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(54) **Fixing assembly for door sealing**

(57) An assembly for fixing a sealing to a door or window leaf comprises a supporting profile (2) designed to be fixed in the longitudinal channel (C) of a leaf (A), and having longitudinal end sections (8, 9), means (13) for anchoring the supporting profile (2) to a leaf (A) at least at one end section (8, 9), wherein the supporting profile (2) has a downwardly open lower portion (3) and a longitudinal upper portion (5) with a pair of substantially vertical sidewalls (6, 7). The upper portion (5) of the supporting profile (2) has at least one groove (15) formed in one of the vertical sidewalls (8), the anchoring means (13) having at least one fixing member (16) designed to slideably engage the groove (15) for anchoring the supporting profile (2) to the channel (C).

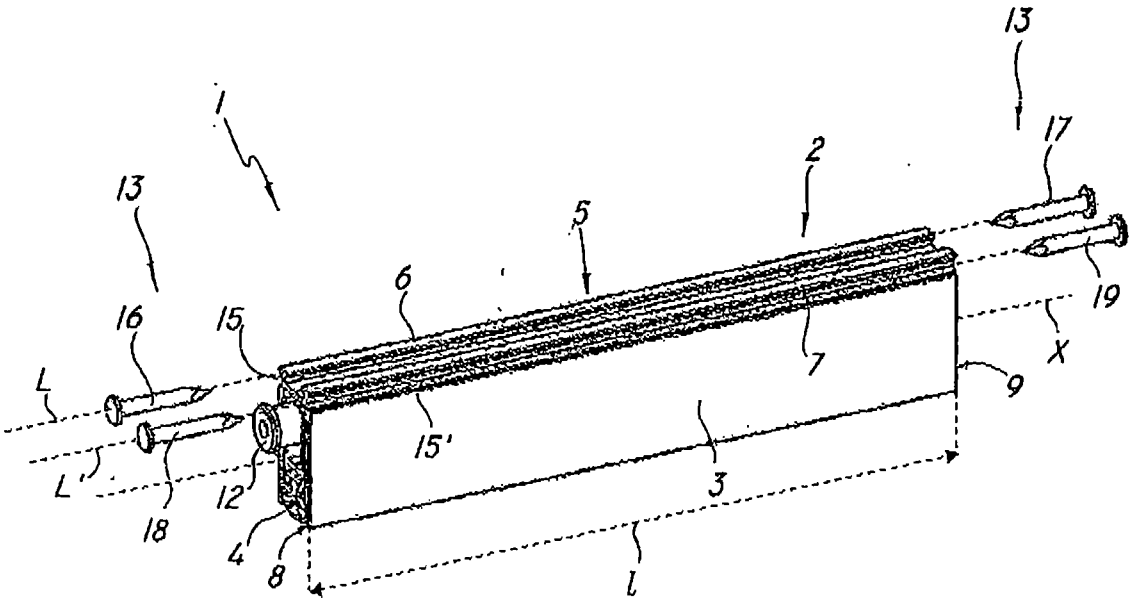

FIG. 1

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Description

Field of the invention

[0001] The present invention generally finds application in the field of sound, heat and weather insulating devices for doors and windows, and particularly relates to an assembly for fixing a sealing to a window or door leaf.

Background art

[0002] Seals for doors or windows are known, which are designed to be inserted in a special channel formed at the lower and/or upper edges of a door or window leaf as a weather strip or for heat and/or sound insulation.

[0003] A particular type of seals includes a rigid supporting rail adapted to be fixed in the channel of the leaf to accommodate therein an insulating profile designed to be pressed against a paving or sill.

[0004] The supporting rail may be fixed to the door leaf in a variety of manners, selected according to both the material that constitutes the leaf and the position and particular operation of the sealing.

[0005] In widely used solutions, the supporting rail is fixed in the channel by interference fit.

[0006] In other solutions, special adhesives are spread over the inner surface of the channel and/or the outer surface of the supporting rail.

[0007] Nevertheless, in spite of their simplicity and cost-effectiveness, these solutions are poorly efficient and exposed to the risk that the sealing might fall away from the leaf.

[0008] In other solutions, transverse fixing means are provided, which are designed to act in a direction substantially orthogonal to the longitudinal direction of extension of the channel and sealing.

[0009] For instance, DE8334610 discloses a sealing for doors and windows, whose supporting rail is fixed to the channel by means of a plurality of vertically operating pins or screws.

[0010] While these solutions afford more stable fixation, they still involve an apparent complication during mounting of the sealing.

[0011] Full assembly of the sealing requires the rail to be already inserted.

[0012] Furthermore, these solutions are not well suited for use with automatic seals, i.e. those having a sealing profile that automatically moves from a rest position to an operating position as a result of the leaf opening/closing movement.

[0013] In other prior art solutions, the sealing is fixed on the front side, i.e. by means of members arranged at a longitudinal end edge of the rail and the channel and operating in a longitudinal direction.

[0014] For instance, EP439278 discloses a seal of fixed or automatic type, in which the supporting rail is fixed on the front side by a vertical bracket with a horizontally projecting appendix that fits into the seat of the supporting rail that is designed to accommodate the insulating profile.

[0015] Stable fixation of the bracket to the leaf is obtained by a screw that extends through the bracket at a corresponding vertical slot, to penetrate the leaf material.

[0016] While this solution allows fixation of the sealing when it is completely inserted in the channel, it still involves the apparent drawback of damaging the leaf, due to the position of the fastening screw.

[0017] Furthermore, the solutions in which the sealing is fixed on the front side are not generally well suited for use with automatic seals, unless they are associated with particular mechanisms for release of the insulating profile, which add some complexity to the construction of the whole sealing.

Disclosure of the invention

[0018] The object of the present invention is to overcome the above drawbacks, by providing an assembly for fixing a sealing to a window or door leaf, that has a simple construction and is relatively cost-effective.

[0019] A particular object is to provide an assembly for fixing a sealing to a window or door leaf, that can be directly associated both with fixed and automatic sealings, without requiring any additional mechanism.

[0020] Another object of the present invention is to provide an assembly that ensures stable anchoring of the sealing to a window or door leaf without damaging the latter.

[0021] Another important object of the invention is to provide an assembly for a window or door leaf of high aesthetic value.

[0022] These and other objects, as better explained below, are fulfilled by an assembly for fixing a sealing designed to be fitted to a window or door leaf which, as defined in claim 1, comprises a supporting profile designed to be fixed in the longitudinal channel of a leaf, and having longitudinal end sections, means for anchoring said supporting profile to a window or door leaf at least at one of said end sections, wherein said supporting profile has a downwardly open lower portion and a longitudinal upper portion with a pair of substantially vertical sidewalls.

[0023] The assembly is **characterized in that** the upper portion of said supporting profile has at least one groove formed in the exterior of at least one of said vertical sidewalls, said anchoring means having at least one fixing member designed to slideably engage said groove for anchoring said supporting profile to said channel.

[0024] Thus, the fixing member may simultaneously interact both with the sealing member supporting profile and with the leaf, thereby ensuring high anchoring stability without damaging the leaf.

[0025] Advantageous embodiments of the sesaling assembly of the invention are defined in accordance with the dependent claims.

Brief description of the drawings

[0026] Further features and advantages of the invention will become more apparent upon reading of the following detailed description of a few preferred non exclusive embodiments of a sealing assembly of the present invention, which are described by way of a non limiting example with the help of the accompanying drawings in which:

FIG. 1 is a partially exploded perspective view of a sealing assembly of the invention according to a first preferred configuration;
FIG. 2 is a first front view of the sealing assembly of Fig. 1 when applied to a window or door leaf;
FIG. 3 is a second front view of the sealing assembly of Fig. 1 when applied to a window or door leaf;
FIG. 4 is a partially exploded perspective view of a sealing assembly of the invention according to a second preferred configuration;
FIG. 5 is a partially exploded perspective view of a sealing assembly of the invention according to a third preferred configuration;
FIG. 6 is a partially exploded perspective view of a sealing assembly of the invention according to a fourth preferred configuration;
FIG. 7 is a partially exploded perspective view of a sealing assembly of the invention according to a fifth preferred configuration;
FIG. 8 is a partially exploded perspective view of a sealing assembly of the invention according to a sixth preferred configuration;
FIG. 9 is a first front view of the sealing assembly of Fig. 8 when applied to a window or door leaf;
FIG. 10 is a second front view of the sealing assembly of Fig. 8 when applied to a window or door leaf;
FIG. 11 is a partially exploded perspective view of a sealing assembly of the invention according to a seventh preferred configuration;
FIG. 12 is a first front view of the sealing assembly of Fig. 11 when applied to a window or door leaf;
FIG. 13 is a second front view of the sealing assembly of Fig. 11 when applied to a window or door leaf;

Detailed description of a preferred embodiment

[0027] Referring to the above figures, the assembly for fixing a sealing according to the invention, generally designated by numeral 1, may be applied to a door or window leaf A.

[0028] In a known manner, the assembly 1 may be associated with a longitudinal channel C formed at one of the end edges E of the leaf A to close the clearance between such edge and a floor or a threshold, to ensure its sound, weather or smoke insulating action.

[0029] According to the invention, an assembly 1 comprises a substantially longitudinal supporting profile 2, which is designed to be inserted and fixed in the channel C of the window or door leaf A.

[0030] The supporting profile 2 has a downwardly open lower longitudinal portion 3 for defining a seat for an insulating profile 4.

[0031] The supporting profile 2 also has an upper longitudinal portion 5 with a pair of substantially vertical walls 6, 7.

[0032] The supporting profile 2 is delimited by a pair of substantially vertical longitudinal end sections 8, 9 which, as the supporting profile 2 is mounted into the channel C, will be arranged in the proximity of the lateral openings of the channel C.

[0033] As used herein, the terms "lower" and "upper" are used for better clarity and have to be merely intended with reference to the illustrated configurations, with the possibility that, as an assembly 1 of the invention is fitted into the channel C formed in the upper edge E of a leaf A, the upper portion 5 is located below the lower portion 3, without departure from the scope of the present invention.

[0034] Preferably, the length of the supporting profile 2 may be selected to substantially coincide with that of the channel C for which it is designed, so that the end sections 8, 9 can be aligned with the lateral openings of the channel C.

[0035] The lower longitudinal portion 3 of the supporting profile 2 may have a substantially U-shape. The insulating profile 4 may also be of known type, for example essentially consisting of a longitudinally elongate elastomeric sealing 10 designed to press against a floor or threshold, and a rigid rail 11 connected to the sealing 10.

[0036] The rigid rail 11 may be fixed or associated, in any known manner, with a control mechanism, only partially shown herein and designated by numeral 12, which is adapted to interact with an abutment, not shown, on the stationary part of the door or window, to automatically move the insulating profile 4 in response to the opening and closing movements of the leaf A.

[0037] The assembly 1 further comprises means 13 for anchoring said supporting profile 2 to a window or door leaf A, which are adapted to be associated with the supporting profile at least at one of the longitudinal end sections 8, 9 thereof.

[0038] Preferably, the assembly 1 may include a pair of anchoring devices 14, 14', not necessarily alike, adapted to be associated with the supporting profile 2 at corresponding opposite longitudinal faces 8, 9.

[0039] According to a peculiar feature of the invention, the upper portion 5 of the supporting profile 2 has at least one groove 15 formed in a corresponding vertical wall 6.

[0040] According to a particularly advantageous aspect, the groove 15 may be formed in the exterior of the corresponding vertical wall 6.

[0041] Furthermore, each of the appropriately arranged anchoring devices 14, 14' include at least one substantially elongate fixing member 16, 17, which is adapted to slideably engage the groove 15 for anchoring the supporting profile 2 to the channel C.

[0042] Preferably, the fixing member 16, 17 may have a substantially cylindrical shape, with predetermined length and maximum diameter.

[0043] As used herein, the term "cylindrical shape" is intended to mean that the fixing member 16, 17 has a substantially constant section or at the most slightly tapering toward one end.

[0044] The section shall not necessarily be circular, but may also have elliptical, polygonal or other shapes.

[0045] The corresponding outer groove 15 may in turn extend in a substantially longitudinal direction L over at least the same length as the corresponding fixing member 16, 17.

[0046] However, in an alternative configuration, not shown, the groove 15 may extend in a direction inclined to the main direction X of extension of the supporting profile 2.

[0047] Furthermore, the outer groove 15 may be laterally open and have a substantially concave cross section with a predetermined maximum transverse dimension smaller than the diameter of the corresponding fixing member 16, 17.

[0048] Thus, as the outer lateral surface of the fixing member 16, 17 is introduced into the groove 15, it can simultaneously interact both with the groove 15 and with the inner wall of the channel G, thereby ensuring stable anchoring of the assembly 1 of the invention.

[0049] According to an advantageous embodiment of the assembly, which is common to all the configurations as shown herein, but does not limit the present invention, the upper portion 5 of the supporting profile 2 may have a pair of substantially longitudinal and parallel grooves 15, 15' formed in corresponding outer walls 6, 7.

[0050] The grooves 15, 15' may be arranged on vertically offset planes, but will preferably be coplanar, as shown.

[0051] Preferably, each of the anchoring devices 14, 140 may in turn have a pair of fixing members 16, 18 and 17, 19 respectively, which are designed to be inserted into corresponding grooves 15, 15'.

[0052] In the configurations of Figs. 1 to 5, each of the anchoring devices 14, 14' will include two separate fixing members 16, 18; 17, 19, adapted to be independently introduced into corresponding grooves 15, 15'.

[0053] Particularly, in Fig. 1 each of the anchoring devices 14, 14' will include a pair of fixing members 16, 18; 17, 19 each consisting of a nail made of metal, preferably steel or a polymer material of adequate strength.

[0054] The nails 16, 18; 17, 19 are designed to be slideably introduced in corresponding longitudinal directions L, L' into corresponding grooves 15, 15' of the supporting profile 2 with their heads abutting against the side edges of the leaf A, as more clearly shown in Figs. 2 and 3.

[0055] In the configuration of Fig. 4, the fixing members 16, 18; 17, 19 are plugs, also made of a metal or polymer material, functionally equivalent to the above mentioned nails.

[0056] In both cases, and even when similar members are used, anchoring will be obtained by interference fit of the lateral surface of the fixing members 16, 18; 17, 19 with the inner sidewalls of the channel G, which will be consequently deformed.

[0057] In the configuration of Fig. 5, the fixing members 16, 18; 17, 19 are self-tapping screws, that will hold on the sidewalls of the channel G.

[0058] Furthermore, each of the anchoring devices 13, 14 may include a bracket 20, 21 for mutual connection of the corresponding fixing members 16, 18; 17, 19.

[0059] For instance, in a particular configuration, as shown in Fig. 6, the anchoring members 16, 18; 17, 19 may be a pair of plugs or similar members in substantially parallel relation.

[0060] In this case, the fixing members 16, 18; 17, 19 may have respective first longitudinal ends 16', 18'; 17', 19' integral with a corresponding bracket 20, 21 and respective free second ends 16", 18"; 17", 19" adapted to slideably fit into corresponding outer grooves 15, 15'.

[0061] The brackets 20, 21 may essentially consist of a substantially transverse cylindrical, prismatic or the like body, which is joined at its ends to the first ends 16', 18'; 17', 19' of the fixing members 16, 18; 17, 19.

[0062] In other embodiments, a few examples whereof are shown in Figs. 7 to 13, the brackets 20, 21 may include a plate-like body 22, 23 which is adapted to be secured to the supporting profile 2 in a substantially vertical and transverse position.

[0063] The plate-like body 22, 23 may have one or a pair of passageways 24, 24'; 25, 25' for corresponding fixing members 16, 18; 17, 19 for allowing the latter to fit into respective grooves 15, 15'.

[0064] Fig. 7 shows an assembly 1 having a pair of anchoring devices 14, 14', each equipped with a bracket 20, 21 with a pair of through holes 24, 24'; 25, 25' defining corresponding passageways for the fixing members 16, 18; 17,19.

[0065] In Fig. 8, the brackets 20, 21 have a single through hole 24, 25 for a corresponding fixing member 16, 17 which is designed to be removably associated with its respective bracket 20, 21 through the hole 24, 25 itself, whereas the other fixing member 18, 19 of each pair has a first end 18', 19' integral with its bracket 20, 21.

[0066] In Fig. 11, the brackets 20, 21 have a single laterally open passageway 24, 25, whose curvature is similar to the transverse curvature of the corresponding groove 15 to allow insertion of the fixing members 16, 17 that may have a screw or the like configuration.

[0067] The passageway 24, 25 may have a flared inner surface adapted to receive the flared head of the fixing member 16, 17 and allow the brackets 20, 21 to be secured to the supporting profile 2.

[0068] It can be noted in all the configurations as shown herein that the upper portion 5 of the supporting profile 2 may also have an additional upper longitudinal slot 26 substantially at the center.

[0069] The cross section of the slot 26 may be adapted to accommodate respective appendices 27, 28 whose

cross sections will mate that of the groove 26.

[0070] Such appendices 27, 28 will extend transversely from the plate-like body 22, 23 of the brackets 20, 21 to slideably fit into the central groove 26.

[0071] This will provide a more stable connection between the fixing devices 14, 14' and the supporting profile 2.

[0072] As is shown in the figures, both the lateral grooves 15, 15' and the central slot 26 may extend all over the length l of the supporting profile 2.

[0073] Nevertheless, in alternative embodiments of the present invention, not shown, they may also have a shorter extension, their extension being preferably at least equal to that of their respective anchoring elements 16, 18; 17, 19 and appendices 27, 28 with which they can be associated.

[0074] Furthermore, if a single anchoring device 14 is used, the grooves 15, 15' and the slot 26 may extend at one longitudinal end section 8 only of the supporting profile 2.

[0075] In certain configurations, the brackets 20, 21 may have a maximum transverse dimension slightly greater than the corresponding transverse dimension of the supporting profile 2 to transversely project out of it.

[0076] Furthermore, the brackets 20, 21 may also have one or more appendices 29, 30, 31 transversely extending from their respective plate-like bodies 22, 23 to at least partially cover the end sections 8, 9 of the supporting profile 2 and the insulating profile 4.

[0077] For example, if a control mechanism 12 is provided for controlling the insulating profile 4, then two transversely offset lateral appendices 29, 30 may be provided, as shown in Fig. 8.

[0078] The device 14', which is designed to be anchored at the end section 8 far from the control mechanism 12 may have in turn a central appendix 31, as shown in Fig,. 7 and Fig. 1, that is possibly associated with a pair of lateral appendices 29, 30, like in the configuration of Fig. 8.

[0079] The above disclosure clearly shows that the invention fulfills the intended objects and particularly meets the requirement of providing an assembly for fixing a sealing to a door or window leaf, having improved anchoring stability as well as simple construction.

[0080] The assembly of this invention is susceptible of a number of changes and variants, within the inventive principle disclosed in the appended claims. All the details thereof may be replaced by other technically equivalent parts, and the materials may vary depending on different needs, without departure from the scope of the invention.

[0081] While the assembly has been described with particular reference to the accompanying figures, the numerals referred to in the disclosure and claims are only used for the sake of a better intelligibility of the invention and shall not be intended to limit the claimed scope in any manner.

Claims

1. An assembly for fixing a sealing to a door or window leaf, wherein a leaf (**A**) has at least one substantially horizontal edge (**E**) provided with a longitudinal channel (**C**), which assembly comprises:

   - a supporting profile (**2**) designed to be fixed into the longitudinal channel (**C**) of a leaf (**A**), and having longitudinal end sections (**8, 9**);
   - means (**13**) for anchoring said supporting profile (**2**) to a leaf (**A**) in correspondence of at least one of said longitudinal end sections (**8, 9**);
   wherein said supporting profile (**2**) has a lower portion (**3**) downwardly open to define an housing for a sealing profile (**4**) and a longitudinal upper portion (**5**) with a pair of substantially vertical sidewalls (**6, 7**);
   characterized in that said upper portion (**5**) of said supporting profile (**2**) has at least one groove (**15**) realized in at least one of said vertical sidewalls (**8**), said anchoring means (**13**) having at least one fixing member (**16**) designed to slidably engage said groove (**15**) for anchoring said supporting profile (**2**) to said channel (**C**).

2. Assembly as claimed in claim 1, **characterized in that** said at least one fixing member (**16**) is substantially cylindrical with predetermined length and diameter, said at least one groove (**15**) extending along a substantially longitudinal direction (**L**) with a length (**l**) at least equal to the length of said fixing member (**16**).

3. Assembly as claimed in claim 2, **characterized in that** said at least one groove (**15**) is laterally open and has a substantially concave transverse section with a maximum transverse dimension less than the diameter of said fixing member (**16**).

4. Assembly as claimed in claim 3, **characterized in that** said upper portion (**5**) of said supporting profile (**2**) has a pair of substantially longitudinal and parallel grooves (**15, 15'**) realized into corresponding sidewalls (**6, 7**), said anchoring means (**13**) having a couple of said fixing members (**16, 18**) designed to be inserted into corresponding grooves (**15, 15'**) of said pair.

5. Assembly as claimed in any of the preceding claims, **characterized in that** said anchoring means (**13**) comprise at least one anchoring device (**14**) having a bracket (**20**) for the reciprocal fastening of said fixing members (**16, 18**).

6. Assembly as claimed in claim 5, **characterized in that** said fixing members (**16, 18**) are substantially

parallel each other with respective first longitudinal ends (**16', 18'**) solidal with said bracket (**20**) and respective second free end (**16", 18"**) slidably insertable into corresponding grooves (**15, 15'**).

7. Assembly as claimed in claim 5 or 6, **characterized in that** said bracket (**20**) comprises a plate-like body (**22**) designed to be anchored to said supporting profile (**2**) in a substantially vertical and transverse position, said plate-like body (**22**) having at least one passage (**24**) for a corresponding fixing member (**16**) and for the insertion thereof in a respective groove (**15**).

8. Assembly as claimed in claim 7, **characterized in that** one of said fixing member (**18**) has a first end solidal with said bracket (**20**), the other fixing member (**16**) being removably associable to said bracket (**20**) through said passage (**24**).

9. Assembly as claimed in any of the claims 5 to 9, **characterized in that** said upper portion (**5**) of said supporting profile (**2**) has a substantially longitudinal upper central slot (**26**) with a transverse section having a predetermined shape, said bracket (**20**) having an appendix with a transverse section complementarily shaped with respect to the one of said slot (**26**) for slidably inserting therein.

10. Assembly as claimed in any of the preceding claims, **characterized in that** said grooves (**15, 15'**) extend substantially for all the length of said supporting profile (**2**), a pair of said anchoring devices (**14, 14'**) being also provided, which devices (**14, 14'**) being designed to be associated to said supporting profile (**2**) at said longitudinal end sections (**8, 9**).

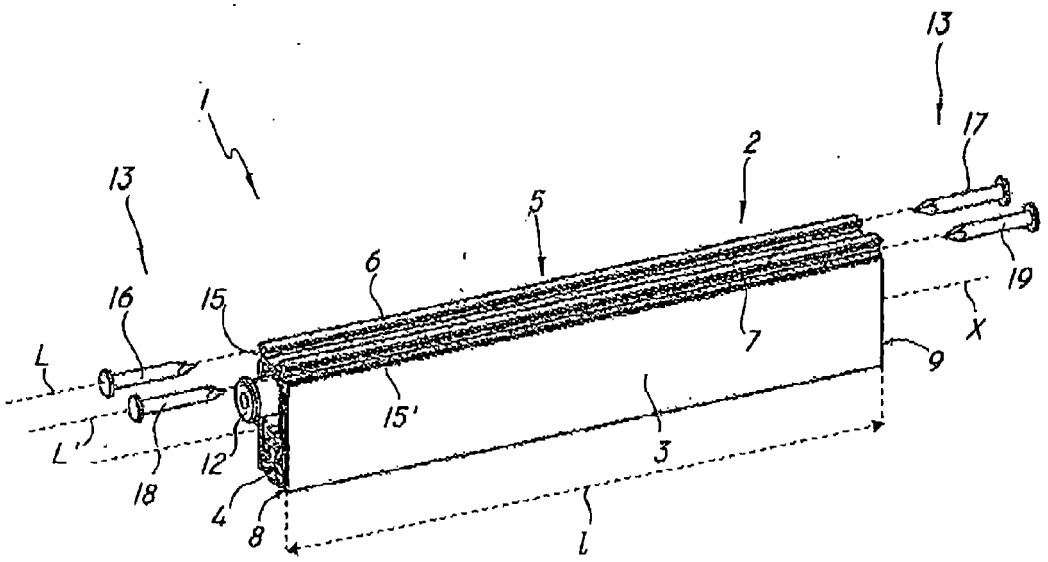


FIG. 1

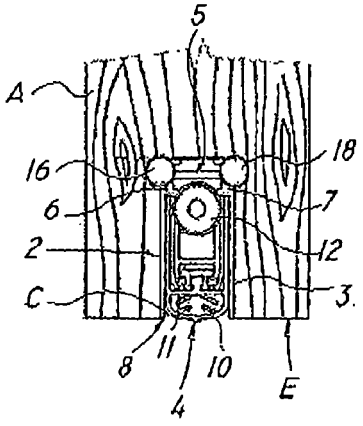


FIG. 2

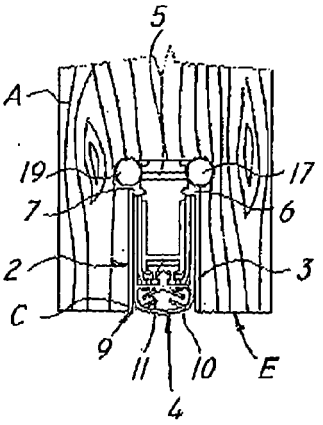


FIG. 3

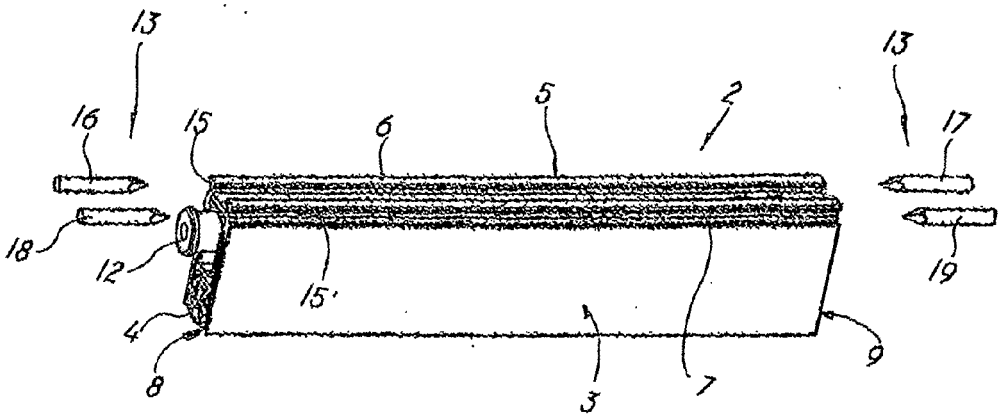

13
13
16
15
6
5
2
17
18
12
15'
19
4
8
3
7
9

FIG. 4

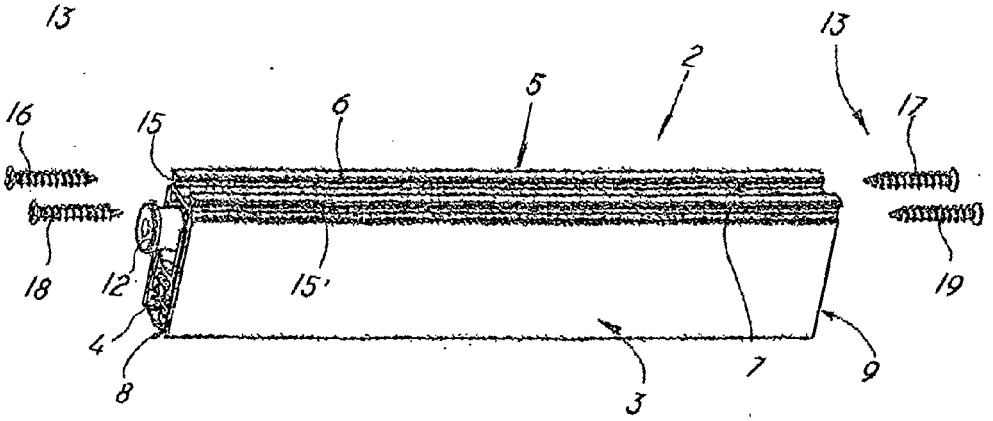
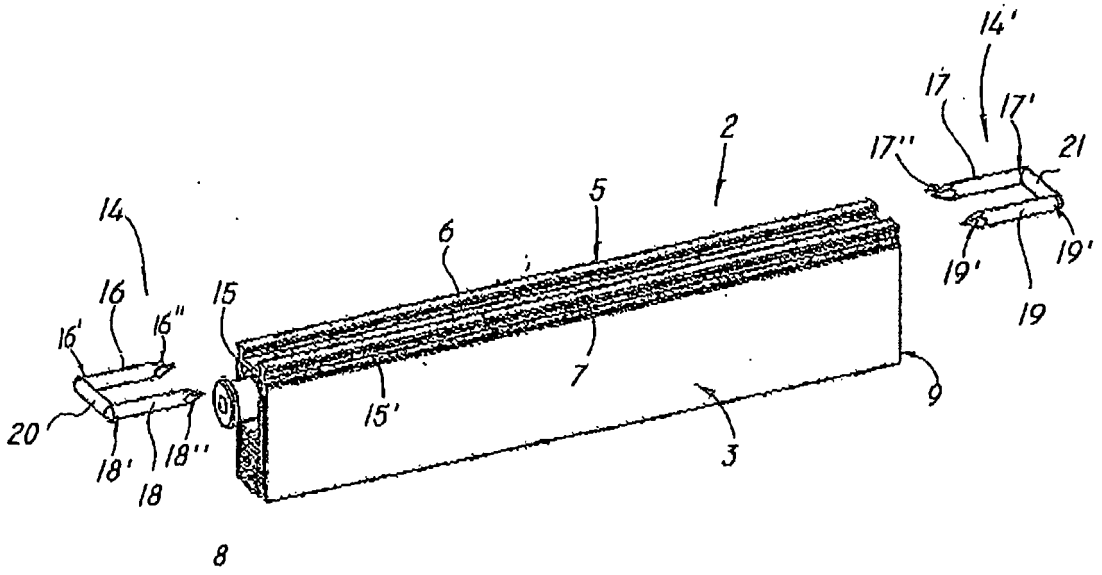

13
13
16
15
6
5
2
17
18
12
15'
19
4
8
3
7
9

FIG. 5


14'
17
17'
17''
21
2
5
14
6
16
15
16'
16''
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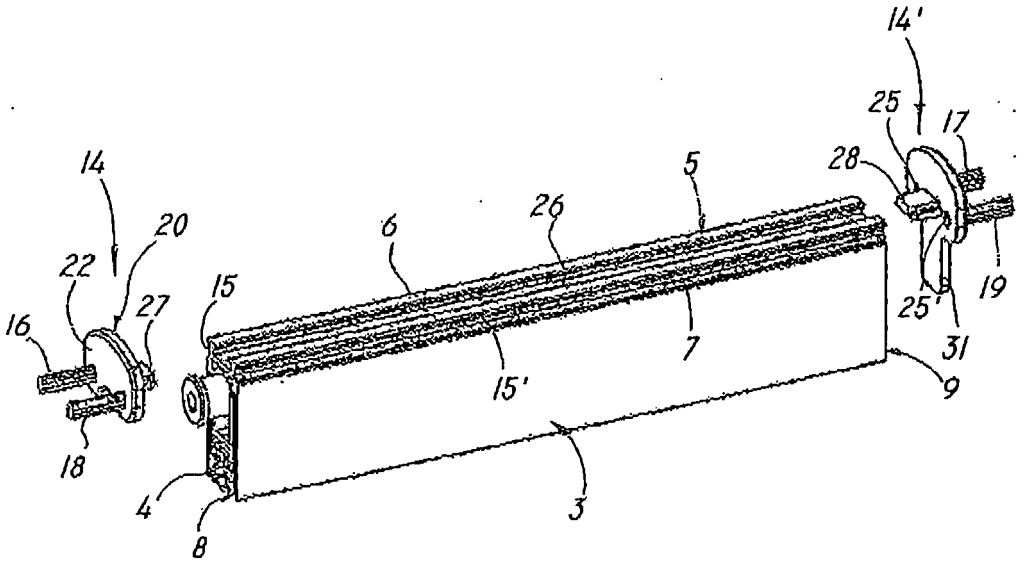
19'
19'
19
20
15'
9
18'
18''
3
18
8

FIG. 6


14'
25
17
14
5
28
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26
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22
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27
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31
15'
9
18
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3
8

FIG. 7

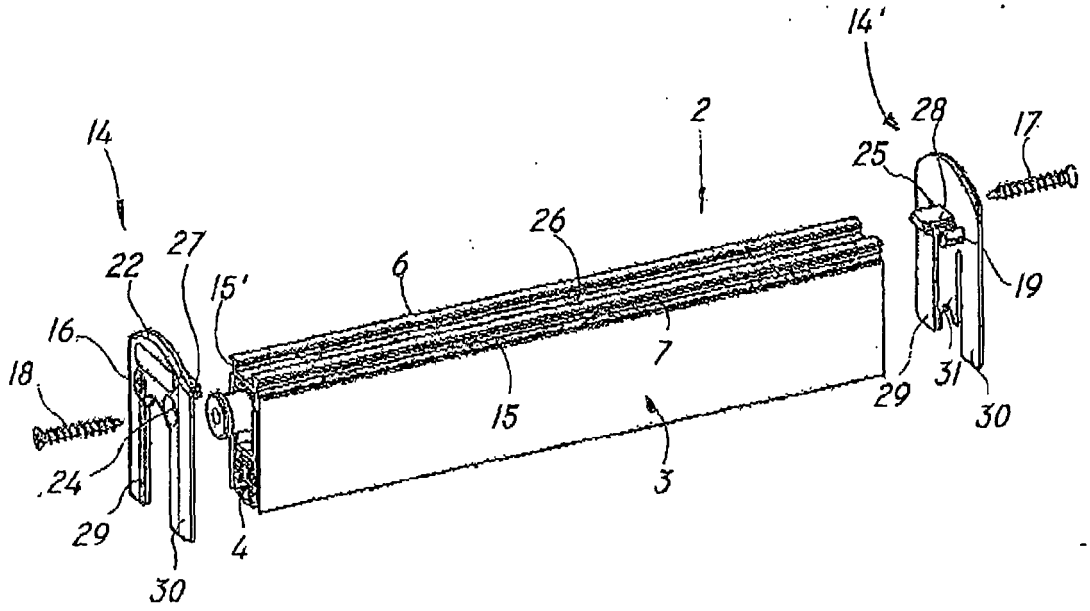

FIG. 8

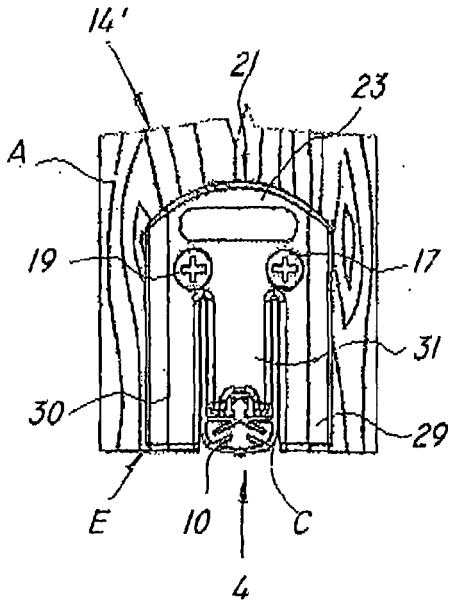

FIG. 9

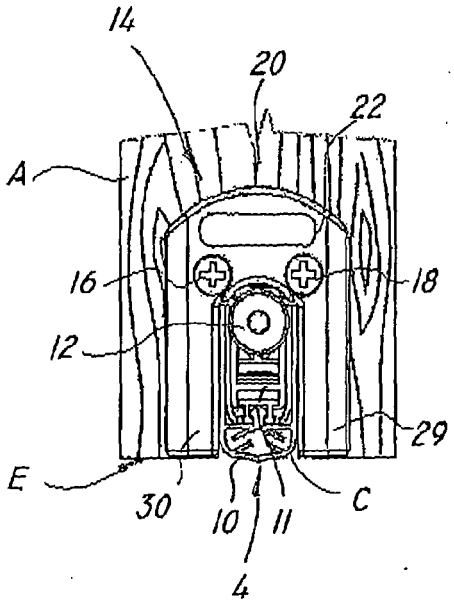

FIG. 10

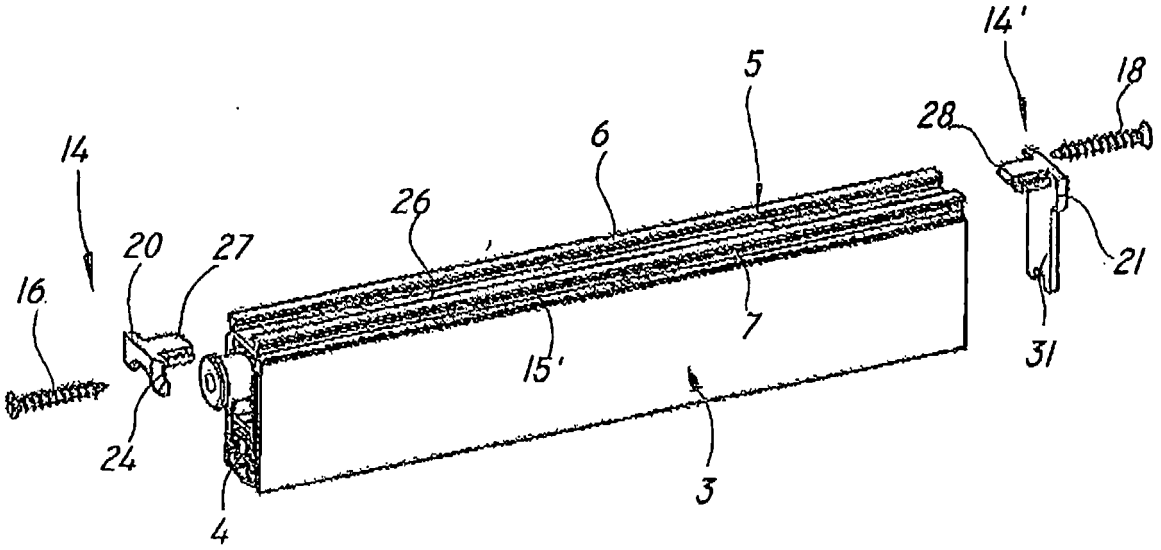

FIG. 11

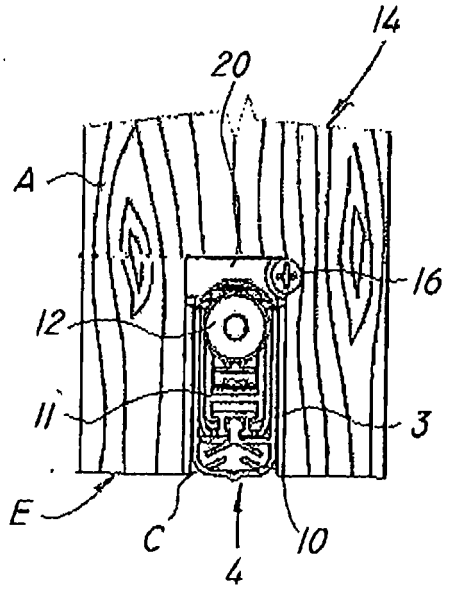

FIG. 12

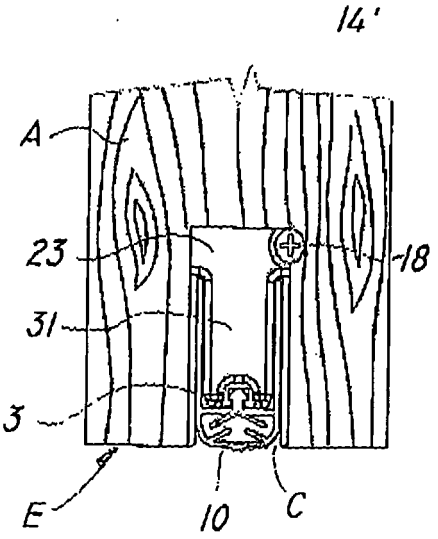

FIG. 13

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European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 00 4053

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	EP 1 486 639 A1 (PLANET GDZ AG [CH]) 15 December 2004 (2004-12-15) * paragraphs [0015] - [0025], [0028]; figures 1-3 * -----	1-6,10 7-9	INV. E06B7/215
Y	EP 1 772 586 A2 (ATHMER FA F [DE]) 11 April 2007 (2007-04-11) * paragraphs [0036] - [0042]; figures 1,1a * -----	7-9	
A	DE 20 2007 006336 U1 (ATHMER OHG F [DE]) 16 August 2007 (2007-08-16) * paragraphs [0005], [0012], [0020], [0021]; figures 2,3 * -----	1-10	
			TECHNICAL FIELDS SEARCHED (IPC) E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 August 2010	Gallego, Adoración

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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