Magnet engine

Patent · August 2015
DOI: 10.13140/RG.2.1.2868.7448

1 author:

Vladimir Zenin

Australian Government
IP Australia

P TM D PBR

ABN 38 113 072 755
Discovery House, Phillip ACT 2606
PO Box 200, Woden ACT 2606
Australia
P 1300 651 010
Int +61 2 6283 2999
www.ipaustralia.gov.au

6 August 2015

Vladimir Zenin
11-3/3 Phillip Street
Waterloo, Sydney NSW 2017
Australia

Notice of Grant

Patent Number: 2014240249

Patentee Name(s): Vladimir Zenin

Your Ref: Futureisnow

IP Australia is pleased to advise that a Patent has been granted in respect of this application. The patent was granted on 6 August 2015 and the Certificate of Grant is enclosed.

Please note the provisions of Section 67 of the Patents Act 1990, which states that the term of a standard patent is 20 years from the date of the patent.

To maintain this standard patent, Section 143(a) of the Patents Act 1990 requires you to pay the prescribed renewal fee annually, within the set time. If renewal fees are not paid the patent will cease.

Please Note:

1. Your first renewal fee payment, being for the 4th year anniversary is due on 2 October 2018.

2. The fee can be paid up to 6 months after the anniversary provided it is accompanied by the relevant late payment fee(s).

If you need any further information please contact 1300 651 010. Alternatively, please visit us at www.ipaustralia.gov.au.

Yours faithfully

Patent and Plant Breeder's Rights Administration

http://pericles.ipaustralia.gov.au/ols/auspat/applicationDetails.do?applicationNo=2014240249

Download Specification(AU-B1)

Australian Government

IP Australia

CERTIFICATE OF GRANT

STANDARD PATENT

2014240249

The Commissioner of Patents has granted the above patent on 6 August 2015, and certifies that the following are the particulars of this patent appearing in the Register of Patents:

Name and Address of Patentee(s):

Vladimir Zenin

11-3/3 Phillip Street Waterloo, Sydney NSW 2017 Australia

Name of Actual Inventor(s):

Zenin, Vladimir

Title of Invention:
Magnet engine

Term of Patent:
Twenty years from 2 October 2014

Dated this 6th day of August 2015

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

Australian Government

IP Australia

(12) STANDARD PATENT (11) Application No. **AU 2014240249 B1**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
Magnet engine

(51) International Patent Classification(s)
HO2K 21/10 (2006.01) ***HO2K 7/065*** (2006.01)

(21) Application No: **2014240249** (22) Date of Filing: **2014.10.02**
(43) Publication Date: **2015.04.23**
(43) Publication Journal Date: **2015.04.23**
(44) Accepted Journal Date: **2015.04.23**

(71) Applicant(s)
Vladimir Zenin

(72) Inventor(s)
Zenin, Vladimir

(74) Agent / Attorney
Vladimir Zenin, 11-3/3 Phillip Street, Waterloo, Sydney, NSW, 2017

(56) Related Art

US 2008/0149445
WO 2009/019001
US 2004/0234395
WO 2006/045333
WO 2009/088144
WO 2015/015506

ABSTRACT

The invention relates to a magnet engine (1), which includes a shaft (2) with a cylindrical wheel (3) and multiple permanent magnets (4) arranged on said wheel in a rotor (5) mounted on a frame (6), multiple cylindrical wheels (7) with magnetic helical strips (8) and their own shafts (9) both ends of which are seated in the bearing brackets (10) attached to the frame (6) and arranged about the rotor on a main transmission (11) in a dynamic stator (12) with magnetic helical strips (8) in permanent attractive or repulsive interaction with permanent magnets (4) of the rotor (5) in the tangent direction, and at least one additional transmission (13) for transmitting torque from stator (12) to output shaft (2).

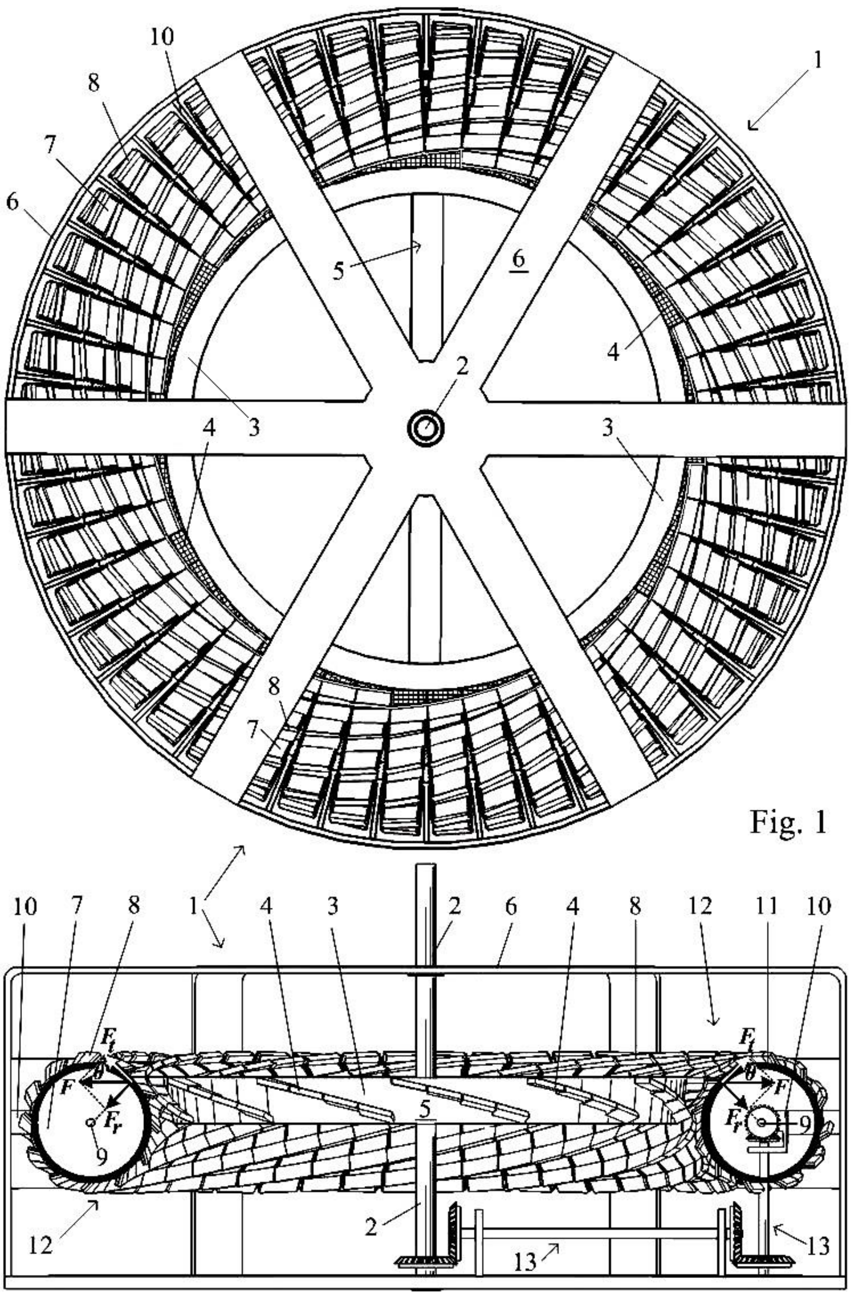

Fig. 1

2014240249 02 Oct 2014

MAGNET ENGINE

TECHNICAL FIELD

[0001] This invention relates to energy engineering and more particularly to the alternative energy technology of getting power from the repulsive/attractive force of permanent magnets with no other input.

BACKGROUND

[0002] Magnetism, like gravity and atomic charge, is one of the basic forces of nature. Permanent magnets generate a force of attraction or repulsion similar to the force generated by the positive and negative charges on protons and electrons. Magnetic force has an effect on other natural magnets and substances such as steel are attracted to magnets. Magnetic force is felt by the magnets and these substances as a push away from the magnet or a pull towards the magnet. This force is generated by the spin of electrons and can cause a responsive object or magnet itself to move.

[0003] There were many attempts to convert the repulsive/attractive force of permanent magnets into rotational movement and build a magnet motor. We can see some of them in operation on YouTube: https://www.youtube.com/watch?v=uHh5AqQ4_xw ; https://www.youtube.com/watch?v=CDpKqdcDDrQ ; https://www.youtube.com/watch?v=smzpbKg9S7M .

[0004] The invention **International Publication Number WO 2006/045333 A1** provides a magnet repulsive motor which comprises: a shaft rotatable about its longitudinal axis, a first set of magnets arranged about the shaft in a rotor for rotation with the shaft, and a second set of magnets arranged in a stator surrounding the rotor, wherein the cylindrical magnets with axial magnetisation are encased in magnetically screened material and angled at an acute angle relative to the tangent to the circumference of the rotor and to the inner circumference of the stator. The rotor and stator magnets also have a special arrangement. A working prototype was demonstrated without a load.

[0005] The device **International Publication Number WO 2009/019001 A2** comprises a rotor and a stator disposed coaxially to an output shaft. The rotor comprises one or more first magnet sequences and the stator one or more second magnet sequences. The first and second magnet sequences each comprise two or more dipole magnets, the arrangement and orientation of which may vary. A prototype was demonstrated at the 41st International Exhibition of Inventions in Geneva (April 10 - 12, 2013), it had around 1200 magnets and powered a fan.

[0006] Unfortunately these magnet motors have disadvantages: they require force to start running, they do not run under a real load and they stop running unexpectedly.

[0007] The invention **International Publication Number WO 2009/088144 A1** discloses an engine capable of obtaining a reciprocation operation by using only a magnetic force of permanent magnets even when a supply of an electric power is disconnected except for the energy which is used for an initial engine start. In this invention, a rotation drum member and a crank shaft having a plurality of permanent magnets with their poles being alternatively arranged are installed in a frame, which support an apparatus. When the rotation drum member rotates, repulsive force and attraction force are alternatively generated between the permanent magnets of the front end of the piston and the permanent magnets of the rotation drum member, so the piston reciprocates, and driving force is obtained by rotating the crank shaft. A video of working magnet engine, created in Shinyeon Energy Research Centre of South Korea, was posted on January 4, 2010, YouTube: https://www.youtube.com/watch?v=smzpbKg9S7M .

[0008] This engine includes an electric power supply and can not start running without it.

[0009] There is a magnet engine **Australian Application No 2014200321**, which includes a shaft with a platform rotatable mounted on a frame, multiple bell cranks assemblies arranged on said platform in a rotor with a first permanent magnet installed on the shaft with its edges on upper hands of the bell cranks, the lower hands of which placed against a power rod with guiding wheels, a second permanent magnet mounted on the frame face to face with the first magnet, multiple cylindrical wheels with helical rails and their own shafts both ends of which connected to flexible joints arranged about the rotor in a first main transmission seated in the bearing brackets attached to the frame and arranged in a dynamic stator with helical rails under permanent pushing of the guiding wheels in the tangent direction, and at least one transmission for transmitting torque from stator to output shaft of the rotor. In this engine the rotor and stator magnets are situated face to face, a distance between them does not change during engine operation and the shortest distance in operating mode gives engine the greatest power.

SUMMARY

Technical Problem

[0010] Magnet motors **WO 2006/045333 A1** and **WO 2009/019001 A2** are made under the supposition that the location of the permanent magnets' direction of magnetization at an acute angle relative to the tangent to the circumference of the rotor and to the inner circumference of the stator or their arrangement in a special configuration on the rotor and stator will create a strong tangential component of force which generates the rotor torque in repulsive mode. This does not happen. A magnetic force just as a gravity force is greater in a direction of the shortest distance between magnets. That is why the normal component of the rotational force, which acts in a radial direction of a rotor and does not affect the torque, is much stronger than tangential component and we can see it is hard to move rotor if a magnet motor on standby. It is magnetically fixed in a certain position by the normal component of force. The tangential components of magnetic force in these motors are so weak that they can not operate under a real working load (1200 strong Neodymium magnets can power only a small fan).

[0011] Magnet engine **WO 2009/088144 A1** is not powerful enough too because the work of the magnetic force during the attraction of one magnet to another as they approach when the piston reciprocates is almost equal to the work of the magnetic force tending to stop the magnet when it is moving away from the rotation drum member and vice versa, the work of the magnetic force during the repulsion of one magnets by another, which tends to stop the magnet as it approaches when the piston reciprocates is almost equal to the work of the magnetic force tending to push the magnet when it is moving away from the rotation drum. Similar processes take place in magnet motors **WO 2006/045333 A1** and **WO 2009/019001 A2** because magnets in the rotor and stator sometimes approach each other and some times move away from each other when the motor operates. These motors operate because of a small difference in work of magnetic force when magnets approach and when they move away. This difference is a result of a slightly differing way of their approaching to each other and moving away because their reciprocal orientation changes during the movement. To make this difference greater inventors change the arrangement and orientation of magnets in

2014240249 02 Oct 2014

2014240249 02 Oct 2014

rotor and stator during experiments until the rotor begins to rotate satisfactorily but they can not get power from such engineering solution.

Solution to Problem

[0012] A radical solution would be to create a new method for converting the magnetic force into rotary motion and a different mechanism for carrying out this conversion, in which rotor and stator magnets are situated face to face, a distance between them does not change during motor operation and the shortest distance in operating mode will give engine the greatest power. The magnet engine **Australian Application No 2014200321** meets these requirements but converting magnetic force into rotary motion needs to carry out the following steps:

a) using a first magnet preferably in the form of a cylinder as a source of force and as the main component of a rotor;
b) making the inlet in the centre of said magnet with internal splines;
c) making external splines formed longitudinally on the rotor's shaft that fit into corresponding internal splines in said magnet inlet and rotatable installing shaft on a frame;
d) installing said magnet on said shaft's external splines for transmitting torque and providing this magnet with the possibility of sliding on the rotor's shaft;
e) installing on the frame a second magnet face to face with the first magnet for getting force from repulsion or attraction between two said magnets;
f) providing the decomposition of the magnetic repulsive/attractive force of two said magnets acting in the coaxial direction into preferably equal component forces acting in the radial direction using guiding wheels which mechanically interact with helical rails on cylindrical wheels of the dynamic stator.

The mechanical interaction between rotor and stator results in a complication of the engine construction and making a noise.

[0013] It is the object of the present invention to provide a magnet engine reproducing the method under the **Australian Application No 2014200321** with the possibility to avoid the necessity of making the above steps and thereby to simplify the engine construction and reduce the noise.

2014240249 02 Oct 2014

[0014] The proposed magnet engine includes a frame, a rotor, a dynamic stator combined about the rotor into a main endless transmission and an additional transmission for transmitting torque from the dynamic stator's revolving components to the rotor's shaft.

[0015] A rotor consists of an output shaft, a gear, a cylindrical wheel with multiple permanent magnets affixed to its outer periphery and rotatable mounted on said frame.

[0016] Permanent magnets finalize the structure of the rotor and are its major parts providing magnetic force interaction between the rotor and the dynamic stator.

[0017] The dynamic stator has multiple cylindrical wheels with the same diameter, each having its own shaft seated in the bearing bracket fixed to the engine frame and combined about the rotor into a main endless transmission. In this transmission, power from one cylindrical wheel to another is transmitted by using:

a) flexible joints connected between two nearby shafts of all cylindrical wheels;
b) angular bevel gears on both ends of all cylindrical wheels; or
c) tongues and grooves on both ends of all cylindrical wheels of the dynamic stator.

[0018] Every cylindrical wheel of the dynamic stator has magnetic helical strips affixed at an acute tangent angle upon the wheel. These strips are permanent magnets or made of magnetic material such as steel. The magnetic helical strips finalize the structure of the dynamic stator. They are its major parts, which are in continuous magnetic interaction with permanent magnets of the rotor.

[0019] At least one additional transmission consists of a set of gears for transmitting torque, rate and the rotation direction from the dynamic stator to the rotor's shaft. This transmission synchronizes and stabilizes the motion of the rotor's permanent magnets strictly along the dynamic stator's endless magnetic helical strips. The rotor's permanent magnets and dynamic stator's magnetic helical strips or magnets are a source of a repulsive/attractive force which set the engine in motion.

[0020] In the proposed magnet engine as well as in magnet engine **Australian Application No 2014200321** the rotor's and stator's magnets are situated face to face and distance between them does not change during the engine's operation and the shortest distance in operating mode will give engine the greatest power.

BRIEF DESCRIPTION OF DRAWINGS

2014240249 02 Oct 2014

[0021] The following is a description, by way of example only, of a magnet engine constructed in accordance with the present invention. Certainly, the present invention is not limited to the precise arrangement shown in the drawings, wherein:

Fig. 1 is a top view and a side view in part section of the magnet engine according to present invention;

Fig. 2 is a perspective view of the magnet engine shown in Fig. 1;

Fig. 3 is a perspective side view of the magnet engine shown in Fig. 1 and Fig. 2 in part section illustrating in detail the main components of the engine and how the torque from the dynamic stator's wheels is transmited to the rotor shaft. A vector diagram illustrates the tangential component of magnetic force action upon the dynamic stator's wheels and curved arrows show the rotation directions of all revolving components and explain the principle of the engine's operation in a repulsive mode when rotor's and stator's magnets repel one another . In attractive mode the rotation directions are opposite;

Fig. 4 is a perspective view of the magnet engine illustrated in Fig. 1, 2 and 3 with all dynamic stator's wheels removed. This provides a good overview of the remaining components of the design. This picture also illustrates a triple additional transmission made of bevel gears only;

Fig. 5 is a perspective view of the magnet engine illustrated in Fig. 1, 2 and 3 with all dynamic stator's wheels removed. This provides a good overview of another additional transmission made with two spur gears instead of five bevel gears;

Fig. 6 is a multiple cylindrical wheels of the dynamic stator (referring to Fig. 1, Fig 2 and Fig. 3), assembled in one long cylinder with one long shaft. This illustrates that the repulsive magnetic force between the rotor's and stator's magnets acts on all wheels of the dynamic stator in tangential direction simultaneously, resulting in their clockwise rotation. This also illustrates that we can install on the rotor a few sets of magnets acting on a few magnetic helical strips of the dynamic stator in tangential direction together at the same time;

Fig. 7a is a perspective side view on the main components of the magnet engine wherein the rotor with the shape of a concave cylinder has 4 sets of permanent magnets acting on 4 magnetic strips of all stator's cylindrical wheels in tangential direction simultaneously; Fig. 7b shows this magnet engine in profile (side view) and Fig. 7c is a cross-section of this engine illustrating the mutual arrangement of magnets on the concave surface of the rotor and magnetic strips on the dynamic stator's cylindrical wheels during engine operation;

Fig. 8 is a view of 48 cylindrical wheels of the dynamic stator, assembled in one long cylinder with diameter D, length L and twelve start magnetic helical strips, similar to leadscrew threads with lead l and pitch p, which is used to calculate gears ratio in additional transmission for coordination of the cylinder's turning motion with the motion of the rotor's permanent magnets in a circle along rotating magnetic strips;

Fig. 9 is the cylinder shown in Fig. 8 rolled up in a ring torus in the supposition that the long cylinder and its helical strips are continuous and flexible (it is a hypothetical flexible torus with all continuous and endless helical strips);

2014240249 02 Oct 2014

Fig. 10 is the cylinder shown in Fig. 8 cut into 48 equal sections and rolled up in a real composite ring, disposing all cylindrical sections closely just inside of the ring, as it is shown in Fig. 1 and Fig. 2 where inside the ring all magnetic helical strips are continuous and form continuous twelve endless magnetic strips during rotation;

Fig. 11 is an enlarged perspective view of two dynamic stator's wheels with their shafts seated in the bearing brackets fixed to the engine frame. This picture also illustrates one section of the main tramission wherein power from one cylindrical wheel to another is transmitted using angular bevel gears on both ends of all dynamic stator's cylindrical wheels. Furthermore this picture shows overlapping magnetic helical strips providing smooth uninterrupted gliding of rotor's permanent magnets along magnetic helical strips of the dynamic stator;

Fig. 12 is enlarged perspective view of two dynamic stator's wheels in part section with two bevel gears providing rotary motion transmision from the main transmission to remaining gears of the additional transmission, which sets in motion the output shaft;

Fig. 13a illustrates 6 dynamic stator's wheels assembled in one long cylinder wherein power from one cylindrical wheel to another is transmitted using tongue and groove joint in which raised areas on the edge of one wheel fits into corresponding grooves in the edge of the other wheel; Fig 13b shows how this kind of joint transmit torque from one wheel to another when their shafts are slightly misaligned and Fig 13c illustrates both sides of the same dynamic stator's wheels with magnetic helical strips are attached.

DESCRIPTION OF EMBODIMENTS

[0022] There are some similarities in the design and function of the electric motor and the disclosed magnet engine.

[0023] The electric motor has a moving part - rotor and a stationary part - stator. The rotor in the electric motor is driven by the action of magnetic forces between the stator and the rotor.

[0024] The disclosed magnet engine also has a rotor and a stator and the rotor actuated in rotation through the action of the repulsive or attractive magnetic forces which set in motion all revolving components of these two main parts of the engine.

[0025] On this basis, it is advisable to consider the magnet engine and its action using the similarity of the two concepts.

[0026] Referring first to the drawings in Figs. 1 and Fig. 2, the numeral 1 designates the invented magnet engine.

[0027] Due to the high density of the engine components in Fig. 1 and Fig. 2, some of them remain closed for viewing. To get out of a difficult situation the magnet engine 1 in Fig. 3 is shown in part section. This provides a good overview of all remaining components of the design. It should be noted that this engine is able to work despite the absence of half of the dynamic stator's components.

[0028] As depicted in Figs. 1 - 3 the magnet engine 1 includes a shaft 2 with a cylindrical wheel 3 and multiple permanent magnets 4 arranged on said wheel in a rotor 5 mounted on a frame 6, multiple cylindrical wheels 7 with magnetic helical strips 8 and own shafts 9 both ends of which seated in the bearing brackets 10 attached to the engine frame 6 and arranged about the rotor on a main transmission 11 in a dynamic stator 12 with magnetic helical strips 8 in permanent attractive or repulsive interaction with permanent magnets 4 of the rotor 5 in the tangent direction, and at least one additional transmission 13 for transmitting torque, rate and the rotation direction from the dynamic stator's wheels 7 to rotor's shaft 2.

[0029] These drawings illustrate frame 6 in the form of transparent cage so that all engine parts are visible. It is the magnet engine housing. This engine does not produce heat. No thermal process occurs inside the permanent magnet engine housing except friction in gears and bearings (the shafts of all rotating components have the bearings). Therefore, frame 4 can be solid.

[0030] Rotor 5 includes a cylindrical wheel 3, affixed to the shaft 2 with gear 21, rotatable mounted on the engine frame 6. Multiple permanent magnets 4 attached to the outer periphery of said cylindrical wheel 3.

[0031] The magnetic laws of attraction and repulsion mean that like poles repel each other while opposite poles attract each other. The law further states that the force of attraction or repulsion decreases significantly with the increasing distance between the poles. The disclosed magnet engine provides a possibility to use permanent magnets repulsion as well as attraction and in attraction mode we can use helical strips made of steel. The distance between magnets, or magnets and steel, does not change during engine operation and the shortest distance in operating mode according to magnetic lows of attraction and repulsion will give engine the greatest power.

[0032] The force ***F*** of attraction or repulsion varies directly as the product of separate pole strengths and inversely as a square of the distance separating the magnetic poles. Therefore, the magnetic force may be increased using magnets with a greater attractive/repulsive force, or by decreasing the distance between magnets.

[0033] Multiple permanent magnets 4 finalize the structure of the rotor 5 and they are its major parts emitting repulsive or attractive magnetic force ***F*** on the magnetic helical strips of the dynamic stator and providing magnetic force interaction between rotor and stator.

[0034] The dynamic stator 12 includes multiple cylindrical wheels 7 with their own shafts 9 rotatable about their axes with both ends seated in the bearing bracket 10 fixed to the engine frame 6. All cylindrical wheels 7 belong to the main transmission 11 wherein power from one cylindrical wheel to another in this case is transmitted using ungular bevel gears on both ends of all dynamic stator's cylindrical wheels.

[0035] These bevel gears connections make all dynamic stator wheels 7 are arranged on the main endless transmission 11 in a circle about the rotor 5.

[0036] Magnetic helical rails 8 are affixed at an acute tangent angle to the dynamic stator cylindrical wheels 7 and permanent magnets 4 disposed on the outer periphery of the rotor face-to-face with them in close proximity.

2014240249 02 Oct 2014

[0037] This means that all dynamic stator's wheels are under a permanent pushing force at an acute tangent angle ***θ.***

[0038] As depicted in Figs. 6 there are two components of force in circular motion: tangential $\boldsymbol{F_t}$ and normal $\boldsymbol{F_r}$. The tangential component $\boldsymbol{F_t}$ acts along the tangent while the normal component acts along the radius $\boldsymbol{r}$. Only the tangential component $\boldsymbol{F_t}$ of the force ***F*** generates torque. The normal component $\boldsymbol{F_r}$ will not affect the torque about point ***p***.

[0039] Torque is a measure of how much a force ***F*** acting on a wheel causes that wheel to rotate. The wheel rotates about an axis, which is the pivot point ***p***. The distance from the pivot point to the point, where the force acts is the moment arm, and denoted by ***r.*** Note that this distance ***r*** is also a vector, and points from the axis of rotation to the point where the force acts. Refer to Fig. 6 for a clear representation of these definitions. Torque (or a rotational force) $\underline{\boldsymbol{\tau}}$ is defined as

$$\underline{\boldsymbol{\tau}} = \underline{\boldsymbol{r}} \times \underline{\boldsymbol{F}} = \boldsymbol{r}\,\boldsymbol{F}\,\sin\boldsymbol{\theta}.$$

[0040] Evidently, the less the angle ***θ*** the greater the rotational force.

[0041] The drawings in Figs 3 - 7 explain how the magnet engine works.

[0042] Referring to Fig. 6, the cylindrical wheels 7 of the dynamic stator are assembled in one long cylinder with one long shaft. This is done to illustrate that the repulsive magnetic force ***F*** of each magnets 4 acts upon all the cylindrical wheels of the dynamic stator in a tangential direction simultaneously. This results in their clockwise rotation. In response to this action the additional transmission 13 of the magnet engine 1 transmit torque from wheels 7 of the dynamic stator 12 to output shaft 2 and force permanent magnets 4 of the rotor 5 to move strictly along the magnetic strips 8 of the rotating cylindrical wheels 7.

[0043] Fig. 6 also illustrates that we can install on the rotor a few sets of magnets acting on magnetic helical strips of the dynamic stator in tangential direction together at the same time. Such an engineering solution is illustrated in Fig. 7a showing a perspective side view on the main components of the magnet engine wherein the rotor with the shape of a concave cylinder 3 has 4 sets of permanent magnets acting on 4 helical strips of the dynamic stator 12 in tangential direction simultaneously; Fig. 7b shows this magnet engine in profile (side view) and Fig. 7c is a cross-section of this engine illustrating the mutual arrangement of

2014240249 02 Oct 2014

magnets on the concave surface of the rotor and magnetic strips on the dynamic stator during engine operation.

[0044] Rotor's magnets and magnetic strips on the stator are situated face to face and distance between them does not change during engine operation and the shortest distance in operating mode will give engine the greatest power.

[0045] Using multiple sets of magnets in rotor which act upon several magnetic strips of the dynamic stator is a second way getting grate power.

[0046] In Fig. 8 the 48 cylindrical wheels of the dynamic stator are assembled in one long cylinder with diameter ***D***, length ***L*** and twelve start helical strips, similar to a leadscrew threads with lead ***l*** and pitch ***p*** which is used to calculate gears ratio in additional transmission 13 for coordination of the wheels' 7 turning motion with the motion of the rotor's permanent magnets 4 precisely along rotating magnetic strips 8.

2014240249 02 Oct 2014

[0047] Lead ***l*** is the axial advance of the helical strips during one complete revolution (360°) and pitch ***p*** is defined as the axial distance between adjacent helical strips.

[0048] Moreover the lead ***l*** is the axial travel of magnets 4 for a single revolution of the cylinder. If a length ***L*** of the long cylinder in Fig. 8 is ***l, 2l, 3l*** and so on it means during one, two, three and so on revolutions of the dynamic stator's wheels every rotor's magnet must go all the way ***L*** which is ***l, 2l, 3l*** and so on accordingly.

[0049] In magnet engine 1 the length ***L*** of all cylindrical wheels 7 in dynamic stators 12 is ***l***. It means during one revolutions of the dynamic stator wheels only one revolution of the rotor takes place. That is why the transmission 13 shown in magnet engine 1 has a ratio 1 : 1.

[0050] If a total length ***L*** of all dynamic stator's wheels is equal to ***2l, 3l, 4l*** and so on, we have to use gears ratio 1 : 2, 1 : 3, 1 : 4 and so on accordingly.

[0051] In Fig. 9, the cylinder shown in FIG. 8 rolled up in a ring in the supposition that the long cylinder and its helical strips are continuous and flexible (it is a hypothetical flexible ring with all continuous and endless helical strips).

[0052] However, it is quite possible to get a real functioning cylindrical ring with endless rails in a special place of the ring. Here is an example: referring to Fig. 10 the cylinder shown in Fig. 8 has been cut into 48 equal sections and rolled up in real composite ring disposing all sections (dynamic stator's wheels 7) closely just inside of the ring. As it is shown in Fig. 1, and Fig. 2, all helical strips inside of the ring are continuous and form continuous endless tracks during rotating.

[0053] Fig. 11 shows an enlarged view of two dynamic stator cylindrical wheels 7 which have their shafts seated in the bearing bracket 10 fixed to the engine frame 6. These wheels belong to the main endless tramission 11 wherein power from one cylindrical wheel to another is transmitted using ungular bevel gears on both ends of all dynamic stator's cylindrical wheels. Fig. 11 also illustrates the magnetic helical strips 8 overlapping 24. This is one example of the helical strips construction providing smooth uninterrupted movement magnets 4 along magnetic strips 8.

[0054] Fig. 12 is an enlarged perspective view of two dynamic stator wheels 7 in part section with two bevel gears 14 and 15 providing rotary motion transmision from the main transmission 11 to remaining gears of the transmission 13.

[0055] Fig. 13a uses a visual method to illustrate 6 dynamic stator's wheels assembled in one long cylinder wherein power from one cylindrical wheel to another is transmitted with the aid of tongue and groove joint in which raised areas on the edge of one wheel fits into corresponding grooves in the edge of the other wheel.

[0056] Fig 13b shows how this kind of joint transmits torque from one wheel to another when their shafts are slightly misaligned. If the dynamic stator consists of 48 cylindrical wheels 7, as it is shown in Fig. 1 and 2, the angle between two near by cylindrical wheels 7 is 360°/ 48 = 7.5°. If the dynamic stator will consist of 96 cylindrical wheels 7 the angle between two near by cylindrical wheels 7 will be 3.75°. Both of these misalignments are appropriate for using tongue and groove joint technology.

[0057] Fig 13c illustrates both sides of the same dynamic stator wheels that it is shown in Fig. 13b, with all magnetic helical strips are attached. This drawing also illustrates the compatibility of the tongue and groove joint technology with engine design.

[0058] In Figs. 3, 4 and 7 transmission 13 consists of a driving bevel gear 14, a driven bevel gear 15 with shaft 16, a bevel gear 17 attached to this shaft, a bevel gear 18 with shaft 19 and a bevel gear 20 attached to this shaft. Bevel gear 20 is driving gear with respect to bevel gear 21. Driven gear 21 is attached to rotor's shaft 2 and sets rotor 5 in motion by magnetic force interaction between magnets 4 of the rotor and magnetic strips 8 of the dynamic stator 12.

2014240249 02 Oct 2014

[0059] The transmission 13 is not limited to the precise arrangement shown in the drawings. For example it is possible to replace bevel gears 17, 18 with shaft 19, 20 and 21 by two spur gears 22 and 23 attached to shaft 16 and output shaft 2 as it shown in Fig. 5. In that case, if a total length ***L*** of all dynamic stator's wheels is equal to ***l***, ***2l***, ***3l, 4l*** and so on, we have to use spur gears ratio 1 : 1, 2 : 1, 3 : 1, 4 : 1 and so on accordingly. It means if spur gear 23 has 96 teeth we will use spur gear 22 with 96, 48, 32 and 24 teeth accordingly.

[0060] The described magnet engine has long main flexible transmission 11 with 48×2 angular bevel gears in series. That is why a double or a triple transmission 13 will be useful. The extra transmission of torque from dynamic stator to the rotor's shaft provides equal parts of the main long transmission with unloading.

[0061] Magnets 4 in every set of magnets in Figs. 1 - 5 and Figs. 7a - 7c are fixed to the outer periphery of the rotor's cylindrical wheel 3 at slightly different angle. It is possible to replace them in every set by strip of the **neodymium-iron-boron flexible magnet (NdFeB)** curved in accordance with angular position of magnets 4. NdFeB flexible magnet is a kind of permanent magnetic material with high power which could be used in magnet engines.

Industrial Applicability

[0062] The disclosed magnet engine does not contravene the laws of physics and its performance specification is not beyond calculations and engineering design. No special design techniques or unique technologies are needed to build this engine. It can be built using common components and materials of modern electric motors, machines and mechanisms.

[0063] Harnessing energy from attraction or repulsion of permanent magnets would be of great advantage. What is very important is that the energy source is clear.

2014240249 02 Oct 2014

CLAIMS

1. A magnet engine comprising:

   a) a frame;
   b) a rotor with output shaft, a gear, a cylindrical wheel and multiple permanent magnets located on the outer periphery of said cylindrical wheel rotatable mounted on said frame;
   c) a dynamic stator with multiple the same cylindrical wheels, each having magnetic helical strips affixed upon the wheel, its own shaft with both ends seated in the bearing bracket attached to the engine frame and arranged around the rotor in a main endless transmission; and
   d) at least one additional transmission with a set of gears transmitting torque, rate and the rotation direction from the stator's wheels to the rotor's shaft.

2. The magnet engine of claim 1, wherein power from one cylindrical wheel to another in main transmission is transmitted by means of flexible joints connected between two nearby shafts of all dynamic stator's cylindrical wheels.

3. The magnet engine of claim 1, wherein power from one cylindrical wheel to another in main transmission is transmitted using angular bevel gears on both ends of all dynamic stator's cylindrical wheels.

4. The magnet engine of claim 1, wherein power from one cylindrical wheel to another in main transmission is transmitted using tongue and groove on both ends of all dynamic stator's cylindrical wheels.

5. The magnet engine of claim 2, 3 and 4, wherein all magnetic helical strips affixed at an acute tangent angle to the dynamic stator's wheels.

6. The magnet engine of claim 2, 3, 4 and 5, wherein magnetic helical strips on dynamic stator wheels are made of permanent magnet or magnetic material.

7. The magnet engine of claim 2 - 6, wherein multiple permanent magnets of the rotor and magnetic helical strips on dynamic stator are in permanent attractive or repulsive interaction in an acute tangent angle relative to the outer circumference of the dynamic stator's cylindrical wheels and located face to face in close proximity during engine operation.

DRAWINGS

2014240249 02 Oct 2014

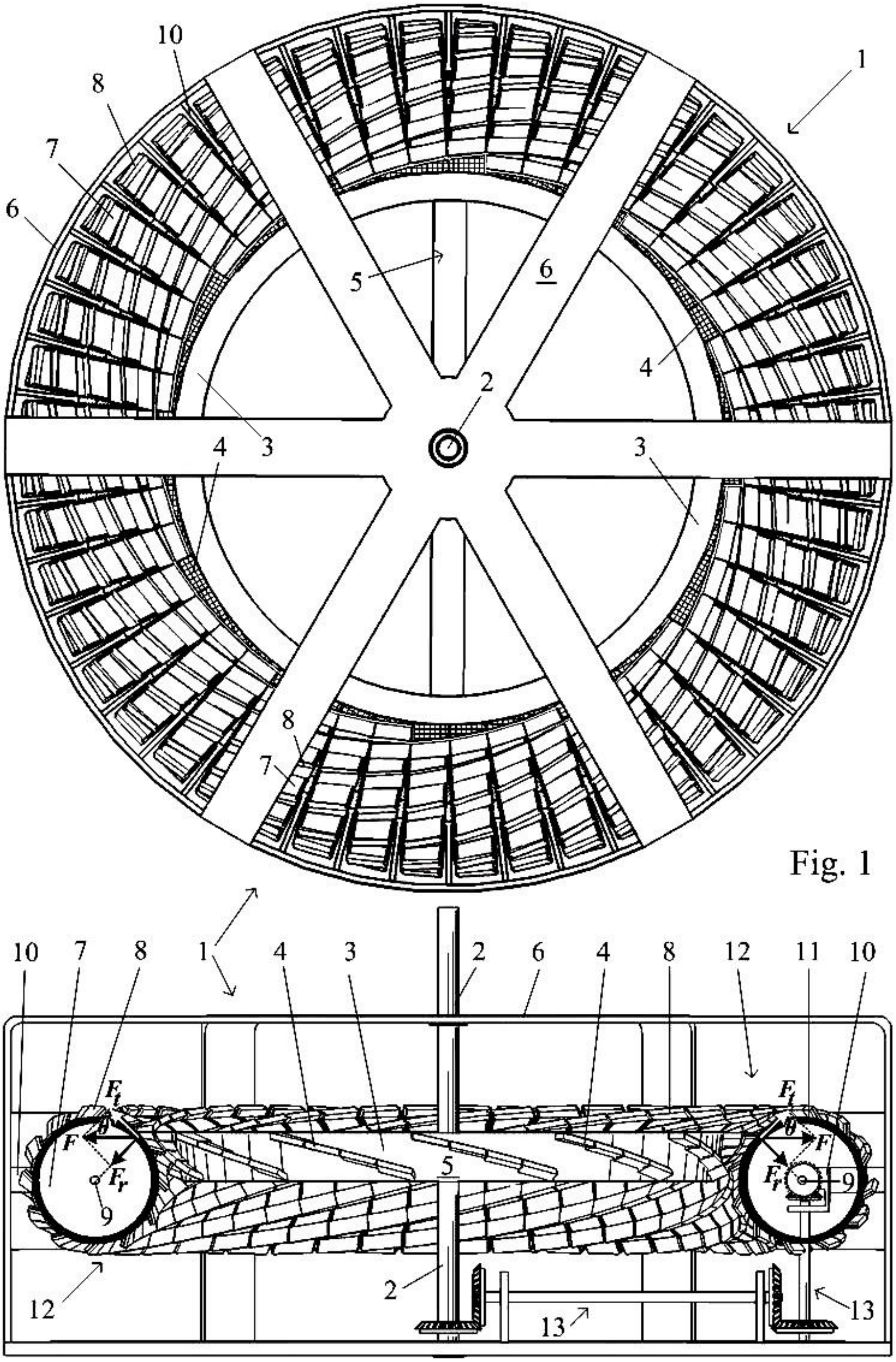

Fig. 1

2014240249 02 Oct 2014

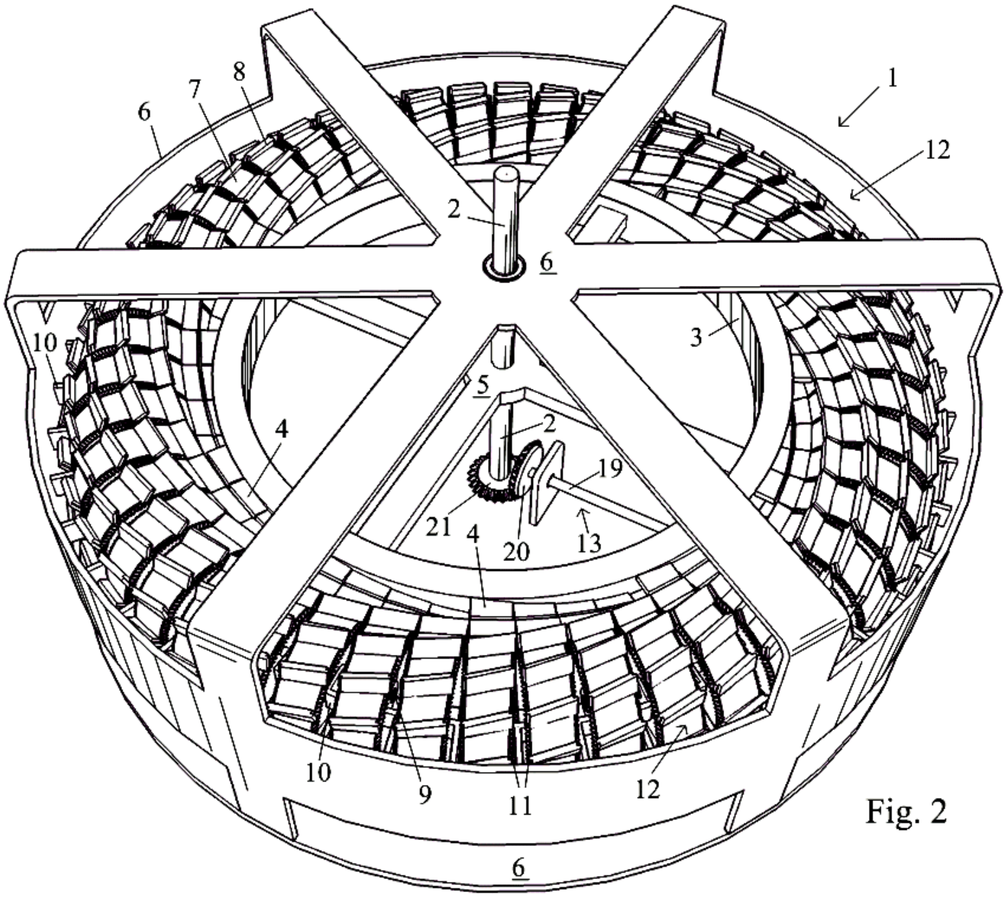

Fig. 2

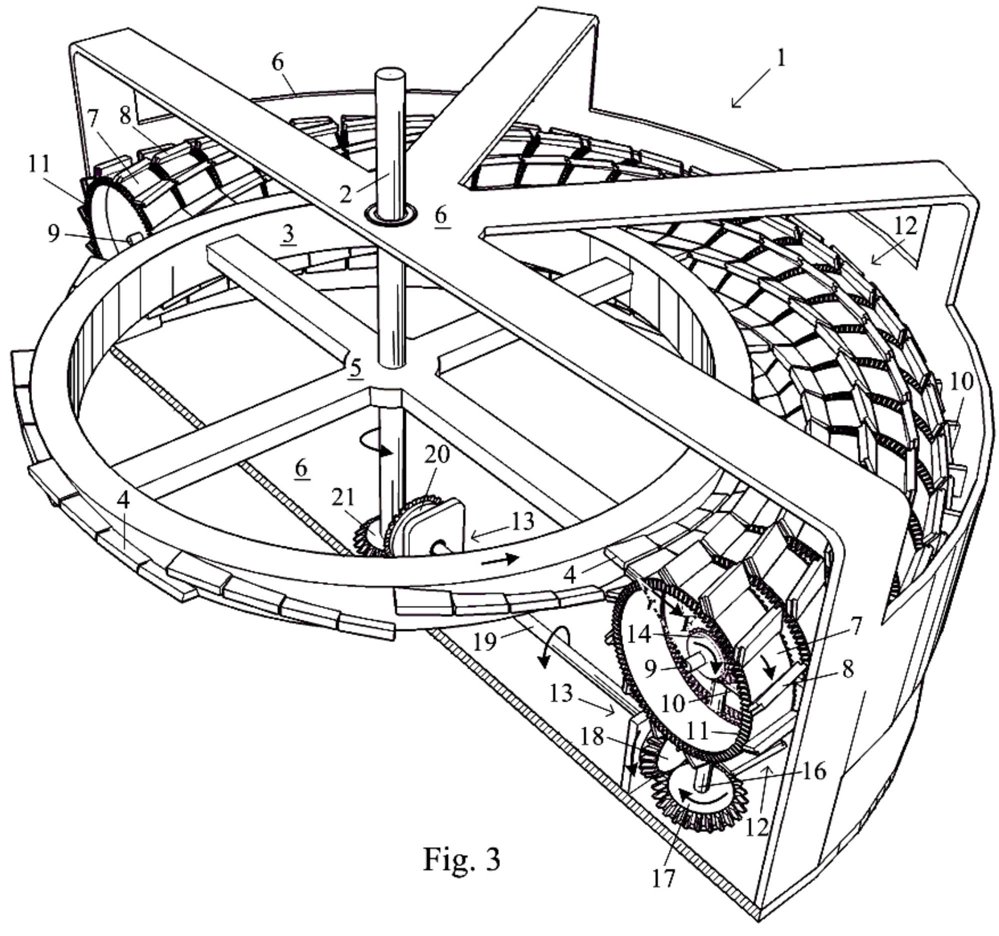

Fig. 3

2014240249 02 Oct 2014

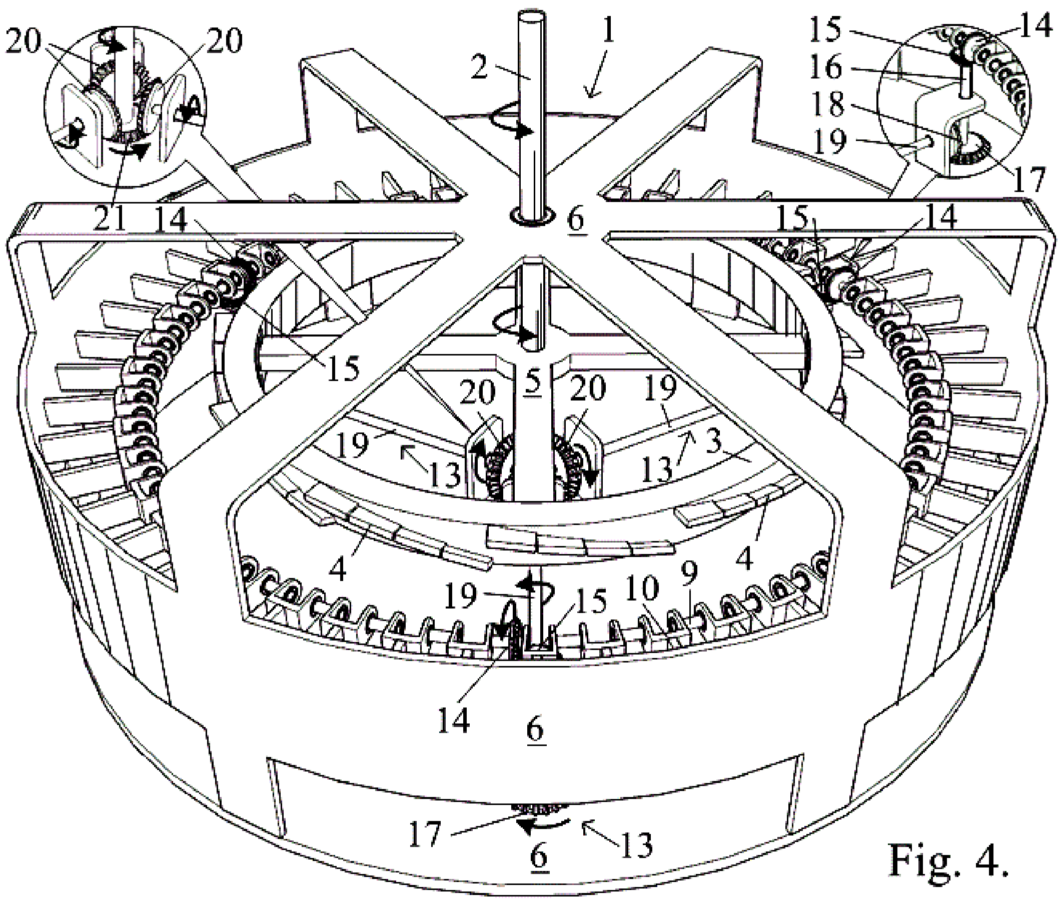

Fig. 4.

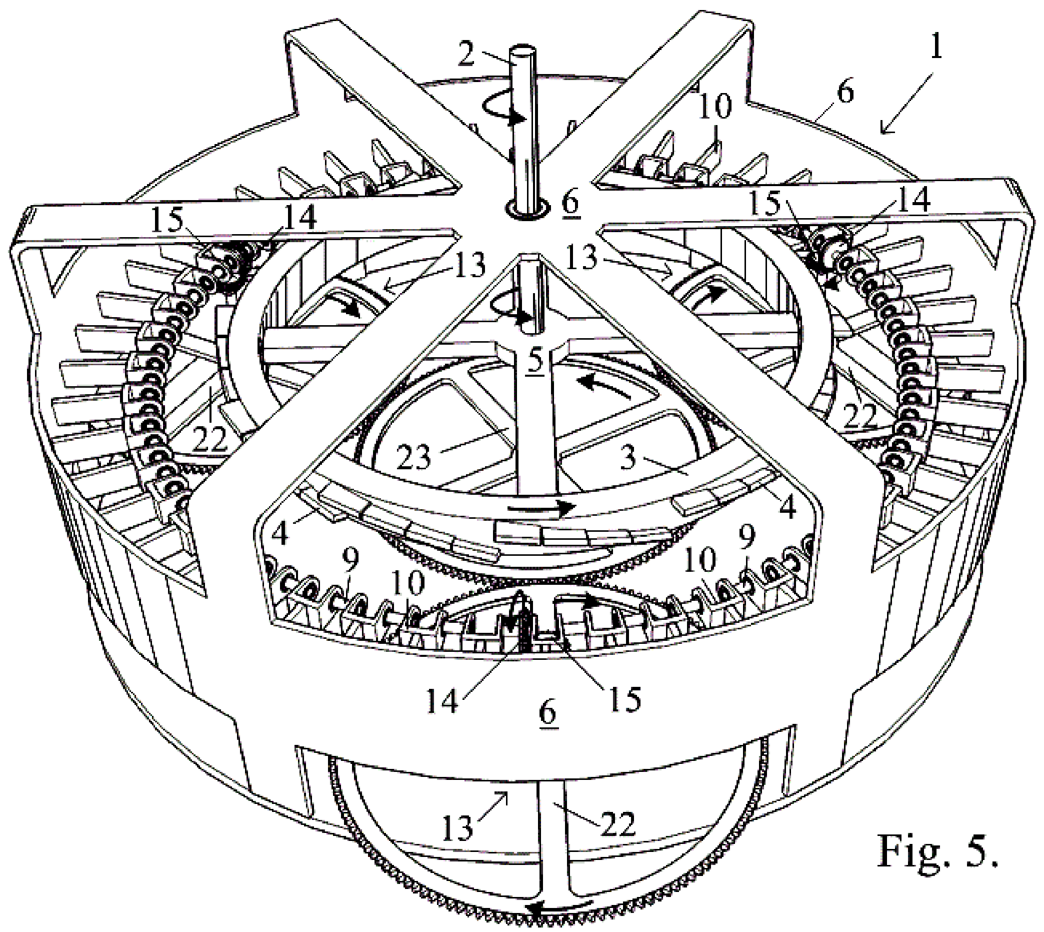

Fig. 5.

2014240249 02 Oct 2014

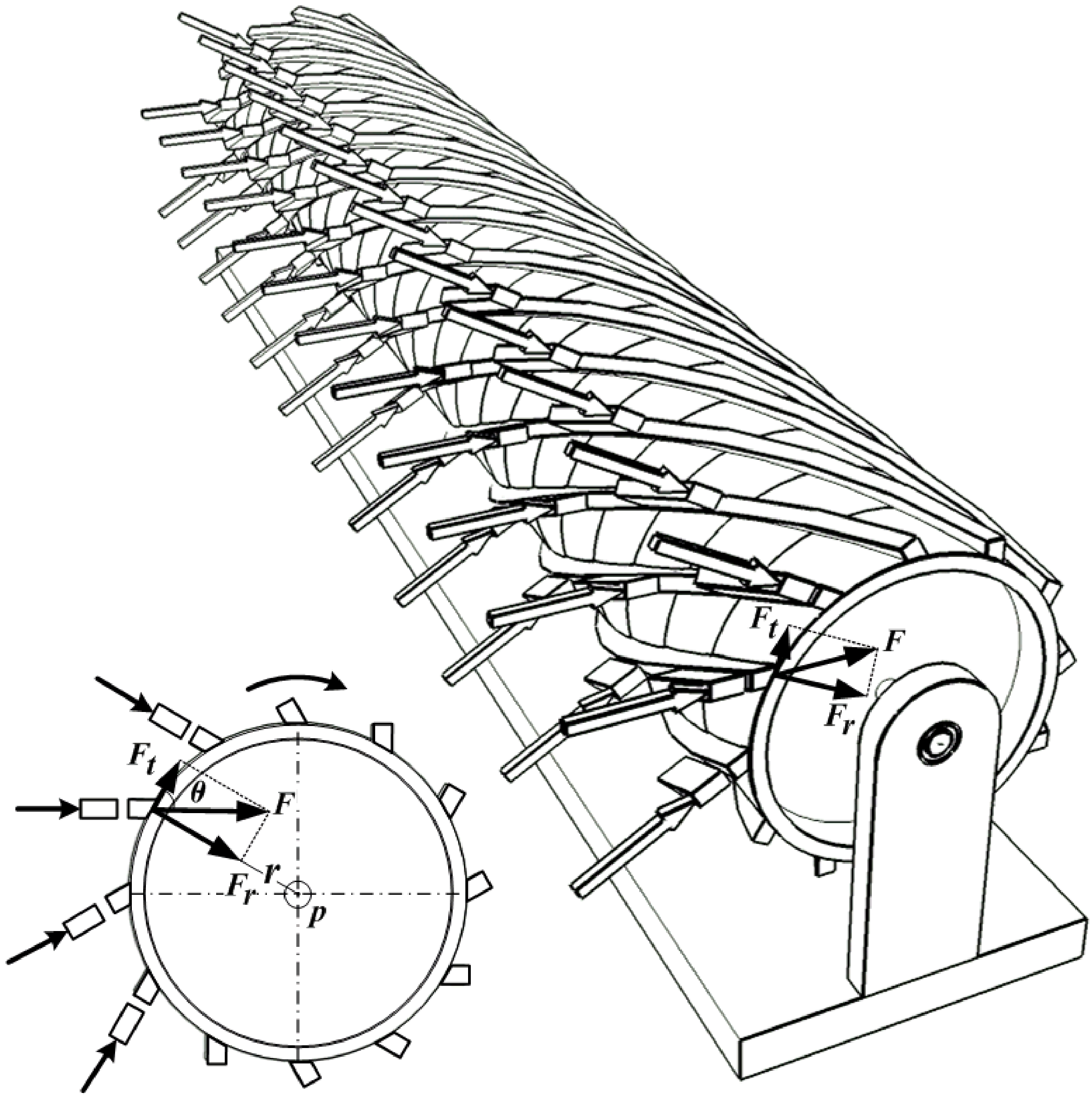

Fig. 6

2014240249 02 Oct 2014

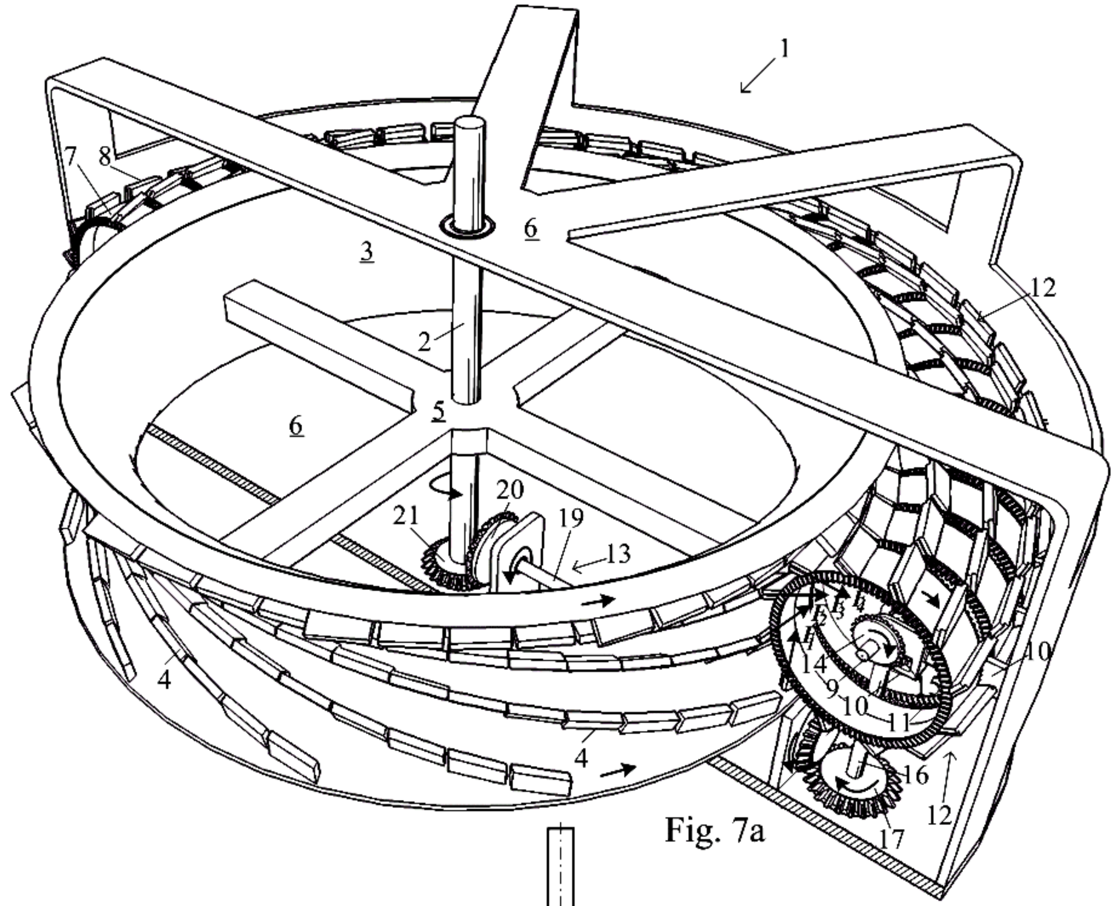

Fig. 7a

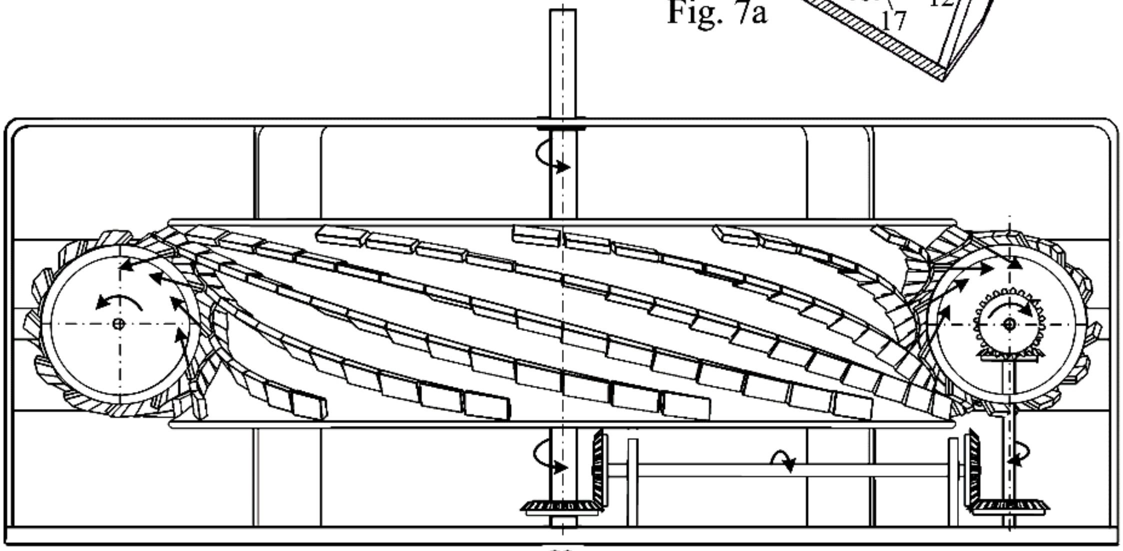

Fig. 7b

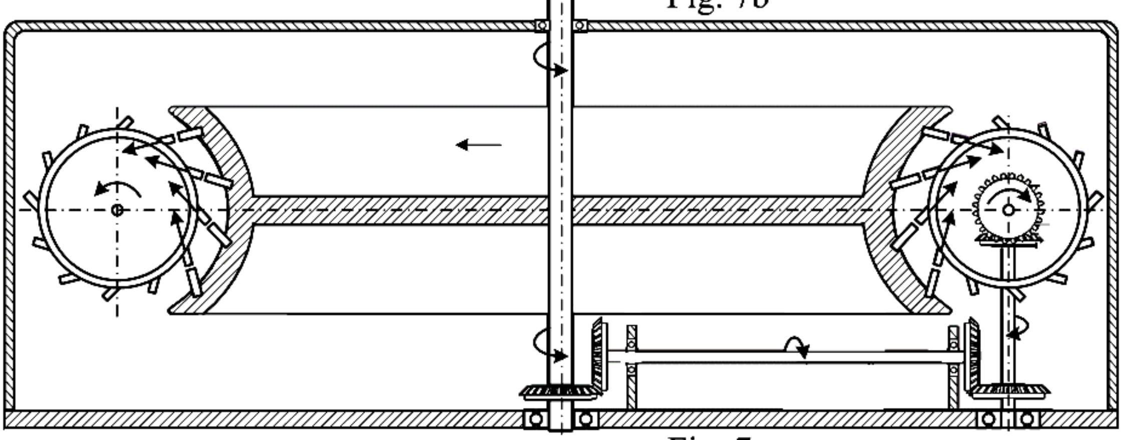

Fig. 7c

2014240249 02 Oct 2014

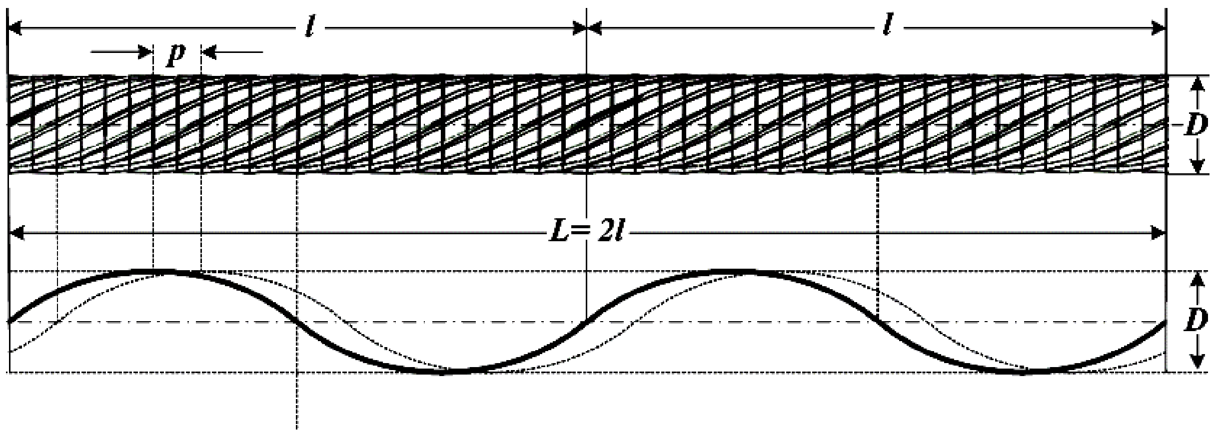

Fig. 8

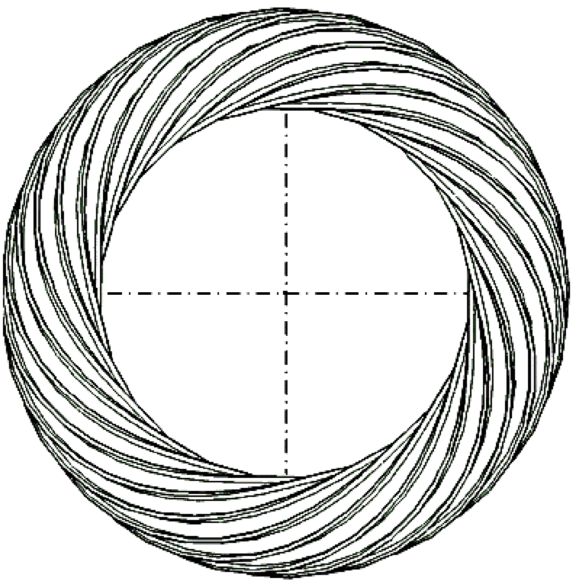

Fig. 9

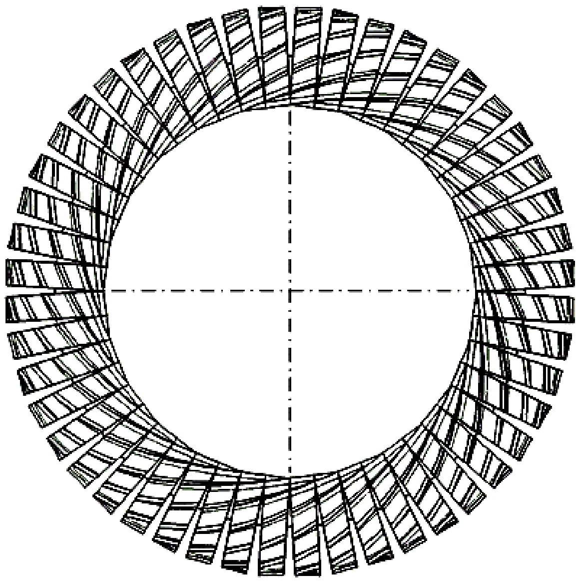

Fig. 10

2014240249 02 Oct 2014

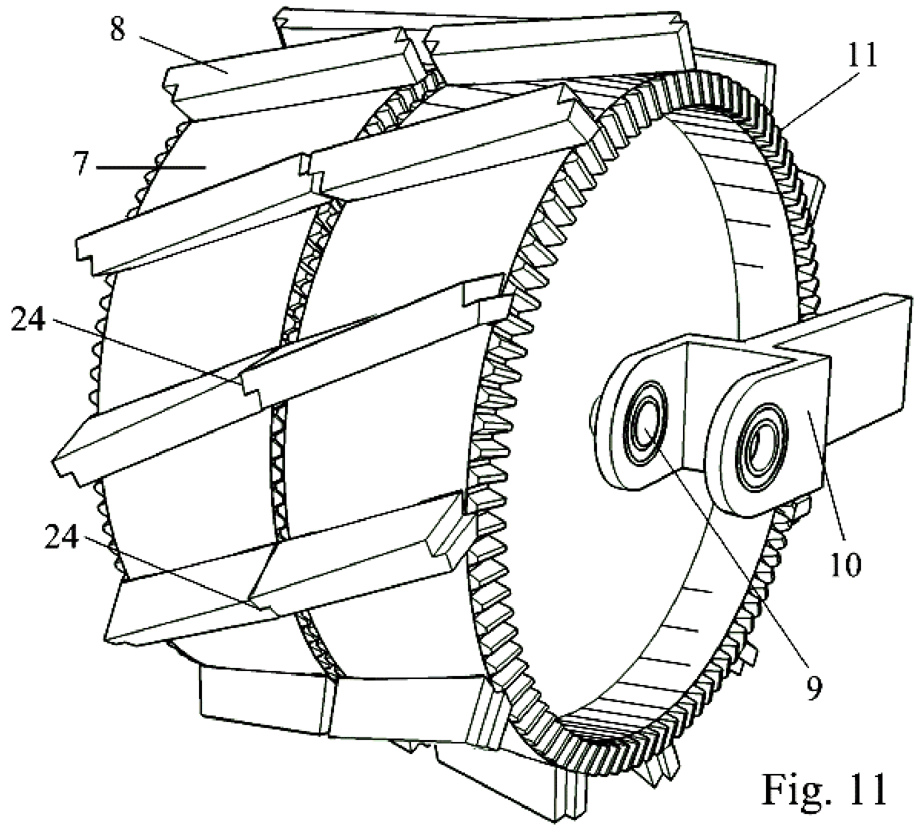

Fig. 11

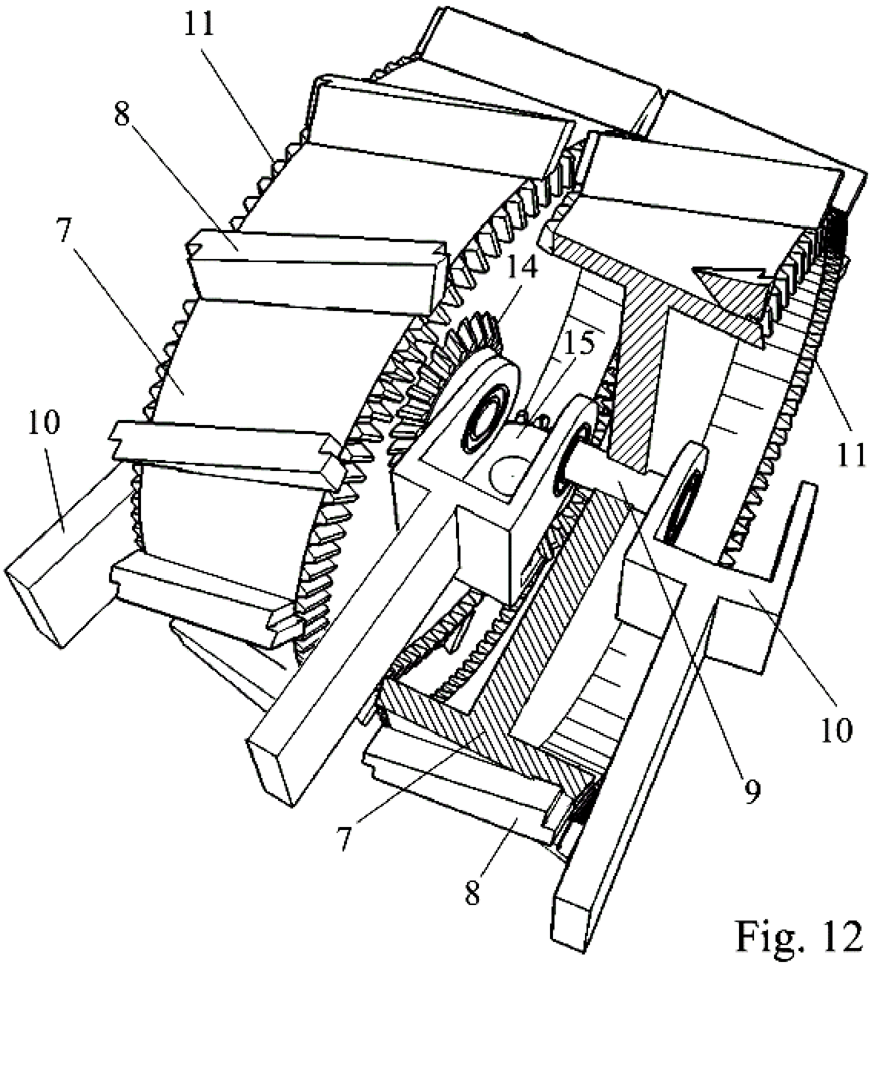

Fig. 12

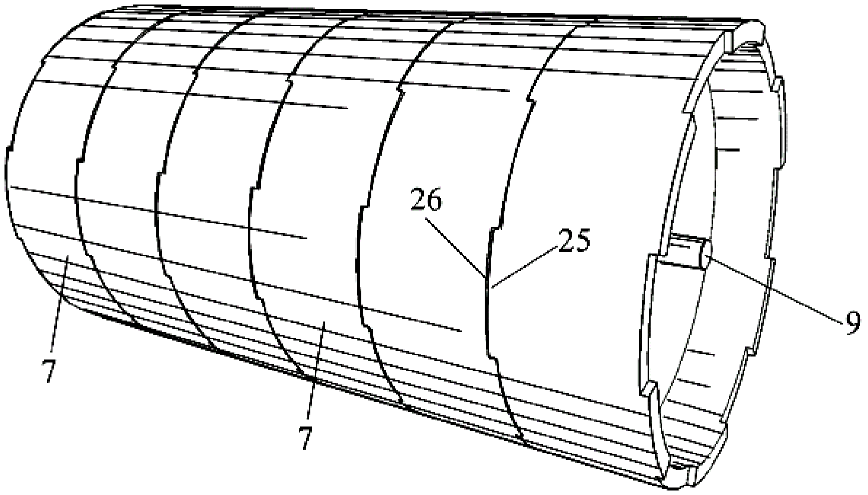

Fig. 13a

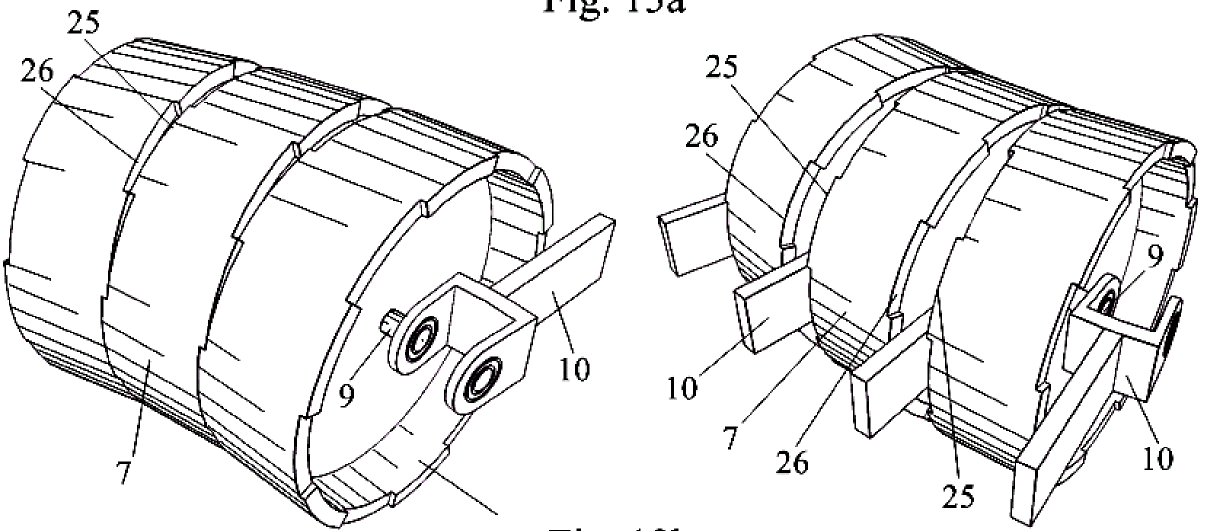

Fig. 13b

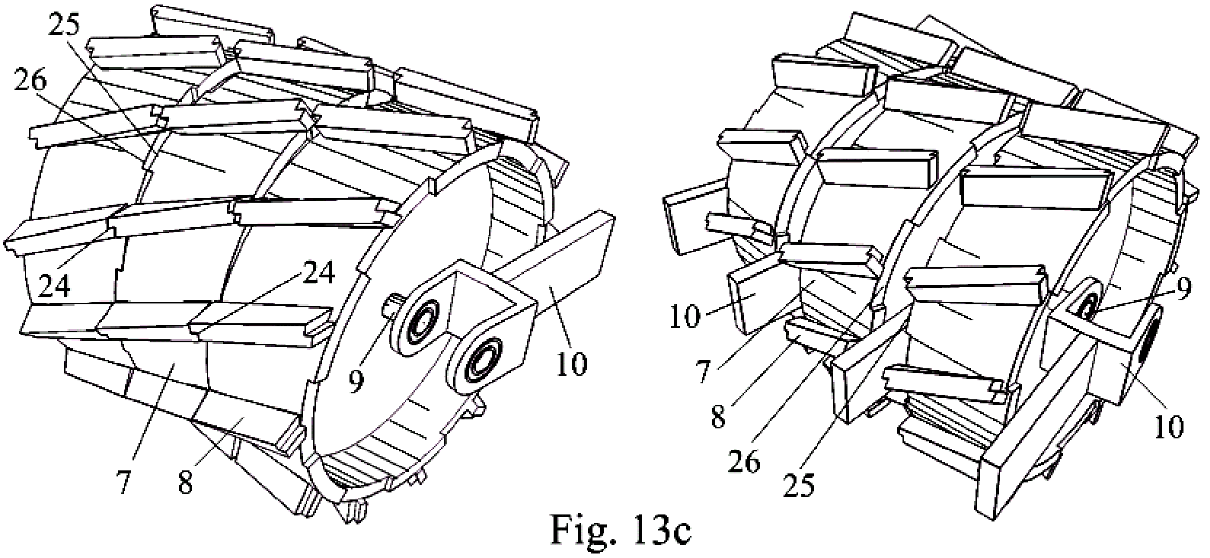

Fig. 13c

20142240249 02 Oct 2014