

# UNITED STATES PATENT OFFICE.

CELESTINO BIANCO, OF NEW YORK, N. Y.

## ELECTROLYTIC SOLUTION FOR ZINC-PLATING.

No. 905,785.

Specification of Letters Patent.

Patented Dec. 1. 1908.

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To all whom it may concern:

Be it known that I, CELESTINO BIANCO, a subject of the King of Italy, residing at New York city, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Electrolytic Solutions for Zinc-Plating, of which the following is a clear, full, and exact description.

This invention relates to an electrolytic solution or bath, which is particularly adapted for plating metal articles of whatever shape, kind, or description, with a strata or coating of metallic zinc, for the purpose of protecting them against disintegrating oxidation.

The process of coating with zinc is remarkably useful for those metals that are more susceptible to atmospheric influences, i. e., iron, cast-iron, steel, and its alloys, and is already extensively used. I have found that the results obtainable with the use of my improved electrolyte are better than those to be had in the ordinary way, as the deposit is smoother, not porous, of metallic appearance, and of a thickness regulable to suit the work; furthermore, the zinc deposited is very pure.

To plate a metallic substance, such as hereinbefore mentioned, I employ the usual method of suspending the article to be plated which becomes the cathode, in my improved electrolyte. I also suspend a sheet or plate of metal zinc in the said electrolyte, the said zinc becoming the anode. I then pass an electric current through said anode, cathode and electrolyte, whereby a stratum of zinc is deposited upon the surface of the cathode in the usual manner. The intensity of the electric current will be regulated by the rules of the current practice, and depends upon the kind of work to be done, and upon the thickness of zinc to be deposited per square foot of surface.

My improved electrolyte is composed of the following ingredients in the following proportions:

Zinc.....	50	to	150	parts
Iron.....	2	"	15	"
Aluminum.....	0.5	"	10	"
Sodium.....	0.5	"	10	"
Sulfuric acid.....	80	"	280	"
Acetic acid.....	.5	"	8	"
Water.....	886.5	"	527	"
	1020.00		1000.00	

Said parts are conveniently compounded, following the usual practice.

Instead of using the single bodies Zn, Fe, Al, Na, their oxids could be used in the combination, as the combined oxygen would react with the hydrogen of the acids to form water, while the composition of the electrolyte would practically remain the same.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. An electrolyte for the electrodeposition of zinc, containing compounds of zinc and iron and an organic-acid salt of an alkali metal.

2. An electrolyte for the electrodeposition of zinc, containing compounds of zinc and iron and an organic-acid salt of sodium.

3. An electrolyte for the electrodeposition of zinc, containing compounds of zinc, iron, aluminum and sodium.

4. An electrolyte for the electrodeposition of zinc, containing sulfates of zinc and iron, and an acetate of an alkali metal.

5. An electrolyte for the electrodeposition of zinc, containing sulfates of zinc and iron, and acetate of sodium.

6. An electrolyte for the electrodeposition of zinc, containing sulfates of zinc, iron and aluminum, and acetate of sodium.

7. An electrolyte for the electrodeposition of zinc, containing zinc, iron and sodium, in the following proportions: zinc, 50 to 150; iron, 2 to 15; sodium, 0.5 to 10.

8. An electrolyte for the electrodeposition of zinc, containing zinc, iron, aluminum and sodium, in the following proportions: zinc, 50 to 150; iron, 2 to 15; aluminum, 0.5 to 10; sodium, 0.5 to 10.

9. An electrolyte for the electrodeposition of zinc, containing zinc, iron, aluminum, sodium, and sulfuric and acetic acids, in the following proportions: zinc, 50 to 150; iron, 2 to 15; aluminum, 0.5 to 10; sodium, 0.5 to 10; sulfuric acid, 80 to 280; acetic acid, 0.5 to 8.

Signed at New York city, N. Y., this 15th day of July, 1907.

CELESTINO BIANCO.

Witnesses:

EDWARD A. JARVIS,  
LILLIAN HARRIS.