

UNITED STATES PATENT OFFICE.

CHARLES GEORGE, OF BERLIN, GERMANY.

PROCESS OF MANUFACTURING ARTIFICIAL STONES.

SPECIFICATION forming part of Letters Patent No. 470,333, dated March 8, 1892.

Application filed October 1, 1890. Serial No. 366,752. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES GEORGE, a subject of the King of Prussia, German Emperor, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in the Process of Manufacturing Artificial Stones, of which the following is a full, clear, and exact description, which will enable others skilled in the art to which it appertains to make and use the same.

Heretofore the manufacture of artificial stones was based upon the application of silicate of soda, which certainly produced, in combination with the respective different stone compounds, a fair material as to its strength and appearance, but is found to be liable to cracks and finally ruptures during the course of time.

The object of my invention is to produce an artificial stone in the manufacture of which the fundamental material is silicic acid, which is beforehand deprived of all bases or salts, especial care being taken that no alkaline salts remain therein, which is done by absorbing the same by aid of lime. The silicic acid being powdered and subjected to said treatment may be thereafter added to any of those compounds necessary for the various imitations. Another important feature in combination with the aforesaid process is to subject the ready-molded stone to a steam bath, and thereafter to a treatment with chloride of calcium. The product is by no means inferior to real stone neither as to its aspect nor as to its strength, nor as to its liability to be influenced by weather or time.

Having thus pointed out the advantages of my invention and the main points of the process, I will now give a clear and detailed description thereof. Silicic acid after being ground to powder is cleansed from all impurities by ordinary means and five to ten per cent. thereof mixed up in warm river or rain water, which either is applied to slaked well-burnt lime or is added to hydraulic lime. The resulting product of this process, which is silicate of lime, I mix up with sand and also small portions of fluor-spar. This mixture may be cast into molds, so as to give various shapes, as desired. The molds then being removed, the castings are allowed to dry as long

as twelve to twenty-four hours, after which time they will be as dry as atmospheric air. Now they are brought into a steam-boiler and steam blown through, so as to drive out all air, after which the boiler is hermetically closed up and steam let in under a pressure of ten atmospheres. In this high-pressured steam bath the stones remain forty-eight to seventy-two hours, and thereafter they are submitted to a bath of boiling and saturated chloride of calcium during six to twelve hours, also under a pressure of about ten atmospheres, which may be done in the same boiler. The condensed water may be used for the bath. The stones are allowed to dry in the open air, or, when desired to dry quickly, steam may be once more made to circulate inside of the boiler after the chloride of calcium has been withdrawn and before the stones are taken out. These stones also allow any desired coloring and polishing like common stone.

Artificial stones manufactured by processes known heretofore were never perfectly deprived of all salts or bases, which still remained therein, as it may have been thought, as harmless impurities. However, these are the causes of the destruction of the material, because all salts have the natural tendency to attract and absorb acids. This also is the case with the small particles of bases contained in artificial stone known until this day. They draw carbonic acid out of the atmospheric air and combine themselves chemically therewith. These particles of bases, however small, when bound to acid expand and force the neighboring or surrounding material to separate, thus causing rents and cracks. These cracks in the beginning are scarcely visible to sight, but widen and deepen in the course of time, soak up water, which water in itself, by freely giving off carbonic acid unto the said bases, enhances the destruction of the stone and also may lead to complete and sudden rupture when in winter the water freezes and thereby expands. This, by reason mentioned above, is not possible in stones manufactured by my process. They are also perfectly fire-proof and will stand against weather like ordinary stones.

I am well aware that steam baths, as well

of in the manufacture of artificial stone previous to this day, and I therefore do not claim these processes in themselves; but

5 What I do claim, and desire to secure by Letters Patent of the United States, is—

The process of manufacturing artificial stone, which consists of treating powdered silicic acid with lime and mixing stone material with the resulting product and casting
10 the mixture into molds, drying the same, and

boiler exhausted of air and thereafter to a bath of chloride of calcium, for the purpose as described.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES GEORGE.

Witnesses:

ADOLF DEMELIUS,
PAUL SCHÜTZ.