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(54) Title: DUNNAGE CONVERSION MACHINE AND METHOD

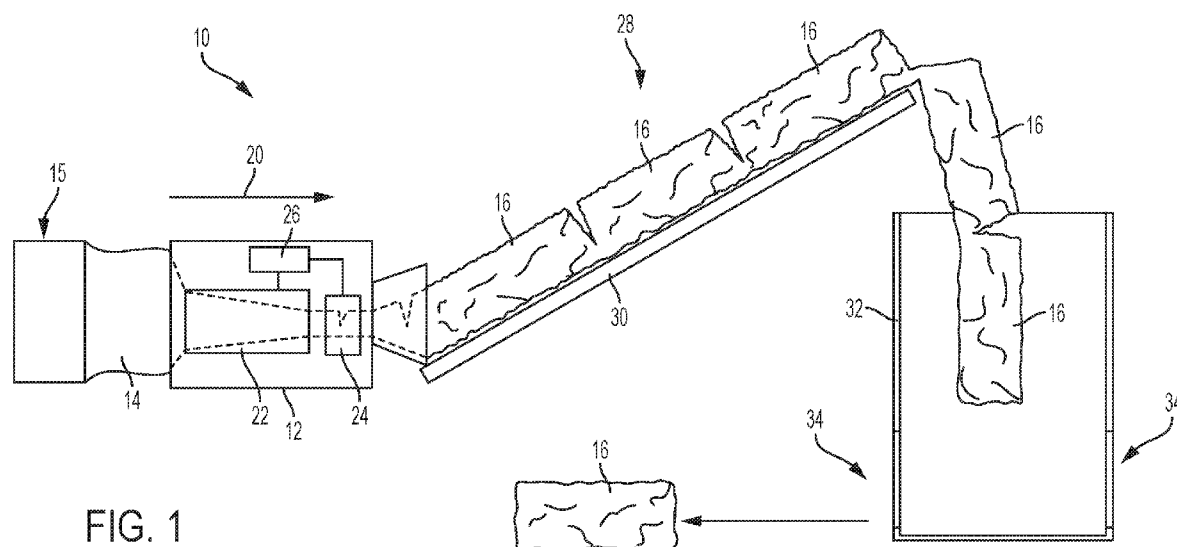


FIG. 1

(57) Abstract: A method of making a dunnage product includes the following steps: (a) converting a sheet stock material into a lower density strip of dunnage having a width and a height that is less than the width; and (b) cutting the strip of dunnage to form a discrete dunnage product of a desired length by cutting across less than the width of the strip of dunnage to maintain a connection between the strip of dunnage and the discrete dunnage product. The connection between respective dunnage products in a string of connected dunnage products keeps the dunnage products together, in the order in which they were produced.

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

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- *with international search report (Art. 21(3))*
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/030527

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.:

1-6, 10-15, 17-20

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.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/030527

A. CLASSIFICATION OF SUBJECT MATTER
INV. B31D5/00
ADD.

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)
B31D

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	US 2004/266598 A1 (TOTH ZSOLT [US]) 30 December 2004 (2004-12-30)	1,4,10, 12-15, 17-20
A	paragraphs [0040], [0042], [0046]; figures 1-5, 7A-C -----	2,3,5,6, 11
X	US 5 593 376 A (ARMINGTON STEVEN E [US] ET AL) 14 January 1997 (1997-01-14)	2,4-6,19
A	column 10, line 58 - column 11, line 10; figures 1-5 -----	3,10-15, 17,18,20
X	US 3 603 216 A (JOHNSON GEORGE R) 7 September 1971 (1971-09-07)	2,4-6,19
A	column 4, line 35 - line 47; figures 1-3 ----- -/--	3,10-15, 17,18,20



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

Date of the actual completion of the international search

29 August 2017

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/030527

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/040416 A1 (LUCASSEN ROGER G M [NL] ET AL) 27 February 2003 (2003-02-27) paragraphs [0020], [0021], [0029]; figures 1-5 -----	1-6, 10-15, 17-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2017/030527

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US 2004266598 A1	30-12-2004	AT 480394 T EP 1778467 A2 US 2004266598 A1 US 2007117705 A1 WO 2006014988 A2	15-09-2010 02-05-2007 30-12-2004 24-05-2007 09-02-2006
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US 3603216 A	07-09-1971	NONE	
US 2003040416 A1	27-02-2003	EP 1044794 A2 US 2003040416 A1	18-10-2000 27-02-2003

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-6, 10-15, 17-20

Various cutting features in a dunnage conversion machine and method.

1.1. claims: 1, 19, 20

Cutting assembly with a controller in a dunnage conversion machine (claim 20 as dependent on claim 19).

1.2. claims: 2-6, 11

Various features of a cutting assembly in a dunnage conversion machine and method.

1.3. claims: 12-15, 17, 18

Various features of a dunnage conversion method including cutting (claims 12-15, 17 and 18 as dependent on claim 10).

2. claims: 7-9, 16

A packaging system including a dunnage conversion machine and an accumulator (claims 7 to 9 as dependent on claims 1 or 19). A corresponding method step (claim 16 as dependent on claim 10).
