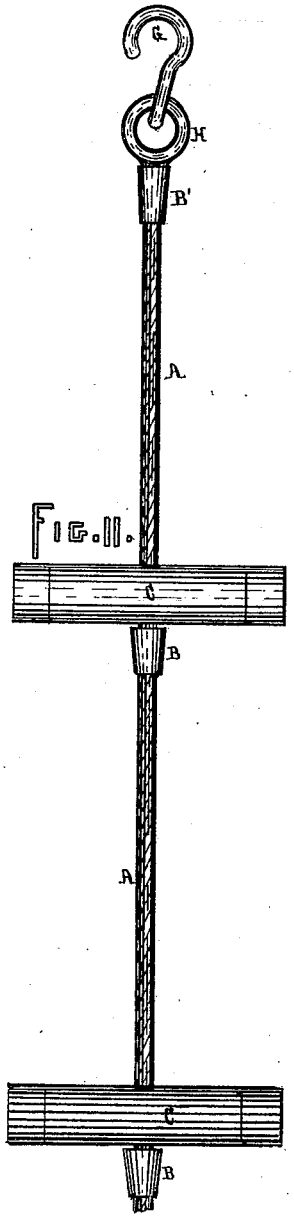

FIG. II.

FIG. V.

Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN WIRE-ROPE LADDERS.

Specification forming part of Letters Patent No. **199,967**, dated February 5, 1878; application filed June 8, 1877.

To all whom it may concern:

Be it known that I, ANTHONY ELTON, of the city and State of New York, have invented a new and useful Improvement in Ladders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part hereof.

My invention relates more particularly to wire-rope ladders than to ladders made of fibrous material; and its object is to provide a certain, cheap, and convenient means to prevent the rounds from slipping downward when called upon to sustain the weight of people using it.

My invention consists of stops soldered to the wire-rope at points immediately below the place of contact of the rounds with the wire rope, to prevent the slipping of the rounds; also, of the combination of the wire-rope and a cup around it, between which and the rope is an annular space filled with solder or other cement, to secure the cup in place upon the rope, whereby each round of the ladder is prevented from slipping down upon the wire-rope.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the drawings, Figure I is a front view of my device, showing a full ladder; Fig. II, a similar view of a single-stile ladder; Fig. III, a longitudinal sectional view of the end of my round; Fig. IV, an end view of the same; Fig. V, a top view of the end of the round, showing the slot.

A A are the stiles or wire-rope sides of the ladder; B, the cups; C, the rounds; D, the slot to receive the rope A; E, the metallic rings inclosing the slots D in the ends of the rounds; G, a hook; H, the rings to connect the hook and the ladder; B′, a cylindrical cup to secure the loop end of the wire-rope around the ring H. This end, in Fig. II, is passed up through cup B′, over ring H, and back again into cup B′, where it is soldered or cemented securely by filling the cup with solder.

In Fig. I there is no end at B′, as the rope A A is all in one piece. At B′ it is looped, passed up through cylindrical cup B′, and around ring H. The cup B′ is then pushed tightly up against ring H to tighten the loop, and cement or solder is then poured into cup B′ to hold it fixedly in place. The cups B are then attached by passing the rope through them, and the solder is then poured into them in the same way, to secure them at such distance apart as it is desired to separate the rounds.

The rounds, slotted, as at D, at their ends to a sufficient degree to admit the wire-rope and the ring E beyond it, are then attached by passing the rope into them, as at Fig. III, and the ring E is then attached, as shown in said figure, and a small screw is passed into it to keep it in place; or the rings E may be screw-threaded, so as to hold their own place when screwed upon the ends of rounds C. If the rounds C are of metal, the rings E may be shrunk upon the ends. These rings prevent the rope slipping out of slots D.

In the ladder shown in Fig. II there is only one line of rope, and it is passed through a hole in the middle of each round C, each cup B being attached below after its round is slipped to place. In short, the cups and rounds are placed upon the rope alternately.

Of course the shapes of cups B B′ may be of various kinds. I prefer the inverted conical shape, because it is a form peculiarly adapted to receive and hold the solder or cement poured into it.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a wire ladder, the stops B, soldered to the wire-rope A at points immediately below the place of contact of the rounds C with the wire-rope, to prevent the slipping of the rounds, substantially as described.

2. The combination of the wire-rope and a cup, B, around it, between which and the rope is an annular space filled with solder or other cement, to secure the cup in place upon the rope, whereby each round of the ladder is prevented from slipping down upon the wire-rope, substantially as described.

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Witnesses:

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