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

(11) **EP 2 221 441 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.08.2010 Bulletin 2010/34

(51) Int Cl.:
E06B 3/263 *(2006.01)*

(21) Application number: **10425036.0**

(22) Date of filing: **15.02.2010**

(84) Designated Contracting States:
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 SE SI SK SM TR
Designated Extension States:
AL BA RS

(30) Priority: **18.02.2009 IT NA20090006**

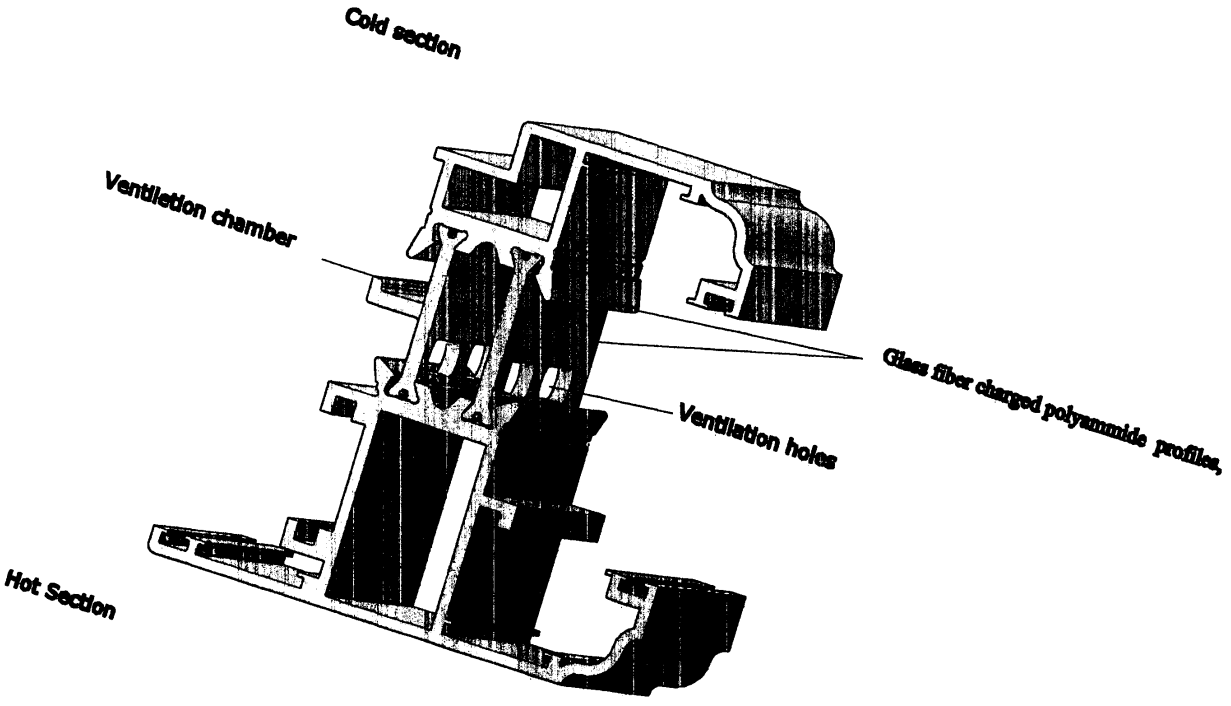
(71) Applicant: **ECO S.r.l.**
80122 Naples (IT)

(72) Inventor: **The designation of the inventor has not yet been filed**

(54) **Device for connecting two aluminium profiles for the realization of composite bars for the construction of casements (windows, doors and balconies) with low thermal transmittance**

(57) The device represented in fig. 1 (form A9) allow to get, to parity of dimensions, inferior values of thermal transmittance to the present analogous devices, to the actual state of the technique, on the market, for the realization of thermal break profiles, overcoming, without increase of costs, the followings disadvantages.
1° disadvantage: Section of elevated dimension.
2° disadvantage: Reduction of the mechanical resistance of the outlined composed.
3° disadvantage: Difficulty to reach the parameters of transmittance required by the European normative.
The found proposes to resolve such problems through the creation of a room of ventilation that allows to reduce the impact of the external cold air with the internal aluminium section.

ECO s.r.l.



EP 2 221 441 A1

Description

[0001] The casements for windows and doors must respond to numerous functional requisites and of thermal isolation as also dictated by norms EEC (EN12412-2: 2003).

[0002] The casements realized with outlined of aluminium they acquit very well to the requisite of duration, finish, facility of realization and costs but they are for the more lacking respect to the thermal isolation, being the aluminium among the best thermal conductors.

[0003] The problem is well known and you have seen the proposition to the market of a lot of solutions but anybody in degree to satisfy to the best thermal isolation conjugated to the structural stability, to the facility of construction and assemblage and to the inexpensiveness of the solution, a purpose of the found present is then that to furnish a method and the means to realize an outlined composite for aluminium casements; further purpose of the found present is to furnish an outlined in which the profiles external and inside of the casement is completely separate through mediate insulating profile; further purpose of the found present is to realize a dynamic isolation that integrates that static; further purpose of the found present is to furnish an outlined of joining of the elements structural inside and outside of the fixture, able to make to circulate the air through natural convective motions; further purpose of the found present is to furnish an outlined insulating intermediary characterized by a perforation able to realize the correct circulation of the air avoiding phenomena of it condenses that they reduce enormously the thermal isolation. These and other purposes are realized by the following found as following described and represented in the fig. 1 in which the outlined for casements according to the found present is represented in section.

Description

[0004] The outlined to thermal cut for casement is decomposable, to the goals of the description, in a part "warm" that it is that revolt inside the building, in a part "cold" and therefore external to the building and in the insulating part; the insulating profile according to the found present is characterized by the presence of a series of openings on both the walls of the outlined that, in the preferred form of realization, they are constituted by rectangular openings with joined edges being nevertheless the form, the surface, the number and the position definable otherwise to get the same consistent technical effect in the creation of a room of ventilation that exploiting the difference of temperature between warm part and cold part of the outlined one creates a circulation of air that constitutes a dynamic barrier to the transmission of the warm one and the cold in perpendicular direction to the outlined ones or from the outside of the building toward the inside.

[0005] The openings of ventilation on the outlined insulating are characterized by the preferential position toward the warm profile.

[0006] The natural ventilation fireplace effect prevents the formation of condenses on the cold walls of the outlined in aluminium, very subject to such phenomenon because of the elevated thermal conductibility of the aluminium, the eventuality of the formation of condenses makes the casements more thermal conductive and it frustrates in good part the interposition of outlined insulators according to the known technique.

[0007] The casement according to the found present can be realized in thicknesses and dimensions reduced in virtue of the increased insulating ability and therefore with smaller expense for a material appreciated as the aluminium.

[0008] The best achievable thermal isolation has been verified through tests and certifications according to the normative EEC.

Claims

1. Section for metallic casements **characterized by** a best thermal isolation

2. Section as from claim 1 in which an insulating septa is mediate among the element "warm" or that he comes to put inside the building and the element "cold" place to the outside of the building in which the section insulating is formed from the known insulating materials and it assumes forms in section whose preferred but not limitative form of realization is **characterized by** two parallel surfaces

3. Section as from claim 1 and 2 in which the insulating septa is **characterized by** a series of perforations on both the walls so that to allow the passage of the air

4. Section as from claims from 1 to 3 in which the perforations on the insulating walls are constituted in the preferred form of realization by openings to rectangular form and rounded off edges and in which dimension number and form can be made to vary without going out of the effect technical product according to the present

5. Section as from claims from 1 to 4 in which the openings are preferably practiced in the nearest part to the outlined one "warm"

6. Section as from claim from 1 to 5 in which the thermal isolation is improved in dynamic way because of the convective motions assumed by the air to the inside because of the difference of temperature between warm wall and cold wall

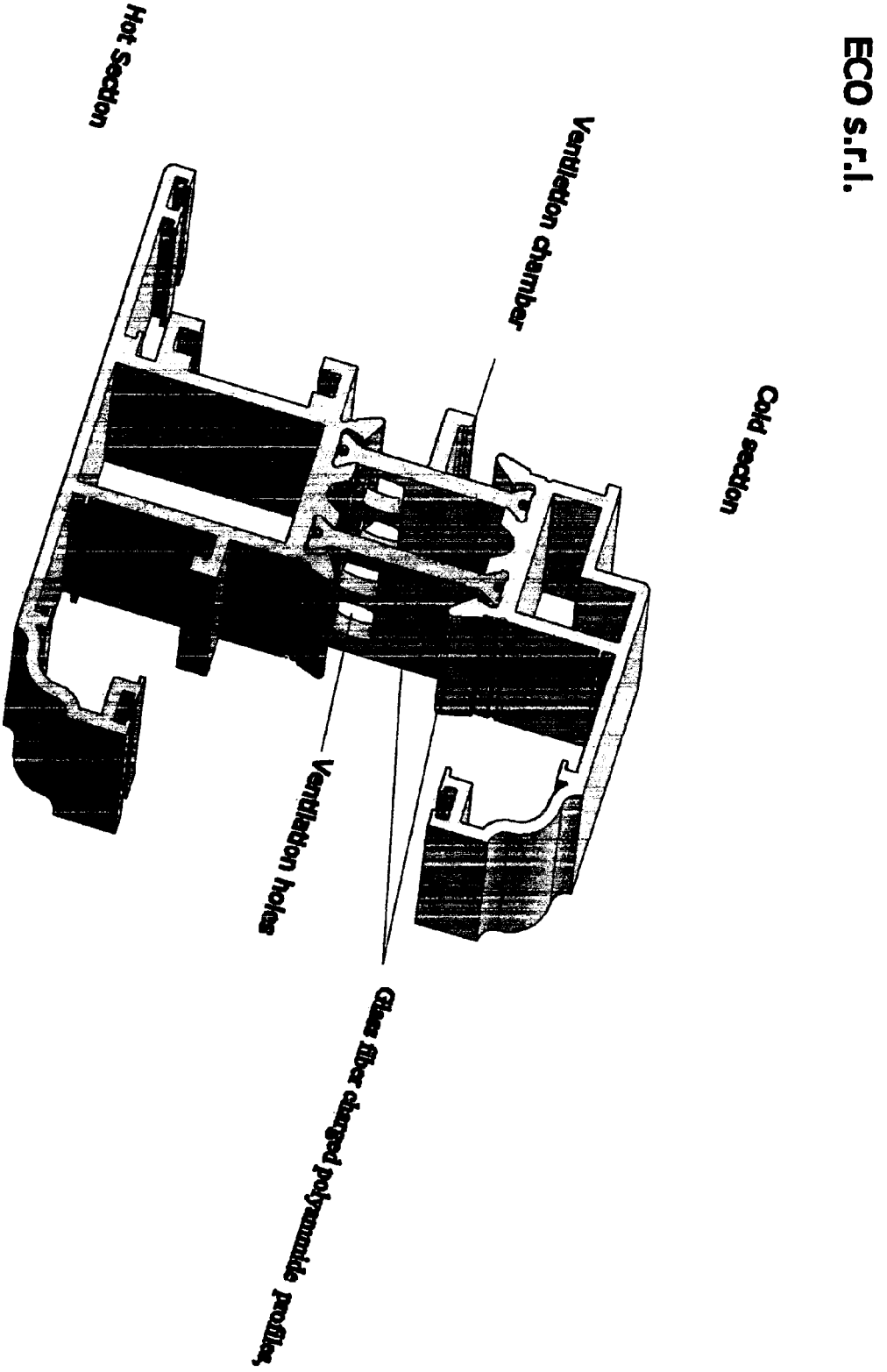
7. Section as from claims from 1 to 6 in which the cir-

culation of the air to the inside eliminates it condenses her/it on the cold walls, very sensitive phenomenon because of the elevated thermal conductibility of the aluminum

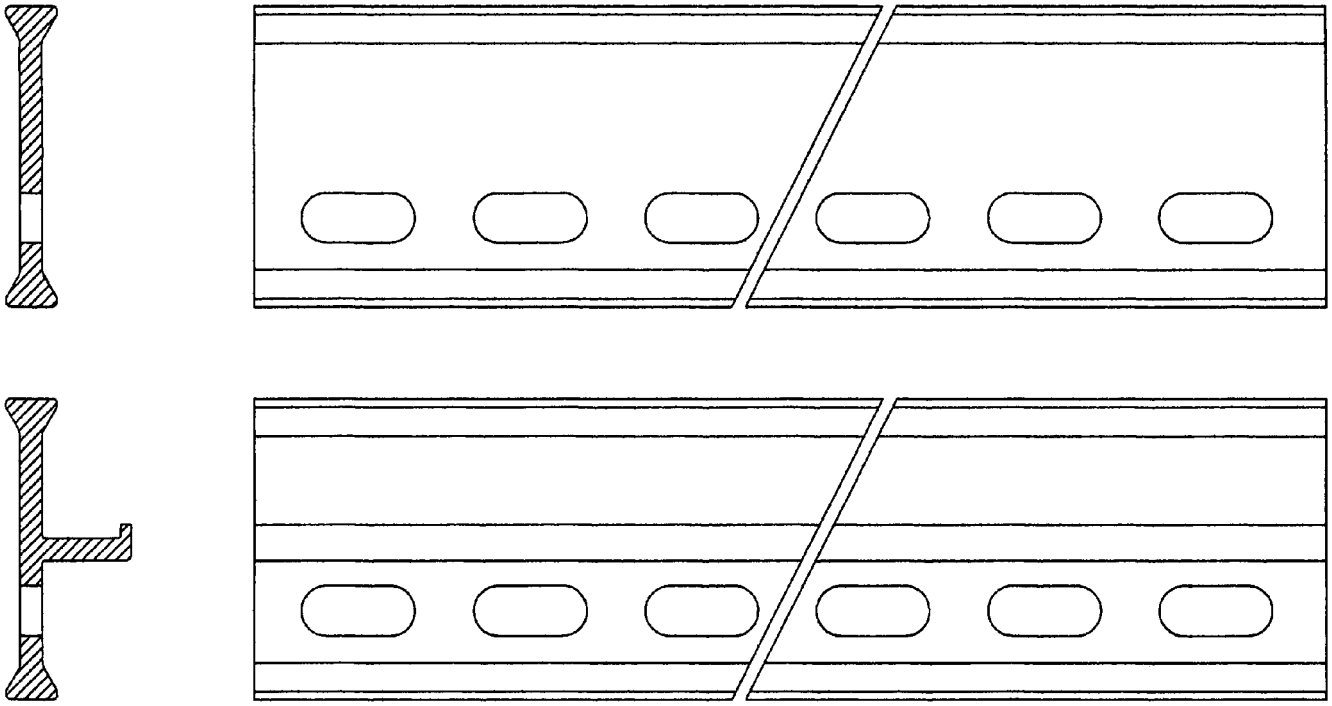
8. Section as from claims from 1 to 7 in which the elimination of the condenses it reduces the transmissibility of the heat through the casement and it reduces the causes of I degrade some material sensitively increasing the life of the same one

9. Section as from claim from 1 to 8 in which the improved effect of isolation allows the reduction of the sections of the outlined in aluminum with notable economic benefit of production and the employment of different materials from the PVC with smaller pollution in the operations of recovery of the waste casements

10. Section as from claims from 1 to 9 as substantially described, represented in the sketches and claimed.


ECO s.r.l.
Hot Section
Ventilation chamber
Cold section
Ventilation holes
Glass fiber charged polyammide profiles

"Device For Union of Two Aluminium Profiles For The Realization of Composite Bars to Use in the Construction Of Casements (windows, doors and balconies) to low thermal transmittance".



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 42 5036

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	EP 1 002 924 A2 (NORSK HYDRO AS [NO]) 24 May 2000 (2000-05-24) * figure 3 * -----	1-10	INV. E06B3/263
X	DE 20 2007 016649 U1 (TECHNOFORM CAPRANO UND BRUNNHO [DE]) 30 April 2008 (2008-04-30) * figure 2 * -----	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	8 June 2010	Verdonck, Benoit

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
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 42 5036

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-06-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1002924 A2	24-05-2000	DE 19853235 A1	25-05-2000
DE 202007016649 U1	30-04-2008	CA 2682644 A1	09-10-2008
		CN 101688421 A	31-03-2010
		EP 2044284 A1	08-04-2009
		WO 2008119535 A1	09-10-2008
		US 2010115850 A1	13-05-2010

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82