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PROCEEDING FOR BURNING IN PILES THE ARTICLES OF NONGLAZED PORCELAIN ESPECIALLY SUITABLE FOR COOLING USE

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The present invention has for its object a special proceeding for burning articles of porcelain, whereby a type of porcelain is obtained which may be more cheaply produced and is particularly resistant to heat.

It is known that one of the principal reasons of the high price of articles of porcelain is that the pieces to be burnt occupy a very large place in the furnace, as they must be placed in separated saggers in order to avoid being attached to one another during the burning at high temperatures, that is at temperatures at which vitrification takes place when the articles are burnt without glaze, at high temperatures, they can be burnt in piles without incurring the risk of remaining attached together if they be separated by means of a layer of a nonadhesive substance. But such a layer remains attached to the surface of separation of the different articles, resulting in an uneven surface. This uneven surface can be eliminated, only in an imperfect manner by means of an expensive grinding operation.

This inconvenience is avoided, according to the present invention, by plunging the articles, raw or after preliminary baking at low temperatures (glow-burning) into a special anti-adhesive mixture, composed of refractory substances and organic glutinous substances, so that the said mixture remains adherent to the outer bottom of the articles, while their interior side on which the said bottoms are leaned is left perfectly smooth. Solely by way of example, the composition of one of such anti-adhesive mixtures is:

	Percent
Alumina	40
Burnt kaolin	55
Dextrin	5

In this manner articles are obtained, that after burning, can be easily polished on their inner side by means of a short grinding operation, the more so if they had been polished when still in raw condition, by means of a small rag or with a polisher of wood or the like, so that they are rendered suitable to be used without glaze, the anti-adhesive layer being then taken away only from the external side of the articles, where some small vestige eventually remaining adherent does not cause a special trouble.

Beside the smaller cost of the articles manufactured in such a way, they have also the advantage of being more resistant to fire than the glazed porcelain.

In fact, it is known that the kitchen porcelain for cooking use must have as an essential characteristic a high resistance to sudden changes in temperature. This resistance is determinated by the similarity of characteristics of the mass and the cover (glaze); that is to say, the more nearly alike the coefficients of expansion and the moduli of elasticity of the two substances which form the object of porcelain will be, the more certain will be the elimination of splits and ruptures in consequence of the sudden changes in temperature.

But in practice it is impossible to find a mass and a cover (glaze) which in this respect are exactly alike, because in this case both substances ought naturally to have the same physico-chemical composition, which would cause the exclusion of the one or of the other of the two constituting elements of the usual porcelain.

Besides, in process of time, the successive changes of temperature cause in the mass as well as in the glaze some modifications of structure, which, also if at first the coefficients of expansion and the moduli of elasticity had been practically identical, cause their values to become different from one another, so that, sooner or later, it nearly always results in a difference in characteristics which is sufficient to produce rupture. It follows therefrom that in practice it is only possible to arrive near the ideal condition of exact similarity, but without reaching the same.

By completely avoiding the glaze, by using the method of the present invention, the risk of rupture which is dependent upon the difference in characteristics of the materials of the body and the glaze, is entirely eliminated.

Having thus described our invention and

in what manner the same is to be performed, we claim as new and desire to secure by Letters Patent the following:

1. A process of producing porcelain articles which comprises the steps of placing an anti-adhesive mixture of refractory and glutinous substances on said articles and submitting said articles with said anti-adhesive mixture, in piles, to a temperature at which vitrification takes place.

2. A process of producing porcelain articles which comprises the steps of placing an anti-adhesive mixture of refractory and glutinous substances on said articles, arranging said articles so that the outside bottom of one article contacts the inside bottom of an adjacent article and submitting the articles, in piles, to a temperature at which vitrification takes place, whereby the mixture of refractory and glutinous substances does not remain attached to the inside bottom of the articles.

3. The process of producing porcelain articles comprising the steps of polishing said articles, placing a mixture of refractory and glutinous materials on said articles, submitting the articles having the mixture thereon, in piles, to a temperature at which vitrification takes place.

4. A process for producing a high temperature resistant, vitrified porcelain article comprising the steps of initially polishing said articles, placing a mixture of refractory and glutinous materials on said articles, submitting the articles having the mixture thereon, in piles to a temperature at which vitrification takes place, and finally polishing said article.

5. A process for producing a high temperature resistant, vitrified porcelain article comprising the steps of placing a mixture of refractory and glutinous materials on said articles, submitting the articles having the mixture thereon, in piles to a temperature at which vitrification takes place, and finally polishing said article.

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