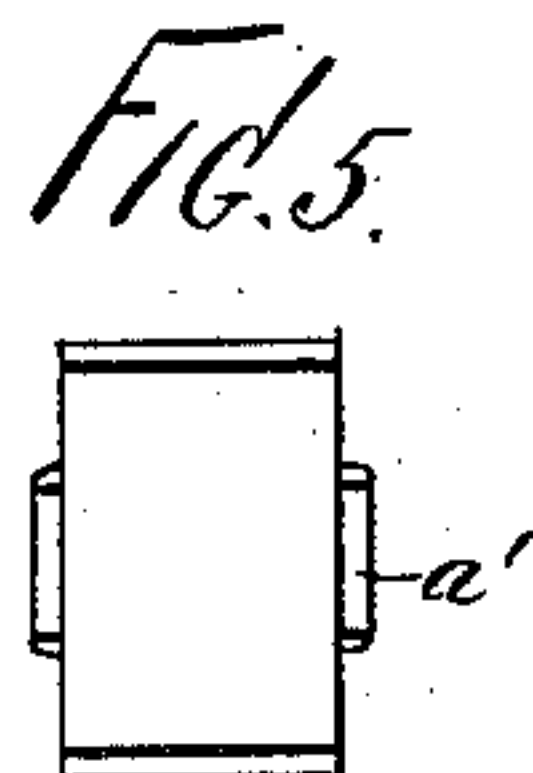
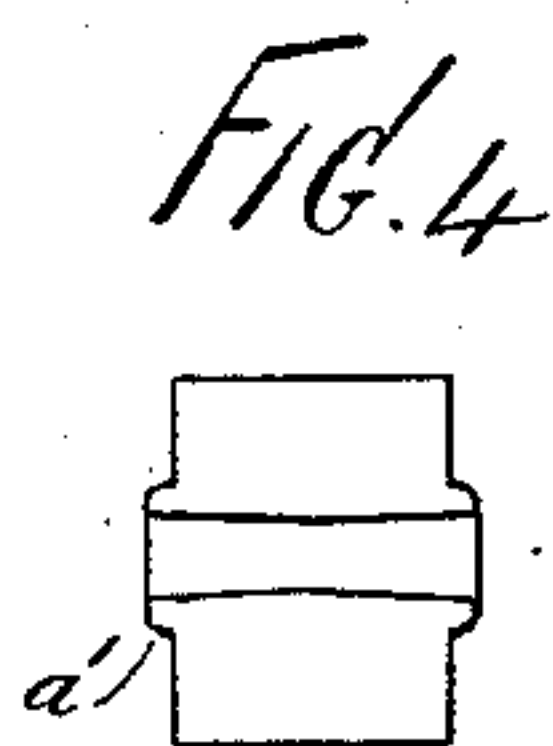
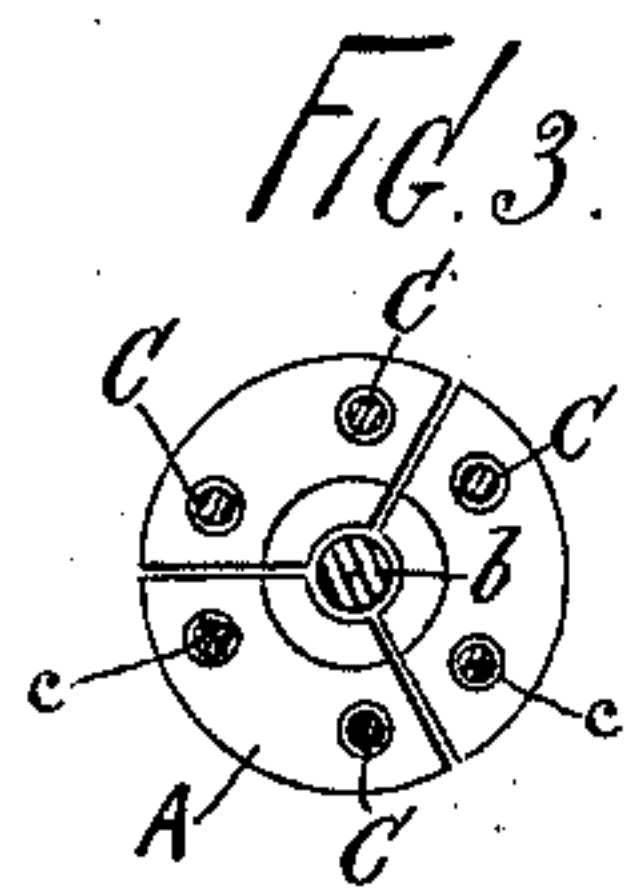
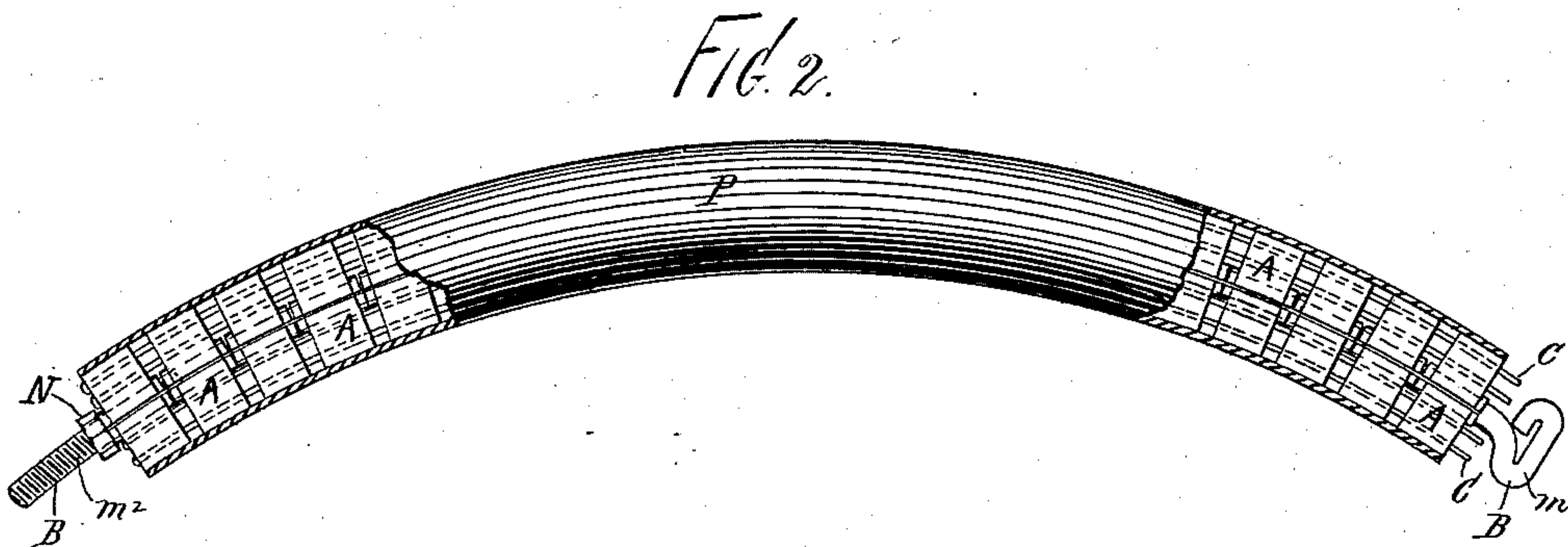
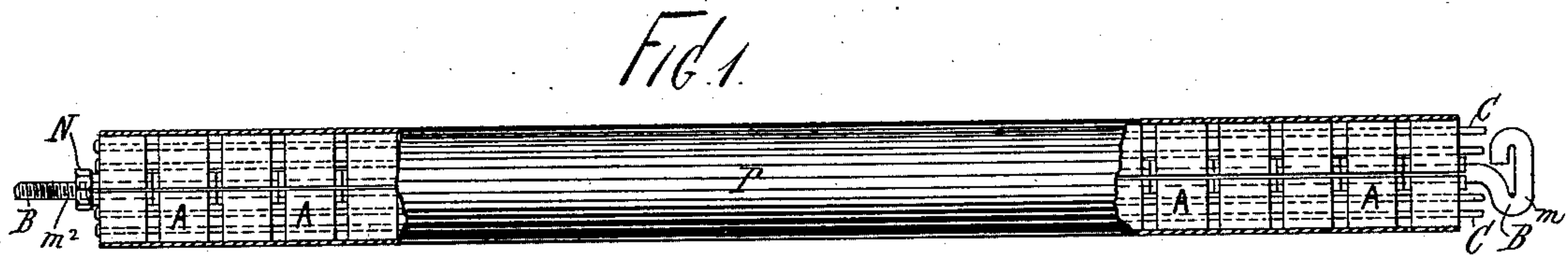


(No Model.)

E. S. LEAYCRAFT.
MANDREL FOR BENDING TUBES.

No. 279,573.

Patented June 19, 1883.



Witnesses.
Charles E. Joe
R. J. Van Hookerch

Inventor.
E. S. Leaycraft

UNITED STATES PATENT OFFICE.

EDWIN S. LEAYCRAFT, OF JERSEY CITY, NEW JERSEY.

MANDREL FOR BENDING TUBES.

SPECIFICATION forming part of Letters Patent No. 279,573, dated June 19, 1883.

Application filed January 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. LEAYCRAFT, a citizen of the United States, residing at Jersey City, in the State of New Jersey, have
5 invented a new and useful Improvement in Forming or Bending Tubes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and accurate description.

10 The object of my invention is to produce a new process or method of forming, bending, or shaping metallic tubes by means of mandrels composed of pulleys cut into sections and placed upon wires running longitudinally
15 through the sections.

In the drawings, Figure 1 represents a section of a metallic tube, showing portions of the mandrel in position before it is finished. Fig. 2 represents the same after it is finished.
20 Figs. 3, 4, and 5 show three views of the pulleys of which the mandrel is composed.

Corresponding letters represent corresponding parts.

A represents the metal pulley, which is
25 made of a diameter equal to the internal diameter of the tube to be bent, and is preferably from one-quarter to one-half of its diameter in thickness. The pulley A is provided at each end with the hub or projection a' , of a
30 thickness equal to one-half the space it is desired to keep the pulleys apart, and having preferably curved or beveled edges, as shown in the drawings. Through the pulley A is
35 bored the center hole or core, b , of any desired diameter, and the smaller holes $c c$. The pulley A is then cut in lines radiating from the center into preferably three parts, so that each of said parts includes two of the small
40 holes $c c$.

B is a central rod or wire of such diameter
45 as to fit snugly into the core b , and is provided at one end with the stop shoulder or handle m , and at the other end with a screw-thread, m^2 , cut upon it. Upon this screw-thread m^2 is placed a nut, N.

C C are wires passing loosely through the
50 holes $c c$ of the pulley A.

P represents the metallic tube or pipe to be bent.

55 The mode of operating my invention is as follows: A number of pulleys, A, are placed upon the wires C C until a length of pulleys arranged on these wires equal in length to the part of the tube to be bent is obtained. They are then placed in the tube, fitting loosely

therein. The central rod, B, is then passed through the tube or core b , forcing the sections of the pulleys to occupy their original position, and thus fitting the tube snugly. The nut N is placed upon screw-thread m^2 and
60 screwed up until the length of pulleys A are forced against the shoulder m . The tube is then ready to be bent, and when proper pressure is applied, either by placing it in a vise or by other suitable means, it is bent to the de-
65 sired curve. The action of the mandrel in bending the tube is as follows: The central rod, B, is bent in a line parallel with the tube, and the sections of the pulleys A toward the center of the curve are pressed closer together,
70 while the sections of the pulleys A farthest from the center of the curve are forced apart. By this means the interior of the tube is supported at a great number of places while being bent, obviating the tendency of the tube
75 to collapse or flatten or to bend or give at particular portions, and thus form sharp curves or indentations. When the desired curvature is obtained, the nut N is removed and the cen-
80 tral rod, B, pulled out of the tube, in consequence of which the sections of the pulleys A relax and fall together, and are then easily drawn from the tube by means of the smaller wires C C. If a number of tubes are to be bent, I prefer, after removing the central
85 rod, B, from the first tube, after it is bent, to push the sections of the pulleys arranged on the small wires immediately into the next tube, one end of it being held in the proper contact with the first bent tube, and so on until the
90 desired number of tubes is bent.

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

A mandrel for forming or bending metallic
95 tubes, composed of pulleys cut into sections radially and strung together on wires passing through the respective sections, and placed upon a central rod or wire of such diameter that the pulleys, when placed thereon, will oc-
100 cupy the same diameter that they would before being cut in sections.

In testimony whereof I have hereunto set my hand this 30th day of December, in the year 1882.

E. S. LEAYCRAFT.

In presence of—

CHARLES G. COE,

R. T. VAN BOSKERCK.