

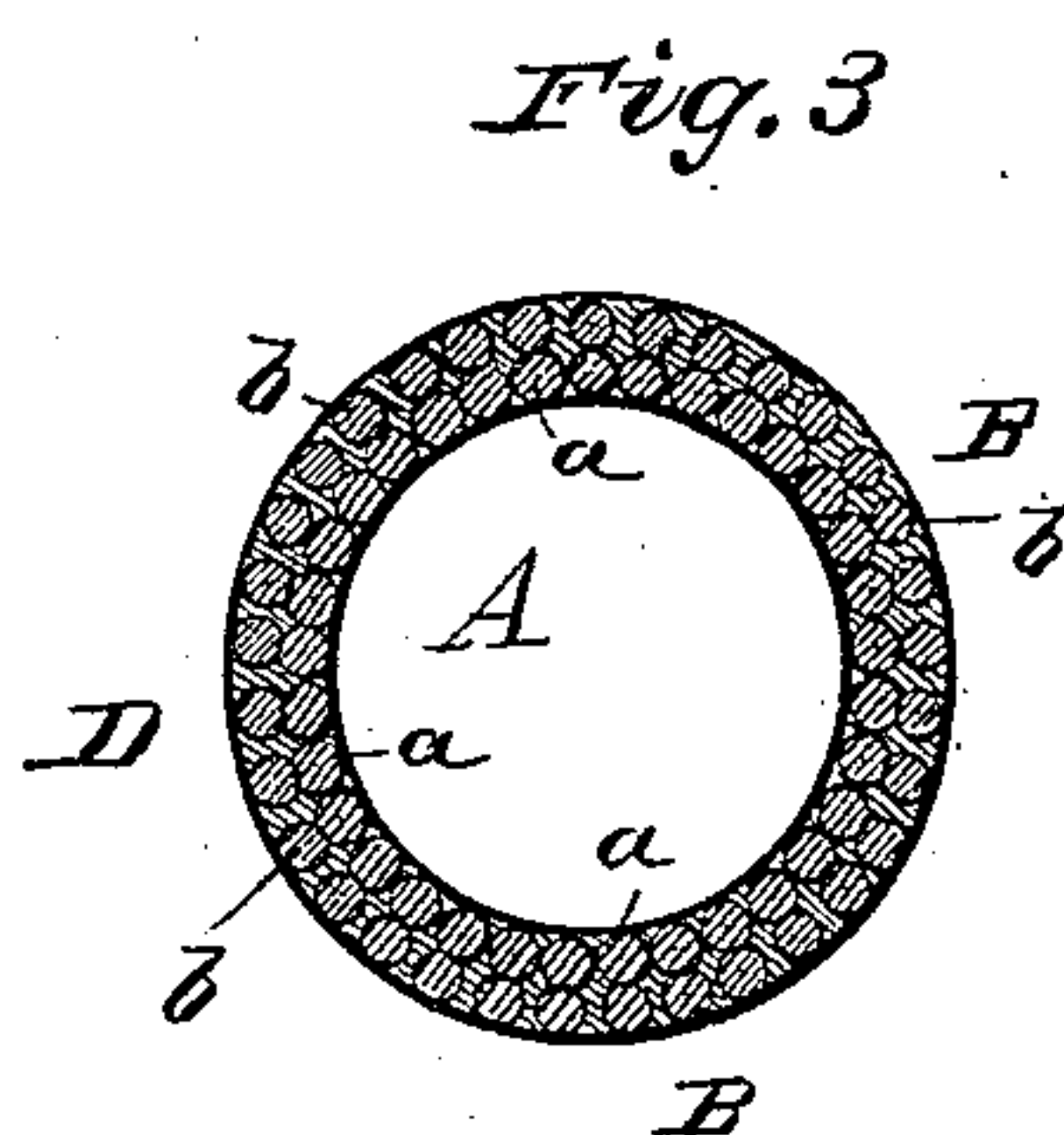
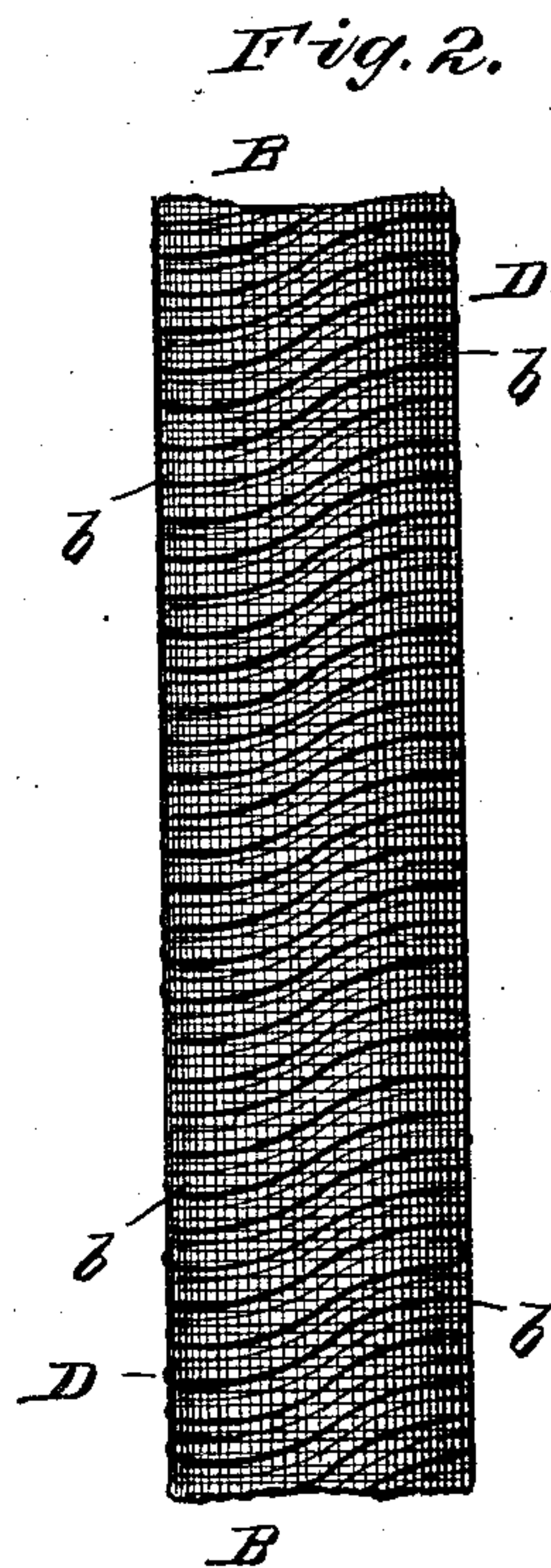
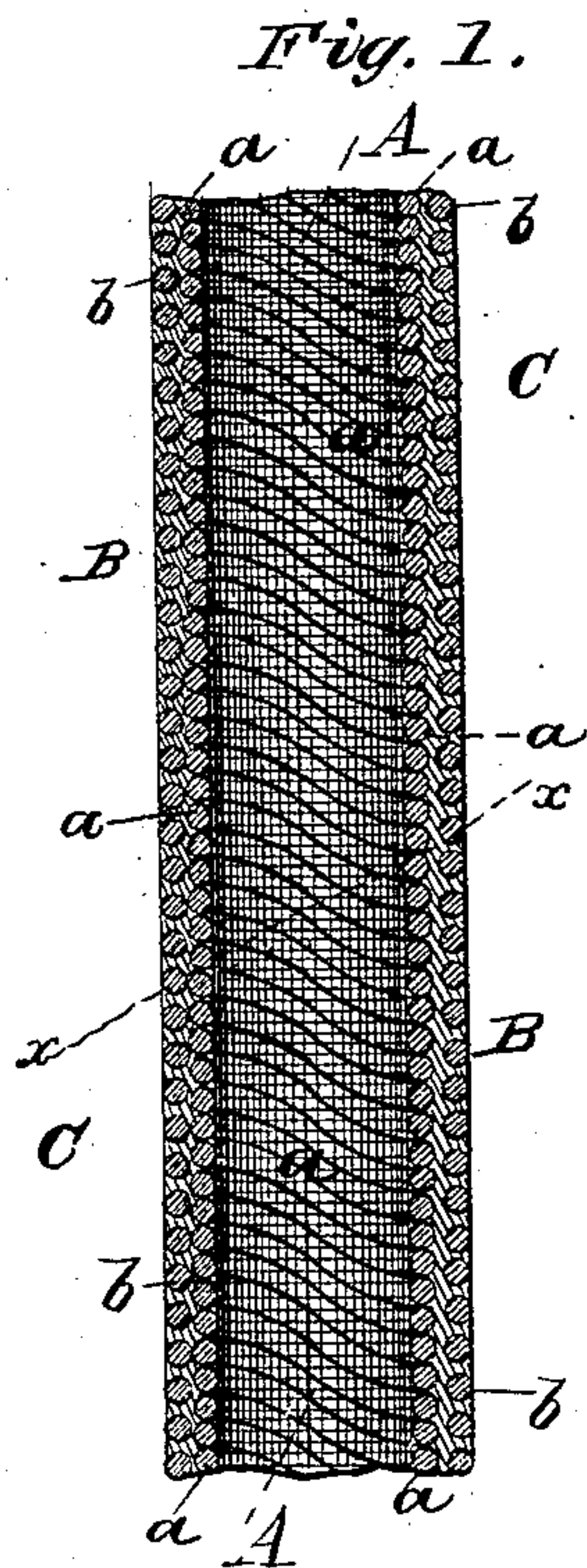
(No Model.)

A. HARBISON.

WIRE TUBING.

No. 267,343.

Patented Nov. 14, 1882.



WITNESSES:

Fred G. Dietrich
John C. Kernon

INVENTOR:

A. Harbison
BY *Wm. H. [Signature]*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW HARBISON, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO
HIMSELF AND WM. C. HARBISON, OF SAME PLACE.

WIRE TUBING.

SPECIFICATION forming part of Letters Patent No. 267,343, dated November 14, 1882.

Application filed February 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANDREW HARBISON, of New Castle, in the county of Lawrence and State of Pennsylvania, have invented a new and useful Improvement in Wire Tubing; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical section; Fig. 2, side elevation of complete tube; Fig. 3, a transverse section on line *xx* of Fig. 1.

My invention relates to improvements in wire tubing; and it consists of a wire tube composed of an inner coil or tube formed of spirally-arranged wires, in juxtaposition or in contact with each other, surrounding and in contact and concentric with which is arranged an outer coil or tube formed of wires coiled spirally in a direction opposite to that of the inner coil or tube, with intervening spaces between the wires of the outer coil, the outer and inner coils or tubes thus joined together, and the wires of the outer and inner coils being soldered together, thus forming a single strong and flexible wire tube, as hereinafter more fully set forth.

My improved wire tube is designed to convey water and other liquids, gas, steam, telegraph, telephone, and electric-light wires under ground, and generally may be employed for all the purposes to which other kinds of tubing have heretofore been applied, and being extremely flexible can be bent or curved when a change of direction is required, thus dispensing with the elbows requisite in changing the direction when rigid tubing is employed. The wires of my improved tubing are made of soft steel or other suitable metal.

In the accompanying drawings, A represents the inner tube or core, formed of the soft steel or other metallic wires *a*, suitably prepared, which are coiled spirally around a core or mandrel at such an angle as to give the greatest strength, the wires being in contact or in juxtaposition on the mandrel or core, like the staves of a barrel, thus forming the inner tube or coil, A. Around the inner wire tube or coil, A, thus formed is coiled spirally in an opposite direction the wires *b* of the outer tube or coil, B, with intervening spaces between the wires *b*, which act as a hoop to bind, hold, and brace the inner spiral coil of

wires, *a*, on the same principle as the hoops of a barrel, resisting alike pressure from the inside and outside, and giving strength and flexibility to the tube, to allow it to be bent in any direction without injury and to suit any direction required, thereby saving extra connections and square or elbow joints in turning corners. The outer and inner tubes or coils, A B, composed of the spiral wire *a b*, thus joined together and constituting the wire tubes C, are then soldered together or plunged into a metallic bath and united, the spaces between the outer wires, *b*, allowing the solder to flow through and securely unite the wires of the outer and the inner tubes and tie the two tubes or coils together. A finished pipe or tube D, is thus formed, combining durability, cheapness, lightness, and flexibility, and possessing strength in proportion to its weight unequalled by other tubing, and, being coated both inside and outside with tin or other non-corrosive metal, is rendered particularly valuable for all purposes where the tubing employed is liable to rust or corrode.

The tubing may be made of any continuous length desired, and of any size, from that of a telegraph-wire to several inches in diameter, and of any weight or strength per foot, regulated by the core on which it is formed, the size and number of wires used in its construction, and the degree of heat employed in the soldering process.

I shall hereafter make an application for Letters Patent for the process and machinery by means of which my improved wire tubing is constructed, this application for Letters Patent being confined to the product or wire tubing constructed by said machinery.

What I claim as my invention is—

As an improved article of manufacture, the wire tubing D, herein described, composed of the inner spiral coil, A, having its wires *a* in juxtaposition with each other, and the outer spiral coil, B, having its wires *b* coiled in an opposite direction from the coil A, and provided with intervening spaces between its wires *b*, the coils A B and the wires *a b* of each coil being soldered to each other, substantially as described, and for the purpose set forth.

ANDREW HARBISON.

Witnesses:

JOHN S. TAGGART,
H. C. FALLS.