

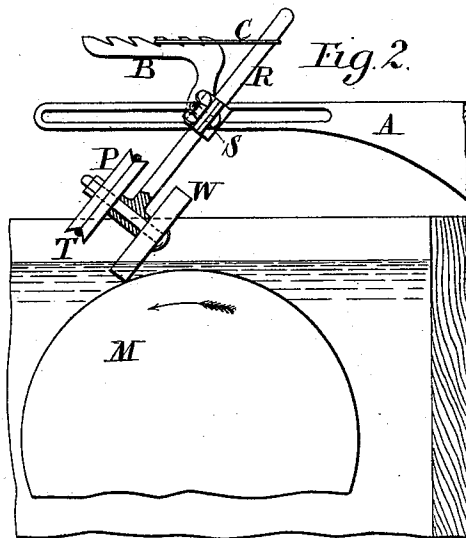
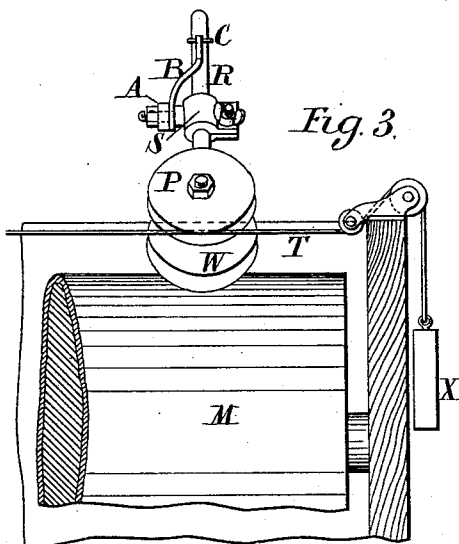
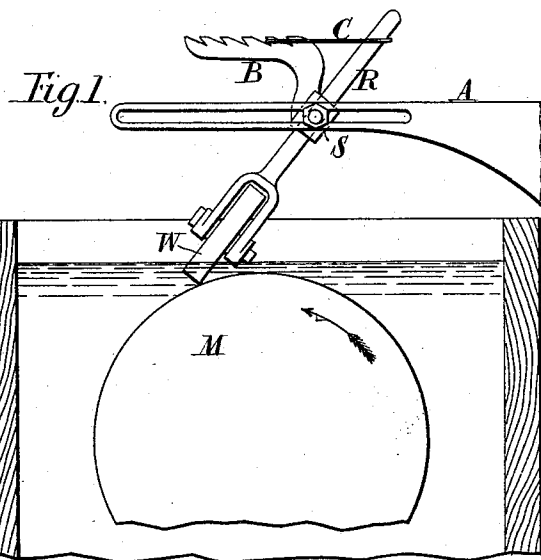
(No Model.)

A. S. ELMORE.

APPARATUS FOR THE MANUFACTURE OF METALLIC ARTICLES BY
ELECTROLYSIS.

No. 484,704.

Patented Oct. 18, 1892.



Witnesses:

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Atty.

UNITED STATES PATENT OFFICE.

ALEXANDER STANLEY ELMORE, OF LEEDS, ASSIGNOR TO ELMORE'S AMERICAN AND CANADIAN PATENT COPPER DEPOSITING COMPANY, LIMITED, OF LONDON, ENGLAND.

APPARATUS FOR THE MANUFACTURE OF METALLIC ARTICLES BY ELECTROLYSIS.

SPECIFICATION forming part of Letters Patent No. 484,704, dated October 18, 1892.

Application filed July 23, 1891. Serial No. 400,414. (No model.) Patented in England August 15, 1888, No. 11,778, and September 16, 1890, No. 14,624; in France July 4, 1891, No. 214,641; in Belgium July 4, 1891, No. 95,573; in Switzerland July 8, 1891, No. 3,803; in Norway July 13, 1891, No. 2,416; in Luxemburg July 14, 1891, No. 1,473; in Italy July 27, 1891, LIX, 75; in Victoria August 14, 1891, No. 8,959; in New South Wales August 17, 1891, No. 3,196; in South Australia August 17, 1891, No. 2,014; in Queensland August 17, 1891, No. 1,825; in New Zealand August 24, 1891, No. 5,153; in Spain August 28, 1891, No. 12,303; in India October 26, 1891, No. 238; in Canada November 14, 1891, No. 37,787; in Austria-Hungary January 31, 1892, No. 51,818 and No. 83,592, and in Western Australia March 8, 1892, No. 324.

To all whom it may concern:

Be it known that I, ALEXANDER STANLEY ELMORE, a citizen of England, residing at Spring Grove, Hunslet, Leeds, in the county of York, England, have invented certain new and useful Improvements in Apparatus for the Manufacture of Metallic Articles by Electrolysis, (for which I have obtained Letters Patent in Great Britain, dated September 16, 1890, No. 14,624; in France, dated July 4, 1891, No. 214,641; in Austria-Hungary, dated January 31, 1892, No. 51,818, and No. 83,592; in Belgium, dated July 4, 1891, No. 95,573; in Spain, dated August 28, 1891, No. 12,303; in Norway, dated July 13, 1891, No. 2,416; in Switzerland, dated July 8, 1891, No. 3,803; in Italy, dated July 27, 1891, No. 75, Vol. LIX; in Victoria, dated August 14, 1891, No. 8,959; in New South Wales, dated August 17, 1891, No. 3,196; in South Australia, dated August 17, 1891, No. 2,014; in New Zealand, dated August 24, 1891, No. 5,153; in Western Australia, dated March 8, 1892, No. 324; in Queensland, dated August 17, 1891, No. 1,825; in India, dated October 26, 1891, No. 238; in Luxemburg, dated July 14, 1891, No. 1,473; in Canada, dated November 14, 1891, No. 37,787, and partly in Great Britain by patent dated August 15, 1888, No. 11,778,) of which the following is a full, clear, and exact specification.

My invention relates to the manufacture by electrolysis of metallic articles, such as tubes, cylinders, or other pieces of circular section, also of sheets, strips, rods, or other pieces obtained by cutting cylindrical shells electrolytically deposited. The depositing, as is well known, is effected in an electrolytic bath on a revolving core or mandrel, the deposited metal being rendered strong and compact by the action of a burnisher on it as it is deposited. These burnishers, which are moved to and fro along the revolving metal, become worn, so that the area of their pressing-surface becomes gradually enlarged and less effective for burnishing. Sometimes in order to distribute the wear the burnishers are

made as rollers retarded, so as to revolve more slowly than the metal surface on which they act; but these are not well adapted for uneven or corrugated surfaces. Now according to my present invention, I make the burnisher in the form of a wheel mounted to revolve on an axis perpendicular, or nearly so, to a plane passing through the axis of the revolving mandrel, and I cause this wheel to travel to and fro along the metal surface and at the same time to rotate, so as to present always a free acting-surface. When the surface of the deposited metal is uneven or corrugated, the burnishing-wheel is made of radius less than the least radius of any of the hollows of the surface, and is thus capable of entering into and acting in all the hollows.

In the drawings, Figure 1 is a transverse section through an electrolytic bath, showing the application according to my invention of a wheel-burnisher to a revolving cathode-mandrel; and Figs. 2 and 3 are respectively a transverse section and a longitudinal section of a modified arrangement.

In the drawings the letter M indicates a mandrel, which in practice is revolved in the direction of the arrow thereupon.

The letter A indicates an arm, which is caused by suitable gearing to travel to and fro parallel to the axis of the mandrel and carrying the burnisher along the surface of the metal deposited on the mandrel. In any part of a slot formed in this arm I fix by setting-screws a bracket B and a rod R, which can slide in a socket S, pivoted on the bracket B. This rod R is forked at its lower end, and in the fork is mounted the wheel W, of agate or other suitable material, presenting its edge to one periphery of the mandrel, against which it is pressed by the strain of a caoutchouc band C, which is passed round the rod R and engaged in one or other of a set of notches formed in the bracket B. As the arm A moves longitudinally to and fro the wheel W rolls along the mandrel, presenting always a fresh portion of its edge to effect the bur-

nishing. When the one edge is worn, the
 wheel may be turned round on the axis R, so
 as to bring the other edge into use. In order
 to insure the rotation of the burnishing-
 wheel W, either at the rate due to its rolling,
 5 or, if desired, at greater or less speed, I adopt
 the arrangement shown in the part trans-
 verse section, Fig. 2, and longitudinal section,
 Fig. 3, in which the parts described with refer-
 10 ence to Fig. 1 are indicated by the same
 letters. In this case I fix on the axis of the
 burnishing-wheel W a grooved pulley P,
 round which I pass a wire or cord T, which
 extends along the bath and is tightened by a
 15 weight X or otherwise. The pulley P in
 traveling along the wire or cord is caused to
 revolve, giving rotation to the burnishing-
 wheel W, which may be made to revolve more
 quickly or more slowly than the speed due to
 20 its rolling by making the pulley P of less or
 greater diameter.

Having thus described the nature of my in-
 vention and the best means I know for carry-
 ing the same into practical effect, I claim—

25 1. In an apparatus for burnishing the metal
 deposited by electrolysis on a mandrel, the
 combination, with a tank and a mandrel ar-
 ranged to revolve therein, of a traveling arm
 and a burnisher-roller supported by said arm

and revolving on an axis lying in a plane per- 30
 pendicular to the axis of the mandrel.

2. In an apparatus for burnishing the metal
 deposited by electrolysis on a mandrel, the
 combination, with a tank and a mandrel ar-
 ranged to revolve therein, of a traveling arm, 35
 and a burnisher-roller pivotally supported
 by said arm and revolving on an axis lying in
 a plane perpendicular to the axis of the man-
 drel.

3. In an apparatus for burnishing metal de- 40
 posited by electrolysis on a mandrel, the com-
 bination, with a tank and a mandrel arranged
 to revolve therein, of a traveling arm, a
 bracket secured to said arm and provided
 with a pivoted socket, a burnisher-roller car- 45
 ried by said socket, and means for holding the
 burnisher-wheel against the mandrel.

In testimony whereof I have signed my
 name to this specification, in the presence of
 two subscribing witnesses, this 9th day of 50
 July, 1891.

ALEXANDER STANLEY ELMORE.

Witnesses:

WM. VEVERS,

GEO. F. MOSS,

*Clerks to T. & H. Greenwood Teal, Solicitors,
Leeds.*