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Declarations under Rule 4.17:

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

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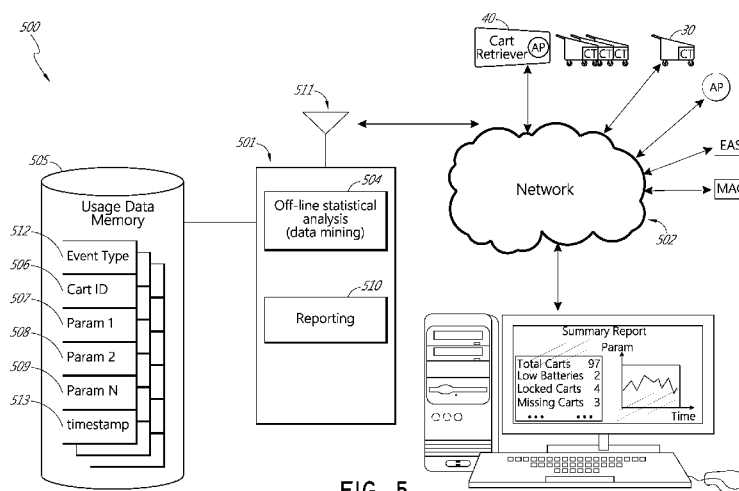
(54) Title: MONITORING USAGE OR STATUS OF CART RETRIEVERS

FIG. 5

(57) **Abstract:** Examples of systems and methods for controlling or monitoring a fleet of human- propelled, wheeled carts and cart retrievers are described. The carts can be shopping carts at a retail facility, and the cart retrievers can be used to collect and return the shopping carts from a parking lot near the facility to a cart collection area. The carts or cart retrievers can monitor various status or usage parameters (such as retriever battery charge, cart collection trip speed, cart collection path or duration, etc.) and transmit the parameters to a central control unit. The central control unit can analyze and process the status or usage parameters. The system can provide a user interface for access to the status or usage parameters of the cart and cart retriever fleet.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2015/042096

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B62B 3/00 (2015.01) CPC - B62B 3/00 (2015.04) 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(8) - B62B 3/00; B60D 1/40; B62B 5/00 (2015.01) USPC - 280/33.994, 47.11, 478.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - B62B 3/00; B60D 1/40; B62B 5/00 (2015.04) (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Orbit, Google Patents, Google Scholar, Google. Search terms used: retriever, shopping carts, battery, parameter, drive, command		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,220,379 B1 (SCHUGT et al) 24 April 2001 (24.04.2001) entire document	1-12
Y	US 2014/0125019 A1 (GATEKEEPER SYSTEM INC) 08 May 2014 (08.05.2014) entire document	1-12
Y	US 2002/0016674 A1 (RUDOW et al) 07 February 2002 (07.02.2002) entire document	4, 5, 8, 9
A	US 2010/0078905 A1 (HOLTAN) 01 April 2010 (01.04.2010) entire document	1-12
A	US 2014/0062062 A1 (GATEKEEPER SYSTEM INC) 06 March 2014 (06.03.2014) entire document	1-12
A	US 2006/0244588 A1 (HANNAH et al) 02 November 2006 (02.11.2006) entire document	1-12
☐ 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 03 November 2015		Date of mailing of the international search report 11 DEC 2015
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Blaine Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2015/042096

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:

Extra 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 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.:
1-12

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/US2015/042096

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-12, drawn to a retriever for shopping carts.

Group II, claims 13-23, drawn to monitoring usage of a cart fleet comprising a cart retriever and a plurality of human-propelled carts.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: a control circuit in electrical communication with the electric motor and the RF transceiver, the control circuit configured to: communicate a drive command to the electric motor; communicate information associated with the battery parameter and the retriever usage parameter via the bidirectional RF transceiver; wherein the battery parameter comprises one or more of: a charge level of the battery, a duration of battery charging, a battery voltage, a battery current, or a state of whether the battery is being charged, as claimed therein is not present in the invention of Group II. The special technical feature of the Group II invention: a cart retriever configured to be coupled to a cart train comprising at least some of the plurality of human-propelled carts, the cart retriever comprising a second RF communication circuit configured to communicate with the first RF communication circuits in the carts in the cart train as claimed therein is not present in the invention of Group I.

Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature of a retriever for carts; monitor a retriever data associated with the retriever; a radio frequency (RF) communication circuit, this technical feature is not a special technical feature as it does not make a contribution over the prior art.

Specifically, US 2006/0244588 A1 (HANNAH et al) 02 November 2006 (02.11.2006) teaches a retriever for carts (power-assisted cart retrieval, Para. 11); monitor a retriever data associated with the retriever (in the context of a shopping cart that is exiting a store, the data acquired via two-way communications with the cart may be used to determine whether the cart passed through a checkout lane, Para. 10); a radio frequency (RF) communication circuit (the wheel's sensor circuitry is coupled to a radio frequency (RF) transceiver system, which may but need not also be housed in the wheel or wheel assembly. The RF transceiver system provides a two-way data link that may be used to retrieve status information from, and send commands to, specific vehicles, Para. 9).

Since none of the special technical features of the Group I or II inventions are found in more than one of the inventions, unity of invention is lacking.