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(54) Method of manufacturing a ceramic gravestone and gravestone thus produced

(57) Method of manufacturing an improved designer ceramic gravestone in which once the decoration thereof has been composed, the four colours of the desired elements are filmed using special software, thus obtaining four films, one for each colour (magenta, cyan, yellow and black). Next, insolation of the films on special papers or sheets is carried out, and then the pigments or colours are applied to the sheets, obtaining a base that will be applied on the enamelled item. With this application an article with the final design that will be fired in the kiln again, for fusion of the two enamels, is obtained.

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Description

[0001] The aim of the present invention is to make use of the inherent properties of ceramics, stoneware, crystal glass, glass-ceramic, porcelaneous stoneware or porcelain, in such a way that these materials can be used, starting from certain dimensions, in the production of gravestones that have the novelty of permanently displaying photographs of the loved ones, flower arrangements, borders, images of favorite saints of the deceased, landscapes particularly loved by the deceased, various typologies and textures of letters of the alphabet or any other detail of particular interest that reminds us of the life of the deceased in some way.

[0002] Concretely, said materials are used in the form of compacted slabs in a mold of ceramic, glass or other ceramic material that can take on a great many textures, including those that imitate marble in any of its forms or granite. However, it is also possible to produce textures of the most varied patterns, many of them being very suitable for achieving a beautiful background of fine material that sets off the photograph and ornamentation mentioned above. Once fired, a novel gravestone is obtained of the state of the art and specific to the object of the present invention, achieving a combination of factors, color and physical appearance that cannot be obtained with traditional gravestones, its esthetic effect being highly valued.

[0003] We thus obtain a standardized system for construction of gravestones, of simple assembly, versatile since it is applicable to various textures and colors on which photographs and ornamental motifs can be provided as desired and that takes advantage of the natural properties of hardness, strength and insulation, coloring and esthetic appearance of a material that until now has had numerous uses, but has never been used as a gravestone in cemeteries. In particular, it is a durable material, which displays very stable behavior against all variables, both physical and chemical, and is long-lasting.

[0004] Gravestones are known in various types of materials, generally of a stony character, among which the marbles and granites stand out, for insertion in the fronts of niches or for placing on tombs, which cannot be combined with the decorative elements of the gravestones according to the present invention, since they are constructed with very different materials, moreover specific structures and particular operations are required for each type of gravestone, as each has its own particular properties. Document ES 231346 U discloses the construction of a frame of crystal glass in the back of the gravestone for protecting the photographs and other ornamentation that are displayed between the crystal glass and the gravestone. Document ES 1044794 U relates to a gravestone for embellishing the closure of a niche, **characterized in that** it is made from a plate of rigid material of minimal thickness, on which a waterproofing sheet of paper is glued, bearing imprints of various funeral motifs, printed out by computer, resulting in a gravestone of poor durability. Document ES 228291 U discloses a gravestone for niches and tombs constituted by a molding in ceramic material or porcelain, whose visible face has decorative bas-reliefs of motifs and patterns, enameled and fired, defining an unalterable surface, being provided on the back surface with a flat peripheral edge for fitting to the surface of the niche or tomb, but it is not possible to incorporate therein the ornamental motifs of the gravestone according to the present invention. Finally, the Spanish patent application ES 2300186 discloses a gravestone wherein, using programs for digital and photographic retouching, the decorative elements that the client decides to choose for the gravestone are assembled. Among said decorative elements it is possible to choose a texture of granite or of marble or even a fancy texture, colours, grain size, orientation of the veins, size of the veins, a photograph of the deceased or of a favourite saint, landscapes, flowers, borders, decorated edges and corners, type of lettering with textures in gold, silver, bronze and any other element supplied by the client. Once the gravestone has been composed, printing is carried out on a transfer on a digital laser printer. If the dimensions of the gravestone are greater than those of the transfer, partitions are made and printing is done in as many parts as are required for the size of the gravestone, making up the latter by juxtaposition of the various parts. The transfer is enamelled and dried ready for application on the enamelled surface of the piece of porcelain-like material described above. With said application, an article is obtained with the final design, which will be fired in the kiln again, for fusion of the two enamels. A shiny gravestone is obtained, which is suitable for outdoor use. Instead of transfer by direct application, it can also be carried out by means of an ink-jet printer, obtaining the same result. However, both the shine and the outdoor performance of the gravestone obtained by this procedure can still be improved.

[0005] The object of the present invention is based on providing a set of technical improvements to said designer ceramic gravestones so that once fired in the kiln and enamelled, by means of programs for digital and photographic retouching, the decorative elements that the client selects for the gravestone are assembled, such as texture, photographs of the deceased, landscapes, flowers, decorative corners and borders, types of lettering with textures of gold, bronze, silver or any other element supplied by the client, extending the process for improving the end result, this latter being the novelty provided by the present addition. With the present invention, a gravestone is obtained that is shinier and more suitable for outdoor use than those of the prior art. The solution to this problem is an improved procedure for the manufacturing of gravestones from porcelainic materials as described below:

[0006] Once the gravestone has been composed following the procedure described in ES 2300186, that is, once it has been enamelled, fired in the kiln and the decorative elements that make it up have been assembled

preferably using programs for digital and photographic retouching, the four colours of said decorative elements are filmed using special software in a cinecamera, thus obtaining four films, one of each colour (magenta, cyan, yellow and black). This film is insolated in an insolator on special paper or thermal transfer sheet provided with adhesive on its reverse, in which the information from each film is obtained. This process is repeated four times, once for each colour. On completion, the film is discarded and the process continues with the sheet. The corresponding pigment is applied to each of the sheets either by hand or using a special machine known as ATM. Once the sheets have been obtained with the information for each colour and with the corresponding pigment applied, they are arranged on base paper or tracing paper and are superimposed precisely so that once the four sheets are combined on the base paper, the image is obtained. Then it is immersed in water until the base comes away, and next it is applied on the ceramic for subsequent firing in the kiln, for which additional enamelling is not required, since the pigments and sheets used each contain a proportion of enamel, which once fired becomes shiny.

[0007] An example of a preferred embodiment of the invention will be presented below, this presentation being just one of the many designs that can be employed for development of the technique and configuration described previously.

[0008] The designer ceramic gravestone is formed on the basis of kiln firing of an enamelled porcelain-like article and assembling, by means of programs for digital and photographic retouching, the decorative elements that the client selects for the gravestone, such as texture, photographs of the deceased, landscapes, flowers, decorative corners and borders, types of lettering with textures of gold, bronze, silver or any other element supplied by the client, then extending the process in the following way: the four colours are filmed using special software in a cinecamera, thus obtaining four films, one of each colour (magenta, cyan, yellow and black). This film is insolated in an insolator on special paper or thermal transfer sheet provided with adhesive on its reverse, on which the information from each film is obtained. This process is repeated four times, once for each colour. Once completed, the film is discarded and the process continues with the sheet. The corresponding pigment is applied to each of the sheets, either by hand or using a special machine known as ATM. Once the sheets are obtained with the information for each colour and with the corresponding pigment applied, they are arranged on base paper or tracing paper and are superimposed precisely so that once the four sheets have been combined on the base paper, the image is obtained. Then it is immersed in water until the base comes away, and next it is applied on the ceramic, for which additional enamelling is not required, since the pigments and sheets used each contain a proportion of enamel, then firing is carried out, in which it melts with the previous enamel, and becomes shiny.

Claims

1. Method of manufacturing a ceramic gravestone comprising the previous step of kiln firing of an enamelled porcelainic element, **characterised in that** the method further comprises the following steps:

   a) filming each one the four colours: magenta, cyan, yellow and black of the desired decorative elements in a cinecamera, thus obtaining four films, one for each colour;
   b) insolate each of the four films obtained in step a) with an insolator on special paper or thermal transfer sheet provided with adhesive on its reverse, obtaining four sheets containing the information from each film;
   c) apply the corresponding pigment to each of the four sheets, obtaining sheets with the information for each colour and with the corresponding pigment applied;
   d) arrange the sheets obtained in step c) on a base paper or tracing paper and superimpose them precisely so that once the four sheets have been combined on the base paper, the image is obtained;
   e) immerse the combination of the sheets and the base paper resulting from step d) in water until the base comes away;
   f) apply the base on the enamelled porcelainic element, and
   g) fire the enamelled porcelainic element with the base, so that the enamel of the porcelainic element is melted with the enamel of the base.

2. Method of manufacturing of ceramic gravestones according to claim 1, wherein the desired decorative elements of step a) have been previously assembled using programs for digital and photographic retouching.

3. Method according to claim 2, wherein the decorative elements comprises photographs of the deceased, landscapes, flowers, decorative corners and borders, types of lettering with textures of gold, bronze, silver or any combination thereof.

4. Method according to any one of previous claims 1-3, wherein, in step c), the application of the pigment is carried out by hand.

5. Method according to any one of previous claims 1-3, wherein, in step d), the application of the pigment is carried out using a special machine known as ATM.

6. Ceramic gravestone made through the procedure of any one of previous claims 1-5.

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EUROPEAN SEARCH REPORT

Application Number
EP 09 15 2473

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	WO 2007/135207 A (RAMON LIMA FRANCISCO JAVIER [ES]; RAMON CASAN VICENTE [ES]) 29 November 2007 (2007-11-29) * page 1, line 2 - page 5, line 17 *	1-6	INV. E04H13/00 B44C5/00 B41M1/00
A	US 2002/015784 A1 (AONO TOSHIAKI [JP] ET AL) 7 February 2002 (2002-02-07) * abstract; figures 1A-5E; examples 5,6 *	1-5	
A	AU 730 042 B2 (PROMARC INTERNAT LTD) 22 February 2001 (2001-02-22) * page 6, line 6 - page 10, line 2; figures 1,2 *	1-6	
A	US 2 215 595 A (SAUNDERS ARTHUR B) 24 September 1940 (1940-09-24) * claims 1-11; figures 1,2 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

E04H
B41M
B44C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 December 2009	Stefanescu, Radu

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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22-12-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007135207 A	29-11-2007	EP 2034108 A1	11-03-2009
		ES 2300186 A1	01-06-2008
		ES 2302646 A1	16-07-2008
US 2002015784 A1	07-02-2002	NONE	
AU 730042 B2	22-02-2001	AU 4002797 A	23-04-1998
US 2215595 A	24-09-1940	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 231346 U **[0004]**
- ES 1044794 U **[0004]**
- ES 228291 U **[0004]**
- ES 2300186 **[0004] [0006]**