



(43) International Publication Date
7 July 2016 (07.07.2016)

(10) International Publication Number
WO 2016/106440 A1

- (51) International Patent Classification:
H02K 1/27 (2006.01) *H02K 53/00* (2006.01)
- (21) International Application Number:
PCT/BG2015/000041
- (22) International Filing Date:
29 December 2015 (29.12.2015)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
111901 30 December 2014 (30.12.2014) BG
- (72) Inventor; and
- (71) Applicant : **SCOZZARI, Francesco Giuseppe** [BG/BG];
ul. "2-ra", No. 2, Pernik 2302 (BG).
- (74) Agent: **VARBANOV, Julian**; J. Varbanov & Partners
Ltd., South Park Complex, Bl.1, entr. A, 2nd floor, Sofia
1421 (BG).
- (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, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, 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, SA, 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, ST, 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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

[Continued on next page]

(54) Title: MOTOR - GENERATOR

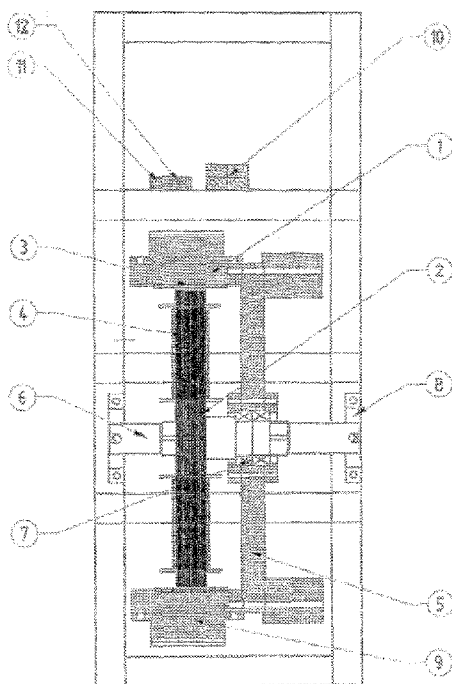


Figure 1

(57) Abstract: The invention refers to a generator with permanent magnets which has a magnetic field rotating externally relative to the axis of the rotation and which, to a limited extent, produces electrical energy in the form of alternating current for domestic and industrial needs. The main feature of the generator is that a single magnetic field passes through a coil, which remains stationary, and that with a series of permanent magnets generating this magnetic field by being specifically positioned on an aluminum ring intersect the coil, attached to a stator, producing, in this way, electrical energy.



Published:

— 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))

MOTOR - GENERATOR

TECHNICAL FIELD

The invention refers to a generator with permanent magnets and a magnetic field rotating externally relative to the axis of the rotation and which, to a limited extent, produces electrical energy in the form of alternating current at a frequency of 50 Hz for domestic and industrial needs.

BACKGROUND OF THE INVENTION

Generators, designed on the basis of Faraday's law which follows the research made by Pačinoṭi and his infamous ring, are well known but the solutions, so far offered, fail to propose a generator operating with one magnetic field and a static coil.

DESCRIPTION OF THE INVENTION

The main feature of the generator is that a single magnetic field passes through a coil in order to generate an alternating current. The coil remains stationary and a series of permanent magnets, suitably located in conformity with an aluminum ring, intersect the coils, which are attached to a stator, with the field they generate.

The generator consists of:

- aluminum rotor 1, the interior of which firmly holds permanent magnets 3 which are sized and positioned at 90° one to another;
- stator 2, composed of sheet metal plates connected to a shaft 6 remains static when the motor runs;
- permanent magnets 8, suitably located and conforming with the aluminum ring, which is connected with the rotor 1 via a mechanical interlock and which are positioned at 45 ° one to another;
- coils 4, through which the magnetic fields, generated by the magnets themselves, pass;
- flange 5, mechanically connected to the rotor 1 which also functions as a nest for the two bearings which permits the rotational motion of the rotor 1 on shaft 6 which remains static;

- shaft 6 is made of carbon steel and has the function of a support for the generator and also an axis for the rotation of rotor 1 with the help of cylinder roller bearings;
- two cylinder roller bearings 7 which allow the rotation of the rotor 1 on shaft 6. The bearings conform with the shaft by means of nuts and safety rings.
- two supporting groups 8, made of construction steel and holding the two ends of the shaft 6. These supports are mechanically connected with welded construction, the purpose of which is to support the entire apparatus and to make it a durable, easily transportable and safe.
- two cog wheels 9 made of steel with slanted teeth curved in both directions which serve to transmitting torque without slipping thus forming a Chevron-type gear transmission which reverses the direction of the rotation given set by the rotating input sector.
- assembly board 11 for system startup via energy supplied by four rechargeable batteries 13;
- assembly board 12 which differentiates the generated energy from the magnetic field from which one part is sent to the batteries to maintain their charge level.

DESCRIPTION OF THE ATTACHED FIGURES

Fig. 1 – General presentation of the generator by grouping parallel to the rotor shaft view.

Fig. 2 – Cross section of the rotor ring.

Fig. 3 – Front view of the stator.

Fig. 4 – Magnets.

Fig. 5 – Coils

Fig. 6 – Cross section of the rotor flange.

Fig. 7 – Front view of shaft.

Fig. 8 – Front view of cylinder roller bearing.

Fig. 9 – Cross section of the supports.

Fig. 10 – Cog wheel

EXAMPLES OF THE PRACTICAL REALIZATION OF THE INVENTION

According to the here-presented invention the motor-generator has a magnetic field passing through 4 coils to generate alternating current. On the output of each coil 4 two electrical connections are mounted to transfer the output electrical energy: one of the connections ensures the link with the motor the other - with the generator.

The inside of the aluminum rotor 1 of the motor-generator securely hosts the permanent magnets 3, which are adequately sized and positioned at 90° one to another. The permanent magnets 8 are connected to the rotor 1 by a mechanical interlock and are positioned one to another at 45. The stator 2 is made of tin lamellae and is connected with the shaft 6, which remains immobile when the motor is running. The rotor 1, which also functions and the nest for two bearings, is connected mechanically to the flange 5. These two bearings ensure the rotary motion of the rotor 1 on shaft 6 which is static. The shaft 6 is made of carbon steel and performs the function of the supporting structure of the generator as well as the function of an axis for the rotation of rotor 1, via the cylinder roller bearings 7. The bearings 7 allow for the rotation of the rotor 1 on shaft 6 and conform to it with the help of nuts and safety rings. The two ends of the shaft 6 lie on two support groups 8, made of construction steel. These supports 8 are mechanically connected with a welded construction, the purpose of which is to support the whole apparatus and to make it durable, easy to handle and safe. The steel cog wheels have teeth 9, slanting in two directions and serving transfer the torque without slipping thus forming a Chevron-type gear, which reverses the direction of the rotation given by rotating the input unit. One of the cog wheels 9 is attached to the outside of the rotor 1 through mechanical fastening and the other - to the electricity generator. The assembly board 11 is connected to the batteries 13 and serves to start the system with energy from the batteries. Assembly board 12 distributes the generated energy from the magnetic field: one part of the energy is sent to the batteries 13 to maintain their charge.

CLAIMS

1. A magnetic generator for alternating current, including rotor and stator, and featuring a single magnetic field, as well as:

- The inside of the aluminum rotor (1) of the motor-generator securely hosts the permanent magnets (3), which are adequately sized and positioned at 90° one to another. Via a mechanical interlock to the rotor (1) permanent magnets (8) are connected and positioned one to another at 45°;
- The stator (2) is made of tin lamellae and is connected with the shaft (6), which remains immobile when the motor is running;
- Passing through coils (4) are the magnetic field which are generated by the magnets; at output of each coil (4) two electrical connections are mounted to transfer the output electrical energy: one of the connections ensures the link with the motor the other - with the generator.
- The flange (5) is mechanically connected to rotor (1) which hosts two bearings ensuring the rotary motion of rotor (1) on shaft (6) which remains static when the motor runs.
- The rotation of rotor (1) is activated by the shaft (6) via two cylinder roller bearings (7) and the two ends of the shaft (6) are based on two groups of supports (8), which are mechanically linked to a welded construction holding the generator;
- To the outside of the rotor (1) and to the electricity generator cog wheels are attached – one cog wheel (9) each – with teeth slanting in two directions and serving to transfer the torque without slipping thus forming a Chevron-type gear, which reverses the direction of the rotation given by rotating the input unit.
- To the two batteries (13) an assembly board (11) is attached which serves to start the system using energy from the batteries (13);
- To the other two batteries (13) and the coils (4) a circuit board (12) is attached to distribute the generated energy from the magnetic field where one part of the energy is sent to the batteries to maintain their charge.

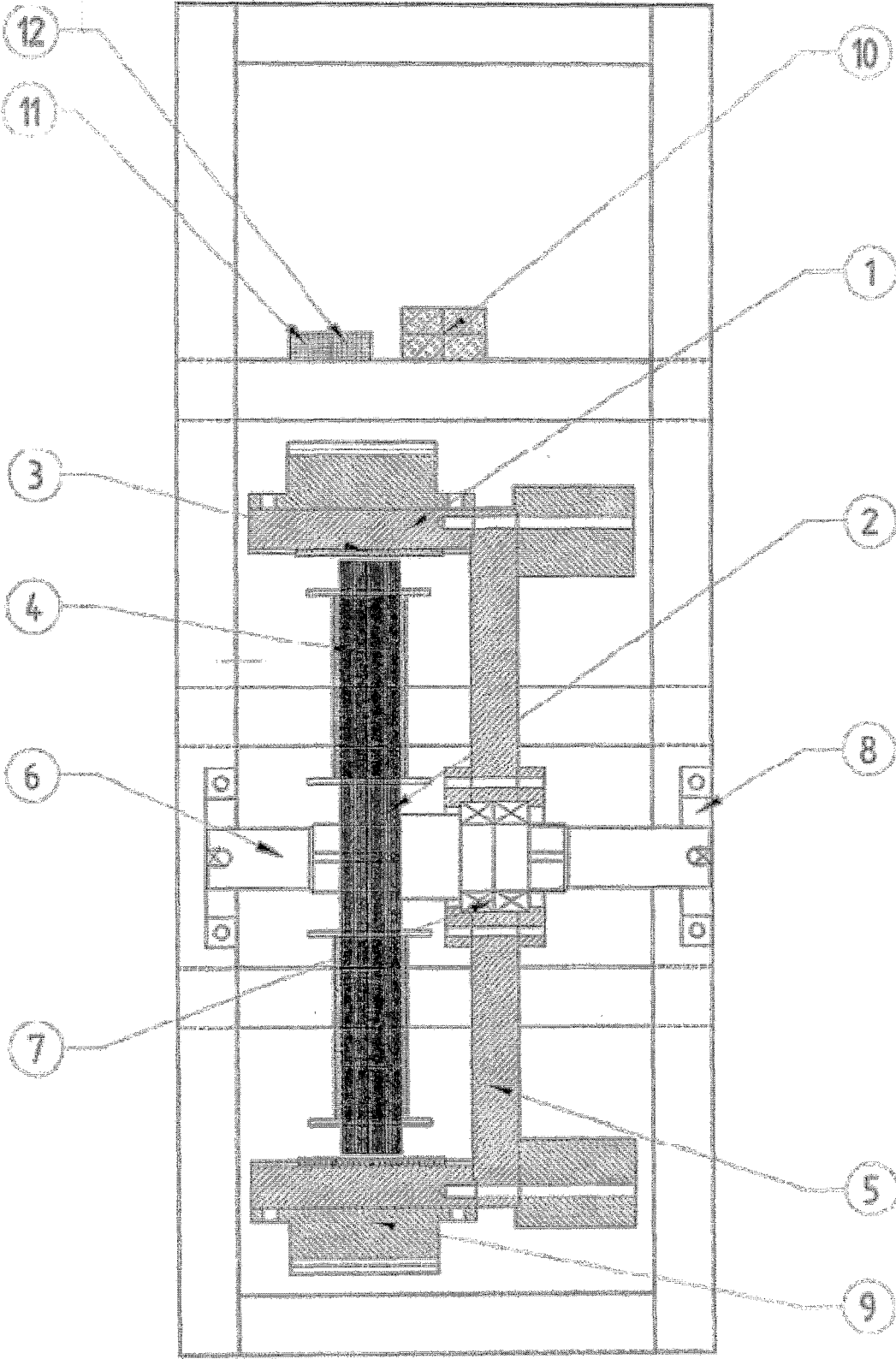


Figure 1



Figure 2

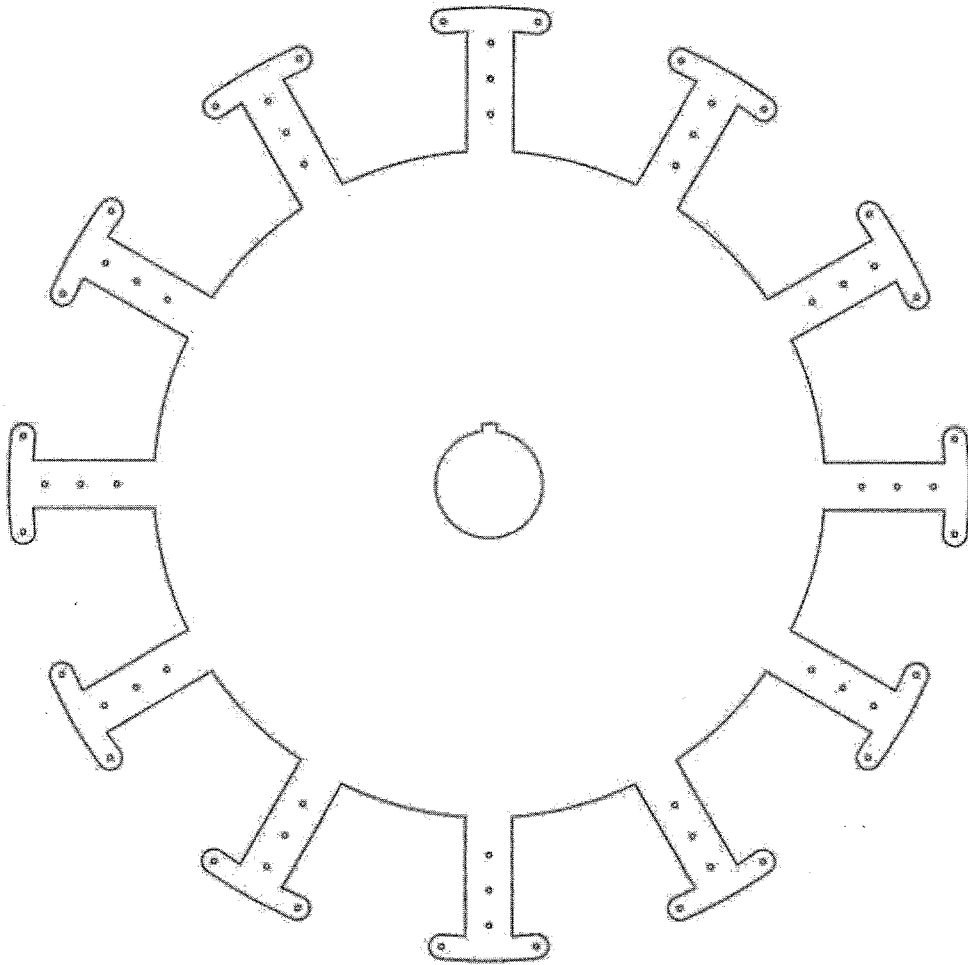


Figure 3

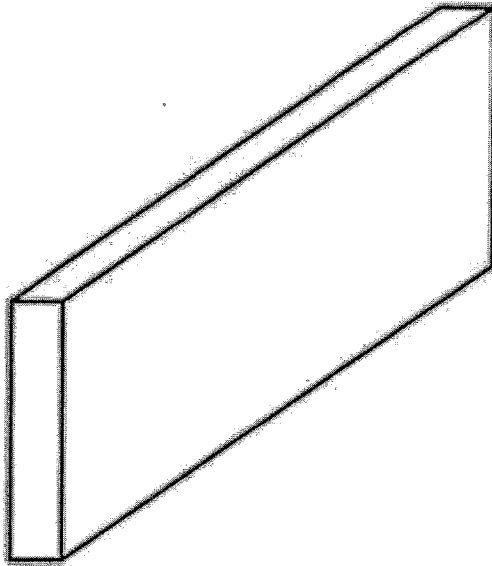


Figure 4

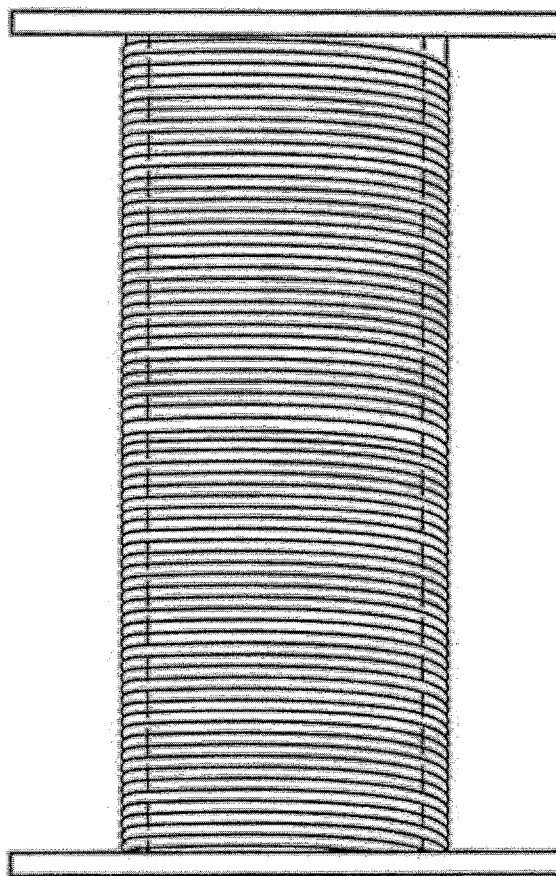


Figure 5



Figure 6

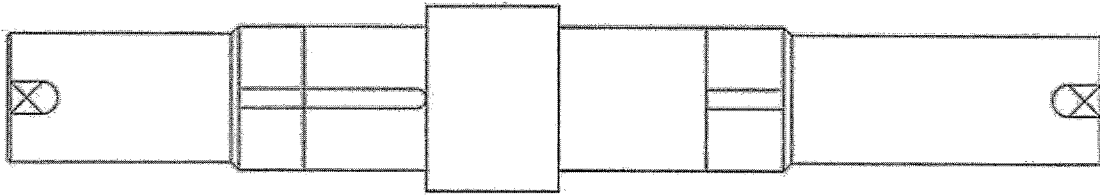


Figure 7

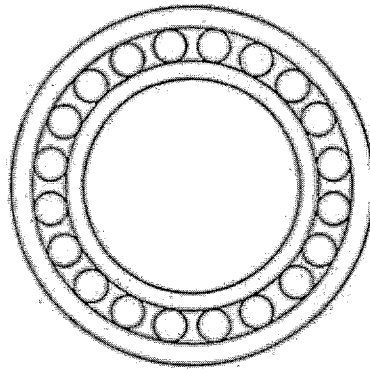


Figure 8

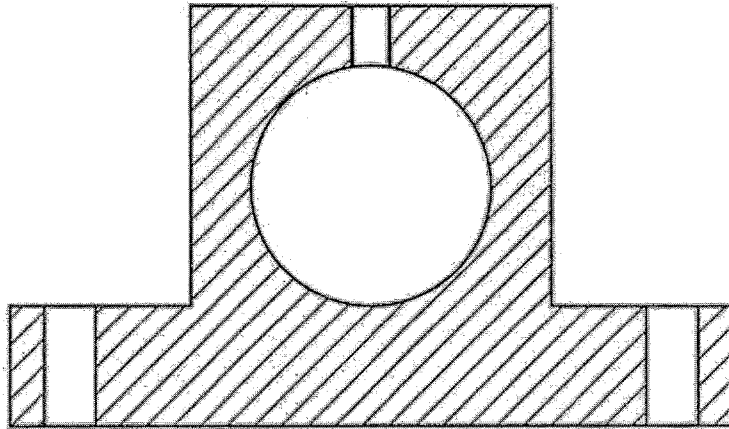


Figure 9

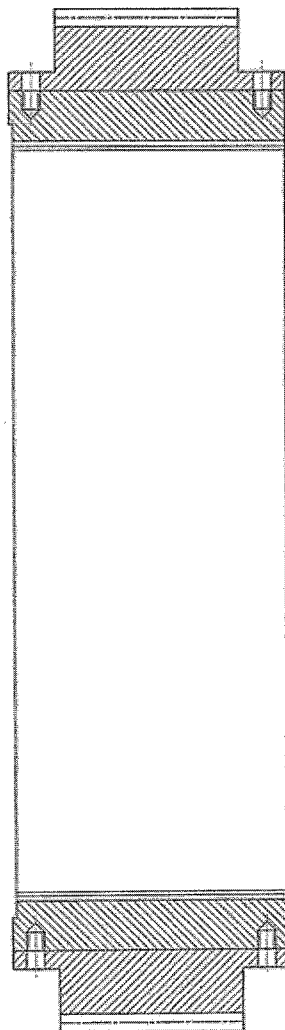


Figure 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/BG2015/000041

A. CLASSIFICATION OF SUBJECT MATTER
INV. H02K1/27 H02K53/00
ADD.

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)
H02K

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2014/327331 A1 (HIKITA TAKAHIKO [JP]) 6 November 2014 (2014-11-06) abstract paragraph [0003] claims figures	1
X	US 7 012 349 B1 (WALKER JAMES M [US]) 14 March 2006 (2006-03-14) abstract column 2, line 64 - column 3, line 26 figures ----- -/--	1



Further documents are listed in the continuation of Box C.



See patent family annex.

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"E" earlier application or patent but published on or after the international filing date

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Date of the actual completion of the international search

13 May 2016

Date of mailing of the international search report

23/05/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Seibert, Joachim

INTERNATIONAL SEARCH REPORT

International application No
PCT/BG2015/000041

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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