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(54) **PVC window or door frame with an aesthetically improved outer surface**

(57) A PVC window or door frame with an aesthetically improved outer surface, comprises frame polyvinylchloride extruded section members, including on at least an exposed to view surface portion thereof a natural wood veneering coating protected by fire retardant paints designed for providing the section member with a high resistance against section member welding temperatures.

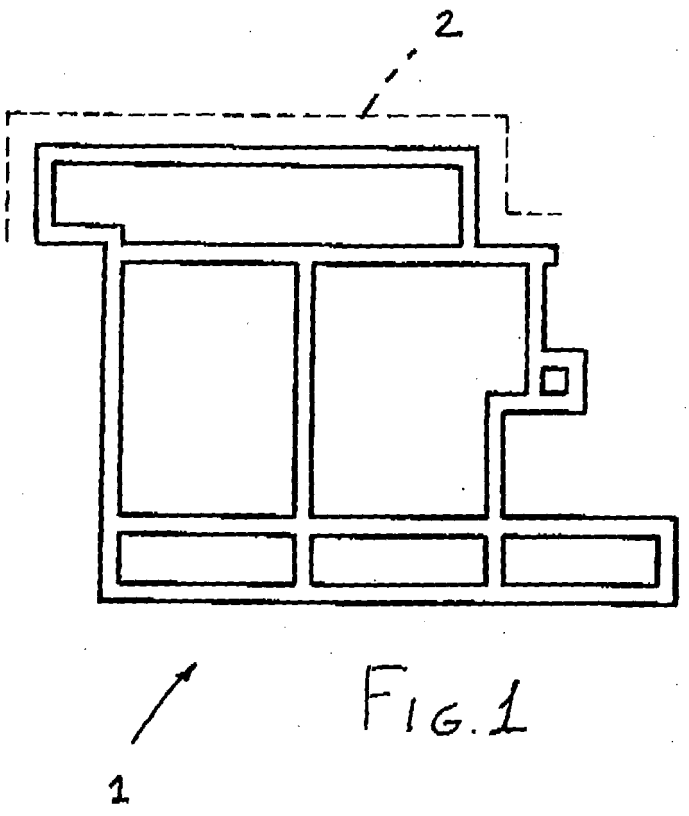

FIG. 1

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a PVC window or door frame with an aesthetically improved outer surface.

[0002] Window and door frames made of extruded PVC section members, which have an exposed to view surface coated by a decorative film, also made of PVC and visually reproducing natural wood materials, are already known.

[0003] It should be apparent that this solution does not provide the window or door frame with an aesthetic feeling like that of natural wood.

[0004] In this connection it should be pointed out that, in general, no window or door frame, made of PVC section members, and having a natural wood exposed to the view surface is at present available.

SUMMARY OF THE INVENTION

[0005] Accordingly, the aim of the present invention is to solve the above mentioned problem, by providing a PVC window or door frame having an exposed to the view surface which is aesthetically improved, in particular a window or door frame having at least an outer surface thereof providing a natural wood visual feeling.

[0006] Within the scope of the above mentioned aim, a main object of the invention is to provide such a PVC window frame which also has very good functional and strength properties.

[0007] Another object of the present invention is to provide such a PVC window or door frame, coated by natural wood which, owing to its specifically designed features, is very reliable and safe in operation.

[0008] Yet another object of the present invention is to provide such a PVC window or door frame, having an aesthetically improved exposed to the view surface, which can be easily made and which, moreover, is very competitive from a mere economic standpoint.

[0009] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a PVC window or door frame having an aesthetically improved outer surface, said PVC window or door frame being made of extruded polyvinylchloride sections members, **characterized in that** said frame comprises, at least on an outer surface portion of said extruded section members, a coating made of a natural wood veneering.

BRIEF DESCRIPTION OF THE DRAWING

[0010] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of a PVC window or door frame having an aesthetically improved outer surface, which is illustrated in the accompanying drawings, the sole figure of which schematically shows a section member used for making the inventive window or door frame.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] With reference to the above figure, the window or door frame, provided with an aesthetically improved outer surface, according to the present invention, comprises at least a window or door frame member, and preferably both the fixed and the movable frame members, made of an extruded section member, generally indicated by the reference number 1, made of PVC (polyvinylchloride).

[0012] The figure, in particular, shows schematically a theoretical configuration of the section member, but it should be apparent that the invention should not be considered as limited to the disclosed configuration.

[0013] The main feature of the invention is that, on at least an exposed to the view surface portion of the section member, and preferably on the section member surface arranged in the environment in which the frame is mounted, is applied a veneering 2 made of natural wood.

[0014] More specifically, said veneering 2 is advantageously made with a thickness of 4/10 mm, and can comprise any commercially available natural wood types, such as maple, walnut, cherry, beech, wengè, teak, ebony, bamboo, and so on.

[0015] The connection between the extruded section member 1 and veneering 2, which is made of a wood cut sheet, is carried out by a mutual glueing operation, though a hotmelt adhesive material, including a polyurethane mixture, to be hot applied on the section member at a temperature from 100 to 140°C could be used.

[0016] The used adhesive, differently from the EVA based adhesive materials which contain thermoplastic resins, will crosslink, thereby providing an unmeltable polyurethane mixture.

[0017] Advantageously, the invention provides to use the available PUR-HOTMELT adhesive material, which is a thermo-melting adhesive with a proper open time and a high starting grip, which will crosslink after few days, depending on air moisture and the material it is applied to.

[0018] This adhesive material has a good cold elasticity and a very good resistance to solvent substances and the like.

[0019] Said adhesive material can be applied by an applying gun, or other specifically designed applying tool and has an open time of about 15 seconds and a reaction time of about three days.

[0020] Thus, after having applied the veneering sheets on the PVC extruded section members, it will be possible to apply a solvent dye coating and a clear polyurethane primer, having fire retardant properties, on the veneering.

[0021] The finishing is carried out by smoothing the o

outer surface and applying a layer of a flame retardant mat polyurethane material thereon.

[0022] The use of a painting layer, including fire retardant paint materials, is necessary to allow to properly perform any subsequent cutting and welding operations for cutting through and welding the frame section members.

[0023] This operation is designed for preserving in an integral condition the wood cut sheet or plate.

[0024] It is further possible to apply on the section member a protective film adapted to resist against high temperatures, thereby further protecting the natural wood cut sheet, in an already painted condition, such as by an acid and fire retardant paints, thereby providing resistance against thermal stresses from the cutting and welding operations.

[0025] The assembling of the section members is performed by carrying out, on a conventional rotary blade cutter, a 45° cut at the two end portions of the section members.

[0026] Moreover, by using a miller, milling operations must be performed in the outer part of the frame from allowing water to properly drain through the finished window frame.

[0027] During this operation, the surface coated by the wood veneering sheet is supported on a working bench, thereby it will be necessary to apply a further protective film on the coating.

[0028] In particular, the section members forming the movable wings and fixed frame will be properly held at a set position by pressure pistons or plungers bearing on the section member surface coated by the natural wood material, and for performing this machining operation, it would be also necessary to protect the wood surface, while the section members are heated by heating plates to a temperature of substantially 242°C, as is necessary to provide a proper welding.

[0029] In this machining operation, moreover, it would be advantageous to further protect the wood coated surface.

[0030] After having performed the welding operation, the molten material projections must be properly removed, which is performed by two removal tools, that is a rotary disc rotating through the section member thickness and a knife element flush arranged on the section member face.

[0031] Also in this machining step it would be advantageous to use a protective film for protecting the veneering sheet or layer.

[0032] Then, as a further finishing operation, iron fittings for opening and closing the window or door will be applied by conventional fitting applying tools.

[0033] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0034] In particular, the fact is to be pointed out that the invention has provided a plastics material window or door frame, having at least a surface thereof, or, optionally, both the surfaces thereof, that is its inner and outer surfaces, covered by a natural wood veneering, thereby providing a very good aesthetic effect, together with very high strength characteristics.

[0035] The invention, as disclosed, is susceptible to several modifications and variations, all of which will come within the scope of the invention.

[0036] Moreover, all the constructional details can be replaced by other technically equivalent elements.

[0037] In practicing the invention, the used materials, provided they are compatible to the intended application, as well as the contingent size and shapes, can be any, according to requirements.

Claims

1. A PVC window or door frame having an aesthetically improved outer surface, said PVC window or door frame comprising extruded polyvinylchloride sections members, **characterized in that** said frame further comprises, on at least on an outer surface portion of said extruded section members, a coating made of a natural wood veneering.

2. A window or door frame, according to the preceding claim, **characterized in that** said veneering is applied by an adhesive layer.

3. A window or door frame, according to the preceding claims, **characterized in that** said adhesive layer is made of an adhesive material including a HOT-MELT adhesive substance including a polyurethane mixture hot applied at a temperature from 100 to 140°C.

4. A window or door frame, according to one or more of the preceding claims, **characterized in that** said veneering has a thickness of substantially 4/10 mm.

5. A window or door frame, according to one or more of the preceding claims, **characterized in that** said window or door frame comprises a solvent dye coating on the exposed to the view portion of the veneering.

6. A window or door frame, according to one or more of the preceding claims, **characterized in that** said window or door frame comprises two primer coatings of a fire retardant clear polyurethane material.

7. A window or door frame, according to one or more of the preceding claims, **characterized in that** said window or door frame is finished by smoothing the primer layer and applying on the veneering a fire retardant mat or opaque polyurethane coating.

8. A window or door frame, according to one or more of the preceding claims, **characterized in that** said

window or door frame comprises a removable protective film applied on said veneering.

9. A method for making a window or door frame starting from polyvinylchloride extruded section members, starting from extruded polyvinylchloride section members, **characterized in that** said method comprises the step of applying, by a hot melt adhesive layer, a layer of natural wood material veneering, two clear fire retardant polyurethane primer coatings and a further fire retardant mat polyurethane coating on said veneering, cutting through 45° the end portions of the section member, and welding a plurality of section members to provide said window or door frame.

10. A method, according to claim 9, **characterized in that** said hot melt adhesive material is applied at a temperature from 100 to 140°C.

11. A method, according to claims 9 and 10, **characterized in that** said veneering has a thickness of 4/10 mm.

12. A window or door frame having an aesthetically improved outer surface, and a method for making said window or door frame, according to the preceding claims, and substantially as broadly disclosed and illustrated, for the intended aim and objects.

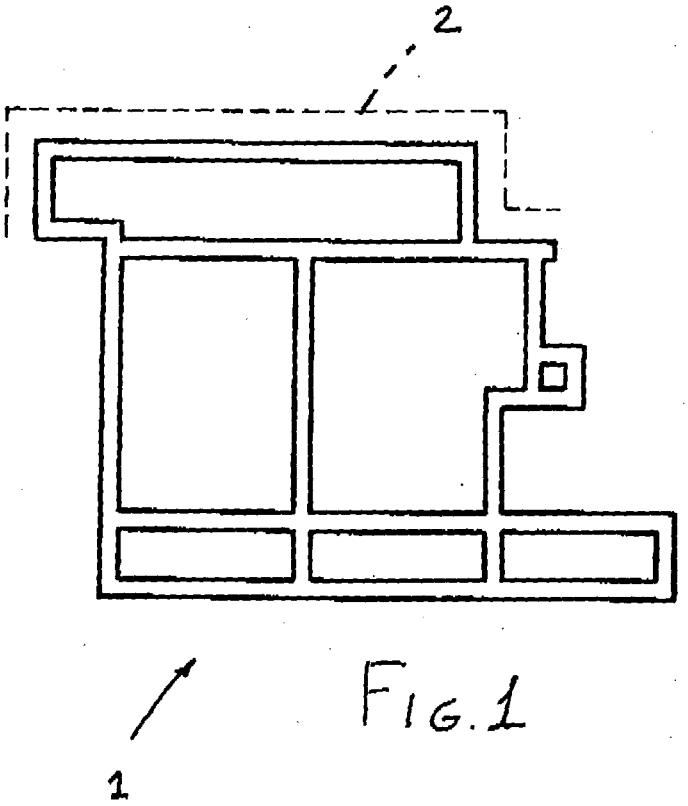

FIG. 1