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

PVC-Fenster- oder Türrahmen mit ästhetisch verbesserter Außenfläche

Cadre de fenêtre ou de porte en PVC avec sa surface externe esthétiquement améliorée

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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.

[0005] The document EP 1617033 discloses substantially the preamble of claim 1.

[0006] The document DE 100 26 284 A1 discloses a plastic profile with a natural wood veneering comprising the features of the preamble of claim 1.

SUMMARY OF THE INVENTION

[0007] 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.

[0008] 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.

[0009] 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.

[0010] 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.

[0011] 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 according to claim 1.

BRIEF DESCRIPTION OF THE DRAWING

[0012] 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

[0013] 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).

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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. A hotmelt adhesive material, including a polyurethane mixture, to be hot applied on the section member at a temperature from 100 to 140°C is used.

[0018] The used adhesive, differently from the EVA based adhesive materials which contain thermoplastic resins, will crosslink, thereby providing an unmeltable polyurethane mixture.

[0019] 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.

[0020] This adhesive material has a good cold elasticity and a very good resistance to solvent substances and the like.

[0021] 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.

[0022] Thus, after having applied the veneering sheets on the PVC extruded section members, a solvent dye coating and a clear polyurethane primer, having fire retardant properties, will be applied on the veneering.

[0023] The finishing is carried out by smoothing the o

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

[0024] 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.

[0025] This operation is designed for preserving in an integral condition the wood cut sheet or plate.

[0026] 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.

[0027] 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.

[0028] 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.

[0029] 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.

[0030] 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.

[0031] In this machining operation, moreover, it would be advantageous to further protect the wood coated surface.

[0032] 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.

[0033] Also in this machining step it would be advantageous to use a protective film for protecting the veneering sheet or layer.

[0034] Then, as a further finishing operation, iron fittings for opening and closing the window or door will be applied by conventional fitting applying tools.

[0035] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0036] 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.

[0037] The invention, as disclosed, is susceptible to several modifications and variations, all of which will come within the scope of the appended claims.

[0038] In practicing the invention the contingent size and shapes, can be any, according to requirements.

Claims

1. A PVC window or door frame (1) comprising PVC sections members, comprising further a coating of natural wood veneering sheet (2) applied to at least one outer surface portion of said extruded section member, said veneering sheet (2) being applied by an adhesive layer, **characterized in that** said adhesive layer comprises a polyurethane mixture of a thermo-melting adhesive which was hot applied at a temperature from 100 to 140°C, said thermo-melting adhesive having an open time of about 15 seconds and a reaction time of about three days, the adhered veneering sheet (2) being further coated by a solvent dye coating, on said solvent dye coating at least a fire retardant clear polyurethane primer layer and a flame retardant mat polyurethane finishing layer are applied.

2. A window or door frame, according to claim 1, **characterized in that** said window or door frame comprises a removable protective film applied on said veneering sheet.

3. A window or door frame, according to claims 1 and 2, **characterized in that** said veneering sheet has a thickness of 4/10 mm.

4. A method for making a PVC extruded section member window or door frame, according to claim 1, **characterized in that** said method comprises the steps of providing PVC extruded section members, hot applying on said extruded PVC section members at a temperature from 100 to 140°C a thermo-melting adhesive having an open time of about 15 seconds and a reaction time of about three days, adhering, to said thermosetting adhesive, a natural wood material veneering sheet, applying on said natural wood material veneering sheet a solvent dye coating, applying, on said solvent dye coating at least a fire retardant clear polyurethane primer layer and applying on said at least a fire retardant clear polyurethane primer layer a flame retardant mat polyurethane finishing layer.

Patentansprüche

1. PVC-Fenster- oder Türrahmen (1), der PVC-Teilabschnittglieder umfasst, ferner umfassend eine Beschichtung aus Naturholzfurnierbahn (2), die auf zumindest einen Außenflächenabschnitt des extrudierten Teilabschnittglieds aufgebracht ist, wobei die Furnierbahn (2) durch eine Klebeschicht aufgebracht ist, **dadurch gekennzeichnet, dass** die Klebeschicht eine Polyurethanmischung aus einem thermoschmelzenden Klebstoff umfasst, der heiß auf einer Temperatur von 100 bis 140 °C aufgebracht wurde, wobei der thermoschmelzende Klebstoff eine offene Wartezeit von ungefähr 15 Sekunden und eine Reaktionszeit von ungefähr drei Tagen aufweist, wobei die Furnierbahn (2) ferner durch eine Lösungsmittelfarbstoffbeschichtung beschichtet ist, wobei auf der Lösungsmittelfarbstoffbeschichtung zumindest eine feuerhemmende klare Polyurethan-Primerschicht und eine flammhemmende matte Polyurethan-Endbearbeitungsschicht aufgebracht sind.

2. Fenster- oder Türrahmen nach Anspruch 1, **dadurch gekennzeichnet, dass** der Fenster- oder Türrahmen eine abnehmbare Schutzfolie umfasst, die auf die Furnierbahn aufgebracht ist.

3. Fenster- oder Türrahmen nach einem der Ansprüche 1 und 2, **dadurch gekennzeichnet, dass** die Furnierbahn eine Stärke von 4/10 mm aufweist.

4. Verfahren zum Herstellen eines extrudierte Teilabschnittglieder umfassenden PVC-Fenster- oder Türrahmens nach Anspruch 1, **dadurch gekennzeichnet, dass** das Verfahren die Schritte des Bereitstellens von extrudierten PVC-Teilabschnitten, Heißaufbringens auf den extrudierten PVC-Teilabschnittgliedern auf einer Temperatur von 100 bis 140 °C eines thermoschmelzenden Klebstoffs mit einer offenen Wartezeit von ungefähr 15 Sekunden und eine Reaktionszeit von ungefähr drei Tagen, Aufklebens einer Furnierbahn aus Naturholzmaterial auf den thermohärtenden Klebstoff, Aufbringens einer Lösungsmittelfarbstoffbeschichtung auf der Furnierbahn aus Naturholzmaterial, Aufbringens von zumindest einer feuerhemmenden klaren Polyurethan-Primerschicht auf der Furnierbahn aus Naturholzmaterial und Aufbringens einer flammhemmenden matten Polyurethan-Endbearbeitungsschicht auf der zumindest einen feuerhemmenden klaren Polyurethan-Primerschicht umfasst.

Revendications

1. Cadre de porte ou de fenêtre en PVC (1) comprenant des profilés de PVC extrudés, comprenant en outre un revêtement d'une feuille de placage d'un matériau de bois naturel (2) appliquée sur au moins une portion de surface extérieure dudit profilé extrudé, ladite feuille de placage (2) étant appliquée grâce à une couche d'adhésif, **caractérisé en ce que** ladite couche d'adhésif comprend un mélange polyuréthane d'un adhésif thermofusible qui a été appliqué à chaud à une température comprise entre 100 et 140 °C, ledit adhésif thermofusible ayant un temps ouvert d'environ 15 secondes et un temps de réaction d'environ trois jours, la feuille de placage collée (2) étant en outre revêtue d'un revêtement colorant avec solvant, sur ledit revêtement colorant avec solvant au moins une couche primaire de polyuréthane transparente ignifugée et une couche de finition polyuréthane matte ignifugée sont appliquées.

2. Cadre de porte ou de fenêtre selon la revendication 1, **caractérisé en ce que** ledit cadre de porte ou de fenêtre comprend un film de protection amovible appliqué sur ladite feuille de placage.

3. Cadre de porte ou de fenêtre selon les revendications 1 et 2, **caractérisé en ce que** ladite feuille de placage a une épaisseur de 4/10 mm.

4. Procédé de fabrication d'un cadre de porte ou de fenêtre en profilés de PVC extrudés selon la revendication 1, **caractérisé en ce que** ledit procédé comprend les étapes de fourniture des profilés de PVC extrudés, d'application à chaud sur lesdits profilés de PVC extrudés à une température comprise entre 100 et 140 °C, d'un adhésif thermofusible ayant un temps ouvert d'environ 15 secondes et un temps de réaction d'environ trois jours, collant sur ledit adhésif thermodurcissable, une feuille de placage d'un matériau de bois naturel, appliquant sur ladite feuille de placage d'un matériau de bois naturel un revêtement colorant avec solvant, appliquant sur ledit revêtement colorant avec solvant au moins une couche primaire polyuréthane transparente ignifugée et appliquant sur ladite au moins une couche primaire de polyuréthane transparente ignifugée et une couche de finition polyuréthane matte ignifugée.

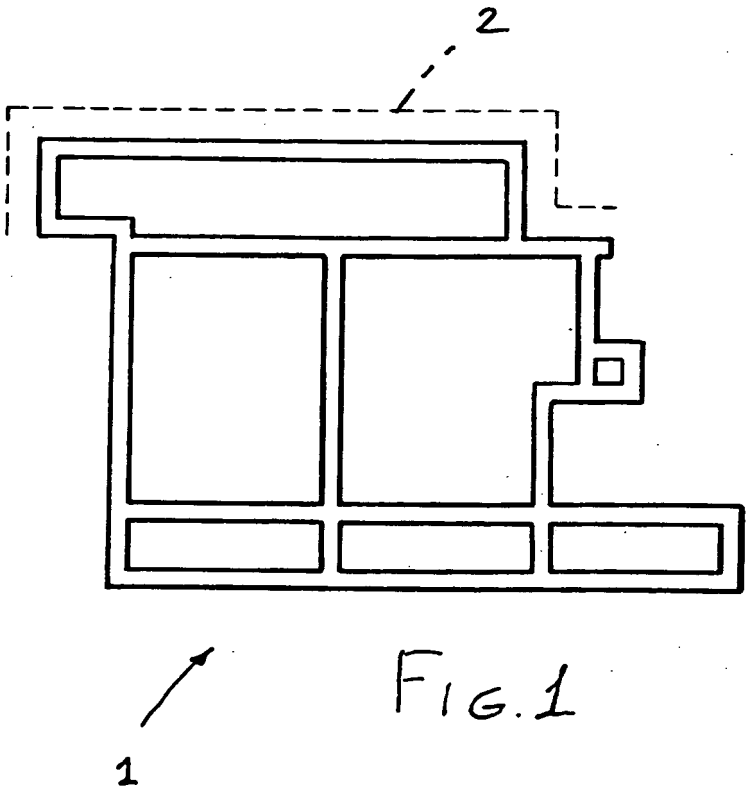

FIG. 1

REFERENCES CITED IN THE DESCRIPTION

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