(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 112 553 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.01.2017 Bulletin 2017/01

(51) Int Cl.:
E04F 13/08 *(2006.01)* *E04F 15/02* *(2006.01)*

(21) Application number: **16176560.7**

(22) Date of filing: **28.06.2016**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **29.06.2015 IT UB20151748**

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(54) **BLOCKING ELEMENT FOR COVERING ELEMENTS**

(57) Blocking element for covering elements (11) used for facades, coverings, or building envelopes, comprising an outer containing profile (12) completely made of a polymeric material, or a composite polymeric material. The outer containing profile (12) comprises a cavity (13) in which a metal reinforcement (14) is housed.

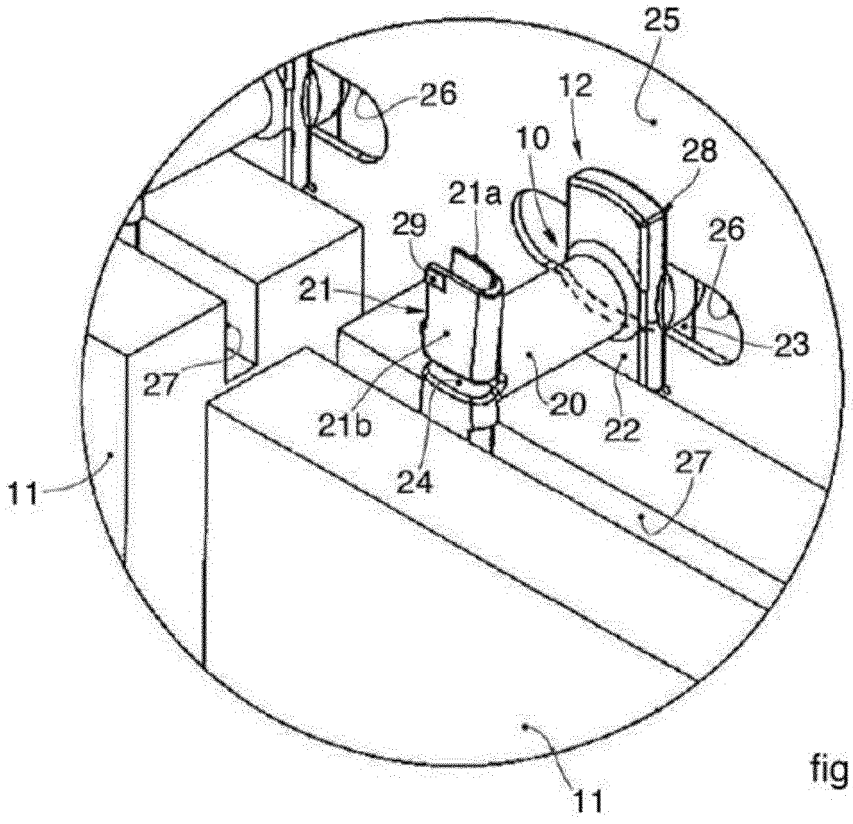

fig. 1

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Description

FIELD OF APPLICATION

[0001] The present invention refers to a blocking element for supporting modular-type covering elements, such as bricks, panels, plates, tiles or similar, mainly used for making facades, coverings, or envelopes in the field of building, both public, residential and street furniture.

[0002] Said blocking element, with the covering elements, is used for covering surfaces of structures, such as for example walls, ceilings, floors, pillars or columns, particularly, but non only, for making ventilated walls, both for the outer and/or inner furniture of commercial or residential buildings, and for the naval furniture and/or in any other suitable applications.

STATE OF THE ART

[0003] For making ventilated walls when building facades of edifices or similar, it is known the use of supporting frames on which the covering elements are attached, such as plates, bricks, panels or similar, made of various materials, which together will form the ventilated wall.

[0004] In such field, it is known the use of blocking elements provided with fins cooperating, by interference, with associated grooves provided along the edges of the covering elements, for placing the covering elements themselves in a simple, ready and guided way, with respect to the wall to be covered.

[0005] Such known blocking elements, generally, are completely made of polymeric material, or composite polymeric material, such as Nylon@ and/or reinforced with glass fiber or carbon fiber.

[0006] In case of a fire, since the blocking element is completely made of a polymeric material, or a composite polymeric material, is caught by the fire, and therefore does not conserve under critical conditions its starting properties of supporting the associated covering elements. To this reason, it is known the elements used for the furniture of buildings, or similar, must satisfy determined requirements indicated, for example, by the standard REI.

[0007] Moreover, the blocking element completely made of polymeric material, or composite polymeric material, ensures its support only to determined loads so that therefore the application of the blocking elements is limited only to some types of covering elements.

[0008] An object of the present invention consists of making a supporting element capable of holding its integrity and functionalities also under fire conditions, in order to limit the problems which can compromise the safety of people.

[0009] A further object consists of ensuring the capacity load of a wide range of covering elements for ventilated walls also having a substantial weight.

[0010] Also another object consists of making a supporting element which can be easily disposable when is no more used for its specific function.

[0011] For overcoming the disadvantages of the prior art and for obtaining these and other objects and advantages, the Applicant has devised, tested and implemented the present invention.

SUMMARY OF THE INVENTION

[0012] The present invention is expressed and characterized by the independent claim, while the dependent claims disclose other characteristics of the present invention or variants of the concepts of the main solution.

[0013] According to said objects, the aim of the present invention consists of making a blocking element comprising an outer containing profile completely made of a polymeric material, or a composite polymeric material.

[0014] The outer containing profile defines inside a receiving cavity.

[0015] According to an embodiment of the present invention, the housing cavity receives inside a reinforcement completely made of a metal material and positioned inside the outer containing outline.

[0016] Advantageously, the blocking element can support covering elements for ventilated walls or covering structures in general also having a substantial weight.

[0017] Moreover, the reinforcement of metal material present inside said outer containing profile enables the blocking element to resist to high temperatures and in contact with the fire, retards the propagation thereof and does not lose its function of supporting covering elements.

[0018] Again, the outer containing profile of polymeric material, or composite polymeric material, enables to maintain the properties of resiliency which the blocking element should exhibit for enabling to be coupled with the covering elements.

[0019] In a preferred embodiment, the outer containing profile is made of two shells reciprocally and integrally coupable by a fast coupling, for example a snap fit, and easily separable. In this way, it is possible to easily remove the metal reinforcement from the inside of the outer containing profile, for enabling to easily and readily dispose of them separately at the end of their service life.

ILLUSTRATION OF THE DRAWINGS

[0020] These and other characteristics of the present invention will appear evident from the following description of embodiments, given in an illustrative, non limiting way with reference to the attached drawings, wherein:

- Figure 1 is a perspective view of a blocking element of an embodiment;
- Figure 2 is a perspective view of a blocking element in an embodiment;
- Figure 3 is a front view of a blocking element of an embodiment;

- Figure 4 is a front view of a reinforcement of a blocking element;
- Figure 5 is a lateral view of a blocking element in an embodiment.

[0021] For aiding the comprehension, identical reference numbers are used, when possible, for identifying identical common elements in the figures. It is understood that elements and characteristics of an embodiment can be advantageously incorporated without further explanations.

DESCRIPTION OF THE EMBODIMENTS

[0022] The present invention refers to a blocking element 10 for supporting covering elements 11 as illustrated in Figure 1.

[0023] Referring to what is illustrated in Figures from 2 to 5, the blocking element 10 exhibits an outer containing profile 12 which is hollow inside.

[0024] The outer containing profile 12 exhibits a housing cavity 13, in this case continuous for all the extension of the outer containing profile 12.

[0025] The outer containing profile 12 is completely made of a polymeric material, or a composite polymeric material, such as for example a polyamide, such as Nylon@ or similar, reinforced with a fibrous material, such as glass fiber, carbon fiber or of another type of material.

[0026] The blocking element 10 comprises inside a reinforcement 14.

[0027] The reinforcement 14 is inserted inside the housing cavity 13 in order to be complementary to this latter.

[0028] The reinforcement 14 is completely made of metal material, or of any other material resistant to high temperatures and capable of remaining integral in case of a fire and capable of retarding the fire propagation to adjacent structures.

[0029] The reinforcement 14 comprises a stem 15, having a parallelepiped shape, at the end of which two opposite fins 16 extend, a central plate 17 and a second plate 18.

[0030] The fins 16 which are substantially normal to the stem 15, are separated from each other by a recess 19.

[0031] In an embodiment variant illustrated in Figures from 2 to 4, at least one fin 16 consists of two limbs 16a and 16b.

[0032] In a further embodiment variant, both the fins 16 are formed by two limbs 16a and 16b.

[0033] The limbs 16a and 16b are both connected to each other, at one side, in order to define a cross-section, which in this case has substantially a "U", "C" or "V" shape. Moreover, the limbs 16a and 16b can be partially resilient.

[0034] The outer containing profile 12 is configured for being integrally associated to the reinforcement 14 and for representing an outer coating for the reinforcement 14 itself.

[0035] In an embodiment variant, associating the outer containing profile 12 to the reinforcement 14 can be executed by a fast coupling, advantageously a snap fit, of two complementary shells which together form the outer containing profile 12. Advantageously, at the end of the service life and at the time of disposing of the blocking element 10, it is possible to easily separate the polymeric material from the metal material, so that it is made easier to readily dispose of the two components, the polymeric and metal components respectively, of the blocking element 10.

[0036] The outer containing profile 12 comprises a stem 20 having a cylindrical shape and at an end of which two opposite fins 21, a central plate 22 and a retaining arm 23 extend.

[0037] The fins 21, which are substantially normal to the stem 20, are separated from each other by a recess 24.

[0038] Advantageously, the fins 21 of the outer containing profile 12 are associated to the respective fins 16 of the reinforcement 14.

[0039] Moreover, the central plate 22 is associated to the first plate 17 of the reinforcement 14, while the retaining arm 23 is associated to the second plate 18 of the reinforcement 14.

[0040] In an embodiment variant illustrated in Figures from 2 to 4, at least one fin 21 consists of two limbs 21a and 21b having a thickness such to offer a good structural strength to the operative stresses.

[0041] In a further embodiment variant, both the fins 21 consist of two limbs 21a and 21b.

[0042] The limbs 21a and 21b are connected to each other at one side, in order to define a cross-section, in this case having a substantially "U, "C", or "V" shape.

[0043] The limbs 21a and 21b are partially resilient and are respectively associated to the limbs 16a and 16b of the reinforcement 14.

[0044] Each fin 21 is resiliently inserted, during an assembly step, into a respective groove 27 longitudinally provided on the upper side and lower side of each of the covering elements 11.

[0045] According to a variant, the limb 21a is made with a thickness greater than the one of the limb 21b, for preventing it from bending, so that the limb 21b is the only part of the fin 21, adapting to the associated grooves 27 of the covering element 11.

[0046] According to a further embodiment variant, the limb 21b can comprise outside a relief 29 (see Figure 1) for having an interference with the associated groove 27, therefore ensuring a stably connection of the blocking element 10 to the covering element 11, and the bending of the edge of the fin 21.

[0047] The fins 21 exhibit a slight taper, obtained by the draft of the fin base attached to the stem 20. Substantially, the outer end of each fin is wider and thicker than the segment attached to the stem 20, for better discharging the loads in the inner part of the grooves 27 of

the covering elements 11.

[0048] The blocking element 10 is configured at one of its ends for enabling to fix it to pillars or sections 25 in turn associated, in contact with or spaced from, to a supporting structure, for example a wall. Specifically, the blocking element 10 is associated to a support 25 at the end of the blocking element 10, provided with the retaining arm 23.

[0049] The support 25 comprises at least one slit 26 having substantially the same shape as the retaining arm 23.

[0050] Coupling the blocking element 20 to the support 25 is performed by inserting the retaining arm 23 inside the slit 26 for bringing it inside the support 25 until it meets the resistance of the central plate 22.

[0051] The central plate 22 has a size greater than the shape of the slit 26.

[0052] By for example inserting the end of a screwdriver inside the recess 24, the blocking element 10 is rotated by 90°, in this case clockwise, for preventing the fins 21 from being deformed, in order to take a second position, so that the central plate 22 and retaining arm 23 are placed normal to the slit 26.

[0053] In an embodiment variant, the ends of the retaining arm 23 can cooperate with projections 28 (see Figure 1) present on the support 25 oppositely to the front side thereof.

[0054] According to an embodiment variant, between the two fins 21 at an intermediate area of the recess 24, it is made a perpendicular seat for enabling to insert a conjugate Allen wrench, or a Torx@ wrench, by which the blocking element 10 is rotated for causing it to be coupled to the recess 26.

[0055] It is evident that to the blocking element 10, as herein described, can be introduced modifications and/or additions of parts, without falling out of the scope of the present invention.

[0056] It is also evident that, although the present invention has been described with reference to some specific examples, a person skilled in the art can immediately implement many other equivalent embodiments of the blocking element 10, having the characteristics disclosed in the claims and therefore all falling in the scope defined by them.

LIST OF THE REFERENCES IN THE FIGURES

[0057]

10 blocking element
11 covering element
12 outer containing profile
13 housing cavity
14 reinforcement
15 stem
16 fin
16a limb
16b limb
17 first plate
18 second plate
19 recess
20 stem
21 fin
21a limb
21b limb
22 central plate
23 retaining arm
24 recess
25 support
26 slit
27 groove
28 projection
29 relief

Claims

1. Blocking element for covering elements (11) used for facades, coverings or building envelopes, comprising an outer containing profile (12) completely made of a polymeric material, or a composite polymeric material, said outer containing profile (12) defining inside a housing cavity (13), **characterized by** the fact it comprises a reinforcement (14) made of metal material and inserted inside said housing cavity (13).

2. Blocking element according to claim 1, **characterized by** the fact said outer containing profile (12) is configured for being integrally associated to said reinforcement (14).

3. Blocking element according to claim 1, **characterized by** the fact said outer containing profile (12) consists of two complementary shells reciprocally coupable for a fast coupling, for example a snap fit.

4. Blocking element according to anyone of the preceding claims, **characterized by** the fact said reinforcement (14) comprises two opposite fins (16) separated by a recess (19), said fins (16) being associated to two opposite fins (21) separated by a recess (24) of the outer containing outline (12).

5. Blocking element according to claim 4, **characterized by** the fact at least one of said fins (16) consists of two limbs (16a, 16b) connected at a side to each other for defining a substantially "U", "C" or "V" cross-section, and **by** the fact said limbs (16a, 16b) are associated to two respective limbs (21a, 21b) of the outer containing profile (12).

6. Blocking element according to claim 5, **characterized by** the fact said limbs (21a, 21b) of the outer containing profile (12) are partially resilient.

7. Blocking element according to claim 4, **characterized by** the fact said recesses (19, 24) are configured for enabling to insert a tool by which the blocking element (10) is rotated.

8. Blocking element according to claim 4, **characterized by** the fact said fins (21) are configured for being resiliently inserted in an associated groove (27) of said covering elements (11).

9. Blocking element according to claims 5 and 8, **characterized by** the fact the limb (21b) comprises outside a relief (29) for generating an interference with the associated groove (27).

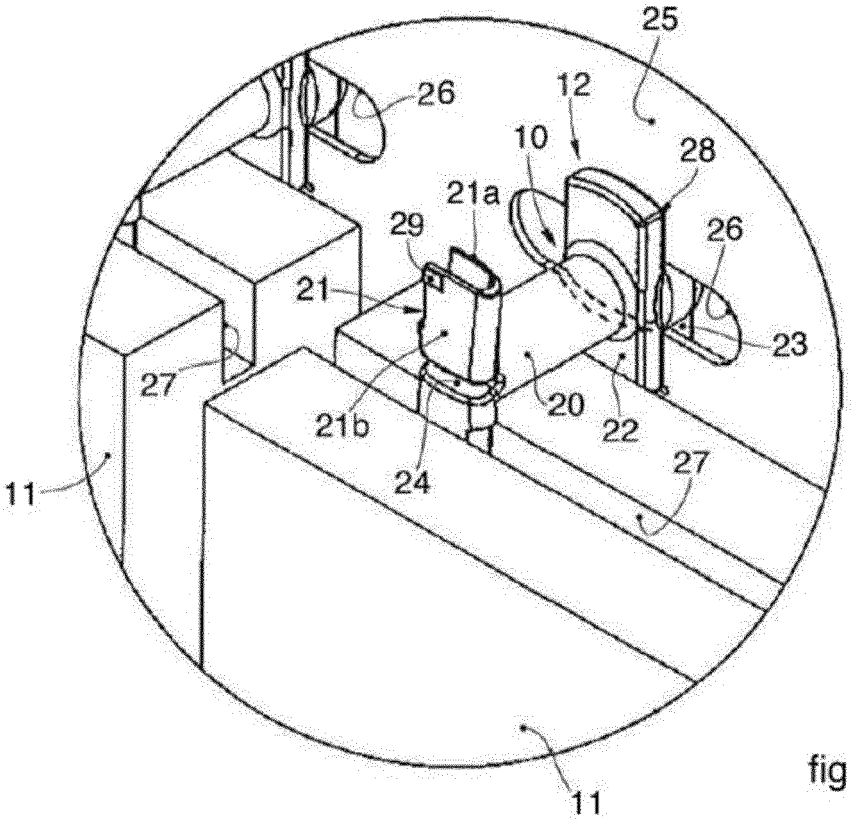
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fig. 1

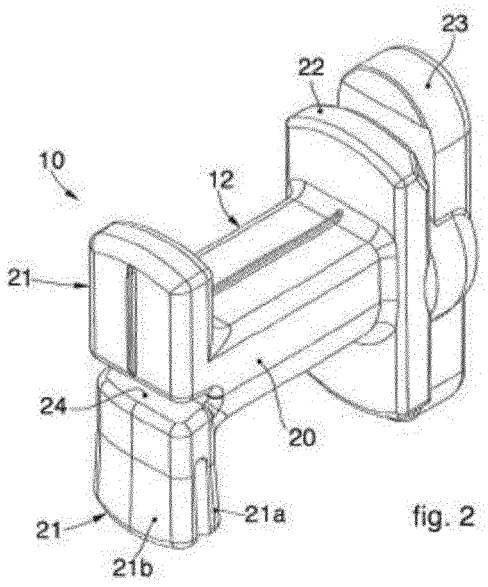
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fig. 2

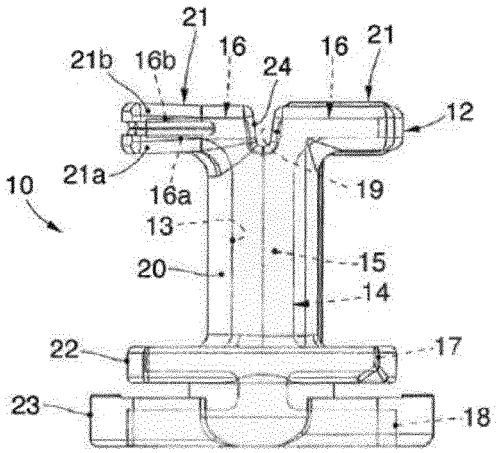

fig. 3

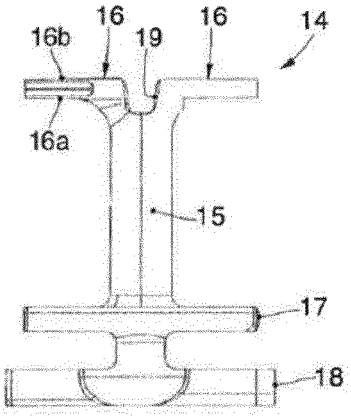

fig. 4

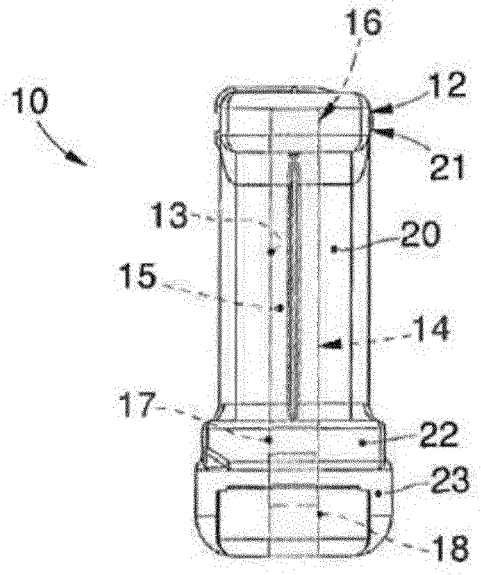

fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 16 17 6560

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	WO 2008/000747 A1 (AVANTGARDE SRL [IT]; TESSADORI ANDREA [IT]) 3 January 2008 (2008-01-03)	1,2	INV. E04F13/08
Y	* page 6, line 5 - line 12; figures 1-10 *	3-9	ADD. E04F15/02
Y	WO 2013/076585 A2 (CASSIUX [BE]) 30 May 2013 (2013-05-30) * page 6, line 12 - line 16; claims 1-6; figures 1,2,5 *	3-9	

TECHNICAL FIELDS SEARCHED (IPC)
E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 October 2016	Khera, Daljit

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 17 6560

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