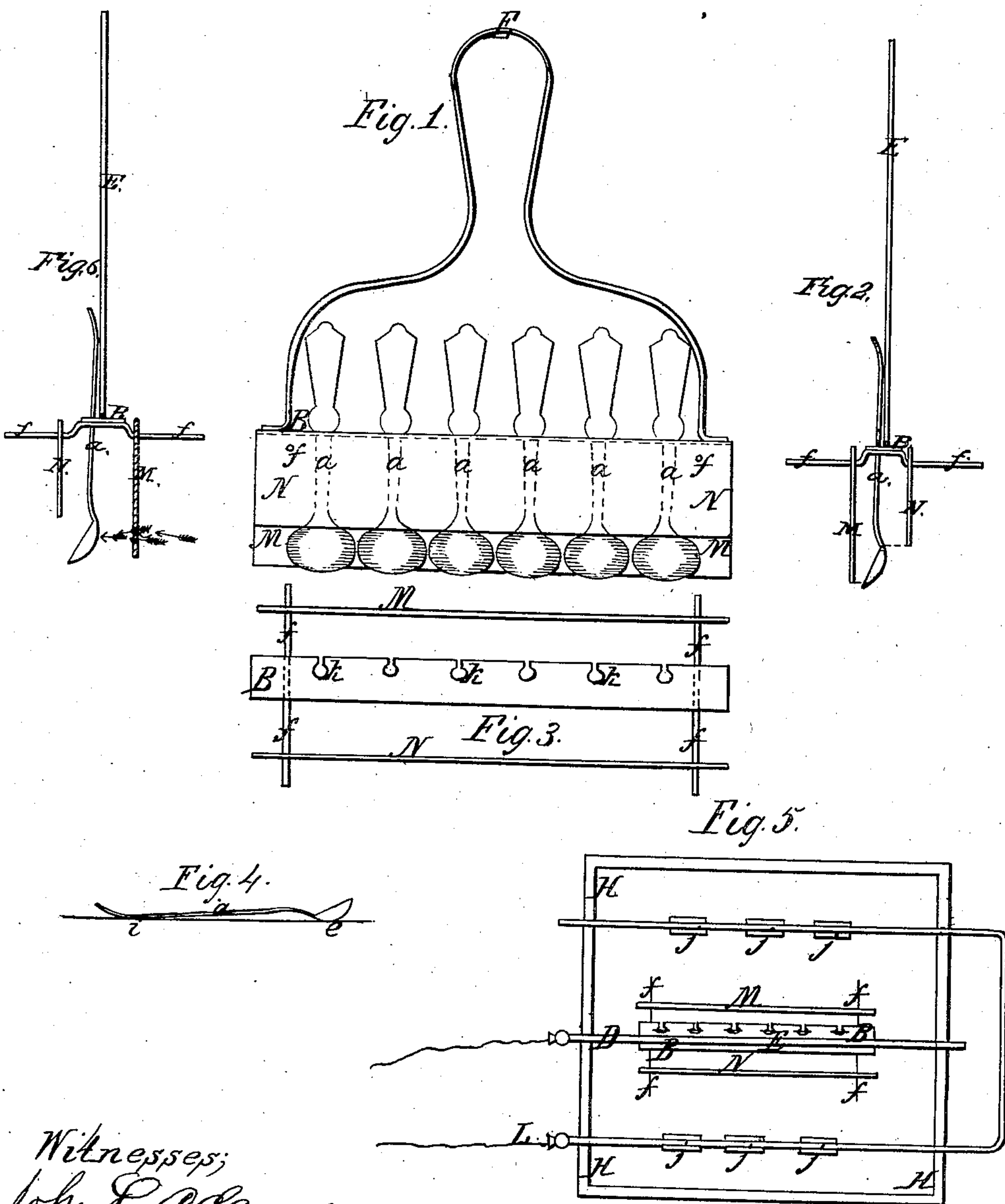


J. P. Woodworth,

Metal Coating,

N^o 84,243.

Patented Nov. 17, 1868.



Witnesses;
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JUSTIN P. WOODWORTH, OF BROOKLYN, NEW YORK.

Letters Patent No. 84,243, dated November 17, 1868.

IMPROVEMENT IN ELECTRO-PLATING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, JUSTIN P. WOODWORTH, of the city of Brooklyn, in the county of Kings, and State of New York; have invented a new and useful Improvement in the Process of Electro-Plating or depositing metal coatings on articles subject to wear; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of my improved apparatus.

Figure 2 is a side elevation of the same.

Figure 3 is a plan.

Figure 4 represents a spoon lying in a position in which it is subjected to most wear, to provide for which is the object of my said invention.

Figure 5 is a plan of my improved apparatus arranged with the tank and the ordinary apparatus used in electro-plating.

Figure 6 is a side elevation of my said apparatus, which exhibits an additional feature of improvement.

Similar letters indicate corresponding parts in all the figures.

My invention consists in placing or employing a movable and adjustable obstruction or device for obstructing and deflecting the electric current between part of the article upon which the metal is being deposited and the pole of the battery, so as to cause the metal to deposit a thinner coating upon the parts of the article, in the line of and protected by the obstructing-device, and to deposit a thicker coating upon the parts of the article that are otherwise exposed; said obstructing-device being variously shaped and applied, to adapt it to the form of the article to be plated, or to the requirements growing out of the way it is used, and the wear to which it is subjected.

My invention consists also in the construction of the rack or holder for holding the article to be plated, for the purpose of better keeping the article or articles in position to receive the deposit subject to the said obstruction.

By the modes heretofore practised, to deposit a greater thickness of metal on one part of an article than upon the other, a patch of metal was first deposited or applied to the portion of the article where it was desired that the plating should be thickest, by fine-coating all the remaining portion of the article with "gutta-percha," asphaltum, or other suitable non-conductor, leaving only exposed, (and consequently subject to the plating-process, the spots or places which are to receive the thicker patches of metal,) after which the article is placed (immersed) in the bath, in the usual way to receive the deposit upon its unprotected portion, when the gutta-percha or like coating is removed, and the whole surface subjected to the plating-process, by which the patches first deposited receive the additional

thickness that is deposited in common over the whole surface.

By another method, the "patch," consisting of a film, or piece of the plating, of the proper size and form, is applied to the part that is required to be thicker, by inlaying or soldering it thereto, or by pressing it thereon, and afterwards placing it in the bath, and plating over the whole surface; and by still another method, the piece or article was confined in a tilting holder, so arranged as to dip or immerse only those portions into the bath as were required to be plated the thicker, to form the film or patch aforesaid, or immersing different parts of the article separately for different periods of time, "whereby those parts which are immersed for the longest period, have the plating-metal deposited thickest upon them."

By all these modes, the particular parts of the article that require more or less than the common coating of plate, are required to be treated separately, which involves the necessity of repeated plating-operations, and consequent manipulation, and is otherwise expensive and objectionable; whereas, by my improved method, all parts are treated and receive their suitable coating of different degrees of thickness at once, without repeating any operation, by simply obstructing and deflecting the electric current, which carries and disposes the material from its natural course in the bath, by certain devices, which regulate and control the distribution of said material in greater or less thickness over the different parts of the article, according to the requirements of its nature or use; the whole operation being performed by one immersion, without further manipulation or operation of any kind.

The difference between the methods above described of partial plating and replating, and my improved method of depositing a variable coating, that is, a coating or plating that is thicker in certain localities than in others, on the article at one operation or treatment, will be readily understood by those skilled in the art, from the following description, to wit :

For the sake of convenience, I have selected, for the purpose of illustrating the object of my said invention, the article of table-ware, a spoon, which naturally rests on the table or other flat surface, as shown in fig. 4, whereby the bowl at *c*, and the handle at *i*, become soonest worn, and will show the baser metal under the plating long before the less exposed (to wear) portions are defaced. These parts, therefore, should receive a thicker coating of plating, while the shank *a* and front of the handle require only a thin plating to endure the same length of time; and this is accomplished by my improved process, during the operation of plating the entire surface of the article, as follows :

The said spoons are held in the rack, figs. 1 and 2, in equidistant openings *k*, through the plate *B*, fig. 3, which openings are of a shape to receive and hold the spoons loosely by the shank, as shown, and also to per-

nit the shanks to slide therein from end to end, by inverting the rack, to avoid leaving a deposit-mark at the point where the shank is held. To this plate B is attached a bail, E, by which it is suspended in the solution or bath, and on either side are fixed projecting rods *f f*, extending from each end, for the reception of the obstructing-plates M N, which are perforated at the ends, and slide laterally upon the rods towards and from the plate B, and the articles held therein. These obstructing-plates may be of glass, wood, gutta-percha, or metal coated with asphaltum, varnish, or other non-conducting substance. They are shaped, and of a width in this instance, it will be observed, to cover, the wider one, the inside of the bowl and front of the shank of the spoon, while the narrower covers the back side of the shank simply, as seen in fig. 2, and the closer the plates M N are placed to the articles, the more perfect the obstruction they will afford to the electric current, and consequent deflection of the deposit, so that the deposit may be graduated to a nicety, by simply sliding the said plates nearer or further from the article to be plated, as it is held in the rack.

This rack, thus arranged, is then immersed in the solution contained in the tank H, fig. 5, and one pole D of the battery attached to it, the other pole, L, being attached to the rod from which the blocks or pieces, *j*, of plating-metal are suspended, and the metal is deposited in direct line through the solution from said blocks *j*, to and upon, first, the most prominent, nearer, and more exposed parts, afterwards upon the remaining portions, so that by means of the said obstructions, the metal is deflected from the parts covered by the obstructions, and deposited more immediately and thickly upon the more exposed parts.

Another form and use of the said obstruction are ex-

hibited in fig. 6, in which an aperture is made through the obstruction, at C, through which the electric current passes in a manner illustrated by arrows, and deposits the metal upon the particular part of the spoon's bowl which has been herein described as subjected to the severest wear, while at the same time the deflected current deposits a thinner coating upon the other protected portion of the spoon.

This method of making apertures in the obstruction or shield M N has a general application to the plating of almost any shape or article, it being only necessary to properly locate the said apertures, and make them of the proper size and form, to obtain the desired result of depositing, during the plating-operation, the requisite extra thickness of plate or metal, where, on account of excessive exposure to wear, or for other cause, it is most needed.

Having described my invention,

What I claim, and desire to secure by Letters Patent, is—

The method, substantially as set forth, of depositing different thicknesses of plating or metallic coating on different portions of an article at one operation, by obstructing and deflecting the electric current in the bath in its passage between the two poles, substantially as described.

Also, the rack or holder, fig. 1, or its equivalent, for holding the articles to be plated properly, and for receiving and adjusting, by suitable means, the said obstructing-device, substantially in the manner described.

JUSTIN P. WOODWORTH.

Witnesses:

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