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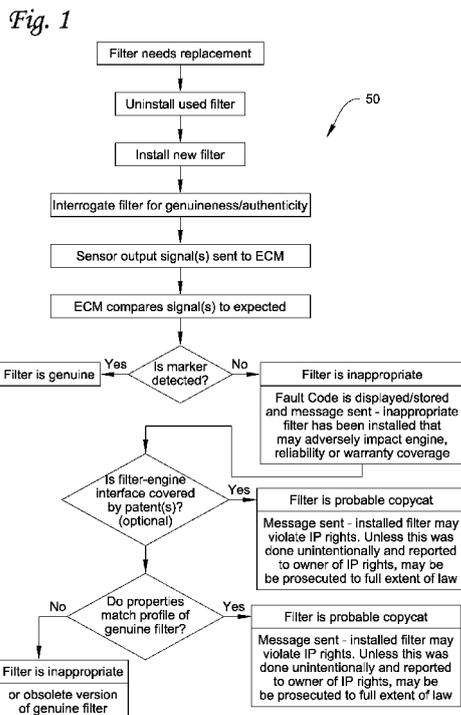
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[Continued on next page]

(54) Title: APPARATUS, SYSTEM AND METHOD FOR DETECTING THE PRESENCE OF GENUINE SERVICEABLE PRODUCT COMPONENTS



(57) Abstract: A process, system, and component configuration are described that discourages customer acceptance/use of will-fit, reconditioned, and counterfeit product components, by determining whether or not a serviceable product component is genuine. If a component is determined to not be genuine, then appropriate action may be taken to warn operators and document such findings. For example, one or more markers are disposed or otherwise put on the subject serviceable product component and serves as a targeted feature, and/or a particular characteristic of the filter itself is identified as the targeted feature. A sensor is used to detect the targeted feature and obtain information unique to the serviceable product component. The targeted feature(s) identifies the particular serviceable component as genuine and forms the basis for determining whether a genuine component has been installed. In some circumstances, a fluid filter product is the component that is the subject detection.

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GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

— *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))*

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**PCT/US2011/027723****A. CLASSIFICATION OF SUBJECT MATTER****G01M 15/00(2006.01)i, F02M 37/22(2006.01)i, F02M 35/024(2006.01)i, G01N 29/04(2006.01)i, G06F 19/00(2011.01)i**

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)

G01M 15/00; G06F 15/20; G01M 17/007; G01J 3/00; B60Q 1/00; G01M 15/04; B01D 35/14; G01M 15/10

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: "engine", "detect", "sensor", "marker", "filter", "product", "information" and similar terms.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0161989 A1 (DAVID S. BREED) 03 JULY 2008 See abstract; figures 1-32; claims 1-14.	1-3, 7-9, 14-16
A	US 2003-0025598 A1 (MICHAEL WOLF et al.) 06 FEBRUARY 2003 See abstract; figures 1-4; claims 1-25.	1-3, 7-9, 14-16
A	US 2002-0144938 A1 (CHARLES HAWKINS et al.) 10 OCTOBER 2002 See abstract; figures 1-10; claims 1-10.	1-3, 7-9, 14-16
A	US 5041976 A (KENNETH A. MARKO et al.) 20 AUGUST 1991 See abstract; figures 1-7; claims 1-34.	1-3, 7-9, 14-16
A	US 2010-0037683 A1 (STEFAN BARNIKOW et al.) 18 FEBRUARY 2010 See abstract; figures 1-6; claims 1-14.	1-3, 7-9, 14-16
A	US 2009-0120177 A1 (WILLIAM HUGH PRESTON) 14 MAY 2009 See abstract; figures 1,2; claims 15-22.	1-3, 7-9, 14-16

 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

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Seo-gu, Daejeon 302-701, Republic of Korea

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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2011/027723****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.: 4-6, 10-13, 17-20  
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 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 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/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0161989 A1	03.07.2008	AU 1999-15262 A1	07.06.1999
		AU 2000-18202 A1	05.06.2000
		AU 2000-35225 A1	28.09.2000
		AU 2000-52997 A1	18.12.2000
		AU 2001-19588 A1	25.06.2001
		AU 2001-59640 A1	20.11.2001
		AU 2002-321216 A8	29.01.2003
		AU 2002-353311 A1	09.07.2003
		AU 2003-252043 A1	09.02.2004
		AU 2003-252091 A1	16.02.2004
		AU 2004-288197 A1	19.05.2005
		AU 2004-288197 B2	11.02.2010
		CA 2392446 A1	07.12.2000
		CA 2392446 C	14.07.2009
		CA 2449243 A1	23.01.2003
		CA 2452157 A1	18.01.2004
		CA 2464365 A1	16.03.2005
		CA 2482232 A1	24.03.2005
		CA 2521362 A1	28.10.2004
		CA 2543762 A1	19.05.2005
		CA 2543762 C	27.01.2009
		CA 2550669 A1	14.07.2005
		CA 2578154 A1	09.07.2007
		CA 2585546 A1	18.05.2006
		CA 2586491 A1	11.05.2006
		CN 100428224 C0	22.10.2008
		CN 100472600 C0	25.03.2009
		CN 100507205 C	01.07.2009
		CN 101076913 A0	21.11.2007
		CN 101094841 A0	26.12.2007
		CN 101151279 A0	26.03.2008
		CN 101232728 A	30.07.2008
		CN 101232728 C0	30.07.2008
		CN 101236771 A	06.08.2008
		CN 101236771 C0	06.08.2008
		CN 1606753 C0	13.04.2005
		CN 1607491 A	20.04.2005
		CN 1607491 C0	20.04.2005
		CN 1623332 A	01.06.2005
		CN 1623332 C0	11.04.2007
		CN 1624641 A	08.06.2005
		CN 1624641 C0	17.09.2008
		CN 1655107 A	17.08.2005
		CN 1655107 C0	17.08.2005
		CN 1703693 A	30.11.2005
		CN 1703693 C0	22.10.2008
		CN 1902374 A	24.01.2007
CN 1902374 C0	24.01.2007		
CN 1954355 A	25.04.2007		

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 0952933 A1	18.06.2003
		EP 0952933 A4	02.02.2000
		EP 0952933 B1	12.01.2005
		EP 1192716 A1	03.04.2002
		EP 1192716 B1	23.09.2009
		EP 1409546 A2	21.04.2004
		EP 1459560 A1	22.09.2004
		EP 1519192 A2	30.03.2005
		EP 1519192 A3	08.06.2005
		EP 1540513 A1	15.06.2005
		EP 1540513 A4	24.09.2008
		EP 1629345 A2	01.03.2006
		EP 1697613 A2	06.09.2006
		EP 1697613 A4	10.10.2007
		EP 1700291 A2	13.09.2006
		EP 1766707 A2	28.03.2007
		EP 1809672 A1	25.07.2007
		EP 1809672 B1	09.09.2009
		EP 1809672 B8	11.08.2010
		EP 1812410 A2	01.08.2007
		EP 1894160 A2	05.03.2008
		EP 1894160 A4	12.11.2008
		EP 1940088 A1	02.07.2008
		EP 1956526 A1	13.08.2008
		EP 2264563 A1	22.12.2010
		GB 2289332 A	15.11.1995
		GB 2289542 A	22.11.1995
		GB 2289653 A	29.11.1995
		GB 2289786 A	29.11.1995
		GB 2301906 A	18.12.1996
		GB 2301922 A	18.12.1996
		GB 2308102 A	18.06.1997
		GB 2323340 A	23.09.1998
		GB 2324864 A	04.11.1998
		GB 2340978 A	01.03.2000
		GB 2360097 A	12.09.2001
		GB 2363638 A	02.01.2002
		GB 2363769 A	09.01.2002
		GB 2369737 A	05.06.2002
		GB 2373117 A	11.09.2002
		GB 2383415 A	25.06.2003
		GB 2405279 A	23.02.2005
		GB 2405931 A	16.03.2005
		GB 2406170 A	23.03.2005
		GB 2406171 A	23.03.2005
		GB 2406646 A	06.04.2005
		JP 02-749729 B2	20.02.1998
		JP 03-960394 B2	15.08.2007
		JP 03-993253 B2	17.10.2007
		JP 04-307252 B2	15.05.2009

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		JP 04-519381 B2	28.05.2010
		JP 04-527731 B2	11.06.2010
		JP 05-054535 A	05.03.1993
		JP 08-175305 A	09.07.1996
		JP 08-198044 A	06.08.1996
		JP 09-175316 A	08.07.1997
		JP 09-189710 A	22.07.1997
		JP 09-240407 A	16.09.1997
		JP 09-501120 A	04.02.1997
		JP 2001-508732 A	03.07.2001
		JP 2002-501459 A	15.01.2002
		JP 2003-501711 A	14.01.2003
		JP 2003-532959 A	05.11.2003
		JP 2004-518104 A	17.06.2004
		JP 2004-522932 A	29.07.2004
		JP 2005-092856 A	07.04.2005
		JP 2005-097307 A	14.04.2005
		JP 2005-306376 A	04.11.2005
		JP 2005-508877 A	07.04.2005
		JP 2005-513928 A	12.05.2005
		JP 2005-520268 A	07.07.2005
		JP 2007-518238 A	05.07.2007
		JP 2007-538299 A	27.12.2007
		JP 2008-160584 A	10.07.2008
		JP 2008-182542 A	07.08.2008
		JP 2008-207875 A	11.09.2008
		JP 2008-251146 A	16.10.2008
		JP 2008-518897 A	05.06.2008
		JP 2008-519793 A	12.06.2008
		JP 2749729 B2	13.05.1998
		KR 10-0604039 B1	24.07.2006
		KR 10-0723738 B1	30.05.2007
		KR 10-0772237 B1	01.11.2007
		KR 10-1003879 B1	30.12.2010
		KR 10-2004-0068972 A	02.08.2004
		TW 1270809B	11.01.2007
		TW 270809 A	11.01.2007
		TW 270809 B	11.01.2007
		US 05155307A A	13.10.1992
		US 05192838A A	09.03.1993
		US 05231253A A	27.07.1993
		US 05233141A A	03.08.1993
		US 05270883A A	14.12.1993
		US 05326133A A	05.07.1994
		US 05389751A A	14.02.1995
		US 05441301A A	15.08.1995
		US 05505485A A	09.04.1996
		US 05629681A A	13.05.1997
		US 05653464A A	05.08.1997
		US 05684701A A	04.11.1997

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 05694320A A	02.12.1997
		US 05746446A A	05.05.1998
		US 05748473A A	05.05.1998
		US 05809437A A	15.09.1998
		US 05822707A A	13.10.1998
		US 05863068A A	26.01.1999
		US 05901978A A	11.05.1999
		US 05943295A A	24.08.1999
		US 06009970A A	04.01.2000
		US 06039139A A	21.03.2000
		US 06078854A A	20.06.2000
		US 06081757A A	27.06.2000
		US 06088640A A	11.07.2000
		US 06134492A A	17.10.2000
		US 06141432A A	31.10.2000
		US 06149194A A	21.11.2000
		US 6175787 B1	16.01.2001
		US 6206129 B1	27.03.2001
		US 6209909 B1	03.04.2001
		US 6234519 B1	22.05.2001
		US 6242701 B1	05.06.2001
		US 6250668 B1	26.06.2001
		US 6253134 B1	26.06.2001
		US 6279946 B1	28.08.2001
		US 6324453 B1	27.11.2001
		US 6326704 B1	04.12.2001
		US 6328126 B2	11.12.2001
		US 6330501 B1	11.12.2001
		US 6343810 B1	05.02.2002
		US 6397136 B1	28.05.2002
		US 6405132 B1	11.06.2002
		US 6413153 B1	02.07.2002
		US 6442504 B1	27.08.2002
		US 6445988 B1	03.09.2002
		US 6452870 B1	17.09.2002
		US 6459973 B1	01.10.2002
		US 6474683 B1	05.11.2002
		US 6484080 B2	19.11.2002
		US 6507779 B2	14.01.2003
		US 6513833 B2	04.02.2003
		US 6517107 B2	11.02.2003
		US 6526352 B1	25.02.2003
		US 6529809 B1	04.03.2003
		US 6532408 B1	11.03.2003
		US 6553296 B2	22.04.2003
		US 6555766 B2	29.04.2003
		US 6557889 B2	06.05.2003
		US 6609053 B1	19.08.2003
		US 6615656 B1	09.09.2003
		US 6623033 B2	23.09.2003

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 6641463 B1	04.11.2003
		US 6653577 B2	25.11.2003
		US 6662642 B2	16.12.2003
		US 6689962 B2	10.02.2004
		US 6715790 B2	06.04.2004
		US 6720920 B2	13.04.2004
		US 6731569 B2	04.05.2004
		US 6736231 B2	18.05.2004
		US 6738697 B2	18.05.2004
		US 6746078 B2	08.06.2004
		US 6748797 B2	15.06.2004
		US 6749218 B2	15.06.2004
		US 6755273 B2	29.06.2004
		US 6757602 B2	29.06.2004
		US 6768944 B2	27.07.2004
		US 6772057 B2	03.08.2004
		US 6778672 B2	17.08.2004
		US 6784379 B2	31.08.2004
		US 6792342 B2	14.09.2004
		US 6793242 B2	21.09.2004
		US 6805404 B1	19.10.2004
		US 6820897 B2	23.11.2004
		US 6823244 B2	23.11.2004
		US 6833516 B2	21.12.2004
		US 6850824 B2	01.02.2005
		US 6856873 B2	15.02.2005
		US 6856876 B2	15.02.2005
		US 6875976 B2	05.04.2005
		US 6885968 B2	26.04.2005
		US 6892572 B2	17.05.2005
		US 6899134 B2	31.05.2005
		US 6918459 B2	19.07.2005
		US 6919803 B2	19.07.2005
		US 6942248 B2	13.09.2005
		US 6950022 B2	27.09.2005
		US 6958451 B2	25.10.2005
		US 6970599 B2	29.11.2005
		US 6984818 B1	10.01.2006
		US 7013419 B2	14.03.2006
		US 7025379 B2	11.04.2006
		US 7049945 B2	23.05.2006
		US 7070202 B2	04.07.2006
		US 7079450 B2	18.07.2006
		US 7082359 B2	25.07.2006
		US 7089099 B2	08.08.2006
		US 7097201 B2	29.08.2006
		US 7103460 B1	05.09.2006
		US 7110880 B2	19.09.2006
		US 7111678 B2	26.09.2006
		US 7126583 B1	24.10.2006

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/US2011/027723**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 7134687 B2	14.11.2006
		US 7147246 B2	12.12.2006
		US 7193065 B2	20.03.2007
		US 7202776 B2	10.04.2007
		US 7209221 B2	24.04.2007
		US 7253725 B2	07.08.2007
		US 7281575 B2	16.10.2007
		US 7286115 B2	23.10.2007
		US 7324039 B2	29.01.2008
US 2003-0025598 A1	06.02.2003	AT 313370 T	15.01.2006
		DE 10000435 A1	12.07.2001
		EP 1246679 A2	09.10.2002
		EP 1246679 B1	21.12.2005
		JP 2003-519880 A	24.06.2003
		JP 2003-519880 T	24.06.2003
		US 6711524 B2	23.03.2004
		WO 01-52185 A2	19.07.2001
		WO 01-52185 A3	19.07.2001
		WO 01-52185A3	27.12.2001
US 2002-0144938 A1	10.10.2002	US 6533926 B2	18.03.2003
US 05041976A A	20.08.1991	EP 0398481 A2	22.11.1990
		EP 0398481 A3	09.10.1991
		EP 0398481 B1	16.10.1996
US 2010-0037683 A1	18.02.2010	DE 102006047188 A1	17.04.2008
		DE 102006047188 B4	03.09.2009
		KR 10-2009-0086211 A	11.08.2009
		KR20090086211A	11.08.2009
		WO 2008-040732 A1	10.04.2008
US 2009-0120177 A1	14.05.2009	AT 435995 T	15.07.2009
		CN 101273230 A0	24.09.2008
		DE 602006007725 D1	20.08.2009
		EP 1943453 A1	16.07.2008
		EP 1943453 B1	08.07.2009
		US 7716972 B2	18.05.2010
		WO 2007-028947 A1	15.03.2007