

UNITED STATES PATENT OFFICE.

GEORGE F. WESCOTT, OF BUFFALO, NEW YORK. ASSIGNOR OF ONE-HALF TO INTERNATIONAL ACHESON GRAPHITE COMPANY, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF NEW JERSEY.

METHOD OF TREATING IRON OR STEEL ARTICLES.

1,034,174.

Specification of Letters Patent.

Patented July 30, 1912.

No Drawing.

Application filed March 17, 1910. Serial No. 549,899.

To all whom it may concern:

Be it known that I, GEORGE F. WESCOTT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Methods of Treating Iron or Steel Articles, of which the following is a specification.

This invention relates to the treatment of iron or steel articles for the purpose of protecting their surfaces from atmospheric and other corrosive influences.

The invention further relates to an improved construction of metallic vessels or utensils, having an interior coating of baked enamel and an exterior graphitic coating.

In the practice of my method I prefer to proceed as follows: A suitable grade of electric-furnace graphite is ground or otherwise thoroughly incorporated with a varnish consisting essentially of flaxseed oil, china wood oil or other suitable vegetable oil, rosin, or a resin, and a suitable drier, the proportion of graphite to the varnish being such as to yield a paint which is sufficiently fluid to permit its easy and uniform application to the metal. Proportions of ingredients which have been found satisfactory are as follows: One part by weight of electric furnace graphite is thoroughly incorporated with four parts of a vehicle comprising:

Flaxseed or china wood oil	25	parts by weight.
Calcium resinate	36	" " "
Manganese borate	0.5	" " "
Sugar of lead	1.0	" " "
Naphtha	37.5	" " "

The iron or steel is coated with the above composition by dipping, brushing or other procedure, and is then baked in an oven or kiln. I have found a temperature of 300° F., maintained for a period of one hour and forty minutes, to yield very satisfactory results with the specific composition above described.

The resulting graphitic coating is highly resistant to corrosive agencies and even to acids, and becomes quite lustrous when burnished. It is a valuable characteristic of this treatment that the protective character of the coating, as regards oxidation of iron or steel, persists after the visible coating has been removed by prolonged use, abrasion or other influences. This may perhaps be attributed to a penetration of the graphite

constituent of the composition into the surface of the metal under the influence of the prolonged heat treatment, and is particularly marked if the graphite employed is such as may be prepared by heating anthracite coal containing some 10% of ash to a graphitizing temperature in an electric furnace, the product being thereafter ground to a state of extreme subdivision. I have observed that the above-mentioned protective action is not obtainable with all commercial grades of graphite, and is not afforded by such grades as coalesce readily under pressure.

My improved vessel or utensil comprises a sheet-iron or steel vessel of any desired form, coated internally with an acid-resisting baked enamel of any of the well known compositions and externally coated with the graphitic composition, baked or heated as above described. This construction is found in practice to possess certain well defined advantages as follows: It is well understood that too high or too prolonged heating of an enameled article yields a hard enamel but one which is liable to chip or scale, owing to imperfect adherence to the coated surface. I have found that when the interior of the vessel only is enameled, the exterior being coated with the graphitic composition, the enamel may be more strongly baked than is the case when the exterior also is enameled. A possible explanation of this observed fact is that the imperfect adherence of the enamel when strongly baked is due to the liberation of occluded gases from the heated metal surfaces; and that when the opposite surface of the sheet metal is provided with a coating which is permeable to these gases, they are afforded a means of escape, at least to such extent that they are not driven to the enameled surface. At the same time the exterior surface receives the protective heat treatment described, and during this treatment is safeguarded from oxidation.

I claim:

1. The method of treating surfaces of iron or steel, which consists in applying to such surfaces a composition containing non-coalescing electric-furnace graphite and a suitable vehicle, and thereafter baking the article.

2. The method of treating surfaces of iron or steel, which consists in applying thereto a composition containing a non-coalescing electric-furnace graphite and a vehicle comprising a vegetable oil, a resinous material, and a drier, and thereafter baking the article.

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

GEORGE F. WESCOTT.

Witnesses:

JAMES W. PERSONS,
E. A. WEAVER.

Correction in Letters Patent No. 1,034,174.

It is hereby certified that in Letters Patent No. 1,034,174, granted July 30, 1912, upon the application of George F. Wescott, of Buffalo, New York, for an improvement in "Methods of Treating Iron or Steel Articles," an error appears in the printed specification requiring correction as follows: Page 1, line 38, for the word "over" read *oven*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of October, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

2. The method of treating surfaces of iron or steel, which consists in applying thereto a composition containing a non-coalescing electric-furnace graphite and a vehicle comprising a vegetable oil, a resinous material, and a drier, and thereafter baking the article.

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

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