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(54) **Multi-layered profile for frames for doors, windows and suchlike**

(57) A multi-layered profile for door and window frames comprising an external covering layer (11), an internal covering layer (12) and an intermediate connection layer (13) between the external covering layer (11) and the internal covering layer (12). The intermediate connection layer (13) comprises a cross section shape d so as to define on a first side at least a first seating (17) open toward the external covering layer (11), and on a second side, opposite the first side, at least a second seating (17') open toward the internal covering layer (12), wherein with each of the at least one first and at least one second seating (17, 17') a corresponding rapid coupling element (14) is associated, able to cooperate with the internal covering layer (12) and with the external covering layer (11) so as to achieve a removable coupling both of the external covering layer (11) and also of the internal covering layer (12) with the intermediate connection layer (13).

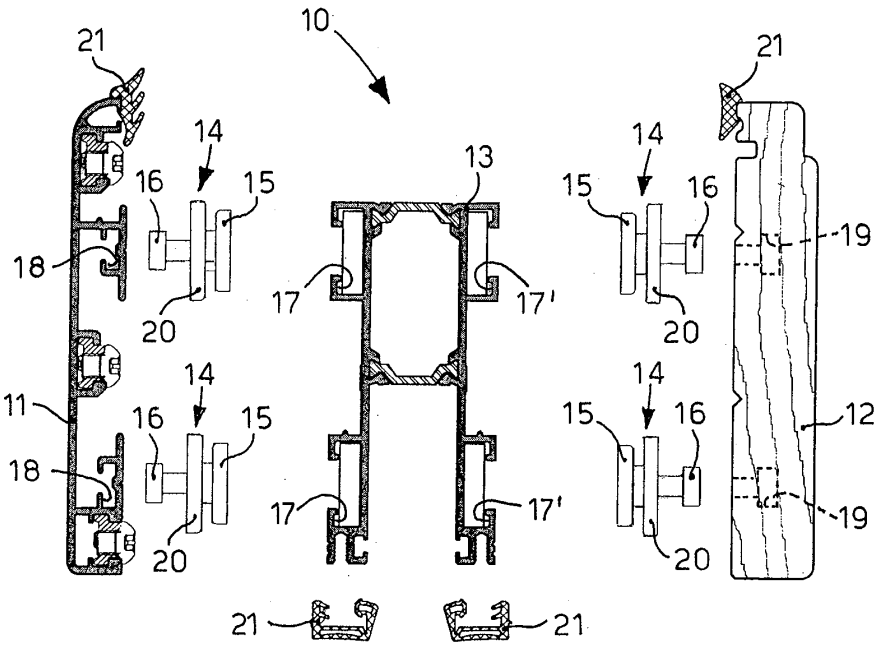

fig. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention concerns a multi-layered profile for frames for doors, windows, shutters and suchlike. In particular the profile according to the present invention consists of an external covering layer, an internal covering layer and an intermediate connection layer.

BACKGROUND OF THE INVENTION

[0002] The use of multi-layered profiles is known to make frames for doors, windows, shutters and suchlike.

[0003] Such profiles normally comprise an external covering layer, typically made of aluminum or an alloy thereof, suitable for exposure to the outside environment, an internal covering layer, made of wood or comparable materials, normally having aesthetic embellishments, and an intermediate connection layer between the aforesaid two layers.

[0004] The intermediate connection layer is typically made of plastic material, for example polyamide, nylon, PVC or suchlike, or of aluminum, and is interposed between the aforesaid two layers, not only for the specific connection function, but also, partially, if it is made in plastic material, for its heat insulating properties.

[0005] One disadvantage of known profiles is that only the internal covering layer is interchangeable, and therefore, in order to carry out substitution and/or maintenance of the external covering layer the frame must be removed from its installation seating, which entails laborious and costly maintenance operations, as well as annoying inconvenience to the user.

[0006] Moreover the known profiles, because of the type of coupling, normally with a snap-in coupling, which the intermediate connection layer makes with the external covering layer and the internal covering layer, do not allow a reciprocal independent dilation of the aforesaid three layers, with the structural problems that this entails.

[0007] Moreover, the snap-in coupling between the intermediate connection layer made of metal material and the external covering layer, also made of metal material, does not guarantee a good heat insulation of the profile. In fact the cold/heat of the external environment is transmitted, through heat conduction, by the external covering element to the intermediate connection element and from this to the internal covering layer.

[0008] The purpose of the present invention is to make a multi-layer profile for door and window frames and suchlike, which allows an easy and rapid maintenance and substitution of both the internal covering layer and also the external covering layer without having to remove the frame from its seating installation, that is, keeping it always in an efficient working condition, which does not entail laborious and costly maintenance operations, and furthermore is robust and guarantees in any condition an efficient seal with respect to the external environment.

[0009] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0010] The present invention is set forth and characterized in the independent claim, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0011] In accordance with the above purposes, a multi-layered profile for frames, according to the present invention, comprises an external covering layer, made of metal, wood, or any other material which is typically suitable to be exposed to the external environment; an internal covering layer, advantageously made of wood or alternative materials, as for example recovered or coated sections, typically with aesthetic embellishments; and an intermediate connection layer between said external covering layer and said internal covering layer, advantageously made of metal material, and/or plastic, or other similar or comparable materials.

[0012] According to a characteristic feature of the present invention the intermediate connection layer comprises a cross section shaped so as to define on a first side at least a first seating open toward the external covering layer, and on a second side, opposite said first side, at least a second seating open toward the internal covering layer, wherein with each of the aforesaid at least a first and at least a second seating a corresponding rapid coupling element is associated, able to cooperate with the internal covering layer and with the external covering layer so as to achieve a removable coupling both of the external covering layer and of the internal covering layer with the intermediate connection layer.

[0013] In a first preferential embodiment of the present invention each rapid coupling element is at least partially solid with respect to said at least one first seating and said at least one second seating, and remains in a preassembly position even after the removal of the respective layer, internal or external.

[0014] Advantageously the external covering layer comprises at least a third seating open toward the intermediate connection layer, able to accommodate the rapid coupling element.

[0015] According to an advantageous feature of the present invention, the internal covering layer comprises at least a fourth seating open toward the intermediate connection layer, able to accommodate the rapid coupling element.

[0016] In a second preferential embodiment of the present invention, at least one rapid coupling element is solid with the external covering layer.

[0017] Advantageously, at least one rapid coupling element is also solid with the internal covering layer.

[0018] In this second embodiment the first and second seatings are able to accommodate the corresponding

rapid coupling element.

[0019] In this way, both the external covering layer and the internal covering layer are able to be associated with/removed from the intermediate connection layer with rapid and easy operations during which, furthermore, the frame is kept in a working condition, even if it is temporarily without the internal layer, the external layer or both.

[0020] This creates a modular frame, in which, according to the needs of the user, the external part, and/or the internal part, can be substituted, for example, in order to make external and/or internal reinforcements, to change the material that constitutes the covering layers, to carry out re-painting or any other work that the frame needs.

[0021] Moreover, the use of rapid coupling elements to couple the three layers prevents any direct contact between them, and therefore allows a reciprocal independent dilation of the three layers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 is a sectioned and exploded side view of the profile according to the present invention in a first form of embodiment;
- fig. 2 is a sectioned lateral view of the profile in fig. 1, in the assembled condition;
- fig. 3 is a sectioned lateral view of a first variant of the profile in fig. 1; and
- fig. 4 is a sectioned lateral view of a second variant of the profile in fig. 1.

DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF EMBODIMENT

[0023] With reference to fig. 1, a multi-layered profile 10 for frames such as doors, windows, shutters and suchlike, according to the present invention, comprises an external covering layer 11, an internal covering layer 12, and an intermediate connection layer 13, interposed between the external covering layer 11 and the internal covering layer 12.

[0024] The profile 10 also comprises coupling blocks 14, for example of the type described in the patent application EP 06111251.2, able to achieve the coupling of the layers 11, 12 and 13.

[0025] Each coupling block 14 is shaped so as to define, at a first end, a clamping element 15, having a substantially oval conformation, with two parallel and rectilinear flanks, for coupling with the intermediate connection layer 13, and at a second end, opposite said first end, a coupling element 16, of a substantially flat cylindrical shape, for coupling with the external covering layer 11 and with the internal covering layer 12. The coupling element 16 also comprises a stop element, not shown in the drawings.

[0026] Each coupling block 14 also comprises a drive element 20, associated with the clamping element 15 and with the coupling element 16, and interposed between them, having a substantially flat shape and having at least two opposite flat flanks, to engage with a tool of a known type and not shown in the drawings. Moreover the drive element 20 maintains the layers 11, 12 and 13 not in direct contact and therefore allows a reciprocal independent dilation of the three layers 11, 12 and 13.

[0027] The intermediate connection layer 13, made of metal material, advantageously aluminum or alloys thereof, and/or of plastic material, is shaped so as to define in this case, on a first side, a pair of seatings 17 and on a second side, opposite the first side, a pair of seatings 17'. However it cannot be excluded that each side of the intermediate connection layer is provided either with a single seating 17, 17' or with a plurality of seatings 17, 17'. Each of the seatings 17, 17' is able to accommodate the clamping element 15 of each coupling block 14. The clamping element 15 is clamped inside the seatings 17, 17' in a known way by rotating it by substantially 90°.

[0028] The external covering layer 11, advantageously made of metal material, wood (fig. 4) or any other type of material, is provided in this case with a pair of seatings 18, disposed in correspondence with the pair of seatings 17 of the intermediate connection layer 13. Each of the seatings 18 is able to accommodate the coupling element 16 of each coupling block 14.

[0029] The internal covering layer 12, advantageously made of wood so as to obtain a high aesthetic level, is provided in this case with a pair of seatings 19, disposed in correspondence with the pair of seatings 17'. Each of the seatings 19 is able to accommodate the coupling element 16 of each coupling block 14.

[0030] The profile according to the present invention also comprises sealing elements 21, to heat insulate the profile, disposed between the external covering layer 11 and the intermediate connection layer 13, between the latter and the internal covering element 12, and between the external and internal covering layers 11, 12 and the glass 22 that in this case, together with the profile, make up the frame.

[0031] Fig. 2 shows the profile in an assembled condition.

[0032] In a first form of embodiment, each coupling block 14 has the clamping element 15 solid with each of the seatings 17, 17'. The external covering layer 11 and the internal covering layer 12 are able to be associated with the intermediate connection layer 13 following the insertion of the coupling element 16 of the coupling block 14 into the seatings 18 and 19. Following the substantially 90° rotation of the clamping element 15 by means of the drive element 20, the stop element is activated, which guarantees a stable clamping of the external covering layer 11 and of the internal covering layer 12 to the intermediate connection layer 13.

[0033] In a second form of embodiment, each coupling block 14 has the coupling element 16 solid with the external covering layer 11 and with the internal covering layer 12. The latter are able to be associated with the intermediate connection layer 13 following the insertion of the clamping element 15, for example by sliding, inside the seatings 17, 17' and following the clamping of the latter by rotating it by substantially 90°, by means of the drive element 20.

[0034] It is clear that modifications and/or additions of parts may be made to the multi-layered profile for frames as described heretofore, without departing from the field and scope of the present invention.

[0035] It comes within the scope of the present invention to provide that for attaching the external covering layer 11 and the internal covering layer 12 attachment screws 23 are also used (fig. 3).

[0036] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of multi-layered profile for frames, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

Claims

1. Multi-layered profile for door and window frames, comprising an external covering layer (11), an internal covering layer (12) and an intermediate connection layer (13) between said external covering layer (11) and said internal covering layer (12), **characterized in that** said intermediate connection layer (13) comprises a cross section shaped so as to define on a first side at least a first seating (17) open toward said external covering layer (11), and on a second side, opposite said first side, at least a second seating (17') open toward said internal covering layer (12), wherein with each of said at least one first and at least one second seating (17, 17') a corresponding rapid coupling element (14) is associated, able to cooperate with said internal covering layer (12) and with said external covering layer (11) in order to achieve a removable coupling both of said external covering layer (11) and also said internal covering layer (12) with said intermediate connection layer (13).

2. Profile as in claim 1, **characterized in that** each rapid coupling element (14) is at least partially solid respectively with said at least one first seating (17) and with said at least one second seating (17').

3. Profile as in claim 2, **characterized in that** said external covering layer (11) comprises at least a third seating (18) open toward said intermediate connection layer (13) able to accommodate said rapid coupling element (14).

4. Profile as in claim 3, **characterized in that** said internal covering layer (12) comprises at least a fourth seating (19) open toward said intermediate connection layer (13) able to accommodate said rapid coupling element (14).

5. Profile as in claim 1, **characterized in that** at least a rapid coupling element (14) is solid with said external covering layer (11).

6. Profile as in claim 5, **characterized in that** at least a rapid coupling element (14) is solid with said internal covering layer (12).

7. Profile as in claim 5, **characterized in that** said at least one first seating (17) is able to accommodate said rapid coupling element (14).

8. Profile as in claim 6, **characterized in that** said at least one second seating (17') is able to accommodate at least said one rapid coupling element (14).

9. Profile as in any claim hereinbefore, **characterized in that** it comprises sealing elements (21) to achieve heat insulation.

10. Profile as in any claim hereinbefore, **characterized in that** said intermediate connection layer (13) is made of metal material.

11. Profile as in any claim hereinbefore, **characterized in that** said intermediate connection layer (13) is made of plastic material.

12. Profile as in any claim hereinbefore, **characterized in that** said internal covering layer (12) is made of wood or comparable material.

13. Profile as in any claim hereinbefore, **characterized in that** said external covering layer (11) is made of metal material.

14. Profile as in any claim hereinbefore, **characterized in that** said external covering layer (11) is made of wood material.

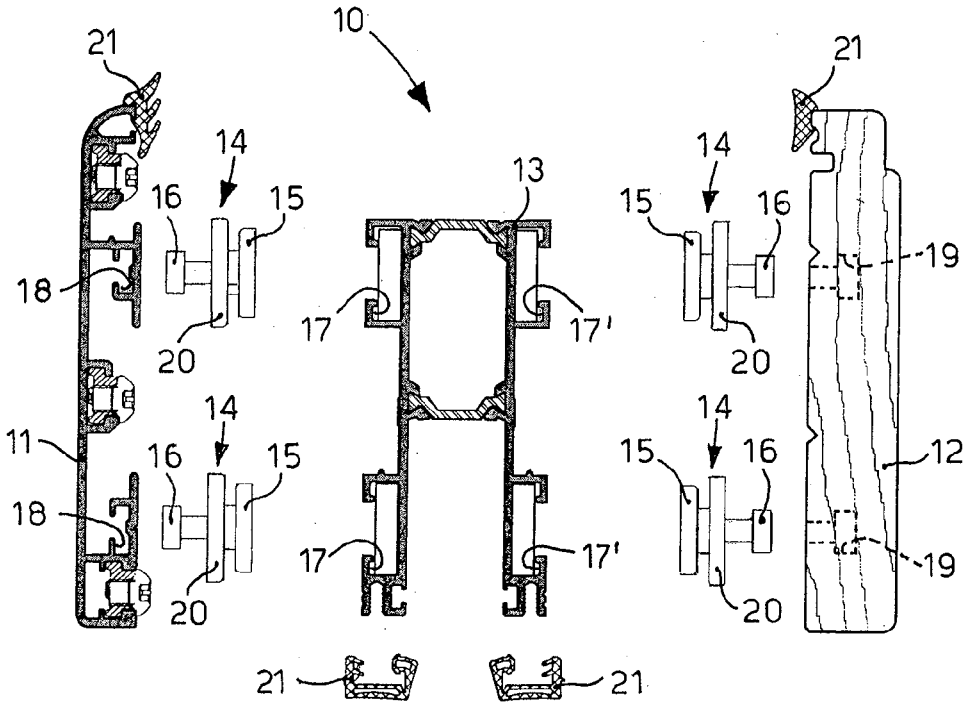

fig. 1

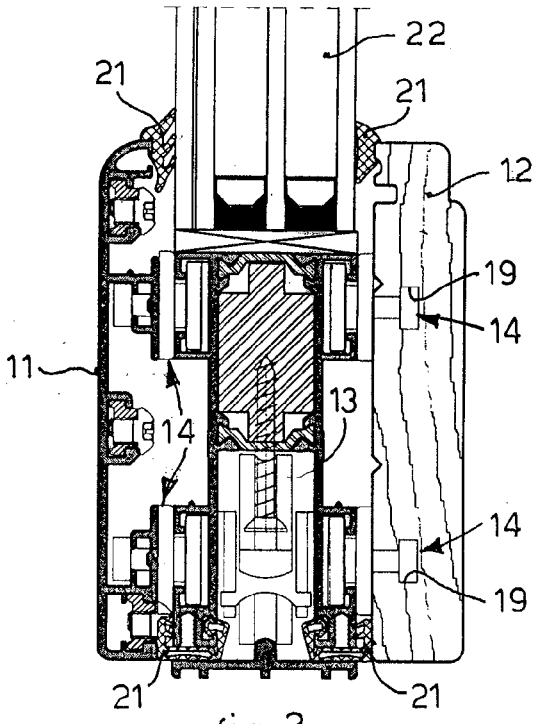

fig. 2

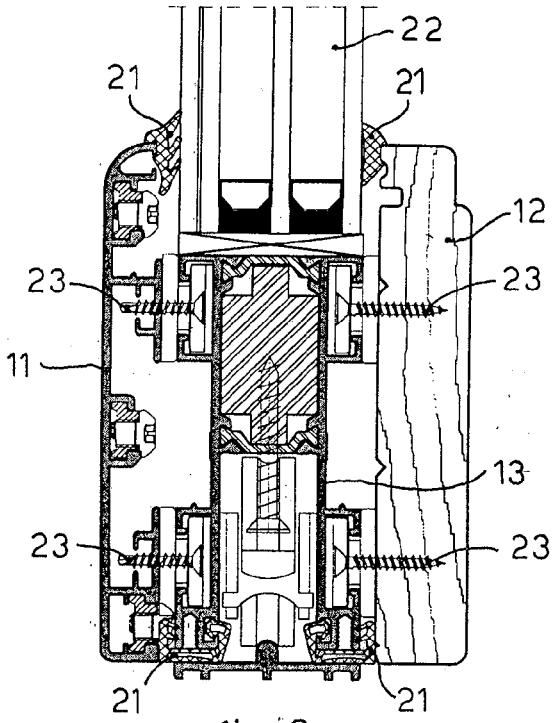

fig. 3

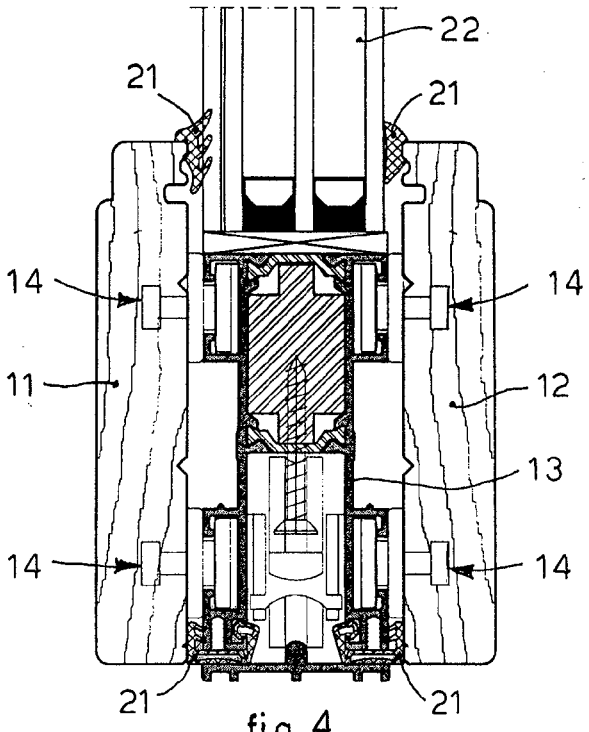

fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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