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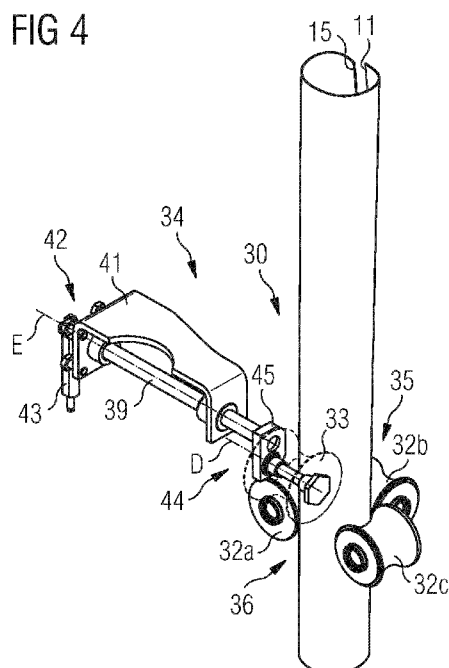
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(54) Title: GUIDING DEVICE

FIG 4



(57) Abstract: A guiding device for guiding a sheet of packaging material (3) in a packaging machine (1) for producing sealed packages (2), said guiding device comprising a plurality of folding rollers defining a passage (31) for said sheet of packaging material (3) and causing a first longitudinal edge (11) of said sheet of packaging material (3) to superimpose to a second longitudinal edge (15) of said sheet of packaging material (3), opposite said first longitudinal edge (11), to define an overlapping area (16) of said first longitudinal edge (11) and said second longitudinal edge (15), said overlapping area having a certain extension, said passage having a longitudinal axis (A), said plurality of folding rollers comprising a group of first folding rollers (32) rotatable around first rotation axes (C) arranged in a common first plane, said plurality of folding rollers further comprising at least one second folding roller (33) rotatable around a second rotation axis (D) arranged in a second plane, different from said first plane, said guiding device further comprising a driving arrangement (34) for moving said at least one second folding roller (33) towards and away from said longitudinal axis (A) of said passage (31) so as to control the extension of said overlapping area (16).

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

International application No
PCT/EP2018/056395

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65B41/16 B29C53/54 B65B41/18 B65B57/04 B65B9/20
B65B9/22 B65B59/00

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)

B65B B29C

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)

EPO-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	EP 1 172 299 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 16 January 2002 (2002-01-16) the whole document	1-9
X	EP 0 903 292 A1 (SHIKOKU KAKOKI CO LTD [JP]) 24 March 1999 (1999-03-24) the whole document	1-9
X	EP 1 116 659 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 18 July 2001 (2001-07-18) the whole document	1-9
X	WO 2009/154532 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]; JOHANSSON ERIK [SE]; SVENLE MARTI) 23 December 2009 (2009-12-23) the whole document	1-9
	-/-	

☒ 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

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"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

6 June 2018

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23/11/2018

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

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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.
X	EP 2 143 643 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 13 January 2010 (2010-01-13) paragraph [0040] -----	1
A	WO 2009/067065 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]; TURESSON MATS [SE]) 28 May 2009 (2009-05-28) the whole document -----	1-9
A	WO 00/41932 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]; SCHELLENBERG FRANK MARIO [DE]; PO) 20 July 2000 (2000-07-20) the whole document -----	1-9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2018/056395

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.:

1-9

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: 1-9

folding rollers which are arranged at different planes wherein first folding rollers have a C-shape arrangement and the second folding roller is arranged at a plane above the first folding rollers.

2. claims: 10-13

an eccentric driving arrangement for moving a folding roller and a sensor.

3. claims: 14, 15

a sealing station with a pressing roller.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2018/056395

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1172299	A1	16-01-2002	AT 240239 T 15-05-2003
		AU 3367001 A 21-01-2002	
		AU 8765701 A 21-01-2002	
		DE 60002708 D1 18-06-2003	
		DE 60002708 T2 18-03-2004	
		DK 1172299 T3 15-09-2003	
		EP 1172299 A1 16-01-2002	
		ES 2198269 T3 01-02-2004	
		JP 4965792 B2 04-07-2012	
		JP 2004502607 A 29-01-2004	
		PT 1172299 E 30-09-2003	
		WO 0204295 A1 17-01-2002	
		WO 0204312 A1 17-01-2002	
EP 0903292	A1	24-03-1999	DE 69803525 D1 14-03-2002
		DE 69803525 T2 22-08-2002	
		DK 0903292 T3 06-05-2002	
		EP 0903292 A1 24-03-1999	
		JP H1191729 A 06-04-1999	
		US 6052970 A 25-04-2000	
EP 1116659	A1	18-07-2001	EP 1116659 A1 18-07-2001
		JP 2001232699 A 28-08-2001	
		US 6397557 B1 04-06-2002	
WO 2009154532	A1	23-12-2009	BR PI0914837 A2 27-10-2015
		CN 101633414 A 27-01-2010	
		EP 2285695 A1 23-02-2011	
		RU 2011101727 A 27-07-2012	
		WO 2009154532 A1 23-12-2009	
EP 2143643	A1	13-01-2010	EP 2143643 A1 13-01-2010
		WO 2010004050 A1 14-01-2010	
WO 2009067065	A1	28-05-2009	BR PI0819168 A2 05-05-2015
		CN 101868409 A 20-10-2010	
		EP 2222568 A1 01-09-2010	
		JP 5437261 B2 12-03-2014	
		JP 2011504155 A 03-02-2011	
		RU 2010125206 A 27-12-2011	
		SE 530821 C2 16-09-2008	
		US 2011120063 A1 26-05-2011	
		WO 2009067065 A1 28-05-2009	
WO 0041932	A1	20-07-2000	AU 2617299 A 01-08-2000
		DE 59905510 D1 12-06-2003	
		EP 1140632 A1 10-10-2001	
		ES 2193686 T3 01-11-2003	
		JP 4301481 B2 22-07-2009	
		JP 2002534333 A 15-10-2002	
		US 6526733 B1 04-03-2003	
		WO 0041932 A1 20-07-2000	