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(11)

EP 1 310 355 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
03.11.2004 Bulletin 2004/45

(51) Int Cl.7: **B31D 5/00**

(43) Date of publication A2:
14.05.2003 Bulletin 2003/20

(21) Application number: **03075303.2**

(22) Date of filing: **12.01.1999**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT SE SI SK TR**
Designated Extension States:
AL LT LV MK RO

(30) Priority: **12.01.1998 US 71213 P**
15.05.1998 US 85721 P

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
99902198.3 / 1 047 545

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(54) Cushioning conversion machine and method

(57) A cushioning conversion machine (20) including a conversion assembly (30) which converts a continuous sheet of multi-ply stock material (22) into a three dimensional cushioning product (32) and a stock supply assembly (550) which supplies the multi-ply stock material (22) to the conversion assembly (30). The conversion assembly (30) includes a forming assembly (52) which inwardly turns lateral portions of the stock material (22) as the stock material (22) travels therethrough in a downstream direction. The stock supply assembly (550) includes a separating device (574) and/or constant-entry device (580) designed to minimize tearing due to excessive tension in the lateral regions of the stock material (22). Additionally or alternatively, the forming assembly (52) includes a shaping member (590) having protrusions in its turning perimeter and/or holding surface to modify the shape of the cushioning product. Another embodiment of stock supply assembly (350) includes a stock-dispensing device (370) which dispenses the multi-ply stock material (22) from a continuous sheet thereof and a transversely extending member which is positioned to engage at least one of

the plies of the dispensed multi-ply stock material (22). The transversely extending member has end portions which are inwardly tapered relative to the central portions of the member and towards the adjacent ends of the member. The inwardly tapered lateral end portions being positioned to engage the ends of the lateral portions of the at least one ply of the stock material (22).

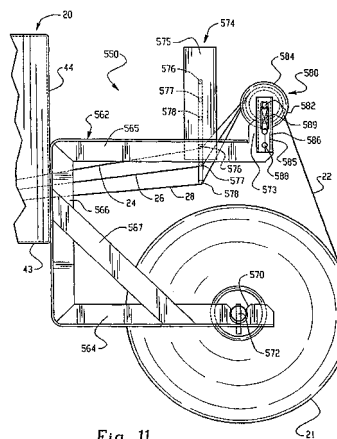


Fig. 11

EP 1 310 355 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 03 07 5303

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.6)
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) B31D
Place of search		Date of completion of the search	Examiner
The Hague		16 June 2004	Roberts, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P04001)



European Patent
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Application Number

EP 03 07 5303

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1 - 7



European Patent
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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 03 07 5303

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-7

A cushioning conversion machine with a constant entry member
having a convexly curved shape

2. claims: 8,9

A cushioning conversion machine with a constant entry device
functioning as a force dampening device

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 03 07 5303

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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