

UNITED STATES PATENT OFFICE.

THOMAS MATHIESON THOM, OF WOODLANDS, CHESHUNT, ENGLAND, ASSIGNOR TO THE LITHOGRAPHIC STONE AND MARBLE COMPANY LIMITED, OF LONDON, ENGLAND, A CORPORATION OF GREAT BRITAIN.

MANUFACTURE OF STONE OR MARBLE ARTIFICIALLY.

No. 898,703.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed August 2, 1907. Serial No. 386,760.

To all whom it may concern:

Be it known that I, THOMAS MATHIESON THOM, a subject of the King of Great Britain, and resident of Woodlands, Cheshunt, in the county of Hertford, England, lithographer, have invented new and useful Improvements Relating to the Manufacture of Stone or Marble Artificially, of which the following is a specification.

10 In the manufacture of stone or marble artificially the materials, for instance, stone or marble chips or blast furnace slag or mixtures thereof are taken and disintegrated to the desired degree, the product is mixed with
15 lime and the mixture slaked and molded into blocks or slabs which are dried and finally submitted to the action of carbonic acid gas in a closed vessel for the purpose of hardening the same and converting them into blocks or
20 slabs of true stone or marble.

The carbonating of the blocks to be thorough and complete must be effected in such a way that the gas is caused to penetrate to the very innermost parts and in this
25 connection a difficulty arises owing to the formation of a hard skin or casing around the blocks which acts as an obstruction to the passing of the gas into the interior. To get over the difficulty I have, in earlier in-
30 ventions, proceeded in one of two ways, viz. I have submitted the blocks to be carbonated in a closed vessel to the action of carbonic acid gas which is pumped into the vessel so that the pressure is increased until the required
35 maximum pressure is obtained, which maximum is maintained by repeated introductions of more gas as long as the operation is in progress. Another method of effecting carbonation particularly suitable for pro-
40 ducing the softer or more porous kinds of stone is by exhausting the vessel containing the slabs as completely as possible and then admitting carbonic acid gas until the vacuum which has been produced is partly destroyed.
45 When a certain reading of the gage is reached the supply of gas is stopped until the vacuum begins to increase again owing to the absorption of the gas which is going on in the blocks and at this point, more gas is allowed to en-
50 ter the vessel so as to maintain the reading of the gage as constant as possible, for ex-

ample, at about 5 inches of vacuum. I have now ascertained that by a combination of these processes excellent results can be obtained.

The blocks are molded in a way that is now understood and are introduced into a closed vessel capable of sustaining a sufficiency of pressure either internally or externally. The vessel containing the blocks is then exhaust-
55 ed as completely as possible, say, until the gage registers 27 inches. Carbonic acid gas is then admitted until the gage registers say 5 inches when the supply of gas is temporarily stopped. As soon as the gage begins to
60 register an increase of vacuum, which is due to the absorption of gas by the blocks, the supply of gas is renewed sufficiently to re-establish the former reading which is main-
65 tained constant in this manner as long as necessary. To complete the operation of carbonation a further supply of gas is pumped into the vessel until an actual pressure of gas is obtained which is gradually in-
70 creased and maintained until perfect carbonation throughout the whole thickness of the blocks has been effected. The degree of increase in the pressure must depend upon the density of the blocks under treatment. With hard stones and marbles it may be
75 necessary to pump in gas until a pressure of 300-400 lbs. to the square inch is ultimately reached, but with soft or porous stones hardly any pressure, succeeding the use of what may be termed the vacuum
80 process, will be needed.

What I claim as my invention, and desire to secure by Letters Patent, is:—

The process of carbonating artificial stone consisting in treating the blocks or slabs
85 with carbonic acid gas at an increasing pressure beginning at less than atmospheric pressure and ending at greater than atmospheric pressure.

In testimony whereof I have signed my
90 name to this specification in the presence of two subscribing witnesses.

THOMAS MATHIESON THOM.

Witnesses:

ALFRED BISHOP,
WALTER F. TANDY.