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

(11) EP 1 312 727 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.05.2003 Bulletin 2003/21

(51) Int Cl.[7]: **E04F 11/18**

(21) Application number: **01500270.2**

(22) Date of filing: **15.11.2001**

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

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(54) Modular element for shaping balustrades

(57) The purpose of this Patent is a "Modular element for shaping balustrades", the use of which is expained in the title of the invention.

The element, coupled to another equal one, simultaneously operates as a loading base between two adjacent balustrades and as a lost formwork for the handrail and is made up of a rectangular plate.

On one of the ends of its upper face it has an orthogonal rim (1) and the edges (2) folded upwards and inwards; a central casting (3) with the edges (4) folded in the same way but with more separation than the edges (2) of the first third; and a serie of grooves (5) parallel to the smaller side.

Its lower face has an orthogonal rim (6) on its smaller side, underneath the handle (1), which is embedded in the suitable groove (5) to attach the balustrades at the chosen distance.

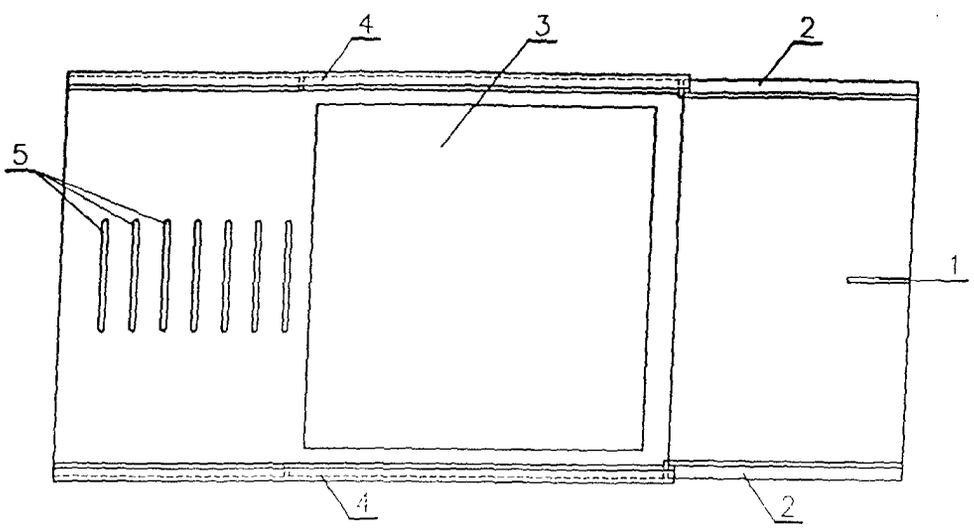

FIG.1

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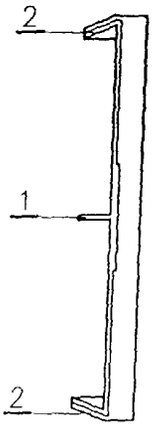

FIG.2

Description

PURPOSE

[0001] The purpose to which the invention protected by this Patent refers consists of a "modular element for shaping balustrades".

HISTORY

[0002] The railing is made up of "a series or order of banisters placed between the rails" to "form the banisters or handrails of balconies, flat roofs and stairways".

[0003] The banisters are "each of the small columns", independent, of different shapes but usually rounded, that are placed at equal separations underneath the rails or handrails and are finished off with plates or plugs on the top and bottom of different shapes and sizes that take on the same shape as the banisters.

[0004] At present they are usually molded with concrete and reinforced with an iron rod axial framework projecting out at its ends to be secured to the rails and skirting boards.

[0005] "H"-shaped joining parts have been used for shaping the banister, which are supported on the upper plugs of each two consecutive banisters, on which the reinforced anchoring mortar of the longitudinal rods is extended and on this the handrail.

[0006] So that the erection process can be developed in the described way, a careful leveling of the base or skirting boards, the verticality of the rails and their equal distance are necessary.

DESCRIPTION OF THE INVENTION

[0007] The aim of the invention constituting the purpose of this Patent is to provide the attainment of the above described erection requirements, improving the precision and speed of the operations.

[0008] In this respect, a modular element has been conceived and designed that, substituting the "H"-shaped part between rails and coupled to another equal one, operates mechanically as a T-head (load part that props up two end stanchions) and operates functionally as a lost formwork when it becomes embedded in the anchoring mortar of the handrail.

[0009] The modular element is made up of a rectangular floor basic plate, preferably obtained by plastic molding transversally divided into three zones differentiated by their formal and functional characteristics and that are different in their upper and lower faces.

[0010] With the upper face in the position to be used, one of the end zones has a centered orthogonal rim shaped as a rectangle triangle, with the vertex corresponding to the straight angle on the smaller side of the rectangular plate and the upper vertex rounded, which is able to be used as a handle to direct the coupling of the two consecutive elements; whilst its edges corresponding to the bigger sides of the rectangular plate are folded upwards and inwards to constitute the interior sliding coupling guide of two elements.

[0011] The central zone of the element has a casting to facilitate pouring the anchoring mortar, whilst its edges are folded upwards and inwards to constitute, in its prolongation towards the other end zone, the exterior sliding coupling guide of two consecutive elements at the same time as it is extended orthogonally downwards.

[0012] The other end zone of the upper face has a series or slots or grooves parallel to the smaller side of the rectangular plate, whilst its edges are folded upwards and inwards as an extension of those of the central zone, with a separation slightly larger than the separation of those of the first end zone, to permit the coupling to slide along the inside of the edges of the first end zone of another consecutive modular element.

[0013] With the lower face in the position to be used, the end zone corresponding to that named as first of the upper face has an orthogonal rim embedded and centered in the smaller side of the rectangular plate, with a height proportional to the depth of the grooves of the upper face, as it has to be housed in one of the grooves corresponding to the consecutive element to prevent its relative sliding and to establish and determine the separation between each two adjacent balustrades.

[0014] The central zone of the lower face has the same casting as the upper face, longitudinally delimited by the extension of the edges of the upper face and transversally by two small partitions. Between one and the other a framework adjusted to the sizes of the upper plug of the rails, which fit into said framework, is defined; whilst the other end zone is completely flat as the depth of the grooves of the upper face is less than the thickness of the basic plate of the element.

[0015] The coupling position of two consecutive elements is determined by the lineal magnitude chosen between certain limits (normally between 8 and 12 cm) as the distance between rails. Said elements are assembled in a sliding way by introducing the folded edges of the end zone of one into the folded edges of the end zone opposite the other one and attaching them at the chosen separation between the centers of the casting by means of embedding the end rim in the suitable groove.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] To complement the description of the invention and facilitate the interpretation of the formal, structural and functional characteristics of its purpose, attached are drawings in which different aspects of a preferred performance of the "Modular element for shaping balustrades", constituting the purpose of this Patent, are schematically represented.

[0017] Said drawings represent an element with squared central casting as it responds to the most fre-

quent design of the end plugs of the balustrades; but it could have any other shape in order to be adapted to that of said plugs.

Figure 1 represents an upper floor view of an element and Figure 2 is a front elevation view of same.

Figure 3 shows a lower floor view of the element; Figure 4 is a side elevation view of the element in the same inverted position as in Figure 3; and Figure 5 is a longitudinal section of the inverted element caused by the axial plane the design of which is represented as A-A in Figure 3.

DESCRIPTION OF A PREFERRED PERFORMANCE

[0018] To clearly show the nature and scope of the advantageous application of the "Modular element for shaping balustrades", purpose of the claimed invention, the following is a description of its structure and utilization, making reference to the drawings which, on representing a preferred performance of said object for information purposes, must be considered in the widest sense and not limiting of the application and content of the claimed invention.

[0019] The set of two coupled modular elements operates mechanically as a load part that props up every two adjacent balustrades operates functionally as a lost formwork when it becomes embedded in the anchoring mortar of the handrail. It is made up of a rectangular basic plate of molded plastic, transversally divided into three zones differentiated by their formal and functional characteristics, which are different on their upper and lower faces when in the position to be used.

[0020] With the upper face in the position to be used, one of the end zones has a centered orthogonal rim (1) shaped as a rectangle triangle, with the vertex corresponding to the straight angle on the smaller side of the rectangular plate and the upper vertex rounded, which is able to be used as a handle to direct the coupling of the two consecutive elements; whilst its edges (2) corresponding to the bigger sides of the rectangular plate are folded upwards and inwards to constitute the interior sliding coupling guide of two elements.

[0021] The central zone of the element has a casting (3) to facilitate pouring the anchoring mortar, whilst its edges (4) are folded upwards and inwards to constitute, in its prolongation towards the other end zone, the exterior sliding coupling guide of two consecutive elements at the same time as it is extended orthogonally downwards.

[0022] The other end zone of the upper face has a series or slots or grooves (5) parallel to the smaller side of the rectangular plate, whilst its edges are folded upwards and inwards as an extension of those (4) of the central zone, with a separation slightly larger than the separation of those (2) of the first end zone, to permit the coupling to slide along the inside of the edges of the first end zone of another consecutive modular element.

[0023] With the lower face in the position to be used, the end zone corresponding to that named as first of the upper face has an orthogonal rim (6) embedded and centered in the smaller side of the rectangular plate, with a height proportional to the depth of the grooves (5) of the upper face, as it has to be housed in one of the grooves corresponding to the consecutive element to prevent its relative sliding and to establish and determine the separation between each two adjacent balustrades.

[0024] The central zone of the lower face has the same casting (3) as the upper face, longitudinally delimited by the extension of the edges (4) of the upper face and transversally by two small partitions (7). Between one and the other a framework adjusted to the sizes of the upper plug of the rails, which fit into said framework, is defined; whilst the other end zone is completely flat as the depth of the grooves (5) of the upper face is less than the thickness of the basic plate of the element.

[0025] The coupling position of two consecutive elements is determined by the lineal magnitude chosen between certain limits (normally between 8 and 12 cm) as the distance between rails. Said elements are assembled in a sliding way by introducing the folded edges (2) of the end zone of one into the folded edges (4) of the end zone opposite the other one and attaching them at the chosen separation between the centers of the casting (3) by means of embedding the end rim (6) in the suitable groove (5).

Claims

1. Modular element for shaping balustrades, **characterized by** the fact that, coupled to another equal one, it operates mechanically as a load part that props up each two adjacent balustrades and operates functionally as a lost formwork when it becomes embedded in the anchoring mortar of the handrail. It is made up of a rectangular basic plate of molded plastic, transversally divided into three zones differentiated by their formal and functional characteristics, which are different on their upper and lower faces when in the position to be used.

2. Modular element for shaping balustrades, according to claim 1, **characterized by** the fact that with the upper face in the position to be used, one of the end zones has a centered orthogonal rim (1) shaped as a rectangle triangle, with the vertex corresponding to the straight angle on the smaller side of the rectangular plate and the upper vertex rounded, which is able to be used as a handle to direct the coupling of the two consecutive elements; whilst its edges (2) corresponding to the bigger sides of the rectangular plate are folded upwards and inwards to constitute the interior sliding coupling guide of two elements.

3. Modular element for shaping balustrades, according to the above claims, **characterized by** the fact that the central zone of the element has a casting (3) to facilitate pouring the anchoring mortar, whilst its edges (4) are folded upwards and inwards to constitute, in its prolongation towards the other end zone, the exterior sliding coupling guide of two consecutive elements at the same time as it is extended orthogonally downwards.

4. Modular element for shaping balustrades, according to the above claims, **characterized by** the fact that the other end zone of the upper face has a series or slots or grooves (5) parallel to the smaller side of the rectangular plate, whilst its edges are folded upwards and inwards as an extension of those (4) of the central zone, with a separation slightly larger than the separation of those (2) of the first end zone, to permit the coupling to slide along the inside of the edges of the first end zone of another consecutive modular element.

5. Modular element for shaping balustrades, according to the above claims, **characterized by** the fact that with the lower face in the position to be used, the end zone corresponding to that named as first of the upper face has an orthogonal rim (6) embedded and centered in the smaller side of the rectangular plate, with a height proportional to the depth of the grooves (5) of the upper face, as it has to be housed in one of the grooves corresponding to the consecutive element to prevent its relative sliding and to establish and determine the separation between each two adjacent balustrades.

6. Modular element for shaping balustrades, according to the above claims, **characterized by** the fact that the central zone of the lower face has the same casting (3) as the upper face, longitudinally delimited by the extension of the edges (4) of the upper face and transversally by two small partitions (7). Between one and the other a framework adjusted to the sizes of the upper plug of the rails, which fit into said framework, is defined; whilst the other end zone is completely flat as the depth of the grooves (5) of the upper face is less than the thickness of the basic plate of the element.

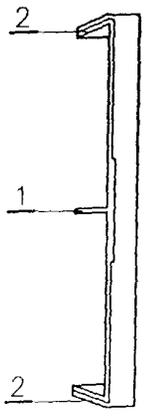

FIG.2

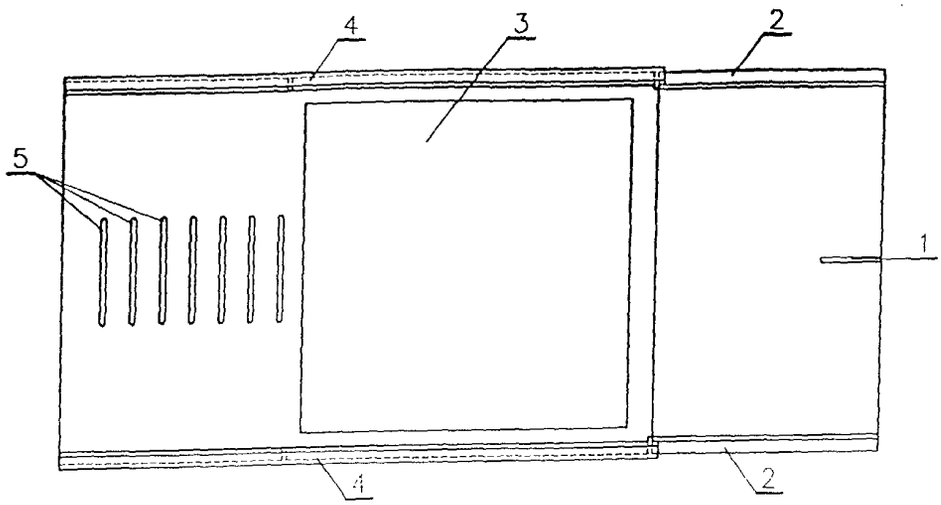

FIG.1

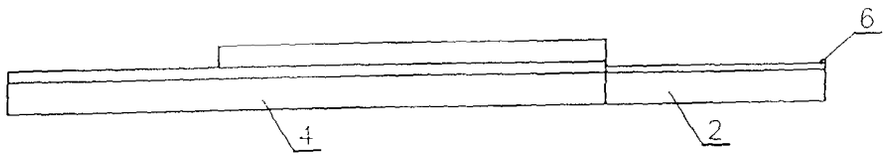

FIG.4

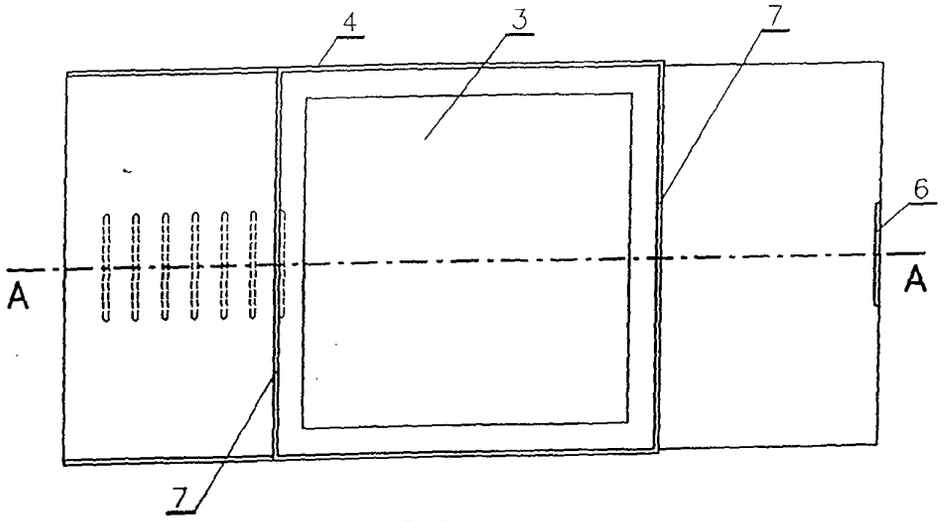

FIG.3

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 01 50 0270

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	FR 2 728 003 A (PREFABRICADOS URKIA SA) 14 June 1996 (1996-06-14) * page 5, line 14 - line 26 * * figures 2A,2B *	1-3	E04F11/18
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A	* column 5, line 30 - line 42 * * column 6, line 47 - line 66 * * figure 3 *	2,3	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	20 February 2002	Bouyssy, V

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 50 0270

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-02-2002

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