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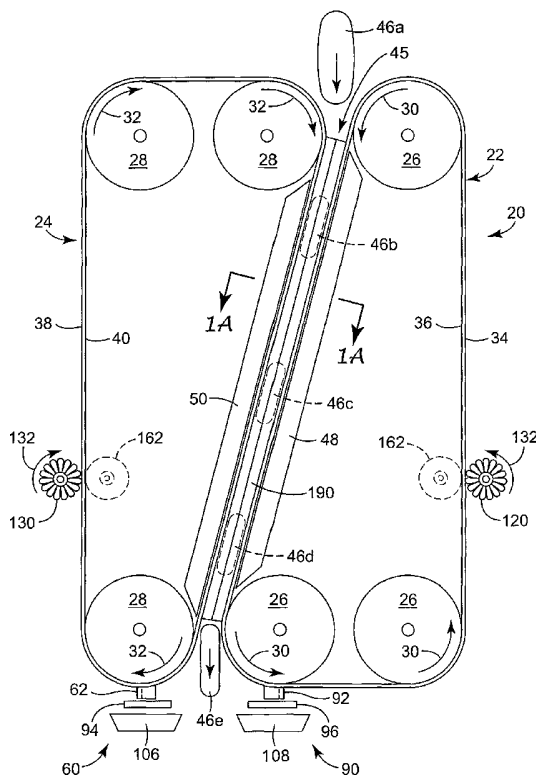
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[Continued on next page]

(54) Title: CONVEYOR BELT CLEANING SYSTEM



(57) Abstract: Cleaning assembly for a conveyor belt system (20) of the type having first and second endless belts (22, 24) which each traverse a separate belt travel path and together define a generally upright article transport path (45) between opposed top faces (34, 38) of the belts. The cleaning assembly includes a belt wiping blade assembly (60) for moving liquids and debris from a belt, an absorbent material (120) downstream from the blade assembly for wiping excess liquid from the belt, and belt edge seals (190) disposed between the opposed top faces of the belts along the article transport path.



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ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
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Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

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9 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

PCT/US 03/33437

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65G45/12 B65G15/18 B65G39/073

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)

IPC 7 B65G

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 875 613 A (PINCUS NATHANIEL) 8 April 1975 (1975-04-08) column 5, line 9 - column 6, line 39 claims 1-6; figures 6,7	1-6
X	US 1 165 404 A (HARRINGTON ROBERT) 28 December 1915 (1915-12-28) page 1, line 42 - line 50 page 2, line 1 - line 9	31, 32, 36, 38
A	US 3 948 383 A (MORISSETTE CLAUDE ET AL) 6 April 1976 (1976-04-06) column 1, line 28 - line 53 figures 1-4	26-30
A	US 4 072 092 A (KOHLEI MARTTI ILMARI ET AL) 7 February 1978 (1978-02-07) column 11, line 3 - line 17 figures 7,8	26-30



Further documents are listed in the continuation of box C.



Patent family members are listed in 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 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 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.
- *G* document member of the same patent family

Date of the actual completion of the international search

10 September 2004

Date of mailing of the international search report

30. 09. 2004

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INTERNATIONAL SEARCH REPORT

PCT/US 03/33437

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-6

A device having blade, filter and collector for wiping liquids and debris from a belt.

2. claims: 26-30, 21

A device having sealing means for preventing liquid and debris from moving to the lateral side edges and bottom face of each belt.

3. claims: 31-46, 7-20, 22-25

A device having liquid absorbant means for wiping liquids from a belt.

INTERNATIONAL SEARCH REPORT

PCT/US 03/33437

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3875613	A	08-04-1975	NONE
US 1165404	A	NONE	
US 3948383	A	06-04-1976	CA 1036971 A1 22-08-1978
US 4072092	A	07-02-1978	SE 395345 B 15-08-1977
		AT 350678 B 11-06-1979	
		AT 213976 A 15-11-1978	
		BE 840026 A1 16-07-1976	
		CA 1047307 A1 30-01-1979	
		CH 624839 A5 31-08-1981	
		DE 2611301 A1 07-10-1976	
		DK 129776 A 26-09-1976	
		FI 760795 A ,B, 26-09-1976	
		FR 2305138 A1 22-10-1976	
		GB 1505624 A 30-03-1978	
		IT 1057422 B 10-03-1982	
		JP 51118871 A 19-10-1976	
		SE 7503474 A 26-09-1976	