

UNITED STATES PATENT OFFICE.

JOHN BOSTON, OF CHICAGO, ILLINOIS.

PROCESS OF ENAMELING METAL.

SPECIFICATION forming part of Letters Patent No. 555,974, dated June 8, 1897.

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To all whom it may concern:

Be it known that I, JOHN BOSTON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Process of Enameling Metal, of which the following is a specification.

The present invention relates to that class of processes by which articles of iron, steel, or other easily-oxidizable metal are provided with a coating which is commonly called "enamel," but which is in fact nothing more than paint. Thisso-called "enamel" applied according to old processes is open to the objection that it peels off frequently in large pieces or scales. The principal causes to which this peeling is due are the brittle character of the enamel itself and the oxidation of the surface of the article which it covers. The oxidation breaks the hold of the enamel on the metal, so that as soon as the continuity of the enamel itself is broken it will fall off.

The principal object of the present invention is to prevent this peeling off of the enamel, and this object I accomplish in part by preventing oxidation of the surface of the article which it covers and in part by making the enamel itself elastic to such a degree that it is not frangible, but not to such a degree that its elasticity is apparent to the touch. Each of these expedients has its own virtues and each is independent of the other, and while I prefer to use both of them, still I desire to have it understood that I reserve to myself the exclusive right to use either of them alone.

Another object of the invention is to provide an enamel that will take a higher polish than any of which I was aware prior to making the present invention.

To these ends the invention consists in the features of novelty that are particularly pointed out in the claims hereinafter.

In order to accomplish the several objects of my invention, the surface of the article to be enameled is first thoroughly cleansed. It is then dipped in a weak solution of aluminium acetate, after which it is placed in an oven and steamed for, say, ten or fifteen minutes. The temperature of this oven is preferably about 212° Fahrenheit, and the

steam is generated from water contained in a vessel which is placed in the oven. This decomposes the weak acetate, evaporating the acetic acid and leaving the surface of the article completely covered by an aluminic coating. I am not prepared to state whether the aluminium contained in this coating exists in the metallic state or in a compound. After evaporating the acetic acid all loose particles of the aluminic coating are removed from the surface of the article, and this may be done by wiping or rubbing the article with a cloth. The first coat of liquid enamel (paint) is then applied in the usual way.

My invention in its broadest aspect is not limited to the use of an enamel made up of any particular ingredients, but I prefer to use a mixture of one hundred pounds of asphaltum, twenty-five quarts of boiled linseed-oil, and seventy-five quarts of kerosene-oil. The article with the first coat applied is then baked in the usual way—that is to say, it is placed in an oven heated either by steam or hot air to a temperature of, say, 375° Fahrenheit and there allowed to remain, say, one hour. The article is then polished. The second and succeeding coats of enamel may be applied in the same way, but I prefer to bake the second coat in an oven containing a quantity of sodium chlorid. If the air in the oven is dry, water is added to the sodium chlorid.

It is my theory that more or less of the sodium chlorid is taken up by the atmosphere of the oven, penetrates the enamel, and combines to a greater or less extent with some of the aluminium in the coating with which the article was previously covered, forming sodium aluminate. Whether this theory be true or not, it is undeniable that when the sodium chlorid is used as described the enamel is fixed to the metal more securely, is more elastic and tenacious, and is capable of taking a higher polish than when the sodium chlorid is not used.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The process of preparing an article for receiving a coating of enamel or paint, which consists in treating it with a solution of aluminium acetate, and then decomposing the

acetate of aluminium by means of heat and moisture, leaving the article covered with an aluminic coating, substantially as set forth.

2. The process of preparing an article for receiving a coating of enamel or paint, which consists in treating it with a solution of aluminium acetate, then decomposing the acetate of aluminium by means of heat and moisture, leaving the article covered with an aluminic coating, and then removing from the article the loose particles of the aluminic coating, substantially as set forth.

3. The process of enameling articles of metal, which consists in treating the article with a solution of aluminium acetate, then decomposing the acetate of aluminium by means of heat and moisture, leaving the article covered with an aluminic coating, then

applying to the article a coat of liquid enamel (paint) and then baking the article and its coat, substantially as set forth. 20

4. The process of enameling articles of metal, which consists in treating the article with a solution of aluminium acetate, then decomposing the acetate of aluminium by means of heat and moisture, leaving the article covered with an aluminic coating, then applying to the article a coat of liquid enamel (paint), then baking the article and its coat in an oven containing chlorid of sodium, and then polishing the coat, substantially as set forth. 25 30

JOHN BOSTON.

Witnesses:

LOUIS G. SCHUMACHER,
AUGUST KOEPPEN.