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(54) MAGNETIC DEVICE SUITABLE FOR USE AS A POWER GENERATOR OR DRIVE MOTOR

(57) Magnetic device adapted to be used as generator or as driving motor. It is comprised coupled to a shaft (2) with possibility of rotation, of at least, a first disk (3) and a second disk (4) identical in its shape with several magnetic poles (5) and without possibility of rotation, a central winding (6) located between both disks (3, 4). The magnetic poles (5) are radially located in both disks, with the polarity successively alternating, positive and negative; and the central winding (6) is comprised of, at least, two coils the core of which (7) has configuration that presents, on both lateral sides, ends having tilted or staggered sides (71), towards a same side with respect to the shaft (2), ending in a point (72); the said cores (7) are located at such a distance between them that their ends having tilted or staggered sides (71) with a point (72), are lapping each other on an external element (9) that gives a movement to a first disk (3). The magnetic poles (5) are incorporated in number, position and magnetic force similar on each of the disks (3, 4). The cores (7) of the coils are bodies of configuration in diamond-shaped front elevation. The points (72) of the cores (7) are not covered by the winding core (8) of wires.

FIG. 1

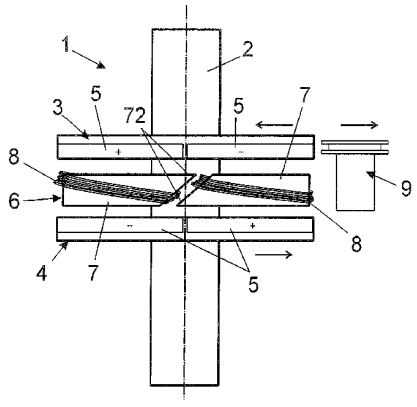

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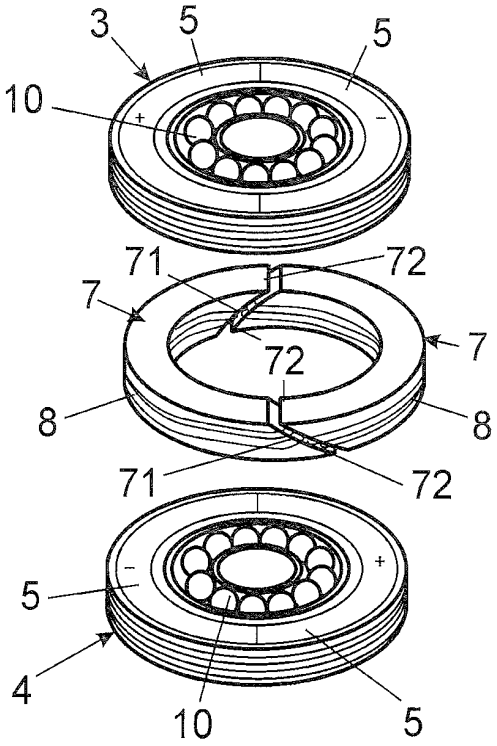
FIG. 3



Description

OBJECT OF THE INVENTION

[0001] The invention, as it appears in the title of this specification, refers to a magnetic device adapted to be used as energy generator or as driving motor that provides, to the function to which it is designed, advantages y characteristics of novelty that will be described in details below.

[0002] The object of this invention refers to a device that, essentially constituted by a set formed by a shaft with two disks of rotary magnetic poles and a central winding, takes advantage of the capacity to be reppelled from the magnetic poles having opposite signs and of the coils to generate an electric current when they are excited by a magnetic field for, from an initial external thrust that rotates a first disk having magnetic poles, generating electrical energy in the winding with a high level of power because of the particular configuration of the winding cores with lapped ends and the arrangement of the magnetic poles in the disks, provoke that, in turn, the second disk rotates in the opposite direction, increasing the magnetic field generated and, in addition, kinetic energy is generated of which advantage can also be taken.

FIELD OF APPLICATION OF THE INVENTION

[0003] The field of application of this invention is within the sector of industry engaged in the production of appliances, systems and devices for the generation of electrical energy, in particular focused in the scope of the electric generators or magnetic drive motors.

BACKGROUND OF THE INVENTION

[0004] As it is well known, an electric generator is a device capable to maintain a difference of electrical power between two of its points (called poles or terminals) transforming the mechanical energy into electrical energy. This transformation is achieved by the action of a magnetic field on the electrical conductors arranged on a frame (stator). If a relative mechanical movement occurs between the conductors and the field, an electromotive force (EMF) is generated. This system is based on the law of Faraday.

[0005] The rotor of some electric motors operates in the opposite direction, taking advantage of the electrical energy to generate movement, because in this type of motors - electric generators, the rotor is the component that rotates (turns) and that, jointly with its fixed counterpart, the stator, constitutes the main set for power transmission.

[0006] The objective of this invention is, therefore, to develop a new device generating magnetic electricity if applied to a kinetic energy or a magnetic driving motor device if applied to an electrical energy.

[0007] On the other hand, and as reference to the state of the art, it shall be pointed out that, at least the applicants, have no knowledge of the existence of any other device or invention having a similar application showing technical and structural characteristics equal or similar to those that are shown by this generator o magnetic motor claimed herein.

DESCRIPTION OF THE INVENTION

[0008] The energy generating magnetic device or driving motor that the invention proposes is therefore configured as a significant improvement within its field of application, because when it is implemented the mentioned objectives are satisfactorily reached, the characterizing details that distinguish them from the already known, being conveniently included in the end claims attached to this description.

[0009] Specifically, what the invention proposes, as it was above mentioned, is a device generating magnetic electricity if a kinetic energy is applied or a magnetic driving motor device if an electrical energy is applied including a shaft to which are coupled, at least, two disks of rotatory magnetic poles and a fixed central winding, showing a configuration such that, when moving one of the disks, by means of any external means, a magnetic field is generated that excites the winding provoking the generation of electrical energy, at the same time that the rotatory movement of the second disk in the direction opposite to the direction in which the first rotates and, thus, provokes the formation of a larger magnetic field that increases the power of the electrical energy generated in the central winding.

[0010] To this aim, both disks are provided with magnetic poles and arranged in an alternate adjacent way, that means, located in an alternate way with positive pole and with negative pole successively in a radial arrangement at the centre of the disk.

[0011] Preferably, both disks are exactly equal or at least, they show the same number of magnetic poles having a similar magnetic power.

[0012] And on its hand, the central winding is arranged in, at least, two coils that show, each of them, a core of magnetic conductive material such as steel, around which the winding of conductive filaments is incorporated, the configuration of which, tilted and lapped at its ends is which determines the capacity to provoke the movement in a direction opposite to that of the second disk.

[0013] More specifically, each core possess, on both sides an ending tilted towards the same side, with respect to the shaft, determining respective bodies of configuration, in its front elevation, approximately diamond-shaped which pointed ends are lapping each other, that means, they remain somewhat separate but one over the one of the contiguous coil and preferably, the points of the winding being free, so that this later is not lapping.

[0014] With this, when rotating the first disk, the magnetic field generated by its magnetic poles alternatively

provokes a magnetic field that, at same time provokes the movement of the second disk in opposite direction.

[0015] By means of the related connection of terminals and wiring to the winding to connect it to an accumulator or transformer, preferably through the shaft, it can be taken advantage of the electrical energy generated.

[0016] Thus, and to avoid as much as possible the loss of energy due to the rubbing effect, between the shaft and the disks related bearings are interposed that minimize such rubbing.

[0017] In addition, optionally, by means of the related coupling of transmission means, it can also be taken advantage of the kinetic energy generated by the rotation of the second disk having magnetic poles.

[0018] The device generating magnetic electricity described if a kinetic energy is applied or a magnetic driving motor device an electrical energy is applied consists, therefore in an innovating structure having characteristics unknown up to now for the aim to which it is designed, reasons that jointly with its practical use, provide it with a ground sufficient to obtain the privilege of exclusivity applied for.

DESCRIPTION OF THE DRAWINGS

[0019] To complete this description that is carried out and in order to assist to a best understanding of the characteristics of the invention, attached to this specification, as an integral part thereof is a sheet of drawings in which for illustration and non- limitation purpose the following has been represented:

Figure number 1.- Shows a schematic elevation view of an example of embodiment of the magnetic device generating energy, object of the invention, in which the main parts and elements appear of which it is comprised , as well as its configuration and arrangement;

Figure number 2. - Shows a schematic representation of the shape in front elevation that the cores of the central winding of the device show, and their lapping on the contiguous coils; and

Figure number 3. - Shows a schematic exploded view in perspective of the disks and the central winding, according to the same example of the device of the invention shown in the figure 1.

PREFERRED EMBODIMENT OF THE INVENTION

[0020] Seen the described figures, and according to the numbering adopted in them, a non-limitative example of the magnetic device can be seen, which includes the parts and elements that are indicated and described in detail below.

[0021] Thus, as it can be seen in the figure 1, the device (1) in question is comprised of a shaft (2) to which are coupled, with possibility of rotation and interposing related bearings (10), at least, two disks (3, 4) with magnetic poles (5) and, without possibility of rotation, that means, jointly fixed to the shaft (2), to a central winding (6), located between a first disk (3) and a second disk (4).

[0022] In addition, both disks (3, 4) are provided with several magnetic poles (5) which are radially placed and arranged with the successively alternating, positive and negative polarity, being preferably in number, position and magnetic force equal or at least very similar in each of the said disks (3, 4), although, preferably, both disks (3, 4) and their magnetic poles (5) are exactly identical.

[0023] On its part, the central winding (6) is comprised, at least, of two coils constituted, each, by a core (7) of conductive magnetic material, such as steel, with a winding (8) of conductive wire, the configuration of which core (7), shows, on both sides, respective ends having tilting sides (71), always towards a same side with respect to the shaft (2), ending in a point (72), so that they determine respective bodies with a configuration, which development in front elevation, is approximately diamond-shaped, as it can be seen in the figure 2.

[0024] In the figures 1 and 3, the example represented has only two magnetic poles (5) by disk and, therefore, only two cores (7) of coils.

[0025] In any case, it is important to point out that the said ends of tilted or staggered sides (71) of the cores (7) of the coils are located at such a distance between them that their respective points (72) are lapping on each other in the coils contiguous and, preferably, without the wires of the respective winding (8) are lapping as the said points (72) are not covered by them, as it can be clearly seen in the representation of the figure 2.

[0026] The device (1) in addition provides an external element (9) that, being of any type, gives a movement to a first disk (3), making that a magnetic field is generated that in turn provokes the excitation of the coils and, at same time, the rotation, in opposite direction of the second disk (4).

[0027] In a preferred embodiment, the cores (7) have grooves on their upper or lower side on which the conductive wire winding (8) is wound.

[0028] In another preferred embodiment, the cores (7) have holes through which the wire winding (8) is wound.

[0029] The nature of this invention having been sufficiently described, as well as the way to implement it , it is not deemed necessary to extend any longer its explanation in order that any person skilled in the art understands its extent and the advantages arising from it, and stating that within its essentiality other embodiments can be implemented that could differ in detail of the embodiment mentioned for example purpose that shall also be covered by the protection applied for provided they do not alter, change or modify is fundamental principle.

Claims

1. Magnetic device adapted to be used as generator of electricity if a kinetic energy is applied or as magnetic driving motor if an electrical energy is applied , comprising a shaft (2) to which disks (3, 4) are coupled with at least two magnetic poles (5) and central winding (6) of coils formed by a core (7) of magnetic material with a winding core (8) of conductive wire, **characterized in that** it is comprised of, coupled to the shaft (2) with possibility of rotation, at least, a first disk (3) and a second disk (4) with several magnetic poles (5) and, without possibility of rotation, a central winding (6) located between both disks (3, 4); **in that** the magnetic poles (5) are radially located in both disks, with the polarity succesively alterning, positive and negative; **in that** the central winding (6) is comprised, at least, of two coils the core of which (7) has a configuration that presents, on both lateral sides, ends having titlted sides (71), towards the same side with respect to the shaft (2), finished in a point (72); **in that** the said cores (7) are located at such a distance between them that their ends having tilted or staggered sides (71) with a point (72), are lapping each other in the contiguous coils; and **in that**, in addtion, it presents an external element (9) that gives movement to a first disk (3), which generates a magnetic field that, in turn, determines the excitation of the coils and, in turn, the rotation, in an opposite direction of the second disk (4).

2. Magnetic device, according to the claim 1, **characterized in that** the magnetic poles (5) are incorporated in number, position and magnetic force similar in each of the disks (3, 4).

3. Magnetic device, according to the claims 1 to 3, **characterized in that** both disks (3, 4) are identical.

4. Magnetic device, according to the claim 1, **characterized in that** the cores (7) of the coils are bodies of configuration in diamond-shaped front elevation.

5. Magnetic device, according to any of the claims 1 to 4, **characterized in that** the points (72) of the cores (7) are not covered by the winding (8) of wires, so that, when the ends having tilted or staggered sides (71) are lapping each other in the contiguous coils, the wires of the respective winding cores (8) are not lapping.

FIG. 1

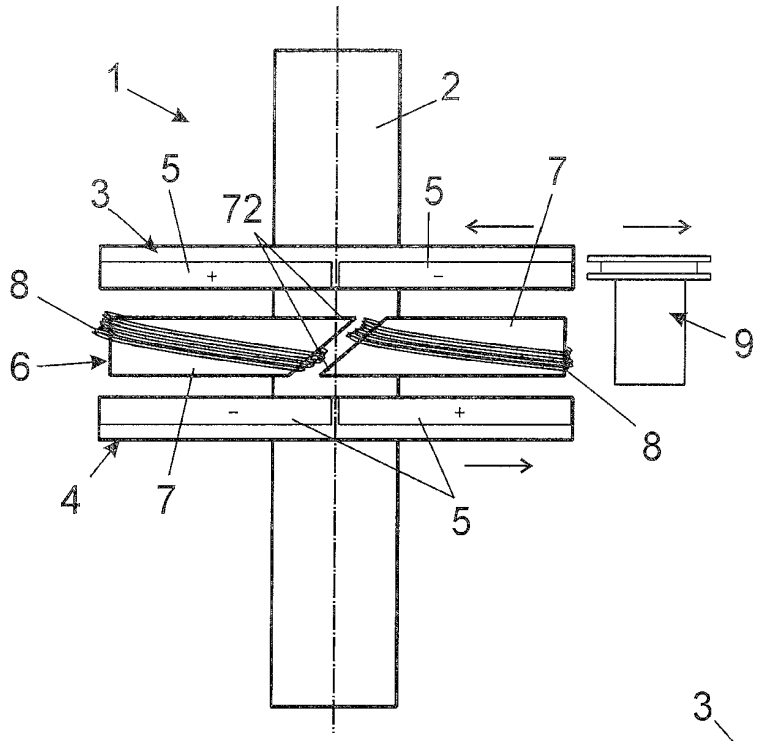


FIG. 2

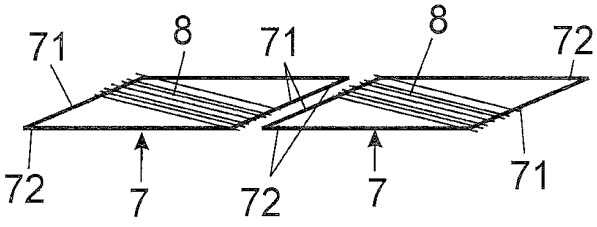
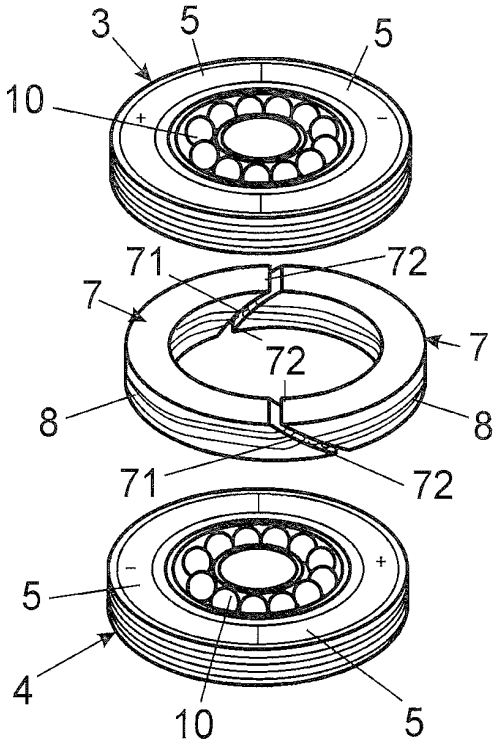


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2017/070321

A. CLASSIFICATION OF SUBJECT MATTER

H02K53/00 (2006.01)
H02K35/02 (2006.01)
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)

EPODOC, INVENES

C. 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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A	KR 20160028688 A (JUNG HYUN BAE ET AL.) 14/03/2016, abstract WPI; abstract EPODOC; figures.	1-5
A	US 2008042506 A1 (LIAO CHIN-LUNG ET AL.) 21/02/2008, abstract; figures; paragraphs 3, 6, 11 and 20.	1-5
A	WO 2015155249 A2 (ZAG TECHNOLOGIES IRELAND LTD) 15/10/2015, abstract; figures; page 1, lines 3-19; page 1, line 29 a page 2, line 12; page 19, lines 13-15; page 22, line 16 a page 23, line 8.	1-5

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
19/06/2017	**(22/06/2017)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer A. López Ramiro Telephone No. 91 3495322

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2017/070321

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	KR 20140126853 A (SONG SIN HEUB) 03/11/2014, abstract WPI; abstract EPODOC; figures.	1-5

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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