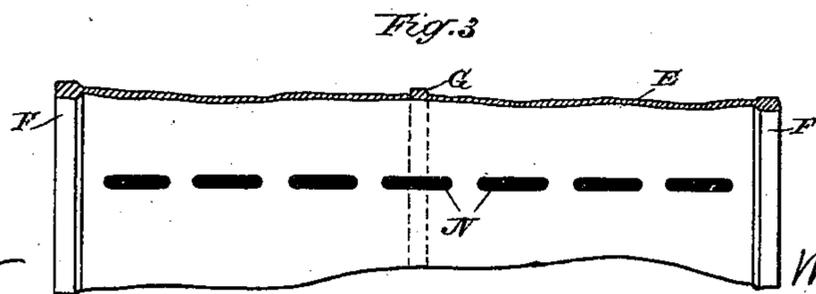
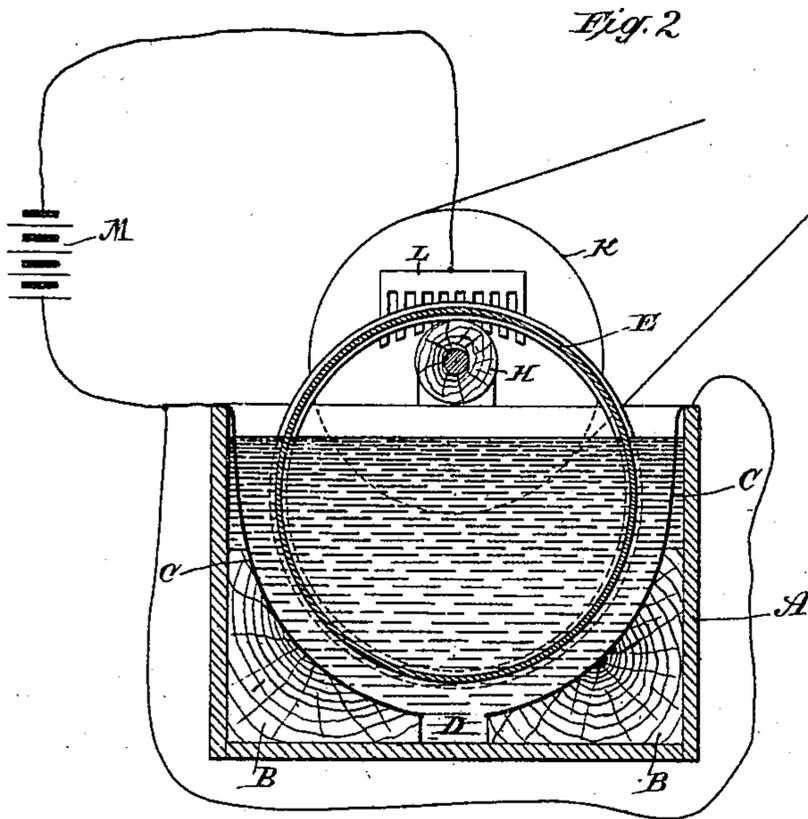
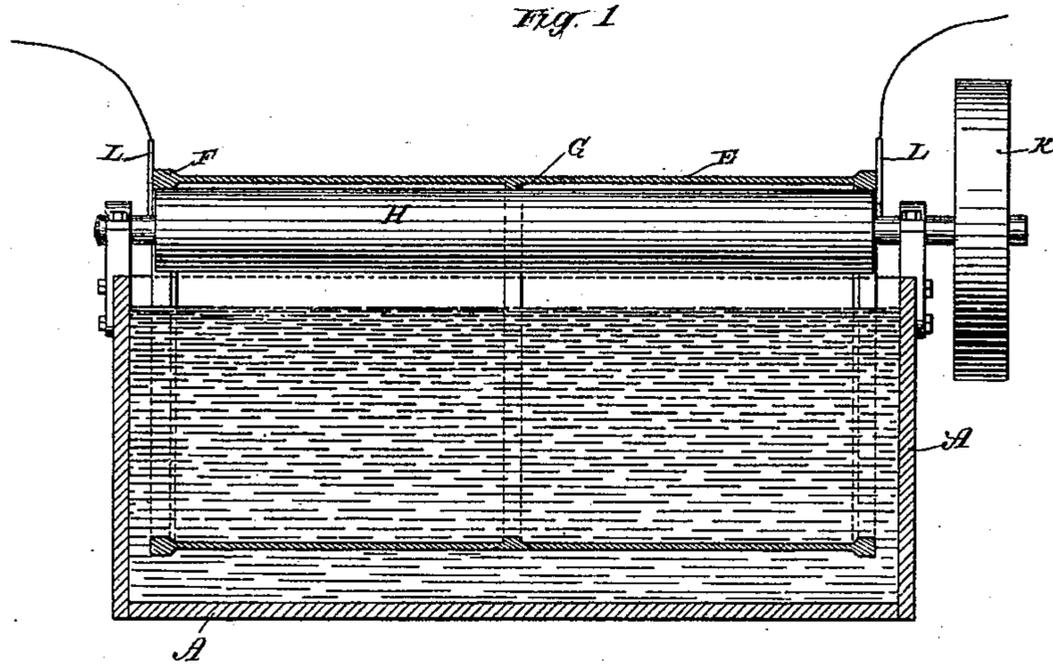


(No Model.)

M. G. FARMER.

APPARATUS FOR PRODUCING SHEETS OF METAL BY ELECTRO DEPOSITION.
No. 426,788. Patented Apr. 29, 1890.



WITNESSES:
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UNITED STATES PATENT OFFICE.

MOSES G. FARMER, OF ELIOT, MAINE.

APPARATUS FOR PRODUCING SHEETS OF METAL BY ELECTRO-DEPOSITION.

SPECIFICATION forming part of Letters Patent No. 426,788, dated April 29, 1890.

Application filed November 20, 1888. Serial No. 291,383. (No model.)

To all whom it may concern:

Be it known that I, MOSES G. FARMER, a citizen of the United States, residing at Eliot, in the county of York and State of Maine, have invented certain new and useful Improvements in Apparatus for Producing Sheets of Metal by Electro-Deposition, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

This invention consists in an apparatus for producing sheets of zinc, copper, or other metals by means of electro-deposition. In a patent of the United States granted to me, No. 381,004, dated April 10, 1888, I have shown and described an apparatus for this purpose, which may be described in a general manner as follows: A curved anode-plate is secured in a tank or vat and a metallic cathode ring or hoop is supported by rollers above the anode and partially immersed in the electrolytic solution. One of the supporting-rollers is rotated, whereby a rotary movement is imparted to the cathode, which receives a deposit of metal. My present invention is an improvement on this device.

Specifically stated, the invention is as follows: I form a metallic cylinder open at the ends, in the manner hereinafter set forth, and support or hang it on a non-conducting roller, to which a slow rotary movement is imparted from any suitable source of power. Beneath the cylinder, which is partially immersed in the electrolytic solution in a tank or vat, I arrange two anode-plates curved to conform to the shape of the cylinder. When a square vat is used, I place in its bottom wooden or other blocks to fill up the space, so that less solution will be required. I make the cylinder of an alloy of lead and antimony and true and polish its surface, so that the deposited metal may be readily stripped off from it; and I mold or cast it with an internal flange or rib around its middle and both internal and external flanges at the ends.

The details of construction and manner of using the device will be understood by reference to the drawings.

Figure 1 is a vertical longitudinal section of the apparatus. Fig. 2 is a central vertical cross-section of the same, and Fig. 3 is a plan

view of a portion of the external surface of the cylinder.

A is a tank or vat, preferably of wood, lined with sheet-lead. A convenient size for the tank is about fifty-four inches long, forty inches wide, and thirty inches deep. The forms or blocks, which are curved to conform to the cylinder, are designated by the letters B B. The curved anode-plates C C are supported in any convenient manner over these forms. There should be a space or recess D between the forms B and the anode-plates, in which any impurities from the solution will settle.

E is the cathode cylinder or hoop. The thickness of the sides of this cylinder should be about one-half an inch, except at the ends, where internal and external flanges F F are formed, the thickness at the ends being about an inch and a half or more. Inside the cylinder, at about its middle, is a flange G, making the thickness of metal at that point about one inch. The edges of the end flanges or ribs are chambered or beveled off, as shown. It will be found convenient to cast or mold the cylinder of an even thickness of about an inch, except at the middle and ends, where the internal flanges or ribs are formed, and to then turn down the outside to the required extent. The dimensions of the cylinder which I use with the tank above described are about fifty-two inches in length by thirty-two inches outside diameter, except at the ends, where it is thirty-three inches. The ends of the cylinder are faced or turned true and smooth. The entire surface of the cylinder, except the faced end and the outside surface between the end flanges, is coated with a non-conducting varnish or coating to prevent the deposit thereon of any metal.

An insulating cylinder or roller H is mounted in suitable bearings above the surface of the electrolytic solution, and the cylinder E is hung thereon, as shown. The roller H has a shaft carrying a pulley-wheel K, to which rotary motion is imparted. The roller H in turning causes the cylinder E to rotate. The circumferential speed of the cylinder should be about one or two inches per second. The weight of the hoop or cylinder thus made will be about twelve hundred pounds. My object

in making it heavy is that I may use a single supporting-roller. The weight of the hoop suffices to maintain it in proper position between the anode-plates.

5 Several thin strips of copper arranged, for example, as a brush L should be caused to bear upon one or both ends of the cylinder E. The current is conveyed from the bat-
10 tery M to each of the anode-plates, and is conducted back to the battery by means of the brush L in contact with the cathode-cylinder.

In order to remove the metal sheet which is deposited upon the cylinder E when the apparatus is in operation, I form across the cy-
15 lindrical surface of the cathode a broken line of insulation N, Fig. 3. This I may do by varnishing the surface or in any other well-understood way. The result is that the de-
20 posited metal between the spots of insulation is easily cut when the sheet is to be stripped off, while there is sufficient continuity of the metal sheet to prevent its edges from peeling and turning back, as it is apt to do when a
25 complete line of insulation is formed across the cylinder.

The construction of the cylindrical cathode herein described is advantageous, for the rea-
30 son that its weight is reduced without impairing its strength, while the internal ribs or flanges afford a good bearing for the roller H.

In using this apparatus the usual solutions may be employed for electro-depositing—for example, sulphate of zinc for making zinc
35 plates or sulphate of copper for making copper plates, or any suitable electrolyte.

Having now described my invention, what I claim is—

1. In an apparatus for forming sheet metal,

the combination, with an electrolytic vat or tank, the forms or blocks partially filling the
40 same, and curved anode-plates supported thereon, of a cylindrical cathode mounted in the tank and capable of rotation therein, as set forth.

2. The combination, with an electrolytic
45 tank, the forms or blocks partially filling the same, and curved anode-plates supported thereon, of an insulating-roller mounted over the tank, a hollow cylindrical cathode hung
50 thereon, and brushes or collectors bearing upon the ends of the cylinder, as herein set forth.

3. The combination, in an electrolytic ap-
55 paratus, with curved anode-plates supported in the solution, of a cylindrical cathode mounted to rotate in the solution, and having a broken
line of insulating patches or spaces across its outer surface, as and for the purpose set forth.

4. The combination, with a vat or tank
60 adapted to contain an electrolytic solution, of a cylindrical cathode, the curved forms or blocks B, and anode-plates C, disposed on opposite sides of the cylinder and forming a re-
cess between them, in which impurities from
65 the solution may settle.

5. In an electrolytic apparatus, the combi-
70 nation, with an anode or anode-plates, of a hollow cylindrical cathode having internal flanges or ribs at its ends and middle and a rotating roller upon which the cathode hangs,
the roller bearing on the ribs or flanges, as set forth.

MOSES G. FARMER.

Witnesses:

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