



(51) International Patent Classification:
B25H 3/00 (2006.01)

(21) International Application Number:

PCT/US2013/045492

(22) International Filing Date:

12 June 2013 (12.06.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/658,729 12 June 2012 (12.06.2012) US

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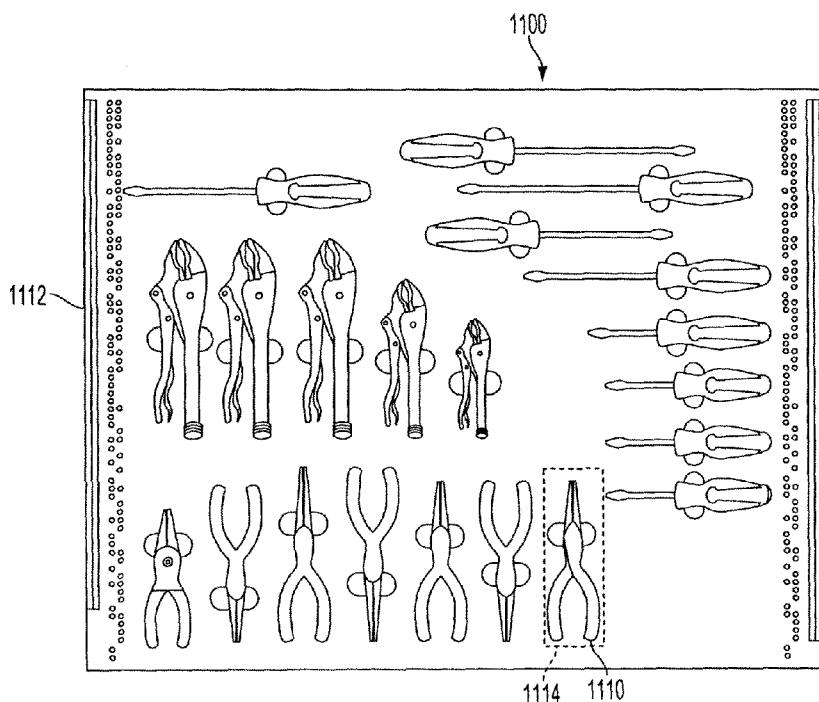
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: AN INVENTORY CONTROL SYSTEM HAVING ADVANCED FUNCTIONALITIES



(57) Abstract: An inventory control system is described that includes a tool storage device including a drawer or a tray providing a pallet, wherein the pallet includes storage locations for objects; a sensing device configured to form an image of the storage locations; and a data processor configured to determine presence or absence of the pallet and presence or absence of objects within the storage locations of the pallet using the information from the image.

**Published:****(88) Date of publication of the international search report:**

6 March 2014

- *with international search report (Art. 21(3))*
- *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(h))*

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2013/045492

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B25H 3/00 (2013.01)

USPC - 221/7

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) - B25H 3/00, 3/02; G06Q 10/00; G08B 13/14, 21/00 (2013.01)

USPC - 221/1, 7, 129; 235/385, 454; 340/5.1, 568.1; 348/143

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC - G06Q 10/087; G07C 9/00896 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patents, Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/0045423 A1 (GLICKMAN et al) 25 February 2010 (25.02.2010) entire document	11-13, 15-20
Y		1-6, 14, 21-24
Y	US 5,205,436 A (SAVAGE) 27 April 1993 (27.04.1993) entire document	1-6, 14
Y	US 7,956,847 B2 (CHRISTIE) 07 June 2011 (07.06.2011) entire document	21-24

☐ 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

"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

28 December 2013

Date of mailing of the international search report

14 JAN 2014

Name and mailing address of the ISA/US

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Facsimile No. 571-273-3201

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PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2013/045492

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 Continuation Sheet Attached)

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.:
claims 1-6, 11-24

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
Information on patent family members

International application No.

PCT/US2013/045492

Continuation of Box III

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 need to be paid.

Group I, claims 1-6, 11-24 are drawn to imaging associated with a storage location.

Group II, claim 7-10 is drawn to an authentication function associated with a storage location.

The inventions listed in 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 features of Group I, a sensing device configured to form an image, and a display device configured to display information, are not present in Group II; and the special technical feature of Group II, performing multi factor authentication functions including functions of receiving from a user a first authentication information, authenticating the user by comparing the first authentication information with a first authorization data, upon successful authentication based on comparison of the first authentication information with the first authorization data, receiving from a user a second authentication information, authenticating the user by comparing the second authentication information with a second authorization data, and upon successful authentication based on comparison of the second authentication information with the second authorization data, and granting user access, are not present in Group I.

Groups I and II share the technical features of a tool storage device including a drawer or a tray for housing objects, and a processor. However, these shared technical features do not represent a contribution over the prior art. Specifically, US 2010/0039513 A1 to Glickman et al. teaches of an image-based inventory control system (Title) comprising a tool storage device including a drawer or a tray for housing objects (Para. [0054], "multiple tool storage drawers 330 for storing tools"), and a processor (Para. [0055], "system 300 includes a data processing system, such as a computer").

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