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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- of inventorship (Rule 4.17(iv))

Published:

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- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

20 August 2020 (20.08.2020)

(54) Title: PANEL AND METHOD FOR MANUFACTURING THE PANEL

(57) Abstract: Method for producing a panel, more specifically a load-bearing panel, and even more specifically a mezzanine floor panel, wherein said panel comprises a wood-based substrate and said panel, on at least one side thereof, in the case of a floor panel preferably the underside thereof, is provided with an aluminum layer, characterized in that in production, the aluminum layer and the substrate are bonded to each other by pressing with the intermediary of a bonding layer, using a flat press. The invention further also relates to load-bearing panels, in particular mezzanine panels, wherein an aluminum layer is bonded to a substrate by means of a polyurethane-based or resin-based bonding layer.



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INTERNATIONAL SEARCH REPORT

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PCT/IB2019/060901

A. CLASSIFICATION OF SUBJECT MATTER

INV. B32B7/12 B32B15/10 B32B21/02 B32B15/20 B32B3/26
B32B15/085 B32B15/095 B32B21/08 B32B27/32 B32B27/40
B32B37/00 B32B37/04 E04F15/02 E04F15/04 E04F15/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B32B E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/109003 A1 (DEPCO TRH PTY LTD [AU]; PRICE DAVID ELWYN [AU]) 11 September 2009 (2009-09-11) figures 1-6; page 1, paragraphs 1, 2, 4, 5; page 2, paragraphs 3, 4, 6; page 3, paragraphs 1-5; page 4, paragraphs 2-6;	1,2,4-7, 9,12-16, 20-24, 29,30, 37,38, 40,42, 48,50, 53-56, 59,60, 66-68, 70, 72-77, 79,81, 84-87, 90,91, 97,98, 100



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	page 5, paragraphs 1, 2, 4, 5; page 6, paragraphs 4-6; page 7, paragraph 3 -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2019/060901

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

2, 4-7, 9, 12-16, 20-24, 29, 30, 37, 38, 40, 42, 48, 50, 53-56, 59, 60
66-68, 70, 73-77, 79, 81, 84-87, 90, 91, 97, 98, 100(completely); 1, 43
72(partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 2, 4-7, 9, 12-16, 20-24, 29, 30, 37, 38, 40, 42, 48, 50, 53-56, 59, 60, 66-68, 70, 73-77, 79, 81, 84-87, 90, 91, 97, 98, 100(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them.

The problem solved is to provide a fire retarding wood based panel, and a method for its production.

2. claims: 3(completely); 1(partially)

A method for producing laminate panels by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press, whereby the laminate produced is large enough to be cut in several panels.

The problem solved is to provide a method for producing several fire retarding wood based panels of desired sizes, using only one compression step.

3. claims: 8, 49, 80(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the aluminium layer is annealed aluminium.

The problem solved is to provide a fire retarding wood based panel having less internal stress (e.g. less warping), and a method for its production.

4. claims: 10, 11, 51, 52, 82, 83(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the aluminium layer has a particular thickness range.

The problem solved is to provide a fire retarding wood based panel with optimum fire retarding properties provided by the aluminium, and a method for its production.

5. claims: 17(completely); 1, 43(partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, the bonding layer being PU based.
The problem solved is to provide a fire retarding wood based panel wherein also the bonding layer has a long lasting fire resistance, and a method for its production.

6. claims: 18, 19, 44-47(completely); 1, 43(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, the bonding layer being based on heat activatable PU.
The problem solved is to provide a fire retarding wood based panel, and a method for its production, wherein the PU fire resistant bonding layer is particularly appropriate for production in a heated press.

7. claims: 25, 26, 78(completely); 1, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the bonding layer comprises a carrier having a thermosetting adhesive on the substrate side and hot melt adhesive on the aluminum side.
The problem solved is to provide a fire retarding wood based panel wherein the bonding layer is optimised for both substrates separately, and a method for its production.

8. claims: 27, 57, 88(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the wood based substrate comprises no fire retardant additive.
The problem solved is to provide a fire retarding wood based panel without the use of fire retardant wood based substrate, and a method for its production.

9. claims: 28, 58, 89(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the wood based substrate comprises fire retardant additives.

The problem solved is to provide a fire retarding wood based panel having optimum fire retardant properties, also for the wood based substrate, and a method for its production.

10. claims: 31, 61, 92(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the wood based substrate on the side of the aluminum layer comprises a layer of finer chips than its other layer.

The problem solved is to provide a fire retarding wood based panel with a more flat/even attachment of the aluminum layer, and a method for its production.

11. claims: 32, 62, 93(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them, wherein the wood based substrate on both its outer sides comprises a layer of finer chips than its core layer.

The problem solved is to provide a fire retarding wood based panel with a more smooth facing, and a method for its production.

12. claims: 33, 63, 94(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them; wherein the wood based substrate comprises a bonding agent comprising MDI and is preferably free of formaldehyde.

The problem solved is to provide a fire retarding wood based panel with less environmental burden, without compromising the strength of the wood based substrate, and a method for its production.

13. claims: 34, 64, 95(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them; wherein the panel has a particular thickness range.

The problem solved is to provide a fire retarding wood based panel having sufficient strength as a floor panel, and a method for its production.

14. claims: 35(completely); 1(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; the method comprising particular efficient ways to apply the bonding layer. The problem solved is to provide a more efficient method for the production of a fire retarding wood based panel.

15. claims: 36, 65, 96(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them; wherein the panel has a tongue and groove profiling on the edges.

The problem solved is to provide a fire retarding wood based floor panel having features to connect neighbouring panels, and a method for its production.

16. claims: 39, 69, 99(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them; wherein the aluminum layer is light coloured or made of white aluminum.

The problem solved is to provide a fire retarding wood based mezzanine floor panel having a bright reflecting underside, and a method for its production.

17. claims: 41, 71, 101(completely); 1, 43, 72(partially)

A method for producing a laminate panel by pressing a wood based substrate, an aluminium layer and a bonding layer between them in a flat press; and the panel comprising a wood based substrate, an aluminium layer and a bonding layer between them; wherein one or both panel outer surfaces comprise protective release layer(s).

The problem solved is to provide a fire retarding wood based

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

mezzanine floor panel comprising an additional protection during handling and transport, and a method for its production.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2019/060901

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009109003 A1	11-09-2009	AU 2009221638 A1	11-09-2009
		WO 2009109003 A1	11-09-2009
