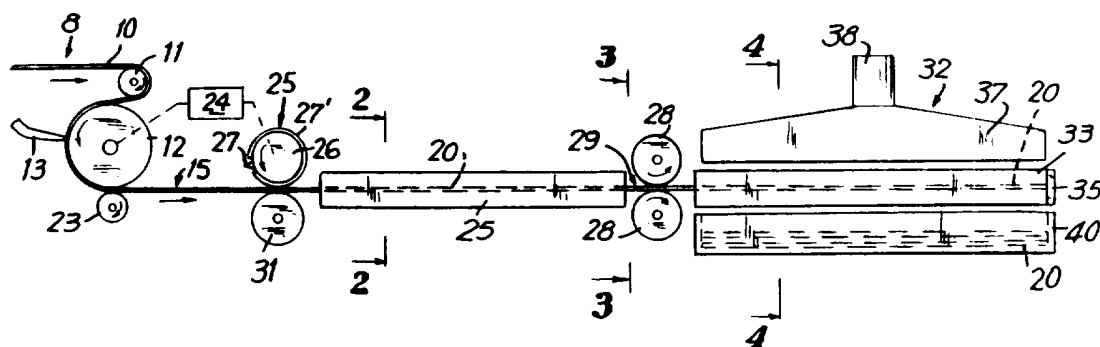




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : B31D 3/02	A3	(11) International Publication Number: WO 92/04182 (43) International Publication Date: 19 March 1992 (19.03.92)
(21) International Application Number: PCT/NL91/00163 (22) International Filing Date: 5 September 1991 (05.09.91) (30) Priority data: 578,548 6 September 1990 (06.09.90) US (71) Applicant: HUNTER DOUGLAS INTERNATIONAL N.V. [NL/NL]; Kaya Flamboyen 22, Curaçao (AN). (72) Inventor: GOODHUE, William, Velte ; Pojack Point, # 57 Street, North Kingston, RI 02852 (US). (74) Agent: JANSEN, C., M.; Hunter Douglas Industries B.V., Piekstraat 2, NL-3071 EL Rotterdam (NL).		(81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), CS, DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), HU, IT (European patent), KR, LU (European patent), NL (European patent), SE (European patent), SU ⁺ . Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. (88) Date of publication of the international search report: 29 May 1992 (29.05.92)

(54) Title: PROCESS AND APPARATUS FOR FABRICATING HONEYCOMB MATERIAL



(57) Abstract

A process and apparatus for making expandable honeycomb structures suitable for use as window coverings. In one embodiment, folded tubular strips (15) with adhesive lines are fed continuously through a cutter (25) which cuts them into predetermined lengths. The cut strips are then accelerated to a stacker (32) for further processing before the next cut strip arrives. In another embodiment, webs of material are fed continuously in a downstream direction, adhesive lines are applied, a middle web is slitted into strips, and the strips bonded along opposite edges to the outer webs. By choosing for the outer webs transparent or porous material, and for the middle web opaque material, a light or air controlling honeycomb structure results.

+ DESIGNATIONS OF "SU"

Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

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DK	Denmark				

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 91/00163

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl.5 B 31 D 3/02																							
II. FIELDS SEARCHED Minimum Documentation Searched⁷ <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 30%;">Classification System</th> <th colspan="3">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;">Int.Cl.5</td> <td style="padding: 5px;">B 31 D B 65 H</td> <td style="padding: 5px;">B 29 D B 31 B</td> <td style="padding: 5px;">E 06 B B 29 C</td> </tr> </table> Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched⁸			Classification System	Classification Symbols			Int.Cl.5	B 31 D B 65 H	B 29 D B 31 B	E 06 B B 29 C													
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹ <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 10%;">Category¹⁰</th> <th style="width: 70%;">Citation of Document,¹¹ with indication, where appropriate, of the relevant passages¹²</th> <th style="width: 20%;">Relevant to Claim No.¹³</th> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">EP,A,0243008 (THERMOCELL) 28 October 1987, see abstract; fig. (cited in the application) ---</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-16</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">FR,A,1373515 (WAENERLUND) 17 August 1964, see page 3, right-hand column, paragraph 1; fig. ---</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-16</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">GB,A,1116934 (CORNING GLASS) 12 June 1968, see claim 1; figures ---</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">DE,B,1241361 (STANDARD ELECTRIK LORENZ) 24 May 1967 ---</td> <td style="text-align: center; vertical-align: top; padding: 5px;">11,15</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">GB,A, 951484 (SPICERS) 4 March 1964 ---</td> <td style="text-align: center; vertical-align: top; padding: 5px;"></td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">GB,A,1036126 (CROSBY) 13 July 1966, see the whole document --- -/-</td> <td style="text-align: center; vertical-align: top; padding: 5px;">17-35</td> </tr> </table>			Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	Y	EP,A,0243008 (THERMOCELL) 28 October 1987, see abstract; fig. (cited in the application) ---	1-16	Y	FR,A,1373515 (WAENERLUND) 17 August 1964, see page 3, right-hand column, paragraph 1; fig. ---	1-16	A	GB,A,1116934 (CORNING GLASS) 12 June 1968, see claim 1; figures ---	1	A	DE,B,1241361 (STANDARD ELECTRIK LORENZ) 24 May 1967 ---	11,15	A	GB,A, 951484 (SPICERS) 4 March 1964 ---		A	GB,A,1036126 (CROSBY) 13 July 1966, see the whole document --- -/-	17-35
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A	GB,A,1036126 (CROSBY) 13 July 1966, see the whole document --- -/-	17-35																					
¹⁰ 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 document 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 "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																							
IV. CERTIFICATION <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 5px;"> Date of the Actual Completion of the International Search 13-03-1992 </td> <td style="width: 50%; padding: 5px;"> Date of Mailing of this International Search Report 15. 04. 92 </td> </tr> <tr> <td style="padding: 5px;"> International Searching Authority EUROPEAN PATENT OFFICE </td> <td style="padding: 5px;"> Signature of Authorized Officer Nicole De Bie </td> </tr> </table>			Date of the Actual Completion of the International Search 13-03-1992	Date of Mailing of this International Search Report 15. 04. 92	International Searching Authority EUROPEAN PATENT OFFICE	Signature of Authorized Officer Nicole De Bie																	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	US, A, 2822840 (REYNOLDS) 11 February 1958 ---	
A	US, A, 2688356 (CONTI) 7 September 1954 -----	

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. ☐ OBSERVATION WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹

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

1. ☐ Claim numbers
Authority, namely: because they relate to subject matter not required to be searched by this
2. ☐ Claim numbers
with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically: because they relate to parts of the international application that do not comply
3. ☐ Claim numbers
the second and third sentences of PCT Rule 6.4(a). because they are dependent claims and are not drafted in accordance with

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

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

1. Claims 1-16

2. Claims 17-35

For further information please see form PCT/ISA/206 mailed on 23.12.91.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application
2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:
3. ☐ 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 claim numbers:
4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the international searching authority did not invite payment of any additional fee.

Remark on Protest

- ☐ The additional search fees were accompanied by applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

NL 9100163
SA 51192

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 08/04/92. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0243008	28-10-87	US-A- 4732630	22-03-88
		AU-B- 601311	06-09-90
		AU-A- 2414688	02-02-89
		AU-A- 7002087	01-10-87
		CA-A- 1280957	05-03-91
		DE-A- 3774753	09-01-92
		JP-A- 63015739	22-01-88
		US-A- 4885190	05-12-89
		US-A- 5002628	26-03-91

FR-A- 1373515		None	

GB-A- 1116934		GB-A- 1116935	

DE-B- 1241361		None	

GB-A- 951484		None	

GB-A- 1036126		None	

US-A- 2822840		None	

US-A- 2688356		None	
