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(54) **CORK-BASED PANELS WITH STONE EFFECT**

- (57) The invention is directed to a process for the production of a cork-based panel with stone effect, the process comprising the following steps: a) treating a first face of a cork-based panel, corresponding to the face intended for contact with a wall on which the panel will be installed, with a material chosen from the following: hardening material based on aerial and/or hydraulic cement mortars, single and two-component stuccoes for stone or metals, glues for stone materials; b) letting the first face dry; c) treating the second face intended to remain exposed with one of the materials described in step
- a, where the two materials used in steps a. and c. may be equal or different; d) letting the second face dry; e) sanding both sides to remove excess material wherein the second face is treated in such a way that on part of the second face cork surface appears, creating on said second face areas with cork surface and areas with cementitious material surface; f) painting the second face with one or more layers of one or more materials chosen from water-based enamels, acrylic enamels, water-based paints, acrylic paints.

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Description

Field of the invention

[0001] The present invention is directed at cork-based panels that reproduce the aesthetic appearance of stone.

Background dell'invenzione

[0002] Cork is a material widely used in furniture for its properties. Not only cork is an excellent thermal insulator, but it is also great for soundproofing a room, to soften a surface, in case of rooms where there are children. In addition, cork is highly valued for its lightness, having a density that is about half that of wood. Although the use of cork panels is an option used in the construction field, very often the cork panel does not remain exposed, being considered of low aesthetic impact. Different natural materials such as various types of stone (granite, marble, etc.) are often used to give a nice finish. These materials, although have a high value, have the defect of being extremely hard, heat-conducting, and have high density (even 10 times that of cork). In addition, the use of stone has a high environmental impact, as it is obtained by digging the mountains and producing a strong visual impact in the landscape. On the contrary, cork chipboard is a waste material of the cork industry and is therefore available at low cost and does not involve consumption of raw materials.

[0003] It would be desirable to have a material for interior decoration that has on the one hand the mechanical and physical properties of cork and at the same time the aesthetic appearance of the stone.

Brief summary of the invention

[0004] The present invention is directed to a cork-based panel having a surface that aesthetically recalls that of a stone. This result is obtained by a specific treatment of the cork that modifies the surface. The invention is therefore also directed to a method for the preparation of a panel as defined above.

Brief description of the figures

[0005]

Figure 1 shows the first face of a panel for use in the process according to the invention, at the beginning of the passage of treatment of the face itself with an adhesive material.

Figure 2 shows the panel of figure 1 at the end of the treatment with adhesive material and at the top a net for the stabilization of the panel itself.

Figure 3 shows the panel of figure 2 with installed the network shown in figure 2.

Figure 4 shows the panel turned 180° (note the net at the bottom of the panel) at the beginning of the

treatment phase with adhesive material of the second face.

Figure 5 shows the panel of figure 4 at the end of treatment with adhesive material.

Figure 6 shows a sanded panel.

Figure 7 shows a panel after sanding and painted only on half panel in order to show the swelling caused by the paint on the cork.

Figure 8 shows the two cross-sections of a cut panel. It is possible to notice the adhesive penetrating into the gaps of the cork and the one or more layers of paint.

Figure 9 shows a finished panel.

Detailed description of the invention

[0006] The invention is directed to a process for the production of a cork-based panel with stone effect, which process includes the following steps: a) treating a first face of a cork-based panel, corresponding to the face intended for contact with a wall on which the panel will be installed, with a material chosen from the following: hardening material based on cementitious air and/or hydraulic mortars, single and bi-component grouts for stone or metals, adhesives for stone materials; b) allow the first face to dry; c) treat the second face intended to remain exposed with one of the materials described in step a, where the two materials used in steps a. and c. may be equal or different; d) dry the second face; e) sanding both sides to remove excess material wherein the second face is treated in such a way that on part of the second face cork surface appears, creating on said second face areas with cork surface and areas with cementitious material surface; f) paint the second face with one or more layers of one or more materials chosen from water-based glazes, acrylic glazes, water-based paints, acrylic paints, vegetable oils, mineral and synthetic.

[0007] In a preferred mode of realization, the panel according to the invention is prepared according to the following process: the panel is laid horizontally and treated on a first face, which corresponds to the face intended for contact with a wall on which the panel will be installed, with a material chosen from the following: hardening material based on cementitious air and/or hydraulic mortars (for example, adhesives for tiles and adhesives for coats) single and bi-component grouts for stone or metal (for example, tile fillers), glues for stone materials (including high thixotropy, both those hardening by physical process and those hardening by chemical process), and other similar materials. In a preferred construction mode, either a type C cementitious adhesive, performance class 1 or 2, optional characteristics F, T, E, S1, S2 as defined in UNI EN 12004 or a category CG cementitious material shall be used, class 1 or 2 and WA, or epoxy category CG according to UNI EN 13888.

[0008] Examples of materials that can be used for the preparation of the first face are: all products in the Keraflex™ and Keracolor™ range from Mapei.

[0009] Optionally, a mesh, for example in fibreglass yarn, can be applied to give greater mechanical stability to the panel. Another function of the net is to give the system an adequate ability to resist the movements of the cork due to temperature changes or shrinkage phenomena. The surface can be treated, for example, with a spatula. In this case, it will be enough to apply pressure up to resistance of the product.

[0010] The panel, once treated, is left to dry. Drying can be done either naturally, forced or mechanically, for example by using a ventilated oven.

[0011] Then, the panel is rotated 180° for the treatment of the second face, which corresponds to the face that will remain exposed once the installation is made. On the second side, a treatment similar to that performed on the first face is performed, in which the material used for the treatment of the two faces is not necessarily the same. Thus, it is possible to use on the first face a first material and on the second face a second different material, as it is instead possible to treat the two faces with the same material. However, it is important to note that the purpose of the treatment of the two faces is different. On the first face the treatment has the sole purpose of stabilizing the panel and therefore the aesthetic effect of the treatment does not matter, being the first face, once mounted the panel, not exposed but in contact with a wall. The second face will be the exposed face and therefore the choice of the material to be used for the treatment affects the final aesthetic appearance. For example, the choice of grain sizes of the material used will affect the final roughness of the panel, which will give the desired stone effect. In a preferred embodiment, either a type C cementitious adhesive, performance class 1 or 2, optional characteristics F, T, E, S1, S2 as defined in UNI EN 12004 or a category CG cementitious material shall be used, class 1 or 2 and WA, or epoxy category CG according to UNI EN 13888. Epoxy adhesives are preferably solvent based polyurethane resins and water based polyurethane resins.

[0012] Examples of materials that can be used for the preparation of the second face are: all products of the Keraflex™ and Keracolor™ GG,FF range from Mapei and Ardex WA Junta™ from Ardex.

[0013] Once treated, the second face undergoes a drying process similar to the one described. Then, it is possible to proceed to the finishing step by levelling the excess material on both sides by sanding, making sure not to ruin the network optionally present. While on the first face levelling is done simply to finish the surface, the correct levelling on the second face corresponds to removing enough material so that cork surface appears on part of the face creating areas with cork surface and areas with cementitious material.

[0014] Then, the panel is preferably finished on the edges with elastomeric materials in order not to miss the natural feature of cork to absorb shocks. The last phase of the process is also the most important for aesthetic purposes and consists in treating the second side of the

panel with one or more coats of paint. The paints that are used to obtain the desired aesthetic effect penetrate into the cork surface and not into the cementitious material, inflating it slightly and placing it in high relief and highlighting the cement part stabilizing it, highlighting the cork and giving the panel a texture that is natural and unique in the genre. The applicable paints and the desired effects are countless and give this material the possibility to be finished even at the specific request of the customer. The more liquid the paints, the greater the surface absorption of the cork and the greater the relief effect of the cork.

[0015] Paints can be coloured at the origin or during mixing with water or solvent depending on the desired colour effect. The paints used to achieve the desired aesthetic effect penetrate into the cork surface and not into the cement material, slightly inflating the cork and putting it in high relief and highlighting the cement and giving the panel a natural texture and unique in the genre. The paints that can be used within the invention are preferably chosen amongst natural, synthetic, water-based, acrylic, resins, all mono and bi-component. The colouring can be derived from the paint itself, or it can be obtained by the addition of dyes such as acrylic paints, oil paints, glazes, synthetic paint. The painting more be performed with one or more hands.

[0016] To make the overall chromatic and aesthetic effect stronger and more persistent, it is possible to carry out a finishing phase of the panel with vegetable, mineral or synthetic oils or with beeswax. Examples of usable oils are linseed oil, Danish oil, tung oil, raw or cooked straw oil, oil for wooden cutting boards.

[0017] The cork panel used in the invention can be of various types. As for the thickness, it is possible to use panels of thickness in the range of preferably from 1 cm to 10 cm, more preferably from 2 cm to 10 cm. As for the size of the panel, it also depends on the type of intended use, however in general terms the length can be between 10 cm and 1m, while the height can be between 10 cm and 50cm. However, the invention can also be made with larger panels, as long as the practical difficulties of working on larger panels are solved. Moreover, the panel is not necessarily rectangular in shape, but can be made in any shape considered ideal for aesthetic and decorative purposes.

[0018] An important aspect for the aesthetic result that it is intended to achieve is represented by the size of the cork used in the panel. The greater the average size of the cork granules, the greater the effect due to the swelling of the same. At the same time the greater the grain size of the panel, the lower the density of the same. Generally speaking, the density of a cork panel varies from 100 kg/m³ for the coarser panel, to 400 kg/m³ for the finer panel. Preferably, the panel shall be composed of cork shavings having an average size between 2 mm and 6 cm, preferably between 3 mm and 5 cm. In which, not usually ball-shaped cork chips, the chip size is given by the length in the major direction of the chip. The average is preferably calculated as an average by number.

Claims

1. A process for the production of a cork-based panel with stone effect, the process comprising the following steps:
 - a. treating a first face of a cork-based panel, corresponding to the face intended for contact with a wall on which the panel will be installed, with a material chosen from the following: hardening material based on aerial and/or hydraulic cement mortars, single and two-component stuccoes for stone or metals, glues for stone materials; 10
 - b. letting the first face dry; 15
 - c. treating the second face intended to remain exposed with one of the materials described in step a, where the two materials used in steps a. and c. may be equal or different;
 - d. letting the second face dry; 20
 - e. sanding both sides to remove excess material wherein the second face is treated in such a way that on part of the second face cork surface appears, creating on said second face areas with cork surface and areas with cementitious material surface; 25
 - f. painting the second face with one or more layers of one or more materials chosen from water-based enamels, acrylic enamels, water-based paints, acrylic paints. 30
2. The process according to claim 1 wherein the material used in step a. is selected from the following materials: a type C cement adhesive, performance class 1 or 2, optional characteristics F, T, E, S1, S2 as defined in UNI EN 12004 or a cement material of category CG, class 1 or 2 and WA according to UNI EN 13888. 35
3. The process according to claim 1 or 2, in which the material used in step c. is selected from one or more of the following materials: a type C cement adhesive, performance class 1 or 2, optional characteristics F, T, E, S1, S2 as defined in UNI EN 12004 or a cement material of category CG, class 1 or 2 and WA, or epoxy of category CG according to UNI EN 13888. 40 45
4. The process according to one of claims 1-3, also including the following step:
 - g. finishing the surface of the second face with a material chosen from: vegetable, minerals, synthetic oils and beeswax. 50
5. The process according to any of the 1-4 claims, wherein the panel is composed of cork chips having average size measured in the largest chip size, between 2 mm and 6 cm. 55
6. The process according to claim 5, wherein the cork chips have average size measured in the largest size of the chip, between 3 mm and 5 cm.
7. The product obtainable by the process of any of claims 1-6.

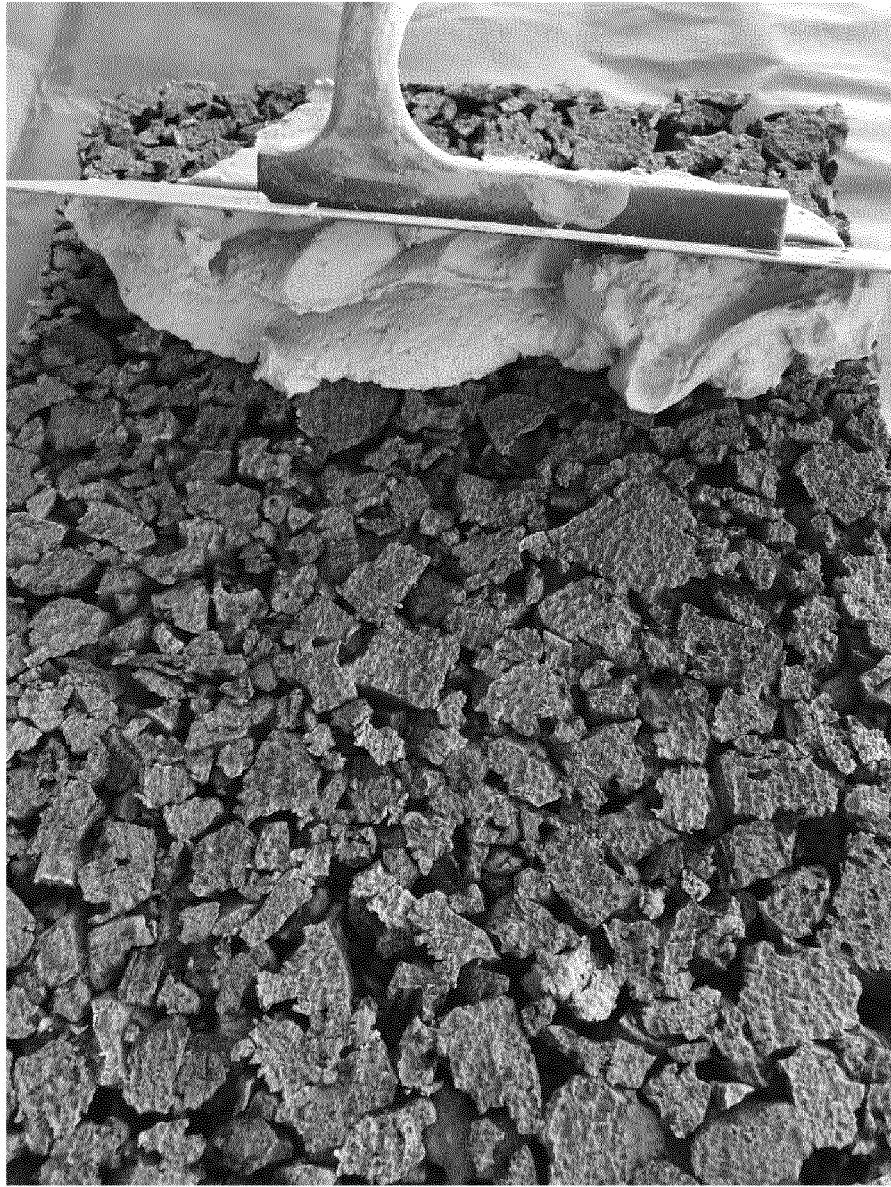


Fig. 1



Fig. 2

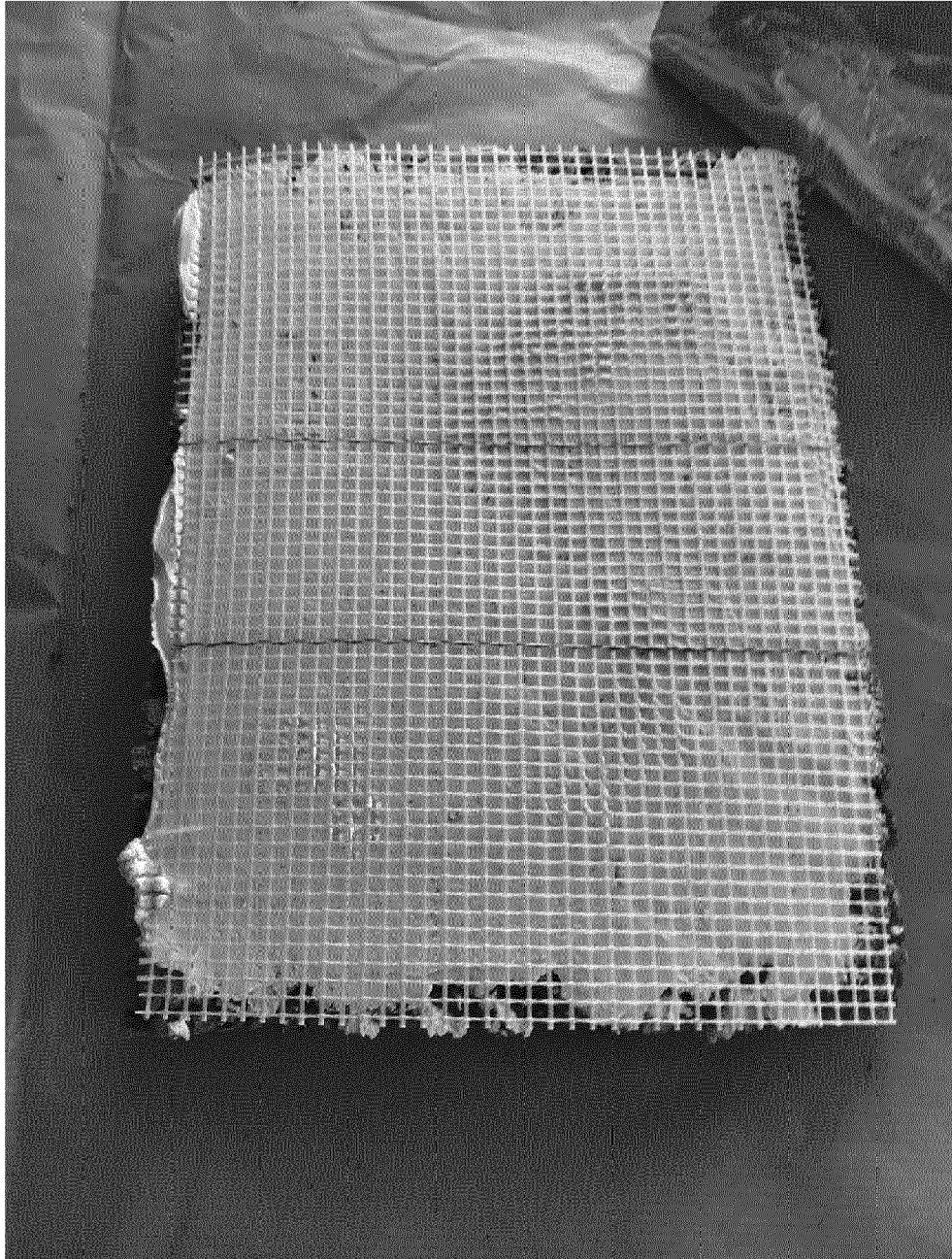


Fig. 3



Fig. 4

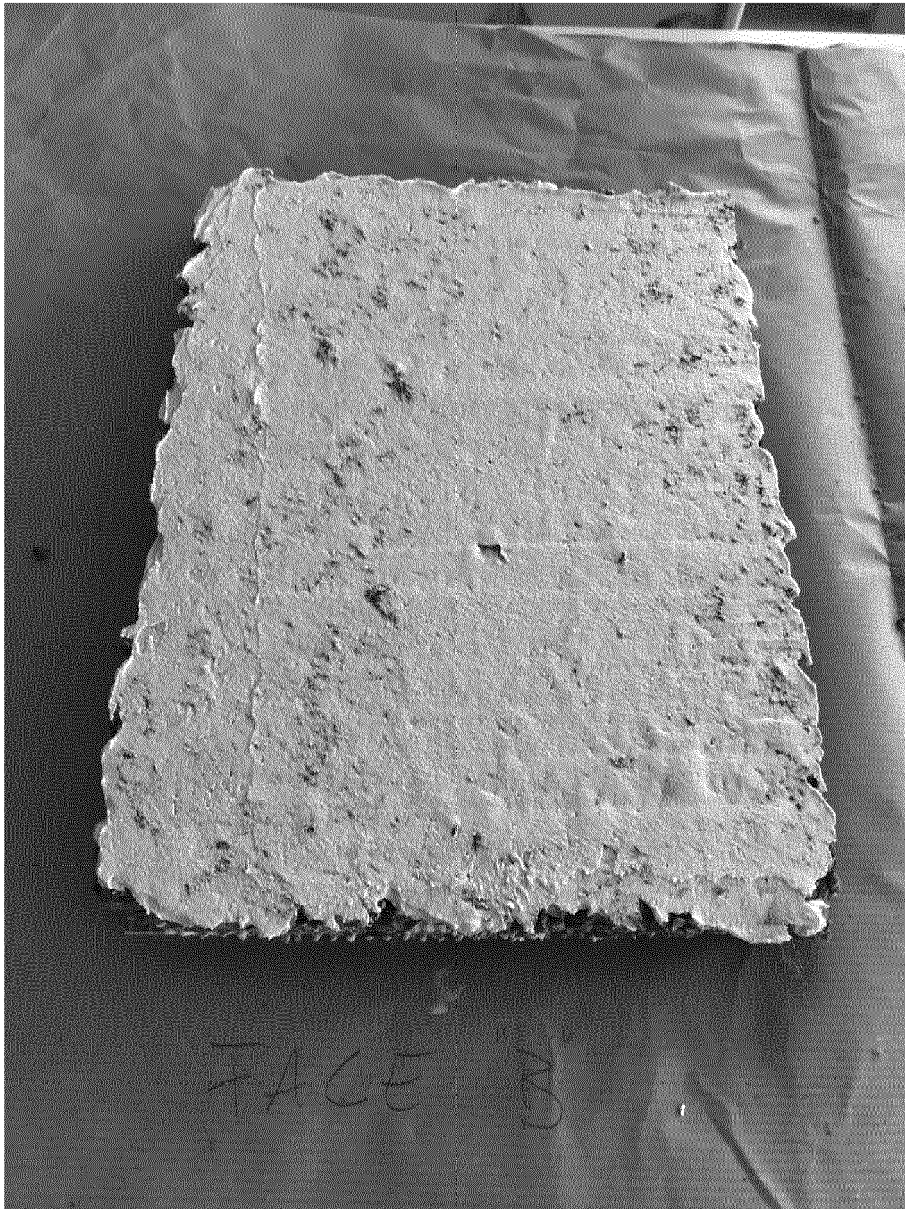


Fig. 5



Fig. 6



Fig. 7

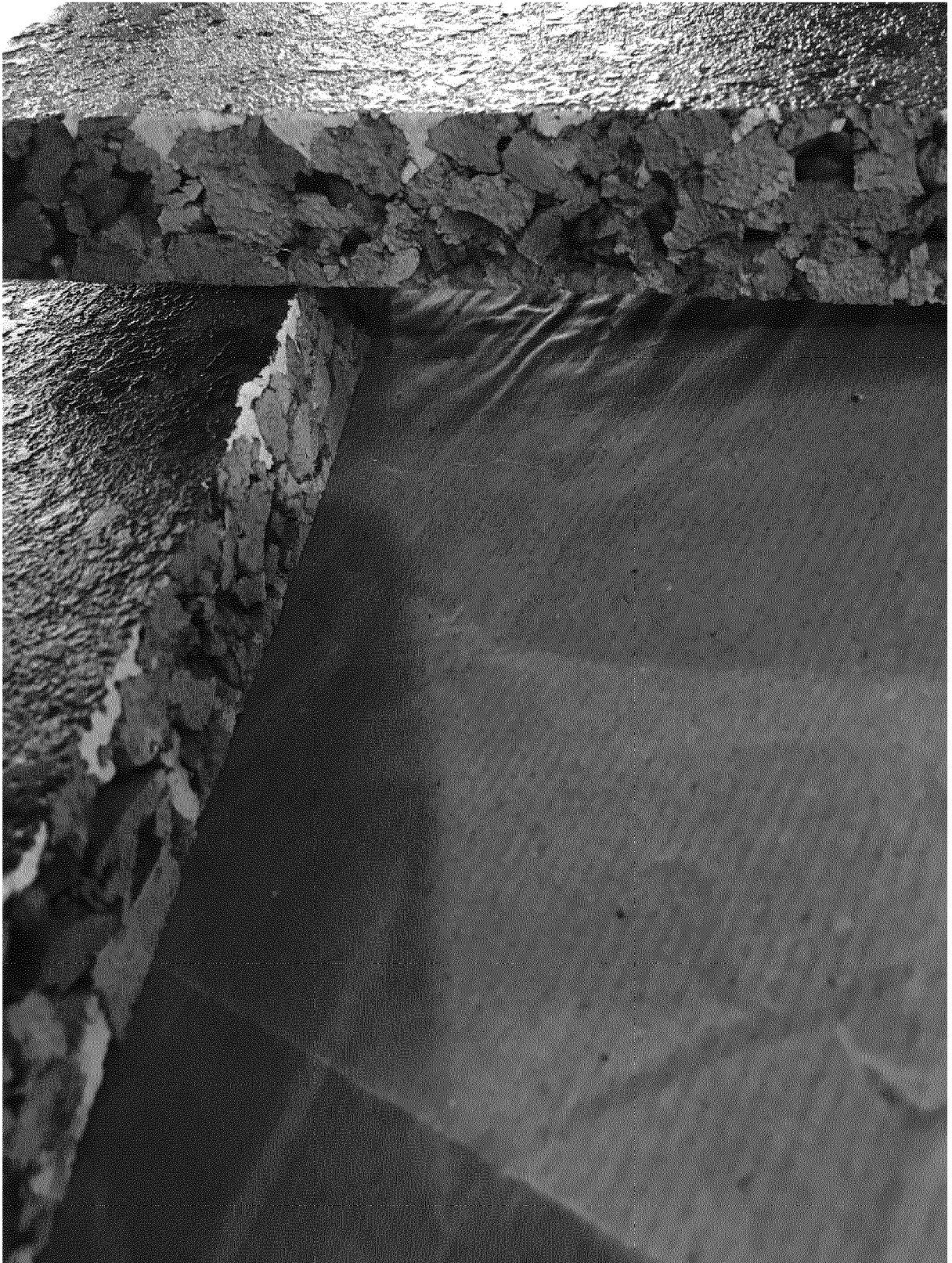


Fig. 8



Fig. 9



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Application Number

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 August 2024	Examiner Björklund, Sofie
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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