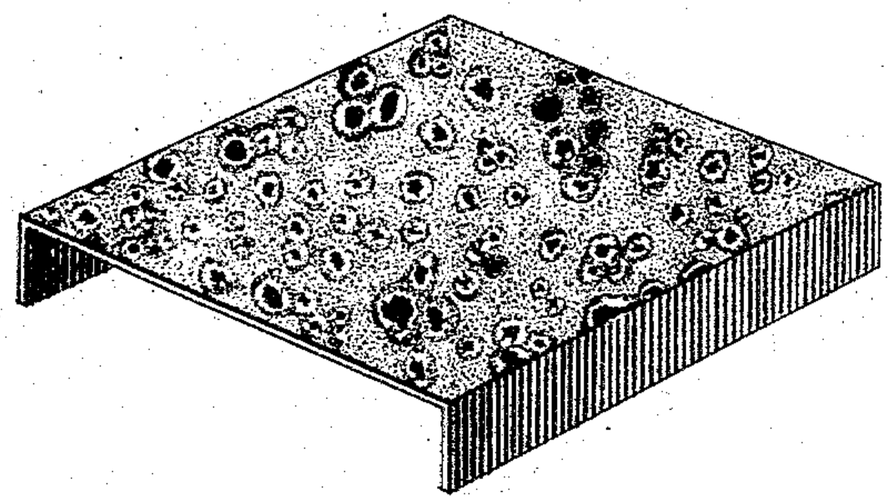
(Specimens.)

A. J. VOLLRATH.

ENAMELED IRONWARE AND PROCESS OF ENAMELING.

No. 515,981. Patented Mar. 6, 1894.



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UNITED STATES PATENT OFFICE.

ANDREW J. VOLLRATH, OF SHEBOYGAN, WISCONSIN.

ENAMELED IRONWARE AND PROCESS OF ENAMELING.

SPECIFICATION forming part of Letters Patent No. 515,981, dated March 6, 1894.

Application filed January 21, 1893. Serial No. 459,113. (Specimens.)

To all whom it may concern:

Be it known that I, ANDREW J. VOLLRATH, a citizen of the United States, residing at Sheboygan, in the county of Sheboygan and State of Wisconsin, have invented a new and useful Improvement in Enameled Ironware and the Process of Enameling, of which the following is a specification.

My invention relates to an improvement in enameled iron ware, and is more particularly directed to an improvement whereby the ware shall present a novel appearance, pattern or design of peculiar beauty and characteristically different from that found in enameled iron ware as heretofore produced. The invention may be practiced in the manufacture of so-called thinly enameled ware, or ware where the enamel is comparatively thick, and it may be practiced for the coating or re-coating of enameled ware in the course of its original production, or after it has been otherwise produced, and for the purpose of giving to its surface a characteristic appearance different from what it had before. The value of a process whereby thinly enameled iron ware, the enamel surface of which is defective either by the failure to produce the desired appearance or by defects in the enamel itself, may be given a characteristically unique or beautiful appearance without material increase in the thickness of the coating, has long been recognized in the art; and processes for this purpose are numerous. This valuable function is one of those attained by the improvement hereinafter described; but it is to be clearly understood that the invention is in no sense limited to the ornamentation of defective ware, but is mainly intended for the production of a new product of enameled iron ware having desirable characteristics, and possessing all the necessary adhesiveness, continuity and, if desired, thinness in the coating. The product produced by the invention covered hereby is one showing, in a coating of enamel, spots, usually round in outline, and presenting at the interior the color of the first coating of enamel, meaning that applied and fused next before the last coating. The effect produced is peculiar, and is difficult to describe in words, but is fitly indicated by the descriptive term "bird's eye" enamel, for the same reason that a certain kind of wood is so characterized.

To make clear the use of certain terms in this specification, it should be understood that in the nomenclature of enameling the several coats are known as follows:—The coating applied to cover defects or irregularities in the iron surface, always necessary with cast iron but not always necessary with sheet iron or steel, and usually very thin and hard, is called the "ground enamel." The coating applied to give to the iron a uniform surface of enamel is called the "first coat." The enamel applied upon this coat, sometimes of the same and sometimes of a different color, and intended as much to produce the necessary color in the enamel or pattern therein as to cover any irregularities in the first coat, is called the "second coating." When there is applied to this second coating a further coating, which is usually thin and transparent and is intended merely to give to the surface a gloss which may be lacking in the second coat, this thin layer of enamel is called the "finishing coat." Sometimes the second coat is also called the finishing coat, where it is applied for the purpose of giving a gloss which the first coat failed to produce.

The present invention relates more particularly to a process and the product thereof relating to the application of the second coat. In other words, it is to be understood that a finishing coat may be applied if desired, though it is deemed unnecessary, and that the surface has been properly prepared to receive the second coat, which may involve the use of the ground and first coat, and even, under some circumstances, two or more first coats.

In the drawing I have illustrated as well as possible a fair sample of enameled iron ware produced in accordance with the improvement herein set forth; but it is to be understood that the characteristic appearance is not limited to the exact representation shown. The spots or eyes may be greater or less in number, uniformly or irregularly distributed, and of uniform or varying size.

To carry out my invention I proceed as follows: A first coating of enamel, which may be transparent but is preferably of some fixed color, is applied to the ware and dried and

fused. There is then applied to the surface an enamel paste of any of the ordinary kinds used in enameling, the paste being applied wet, and before it is permitted to dry there is spattered over the surface, or so much thereof as is desired to show spots, preferably alcohol, and then with or without intermediate drying, the ware is introduced into the muffle furnace and subjected to the usual melt for several minutes at a temperature of 1000° to 1500° Fahrenheit. The alcohol seems to pass through the enamel paste and push aside the enamel constituent, the greatest effect in the way of separation occurring apparently at the center, and seeming moreover to produce a thickening or densification of the enamel at the edge of the spot produced. It is usually desirable to use for this paste one giving a color different from that of the surface to which it is applied, and the product obtained is one which shows at the center of each spot the color of the first coating, at the edge the color more intense of the second coating, and a shading or modification of these colors at the intermediate part of the spot. The effect of this modification of the colors toward the edge of the spot is in many cases such as to produce a greater intensity of color like that of the second coat within the spot, with a line of the color of the first coat around it, resembling somewhat the marginal line of the iris of the human eye. This effect is more pronounced where the first coating is dark and the second coating is comparatively light, but a similar effect is attained in all cases where there is a contrast between the two coatings. If desired, the alcohol itself may be covered, as by means of a metallic oxide.

So far as I am at present aware, alcohol is the best substance to use for sprinkling the wet surface to produce the characteristic appearance herein described; but I do not limit my invention to the use of alcohol as any other substance giving the same result is intended to be covered hereby. It is to be remarked, however, that no material for this purpose should be considered as available as alcohol the use of which introduces into the spot a color not obtained either from the surface coated or from the paste which coats it.

I am aware of a process under which there is sprinkled or spattered upon a coating of a specially constituted enamel before fusing carbonate of soda and like substances, which give to the center of the spot produced a lighter color than to the remainder, the color being produced with the material sprinkled on the surface This process, though practical and producing a fair result, is more expensive than the process contrived by me, and the result obtained is so different as to be readily discernible on a comparison of the products.

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

1. As a new article of manufacture, iron ware having a first coat of fused enamel of uniform color, upon this a second coating of contrasting color, the latter coating being dispersed into an irregular series of separated rings or bird-eyes, the centers of which show the ground-work or first coat color, which centers are surrounded by rings of intensified color of the second coating, substantially as shown and described.

2. The process of producing ornamental enameled iron ware which consists in applying and vitrifying a first coat of enamel of uniform color in the usual manner, then applying over this a second coat of enamel and while this is still wet sprinkling drops of alcohol upon the wet enamel and thereby washing or removing the wet enamel from the central portion of each drop thus forming a surrounding ring of intensified color contrasting with both the central removed portion and with the surrounding undisturbed portion whereby a resemblance of burl knots and bird-eyes of wood is produced, then drying and baking the same, substantially as set forth.

ANDREW J. VOLLRATH.

In presence of—
J. N. HANSON,
W. N. WILLIAMS.

Correction in Letters Patent No. 515,981.

It is hereby certified that in Letters Patent No. 515,981, granted March 6, 1894, upon the application of Andrew J. Vollrath, of Sheboygan, Wisconsin, for an improvement in "Enameled Ironware and Process of Enameling," an error appears in the printed specification requiring the following correction, viz: On page 2, line 37, the word "covered" should read *colored;* 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, countersigned, and sealed this 20th day of March, A. D. 1894.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.