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(54) Title: RETURN ROLLING BALL

(57) Abstract: Return rolling ball belongs to constructions or objects in the field of entertainment, recreation and group or single participation sports. Return rolling ball consists of an outside synthetic cover appropriately shaped (2), with a specific construction of the rotor (10), with a static gravity center stable stator (11), spherical sector condenser (3) kinematically connected in a way that they form and enable a whole as a form and needed function.



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RETURN ROLLING BALLTechnical field to which the invention regards

The return-rolling ball is a construction and an invention that belongs to constructions and objects in the field of entertainment, recreation and sports. The characteristic of the return-rolling ball is that at the end of the rolling process it goes back to a certain length
5 of its rolling path following the same or similar rolling path.

Technical problem solved with the patent

This patent with its construction solves the return process - going back of the ball after it stops to roll to a certain distance from the start position of the rolling.

Condition of the technique and applicability

10 There are many different objects and constructions in the shape of a ball which are used in a variety of sports, different games, for personal and other recreations and occupations, used in different environments and media, and different ways of moving are used when using the balls as above mentioned.

Sometimes the balls used in games, or recreation are rolled, but until now it was impossible
15 for the ball to return to the position (or near it) from where it started to roll without a return stroke, being thrown away or being rejected by a wall or some other object.

Solution of the technical problems

The construction of the return-rolling ball consists of an outside synthetic cover, with lateral engravings on the sides; a rotor with an inside, ridged iron core for placing the
20 conductors, and connected to round and thin panels (disks) with symmetrically cut ball with two spherical sectors, one on each side of the axle, which have the same bases; an iron core that continues in two connecting branches ; static stator which, thanks to its construction, is in a stable balance position when the ball is moving; fixed condensers shaped as the cut, side-axial spherical sectors of the ball.

25 This construction can be best described with the drawings 1/1, drawing 2/2 and the sections, marked and presented to define the patent constructively and functionally:

Drawing 1/2

1. Engravings on the outside of the synthetic cover
2. Outside part of the sphere

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Drawing 2/2

1. Spherical part of the rotor
2. Synthetic cover
3. Spherical sector of the condenser
- 5 4. Base of the spherical sector of the condenser
5. Axial thin disk
6. Semi-ring – collector
7. Free inclined holders – fixers
8. Nail for fixing the free inclined holders
- 10 9. Inside spring
10. Rotor
11. Stator
12. Small rolling balls positioned – axial and radial positions
13. Ridges on the rotor for the conductors
- 15 14. Balls on which the base of the spherical sector is axially positioned on the lateral panel of the rotor
15. Balls on which the basis of the thin disk for the kinematical connection of the condenser and the sphere is axially positioned
16. Connection with the outside cover and the outside part of the spherical
- 20 sector
17. Lateral disks for connecting the central core of the rotor and the sphere of the rotor
18. Plugged opening for positioning the small balls in the ridges of the stable stator
- 25 19. Hollow branches of the rotor
20. Key or brush connected in a contact manner to the commutator

The elements are connected together kinematically. The spherical cover of the rotor (1) rolls over the surface of the statically stable stator (11) over the balls (15) that are placed in the ridges of the stator, and in that way the core of the rotor (10) rolls

30 without a contact with the stator with the needed clearance. The rotor is connected to

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- the spherical sector condenser (3) with the branches that go in the bases of the spherical sector, which laterally with the nails (8) open and fix four inclined holders (7) of the both branches of the rotor in a shape of an umbrella holders, and in that way making it possible for the thin disks (5) of the balls (15) to roll on the base of the
- 5 spherical sector condenser; the spherical sector condenser axially leaned on the lateral rotor disks of the sphere (1) through the balls (14), which are connected to the iron core (10) and the cut ball-sphere (1) and allowing to be a kinematical whole in a shape of a ball, where the synthetic cover is connected tightly to the spherical sectors (16), and the rotor (10) with its sphere spins, or rolls freely in the inside.
- 10 This construction allows it to function as one-way dynamo machine; when it rolls it is the inductive force that accumulates in the condenser (3), and when it stops the return force of the condenser that allow the movement of the rotor in the opposite direction, which makes the dynamo an electric motor, and so it moves, as a kinematical whole, where the condensers is relatively fixed to the rotor. When the ball rubs with the surface
- 15 where the return ball stands it rolls on that surface.
- The power from the rotor to the condenser is transmitted through a conductor from the base of the spherical sector condenser that is connected to the rings of the rotor as a collector.

Claims

1. Return rolling ball consists of a synthetic cover (2) with engravings marked as (1) in drawing 1/2, rotor marked as (10) in drawing 2/2, and connected to round thin panels, marked as (17), which, on one side, have fixed opening for putting balls for rolling movement of the spherical part of the rotor (1), stator, marked as (11), which is
5 in a static balance position, relatively immobile spherical sector condensers (3) kinematically, axially as bearing connected to the thin disks of the rotor in a whole shaped as a ball.
2. Return rolling ball according to claim 1 in drawing 2/2, the rotor (10) consists of a ridged, cylindrical, iron core marked as (13) which ends in
10 two hollow branches marked as (19), connected to the thin disks (17); connected to the sphere (1) – ball cut laterally axially in two spherical sectors with the same bases, marked as (3); which rolls on the outside surface of the stator (11).
3. Return rolling ball according to claims 1 and 2, the spherical part of the rotor in drawing 2/2 marked as (1) rolls on the outside side of the stator over the balls in the
15 ridges marked as (12), and the static stator with 2p of the permanent magnet is in a stable balance position when rolling, to allow the induction of the EMF in the conductors in the ridged core of the rotor.
4. Return rolling ball according to claims 1, 2 and 3, the spherical sector condenser, marked as (3) in drawing 2/2, with the spherical sector base, lies
20 kinematically axially, as bearing, on the balls (17) on the thin connecting disks of the rotor, and the spherical sector base (4), from the inside, is connected kinematically axially, as bearing, through thin panels (5) which lie on balls on the inside of the spherical sector base, and in that way the spherical sectors are connected to the body of the cut sphere – rotor kinematically axially in a whole shaped as a ball.
- 25 5. Return rolling ball according to claim 4, thin panels marked as (5), which press the inner part of the spherical sector base axially, are pressed by four holders (7), which go out of the hollow branches of the rotor (19) under certain angle, and fixed by nail (8) from the lateral side of the hollow branch, in a form which does not allow to go out of the lateral opening of the branch, holding the holders (7) tight under certain
30 angle (like an open umbrella), and from the inner side the holders lie on the curved surfaces of the lateral inside panels, and in that way they allow kinematical connecting

of the spherical sector to the sphere of the rotor in a whole shaped as a ball, whose sphere of the rotor can turn relatively towards the spherical sectors.

35 6. Return rolling ball according to claim 5, the lateral nails (8), which open and hold tight the inclined holders, have small lateral springs marked as (9) which, on their other side, lean on the central inside surface of the spherical sector, creating inside pressure in the ball, which allows the whole of the form to be and to function.

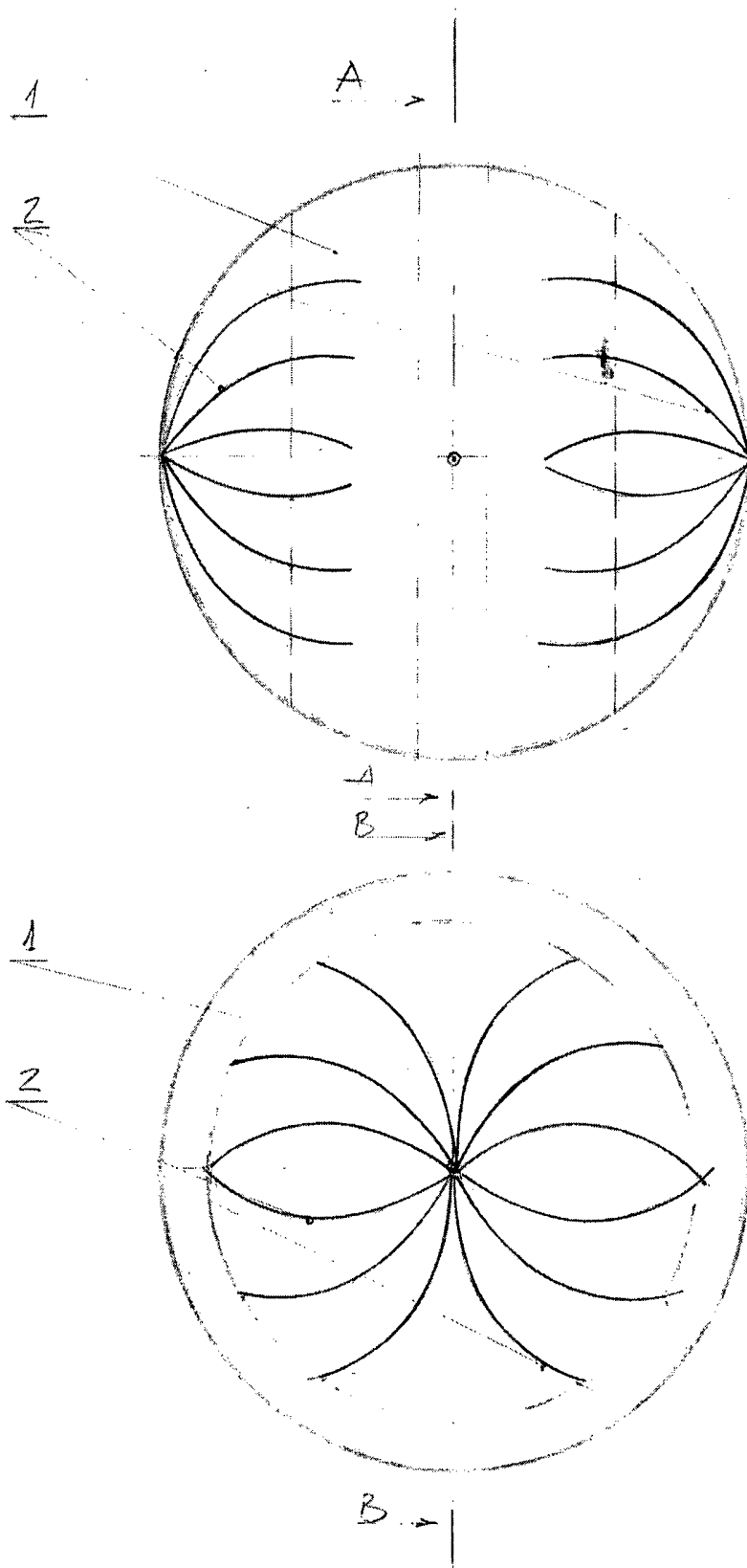
7. Return rolling ball according to claim 1, opposite conductors are placed on the base of the spherical sector condenser, and connected to the homogeneous poles of
40 the spherical sector condenser and connected in a contact manner to the keys – brushes, marked as (20) and the semi-rings of the commutator (which are isolated between themselves) marked as (6), so that the inductive force is transmitted from the rotor to the condenser and then from the condenser to the commutator semi-rings of the rotor, functioning once as an electric machine – dynamo, and then as an electric motor.

45 8. Return rolling ball according to claim 1 is covered with a synthetic cover that, on the inner part, is fastened to the outside of the spherical sector condensers (16), while the middle part closely leans on the outside part of the spherical part of the rotor, in a way that allows inner sliding in both ways when the sphere of the rotor rolls, pressing with its weight the free inner side of the cover, which lies with its outside on
50 the surface with which it rubs when moving with the coefficient of rubbing while rolling, in that way the whole system – the ball- is able to roll.

9. Return rolling ball according to claims 1 and 8, on the external part of the spherical sectors there are engravings, marked as (2), which allow, when rolling the ball to determine the direction with its middle part - gravity center part – so that the ball
55 can come back to or near the start position, that is it will allow certain rolling motion of the rotor that will induce EMF in the conductors, and the return motion of the ball is possible.

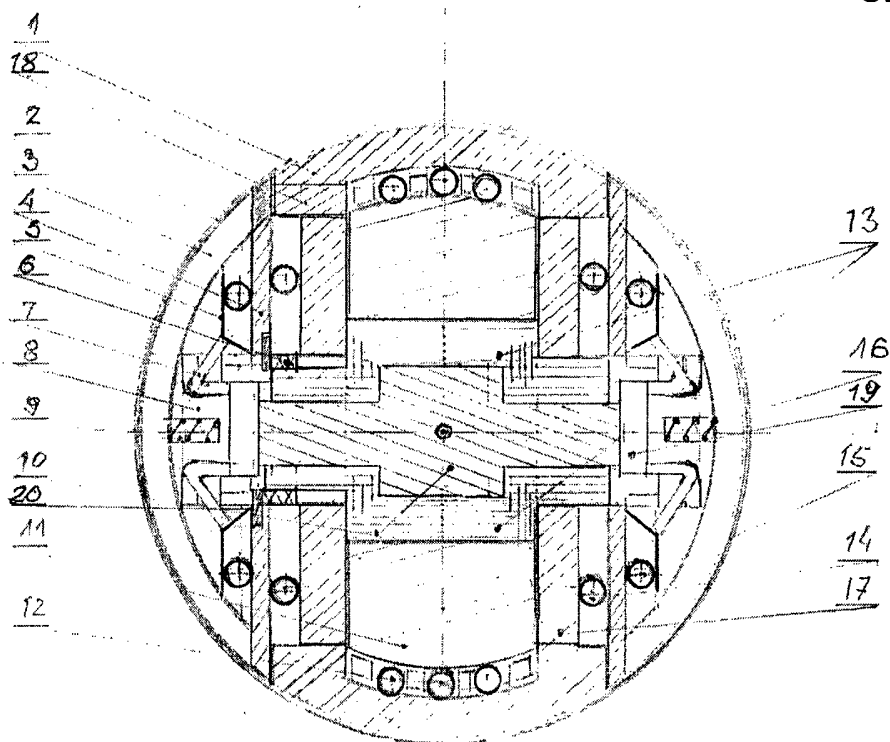
1 / 2

FIG. 1

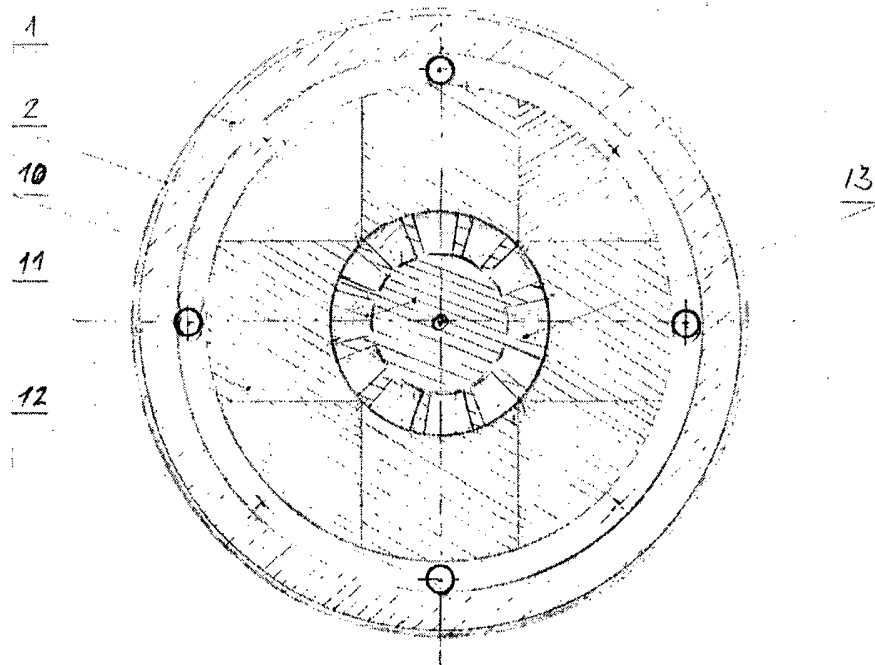


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SECTION B-B



SECTION A-A



INTERNATIONAL SEARCH REPORT

International Application No

PCT/MK 02/00003

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A63H33/00 A63B43/04

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)

IPC 7 A63H A63B

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)

WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 470 974 A (ARTHUR PEEL) 25 August 1937 (1937-08-25) page 2, line 14 - line 41; figures ---	1
A	US 1 577 997 A (ALK SAMUEL M) 23 March 1926 (1926-03-23) page 1, line 94 -page 2, line 21; figures ---	1
A	FR 555 328 A (BONTEMPS PROSPER) 28 June 1923 (1923-06-28) page 2, line 4 - line 19; figures ---	1
A	US 6 227 933 B1 (CARON SERGE ET AL) 8 May 2001 (2001-05-08) column 4, line 28 - line 30; figures column 4, line 58 -column 5, line 19 -----	1

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☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 470974	A	25-08-1937	NONE	
US 1577997	A	23-03-1926	NONE	
FR 555328	A	28-06-1923	NONE	
US 6227933	B1	08-05-2001	CA 2311504 A1	15-12-2000