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(54) Method for making products with irregular appearance and products obtained thereby

(57) The method, particularly for producing ceramic coating products (2'), comprises preparing a mixture (1) of ceramic materials in a cohesive and deformable state, modelling/dividing (101) said mixture, obtaining cohesive

and deformable pieces (2) substantially coinciding with said products (2') to be manufactured, firing (104) said cohesive and deformable pieces (2), between said dividing and said firing (104) stirring/remixing (103) said cohesive and deformable pieces (2) being provided.

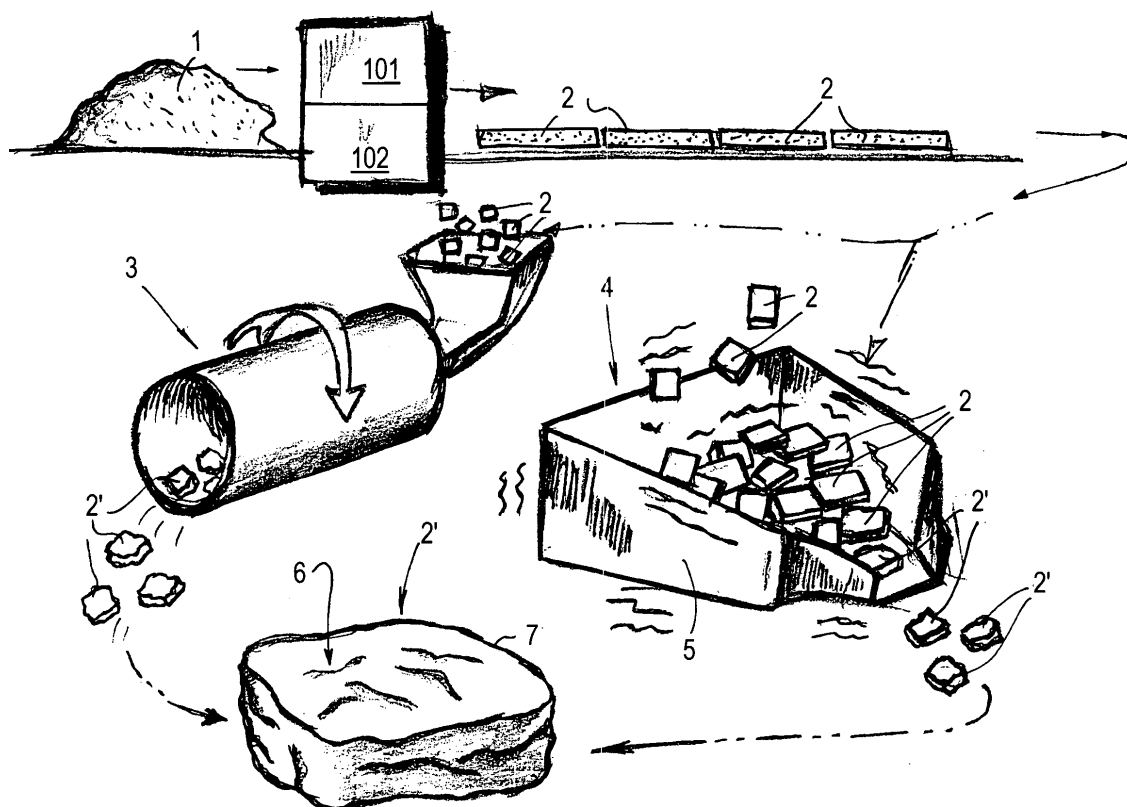


Fig. 1

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Description

[0001] The invention relates to a method and product, in particular for ceramic coating products that have the appearance of handmade products.

[0002] Some ceramic products, in the case in point tiles, are particularly appreciated and in demand by the market if they have an irregular appearance as if they had been produced using handcrafting production techniques.

[0003] In order to make ceramic tiles that have these features or that have features such as to resemble tiles obtained through handicraft production techniques, certain production techniques are used that are indicated below by way of example.

[0004] A first method provides for making finished basic tiles, i.e. tiles that have already been subjected to firing, that are subsequently cut by suitable cutting machines, so as to obtain tiles of smaller dimensions than those of the basic tiles; the tiles that are thus obtained are subsequently introduced into apparatuses that make the contours thereof irregular; in particular, these apparatuses comprise vibrating devices that are shaped as tanks for containing many tiles obtained by cutting, and vibrating cause random blows and scratches among the latter; at the end of the vibrating treatment, owing to the action of reciprocal abrasion due to the movements and to the scratching, the tiles have irregular edges that are different from one another, as if they had been handcrafted.

[0005] A second method provides for introducing into the moulds of a press a mixture of ceramic materials and pressing these materials with pads that have dies that are provided with contact surfaces that deliberately have irregularities that are transferred to the surfaces of the mixture by means of pressing.

[0006] The dies of the moulds may also have baffles within themselves that are arranged to divide the ceramic materials into several pieces, the visible surface of each of which, after pressing, is provided with irregularities that recall handcrafted products; the unfired products made by pressing are then subjected to firing to stabilise the shape thereof. A third method provides for still using finished basic tiles, i.e. which have already been subjected to firing, making incisions into the installation face thereof for a limited part of the thickness thereof and fracturing the basic tiles along the incision lines, obtaining tiles of smaller dimensions.

[0007] These fractures cause the creation in the tiles of highly irregular and ragged edges that make the tiles different from one another, eliminating the repetitive appearance generated by the through cuts executed by conventional industrial processes: these irregularities and raggedness make them resemble in a substantially satisfactory manner tiles made by hand using handcrafting methods.

[0008] This prior art has some drawbacks.

[0009] A first drawback is that the tiles obtained with

the currently known methods still retain a certain regularity on both the perimeter sides and on the installation face that is opposite the visible face and is the one on which the previously disclosed treatments mainly concentrate as both the perimeter sides and the installation face are intended to be hidden after the tiles have been laid on a surface to be tiled.

[0010] A second drawback is that the tiles obtained with the known methods always have only one visible face, and, consequently, only one opposite installation face, for which reason it is easy for anybody to recognise the industrial origin thereof and therefore a lower commercial value than those produced with handcrafting processes.

[0011] Furthermore, during installation, it is indispensable to position the tiles so that the visible face thereof always faces in the opposite direction to the surface to be tiled on which they have to be installed.

[0012] The technical aim of the invention is to improve the prior art.

[0013] An object of the invention is to provide a method and product that enable coating products to be obtained that are industrially produced but which are provided with an overall appearance that is similar to the appearance of handcrafted products.

[0014] Another object of the invention is to devise a method and product that enable coating products to be obtained that do not have installation or visible faces that are different from one another.

[0015] According to an aspect of the invention a method is provided, particularly for producing ceramic coating products comprising: preparing a mixture of ceramic materials in a cohesive and deformable state, obtaining from said mixture unfired deformable pieces and substantially coinciding with said products to be manufactured, firing said unfired deformable pieces, characterised in that between said obtaining and said firing there is provided stirring/remixing said unfired deformable pieces.

[0016] According to another aspect of the invention a ceramic coating product is provided comprising a plurality of faces characterised in that at least a part of said faces is irregular.

[0017] According to a further aspect of the invention a ceramic coating product is provided comprising a plurality of corners characterised in that at least a part of said corners is irregular.

[0018] Therefore, the method and product enable coating products to be made industrially comprising products having the appearance of handcrafted products.

[0019] Further features and advantages of the invention will be clearer from the detailed disclosure of a method and product, illustrated by way of example in the attached drawings in which:

Figure 1 is a schematic view of the steps of a method particularly for the production of ceramic products having an irregular appearance;

Figure 2 is a diagram of the succession of operational

steps of a method for producing ceramic products having an irregular appearance;

Figure 3 is a frontal view on an enlarged scale of a ceramic product having an irregular appearance.

[0020] With reference to Figure 1, 1 indicates a mixture of ceramic materials prepared at step 100 so as to have a plastic and deformable consistency.

[0021] The mixture 1 is processed, according to step 101, for example by subjecting it to cutting or modelling, to obtain to the step 102 plastic semifinished products 2 that already substantially have the dimensions and overall shape of the products that it is desired to obtain, for example tiles or inserts for mosaics (2').

[0022] The modelling or cutting can be performed according to known techniques and using apparatuses already used in the sector of the manufacture of ceramic products.

[0023] For example, modelling or sectioning can be obtained by introducing the mixture 1 into a mould of a press in which, during pressing, a die is introduced that has a series of lamellar baffles that are crisscrossed so as to form a multiplicity of cutting blades so that the mixture 1 in the mould is cut to give rise to a plurality of deformable semifinished plastic ceramic products 2.

[0024] Another form of modelling may comprise extruding the mixture 1 by means of a known extruder and the subsequent cutting of the ribbon of extruded mixture 1 to obtain deformable semifinished plastic ceramic products 2.

[0025] Another form of modelling may comprise hand modelling of the mixture 1 until deformable semifinished plastic ceramic products 2 are obtained.

[0026] When the semifinished ceramic products 2 have been obtained, i.e. ceramic tiles that are still deformable, they are subjected to stress, such as, for example, stirring or remixing, according to step 103, so as to induce deformation of the profile thereof by bringing them into contact with other deformable semifinished plastic ceramic products 2.

[0027] In order to achieve this stirring or remixing, the deformable semifinished plastic ceramic products 2 are introduced, for example into rotating drums 3 that have rotation axes slightly tilted with respect to the horizontal and which, by rotating, remix the deformable semifinished plastic ceramic products 2, causing a multiplicity of blows and scratches between them.

[0028] These blows and scratches occur in a random manner and give the deformable semifinished plastic ceramic products 2 the aspect of imperfect ceramic tiles 2', as if they had been produced with handcrafting methods.

[0029] The same effect can be obtained by placing the deformable semifinished plastic ceramic products 2 inside vibrating apparatuses 4, comprising tanks 5 of significant dimensions and which are mounted on vibrating units suitable for making them vibrate: the deformable semifinished plastic ceramic products 2 also undergo in this case a multiplicity of random reciprocal blows and

scratches that give them a similar appearance to that of imperfect ceramic tiles 2', as if they had been made with handcrafting methods.

[0030] The dwell time of the deformable semifinished plastic ceramic products 2 inside the rotating drums 3 or the vibrating apparatuses 4 may be for short or prolonged periods, according to the size of the profile deformations that it is desired to obtain both on the faces 6 and on the corners 7.

[0031] These deformation have a prevalently chamfered pattern that is free of chipping due to the fact that the semifinished plastic ceramic products 2 are still unfired before being subjected to deformation stress and the mass thereof is plastic: the blows and scratches cannot therefore cause cracks but only modelling and abrasions.

[0032] When the vibration or remixing have finished, the unfired and deformed tiles 2' are sent to a kiln (not shown because familiar to those skilled in the art) for the usual firing phase, according to step 104, for the definitive stabilisation of the profile thereof.

Claims

1. Method, particularly for producing ceramic coating products (2), comprising the steps of: preparing a mixture (1) of ceramic materials in a cohesive and deformable state (100), obtaining from said mixture (101; 102) unfired and deformable pieces (2), substantially coinciding with said products (2) to be manufactured, firing (104) said unfired and deformable pieces (2), **characterised in that** between said obtaining (101; 102) and said firing (104) there is provided subjecting (103) said unfired and deformable pieces (2) to stress such as to cause profile deformation.
2. Method according to claim 1 wherein said subjecting is carried out so as to make said deformation contained within preset limits.
3. Method according to claim 1 or 2 wherein said deformation is such as to substantially maintain an initial form of said pieces.
4. Method according to claim 1 or 2 wherein said subjecting comprises stirring/remixing (103) said unfired and deformable pieces (2).
5. Method according to claim 4 wherein said stirring/remixing (103) is obtained with stirring/remixing means (3; 4).
6. Method according to claim 1 wherein said mixture (1) is a plastic mixture.
7. Method according to claim 1 wherein said obtaining

(101; 102) comprises forming said unfired and deformable pieces (2) with mould means and pressing means.

8. Method according to claim 1 wherein said obtaining (101; 102) comprises forming said unfired and deformable pieces (2) with extruding means. 5
9. Method according to claim 1 wherein said obtaining (101; 102) comprises forming said unfired and deformable pieces (2) by hand. 10
10. Method according to claim 5 wherein said stirring/remixing means (3; 4) comprises rotating drum apparatuses (3) rotatable around a rotation axis. 15
11. Method according to claim 5 wherein said stirring/remixing means (3; 4) comprises vibrating apparatuses (4). 20
12. Semifinished plastic ceramic product (2) having geometrical features defined by faces (6) and corners (7) **characterised in that** at least one of said geometrical features is irregular. 25
13. Semifinished plastic ceramic product (2) according to claim 12 wherein said semifinished plastic ceramic product (2') is substantially flat.
14. Semifinished plastic ceramic product (2') according to claim 12 wherein at least most of said geometrical features are irregular. 30
15. Semifinished plastic ceramic product (2) according to claim 12 wherein all said geometrical features are irregular. 35
16. Ceramic product (2') **characterised in that** it is obtained through firing a semifinished plastic ceramic product (2) according to claims 12 to 15. 40
17. Ceramic product (2') according to claim 16 wherein any one of said faces (6) can be coupled with an installation surface. 45
18. Ceramic product (2') according to claim 16 and having two faces (6) of greater size than the remaining ones wherein any of said two faces (6) can be coupled with an installation surface. 50

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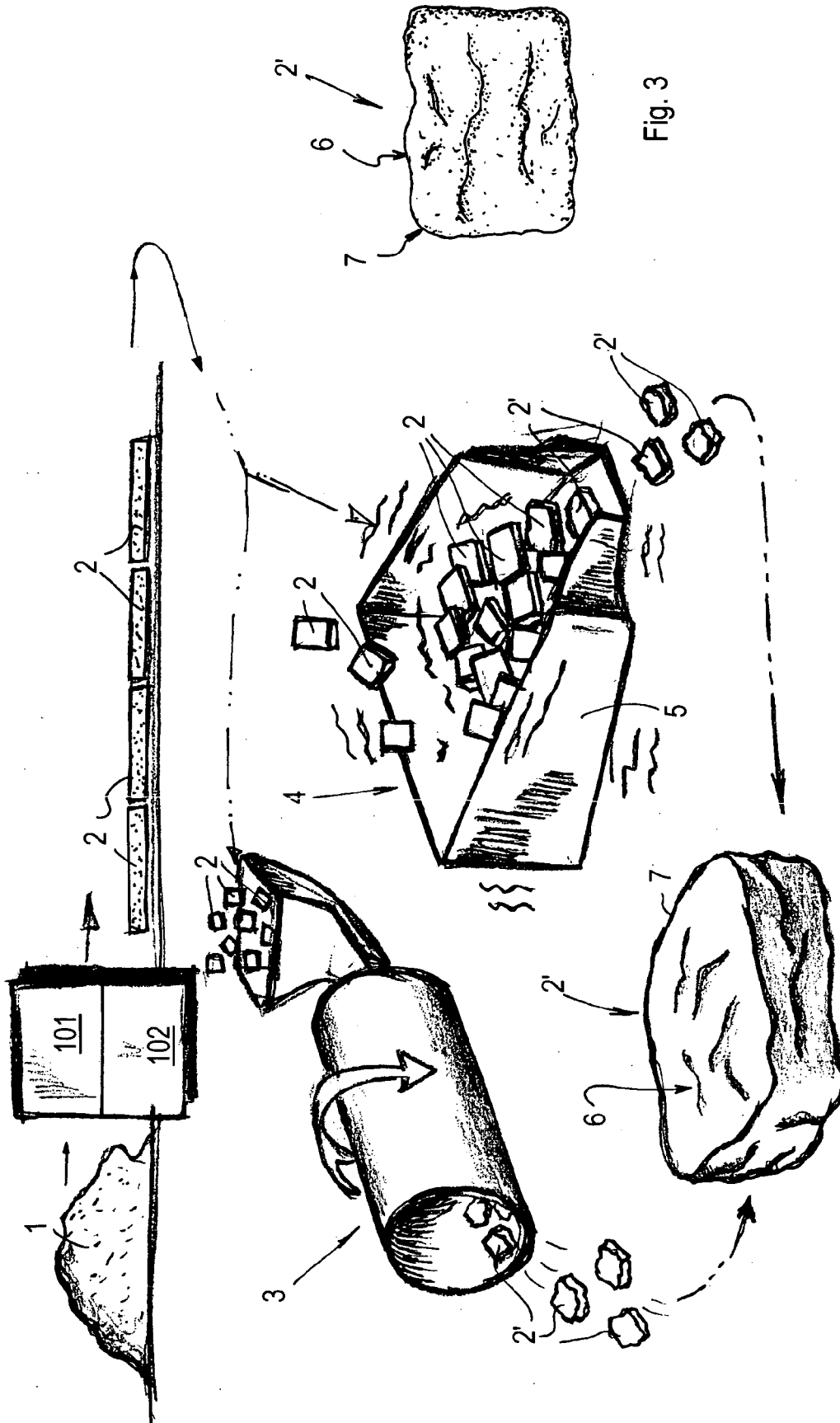


Fig. 1

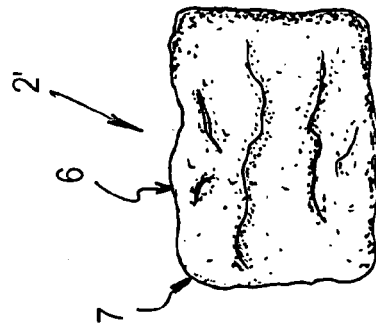


Fig. 3

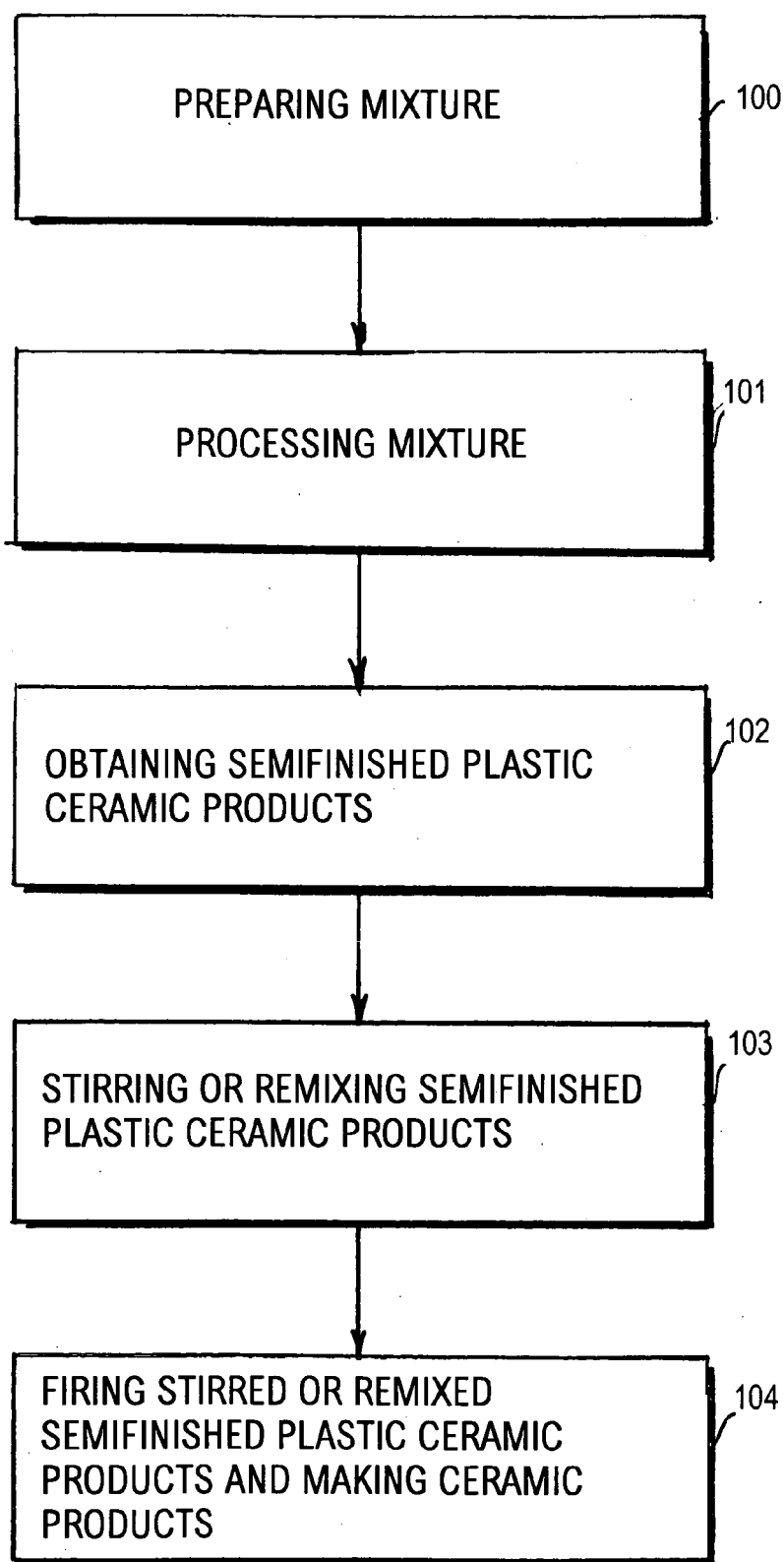


Fig. 2