BUILDABLE PART PAIRS IN AN UNCONFIGURED PRODUCT STRUCTURE

(54) Title: BUILDABLE PART PAIRS IN AN UNCONFIGURED PRODUCT STRUCTURE

(57) Abstract: Systems and methods for identifying unbuildable part pairs in product data management (PDM) systems. A method includes receiving a product structure having a plurality of nodes with variant conditions. The method includes building, by the client PDM system, a variant condition forest (VCF) corresponding to the product structure and selecting a pair of nodes in the product structure. The method includes determining, using the VCF, whether the variant conditions of each of the selected nodes are satisfiable both separately and at the same time, and if not, marking the selected pair of nodes as unbuildable. The method includes adding the unbuildable pair of nodes to an unbuildable pairs list. The method includes performing a clearance analysis process on the product structure, without processing unbuildable pairs on the unbuildable pairs list, and storing the results of the clearance analysis process.

FIG. 5
Published:

— with international search report (Art. 21(3))

(88) Date of publication of the international search report: 23 January 2014

before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(b))
A. CLASSIFICATION OF SUBJECT MATTER
IPC(B) - G06Q 10/08 (2013.01)
USPC - 705/26.8
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(B) - G06F 17/50; G06Q 10/08, 10/08 (2013.01)
USPC - 705/2, 705/7.12, 7.23, 7.25, 26.5, 26.61, 26.62, 26.63, 26.64 26.8, 26.81, 26.82, 29, 707/797

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - G06F 17/50; G06Q 10/08, 10/0831, 10/08315, 10/08 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
PatBase, Orbit, Google Patent, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of Box C.

* 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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“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

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Date of the actual completion of the international search
11 November 2013

Date of mailing of the international search report
26 NOV 2013

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Form PCT/ISA/210 (second sheet) (July 2009)
INTERNATIONAL SEARCH REPORT

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.: 4-7, 11-14, 18-20
   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:

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 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.: 20050703

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2009)