April 28, 1931. F. K. PENCE 1,802,776

PROCESS OF FLASHING CLAY PRODUCTS AND THE PRODUCT

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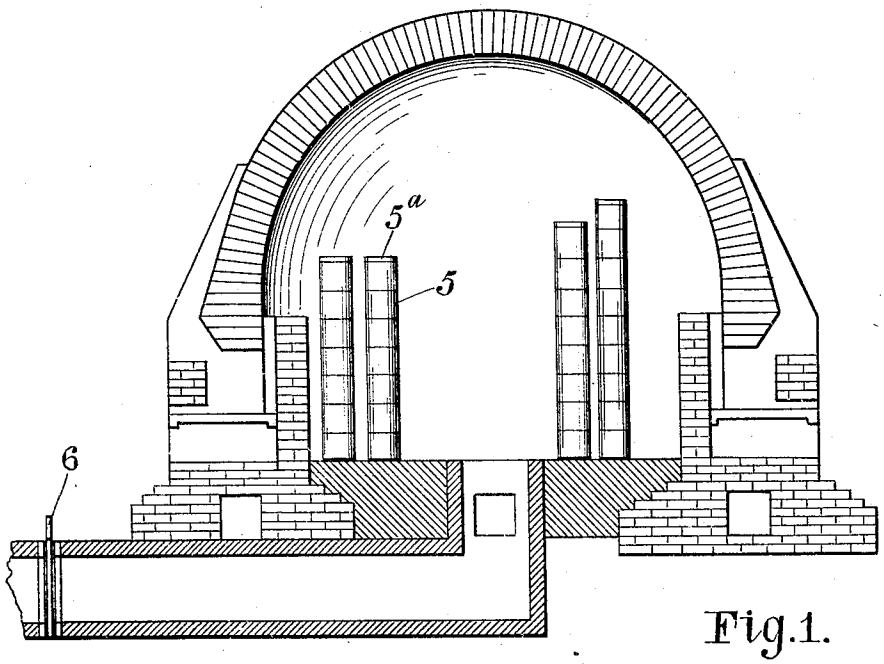


Fig.1.

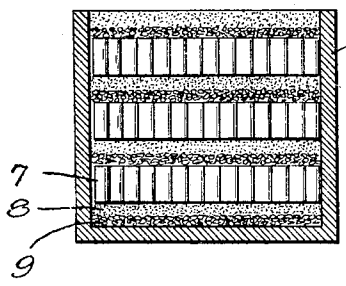


Fig.2.

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UNITED STATES PATENT OFFICE

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PROCESS OF FLASHING CLAY PRODUCTS AND THE PRODUCT

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This invention relates to the manufacture of "flashed" or colored unglazed clay products, as for example, tiling for floors, walls or other structures where decorative effects are desired. Flashed ware has heretofore been manufactured by placing it in the open space of the kiln and generating the reducing gases in the firing chamber of the kiln, said gases coming in contact with the ware to effect a reduction therein of the coloring oxides, for example, oxide of iron, contained in the clay. The process as hitherto conducted is difficult of control, the results often being uncertain, incomplete and unsatisfactory.

The object of the present invention is to make it possible to control the process of flashing and produce general or special effects in the ware as regards the coloring, as may be desired, of the ware, and to bring about large economy in the manufacture of such ware.

The invention is embodied as herein set forth, the features of novelty being pointed out in the claims.

In the accompanying drawing—

Figure 1 illustrates an ordinary kiln having saggers or ware containers therein.

Fig. 2 is a vertical section on a larger scale of a container or sagger showing the ware, the reducing agent and sand therein.

In carrying out my process the tile or ware 7 is inclosed in the clay or other refractory containers, as at 5, along with the reducing agent 9, and an inert material 8, as for example, sand. The reducing agents preferably consists of pulverized coal or coal slack but it can consist of any material having a suitable affinity for oxygen when subjected to ordinary kiln heat. The inert material preferably consists of sand and is used to dilute or cover the reducing agent and to wholly or partially cover and surround the ware, such sand having the effect of confining and retarding the operation of the reducing agent. The reducing agent and diluent are preferably put into the container in alternate layers surrounding the ware as illustrated in Fig. 2. By partially covering the ware considerable and interesting variations in the coloring effect can be produced in the ware. Color effects can also be varied by including in the container along with the reducing agent a suitable mineral, salt (NaCl) for example, or minerals that vaporize and under the conditions of the diluent of inert material. The salt will impart a grayish tint. The container itself can be made of a material consisting of or containing a reducing agent, graphite for example, to produce a flashing.

In the drawing Fig. 1 illustrates, in vertical section, an ordinary kiln in which the container 5 for the ware, the coal and sand are stacked in tiers, the bottom of the container constituting the cover for the open end of the container next below, and the uppermost one having a special cover 5^a, if desired. The containers can be wholly or partially sealed and the containers fired in the kiln in accordance with regular firing practice. The kiln has an ordinary damper 6 in its outlet by means of which the draft can be controlled.

The advantages of the process are that definite results can be obtained by the use of measured quantities of reducing agent and diluent in particular contact with the ware, and striking and unusual color effects can be obtained due to the confining of the ware and the reducing agent and diluent in a relatively small container. There is also great economy in handling, especially when the pieces are small, and a small quantity of reducing agent sufficies because it is confined and not widely and wastefully diffused as in ordinary practice. The inert material can be repeatedly used. Ware to be treated with my invention can be fired in the kiln with other non-reduced ware, this being impossible in the open kiln process formerly used.

What I claim is:

1. The process of manufacturing flashed unglazed clay articles containing oxides, said process consisting in confining said articles in a refractory container along with an oxide reducing agent and a diluent pulverized refractory mineral and subjecting said container to a firing action in a kiln and thereby liberating the gases of the reducing agent.

2. The process of manufacturing flashed unglazed clay articles consisting in confining

said articles, an oxide reducing agent and a salt in a refractory container and subjecting said container to a firing action in a kiln and thereby liberating the gases of the reducing agent.

3. A flashed unglazed clay article characterized by the fact that portions of the flashed surfaces contain less than others of the normal coloring oxides of said article.

4. A flashed unglazed clay article characterized by the fact that the flashed surface contains less than the normal coloring oxide of said article.

5. The process of manufacturing a flashed unglazed clay article consisting in placing said article in a container in juxtaposition to an oxide reducing agent and a pulverized refractory material adapted to dilute the oxide reducing agent, and then subjecting said container and its contents to the firing action of a kiln.

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