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(54) Reinforced aluminium beam.

(57) The reinforced aluminium beam is a standardized beam, industrially produced, which is used for the construction of frames and other structures of construction works with high strenght and architectural requirements.

It consists externally of an aluminium extrusion, which is filled with resin mortar and building iron integrated in the resin mortar during the process of casting the resin mortar inside the vacuum of the aluminium profile so that the materials form an integrated whole.

The beam is industrially produced in standardized shapes, dimensions and colours, according to the architectural and statical requirements of the frame of the construction or structure in which it is used.

The beam has the advantage of the external form of aluminium combined with the advantage of the high strenght of the resin mortar and the iron reinforcement, a combination of advantages allowing the industrial production and use of the beam in a great number of applications in the field of construction works and any other type of construction.

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The present invention refers to the industrial production of standardized aluminium beam, reinforced by reinforced resin mortar, for the construction of frames and other stuctures of building works, where high requirements of strenght and architectural shapes are needed.

Aluminium is currently used for the construction of doors and windows frames, structural glazing, partition walls and false ceilings, as well as in several other small structures with low strenght requirements.

The above use of aluminium is due to its great advantage of being easily shaped to the required achitectural shapes, as well as to its low specific weight in comparison with other metals used in construction works.

On the othe hand, due to the disadvantage of the low strenght of aluminium, the currently used aluminium profiles are of increased dimensions with large internal vacuums, in order to enable them to bear the limited loads they receive in the structures in which they are used.

The present invention removes the disadvantage of the low strenght of aluminium, while fully exploiting its capability to be easily shaped, through the combination of aluminium, resin mortar consisting of polyester resins and fine-sized inert materials, and building iron.

Through this combination, the surface of the beam is covered by aluminium, shaped according to the architectural and functional requirements of the structure in which it is used, while the resin mortar and the building iron provide to the beam the necessary strenght according to the statical requirements of the structure.

Thus, the invention consists in filling the internal vacuum of aluminium profiles with resin mortar and in adding within the resin mortar the necessary iron reinforcement in order to meet the required strenght of the beam.

The connection and cooperation of the two metals, aluminium and iron reinforcement, is achieved through the resin mortar, which, besides high compressive and bending strenght, also possesses the necessary adhesive capasity on both metals, which is required for the cooperation of the materials in order to constitute a unified whole.

In this way, the aluminium profile constitutes on the one hand the mould for casting the resin mortar as well as the container of the iron reinforcement, and on the other hand the external surface of the beam.

The overall production of the beam is industrial and in standardized forms according to the architectural, statical and functional requirements of the works where the beam will be used.

The industrial process of the production of the beam involves first the production of the aluminium profile, followed by the casting of the resin mortar and the placement of the iron reinforcement inside the vacuum of the aluminium profile.

According to the above, the reinforced aluminium beam possesses all the advantages of aluminium, combined with the advantages of the resin mortar and of the iron reinforcement: high strenght, zero water permeability, low heat conductivity, non-electrical conductivity, sound insulation, resistance to the effects of the atmosphere and the environment, durability, with surfaces and forms of high architectural requirements, as well as the possibility of being used in a large number of applications in construction works and any other type of construction.

Claims

1. Standardized beam industrially produced, used for the construction of frames and other structures of construction works. It consists externally of an aluminium extrusion of any architectural shape, colour and texture, which is filled with resin mortar consisting of polyester resins and fine inert material, as well as building iron integrated into the resin mortar in the arrangement and quantity required by the strenght requirements of the beam and the shape of the aluminium profile.

2. The reinforced aluminium beam, according to claim 1, is industrially produced in various shapes, dimensions and colours, according to the architectural and statical requirements of the statical frame of the construction or structure in which it is used, as an integral or independent part of these constructions.

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EUROPEAN SEARCH REPORT

Application Number
EP 95 60 0007

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.6)
Y	US-A-3 810 337 (POLLARD) * column 2, line 29 - column 2, line 51 * * column 3, line 39 - column 4, line 8 * * figures 1-4 *	1,2	E04C3/29
Y	WO-A-86 03820 (SKANDINAVISKA ALUMINIUM PROFILER) * page 2, line 17 - page 3, line 3 * * claims 1,3,9; figure 1 *	1,2	
A	US-A-3 487 518 (HOPFELD) * column 2, line 5 - column 2, line 18 * * column 3, line 6 - column 3, line 23 * * figures 1-7 *	1,2	
A	DE-A-34 29 883 (MUANYAGIPARI KUTAT INT ZET) * page 4, paragraph 4 - page 4, paragraph 6 * * page 5, paragraph 6 * * page 8, paragraph 3 * * claims 1,2; figures 1,2 *	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E04C
A	US-A-4 580 380 (BALLARD)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	8 September 1995	Hendrickx, X

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
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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