UNITED STATES PATENT OFFICE.

JOHN A. MEHLING, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-THIRD HIS RIGHT TO JOHN W. HEISLEY, OF SAME PLACE.

IMPROVEMENT IN PREPARING, FINISHING, AND POLISHING THE SURFACES OF ARTIFICIAL STONE.

Specification forming part of Letters Patent No. **208,532**, dated October 1, 1878; application filed July 26, 1878.

To all whom it may concern:

Be it known that I, JOHN A. MEHLING, of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Preparing, Finishing, and Polishing the Surface of Artificial Stone, of which the following is a full, clear, and exact description.

My invention has special relation to the finishing and polishing of artificial stones.

Numerous experiments by me made indicate that this class of stones are extremely liable to be roughened by any hitherto-known means of polishing them or other stones, and that the production of a highly-polished surface thereon, giving an appearance equal to the best Italian, verd-antique, and similar marbles, has heretofore been impossible. To produce the desired finish and polish, thereby fitting the artificial stone to take the place of the more expensive natural material in the decorative and other arts, is the object of my invention; and to accomplish this the invention consists in certain processes or manipulations, which will be hereinafter first fully described, and then pointed out in the claims.

The stone to be operated upon is colored as may be required (whenever it is not desired to be pure white) by pigments, like Indian red, vermilion, Venetian red, ivory-black, lamp-black, ultramarine or Prussian blue, ocher, paris-green, &c. The colors are mixed with the composition in accordance with formulæ of my own, (not necessary to be herein detailed, since the proportions of ingredients are no essential part of the present invention,) and the mass is so manipulated as to draw the colors through it, giving the appearance of variegated marble or of any suitably-colored stone. It is then rolled, spread, or molded into the desired form or shape, and permitted to dry until hard enough to withstand the finishing process.

The cement and the intermingled pigments being of different degrees of hardness and of different degrees of solubility in the liquids ordinarily employed in polishing, the mass presents a surface which it is extremely difficult to reduce to the required finish. To overcome these difficulties, and to effectually accomplish the objects of the invention, I proceed substantially as follows:

I first bring the mass to the desired level by rubbing it first with sandstone and then with coarse grit, following this with pumice-stone, or a finer quality of grit, and finally with hone. In this rubbing, water must be used with the above-named materials, for with dry stones or grit the surface of the mass would be too much disturbed. When the stone has been rubbed down to a level numerous pores and interstices will be apparent in the surface. The surface having thus been ground down sufficiently, in order to prepare it for the rubbing or polishing yet to be described, an application of the material of which the stone is composed and water mixed therewith to the consistency of butter is made to the ground surface, in order to fill up the pores and interstices produced by the grinding process. This will evidently afford a surface of uniform hardness and solubility of its particles. The article is now allowed to dry again, and when completely dry it is rubbed with hone steeped in oil (linseed or other oil capable of drying hard is used) or turpentine, or a mixture of oil and turpentine, until all the above-described filling is apparently rubbed off—*i. e.*, until the surface of the filling is brought down to a level with the previously-ground surface. It is then burnished with either blood-stone, agate, petrified wood, or steel, or other hard material suitable for a burnisher, all of which must be highly polished. In this part of the process, should water be used the rubbing would again disturb the surface and open up the pores and interstices; but by the use of the oil and turpentine, or their admixture, the burnishing instrument is kept from coming into too severe contact with the surface of the stone and disturbing it, and the oil and turpentine become, by the rubbing, incorporated with the particles forming the surface, and, as they dry, render it solid, compact, and tenacious enough to be susceptible of a high polish.

After the above burnishing, and after the surface is completely dry and hard, it is, in order to complete the smoothness of the surface, polished with a rag moistened with oil and any one of the following powders, viz: pow-

dered chalk, ground rotten-stone, Vienna whiting, French whiting, putty powder, powdered clay, tripoli, &c. After it is polished as highly as possible with these materials, or any of them, I again rub the surface with bloodstone, agate, petrified wood, steel, or other material suitable for a burnisher, all of which must be highly polished in order to communicate the desired luster to the polish already obtained.

Following out the several steps as herein indicated, I am enabled to produce a mirror-like surface upon the artificial stone, similar in appearance to that of the highly-polished granites, marbles, &c., which has heretofore been regarded as practically impossible.

The utility of the invention is sufficiently obvious to all acquainted with the arts of cutting and polishing stone and the relative values of the natural and artificial varieties. It is therefore regarded as unnecessary to attempt to specify herein any of the numerous uses to which the polished article may be applied.

I desire to add, however, that I am well aware of numerous varieties of artificial stone made with a base of Keene's and other cement, and having coloring-matters applied in different ways; and I am also aware that numerous processes have been adopted for polishing the surfaces thereof. I do not, therefore, desire to be understood as laying any claim herein to the composition forming the stone, to the mere polishing of the surface thereof, nor yet to any particular one of the steps herein explained when considered separately; but,

Having thus fully described my invention, what I do claim as new, and desire to secure by Letters Patent, is—

1. As an improvement in the art of polishing artificial stone, the method or process herein explained for bringing the surface to a condition suitable for receiving the polish, the same consisting in grinding with sandstone, grit, and hone, using water as a lubricator, then filling the pores with a solution of a like material to that of the base, allowing the filling to become hard, and next rubbing the prepared surface with hone, using therewith oil and turpentine, or either, as a lubricator, and permitting the incorporated lubricator to become dry and hard, substantially as and for the purposes set forth.

2. The herein-described method of polishing and finishing artificial stone, the same consisting, essentially, in grinding with sandstone, grit, and hone, using therewith water as a lubricator, filling the pores with a solution of a like material to that of the base, drying the filling, rubbing down with oil and turpentine, or either, and burnishing with blood-stone, agate, petrified wood, steel, or other hard material suitable for a burnisher, again drying and rubbing the dried surface with a cloth, using therewith oil and polishing-powder, and finishing with agate, polished steel, &c., all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JOHN A. MEHLING.

Witnesses:
A. MEHLING,
E. M. HEISLEY.