June 1, 1926. 1,587,303

A. H. HART

ELECTROLYTIC COATING APPARATUS

Filed April 8, 1924

Fig. 2.

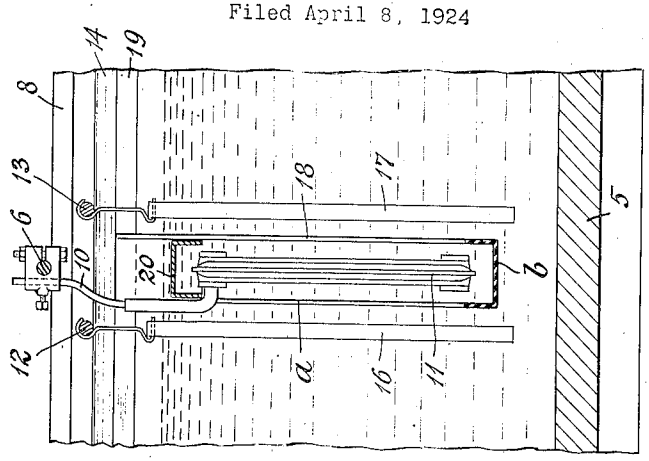
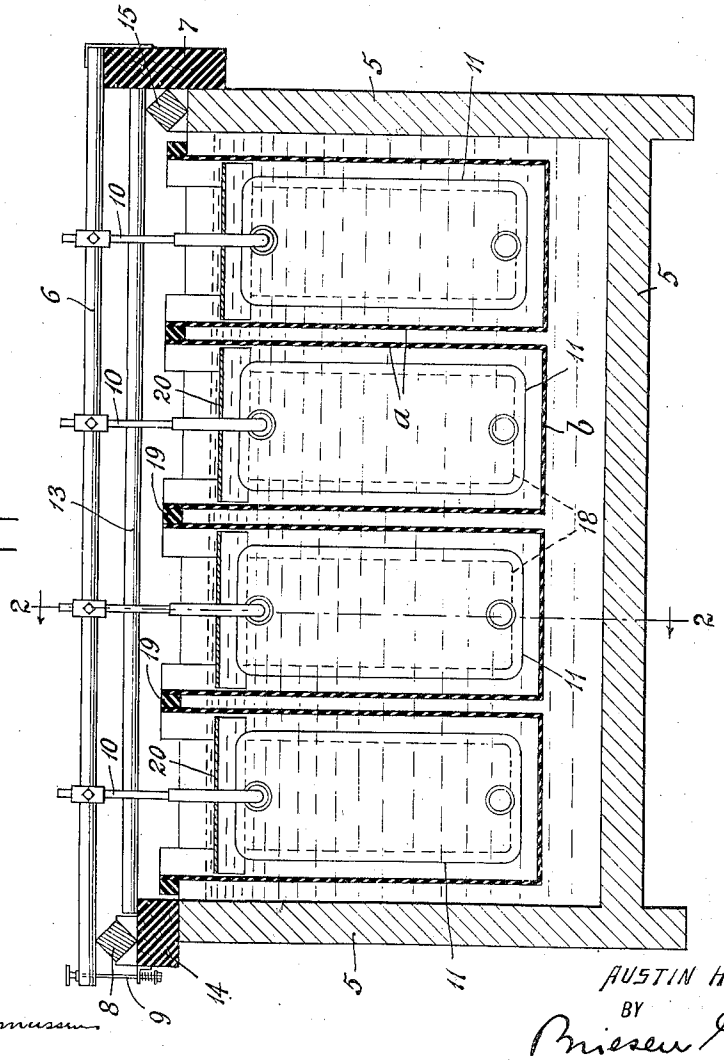


Fig. 1.



WITNESS

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Patented June 1, 1926. 1,587,303

UNITED STATES PATENT OFFICE.

AUSTIN H. HART, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO ROME RADIATION COMPANY, INC., OF ROME, NEW YORK, A CORPORATION OF NEW YORK.

ELECTROLYTIC COATING APPARATUS.

Application filed April 8, 1924. Serial No. 704,935.

The invention relates to apparatus for electrolytically depositing metallic coatings upon the elements to be coated and, more particularly to apparatus of this type adapted especially for covering radiator units with copper by electro-deposition before said units are assembled into a radiator. In apparatus of the indicated class, the electric current passing from the copper anode will travel more readily to the edges of the units or other elements than to the surfaces or sides thereof, so that the units or other elements would, under normal circumstances and with a strong current, have deposited around their edges much more copper than on their surfaces or sides. The object of the present invention is to provide a simple and novel arrangement whereby an even deposition of copper over the entire exterior of the unit or other element is secured and whereby high current density at the edges is avoided and the thickening of the deposit thereon is prevented in an efficient manner. Other more specific objects of the invention will appear from the description hereinafter.

In the accompanying drawings, which show an example of the invention without defining its limits, Fig. 1 is a cross-section of the electric coating apparatus and Fig. 2 is a fragmentary section thereof on the line 2—2 of Fig. 1.

As shown in the drawings the apparatus comprises a deposition tank 5 of suitable material and dimensions and arranged to contain the customary electrolytical bath adapted for the purpose at hand. One or more negative rods 6 are supported above said tank and extend transversely across the same as shown in Fig. 1; a strip 7 serves to support one end of said rod or rods 6, the other end thereof extending over a negative bar 8 and being maintained in contact thereby by means of resilient devices shown at 9 in Fig. 1. Both the strip 7 and the bar 8 extend lengthwise of the tank 5, the bar 8 being in electrical connection with the negative pole of a source of electricity in any conventional manner. Supporting devices 10 are fixed upon the rod 6 at suitably spaced intervals for suspending therefrom the elements to be coated in the electrolytic bath of the tank 5; in the illustrated example these elements are radiator units 11 intended to be copper-covered before being assembled into a radiator.

Positive rods 12 and 13 are mounted above the tank 5 and are supported at one end upon a strip 14 and at the other end upon a positive bar 15 which is in electrical connection with the positive pole of said source of electricity. The positive rods 12 and 13 are located upon opposite sides of each negative rod 6 and are arranged to respectively suspend cathodes 16 and copper anodes 17 in the electrolytic bath in the well-known manner upon opposite sides of the units 11 or other elements to be coated. As so far described the apparatus may be of any well-known type and may include any features commonly found therein.

The novel features of the construction consist in providing channeled shrouds 18 of U-shape and consisting of upright members *a* arranged to extend parallel with the vertical or side edges of the units 11 and horizontal connecting members *b* extending parallel with the lower edges thereof. The shrouds 18 are suspended from strips 19 suitably fixed in the tank 5 and in turn serve to support transverse shrouds 20, also channeled, which extend parallel with the upper edges of the units 11; the shrouds 18 and 19 are made of any suitable acid resisting dielectric material and are of such dimensions and so arranged as to be spaced from the units 11 to a predetermined extent.

These shrouds 18 and 20 avoid a high current density at the edges of the unit and thereby prevent an uneven and thickened deposit at said edges and bring about an even deposition of the copper over the entire exterior of the units 11. The thickness of the deposit along the edges of said units can be regulated by adjusting or constructing the shrouds in a manner to diminish or enlarge the distance between the edges of the shrouds and the units and by causing said shrouds to extend over the latter to a larger or smaller extent; the greater the distance between the edges of the shrouds and the units and the less the latter project into said shrouds the greater will be the amount of copper deposited on said edges.

The arrangement is simple in construction and installation and efficient in operation and may be uniformly used wherever a tendency to produce an uneven electrolytic deposit of metals upon given portions of an element exists. The improvement is particu-

larly adapted for use in electroplating radiator units with copper.

Various changes in the specific form shown and described may be made within the scope of the claims without departing from the spirit of my invention.

I claim:

1. In an electrolytical apparatus for the electro-deposition of a metallic coating comprising a tank containing an electrolytic bath, means for suspending the elements to be coated, in said bath, means for suspending a cathode and an anode therein, adjustable independent means enclosing the peripheries of said elements at a predetermined distance adapted to regulate the deposition of metal upon said peripheries.

2. In an electrolytical apparatus for the electro-deposition of a metallic coating comprising a tank containing an electrolytic bath, means for suspending the elements to be coated in said bath, means for suspending a cathode and an anode therein, and adjustable independent channelled members enclosing the peripheries of said elements adapted to regulate the deposition of metal upon said peripheries.

3. In an electrolytical apparatus for the electro-deposition of a metallic coating comprising a tank containing an electrolytic bath, means for suspending the elements to be coated in said bath, means for suspending a cathode and an anode therein, U-shaped shrouds having channeled members extending parallel with portions of the peripheries of said elements and channeled, transverse shrouds extending parallel with other portions of said peripheries to regulate the deposition of metal upon said peripheries.

4. In an electrolytical apparatus for the electro-deposition of a metallic coating comprising a tank containing an electrolytic bath, a negative rod for suspending a substantially rectangular radiator unit in said bath, positive rods upon opposite sides of said negative rod for respectively suspending a cathode and a copper anode in said bath upon opposite sides of said unit, a U-shaped channeled shroud extending parallel to the vertical and lower edges of said unit at predetermined distances and a channeled, transverse shroud bridging said U-shaped shroud and extending parallel to the upper edge of said unit at a predetermined distance, said shrouds being of acid resisting and dielective material and arranged to regulate the deposition of copper upon said edges.

In testimony whereof I have hereunto set my hand.

AUSTIN H. HART.