J. F. KITCHEN.

ELECTROPLATING RACK.

APPLICATION FILED JUNE 26, 1909.

1,010,639.

Patented Dec. 5, 1911.

2 SHEETS—SHEET 1.

FIG. 2

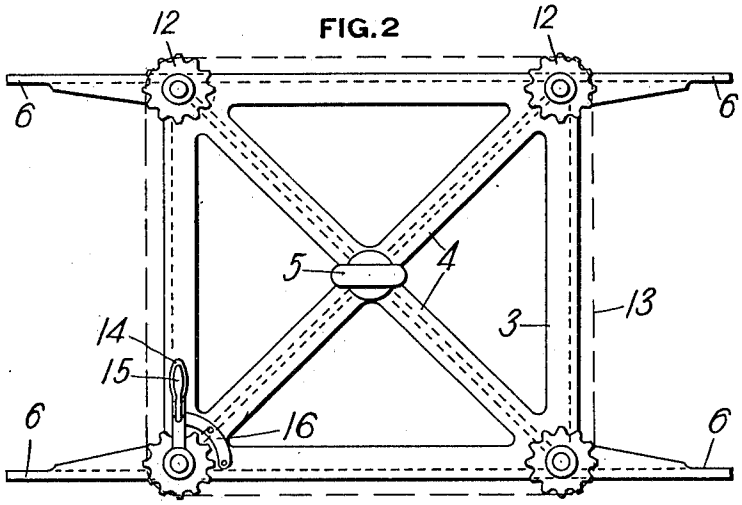


FIG. 5

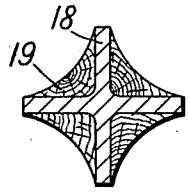


FIG. 6

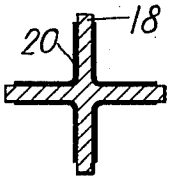
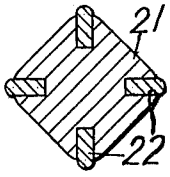


FIG. 7



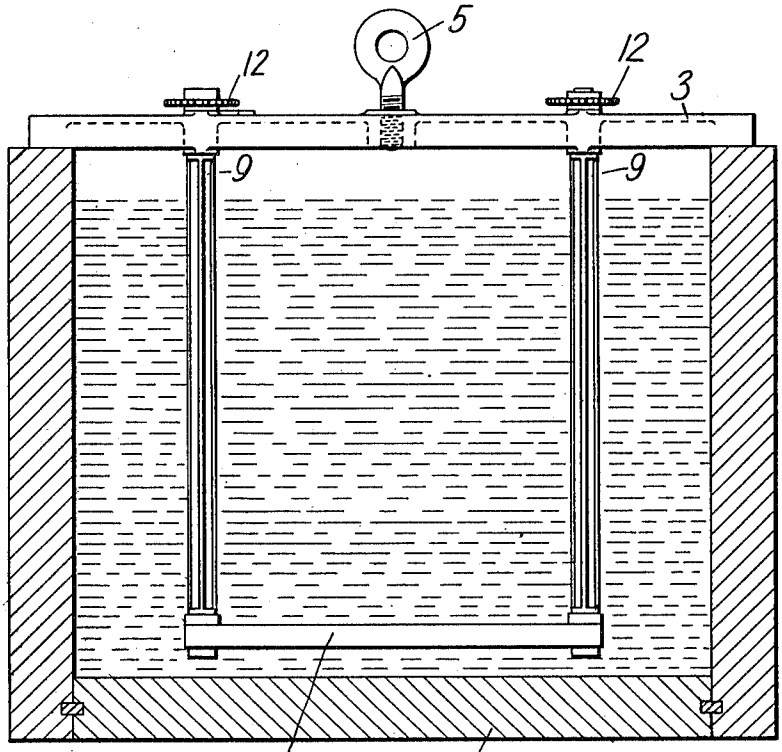


FIG. 1

WITNESSES

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2 SHEETS—SHEET 2.

FIG. 3

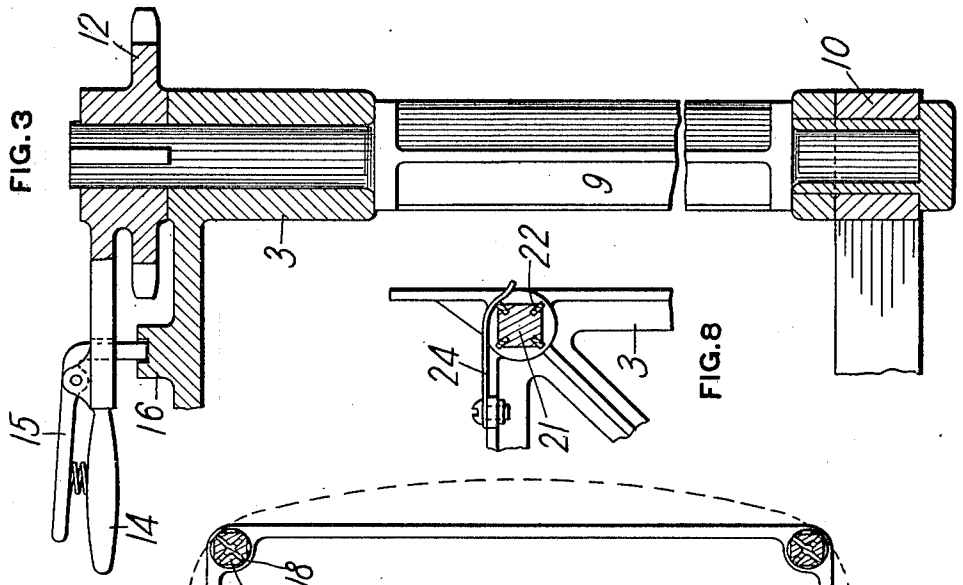
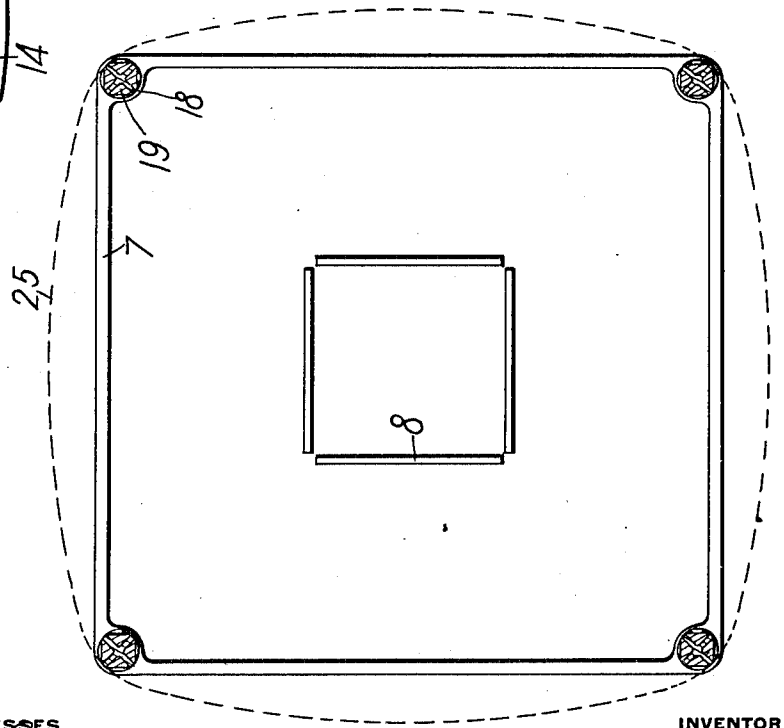


FIG. 8

FIG. 4



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UNITED STATES PATENT OFFICE.

JOHN F. KITCHEN, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO THE SPIRELLA COMPANY, OF MEADVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ELECTROPLATING-RACK.

1,010,639. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed June 26, 1909. Serial No. 504,444.

To all whom it may concern:

Be it known that I, JOHN F. KITCHEN, a resident of Meadville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Electroplating-Racks, of which the following is a specification.

This invention relates to cathode hangers or supports for use in electroplating metal articles.

The object of the invention is to provide a hanger or support upon which the article being plated can be shifted at intervals during the plating process without removal from the tank so as to give new points of contact and prevent any bare spots being left in plating.

It is well known that in electroplating the portion of the work in actual or close contact with the support or cathode rack is not properly plated.

My invention is designed particularly for plating long lengths of metal articles in the form of wire or strips, or coiled or reversely bent wire, such as used in corset stays, in quantity, and in which bare spots are entirely prevented. This is accomplished by winding such articles in the form of a helix upon a suitable reel-like rack or bars which are conductors and serve as contact bars and are so arranged that they can be rotated from time to time to shift the work thereon so as to give new points of contact with the work.

The invention comprises the particular construction and arrangement hereinafter described and claimed.

In the accompanying drawings Figure 1 is a vertical sectional view through an electroplating tank showing my improved rack therein; Fig. 2 is a plan view of the rack; Fig. 3 is a view on an enlarged scale showing one of the contact bars with the upper and lower bearings thereof in section; Fig. 4 is a horizontal section showing the bottom part of the rack in plan view; Figs. 5, 6 and 7 are cross-sections showing modified forms of contact bars; and Fig. 8 is an inverted sectional view through a contact bar with a modified current conducting connection.

In the drawings the electroplating tank is shown at 1 with the bath therein. The rack comprises a suitable top frame 3 of square or similar form having diagonal cross connecting portions 4 and provided at the crossing point of said members with a hook or other supporting member 5 for convenience in handling the rack or for connecting the same to the cathode conductor. The frame is provided with projecting arms 6 which rest on the side walls of the tank or other support and which may also be used for making connection to cathode conductors if so desired. The frame 3 is formed of good conducting metal. The bottom frame 7 has an open square or rectangular form without diagonal braces so as to permit the location of the anode within the rack, as shown at 8 in Fig. 4. The article supporting and contact bars 9 are shown as four in number. These are rotatably mounted in the top and bottom frames, the lower bearing 10 being preferably formed of insulating material as shown. To the upper end of each bar is secured a sprocket wheel 12, said sprocket wheels being connected by sprocket chain 13 and one of the wheels being provided with a suitable handle 14 for rotating the same and latch 15 coöperating with notched segments 16 for locking the same. This handle and the sprocket and chain arrangement provide for rotating the contact bars 9 simultaneously and locking them in any desired position. Any other means for rotating the same will answer the purpose equally as well.

Each contact bar is preferably of irregular or angle shape in cross-section and also preferably provides only a narrow edge or line of contact surface. It is well known that the cathode supports which are immersed in the bath become coated with a deposit of the metal, which prevents proper contact with the article to be plated and also results in an unnecessary consumption of current. By leaving only a narrow edge exposed the amount of coating metal which

is thus deposited is reduced to a minimum and said edges can also be more readily cleaned. Consequently the bars are mostly covered with insulating material. For instance, as shown in Figs. 4 and 5 each bar is of cruciform shape having four wings 18 with the spaces between the same covered with wood or other suitable insulating material 19 with the edges of the wings projecting beyond the insulating material. Fig. 6 shows a modification where the insulation is formed by a layer 20 of suitable insulating paint, enamel or insulating composition covering; Fig. 7 shows still another modification wherein the body of the bar 21 is formed of wood or other non-conducting material, such as fiber, porcelain or the like and having set thereinto a number of narrow conducting strips 22. In all forms the exposed conducting surfaces are only narrow. Fig. 8 shows an arrangement for still further reducing the active surface exposed to the solution. The form of bar shown is similar to that shown in Fig. 7 but has the conducting strips 22 insulated from each other and not electrically connected at the ends of the bar. A contact spring or brush 24 is arranged on frame 3 in position to contact with the particular conducting strip which is in use, but not with others. The other conducting strips are inactive and hence receive no deposit. This form is applicable only to bars in which the contact strips are insulated from each other.

The article to be coated is indicated generally at 25 in the form of a strip of wire and is wound helically around the reel-like frame, being supported by the contact bars 9. In order to shift the work the handle 14 is operated to rotate the bars 9 and shift the work thereon, bringing a fresh contact edge of the bar into contact with a new spot on the work. Such shifting can be accomplished periodically during the plating process and without interrupting the process. It insures practically a uniform coating of the article and prevents bare spots. The contact bars are so constructed that when the exposed edges are excessively coated they can be readily cleaned by grinding or the like.

The rack described can be used to advantage for coating reversely bent wire for forming corset stays such as described in the patent to Beeman No. 507,875, in which the loops are in such close contact that plating material will not enter between the same. A long length of such bent wire can be placed upon the reel, and slightly stretched to open up the loops and permit the coating material to get between the same. The ends of such wire may have attached thereto pieces of cord, wire or other flexible material, which are wound a number of times around a contacting bar 9 in such a manner that when the contact bars are rotated the cord at one end is wound onto its bar and that on the opposite end is unwound from its bar.

What I claim is:

1. A cathode rack for electro-plating, comprising a plurality of contact members for supporting the work while entirely submerged, and means for shifting the work on said contact members.

2. A cathode rack for electro-plating, comprising a plurality of contact members for supporting the work while entirely submerged, and means for moving said contact members in a manner to shift the work thereon.

3. A cathode rack for electro-plating, comprising a plurality of contact members for supporting the work while entirely submerged, and means for rotating said members and thereby shifting the work thereon.

4. A cathode rack for electro-plating comprising a frame, a plurality of vertical work supporting bars rotatably mounted therein and arranged to support the work while immersed in the bath, and means for rotating said bars and thereby shifting the work thereon.

5. A cathode rack for electro-plating, comprising a frame, a series of contact bars rotatably mounted therein and arranged to have a piece of material supported by said series of bars and entirely immersed in the bath, and means for rotating said bars and thereby shifting the work thereon.

6. A cathode rack for electro-plating comprising a frame, a series of contact bars rotatably mounted therein and arranged to have a piece of work supported by said series of bars and entirely immersed in the bath, each of said bars providing a plurality of narrow conducting contact surfaces, and means for rotating said bars.

7. A cathode rack for electro-plating comprising a frame, a plurality of contact members mounted therein and arranged to support the work while entirely submerged, each of said members providing a plurality of narrow conducting contact surfaces, and means for rotating said members.

8. A cathode rack for electro-plating, comprising a frame, and a plurality of rotatable contact bars mounted therein and arranged to support the work while entirely submerged, each bar being provided with a plurality of narrow longitudinal conducting wings or strips with the portion between the edges thereof of insulating material.

9. A cathode rack for electro-plating, comprising a frame, rotatable contact bars mounted therein, each bar being provided with a plurality of narrow longitudinal conducting strips insulated from each other,

and a conducting member arranged to make contact only with the strip or strips in contact with the work.

10. A cathode rack for electro-plating, comprising a frame, a plurality of vertical contact bars rotatably mounted therein, and means for rotating said bars and thereby shifting the work thereon.

11. A cathode rack for electro-plating, comprising a frame, a plurality of vertical contact bars rotatably mounted therein, each of said bars providing a plurality of narrow conducting contact surfaces, and means for rotating said bars.

In testimony whereof, I have hereunto set my hand.

JOHN F. KITCHEN

Witnesses:
J. H. PARDEE,
ERMA PORTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."