

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2018/005838

A. CLASSIFICATION OF SUBJECT MATTER

G01N 27/82(2006.01)i, G01V 3/10(2006.01)i, G01N 33/20(2006.01)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)

G01N 27/82; B65B 57/00; B65G 23/08; G01N 23/04; G01N 27/72; G01N 23/18; G01V 3/10; G01N 33/20

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: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: object to be detected, metal impurity, detection unit, sensor coil, protective case, filling material

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| Y | KR 10-1603092 B1 (NOWSYSTEMS CO., LTD.) 14 March 2016 See paragraphs [0001], [0009]-[0035] and figure 1. | 1-5 |
| Y | JP 6040190 B2 (NISSIN ELECTRONICS CO., LTD.) 07 December 2016 See paragraphs [0016]-[0030] and figure 1. | 1-5 |
| Y | KR 20-1999-0025340 U (DAEWOO MOTOR CO., LTD.) 05 July 1999 See page 2, line 39-page 3, line 12 and figure 3. | 2 |
| A | KR 10-0794907 B1 (TOK ENGINEERING CO., LTD.) 14 January 2008 See paragraphs [0076]-[0100] and figures 1-9. | 1-5 |
| A | KR 10-0543992 B1 (TOK ENGINEERING CO., LTD.) 20 January 2006 See paragraphs [0099]-[0120] and figures 1-5. | 1-5 |



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

20 SEPTEMBER 2018 (20.09.2018)

Date of mailing of the international search report

20 SEPTEMBER 2018 (20.09.2018)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 Government Complex Daejeon Building 4, 189, Cheongsa-ro, Seo-gu,
 Daejeon, 35208, Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2018/005838

| Patent document cited in search report | Publication date | Patent family member | Publication date |
|--|------------------|--|--|
| KR 10-1603092 B1 | 14/03/2016 | NONE | |
| JP 6040190 B2 | 07/12/2016 | JP 2015-028464 A JP 2015-028465 A JP 6346764 B2 | 12/02/2015 12/02/2015 20/06/2018 |
| KR 20-1999-0025340 U | 05/07/1999 | NONE | |
| KR 10-0794907 B1 | 14/01/2008 | CN 100483125 C CN 1798973 A EP 1679511 A1 KR 10-2006-0026028 A US 2007-0058777 A1 WO 2005-043149 A1 | 29/04/2009 05/07/2006 12/07/2006 22/03/2006 15/03/2007 12/05/2005 |
| KR 10-0543992 B1 | 20/01/2006 | CN 1476535 A CN 1476535 C EP 1429140 A1 EP 1429140 A4 JP 3857271 B2 KR 10-2003-0062414 A US 2004-0046550 A1 US 2005-0206373 A1 US 6958603 B2 US 7102347 B2 WO 03-027659 A1 | 18/02/2004 21/03/2007 16/06/2004 17/05/2006 13/12/2006 25/07/2003 11/03/2004 22/09/2005 25/10/2005 05/09/2006 03/04/2003 |