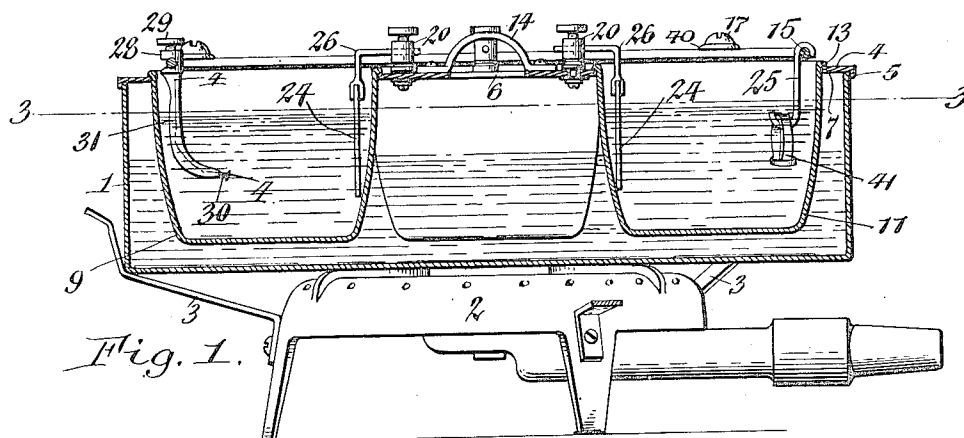
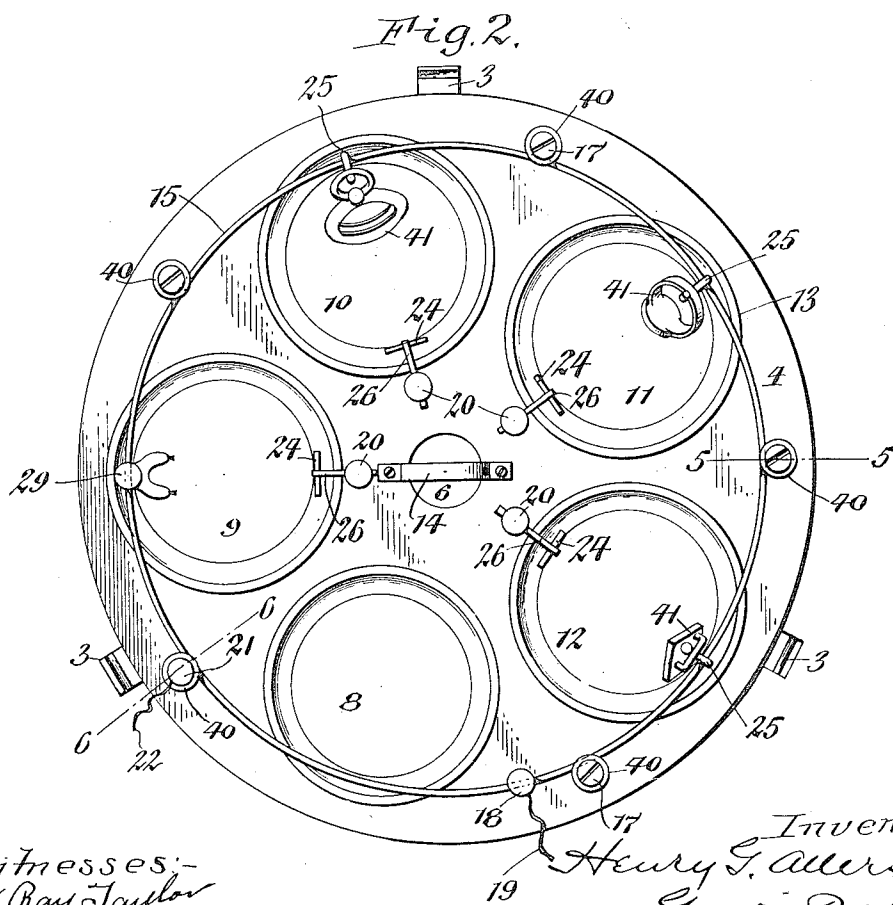


H. G. ALLERS.
ELECTROPLATING APPARATUS.
APPLICATION FILED MAY 23, 1914.

1,144,680.

Patented June 29, 1915.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

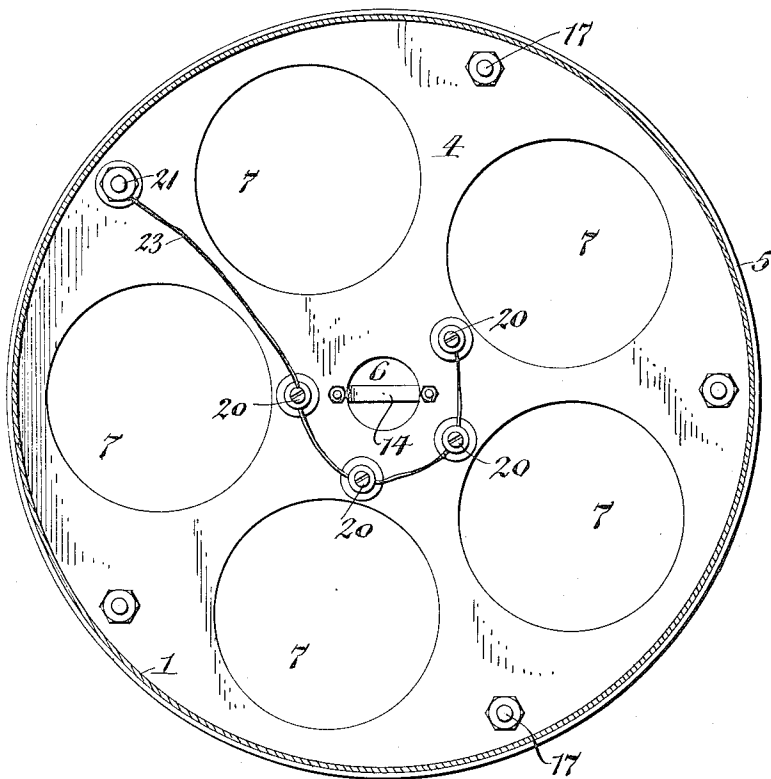


Fig. 4.

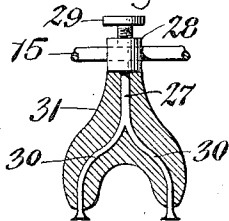


Fig. 5.

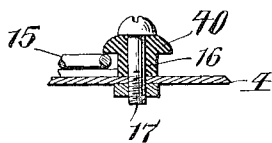
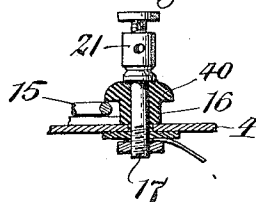


Fig. 6.



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ELECTROPLATING APPARATUS.

1,144,680.

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Application filed May 23, 1914. Serial No. 840,497.

To all whom it may concern:

Be it known that I, HENRY G. ALLERS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Electroplating Apparatus, of which the following is a specification.

This invention relates to an electro-plating apparatus which is more particularly designed for use by jewelers for the purpose of electro-plating articles which have been repaired by the use of solder or otherwise and require a thin coating of metal, corresponding to the main part of the jewelry, to be deposited over the solder joints and other parts preparatory to polishing and finishing the job suitable for handing over to the customer.

It is the object of this invention to produce an apparatus for this purpose which is comparatively simple and inexpensive in construction, which can be operated at low cost, which enables the jeweler to produce at a minimum cost electro-plating solutions of various metals and colors of metals preparatory to performing the actual electro-plating operation, and which enables a jeweler to electro-plate different jobs with different kinds and colors of metal at the same time in his own establishment without necessitating sending the same out to another plating works for this purpose.

In the accompanying drawings: Figure 1 is a vertical cross section of an electro-plating apparatus embodying my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal section taken in line 3—3, Fig. 1 looking upwardly and showing the receptacles for the cleaning and plating solutions removed. Fig. 4 is a fragmentary vertical section taken in line 4—4, Fig. 1. Figs. 5 and 6 are fragmentary vertical sections taken in the correspondingly numbered lines in Fig. 2.

Similar characters of reference indicate corresponding parts throughout the several views.

1 represents a pan or tank preferably of metal which is adapted to contain water for the purpose of heating or warming the various cleaning and electro-plating solutions which are used in the apparatus. This tank may be supported and the water therein heated by any suitable means those shown in the drawings being preferred and com-

prising a burner 2 adapted to rest upon a table or other support and supplied with gas or other ignitable fuel and provided with a plurality of laterally projecting arms 3 which are adapted to engage with the underside of the heating tank for supporting the latter over the burner so that the flame of the same strikes the underside of the tank and heats or warms the water therein.

Removably supported on the upper edge of the wall of the heating tank is a supporting plate or cover 4 which is provided with an annular depending flange 5 which engages with the outer side of the tank wall and confines this supporting plate or cover against lateral displacement on the tank. This tank and its cover may be of any suitable shape but, as shown in Figs. 2 and 3, these parts are preferably made of circular form.

The supporting plate or cover is provided in its central part with a vent opening 6 to permit the free escape of any vapors rising from the water and around this vent opening the same is provided with a plurality of openings 7 which receive cups, vessels or receptacles 8, 9, 10, 11, 12 adapted to contain the cleaning and plating solutions. The number of such openings in the cover and the corresponding number of receptacles supported therein may be varied but as shown in the drawings five of such openings and receptacles are provided inasmuch as this number answers all practical requirements. These openings and receptacles are arranged in an annular row around the center of the cover and one of them, for instance 8, is adapted to serve as a cleaning receptacle while each of the remaining receptacles is adapted to receive a particular electro-plating solution suitable for producing an electro-plated coating of one particular metal or color of metal suitable for plating jewelry of that particular metal or color of metal, for instance, the receptacle 9 may be used for containing a copper solution, the receptacle 10 a silver solution, the receptacle 11 a gold solution and the receptacle 12 a nickel solution.

If desired the gold solution receptacles may also be used for plating articles of jewelry either rose gold, red gold, Roman gold, green gold or any other desired color to suit the particular article of jewelry

which is being repaired, polished or finished. The cleaning receptacle is usually filled with a solution containing potash and water so that the articles of jewelry immersed in the same may be thoroughly cleaned before electro-plating the same but if desired any other kind of cleaning solution may be employed for this purpose.

Each of the solution receptacles is preferably made of metal which is covered on its outer side with a coating of enamel so that each of these receptacles and its contents are electrically insulated from the metal cover 4 upon which it is supported. The openings of the cover are preferably of such a diameter that the receptacles may project downwardly through the same and be supported on the cover by means of outwardly projecting annular flanges or rims 13 formed on these receptacles and resting on the upper side of the cover so that the lower parts of the receptacles are immersed in their outer sides in the heated or warmed water contained within the tank. By this means the solution in each receptacle can always be maintained at the temperature best suited for performing the particular work in hand and the several receptacles may be easily removed from the cover and replaced for convenience in cleaning the apparatus. The central part of the cover is also preferably provided with an upwardly projecting handle 14 whereby the several receptacles may be all lifted out from the tank at the same time when this becomes desirable, for instance when the jeweler is interrupted during the electro-plating operation and obliged to wait upon a customer, at which time it is desirable to remove the solution receptacles from the water tank so as to prevent the different solutions from boiling away while the apparatus is not receiving the attention of the jeweler.

15 represents an electrical distributing and retaining ring of metal which is placed concentrically over the annular row of solution receptacles so as to engage with the upper edges of the same adjacent to the outer side of each of these receptacles, leaving the remaining space over each receptacle unobstructed, as shown in Fig. 2, to permit free access to the receptacles while carrying on the jewelry cleaning and electro-plating operation.

At suitable points the distributing ring 15 is engaged by fastening devices which hold the same down upon the several solution receptacles and also in a concentric position relatively to the annular row of receptacles. The preferred means for this purpose which are shown in the drawings comprise a plurality of upright posts 16 mounted on the upper side of the cover 4 adjacent to the periphery of the distributing ring and each post being provided with an annular flange

40 at its upper end forming a downwardly facing shoulder which engages with the top of the adjacent part of the distributing ring. Each of these posts and its retaining flange is constructed of hard rubber or similar insulating material so as to avoid any electrical connection between the distributing ring and the metal cover 4. Various means may be employed for securing these insulating posts to the cover those shown in the drawings being suitable and comprising bolts 17 each of which is arranged with its shank vertically in one of the retaining posts and engages its head with the upper end of the post while its nut engages with the underside of the cover, as shown in Figs. 5 and 6. In attaching this ring to these retaining posts the same is sprung underneath the flanges of the posts while this ring is placed upon the several solution receptacles after which the resilience of this ring retains the same in place so that the same and the solution receptacles cannot be disarranged while the apparatus is in operation. When dismembering the apparatus for cleaning or inspection the distributing ring is sprung out of engagement with the shoulders of the retaining posts, thereby leaving the several solution receptacles free to be lifted out of the several openings of the cover. At a suitable point the distributing ring is provided with a binding post 18 which is adapted to receive the line or wire 19 connected with one side of an electric generator of any suitable character.

On the upper side of the cover 4 and adjacent to the inner portion of each of the solution receptacles or cups, excepting the receptacle for holding the cleaning solution, is mounted a binding post 20 which is electrically insulated from the metal cover in any suitable manner and which is adapted to be connected with the opposite side or pole of the electric generator above referred to. The several binding posts 20, are preferably connected with each other and with a main binding post 21 by a wire 23 for convenience in making the electrical connection by a wire 22 with the electric generator, this wire 23 being arranged on the underside of the cover, as shown in Fig. 3, and the main binding post 21 being constructed to form the upper part of one of the fastening bolts 17 which secure one of the retaining posts to the cover, as shown in Fig. 6, the respective bolt 17 being insulated from the cover, as shown in the last mentioned figure for the purpose of preventing short circuiting of the parts. By this means the jeweler or operator can readily connect or disconnect the electro-plating apparatus with the electric generator by simply connecting the main lines or wires of the electric circuit with the binding posts 18, 21 or detaching the same therefrom.

If desired, a previously prepared electro-plating solution of the desired character may be placed in one of the plating receptacles or several of such previously prepared solutions may be placed in different plating receptacles and the electro-plating of articles 41 may be effected by suspending each article from the distributing ring 15 so that the same is immersed in the respective solution on one side of one of the plating receptacles and an anode 24 of the desired character may be immersed in this solution adjacent to the opposite side of this receptacle and connected with the companion binding post 20.

Suspension of the article to be plated from the distributing ring may be accomplished by any suitable means, for instance, by means of a hook or hanger 25, as shown in Figs. 1 and 2. The anode may also be of any suitable shape but, as shown in Figs. 1 and 2, the same is preferably constructed in the form of a strip or plate which is provided at its upper end with an angular coupling pin 26 which is secured in the opening of the adjacent binding post 20 so that this anode can be readily inserted in the companion receptacle or removed therefrom. When the parts are thus assembled the electro decomposition of metal from the anode and dissemination in the solution and deposition on the article to be plated is effected in the usual and well known manner when the terminals 18, 21 are connected with opposite sides of an electric generator and a current is caused to traverse the plating solution from the anode to the cathode represented by the article to be plated.

If desired, a rheostat of any suitable character may be used in connection with this apparatus for regulating the voltage of the current and thereby increasing or decreasing the amount of electro deposit on the article to be plated within a given time.

Means are provided for producing the electro-plating solution in one or more of the plating receptacles before beginning the plating operation. The preferred means and method for producing the electro-plating solution are as follows: Suspended from the electric distributing ring in place of the article to be plated is a solution forming a terminal which preferably comprises a single upper metal shank 27 provided at its upper end with a metallic jaw 28 which may be detachably secured to the distributing ring by means of a clamping screw 29 and two lower arms 30 which diverge downwardly from the lower end of the shank and have their lower ends or tips exposed in the liquid within the plating receptacle, those parts of the arms above the tips thereof and the adjacent part of the shank being covered by an insulating jacket 31 such as rubber or other electric insulating and non-

corrosive material. The liquid for use in forming the plating solution preferably comprises water and cyanid of potassium in suitable proportions. Opposite this duplex pointed terminal an anode of the desired kind of metal is placed within this solution and connected with the companion binding post 21, as shown at the left hand side of Figs. 1 and 2. Upon now connecting the binding posts 18, 21 with opposite sides of an electric generator so that the current is caused to pass from the anode 24 through the liquid in the receptacle and to the exposed points of the solution forming terminal, the metal of this anode will be decomposed by electrolytic action and transferred to the liquid in the plating receptacle.

By providing the solution forming terminal with two points which are separated from each other and insulating this terminal so that only its points are exposed to the plating solution in the receptacle, the current of electricity is divided as it passes from this anode to these two points, thereby quickening the electrolytic action for forming the electro-plating solution and causing the metal of the anode to be distributed faster and more uniformly throughout the entire body of the solution. After the current has been thus permitted to pass from the anode to the solution forming terminal a sufficient length of time to produce an electro-plating solution of the desired strength the solution forming terminal is removed from the distributing wire or ring and the article to be plated is suspended in this solution from this ring in place of the solution forming terminal. When this is done the plating of this article proceeds in the manner previously described.

By the use of such a solution forming terminal it is unnecessary for a jeweler to either purchase or keep on hand different kinds of electro-plating solutions inasmuch as it is possible and practical to produce these solutions in the plating tanks of the required strength and character immediately before effecting the plating operation. A jeweler is therefore able to know with exactness the kind of solution with which he is dealing and can therefore adjust his work much more carefully and accurately to suit the requirements of the job.

This apparatus is very compact in construction, the same can be produced at comparatively low cost and enables a jeweler to do electro-plating quickly and at low cost inasmuch as it avoids the necessity of sending jewelry to a separate plating establishment as has been customary heretofore.

I claim as my invention:

1. An electro-plating apparatus comprising a supporting plate having an opening, a receptacle arranged in said opening, a

wire mounted on the upper side of said support and engaging with the upper end of said receptacle and means for suspending a terminal from said wire within said receptacle.

5 2. An electro-plating apparatus comprising a supporting plate having an opening, a receptacle arranged in said opening, posts arranged on said plate and provided with
10 downwardly facing shoulders, and a wire engaging with said shoulders and the upper end of said receptacle.

3. An electro-plating apparatus comprising a supporting plate having an opening,
15 a receptacle arranged in said opening, a wire mounted on the upper side of said support and engaging with the upper end of said receptacle, and a post arranged on said support, said post and wire being adapted
20 respectively to hold an anode and an article to be plated within said receptacle and to form conductors of an electric current.

4. An electro-plating apparatus comprising a supporting plate having an annular row of openings, a plurality of receptacles each arranged in one of said openings, a ring engaging with the upper ends of said receptacle and adapted to support articles to be plated in said receptacle, insulating posts mounted on said plate and having
3 downwardly facing shoulders engaging with the upper side of said ring, and anode posts mounted on said plate and each adapted to support an anode in one of said receptacles, said anode posts and rings being adapted to be connected with opposite sides of an electric generator.

Witness my hand this 18th day of May, 1914.

HENRY G. ALLERS.

Witnesses:

THEO. L. POPP,
ANNA HEIGIS.