



(43) International Publication Date
28 January 2010 (28.01.2010)

PCT

(10) International Publication Number
WO 2010/010434 A1

- (51) International Patent Classification:
H05H 15/00 (2006.01) *G21K 1/00* (2006.01)
- (21) International Application Number:
PCT/IB2009/006069
- (22) International Filing Date:
22 June 2009 (22.06.2009)
- (25) Filing Language: Italian
- (26) Publication Language: English
- (30) Priority Data:
MI2008A001357 24 July 2008 (24.07.2008) IT
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- (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, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

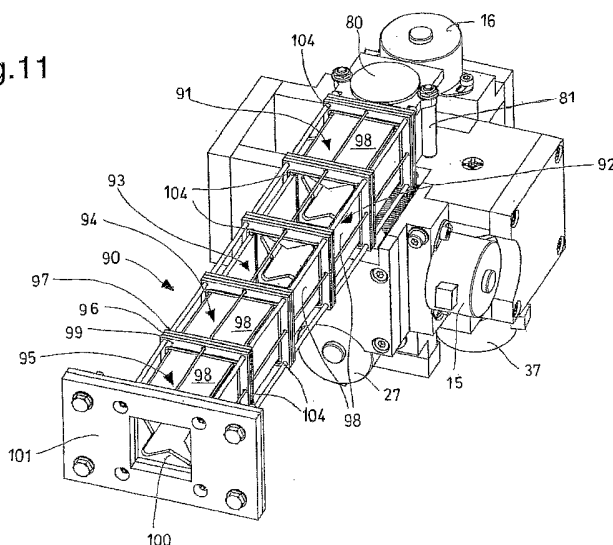
- (84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: HIGHLY EFFICIENT DEVICE FOR TRANSFORMING ENERGY AND RELATIVE METHOD

Fig.11



(57) Abstract: A device for transforming energy (10) comprising, with respect to a system of fixed orthogonal Cartesian axes XYZ, having their origin in the point O, two solids (11, 12) having a circular section and at least partly consisting of heavy metals consisting of fermions forming a mixture of isotopes with nucleuses having a half-integer spin and positioned on the axis Y on opposite sides with respect to O, wherein a first solid (11) rotates around an axis parallel to the axis X and symmetrical for the first solid (11) and a second solid (12) rotates around an axis parallel to the axis Z and symmetrical for the second solid (12), in which the solids (11, 12) are equal and positioned on said axis Y symmetrically with respect to said point O, the solids (11, 12) being suitable for blocking the recombination of the virtual particle-antiparticle pairs which are generated in the vacuum by quantum energy fluctuations according to the Heisenberg uncertainty principle, such a device (10) also comprising means (20, 30, 50, 60, 90) for the generation of electric, magnetic and electromagnetic fields suitable for setting in motion the antiparticles and conveying them against ordinary matter outside of the device (10).

HIGHLY EFFICIENT DEVICE FOR TRANSFORMING ENERGY AND
RELATIVE METHOD

The present invention refers to a highly efficient device and relative method for transforming energy.

- 5 There are currently many means for transforming energy, also known as energy generators that are nevertheless characterised by numerous serious drawbacks.

Let us consider, for example, thermo-electric generation systems. The basic principle consists in
10 supplying thermal energy to liquid water to transform it into pressurised steam, which is then expanded in a turbo-alternator.

The liquid/vapour phase transformation is effected with combustion processes, in which fossil fuels, methane or
15 coal are used. These fuels are generally imported from producer countries, in which there are limited reserves, destined to become exhausted over more or less long periods of time. Moreover, their cost for the purchasing countries is considerable, with negative
20 consequences on the budgets of the paying countries.

Another drawback of these combustion processes consists in the discharging into the atmosphere of a large quantity of carbon dioxide, a substance which is considered harmful for the environment.

- 25 Another process used today for the generation of energy is nuclear fission.

This is also limited, however, by the availability of fissile elements.

Disadvantageously, moreover, this process produces active isotopes with a long half-life, called "radioactive waste", which must be stored under safety conditions even for very long periods of time, before
5 losing their harmfulness.

Another process used today is hydroelectric energy generation.

However, this is also limited by the availability of high water flow per head products.

10 The possibility of said process causing significant environmental changes should also be taken into consideration.

The generation of energy through the conversion of solar energy into electricity requires ample spaces and
15 still suffers from considerable difficulties associated with the non-optimum conversion yield of the solar cells.

The generation of energy through the conversion of solar energy into electricity requires ample spaces and
20 still suffers from considerable difficulties associated with the non-optimum conversion yield of the solar cells.

Finally, controlled fusion generation is still in a non-industrially operative phase and in any case is
25 extremely expensive. With hot plasma machines, in fact, there is still much to be done for reaching operative parameters which ensure that the energy produced is greater than that used up, whereas inertial fusion

machines, which also are extremely expensive, have an industrial efficacy which cannot at present be predicted.

Consequently, all of the processes, which represent the
5 most important methods existing today for the production of energy, suffer from considerable drawbacks (limited world reserves of fossil fuels and of fissile elements, dangerousness of active waste, space, costs, etc.)

10 The purpose of the present invention is to make a device for transforming energy capable of solving the aforementioned drawbacks of the known art in an extremely simple, economical and particularly functional manner.

15 A further purpose is to provide a highly efficient device for transforming energy and a relative method in which the presence of a particular type of "combustible" material is not necessary.

Another purpose is to provide a device for transforming
20 energy and relative method which is capable of drawing energy from the "quantum" vacuum and making it usable.

Yet another purpose is to make it possible to have a device for transforming energy and relative method that does not produce any waste. These purposes according to
25 the present invention are achieved by providing a highly efficient device and method for transforming energy as outlined in claims 1 and 21, respectively.

Further characteristics of the invention are

highlighted by the dependent claims.

The characteristics and advantages of a highly efficient device for transforming energy and of a relative method according to the present invention will appear more evident from the following illustrative and non-limiting description, referring to the attached schematic drawings, in which:

figure 1 schematically shows the space arrangement of some of the components of the device for transforming energy according to the present invention;

figure 2 is a view of an embodiment of the components of figure 1;

figures 3 and 4 schematically show the functioning principle of the components of the device shown in figures 1 and 2;

figure 5 schematically shows the space arrangement of other components of the device for transforming energy according to the present invention;

figure 6 is a view of an embodiment of some of the components of figure 5;

figure 7 schematically shows the functional principle of the components of figure 6;

figure 8 schematically shows the functioning principle of the components of figure 5;

figure 9 shows an embodiment of further components of the device according to the present invention;

figure 10 schematically shows the functioning principle of the components of figure 9;

figure 11 shows an embodiment of the device for transforming energy of figure 9 equipped with an electromagnetic guide according to the present invention;

5 figure 12 schematically shows an enlarged example of a detail of a cell element of the guide of figure 11; and figure 13 shows an overall embodiment of a device for transforming energy according to the present invention. With reference to the figures, a highly efficient
10 device for transforming energy according to the present invention is shown and indicated with 10.

Such a device 10 for transforming energy is capable of producing antimatter, starting from a vacuum, to be taken to mean a quantum vacuum, and subsequently
15 directing it in an orderly manner along an established direction against ordinary matter outside of the device 10 itself.

The term "antimatter" refers to everything that is composed of "antiparticles".

20 It is known in quantum mechanics and from Dirac's equations that each particle of ordinary matter corresponds to an antiparticle, of equal mass. In the case in which the particle is electrically charged, like for example the electron, which is negatively
25 charged, the corresponding antiparticle has an equal electric charge in absolute value, but of opposite sign: in the case of the electron, the positron, its antiparticle, has a positive charge.

The fundamental characteristic of each antiparticle is that in crashing against the corresponding particle, the pair disappears and electromagnetic radiation is released in virtue of a spontaneous process, known as

5 "annihilation".

Having clarified just what antiparticles are, we shall set out why the device 10 transforms energy.

The device 10 generates antiparticles and conveys them outside of it against ordinary matter consisting of

10 particles. When the antiparticles come into contact with the corresponding particles, they annihilate one another and energy is released in the form of electromagnetic radiation.

For example, the annihilation of a positron with an

15 electron frees an amount of energy, in virtue of the relationship $E=mc^2$, equal to 1.022 MeV, i.e. about one mega-electronvolt.

In quantum mechanics there is a principle, known as the "Heisenberg uncertainty principle", that states that it

20 is impossible to simultaneously measure to arbitrary precision the energy of a system and the moment when it is provided with it. It derives from this that according to such a principle, the energy of a vacuum is not zero, but continually fluctuates. When this

25 fluctuation reaches the value of 1.022 MeV, an electron-positron pair can form, since mass and energy are totally equivalent according to the theory of special relativity.

On the basis of the same principle indicated above, this pair can only exist for a very short period of time, in the order of 10^{-22} seconds. After this time, the pair disappears and gives the energy that generated
5 it back to the vacuum. Pairs of this type are called "virtual" and there is no direct physical method for observing them.

However, by generating a gravito-magnetic field, described hereafter, in a working volume, the particles
10 that formed spontaneously, through the effect of the Heisenberg uncertainty principle, in such a volume are subjected to the gravito-magnetic field, generated beforehand, which rotates its spin preventing its spontaneous recombination. In this way the device
15 intercepts the virtual pair of particles.

In view of what is explained above, the device for transforming energy 10 according to the present invention sets itself the following purposes: preventing the spontaneous annihilation of the pairs
20 which are generated from the vacuum according to the Heisenberg uncertainty principle; separating the particles from the antiparticles; subsequently directing the latter along an orderly flow towards a target of ordinary matter outside of the device 10
25 itself.

In this way, it is possible to use the energy released by the annihilation process for specific purposes when the antiparticles reach the target particles .

To effect all of this the device 10 according to the invention comprises, as shown for example in figure 1, with respect to a Cartesian tern XYZ centred at O, two solids 11 and 12 having a circular section and at least
5 partly consisting of heavy metals consisting of fermions forming a mixture of isotopes with nucleuses having a half-integer spin positioned on opposite sides, on the Y axis with respect to O, symmetrically if the two solids are equal.

10 In the particular example shown the two solids 11 and 12 with circular section are two equal hollow spheres made of steel containing mercury, heavy metal consisting of fermions.

Of these two spheres 11 and 12, one 11 rotates around
15 an axis having its own symmetry and parallel to the X axis and the other 12 rotates around an axis having its own symmetry and parallel to the Z axis.

The above two spheres 11, 12 contain mercury, preferably in equal quantities, or any other mixture of
20 isotopes having nucleuses with a half-integer spin, or fermions.

The two spheres 11, 12 are respectively fitted on two shafts 13, 14, made of non-ferromagnetic material, in particular aluminium, one 13 parallel to the axis X and
25 the other 14 parallel to the axis Z, respectively rotated by two electric motors 15 and 16 guided by specific electronics (figure 2).

When the spheres 11 and 12 are at a standstill, the

spins of the fermions that they are at least partially composed, are oriented at random in all directions due to the thermal stirring and consequently possible fields generated thereby are normally zero.

5 On the other hand, when the spheres 11 and 12 are rotated, the spins of the fermions of which they at least partially composed, are aligned, all oriented parallel to the rotation direction of the relative sphere.

10 Indeed, according to the general theory of relativity, every rotating mass determines a so-called "gravito-magnetic field" that progresses axially around the rotation axis. Therefore, such a gravito-magnetic field will also be created around each sphere 11 and 12, due
15 to the rotating masses of mercury inside them.

In this way their influences are accumulated and two fields are produced, generically of the gravito-magnetic type, offset by 90 degrees, as the rotation axes of the spheres 11 and 12 are orthogonal to each
20 other.

these fields have the effect of rotating the spin of an electron or of a positron, or of any other particle having a spin closed to them.

As can be seen in the scheme of figure 3, during the
25 rotation of the spheres 11 and 12, the two masses of fermions are arranged with the centers of mass indicated with G11 and G12, at two different distances with respect to the axis Y due to the fact that the

-10-

sphere 11 rotates around a horizontal axis and the other 12, on the contrary, around a vertical axis.

In the space between the two rotating spheres 11 and 12 there are point sites which are situated at an equal
5 distance from both G11 and G12.

Geometrically, such sites shall be circles, each of which shall be the intersection of two ideal spheres, one with centre in G11 and the other with a centre in G12, having equal radiuses. These circles will be
10 called "separability circles" C or "separability point" M, for the reasons explained hereafter.

In the scheme described above, reference is made to the figures shown and to the embodiment of the two solids 11 and 12 as two spheres containing mercury but,
15 alternatively, other embodiments can be envisaged of the two solids with a circular section as cylinders made of bismuth or another heavy metal consisting of fermions forming a mixture of isotopes with nucleuses having a half-integer spin.

20 By construction, using both spheres with mercury, cylinders made of bismuth or other, in such separability circles the two gravito-magnetic fields shall be of equal intensity; on the other hand, the field immediately to one side of such a circle and
25 closer to its source will have a greater intensity, even if to a small extent, than that on the opposite side; moreover, they will be situated at 90° between each other as the solids 11 and 12 will rotates on axes

at 90° with respect to each other.

Among all of the possible virtual pairs of particles and antiparticles that can be generated from the vacuum, let us consider, purely as an example, a
5 virtual electron-positron pair, which is generated on a circle C or point M as described above. Due to the electric field being exerted, the electron will tend to move away in the negative direction of the axis Y and therefore will move closer to the solid rotating around
10 a vertical axis, whereas the positron will tend to move towards a position closer to the other solid. As soon as they have moved away from each other, the electron will be consequently more influenced by the vertical field due to its greater proximity to the source of the
15 field itself, whereas the positron will be more influenced by the horizontal field for the same reason. Therefore, the electron will align its own spin in the direction parallel to the axis Z and the positron in the direction parallel to the axis X .

20 This phenomenon is schematically represented in figure 3 wherein the spin vectors of the positron and of the electron, indicated with two arrows se^+ and se^- , are aligned with the rotation axes of the two spheres 11, 12.

25 For the sake of greater simplicity of representation, in figure 3 the arrows se^+ and se^- are drawn outside of the circle of separability C, whereas they should be imagined ideally applied in the point of separability

M.

In this way, all of the particles formed in a circle or point of separability rotate their spin, and therefore can no longer recombine, in other words annihilate one another and return to the vacuum giving back the energy provided by it to generate the pair itself, but rather they can be separated through the application of further magnetic fields described hereafter.

This depends upon the fact that the vector sum of the spins of the particle-antiparticle pair is now different from zero.

The reason for this physical phenomenon for which reason in such conditions, i.e. when the vector sum of the spins of the particle-antiparticle pair is different from zero, annihilation is blocked, where it would otherwise occur, is the following.

The vacuum has zero spin and due to the principle of conservation of spin, the total spin vector of each virtual particle-antiparticle pair which is created from the vacuum must also be zero.

This means that at the moment of their generation the particle has the same spin as the relative antiparticle but offset by 180° .

In other words, if in any pair the particle has a certain spin vector, its companion, the antiparticle must have a spin vector with the same intensity and orientation, but in an opposite direction.

As already mentioned, the two rotating spheres 11 and

12 described above, determine two fields situated, for example, at 90 degrees from each other. In this way, the particle is induced by one of the two fields (with which it interacts) to rotate its spin aligning itself therewith, whereas the antiparticle does the same with the other field. The final result is that the spins rotate, reaching, according to the example, an angular distance of 90 degrees from each other, so that, after rotation, the total spin of the pair is no longer zero.

10 This means that, contrary to what normally happens, the pair can no longer return to the vacuum with a zero spin, because, if it did so, it would violate the total spin conservation law.

It should also be noted that in relation to the rotation rate of the two spheres 11 and 12 the relative centres of mass will position themselves at different distances from the axis Y, each time generating separability circles with different tilts.

All of the other virtual pairs which are formed outside of the separability circles, by definition will be situated closer to one sphere than to the other. In this case, a particle will position itself with its spin parallel to the rotation direction of the closer sphere, the other with its spin antiparallel to this and therefore they will almost immediately be annihilated due to the uncertainty principle.

The device 10 also comprises means for setting in motion the antiparticles and conveying them against

ordinary matter.

In particular, it comprises means 20 capable of generating an electric field having force lines, as shown with the dashed arrow F in the example of figure 5 4, roughly parallel to the Y axis in O , in the example orientated from $-Y$ to $+Y$, and translating in the direction X with velocity V_{ex} shown with the relative arrow.

In this way, the virtual particles that have formed, 10 for example in the vicinity of the origin, tend to move in the following way: the electrons tend to move away from the plane $X-Z$ towards the negative Ys , whereas the positrons tend to head in the opposite direction. Their velocity, of common modulus, is caused by the presence 15 of the electric field. Supposing that the velocities along $\pm Y$ are much greater than the velocity along X it can be stated that the two particles will tend to move in the directions of the negative or positive Ys according to their charge, moving apart from one another.

20 Since, considering the hypothesis that it is exclusively the electric field that acts, the spins associated with the two particles at the moment when they form remain antiparallel, once the lifetime granted by the uncertainty principle is over, they 25 recombine giving their mass energy back to the vacuum.

In the example that can be seen in the scheme of figures 1-3, such a field can be obtained by charging, with a certain difference of electric potential, the

opposite faces of three ceramic disks 21, 22 and 23 fitted on a rotating shaft 24 made of insulating material positioned parallel to the Y axis and passing through a point O' on the axis of the negative Zs.

- 5 In particular, the disks are positively charged on a face facing towards the negative Ys and negatively charged on the face facing towards the positive Ys.

In a practical embodiment the shaft 24 can be mounted on two ball bearings thanks to which it can rotate
10 about its own axis.

Such a rotation in the anticlockwise direction, according to the example of figure 2, is made through an electric motor 27 driven by special electronics.

In order to avoid damage to the device 10 caused by
15 collisions of positrons generated into stable existence but not yet conveyed, with electrons belonging to pieces of the device 10, it comprises means 30 (figure 5) capable of generating in the vicinity of the origin O a weak magnetic field B_1 , also shown in figure 5 and
20 of the order of a few gauss, that makes a certain, preferably small, angle ψ with the Z axis in the plane YZ and that has components B_{my} and B_{mz} translating along the Y and Z axes, as well as elements with half-integer spin 40, 41, 42, 43 (figures 6 and 7) associated to the
25 means 30 for generating the magnetic field B_1 .

Moreover, in order to ensure that the earth's magnetic field does not influence the field B_1 , which must not have components outside of the plane YZ, i.e. along the

X axis, it is necessary to orientate the device 10 so that its Y axis is parallel to the direction between the geomagnetic north pole and the geomagnetic south pole, i.e. to that indicated by the needle of a
5 compass. In this case, indeed, the earth's magnetic field will have no projection on the X axis of the machine and therefore the field B_1 will lie completely in the plane YZ.

In order to then eliminate the vertical component of
10 the earth's magnetic field, sheets of magnetized rubber, not shown, are arranged inside the device 10, all around it and on the bottom. By suitably selecting the magnetization intensity, in this way an upward-facing vertical magnetic field is created that is capable of
15 compensating for the downward facing vertical component of the earth's magnetic field.

According to an exemplary embodiment, such means 30, shown in figure 5, there can be two disk-shaped rotating magnets 31 and 32, in which one magnet 31 has
20 its rotation axis parallel to the Z axis and the other 32 has its rotation axis parallel to the Y axis. Both of the rotating magnets 31 and 32 have the relative centres along the X axis situated on opposite sides with respect to O.

25 Preferably, in the case in which the disks 31 and 32 are equal, they are positioned an equal distance from O.

By doing so, each disk 31 and 32 generates in O, and in

its vicinity, a magnetic field parallel to its rotation axis. As already stated, in figure 5 the two fields are indicated with the vectors B_{mz} , generated by the disk 31, and B_{my} generated by the disk 32.

5 Therefore, it will be possible, through a suitable selection of the magnetization intensity of each disk 31 and 32, to obtain in O and in its vicinity a total magnetic field B_1 of desired intensity and direction.

In a practical embodiment shown in figure 6, such
10 magnets 31 and 32 are respectively fitted on two rotating shafts 33 and 34, made of non-ferromagnetic material, preferably aluminium, mounted on ball bearings and are set in rotation by two electric motors 37 and 38 driven by special electronics.

15 Again with reference to figure 6, the elements with half-integer spin are pairs of disks 40, 41 and 42, 43 formed from fermions mounted on each shaft 33 and 34 parallel and on opposite sides of each of the magnetic disks 31 and 32, preferably symmetrically.

20 For each pair, one disk 40 and 42 is made of gold and the other disk 41 and 43 is made of platinum. In particular, with respect to the magnetic disk 31 rotating around a vertical axis, in other words parallel to the Z axis, the gold disk 40 is positioned
25 on the side of the positive Zs, and the platinum disk 41 is positioned on the side of the negative Zs. On the other hand, with respect to the magnetic disk 32 rotating around a horizontal axis, in other words

parallel to the Y axis, the gold disk 42 is positioned on the side of the negative Ys, and the platinum disk 43 is positioned on the side of the positive Ys.

The purpose of the set of rotating disks comprising the
5 disks with half-integer spin 40, 41 and 42, 43 in combination with the magnetic disks 31 and 32 is to protect the components of the device 10 from collisions with the real positron separate from the spheres 11 and 12.

10 Indeed, the quoted set of rotating disks fitted onto the shafts 33 and 34, which are each positioned orthogonal to the rotation axis 13, 14 of a sphere 11, 12 as shown in figure 7, generates gravito-magnetic fields conceptually like the spheres containing
15 mercury, which oppose the gravito-magnetic fields generated by the rotating spheres 11 and 12, compensating them and thus forcing the two particles (the electron and the positron) into equilibrium.

The action of the disks tends to orientate the spin
20 vectors of the pairs of electrons-positrons ideally present in the point of separability M the opposite way with respect to the direction and the set way given by the spheres 11 and 12. In figure 7 the arrows de^+ and de^- schematise the influence of the disks rotating on
25 the spin vectors of the particles, which once again rotate the spins of the particles already rotated by the spheres 11 and 12. In such a situation the effect of the spheres 11 and 12 is cancelled out and after a

time of about 10^{-22} seconds the system goes back to the initial state and the particles, recombining, go back to the quantum vacuum. Therefore, they cannot damage the machine.

5 The reason why the three electrically charged ceramic disks 21, 22 and 23 and the two magnetic disks 31 and 32 also rotate, is the fact that, as indicated earlier, translating magnetic and electric fields are obtained. The three ceramic disks 21, 22 and 23, being
10 electrically charged, generate, as stated, an electric field in direction Y. By setting these three disks 21, 22 and 23 in rotation, the electric field generated by them will translate along the X axis with a certain velocity, given by the product of the common angular
15 velocity ω_e of the disks, shown in figure 8, by the distance O-O', where O' is the centre of the central disk.

Imagining a positron situated for example at O, figure 8, due to the principle of relativity of motion it will
20 be as if the electric field were still and the positron translated with equal and opposite velocity V_{ex} . In figure 8 V_{y1} has also been used to indicate the velocity imparted to a positron by the electric field of the ceramic disks 21, 22 and 23.

25 It should be noted that V_{ex} is necessarily small, of the order of a few m/s, whereas V_{y1} can be of the order of a few thousand km/s.

A similar thing occurs in the case of the magnetic

disks 31 and 32 that by rotating generate translating magnetic fields. It will thus be as if such fields were still and the positron possessed an equal and opposite velocity to those of translation of such fields.

5 Since the ceramic disks 21, 22 and 23 and the two magnetic disks 31 and 32 rotate around three directions orthogonal to one another, it will be as if, for example at 0, all of the fields were still and a positron located there possessed three linear
10 velocities orthogonal to one another. In figure 8 V_{my} and V_{mz} indicate the velocities due to the rotary motion of the magnetic disks 31 and 32. V_{my} and V_{mz} will also generally be much smaller than V_{y1} and of the order of 1 m/sec.

15 Generally, the velocity V_{y1} is a few thousands of km/sec and runs along the Y axis, whereas the remaining three velocities running along the three axes and due to the rotations of the disks are typically 1 m/sec.

Therefore, the resultant V of the velocities shall
20 almost coincide with V_{y1} . Figure 8 also shows the composition of the velocity vectors and shows the vectors V and V_{y1} greatly diverging from one another only for the sake of clarity.

As described earlier the field B1 is weak and oriented
25 so as to form a small angle ψ with the Z axis.

In order to obtain the separation of the positrons and electrons in the circle C or point M of separability, as well as to free them from the so-called "entangled"

state and force the positrons to follow helical trajectories, the device 10 also comprises a solenoid 50 (figure 9), having its axis coinciding with the Z axis. Such a solenoid 50, as can be seen in figure 9, is made of insulating wire wrapped around a cylindrical element 51 made of aluminium or another non-ferromagnetic material. Moreover, such a solenoid 50 is provided on top with a semicylindrical cap 52 open towards a direction of the Ys, in the example of figure 9 the positive one.

Such a solenoid 50 is made to run by an electric current of suitable intensity, so as to generate a sufficiently intense vertical magnetic field B_s , figure 10, inside of it for desired time periods.

Such a field will be in the direction of the Z axis and will combine with the weak one B_1 existing even in the absence of current and due to the two permanently magnetized disks 31 and 32.

The resulting field B, figure 10, will thus make a small angle θ with the Z axis in the plane YZ.

By activating the solenoid 50, the effect upon the spin vectors of the electron and of the positron due to the gravito-magnetic fields of the set of rotating disks, schematized in figure 5 with the arrows de^- and de^+ , no longer balances out the effect on the spin vectors due to the gravito-magnetic fields of the spheres 11, 12. The gravito-magnetic fields of the two spheres 11 and 12 can now intervene and make the two spins of all of

the pairs of particles formed in a centre or point of separability to mutually rotate.

The particles are thus freed from one another.

The mutually freed particles cannot help but move apart
5 set in motion by the quoted electric field determined by the three ceramic disks 21, 22 and 23.

It is well known that in such conditions the positrons move around the force line of the resulting magnetic field B with a helical movement. The same amount of
10 positrons that goes helically upwards generates an equal amount of electrons that goes downwards and is discharged to earth.

Thus the location in which the separation of the virtual particles can take place will consist, from one
15 time to the next during the activation time of the solenoid, of all of the infinite points of a small volume, having as its sides the distances covered by the electric field and by the two magnetic fields, schematized in figure 8. Consequently, the number of
20 particles released by the system will greatly increase, in proportion both to the duration of the current impulse, and to the rotation velocity given to the disks.

Such a helical movement is the composition of two
25 motions: one a rotation around the field, due to the component of the velocity normal to the field $V \cos \theta$, which generates a Lorentz force; the other a translation along the field, due to the component $V \sin \theta$

of the velocity of the positron, parallel to the direction of the field.

Since θ is small, the first component greatly predominates, whereas the second is much smaller.

5 Before giving current to the solenoid 50, it is possible to intervene, as explained above, on the control electronics of the three electric motors 27, 37 and 38 in order to vary the three mutually orthogonal velocities possessed by each positron.

10 Then by circulating current in the solenoid 50 it is possible to capture the positrons present in the vicinity of the origin forcing them to move according to spirals around the field B indicated in figure 10.

The variations made before the circulation of current
15 in the solenoid 50 to the rotation velocities of the electric disks 21, 22 and 23 and magnetic disks 31 and 32, i.e. to the three mutually orthogonal velocities, will have will have the effect of modifying the helix trajectories of the positrons around the magnetic field
20 inside the solenoid 50, which are generated as a consequence of the creation of the field B. Indeed, it should be noted that, once the current that circulates in the solenoid 50 has been set, having set the magnetizations of the two magnetic disks 21, 22 and 23,
25 such a field can be considered constant. Consequently, due to the Lorentz law, each modification to the helix trajectories of the positrons will be exclusively attributed to the values of the three electronically

controllable mutually orthogonal velocities.

By electronically modifying the rotation velocities of the three electric motors, it will be therefore possible, in particular, to apply variations to the
5 pitch of said helix trajectories, thus obtaining a band of particles of antimatter which move controllably.

Of course, variations can be made to the trajectories of the antiparticles also by modifying the current that circulates inside the solenoid 50. This in fact
10 modifies the resulting magnetic field vector B.

Although the requisite of controllability of the trajectories of the anti-particles is not indispensable for the generation of energy, it is considered necessary to describe it herein also in view of future
15 further applications of the new machine.

As can be seen, the presence of the solenoid 50 and of the relative current has the purpose of making the axes of the spirals followed by the positrons parallel and directing upwards as far as the upper mouth of the
20 solenoid 50.

At this point it is essential to position a magnetic cage 60 just above the exit of the solenoid 50, figure 9, consisting of four suitably magnetized permanent magnets, three of which are square magnets 61, 62 and
25 63 positioned around the cap 52 and one is a cylindrical magnet 64 situated above the cap 51. Inside the solenoid 50 and at the cylindrical magnet 64 there are equal shaped plates 70 and 71 made of lead are

positioned, in order to filter a part of the flow of antimatter. The shaped plate 70 and the cylindrical magnet 64 are held in position by a specific covering element 80 made of non-ferromagnetic material, figure 5 11, which is for example connected to the machine by two columns 81 and 82 of the same material.

An electromagnetic guide 90 is situated adjacent to the cage 60. Such a guide 90, as can be observed in figure 11, consists of at least one cell element, or 10 cell. Preferably, as shown in figure 11, five equal cells 91, 92, 93, 94 and 95 are positioned one after the other along an axis parallel to the axis Y .

Each cell, whose side view of which is shown in figure 12, consists of a lamina made of gold 97, a lamina made 15 of lead 96, a lamina made of platinum 99 and four permanent magnets 98 which form the side containment surfaces parallel to the axis Y .

The outer end of the electromagnetic guide 90 ends with a lead lamina 100, bound to two rectangular plates made 20 of a non-ferromagnetic material 101. The metallic laminas made of gold 97, lead 96 and platinum 99, orthogonal to the axis Y, are shaped internally so as to leave a cavity for the passage of the antiparticles.

The guide 90 also envisages the presence of coils 104 of 25 insulating wire, positioned outside the magnets and each adjacent to the platinum lamina.

These coils 104 are in series with each other and with the solenoid 50 and create magnetic fields inside the

guide 90 parallel to the axis of the guide 90 itself, in order to favour the translation of the antimatter inside the guide.

The purpose of this overall arrangement is the following. The positrons are directed, with spiral trajectories, to the upper exit of the solenoid 50.

Here the magnetizations of the three square magnets 61, 62 and 63, of the upper circular magnet 64 and of the side containment magnets 98 of the guide 90, generate a total magnetic field capable of bringing the antiparticles to the inlet of the guide, i.e. making them firstly follow a circular trajectory inside the cage 60 and then a straight translation in the cavity inside the guide 90.

In this way the positrons (or other antiparticles) are extracted from the device 10 with just magnetic and electromagnetic means, i.e. without material guides, which would imply annihilation, and they can be sent onto a target consisting of ordinary matter, where, as stated at the start, they can collide with matter and annihilate themselves with it, returning the mass energy of the relative pairs, which can thus be exploited for practical purposes.

The electromagnetic guide 90, figure 13, is inserted in four sheets of non-ferromagnetic material, one of which is indicated with 103, bound to each other by four angle bars 102 fixed with screws.

Finally, the device 10 can be inserted in a group of

suitably shaped boxes to act as a support for the device 10 itself. The electric wires pass through the boxes for the driving of the motors, connected to a specific control board which contains the control
5 electronics.

It is absolutely easy to understand how the device object of the finding operates.

The device for transforming energy 10 effects the phases of

- 10 a) generating antimatter and
- b) sending said generated antimatter in an orderly manner onto ordinary matter.

In particular, according to the invention the antimatter generating phase comprises a phase which
15 consists of blocking the reciprocal particle-antiparticle annihilation in the virtual pairs which are generated in the vacuum by quantum fluctuation according to the Heisenberg uncertainty principal.

Such blocking of annihilation occurs by imposing a
20 rotation of an angle different from 180° to the spin of the particle with respect to the spin of the relative antiparticle by rotating, along two axes forming said angle different from 180° , two solids 11 and 12 at least partly consisting of a mixture of isotopes with
25 nucleuses having a half-integer spin.

Thereafter, according to the invention, the device 10 sends the antimatter generated in an orderly manner by means a spatially delimited and controllable beam onto

ordinary matter by the generation of magnetic and electromagnetic fields such as to send it, by preventing premature annihilation, against ordinary matter for the generation of energy. It has thus been
5 seen that a highly efficient device and method for transforming energy according to the present invention achieves the purposes outlined above.

The highly efficient device and method for transforming energy of the present invention is suitable for being
10 exploited both on the planet earth and in space where there is no gravity, since it acts upon the virtual particle-antiparticle pairs that are generated in a vacuum, by "vacuum" meaning a quantum vacuum.

The highly efficient device and method for transforming
15 energy of the present invention thus conceived can undergo numerous modifications and variants, all of which are covered by the same inventive concept; moreover, all of the details can be replaced by technically equivalent elements.

20 In practice, the materials used, as well as their sizes, can be whatever according to the technical requirements.

CLAIMS

1) Device for transforming energy (10) comprising, with respect to a system of fixed orthogonal Cartesian axes XYZ, having their origin in the point O, two solids (11, 12) having a circular section and at least partly consisting of heavy metals consisting of fermions forming a mixture of isotopes with nucleuses having a half-integer spin and positioned on said Y axis on opposite sides with respect to O, wherein a first solid (11) rotates around an axis parallel to the X axis and symmetrical for said first solid (11) and a second solid (12) rotates around an axis parallel to the Z axis and symmetrical for said second solid (12), wherein said solids (11, 12) are the same as one another and positioned on said Y axis symmetrically with respect to said point O, said solids (11, 12) being suitable for blocking the recombination of the virtual particle-antiparticle pairs which are generated in the vacuum by quantum energy fluctuations according to the Heisenberg uncertainty principle, said device (10) also comprising means (20) for the generation of an electric field having lines of force passing through O, parallel to the Y axis, and translating along X, to set in motion and convey said antiparticles against ordinary matter outside of said device (10), said electric field being suitable for imposing velocities upon the antiparticles generated, means (30) for the generation of a magnetic field B_1 in the plane YZ having

parallel components translating along Y and Z associated to elements with half-integer spin (40, 41, 42, 43) for protecting said device (10) from contact with the antimatter generated but not conveyed, and a
5 solenoid (50) having an axis coinciding with the Z axis for the releasing of the generated antimatter, whose end comprises a semicylindrical cap element (52) open towards the direction of the positive Y axis.

2) Device (10) according to claim 1, characterized
10 in that it comprises a magnetic cage (60) situated just above the exit of the solenoid and consisting of permanent magnets, and a linear electromagnetic guide (90) connected to said magnetic cage (60) and comprising at least one hollow cell element (91, 92,
15 93, 94, 95) positioned along said positive Y axis wherein said cap (52) is open, wherein each of said at least one cell element (91, 92, 93, 94, 95) consists of a lamina made of gold (97), a lamina made of lead (96) and a lamina made of platinum (99) and four permanent
20 side containment magnets (98), wherein said metallic laminas made of gold (97), lead (96) and platinum (99) are internally shaped so as to leave a through cavity, said solenoid (50), said cap (52), said magnetic cage (60) and said linear electromagnetic guide (90) being
25 suitable for conveying the antimatter generated and set in motion from inside said device (10) towards ordinary matter outside said device (10).

3) Device (10) according to claim 1 characterized

in that said solids (11, 12) are two hollow spheres (11, 12) made of non-ferromagnetic material containing mercury.

4) Device (10) according to claim 3 characterized
5 in that said spheres (11, 12) are respectively fitted on two rotating shafts (14, 13) made of non-ferromagnetic material.

5) Device (10) according to claim 1 characterized
in that said solids (11, 12) are set in rotation by two
10 electronically driven electric motors (15, 16).

6) Device (10) according to claim 1 characterized
in that said generating means (20) of an electric field are three ceramic disks (21, 22 and 23) rotating and fitted on an insulating shaft (24) positioned parallel
15 to the Y axis and passing through a point O' on the axis of the negative Zs, wherein the opposite sides of said three ceramic disks (21, 22 and 23) are charged with a difference of electric potential.

7) Device (10) according to claim 6 characterized
20 in that said shaft (24) is assembled on ball bearings and rotates around its own axis moved by an electronically driven electric motor (27).

8) Device (10) according to claim 1 characterized
in that said means (30) for the generation of a
25 magnetic field in the plane YZ having components translating along Y and Z are two rotating magnets (31, 32) in the form of a disk wherein a first magnet (31) has its rotation axis and symmetry parallel to the Z

axis and a second magnet (32) has its rotation axis and symmetry parallel to the Y axis, the centres along the X axis being situated on opposite sides with respect to O.

5 9) Device (10) according to claim 8 characterized in that said magnets (31, 32) are fitted on two rotating shafts (33, 34) made of non-ferromagnetic material assembled on ball bearings.

10 10) Device (10) according to claim 9 characterized in that said rotating shafts (33, 34) are set in rotation by two electronically driven electric motors (37, 38).

15 11) Device (10) according to claim 10 characterized in that each of said shafts (33, 34) bears said elements with half-integer spin consisting in a disk (40, 42) made of gold and a disk (41, 43) made of platinum assembled parallel and symmetrically on opposite sides to said magnets (31, 32).

20 12) Device (10) according to claim 1 characterized in that said solenoid (50) is an insulating wire wound on a cylindrical element (51) made of non-ferromagnetic material, and that said cap element (52) is made of non-ferromagnetic material.

25 13) Device (10) according to claim 2 characterized in that said magnetic cage (60) consists of three square magnets (61, 62, 63) positioned around said cap (52) and a cylindrical magnet (64) situated above said cap (52).

14) Device (10) according to claim 13 characterized in that below said cylindrical magnet (64) there are two equal shaped plates (70, 71) made of lead, wherein an upper plate (70) and said cylindrical magnet (64) are kept in position by a specific covering element (80) made of non-ferromagnetic material, connected to the device (10) by two columns (81, 82).

15) Device (10) according to claim 2 characterized in that said guide (90) comprises at one of its free ends a lead lamina (100) connected to two rectangular plates (101) made of a non-ferromagnetic material.

16) Device (10) according to claim 2 characterized in that said guide (90) comprises coils of insulating wire (104) positioned outside said magnets (98) and adjacent to said platinum lamina (99).

17) Device (10) according to claim 2 characterized in that said electromagnetic guide (90) is inserted in four sheets (103) made of non-ferromagnetic material bound to each other by four angle bars (102).

18) Method for transforming energy comprising the following phases:

- generating antimatter and
- sending said generated antimatter in an orderly manner onto ordinary matter

characterized in that said antimatter generating phase comprises the phase of blocking the reciprocal annihilation of the particle-antiparticle pairs in virtual pairs which are generated in the vacuum by

quantum fluctuation according to the Heisenberg uncertainty principal by imposing a rotation of an angle different from 180° to the spin of said particle with respect to the spin of said antiparticle and that
5 said phase for conveying said generated antimatter in an orderly manner onto ordinary matter comprises the phase of generating electric, magnetic and electromagnetic fields suitable for setting in motion and conveying said generated antimatter in an orderly
10 manner onto ordinary matter and preventing premature annihilations both before and during said conveying phase.

19) Method according to claim 18 characterized in that said rotation of an angle different from 180° of
15 the spin of said particle with respect to the spin of said antiparticle is obtained by setting two solids (11, 12) at least partly consisting of a mixture of isotopes with nucleuses having a half-integer spin, in rotation along two axes forming with each other, said
20 angle different from 180° .

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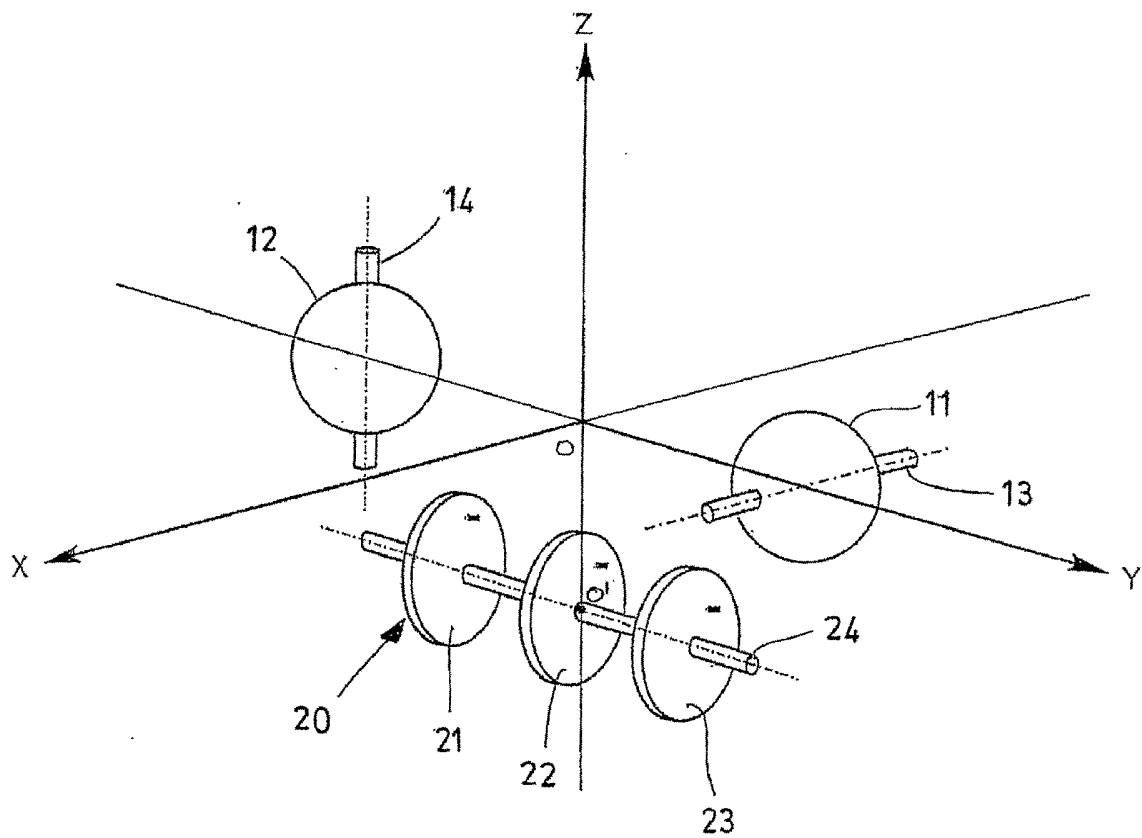


Fig.1

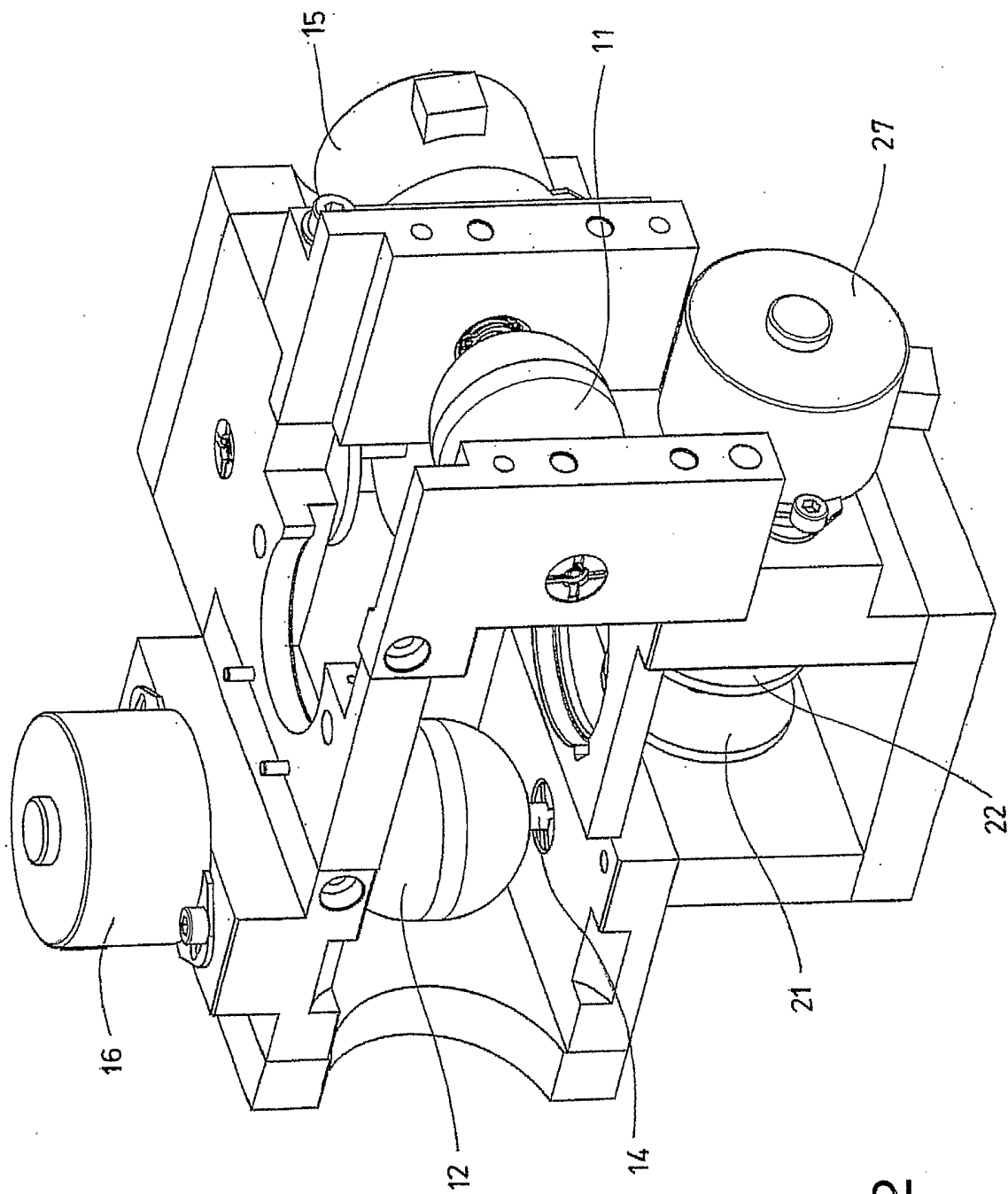


Fig.2

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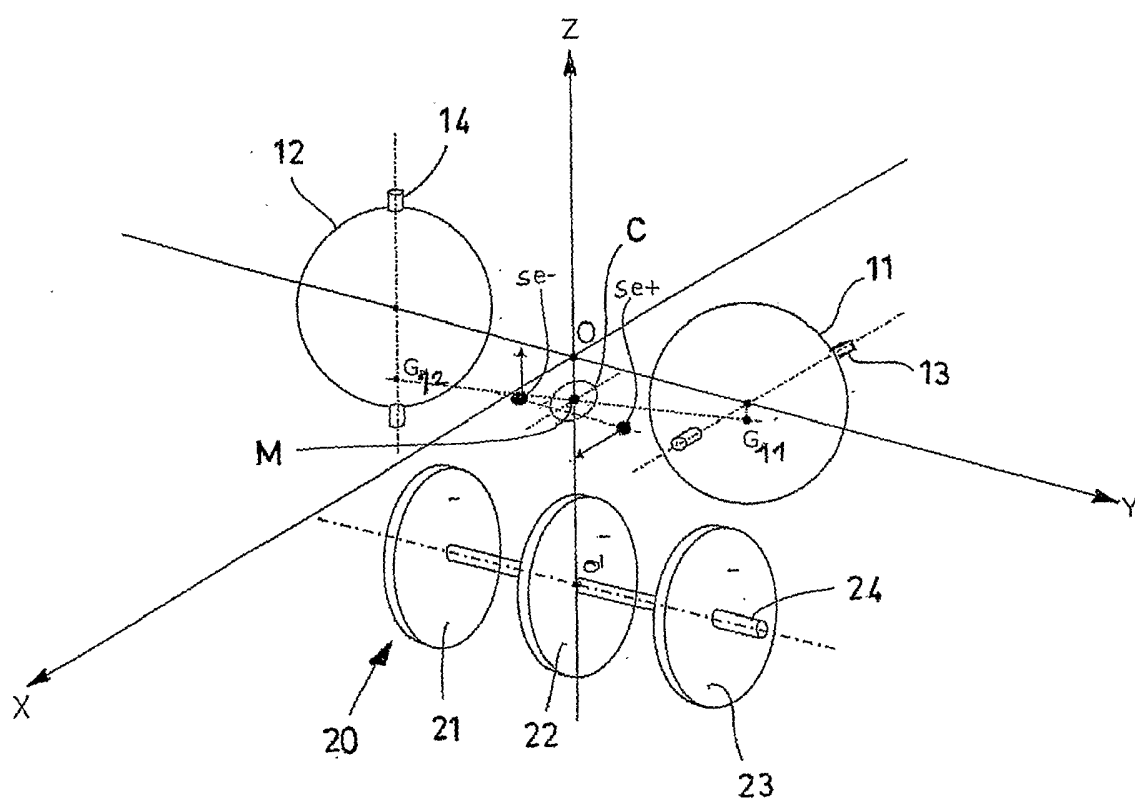


Fig.3

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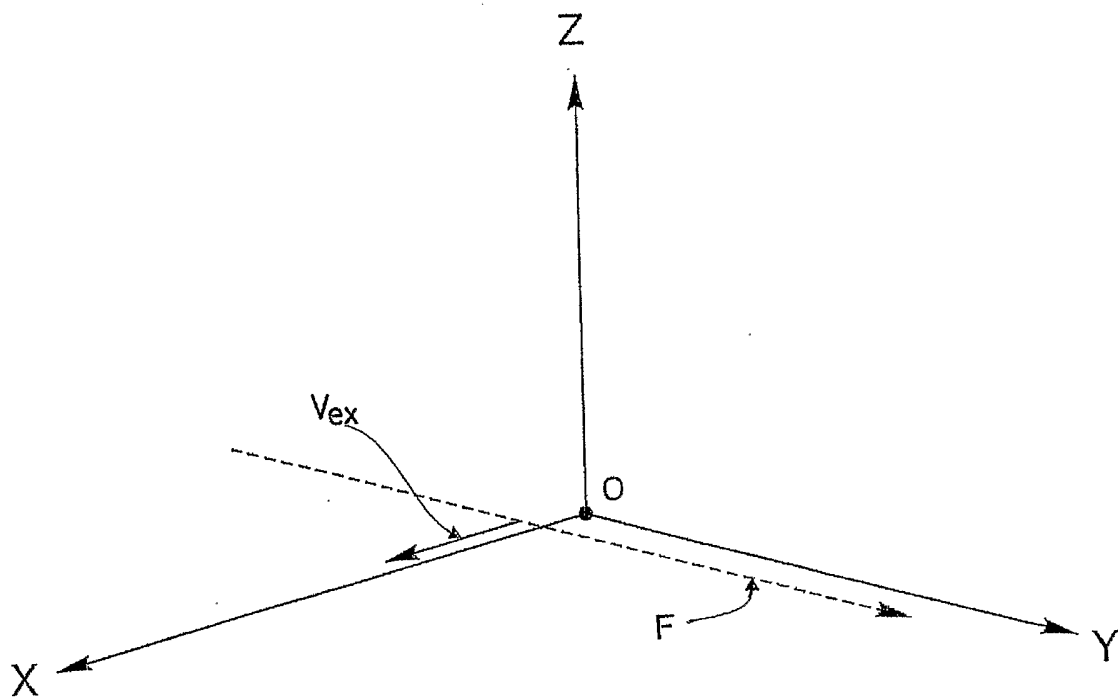


Fig.4

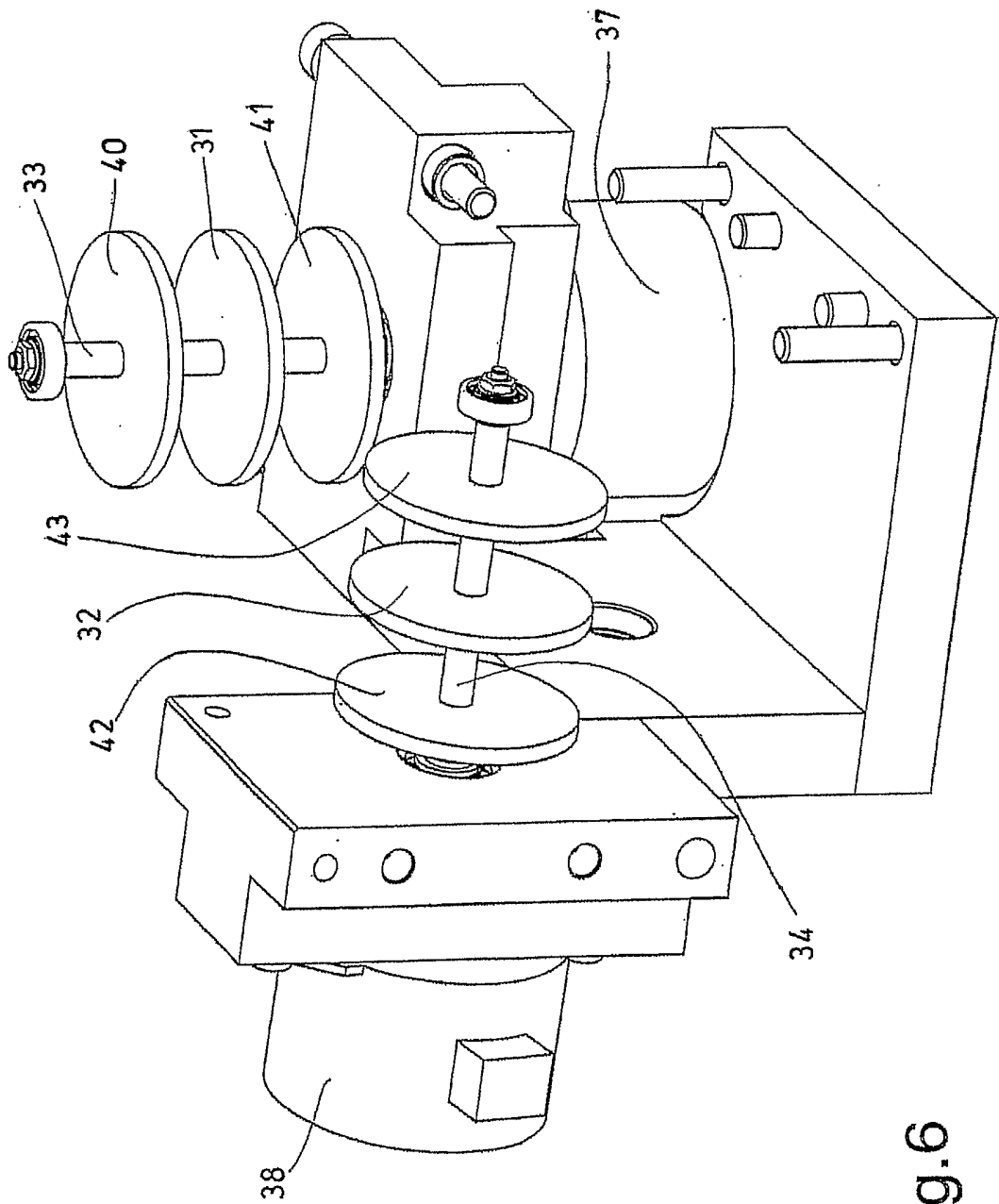


Fig.6

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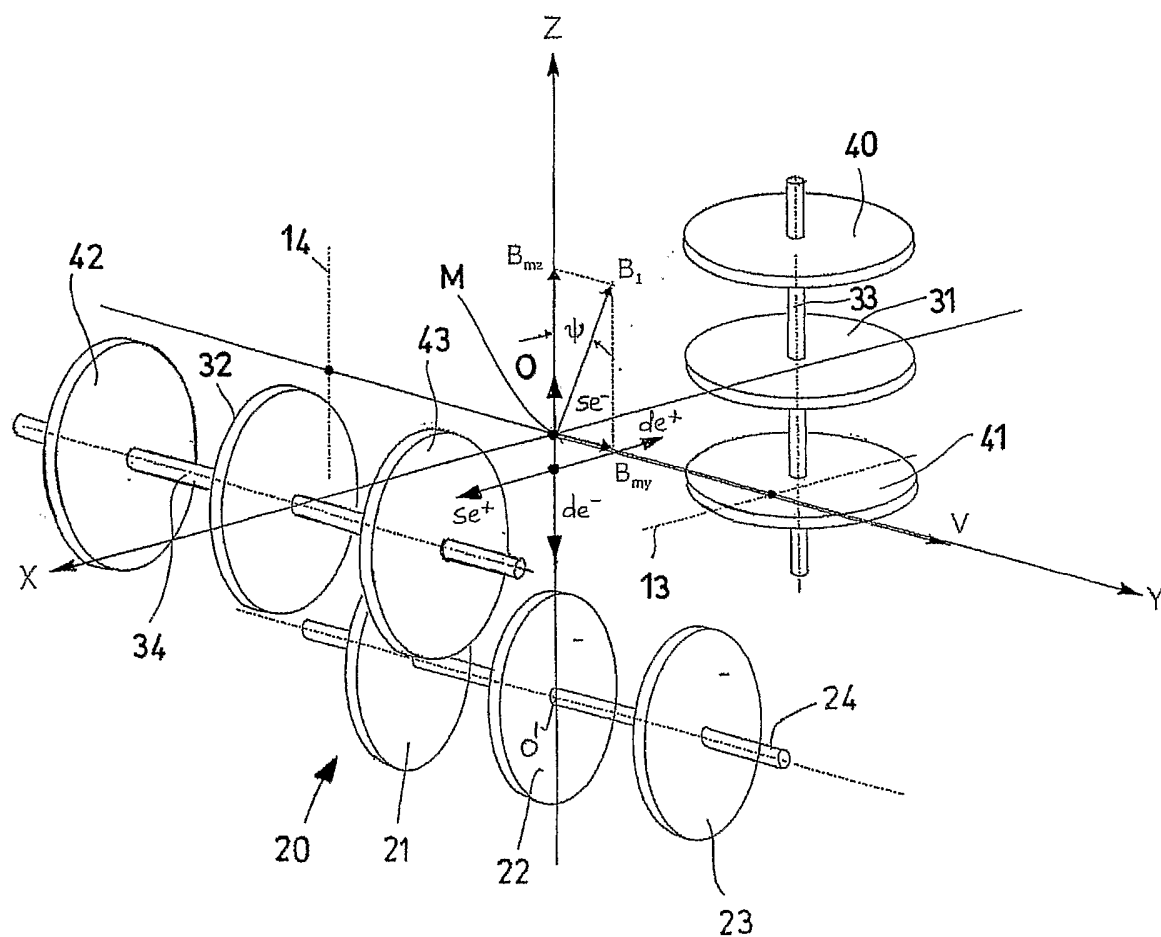


Fig.7

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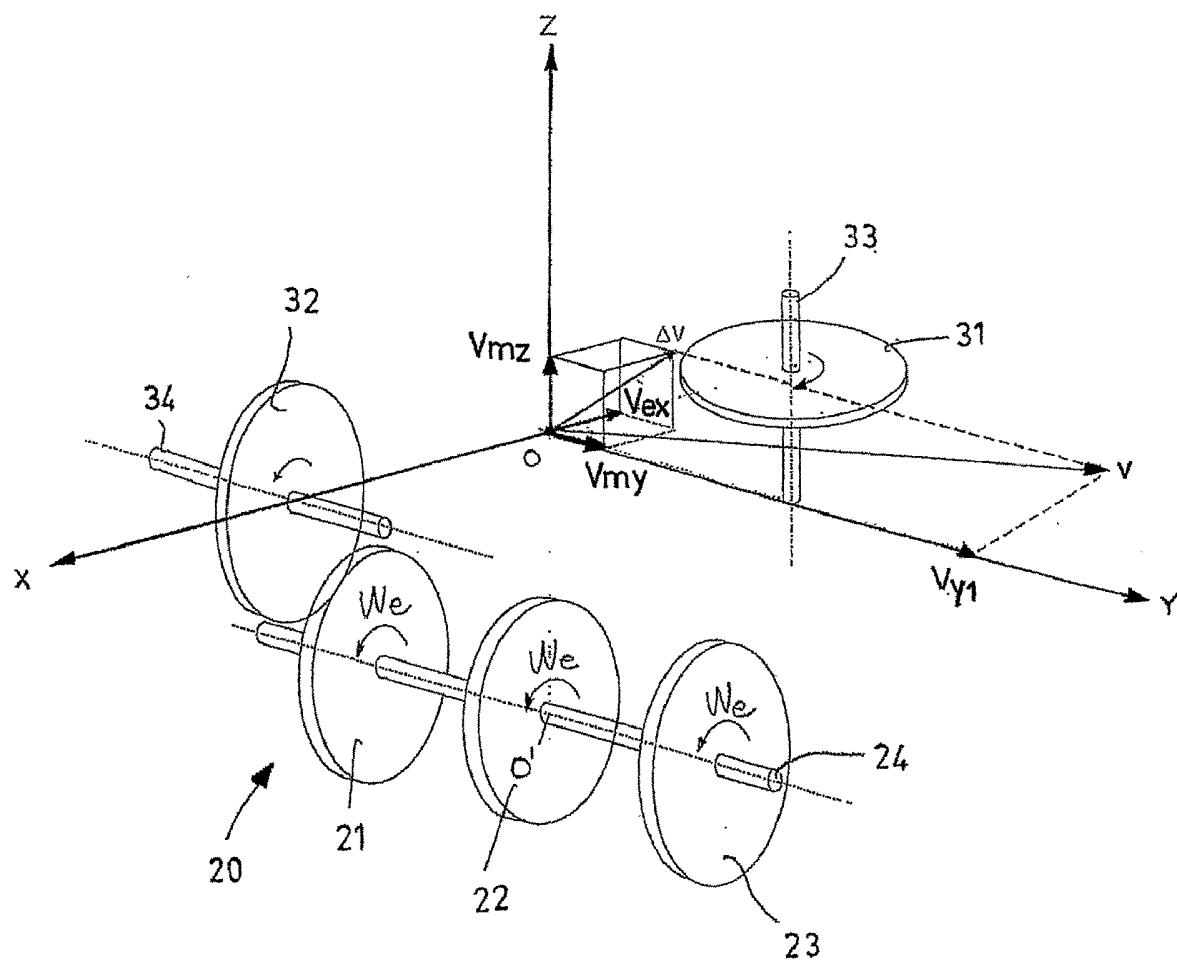


Fig.8

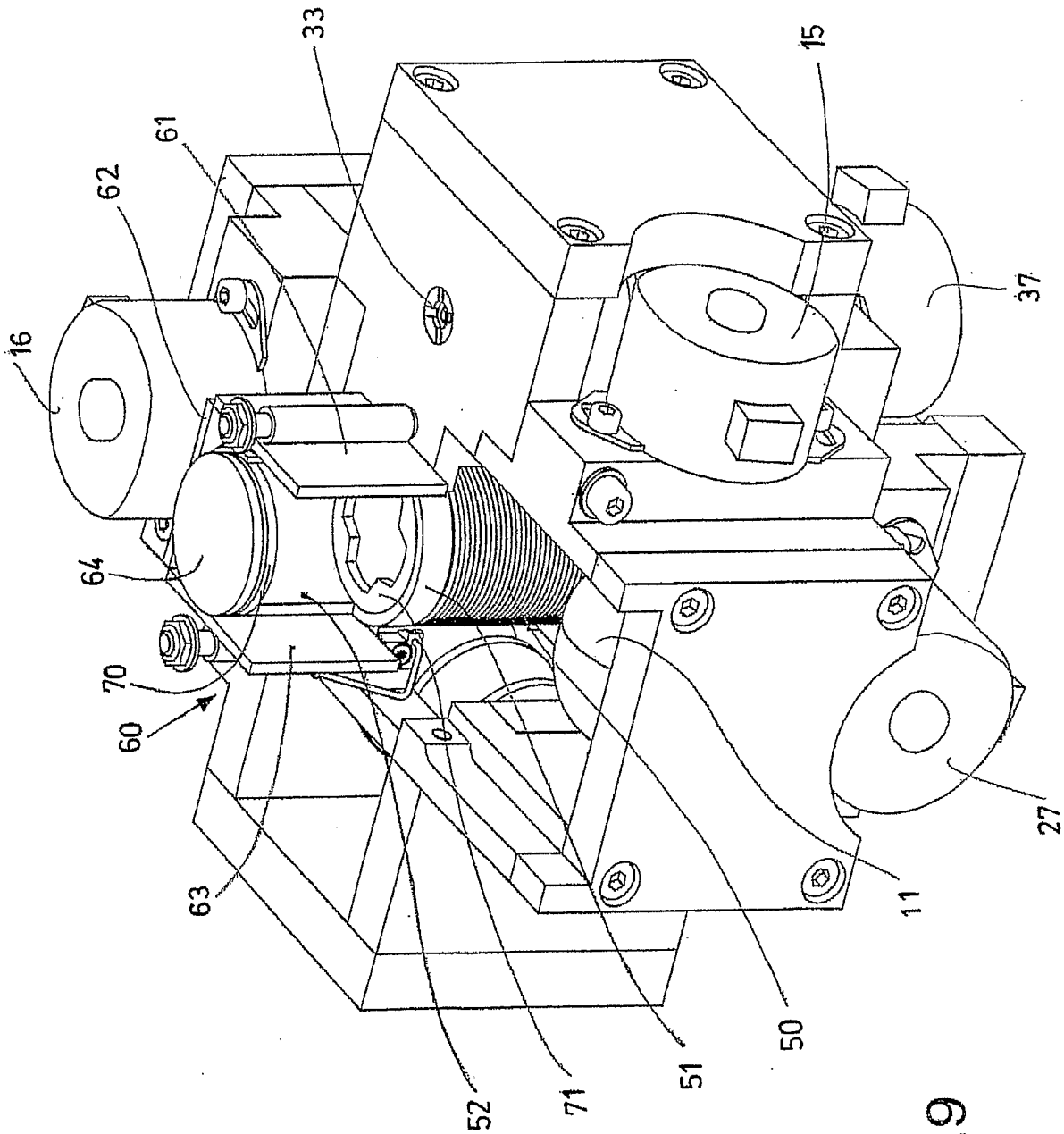


Fig.9

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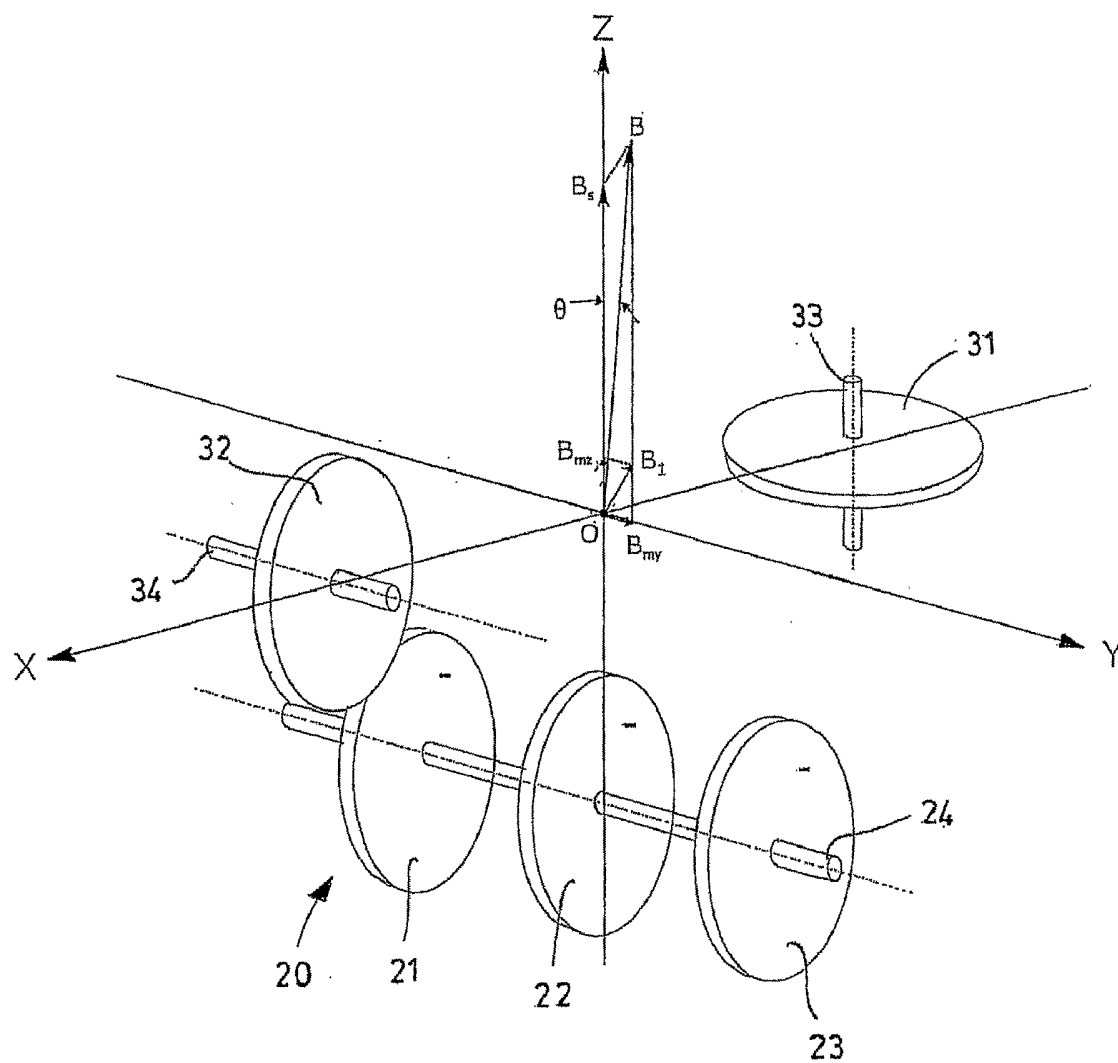


Fig.10

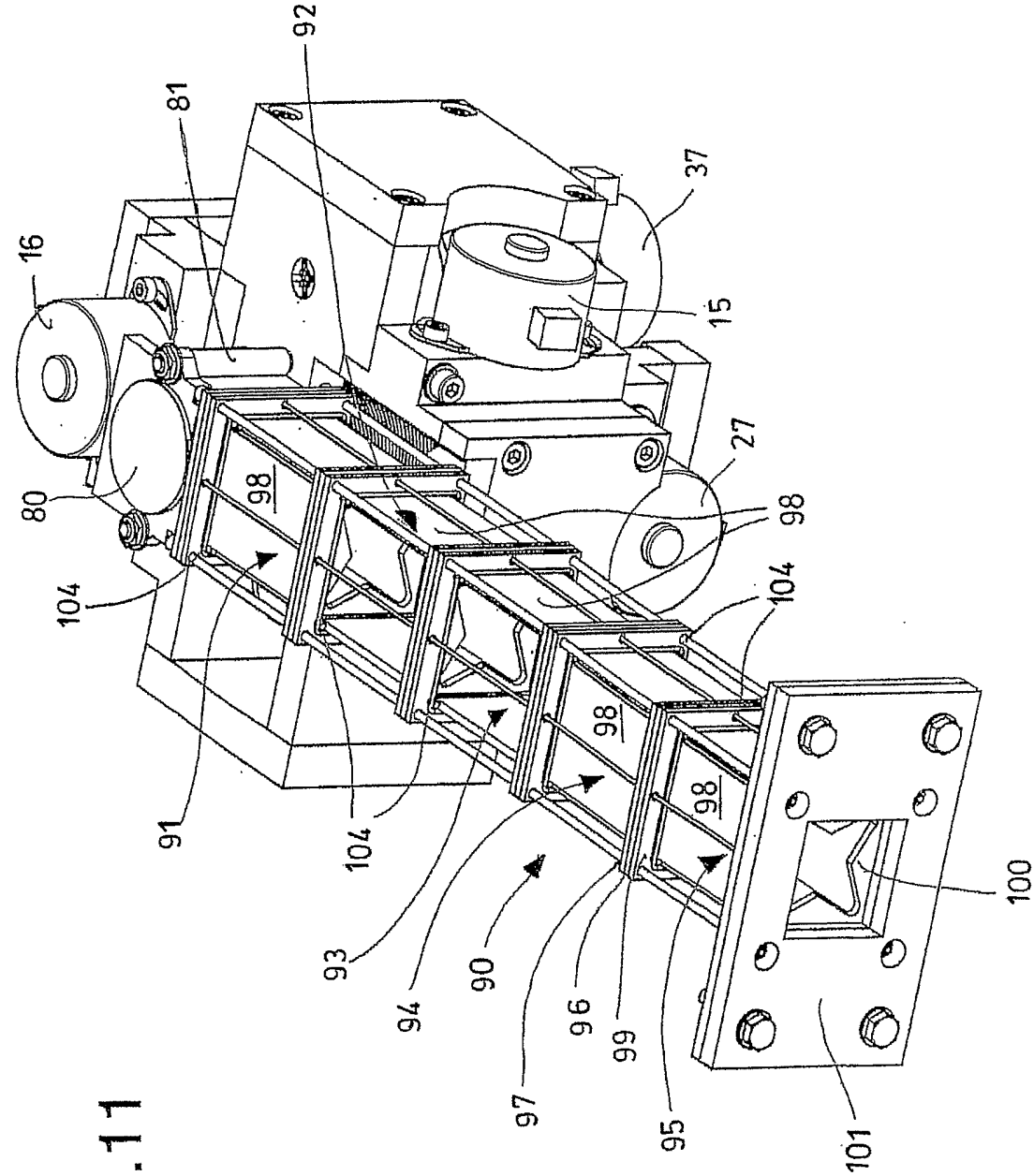


Fig.11

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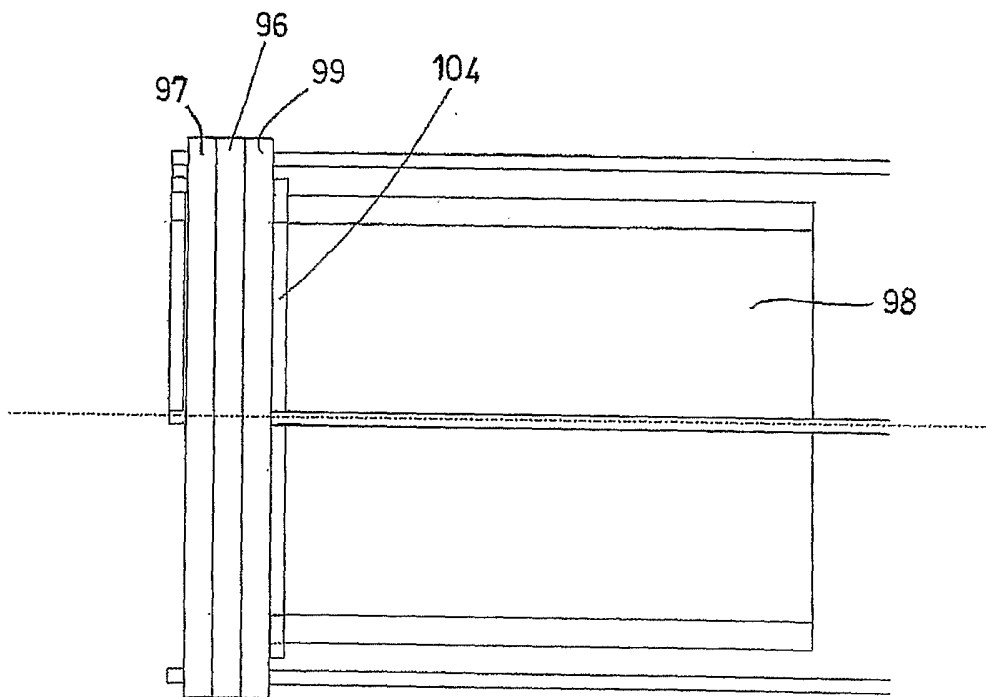
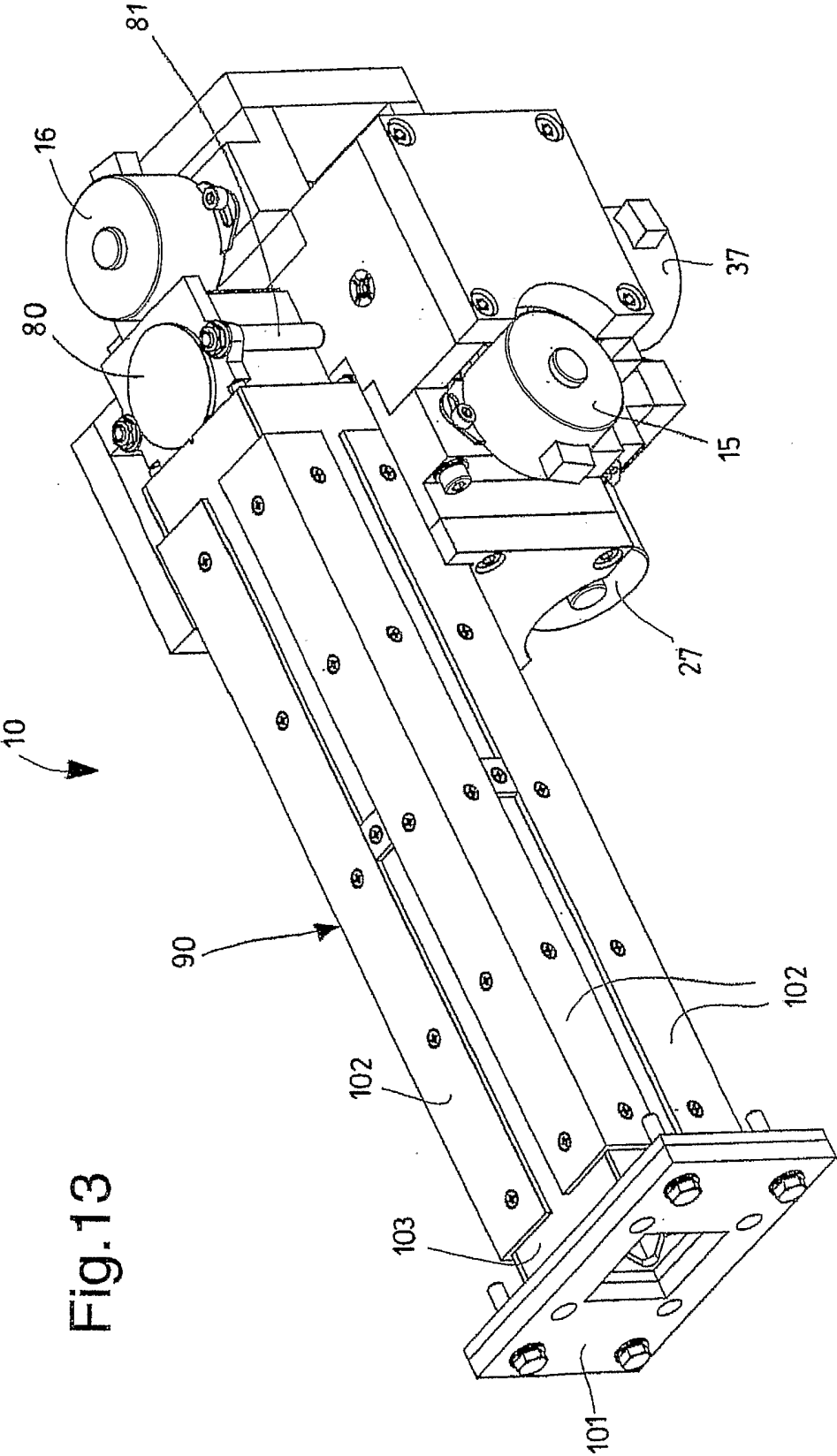


Fig.12



INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/006069

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H05H15/00 G21K1/00

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)

H05H G21K

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 practical, search terms used)

EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 813 330 B1 (BARKER DELMAR L [US] ET AL) 2 November 2004 (2004-11-02) column 5, line 51 - line 60	1,18
A	SCHMELCHER P ET AL: "Stabilization of matter-antimatter atoms in crossed electric and magnetic fields" NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH, SECTION - B: BEAM INTERACTIONS WITH MATERIALS AND ATOMS, ELSEVIER, AMSTERDAM, NL, vol. 143, no. 1-2, 1 August 1998 (1998-08-01), pages 202-208, XP004142293 ISSN: 0168-583X page 202, paragraph 1	1,18

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☒ 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

12 October 2009

Date of mailing of the international search report

23/10/2009

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2009/006069

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

International application No

PCT/IB2009/006069

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			JP	2007500349 T		11-01-2007
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