



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 338 746 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.08.2003 Bulletin 2003/35

(51) Int Cl.7: **E06B 3/30, E06B 3/263**

(21) Application number: **03002648.8**

(22) Date of filing: **11.02.2003**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT SE SI SK TR**
Designated Extension States:
AL LT LV MK RO

(72) Inventor: **Vigano', Adelio**
20046 Biassono (Prov. of Milan) (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(30) Priority: **22.02.2002 IT MI20020090 U**

(71) Applicant: **Indinvest S.p.A.**
20046 Biassono (Prov. of Milan) (IT)

(54) **Frame for doors or windows of the type with metal profiles on the outer side and with wood cladding on the inner side**

(57) A frame for doors or windows of the type with metal profiles on the outer side and wood cladding on the inner side, comprising an extruded metal profile (1a, 1b, 1c), which forms the outer side of the frame and an outer abutment (2) for a pane (3) made of glass or other material, and a wood profile (4a, 4b), which is associat-

ed with the side of said metal profile (1a, 1b, 1c) that faces inward, further comprising a contoured plate element (5), which is fixed to the side of said metal profile that is directed inward and forms an internal abutment (6), arranged opposite said external abutment (2), for said pane (3).

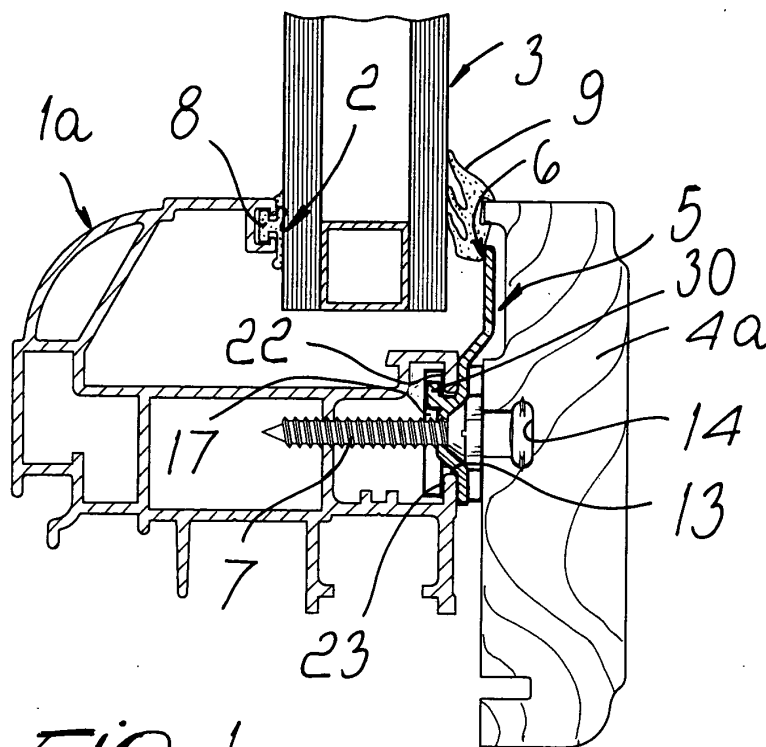


Fig. 1

EP 1 338 746 A2

Description

[0001] The present invention relates to a frame for doors or windows of the type with metal profiles on the outer side and with wood cladding on the inner side.

[0002] Frames for doors or windows are known which are composed of metal profiles, generally made of extruded aluminum, which are clad on their inner side by means of wood profiles.

[0003] In these kinds of frame, the metal profile forms the external abutment for the pane, which is made of glass or other material, while the inner abutment, arranged opposite the outer abutment, is formed by the wood profile. Gaskets that provide a seal with the pane are fitted to the inner abutment and to the outer abutment.

[0004] In this type of profile, very often the inner abutment, formed by the wood profile, does not offer adequate assurances of tightness. Since the wood profile is generally connected to the metal profile by means of nylon inserts that are interposed between the two profiles so that they are not visible on the inner side of the door or window, a strong push against the pane from the outside inward can cause the separation of the wood profile from the metal profile, releasing the pane. For this reason, frames of this kind do not offer adequate assurances of safety against any break-in attempts.

[0005] Furthermore, over time play can develop between the metal profile and the wood profile and can cause movements or vibrations of the pane.

[0006] The aim of the present invention is to obviate the drawbacks described above, by providing a frame for doors or windows of the type with metal profiles on the outer side and with wood cladding on the inner side that is capable of ensuring adequate locking of the pane both on the inner side and on the outer side so as to contrast effectively any break-in attempts.

[0007] Within this aim, an object of the invention is to provide a frame that assuredly prevents unwanted movements or vibrations of the pane.

[0008] Another object of the invention is to provide a frame that is simple and rapid to assemble.

[0009] Another object of the invention is to provide a frame that can be manufactured at competitive costs.

[0010] This aim and these and other objects that will become better apparent hereinafter are achieved by a frame for doors or windows of the type with metal profiles on the outer side and wood cladding on the inner side, comprising an extruded metal profile, which forms the outer side of the frame and an outer abutment for a pane made of glass or other material, and a wood profile, which is associated with the side of said metal profile that faces inward, characterized in that it comprises a contoured plate element, which is fixed to the side of said metal profile that is directed inward and forms an internal abutment, arranged opposite said external abutment, for said pane.

[0011] Further characteristics and advantages will be-

come better apparent from the detailed description of a frame according to the invention, illustrated by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a sectional view of a movable leaf of a frame according to the invention;

Figure 2 is a sectional view of a movable leaf of a frame according to the invention, taken in a different region with respect to Figure 1;

Figure 3 is a sectional view of a fixed beam of a frame according to the invention;

Figure 4 is a sectional view of a base of a movable leaf of a frame according to the invention that can be used as an alternative to the set of profiles shown in Figures 1 and 2, for example to form the lower side of French doors;

Figures 5 and 6 are enlarged-scale perspective views, taken from two different angles, of a lever for assembling the metal profile and the wood profile; Figure 7 is an enlarged-scale perspective view of the contoured plate element.

[0012] With reference to the figures, the frame for doors or windows having the structure according to the invention comprises an extruded metal profile 1a, 1b, 1c, which may have different shapes, as shown, depending on whether it is to be used to form a movable leaf of the frame, as shown in Figures 1 and 2, or a fixed beam, as shown in Figure 3, or a base, as shown in Figure 4.

[0013] The metal profile 1a, 1b, 1c forms the outer side of the frame and an external abutment 2 for a pane 3 made of glass or other material.

[0014] The frame also comprises a wood profile 4a, 4b, which is associated with the side of the metal profile 1a, 1b, 1c that is directed inward. The wood profile 4a, 4b also can have different shapes depending on whether it is used for the movable leaf of the frame, as shown in figures 1 and 2, or is used for a fixed beam or for a base, as shown in figures 3 and 4.

[0015] According to the invention, the frame comprises a contoured plate element, generally designated by the reference numeral 5, which is fixed to the side of the metal profile 1a, 1b, 1c that is directed inward and forms an inner abutment 6, arranged opposite the outer abutment 2, for the pane 3.

[0016] The plate element 5 is fixed to the inner side of the metal profile 1a, 1b, 1c, preferably by means of at least one screw 7, so that it is rigidly coupled to the metal profile 1a, 1b, 1c.

[0017] It should be noted that the plate element 5 cooperates with the wood profile 4a, 4b in locking the pane 3 on the inner side.

[0018] Respective gaskets 8, 9 for sealing the pane 3 are arranged on the outer abutment 2 and on the inner abutment 6.

[0019] Owing to the fact that the pane 3, on its inner

side, is locked by means of the plate element 5, which is rigidly coupled to the metal profile 1a, 1b, 1c and co-operates with the wood profile 4a, 4b in locking the pane 3, the pane 3 is locked so as to offer adequate assurances of safety against break-in attempts. Moreover, the plate element 5, by ensuring effective locking of the pane 3 regardless of the coupling between the metal profile 1a, 1b, 1c and the wood profile 4a, 4b, prevents the occurrence of accidental movements or vibrations of the pane 3.

[0020] More particularly, the plate element 5, shown in particular in Figure 6, has a contoured portion that is meant to rest against the side of the metal profile 1a, 1b, 1c that is directed inward. Said portion has a contoured region 9, which is formed by two inclined portions 10 that have mutually opposite inclinations and are joined by an intermediate region 11 that lies on a plane that is substantially parallel to the plane of the portion of said plate element 5 that forms the inner abutment 6. In the intermediate region 11 there is a hole 12 for the passage of the screw 7. The contoured portion 9 can be inserted in a longitudinal slot 13 provided on the side of the metal profile that is directed inward. Laterally and on mutually opposite sides with respect to the contoured portion 9 that can be inserted in the longitudinal slot 13 there are two flat portions 14, which rest against the side of the metal profile 1a, 1b, 1c that is directed inward, proximate to the longitudinal slot 13, thus obtaining stable and precise resting of the plate element 5 against the metal profile 1a, 1b, 1c.

[0021] The wood profile 4a, 4b has, on its side directed toward the metal profile 1a, 1b 1c, a longitudinal slot 14, which faces the longitudinal slot 13. The connection between the metal profile 1a, 1b, 1c and the wood profile 4a, 4b is provided by way of connection means, which are interposed between the metal profile and the wood profile and engage within the longitudinal slots 13 and 14.

[0022] Said connection means preferably comprise a lever, generally designated by the reference numeral 16 and shown in particular in figures 5 and 6, which is flat and has, on his two opposite main faces, engagement elements 17, 18, which can be engaged respectively with the metal profile 1a, 1b, 1c and with the wood profile 4a, 4b. Each one of the engagement elements 17, 18 has dimensions that differ along two directions that are perpendicular on a plane that is substantially parallel to the planes of arrangement of the two opposite main faces of the lever 16. Each engagement element 17, 18 can be inserted in one of the longitudinal slots 13, 14 so that its larger dimension is orientated parallel to the extension of the longitudinal slot 13, 14 and, by way of a rotation of the lever 16 through an angle of substantially 90°, about a rotation axis 19 that is perpendicular to the planes of arrangement of the two opposite main faces of the lever 16, can be moved so that its larger dimension lies transversely with respect to the extension of the longitudinal slot 13, 14 in which it is inserted so as

to stably mutually fix the metal profile 1a, 1b, 1c and the wood profile 4a, 4b.

[0023] The wood element 17 is shaped like a prism with a rectangular base that is radiused at the corners. The engagement element 18 also is shaped like a prism with a substantially rectangular base with radiused corners. The shorter side of the rectangular base of the engagement elements 17, 18 is shorter than the transverse dimension of the opening of the slot 13, 14 in which it is to be inserted, while the longer side of the rectangular base of the engagement elements 17, 18 is longer than said transverse dimension of the opening of the corresponding slot 13, 14.

[0024] The engagement element 17 and the engagement element 18 are joined to the body of the lever 16 by means of a pivot 20, 21, the diameter of which is smaller than the transverse dimension of the opening of the corresponding longitudinal slot 13, 14 with which the corresponding engagement element 17, 18 can engage.

[0025] The longitudinal slots 13, 14 have an opening whose dimensions are chosen so as to allow the passage of the shorter side of the engagement element 17, 18 and have, after said opening, a wider region that forms undercuts 22, 23 against which the engagement element 17, 18 engages when the lever 16 is rotated, as will become better apparent hereinafter. The lever 16 has an elongated shape, and the engagement elements 17, 18 are arranged proximate to a longitudinal end of the lever 16. The opposite longitudinal end of the lever 16, designated by the reference numeral 16a, is adapted to protrude from the profiles 1a, 1b, 1c and 4a, 4b in order to allow to turn the lever 16 about the axis 19 in order to engage the engagement elements 17, 18 with the profiles and conceal said lever 16 between the metal profile and the wood profile.

[0026] Substantially, in order to assemble the metal profile 1a, 1b, 1c to the wood profile 4a, 4b, the lever 16 is arranged so that the longer side of the engagement elements 17 and 18 is parallel to the extension of the longitudinal slot 13, 14. In this position, the engagement element 17 can enter the slot 13 and the engagement element 18 can enter the slot 14. In this position, moreover, the lever 16 protrudes with its end 16a transversely to the profiles 1a, 1b, 1c and 4a, 4b. By acting on the end 16a of the lever 16 and causing a rotation substantially through 90° about the axis 19 of said lever 16 with respect to the profiles, the engagement elements 17, 18 engage the undercuts 22 and 23 of the slots 13 and 14, firmly coupling the wood profile 4a, 4b to the metal profile 1a, 1b, 1c. The rotation of the lever 16 about the axis 19 also conceals the lever 16 between the profiles 1a, 1b, 1c and 4a, 4b.

[0027] In order to increase the engagement with the wood profile 4a, 4b, it is possible to provide grip teeth 24 on the lateral surface of the engagement element 18.

[0028] Preferably, in order to increase the strength of the coupling of the plate element 5 to the metal profile

1a, 1b, 1c, it is possible to provide, as shown, a tooth 30, which protrudes from one side of the plate element 5, can be inserted in the longitudinal slot 13 and can engage the undercut 22. In this case, the screw 7 is designed only to maintain the position of the plate element 5, whilst the stresses produced by a break-in attempt are transmitted by the tooth 30 to the metal profile 1a, 1b, 1c.

[0029] In manufacturing the frame according to the invention, multiple plate elements 5 are used and are spaced along the longitudinal slot 13 so as to allow to position between the plate elements 5, in each instance, a lever 16 for the assembly of the wood profile 4a, 4b to the metal profile 1a, 1b, 1c.

[0030] In the profiles, such as for example the metal profile 1b, that are meant to engage two panes 3, it is possible to provide, as shown in Figure 2, two plate elements 5 for locking the two panes 3.

[0031] In practice it has been found that the frame having the structure according to the invention fully achieves the intended aim, since by means of said plate element it achieves adequate locking of the pane on the inner side of the frame, offering adequate assurances of resistance to any break-in attempts and avoiding accidental movements or vibrations of the pane.

[0032] In practice, the materials used, as well as the dimensions, may be any according to requirements and to the state of the art.

[0033] The disclosures in Italian Utility Model Application No. MI2002U000090 from which this application claims priority are incorporated herein by reference.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A frame for doors or windows of the type with metal profiles on the outer side and wood cladding on the inner side, comprising an extruded metal profile, which forms the outer side of the frame and an outer abutment for a pane made of glass or other material, and a wood profile, which is associated with the side of said metal profile that faces inward, **characterized in that** it comprises a contoured plate element, which is fixed to the side of said metal profile that is directed inward and forms an internal abutment, arranged opposite said external abutment, for said pane.
2. The frame according to claim 1, **characterized in that** said plate element is fixed to said metal profile by means of at least one screw.

3. The frame according to claims 1 and 2, **characterized in that** said metal profile has, on its side that is directed inward, a longitudinal slot; said plate having a contoured portion that is inserted in said longitudinal slot, at least one hole for the passage of a fixing screw being formed in said contoured portion.
4. The frame according to one or more of the preceding claims, **characterized in that** said plate has, laterally to said contoured portion inserted in said longitudinal slot, two substantially flat regions that rest against the side of said metal profile that is directed inward.
5. The frame according to one or more of the preceding claims, **characterized in that** said wood profile has, on its side directed toward said metal profile, a longitudinal slot, which faces said longitudinal slot of the metal profile, connection means being provided which are interposed between said metal profile and said wood profile and engage said longitudinal slots.
6. The frame according to one or more of the preceding claims, **characterized in that** said connection means comprise a flat lever which has, on its two opposite main faces, respectively an engagement element that can engage said metal profile and an engagement element that can engage said wood profile, each one of said engagement elements having different dimensions along two directions that are substantially perpendicular on a plane that is substantially parallel to the planes of arrangement of said two opposite faces of the lever; each engagement element being insertable in one of said longitudinal slots so that its longer dimension is orientated parallel to the extension of said longitudinal slot and being able to rotate through an angle of substantially 90° about a rotation axis that is perpendicular to the planes of arrangement of said two opposite faces of the lever in order to arrange its larger dimension transversely to the extension of the longitudinal slot in which it is inserted.
7. The frame according to one or more of the preceding claims, **characterized in that** said longitudinal slots of the profiles have undercut regions for the engagement of the corresponding engagement element.
8. The frame according to one or more of the preceding claims, **characterized in that** each one of said engagement elements is connected to the corresponding face of the flat lever by means of a pivot whose diameter is smaller than the transverse dimension of the longitudinal slot of the profile in which it is inserted.

9. The frame according to one or more of the preceding claims, **characterized in that** said engagement elements are shaped like a prism with a substantially rectangular base with rounded corners, the shorter sides of the rectangle being shorter than the transverse dimension of the opening of said longitudinal slot in which the engagement element is to be inserted, the longer sides of the rectangle being longer than said transverse dimension of the opening of the longitudinal slot. 5 10
10. The frame according to one or more of the preceding claims, **characterized in that** grip teeth are provided on the lateral surface of the engagement element that is designed to couple to the wood profile. 15
11. The frame according to one or more of the preceding claims, **characterized in that** said lever has an elongated shape, said engagement elements being arranged proximate to a longitudinal end of said lever, the opposite longitudinal end of said lever being adapted to protrude from said profiles in order to allow to turn said lever about said rotation axis in order to engage said engagement elements with said profiles and in order to conceal said lever between said metal profile and said wood profile. 20 25
12. The frame according to one or more of the preceding claims, **characterized in that** said plate element has, on one of its sides, a tooth that can be inserted in said longitudinal slot of the metal profile and can engage one of said undercut regions. 30

35

40

45

50

55

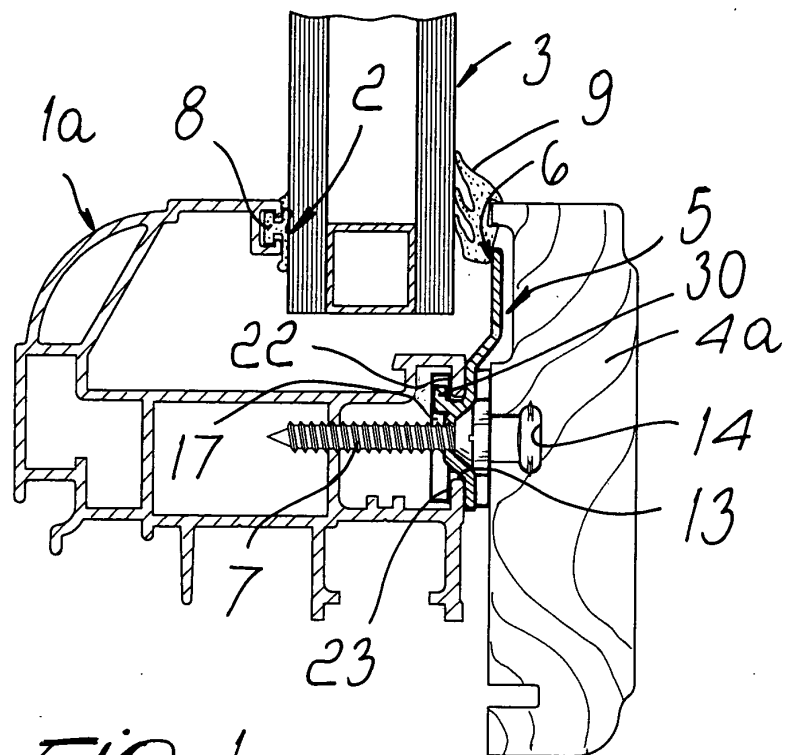


Fig. 1

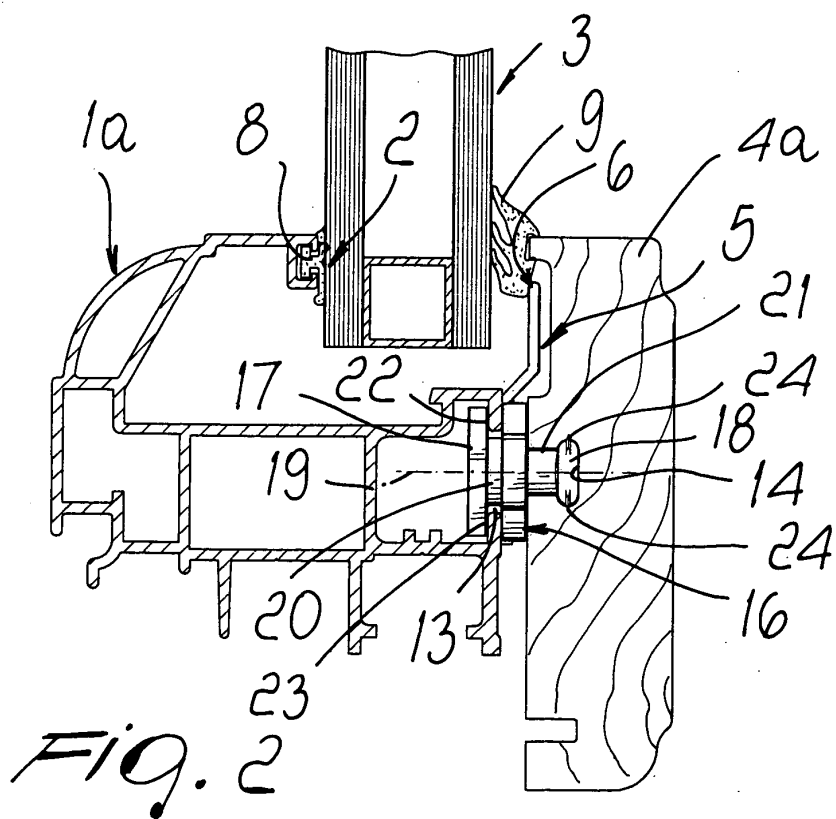


Fig. 2

