UNITED STATES PATENT OFFICE.

GEORGE RICHARDS ELKINGTON, OF BIRMINGHAM, ENGLAND.

IMPROVED PROCESS FOR GILDING COPPER, BRASS, &c.

Specification forming part of Letters Patent No. **741**, dated May 17, 1838.

To all whom it may concern:

Be it known that I, GEORGE RICHARDS ELKINGTON, a subject of the Queen of Great Britain, and now residing at Birmingham, in the county of Warwick, in the said Kingdom of Great Britain, have invented or discovered a new and Improved Method of Gilding Copper, Brass, and other Metals or Alloys of Metal; and I, the said GEORGE RICHARDS ELKINGTON, do hereby declare the nature of my invention and the manner in which the same is to be performed are fully described and ascertained in and by the following statement thereof—that is to say:

My invention consists in gilding copper, brass, and other metals or alloys of metals by means of potash or soda combined with carbonic acid and with a solution of gold, as hereinafter described and in order to my invention being most fully understood, I will proceed to describe the process as performed by me, and which has fully answered the purpose, the articles operated on having a very beautiful appearance, and in most instances are considered to be gilded far better than when similar articles have been submitted to the gilding process where quicksilver is used, the process of gilding by the aid of quicksilver being well known and in general practice, and as it forms no part of my improved method, but is entirely different from my invention, no description of such process will be necessary in this my specification.

I will first describe the preparation of the materials and then explain the process of using the same.

Dissolve five ounces, troy weight, of fine gold in fifty-two ounces, avoirdupois weight, of nitro-muriatic acid of the following proportions—videlicet, twenty-one ounces of nitro-acid pure, of 1.45 specific gravity, seventeen ounces of muratic acid pure, of 1.15 specific gravity, and fourteen ounces of distilled water. For this purpose, the gold being put into the mixture of acids and water, they are to be heated in a glass or other convenient vessel till the gold is dissolved, and I usually continue the operation of heat after this is effected and until a reddish or yellowish vapor ceases to rise. The clear liquid is to be carefully poured off from any sediment which generally appears, and results from a small portion of silver which is generally found in alloy with the gold. The clear liquid is to be placed in a suitable vessel. I prefer the same to be of stone pottery-ware. Add to the solution of gold four gallons of distilled water and twenty pounds of bicarbonate of potash of the best quality; let the whole boil moderately for two hours. The mixture will then be ready for use. The liquid being thus prepared, and as in practice it is difficult to keep the liquid hot in stoneware vessels when many articles are being dipped, I have found it advantageous to transfer the liquid to a cast-iron vessel, which it is necessary to keep very clean. The articles to be gilded having been first perfectly cleaned from scale or grease, they are to be suspended on wires conveniently for a workman to dip them in the liquid, which is kept boiling. The time required for gilding any particular article will depend on circumstances, partly on the quantity of the gold remaining in the liquid and partly on the size and weight of the article; but a little practice will readily produce sufficient judgment to the workman. Supposing the articles desired to be gilded to be brass or copper buttons, or small articles for gilt toys, or ornaments of dress, such as ear-rings or bracelets, a considerable number of which may be strung on a hoop or bent piece of copper or brass wire, and dipped into the vessel containing the boiling liquid above described and moved therein; and the requisite gilding will be generally obtained in from a few seconds to a minute. This is when the liquid is in the condition above described, and depending on the quality of the gilding desired; but if the liquid has been used some time the quantity of gold will be lessened, which will vary the time of operating to produce a given effect on the color required, all which will quickly be observed by the workman, and by observing the appearance of the articles from time to time he will know when the desired object is obtained, though it is desirable to avoid taking the articles out of the liquid as much as possible. When the operation is completed the workman perfectly washes the articles so gilded with clean water. They may then be submitted to the usual process of coloring.

If the articles be cast figures of animals or

otherwise—a considerable weight compared with the articles above mentioned—the time required to perform the process will be greater.

In case it is desired to produce what is called a "dead" appearance, it may be performed by several processes. The one I usually employ is to dead the articles in the process of cleaning, as practiced by brass-founders and other trades, and it is produced by an acid prepared for that purpose, sold by the makers under the term "deading aqua fortis," which is well understood. It may also be produced by a weak solution of nitrate of mercury applied to the articles previous to the gilding process, as is practiced in the process of gilding with mercury previous to spreading the amalgam, but generally a much weaker solution; or the articles having been gilded may be dipped in a solution of nitrate of mercury and submitted to heat to expel the same, as is practiced in the usual process of gilding.

It is desirable to remark that much of the beauty of the result depends on the well cleaning of the articles, and it is better to clean them by the ordinary processes and at once pass them into the liquid to be gilded.

I have always employed the usual means for cleaning the articles from scales and other impurities, which are commonly resorted to in working of the metals for other purposes, where the surfaces are required to be freed from scales or other impurities, and I would remark that great care should be observed in purchasing the articles above described of the best description.

I have described only the using of bicarbonate of potash, which I believe to be the best material for the purpose, and I would remark that soda in a state of carbonate may be employed, as also some preparations of potash and soda, but, so far as my experience goes, not with such advantages as potash in a state of bicarbonate, as above described.

Having now described the nature of my invention and the manner of performing the same, I would have it understood that, although in order to give the best information in my power I have stated the exact quantities of the articles employed, I do not confine myself thereto; nor do I claim any process for cleaning or deading; but

What I claim as the improved process of gilding is—

The gilding copper, brass, and other metals or alloys of metals by means of potash or soda, in the state of carbonate or otherwise, and a solution of gold, as above described.

GEORGE RICHARDS ELKINGTON.

Witnesses:

WM. ELKINGTON,
Attorney at Law, Birmingham.

JOHN BULLIVANT,
His Clerk.