UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING TARNISH FROM METALS.


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To all whom it may concern:

Be it known that I, MARSHALL H. KEYT, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Removing Tarnish from Metals, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to apparatus for electrolytically removing tarnish from metals, and the invention consists in the peculiar construction of a combined electrode and container which is adapted for use in the cleaning of silverware, surgical instruments and other articles having tarnished surfaces.

In the drawings: Figure 1 is a perspective view of the combined electrode and container. Fig. 2 is a vertical section through a vessel containing the electrolyte, showing the manner of using the electrode and container. Fig. 3 is a perspective view of the removable bottom of the electrode and container detached. Fig. 4 is a cross section showing the manner of supporting the removable bottom within the container and in electrical connection therewith.

My improved apparatus is designed for use in simultaneously cleaning metallic articles such as table silverware from food or dirt adhering thereto, and also removing the tarnish or corrosion on the metallic surface. The electrolytic removal of the tarnish or corrosion has heretofore been accomplished by immersing the articles to be brightened in an electrolyte in contact with an anode of more electro-positive character.

It has been found in practice that this anode loses its efficiency in a short time due to the formation of an oxid on its surface which prevents electrical contact between the same and the articles to be cleaned and also interferes with the operation of the electrolyte. Therefore, to maintain the efficiency of the anode, it must be frequently removed and cleaned from corrosion. The cleaning may be most effectively accomplished by scoring or treatment with a dilute acid which has an affinity for the oxid, and a flat plate may be cleaned more readily than a curved or bent surface. On the other hand, the electrolytic action is increased in proportion to the extent in surface of the anode and it is not essential that all portions of this extended surface should be entirely free from corrosion, if there is a portion having a bright surface for contact with the metallic articles to be cleaned.

With my improved apparatus, I have facilitated the brightening of the portion of the anode which is to contact with the articles to be cleaned by forming it as a flat removable plate, while the surface of the anode is extended by side walls which also form a basket or receptacle for the articles to be cleaned. All portions of this basket will thus operate as an anode when immersed in the electrolyte, but it is only necessary to remove the corrosion from the flat bottom plate alone to restore efficiency whenever it is impaired.

In detail, A is a basket-like receptacle formed of an electro-positive metal such as zinc, and which is provided with sides preferably having perforations B therein. C are handles secured to the sides and projecting upward therefrom so that the operator may immerse and withdraw the basket from the electrolyte without wetting his hands with the solution. D is the removable bottom plate of the anode, which is formed of the same metal and is preferably perforated. This plate rests upon marginal flanges or ledges E formed on the sides of the basket and may be normally held in position by suitable means such as the spring clips F struck out from the ends of the basket. These in normal position extend over the bottom and prevent it from displacement, but at any time by springing outward the clips F the bottom may be removed.

One important object of my invention is to adapt the apparatus for simultaneously operating electrolytically and for cleaning the articles from foreign substances adhering thereto such as the food upon table silverware. This is accomplished by the formation of the basket with perforations through which the cleaning solution may freely flow, and by selecting as a cleaning agent a solution having the combined properties of a cleanser and an electrolyte. As it is not necessary for the operator to place his hands in the solution by reason of the handles C, this solution may be used as hot as desirable.

In operation the soiled and tarnished articles to be cleaned and brightened are first
placed in the basket $A$, while the solution forming the electrolyte and cleanser is placed in another receptacle $G$ of sufficient size to receive the basket. The basket may then be immersed in the solution and by raising and lowering it the liquid is caused to flow through the perforations and the interstices between the articles contained in the basket so as to wash off adhering portions of food. At the same time the electrolytic action is taking place and all tarnish is thereby decomposed leaving the bright metallic surface. The basket may then be lifted out from the solution and immersed in hot water for rinsing, after which it is merely necessary to wipe the articles to render them both bright and clean.

Where articles are badly tarnished the electrolytic decomposition will produce a corresponding coating with corrosion of the surface of the electrode which would destroy further electrolytic action. This defect may be quickly remedied by springing out the clips $F$, removing the bottom plate $D$ and scouring the latter with an abrasive material such as sand paper or by rubbing it with an acid solution such as lemon juice. It is not necessary to clean the entire basket every time the bottom $D$ is scoured, but it is desirable to brighten some portion of the ledge $E$ upon which the plate $D$ rests so as to provide good electrical conduction therebetween.

What I claim as my invention is:

1. An apparatus for cleaning and removing tarnish from metals, comprising a basket or container formed of an electro-positive metal, the bottom of said basket being detachable and formed of a flat plate of the same metal, and means integral with said container for locking said plate from accidental disengagement.

2. An apparatus for cleaning and removing tarnish from metals, comprising a basket or container having ledges or shoulders extending inward therefrom, and a detachable bottom plate resting upon said ledges or shoulders, both elements being formed of the same electro-positive metal.

3. An apparatus for cleaning and removing tarnish from metals, comprising a basket or container having perforated side walls and ledges or shoulders extending inward therefrom, a perforated bottom plate resting upon said ledges or shoulders, and a spring clip struck up from a portion of the side for retaining said bottom plate from disengagement, all being formed of the same electro-positive metal.

4. An apparatus for cleaning and removing tarnish from metals, comprising a basket or container having perforated sides with inwardly extending ledges or shoulders, handles secured to and extending upward beyond said sides, a detachable bottom plate resting upon said ledges or shoulders, and spring clips struck out from the opposite sides for holding said bottom plate from accidental disengagement.

In testimony whereof I affix my signature in presence of two witnesses.

MARSHALL H. KEYT.

Witnesses:
WM. J. BELKNAP,
JAMES P. BARRY.