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(54) Method for changing the width and/or length of a sandwich construction unit

(57) The invention relates to a method for changing the width and/or length of a sandwich construction unit, said construction unit (1) comprising a core element (2) of some thermally insulating material, having edge-profiled surface sheets (3, 4) attached to its two opposite major surfaces. The method comprises splitting and/or breaking the unit (1) by cutting it longitudinally and/or laterally along a desired line, followed by removing a piece of core element material (2a) from alongside the cut edge to enable edge-profiling devices (8) to fit in a space between the surface sheets (3, 4), followed by profiling a cut edge (5a) of the surface sheets and by replacing the removed piece of core element material (2a) with a fresh piece of core element material (2b).

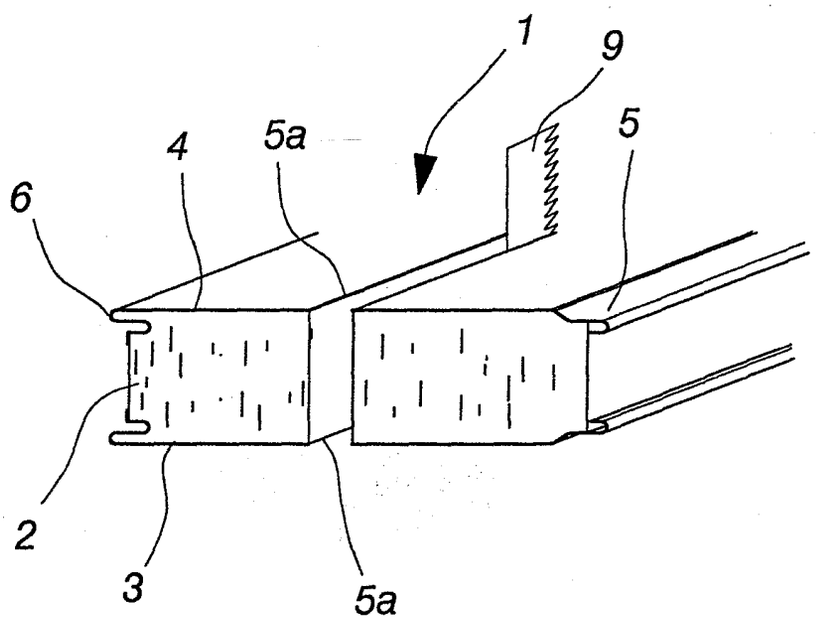

Fig. 2

EP 1 493 876 A1

Description

[0001] The present invention relates to a method for changing the width and/or length of a sandwich construction unit, said construction unit comprising a core element of some thermally insulating material, having surface sheets attached to its two opposite major surfaces.

[0002] Sandwich construction units are typically manufactured on a production line in certain modular sizes, e.g. in a width of 1200 mm. Occasionally, however, it is necessary to use a unit narrower than the standard width, for example for the highest row of units in a system of tongued-and-grooved units to be mounted on top of each other, or along a row of windows, which causes problems, especially in cases that such a narrower unit must also have both of its opposite edges profiled.

[0003] Accordingly, it is an aim of the present invention to provide a method, which can be used for reducing the width and/or length of a sandwich construction unit in such a way that the downsized unit also has profiled edges. In order to accomplish this aim, a method of the invention is characterized in that the method comprises splitting and/or breaking the unit by cutting it longitudinally and/or laterally along a desired line, followed by removing a piece of core element material from alongside the cut edge to enable edge-profiling devices to fit in a space between the surface sheets, followed by reprofiling the cut edge of the surface sheets and by replacing the removed piece of core element material with a fresh piece of core element material.

[0004] According to one aspect of the invention, the method is applied to a construction unit, which construction unit comprises a core element of some thermally insulating material, having edge-profiled surface sheets attached to its two opposite major surfaces with a bonding agent, whereby, in the process of manufacturing the unit, the method comprises coating the inner surface of the unit's surface sheets along a desired cutting line of the unit with a relatively narrow protective layer extending longitudinally and/or laterally of the unit for preventing the adherence of a bonding agent to the inner surface of a surface sheet, followed by attaching the surface sheets to the core element by means of the bonding agent, whereafter the unit is cut along said protective layer and the necessary removal of core element material is performed prior to reprofiling the edge.

[0005] According to a second aspect of the invention, the method is applied to a construction unit, in which construction unit a core element is formed by foaming a thermally insulating material into a space between two surface sheets, whereby the foamed core element material adheres to the surface sheets, whereby, in the process of manufacturing the unit, the method comprises coating the inner surface of the unit's surface sheets along a desired cutting line of the unit with a relatively narrow protective layer extending longitudinally and/or laterally of the unit for preventing the adherence of a foamed core element material to the inner surface of a surface sheet, followed by foaming the core element material into a space between the surface sheets, whereafter the unit is cut along said protective layer and the necessary removal of core element material is performed prior to profiling the edge.

[0006] The invention will now be described in more detail with reference to the accompanying drawings, in which:

Fig. 1 shows schematically a surface sheet used in a sandwich construction unit, and

Figs. 2 -5 show various phases in changing the width of a unit in schematic views.

[0007] The unit shown by way of example in the figures comprises a core element 2 of a thermally insulating material, such as, for example, mineral wool, having surface sheets 3 and 4 attached to its opposite surfaces by means of a bonding agent, the opposite lengthwise edges of said sheets being formed with edge profiles 5 and 6 for fastening adjacent units to each other with a tongue-and-groove joint. The tongue is represented by reference numeral 5 and the groove by reference numeral 6.

[0008] In a method of the invention, the unit 1 is first split along a desired line to a certain width, e.g. by means of a saw represented in fig. 2 by reference numeral 9. This is followed by removing from the unit a piece of core element material from alongside a split edge 5a, for example to the depth of about 50 mm, and possible traces or residues of the bonding agent and/or thermally insulating material are finally scraped off the sheet's inner surface. The removal of the thermally insulating material can be performed for example by means of a plane device 7 shown in fig. 3. Fig. 4 illustrates the positioning of profiling rollers in a gap between the surface sheets 3 and 4 in a space vacated by a planed-off piece of thermally insulating material 2a, and fig. 5 illustrates a split unit 1 formed with a new profile 5, the formation of said edge profile being followed by replacing a fresh piece of thermally insulating material 2b in the vacated space between the surface sheets 3 and 4. After this, the narrowed unit is ready for service. The added piece of thermally insulating material 2b may consist of previously removed thermally insulating material or it may consist of a fresh thermally insulating material, possibly even a material other than the previous one.

[0009] Fig. 1 depicts one preferred implementation of the method, in which the unit's surface sheets 3 and 4 are first coated with a protective layer 9 along a desired cutting line, prior to attaching the surface sheets to the core element 2. The protective layer can be applied prior to profiling the surface sheets 3, 4 on a production line, or during or after the profiling process. The protective layer may comprise, for example, a tape or an adhesive

film, or a liquid material which sets on the inner surface of a surface sheet to form a desired protective layer, or a greasy type of material, and said protective layer being relatively easily removable from the sheet's inner surface. By virtue of this protective layer 9, the removal of a bonding agent, intended for the attachment of a core element and particularly a core element and a surface sheet, to be performed after splitting the unit, will be considerably easier from alongside a cut edge than the removal of a bonding agent from the surface sheets' inner surface by scraping or in a similar fashion. The inventive method can be carried out either on an installation site or completed in a factory, as the case may be.

[0010] Besides or in addition to the narrowing of a unit, the inventive method can be used for the shortening of a unit and it is also applicable to reducing the width and/or length of units with all edges tongued and grooved. The core element material may comprise e.g. mineral wool or a corresponding heat insulating material, which is attached by means of a bonding agent to surface sheets, or the thermally insulating material may comprise a foamed material, which adheres directly to surface sheets when applied in a space between the surface sheets.

Claims

1. A method for changing the width and/or length of a sandwich construction unit, said construction unit (1) comprising a core element (2) of a thermally insulating material, having surface sheets (3, 4) attached to its two opposite major surfaces, **characterized in that** the method comprises splitting and/or breaking the unit (1) by cutting it longitudinally and/or laterally along a desired line, followed by removing a piece of core element material (2a) from alongside the cut edge to enable edge-profiling devices (8) to fit in a space between the surface sheets (3, 4), followed by profiling a cut edge (5a) of the surface sheets and by replacing the removed piece of core element material (2a) with a fresh piece of core element material (2b).

2. A method as set forth in claim 1, wherein the construction unit (1) comprises a core element (2) of some thermally insulating material, having surface sheets (3, 4) attached to its two opposite major surfaces, **characterized in that** in the process of manufacturing the unit (1), the method comprises coating the inner surface of the unit's surface sheets (3, 4) along a desired cutting line of the unit with a relatively narrow protective layer 9 extending longitudinally and/or laterally of the unit for preventing the adherence of a bonding agent to the inner surface of a surface sheet, followed by attaching the surface sheets (3, 4) to the core element (2) by means of the bonding agent, whereafter the unit is cut along said protective layer and the necessary removal of core element material is performed prior to profiling the edge.

3. A method as set forth in claim 1, wherein a core element in said construction unit is formed by foaming a thermally insulating material into a space between two surface sheets, whereby the foamed core element material adheres to the surface sheets, **characterized in that** in the process of manufacturing the unit, the method comprises coating the inner surface of the unit's surface sheets along a desired cutting line of the unit with a relatively narrow protective layer extending longitudinally and/or laterally of the unit for preventing the adherence of a foamed core element material to the inner surface of a surface sheet, followed by foaming the core element material into a space between the surface sheets, whereafter the unit is cut along said protective layer and the necessary removal of core element material is performed prior to profiling the edge.

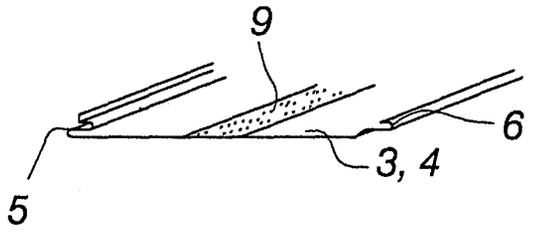

Fig. 1

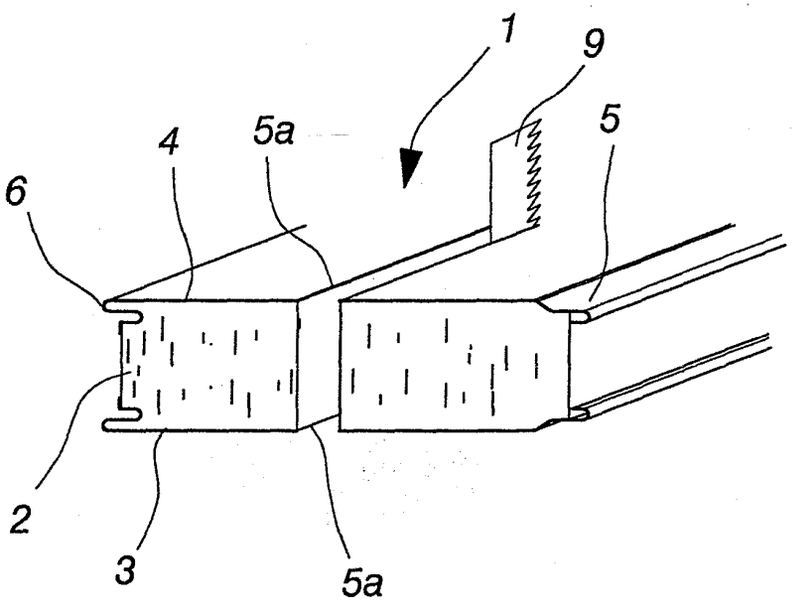

Fig. 2

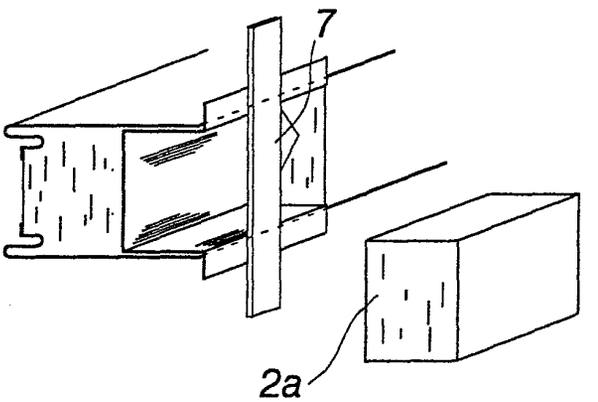

Fig. 3

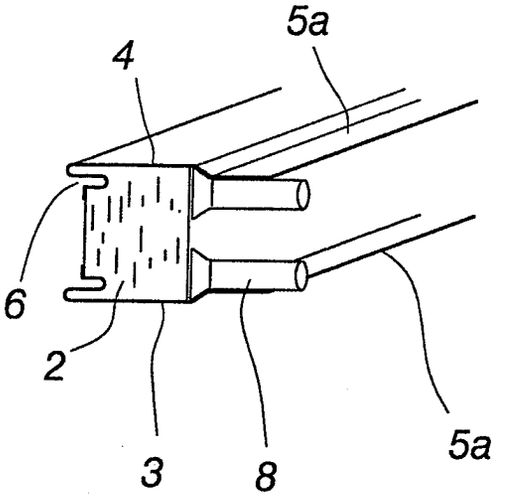

Fig. 4

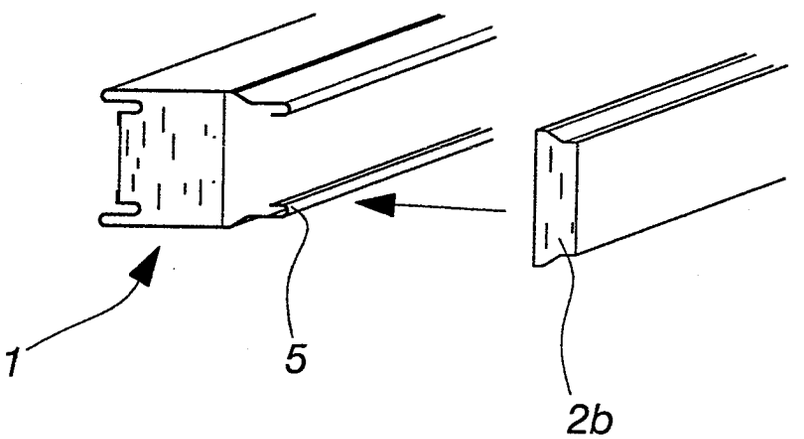

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 04 10 2241

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)
A	GB 2 227 261 A (KEYSAN LTD) 25 July 1990 (1990-07-25) * page 2, line 21 - page 4, line 13; figures 1,3 *	1-3	E04B1/61
A	WO 99/53155 A (KROIE ROBERT ; UNIPANEL PTY LTD (AU)) 21 October 1999 (1999-10-21) * page 15, line 21 - page 16, line 12; figure 11 *	1-3	
A	US 5 293 728 A (CHRISTOPHER MICHAEL E ET AL) 15 March 1994 (1994-03-15) * abstract; figures 1,2 *		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E04B
E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	5 November 2004	Khera, D

CATEGORY OF CITED DOCUMENTS

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05-11-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2227261 A	25-07-1990	NONE	
WO 9953155 A	21-10-1999	AU 3321899 A	01-11-1999
		WO 9953155 A1	21-10-1999
		EP 1070178 A1	24-01-2001
		JP 2002511541 T	16-04-2002
US 5293728 A	15-03-1994	US 5410849 A	02-05-1995

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