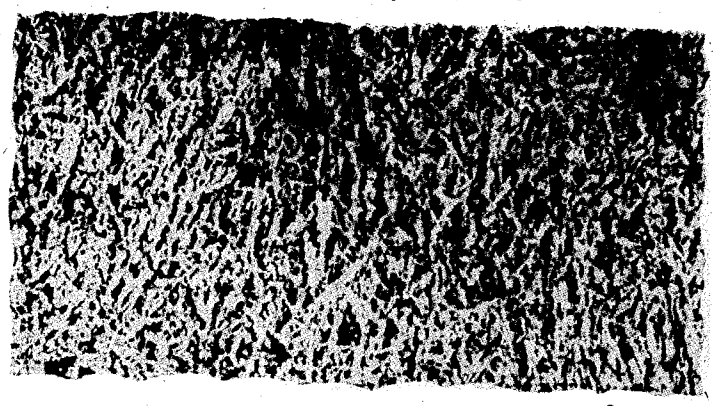
April 30, 1935. J. R. PARSONS 1,999,371

ACOUSTIC CORRECTIVE MATERIAL

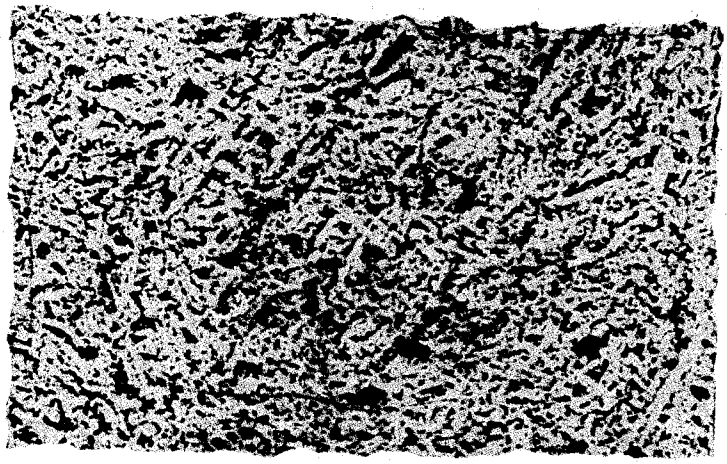
Filed Sept. 9, 1933

Fig. 1.



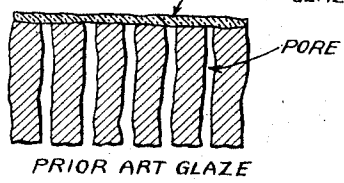
GLAZED

Fig. 2.



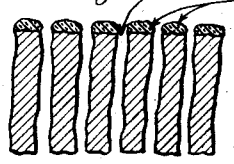
UNGLAZED

Fig. 3.



PRIOR ART GLAZE

Fig. 4.



GLAZE AS IN FIG. 1.

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ACOUSTIC CORRECTIVE MATERIAL

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Application September 9, 1933, Serial No. 688,772

5 Claims. (Cl. 72—18)

The present invention relates to an improvement in decorating, by means of an enamel, the surface of ceramic acoustic corrective material.

There has recently been perfected a type of acoustic corrective material consisting of a ceramic body rendered highly porous by the use of gaseous density reducing agents,—and particularly foam,—incorporated with clay while it is still soft and before the forming of the clay ware. Such processes are to be found, for example, in Richard Ericson patent, Reissue No. 18,606; in the co-pending application of the present applicant, Serial No. 550,317; and in Parsons et al. application Serial No. 600,558.

It has been the usual custom, in carrying out the manufacture of such ceramic acoustic corrective material, to abrade the surface thereof after firing, so as to expose as fully as possible the porous and sound-absorptive interior thereof. When so doing, however, it has been found that the article does not present an attractive appearance but looks coarse and unfinished, and because of the natural roughness of the burned clay is very prone to the collection of dirt and grime. Inasmuch as this material is used as the exposed material of walls of rooms, theaters and the like, it is important to provide a surface which may readily be cleaned by ordinary washing, so as to restore the original appearance of the material.

While the enameling or glazing of ceramic ware is as old as the ceramic art itself, the very nature of the glazes commonly employed is such that they will tend to spread evenly over the surface of the ceramic ware so as to close all the pores therein. In fact, the main object of glazing ceramic ware is to render it liquid-proof and impervious, and hence in glazing or enameling the primary object has always been to spread the glaze as evenly as possible over the body of the ware.

For the present purposes, however, the closing of the pores of the mass is to be avoided, and hence the enameling or glazing of acoustic corrective material presents unusual difficulties because if spreading and covering glazes are applied, they will tend, by their wetting properties and their fluidity, to bridge over or soak into and fill up any small openings or pores present in the material and hence will, of course, destroy the openings of the pores therein and thus render the material useless for sound-absorbing purposes. Applicant applies the glaze in such a manner as to avoid this difficulty, and enables a fired ceramic acoustic corrective material to be provided with a glaze which permits its washing and cleaning without the destruction of the essential porosity of the clay bodies. The glaze produced by applicant is of such a nature that it tends to form what might be called a negative meniscus with the clay ware, with the result that it will tend to crawl together and form what might be termed lumps. But, in any event, the glaze is such that it will have a very marked tendency to gather together and to keep away from fissures, cracks and openings in the surface upon which it is applied.

If such a glaze, for example, be placed upon a base having a number of cracks therein and then be fired, it will be found that all the cracks will be perfectly visible because the glaze will have drawn away from the edges thereof. This property of the glaze is therefore, for ordinary purposes, a very troublesome one, but for the purposes of the present invention it is a highly valuable one; and it is a recognition of the value of this property and its commercial and practical application which forms the basis of the present invention. Thus, for example, any suitable base having the necessary porosity to serve as an acoustic corrective material may be provided with a crawling glaze which, while adhering to the surface of the base body, will not obturate the pores which are to receive and entrap the sound waves. Such a base must of course be sufficiently heat-resisting to permit of being raised, without damage to its sound-absorbing properties, to the temperature required to affix to glaze, and may in fact consist of a natural or artificial stone-like substance having the required physical structure and resistance to glazing temperatures.

As an exemplification of the present invention, a glazed ceramic acoustic corrective material may be made by first providing, by any of the processes of the prior art, a porous ceramic ware. This ware is then ground down so as to present a smooth but porous surface, and upon this surface there is applied—by a brush or, preferably, by means of a spray gun—a coating of a crawling glaze which has the property of gathering together, lumping, and drawing away from cracks and openings. A glaze suitable for the purpose has the following mol. composition:

.27 Na_2O .20 CaO .11 BaO .35 ZnO .07 CoO	.45 Al_2O_3	2.75 SiO_2

and is of such a nature that it can be fired suc-

cessfully at a temperature equivalent to Cone 2. The presence of the cobalt renders this glaze blue. Other colors can be obtained by substituting other oxides for the cobalt, as is well known in this art.

The crawling tendency of this glaze may be further improved by slightly increasing the ratio of zinc oxide to calcium and barium oxide and by a slight increase in alumina, but the formula given yields good results, although it is to be understood as merely illustrative and without any limitations whatever upon the basic principle involved in the present invention.

In commercial practice, the glaze is applied by spraying a cream-like suspension thereof onto the ware, care being taken by the workman to avoid any unnecessary plugging of the pores of the tile. The glaze will get its initial set within a few minutes after application, whereupon the ware may be dried and then placed in a kiln to fuse the glaze and to cause it to bond itself to the ceramic body.

In order that the present invention may be more easily understood, there is furnished in connection with this specification a drawing which shows the appearance of the tile before and after the application of the glaze, there being also illustrated, in diagrammatic form, the difference between glazes which cover the cracks and pores in a porous clay mass and the glaze of the present invention which leaves the pores open. Suitable indicia on the drawing indicate the type of glaze.

Figure 1 shows the glazed porous tile;

Fig. 2 shows the unglazed tile;

Fig. 3 is a purely diagrammatic sectional view of tile having its pores closed by a glaze; and

Fig. 4 is a similar view of a tile glazed in accordance with the present invention.

In the hereunto appended claims the term "crawling glaze" is intended to cover a fired ceramic glass-like glaze whose chief characteristic is its tendency to crawl away or draw away from the edge of a surface to which it is applied. Such a glaze will draw together on firing, thereby leaving the pores of the article to which it is affixed open to the air. For sound-absorbing tile this is, of course, of prime importance, as it is the entry of the sound waves into the pores which cause the aborption of the impinging sound waves and prevents their reflection.

The term "ceramic" as used herein is employed in its broadest aspects and is intended to cover any product composed of inorganic material in the process of whose formation, either by nature or man, high temperatures are a factor.

What it is desired to protect by Letters Patent is the following:

1. A sound-absorbing article consisting of a body of incombustible material provided with substantially continuous interconnected pores or voids extending inwardly from the surface of the article and a coating of fired crawling glaze on the surface of said article at areas intermediate the openings of said pores.

2. A porous sound-absorbing tile having a body of ceramic ware provided with inwardly extending substantially continuous interconnected pores or voids, the outermost surface of said body at all points between the openings of said pores being coated with a crawling glaze.

3. A porous sound-absorbing tile consisting of a ceramic body provided with inwardly extending substantially continuous interconnected pores or voids which open into the outer surface of the tile, and a coating of crawling glaze on the outer surface of the tile so applied as to leave the pores open.

4. A sound-absorbing tile having pores substantially continuous extending inwardly from the outermost surface of the tile, said pores being substantially continuous and interconnected so as to permit access of sound-waves, and a crawling glaze on the outermost surface of the tile at all points thereof, intermediate said pore openings.

5. A sound-absorbing structure consisting of an incombustible body provided with pores that extend substantially continuously from the exposed face of the tile inwardly, a crawling glaze being applied to the face of said tile in such manner as to keep said pores open to the atmosphere.

JOSEPH R. PARSONS.