

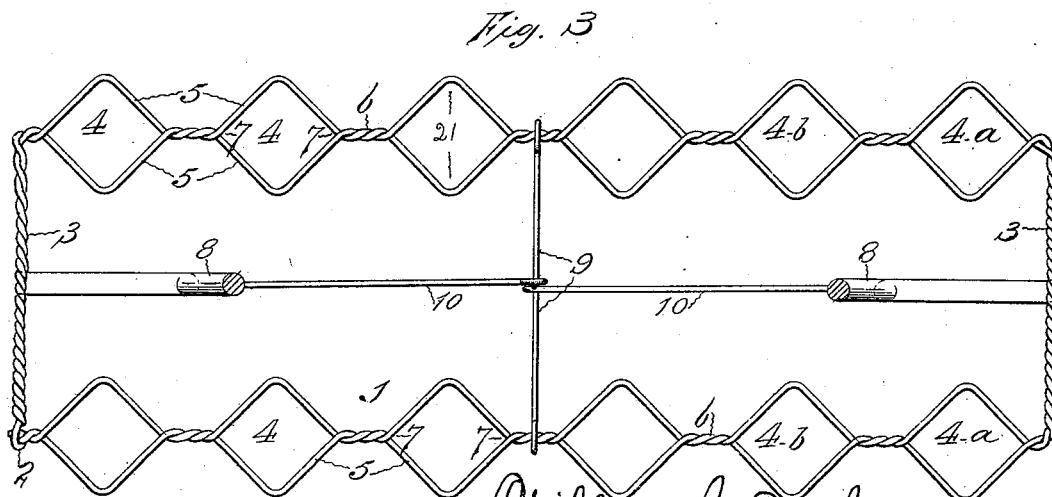
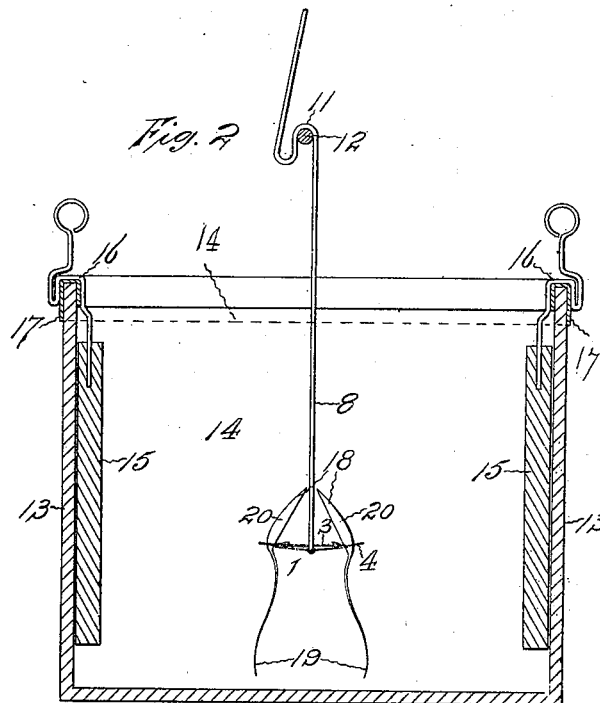
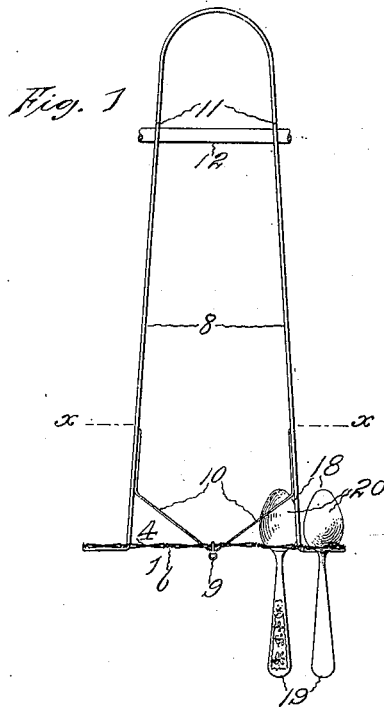
No. 645,786.

Patented Mar. 20, 1900.

W. Y. BUCK.  
ART OF ELECTROPLATING.

(Application filed July 15, 1899.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM Y. BUCK, OF BRISTOL, CONNECTICUT.

## ART OF ELECTROPLATING.

SPECIFICATION forming part of Letters Patent No. 645,786, dated March 20, 1900.

Application filed July 15, 1899. Serial No. 723,910. (No specimens.)

*To all whom it may concern:*

Be it known that I, WILLIAM Y. BUCK, of Bristol, Hartford county, Connecticut, have invented certain new and useful Improvements in the Art of Electroplating, which are described in the following specification and are illustrated by the accompanying drawings.

This invention relates in general to the art of electrodeposition of metals and to the arrangement and position of the work in the process of plating by that art. It relates in particular to the exposure of spoons, forks, and other flat ware in the electrolytic bath and to the manner of holding articles of that kind in the plating-vat. In the plating of such goods it is desirable that the deposit instead of being of uniform thickness upon all parts of the work should be heavier upon those parts which are to be exposed to the most wear and lighter upon those parts which are less exposed. Thus all the outside of the bowl and all those parts of the bowl and handle by which a spoon when laid upon its back comes in contact with a table or other flat surface upon which it is laid require a thicker and more durable deposit, while for the inside of the bowl and for the front side of the handle of a spoon and for the corresponding parts of a fork or other like article a thinner plating is sufficient. If the weight of the deposit upon the first-mentioned parts be increased to any extent, it is obvious that the durability of the plating in general must be increased in proportion. For the purpose of obtaining such inequality of deposit these articles have in times past been subjected to a process of "sectional" plating, so called, which consists in first plating by successive operations only those parts of the work which require the thickest deposit and in afterward plating by a subsequent operation the whole surface of the work, including the parts plated first. This method, with its repeated cleanings and other treatments of the work, is both expensive and inconvenient.

It is the object of my invention to produce the desired unequal distribution of the deposit in a convenient and economical manner and without any such multiplicity of operations. To accomplish this object, I make use of the same principle upon which a pitcher or

other hollow article immersed in the bath is plated more heavily without than within when no precautions are observed for the purpose of equalizing the external and the internal deposits. The same principle, which has been termed the principle of "shadowing," is illustrated in a greater or less degree whenever work is unequally sheltered in the bath or is unequally exposed to the action of the solution or is placed near any obstructions not affecting all parts of the work alike. To utilize this principle for the purpose specified, I prefer to employ a holder having two parallel rows of meshes arranged in pairs and adapted to hold pairs of spoons, forks, or the like with their bowls opening toward and near each other.

The best manner in which I have contemplated applying the principles of the invention is shown in said drawings.

Figure 1 is a side view of a holder which is constructed in accordance with the requirements of those principles. In this figure two spoons are shown in position in the holder. Fig. 2 is an end view of the same holder with a pair of spoons therein, all in position in an electroplating-vat. Fig. 3 is a plan of the same holder on an enlarged scale, the handle being cut off on the section-line *xx* of Fig. 1.

In the views the numeral 1 denotes a horizontal rack constituting the body of the holder. This rack is formed of a piece of iron or steel wire doubled at the middle, twisted together, and bent into a closed, flat, and generally-rectangular form, as shown in Fig. 3. The opposite end portions of the rack (denoted by numerals 3) are mere straight cables of this wire twisted together uninterruptedly, while the opposite sides or edge portions of the rack consist of two duplicate straight rows of meshes or openings 4, formed by and between untwisted parts or strands 5 of the twisted wire and separated from each other by twisted portions of the same wire. These openings are at such a distance apart in their respective rows that the articles held in them cannot touch each other, are of general rectangular or diamond shape, and are of uniform size, large enough to admit the shanks or handles, but not the bowls, of the work and to hold the latter hanging loosely by the bowls in the positions indicated in

Figs. 1 and 2. At the opposite ends of each mesh the strands 5, converging toward twists 6, form with each other two opposite angles, which are denoted in certain instances by numerals 7 in Fig. 3. The two remaining internal angles of each mesh are indicated by the numerals 21. These meshes being arranged in two equal rows side by side are also arranged in a number of pairs, each of which has its two members in line with each other across the holder. Thus the two meshes 4<sup>a</sup> constitute one pair, the meshes 4<sup>b</sup> another pair, and so on. Rack 1 is provided with an electrically-conductive wire handle 8, which is rigidly united therewith at cables 3 and is electrically attached thereto by wires 9 and 10, which are soldered on as braces and supports. Handle 8 has a bend 11, by which the device may be suspended in the usual manner as a movable conductive hanger. In Figs. 1 and 2 the apparatus is shown hanging from a conductive rod 12, which represents the negative pole of the circuit.

In Fig. 2 the numeral 13 denotes the side walls of a vat containing the plating solution 14, in which the work is suspended. The anodes 15, being plates of silver or other metal, are submerged in the solution at a convenient distance from the work on opposite sides of the holder, being suspended by hooks 16, which are in electrical contact with a copper strap 17, representing the positive pole of said circuit.

The work, which is represented by the spoons 18, is placed in the holder by inserting the handles 19 in the several meshes 4 from above and by permitting them to descend therein till the bowls 20 are stopped by contact with the meshes. When the work is so placed in the position shown, those articles which occupy a single pair of meshes—as, for example, those in meshes 4<sup>a</sup> or in meshes 4<sup>b</sup>—assume positions of slight inclination and rest in angles 7 with the bowls 20 of each pair near together and opening toward each other, as plainly shown in Fig. 2. Under the same circumstances the handles 19 are swung out a little toward the anodes 15, while the backs of the bowls and handles are turned directly toward those plates. All these conditions remain undisturbed when the holder is agitated in the bath, being maintained by the tendency of the work to retain by its own weight the position indicated. On the passage of current through the solution in the usual manner while the work is suspended in this position the heaviest plating is deposited upon the back side of the handle 19 and the outside of the bowl 20, while the inside of the bowl and the front side of the handle, being protected both by their own form and by their relative location, receive a considerably-thinner deposit. It is the peculiar advantage of

this invention that it dispenses with all extraneous means of shadowing the work and causes each piece of the work to shadow each other piece of the same pair. Out of twenty-eight grains of silver deposited upon a teaspoon I have in this way caused seventeen grains to be placed upon the back side of the spoon, while only eleven grains were deposited upon the front side. In that instance the work was continually agitated by swinging in the vat in the usual manner. By dispensing with the vat-motion this inequality of deposit may readily be much increased.

The same improvement in the art of electroplating may be practiced by the use of other means and instrumentalities for supporting the work, yet the described holder, besides being adapted to operate as described, possesses these incidental advantages: that, being composed of wire, it presents to the action of the solution but a small percentage of the permissible cathode surface and receives upon itself but a minimum of the deposit; that, holding the work only by the edges of the bowls, it produces none of those lines or objectionable markings which are commonly produced by wiring and by other methods of support, and that, being adapted by reason of the arrangement and the angularity of its meshes to hold pieces of work in any of several unchanging positions, it may be used as a substitute for all of those old frames which are capable of holding work in any of those positions. This holder as an independent invention is made the subject of a separate application for Letters Patent filed by me September 22, 1899, under Serial No. 731,286.

Such being my improvement in the art of plating, I claim as my invention—

1. That improvement in the art of electroplating which consists in holding between two anodes in an electrolytic bath two pieces of work facing toward and near each other, and in passing current from the anodes through the plating solution to the work held in that position, substantially as and for the purpose specified.

2. That improvement in the art of electroplating, as applied to articles having convex portions, which consists in holding between two anodes in a plating solution two articles of that kind with their convexities projecting toward said anodes respectively, and in passing current through the solution to the work so held, substantially as and for the purpose specified.

In testimony whereof I hereunto set my name in the presence of two witnesses.

WILLIAM Y. BUCK.

Witnesses:

WILLARD EDDY,  
ELLA M. OLMSTEAD.