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

Verfahren zur Kürzung der Breite und/oder der Länge einer Sandwichplatte

Méthode pour réduire la largeur et/ou la longueur d'un panneau de sandwich

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(73) Proprietor: **Paroc Oy Ab**
01300 Vantaa (FI)

(72) Inventor: **Willberg, Jim**
FI-21600, Parainen (FI)

(74) Representative: **LEITZINGER OY**
Tammasaarenkatu 1
00180 Helsinki (FI)

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US-A- 5 293 728

EP 1 493 876 B1

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 a thermally insulating material, having surface sheets attached to its two opposite major surfaces. Such construction elements are commonly known, see e.g. GB 2 227 261 A.

[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 a 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 10. 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 placing a piece of core element material (2b) in the space between the surface sheets (3, 4).

2. A method as set forth in claim 1, wherein the construction unit (1) comprises a core element (2) of a thermally insulating material, having surface sheets (3, 4) attached to its two opposite major surfaces by means of a bonding agent, **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 (2) in said construction unit (1) is formed by foaming a thermally insulating material into a space between two surface sheets (3,4), 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 long 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 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.

4. A method as set forth in any of claims 1 and 2, **characterized in that** the piece of core element material (2b) to be placed in the space between the surface sheets (3, 4) consists of previously removed core element material (2a) or a fresh thermally insulating material.

Patentansprüche

1. Verfahren zur Kürzung der Breite und/oder der Länge einer Sandwichplatte, die Platte (1) umfassend ein Kernelement (2) aus einem wärmeisolierenden Material mit Oberflächenbahnen (3, 4), die auf seinen beiden gegenüberliegenden größeren Oberflächen angebracht sind, **dadurch gekennzeichnet, dass** das Verfahren das Spalten und/oder Brechen der Platte (1) durch Schneiden derselben längs und/oder seitlich entlang einer erwünschten Linie, gefolgt vom Entfernen eines Stücks Kernelementmaterial (2a) von längsseits der Schneidkante zum Ermöglichen des Einpassens von Kantenprofilvorrichtungen (8) in einen Raum zwischen den Oberflächenbahnen (3, 4), gefolgt vom Profilieren einer Schneidkante (5a) der Oberflächenbahnen und vom Anordnen eines Stücks Kernelementmaterial (2b) in den Raum zwischen den Oberflächenbahnen (3, 4) umfasst.

2. Verfahren nach Anspruch 1, wobei die Platte (1) ein Kernelement (2) aus einem wärmeisolierenden Material mit Oberflächenbahnen (3, 4), die auf seinen beiden gegenüberliegenden größeren Oberflächen mithilfe eines Haftmittels angebracht sind, umfasst, **dadurch gekennzeichnet, dass** das Verfahren im Herstellungsprozess der Platte (1) das Beschichten der Innenfläche der Oberflächenbahnen (3, 4) der Platte entlang einer gewünschten Schnittlinie der

Einheit der Platte mit einer verhältnismäßig schmalen Schutzschicht (9), die längs und/oder seitlich der Platte zum Verhindern des Anhaftens eines Haftmittels an der Innenfläche einer Oberflächenbahn verläuft, gefolgt vom Anbringen der Oberflächenbahnen (3, 4) an dem Kernelement (2) mithilfe des Haftmittels umfasst, wonach die Platte entlang der Schutzschicht geschnitten wird und das notwendige Entfernen von Kernelementmaterial vor dem Profilieren der Kante ausgeführt wird.

3. Verfahren nach Anspruch 1, wobei ein Kernelement (2) in der Platte (1) durch Einschäumen eines wärmeisolierenden Materials zwischen zwei Oberflächenbahnen (3, 4) ausgebildet wird, wobei das geschäumte Kernelementmaterial an den Oberflächenbahnen anhaftet, **dadurch gekennzeichnet, dass** das Verfahren im Herstellungsprozess der Platte das Beschichten der Innenfläche der Oberflächenbahnen der Platte entlang einer gewünschten Schnittlinie der Einheit der Platte mit einer verhältnismäßig schmalen Schutzschicht (9), die längs und/oder seitlich der Platte zum Verhindern des Anhaftens eines geschäumten Kernelementmaterials an der Innenfläche einer Oberflächenbahn verläuft, gefolgt vom Einschäumen des Kernelementmaterials in einen Raum zwischen den Oberflächenbahnen umfasst, wonach die Platte entlang der Schutzschicht geschnitten wird und das notwendige Entfernen von Kernelementmaterial vor dem Profilieren der Kante ausgeführt wird.

4. Verfahren nach einem der Ansprüche 1 und 2, **dadurch gekennzeichnet, dass** das Stück Kernelementmaterial (2b), das in dem Raum zwischen den Oberflächenbahnen angeordnet werden soll, aus einem vorher entfernten Kernelementmaterial (2a) oder einem unverbrauchten wärmeisolierendem Material besteht.

Revendications

1. Procédé pour réduire la largeur et/ou la longueur d'un panneau de sandwich, ledit panneau (1) comprenant un élément de coeur (2) dans un matériau thermiquement isolant, présentant des feuilles de surface (3, 4) fixées sur ses deux surfaces principales opposées, **caractérisé en ce que** le procédé comprend de séparer et/ou de casser le panneau (1) en le découpant longitudinalement et/ou latéralement le long d'une ligne souhaitée, suivi du retrait d'une pièce du matériau de l'élément de coeur (2a) du long du bord de coupe pour permettre à des dispositifs de profilage de bord (8) de s'insérer dans un espace entre les feuilles de surface (3, 4), suivi d'un profilage d'un bord de coupe (5a) des feuilles de surface et du placement d'une pièce de l'élément de coeur (2a)dans l'espace entre les feuilles de surface (3, 4).

2. Procédé selon la revendication 1, dans lequel le panneau (1) comprend un élément de coeur (2) dans un matériau thermiquement isolant, présentant des feuilles de surface (3, 4) fixées sur ses deux surfaces principales opposées au moyen d'un liant, **caractérisé en ce que** dans le processus de fabrication du panneau (1), le procédé comprend le fait de revêtir la surface intérieure des feuilles de surface (3, 4) du panneau le long d'une ligne de coupe souhaitée du panneau avec une couche protectrice (9) relativement mince s'étendant longitudinalement et/ou latéralement depuis le panneau, pour éviter qu'un liant n'adhère à la surface intérieure d'une feuille de surface, suivi de la fixation des feuilles de surface (3, 4) à l'élément de coeur (2) au moyen du liant, après quoi le panneau est découpé le long de ladite couche protectrice et le retrait nécessaire du matériau de l'élément de coeur (2a) est effectué avant de profiler le bord.

3. Procédé selon la revendication 1, dans lequel un élément de coeur (2) dans ledit panneau (1) est formé en moussant un matériau thermiquement isolant dans un espace entre deuxfeuilles de surface (3, 4), moyennant quoi le matériau de l'élément de coeur moussé adhère aux feuilles de surface, **caractérisé en ce que** dans le processus de fabrication du panneau (1), le procédé comprend le fait de revêtir la surface intérieure des feuilles de surface du panneau le long d'une ligne de coupe souhaitée du panneau avec une couche protectrice (9) relativement mince s'étendant longitudinalement et/ou latéralement depuis le panneau, pour éviter qu'un matériau de l'élément de coeur moussé n'adhère à la surface intérieure d'une feuille de surface, suivi du moussage du matériau de l'élément de coeur dans un espace entre les feuilles de surface, après quoi le panneau est découpé le long de ladite couche protectrice et le retrait nécessaire du matériau de l'élément de coeur est effectué avant de profiler le bord.

4. Procédé selon l'une quelconque des revendications 1 et 2, **caractérisé en ce que** la pièce de matériau de l'élément de coeur (2b) à placer dans l'espace entre les feuilles de surface (3, 4) consiste en le matériau de l'élément de coeur (2a) préalablement retiré ou en un nouveau matériau thermiquement isolant.

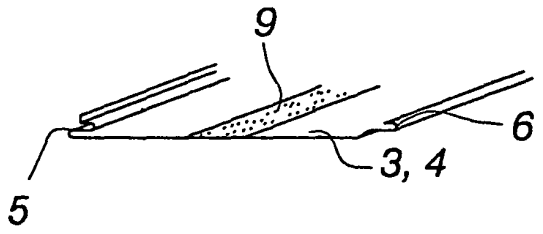

Fig. 1

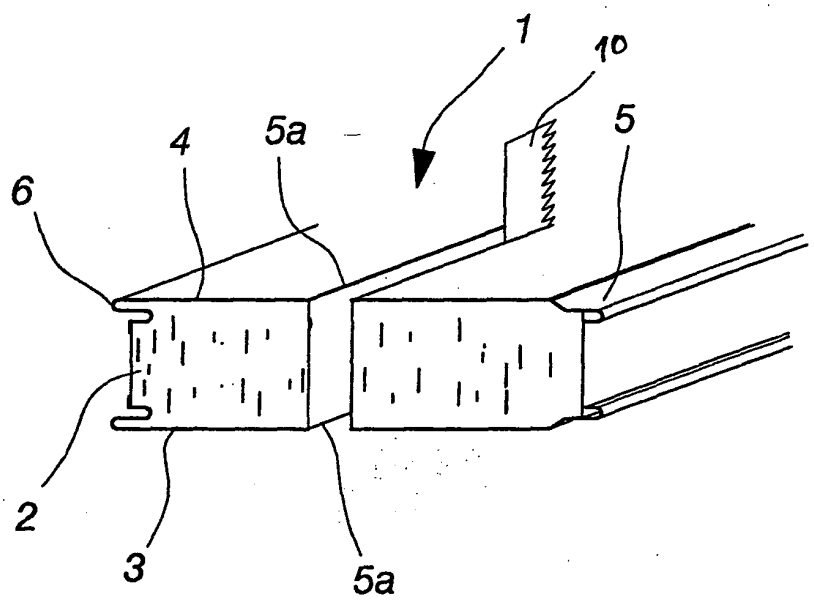

Fig. 2

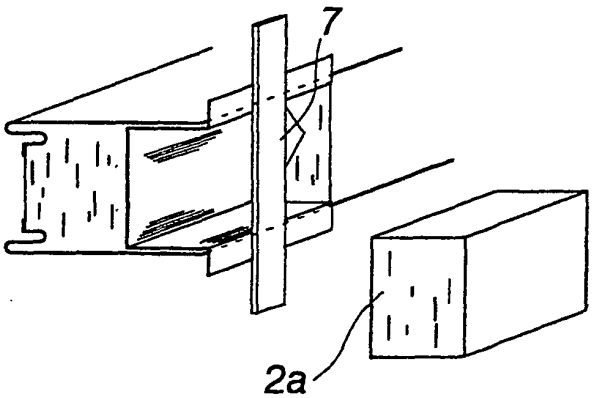

Fig. 3

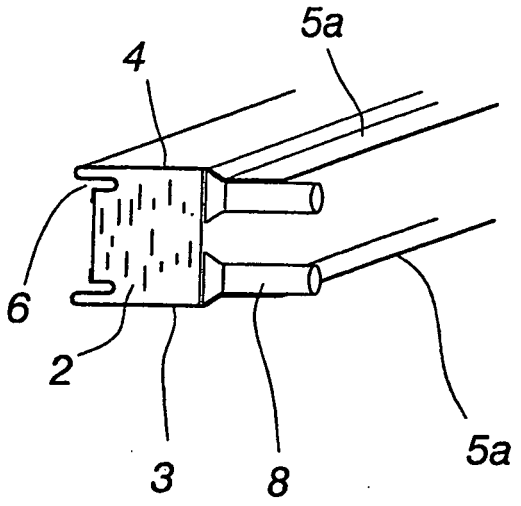

Fig. 4

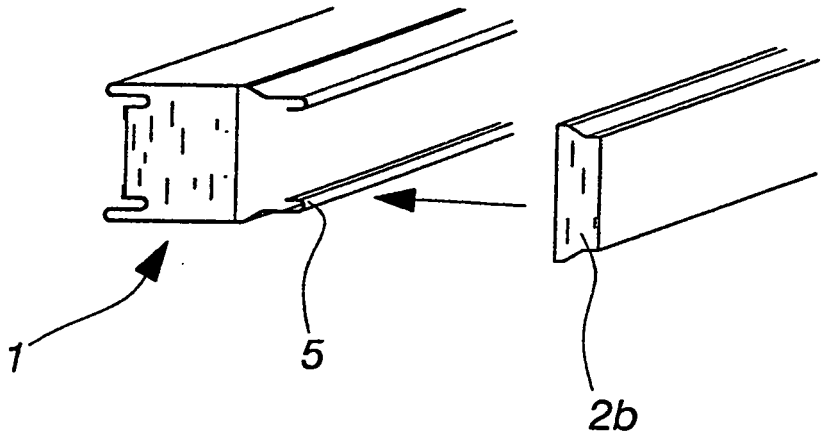

Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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