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(54) **Indoor and outdoor covering panels and shapes**

(57) Indoor and outdoor covering panels and shapes are disclosed, comprising a PVC core (1),

wherein said core is solid and packed and is coated by a plurality of protective layers, said layers providing for an external pattern reproducing the wood grain.

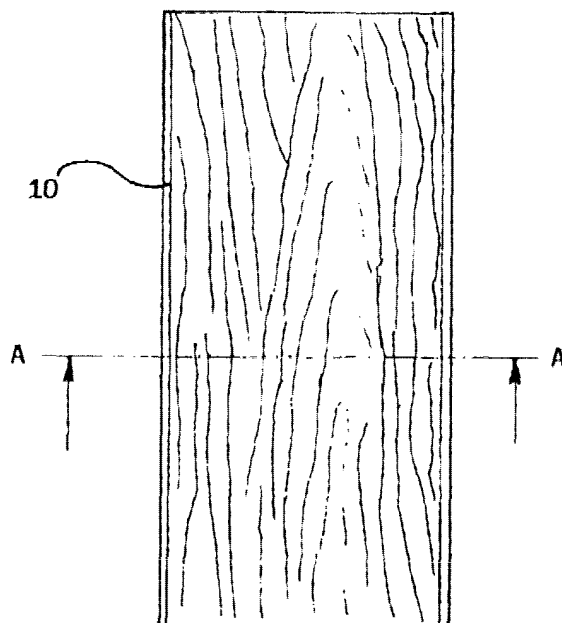


Fig. 1

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Description

[0001] The present invention relates to indoor and outdoor covering panels and shapes.

[0002] In the building industry covering panels or shapes are used in many circumstances, said panels or shapes being mostly made of wood or plastic materials and used for both aesthetic and functional purposes. More particularly said panels are used for fences, coverings for external and internal walls and so forth. A valuable aesthetic effect is thus obtained together with a good practical utility in view of the warm atmosphere created by wood or wooden substitutes.

[0003] Although these known panels solve the mentioned technical problem, nevertheless they are afflicted by some drawbacks.

[0004] The wooden panels are deteriorated very quickly by the atmospheric agents and consequently need a great maintenance for preserving a bright colour and a pleasant look, of course besides their functional effect. Such a maintenance is particularly burdensome from the economic point of view.

[0005] The panels and coverings made of plastic material have the drawback of a high degree of brittleness to impact in view of their stiffness, for instance of the hollow shapes made of rigid PVC, and high deformation due to external loads in case of shapes made of foamed PVC. These materials undergo also a rapid loss of colour caused by the solar radiation.

[0006] Finally for recycled and painted PVC it is practically impossible to reproduce the surface appearance of wood since the paint peels off with time.

[0007] The object of the present invention is to overcome said drawbacks of the prior art panels.

[0008] Thus the invention relates to indoor and outdoor covering shapes and panels that are practical, environmentally friendly, cheap to be produced, very resistant to impact and weather, have aesthetic and functional characteristics that are kept unaltered for long periods of time, with consequent savings of maintenance costs.

[0009] In few words according to the invention indoor and outdoor covering panels and shapes comprise a PVC core which is solid and packed and is covered by a plurality of protective layers, said layers reproducing externally the wood grain.

[0010] The indoor and outdoor covering panels and shapes according to the invention are characterised by the features recited in Claim 1.

[0011] The panels and shapes according to the invention have the same outer appearance of wood because said layers comprise a first PVC layer and a second polymethylmethacrylate layer, where said first PVC layer has a pattern reproducing the wood grain and a thickness of about 150 μm , while said second polymethylmethacrylate layer has a thickness of about 50 μm .

[0012] The panels and shapes according to the invention are perfectly preserved before use because they

are covered with a protective film to be removed at installation.

[0013] Advantageously the panels and shapes according to the invention are environmentally friendly and can be manufactured at low cost because said core is obtained by making a homogeneous blend of recycled PVC followed by heat extrusion, cooling and cutting operations, while said plurality of protective layers is applied on said core with a polyurethane glue by means of film applicator rollers.

[0014] Further characteristics, advantages and details of the indoor and outdoor covering panels and shapes according to the invention will be better understood by reading the following description of a preferred embodiment given as an illustrative but non limiting example shown in the accompanying drawings in which:

Fig.1 is a front view of a panel according to the invention ready for its installation;

Fig.2 is a sectional view of the panel of the invention taken along line A-A of Fig.1;

Fig.3 is a front view of a blank panel according to the invention;

Fig.4 is a sectional view of the blank panel according to the invention taken along line B-B of Fig.3;

Fig. 5 is an enlarged view of the section shown in Fig.2; and

Fig.6 is a partially sectioned perspective view of the panel shown in Fig.1.

[0015] With reference to the above listed figures of the drawings, the indoor and outdoor covering panels and shapes 10 of the invention comprise an inner solid core 1 made of polyvinyl chloride (PVC).

[0016] More particularly this core is made by extruding recycled PVC with different ageing degrees, homogenised by a suitable mechanical blending operation of the particles inside various silos. The recycled PVC is mainly obtained by scraps of used rolling shutters, PVC windows, used pipes and match boards and the like.

[0017] Said blending operation is preferably carried out for lots of about 1,000 kg for a better homogenisation of quality according to the various sources of used PVC.

[0018] The subsequent extrusion occurs in a known way, preferably using a single screw extruder at a speed of about 0.65 m/min. The extrudate then goes through a cooling and cutting section and the core 1 is therefore ready.

[0019] The panels or shapes 10 are then provided with a plurality of protective and aesthetic layers associated to said core 1.

[0020] More particularly a layer 2 preferably made of PVC having a thickness of about 150 μm , on which a pattern reproducing the wood grain was previously printed, and a layer 3 having a thickness of about 50 μm and consisting of a film preferably made of polymethylmethacrylate, are then applied on said core 1.

[0021] More particularly the layers 2 and 3 are placed

on one another before being applied on the core 1, the latter application being carried out in a known way by means of film applicator rollers, the layers 2 and 3 being heated and glued with a polyurethane glue.

[0022] Finally a protective transparent film 4 is applied on the panels and shapes so produced, said film 4 being removed before use.

[0023] The finished panels and shapes 10 have the same external appearance of the traditional wood panels, however without being afflicted by the typical drawbacks of wood or plastic articles now available on the market.

[0024] Indeed the articles of the invention are hard and packed but not brittle in view of their solid blank core made by extrusion, thus showing an excellent resistance to accidental shocks or continuous strains without undergoing any deformation.

[0025] The protective layers 2 and 3 confer at the same time a full protection against atmospheric agents, resulting in a colour fastness for at least 12 years, and a high aesthetic value allowing to replace wood with no regrets even from this point of view, since the same visual effect is obtained at the end of the installation.

[0026] The installation is effected very quickly by removing the protective film 4 and cutting in situ the panels to the size suitable for the intended use, then mounting the panels through known mechanical means. In this way it is possible to make fences, railings, indoor and outdoor coverings that do not require maintenance for very long periods of time.

[0027] Many modifications, variations, adaptations, additions and substitutions may of course be resorted to the embodiment hereinbefore described as an illustrative and non-limiting example only, without departing however from the scope of the invention as defined in the appended claims.

Claims

1. Indoor and outdoor covering panels and shapes comprising a PVC core (1), characterised in that said core (1) is solid and packed and is coated with a plurality of protective layers, said layers providing an external pattern reproducing the wood grain.
2. Indoor and outdoor covering panels and shapes according to Claim 1, characterised in that said layers comprise a first PVC layer (2) and a second polymethylmethacrylate layer (3).
3. Indoor and outdoor covering panels and shapes according to Claim 2, characterised in that said first PVC layer (2) has a pattern reproducing the wood grain and a thickness of about 150 μm while said second polymethylmethacrylate layer (3) has a thickness of about 50 μm .
4. Indoor and outdoor covering panels and shapes according to Claim 1, characterised in that said shapes and panels (10) are coated with a protective film (4) to be removed at use.
5. Indoor and outdoor covering panels and shapes according to Claim 1, characterised in that said core (1) is obtained through a homogeneous blending of recycled PVC followed by heat extrusion, cooling and cutting operations.
6. Indoor and outdoor covering panels and shapes according to Claim 1, characterised in that said plurality of protective layers is placed on said core (1) through film applicator rollers by using polyurethane glue.

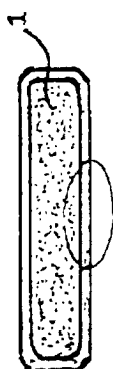


Fig. 2



Fig. 4

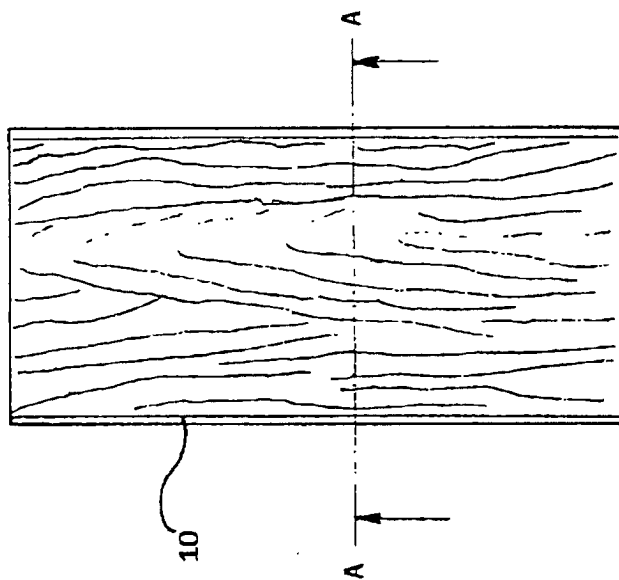


Fig. 1

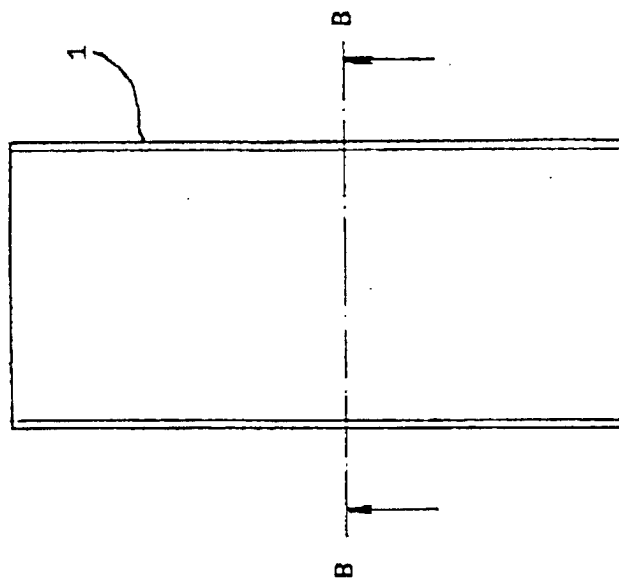


Fig. 3

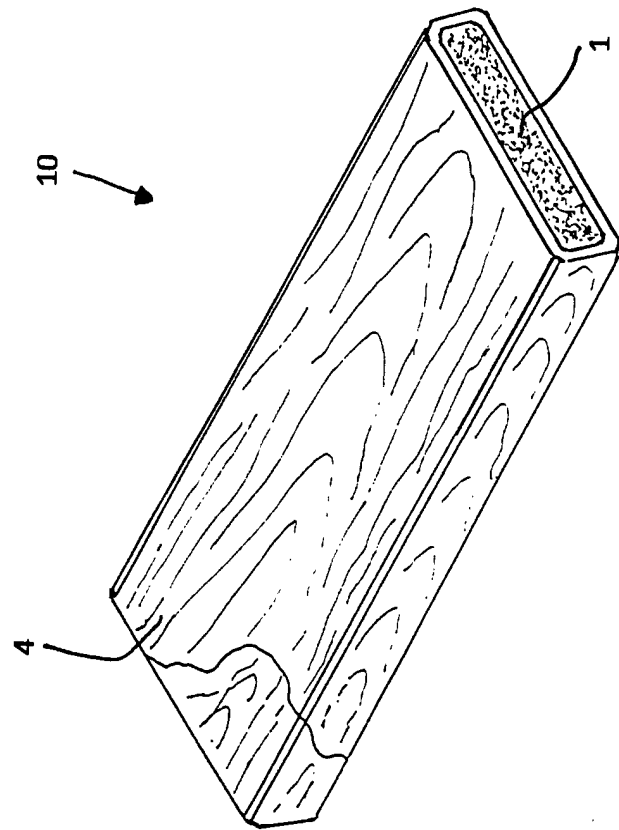


Fig. 6

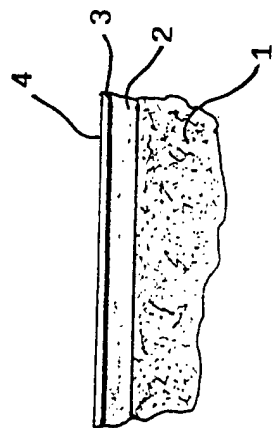


Fig. 5