WHAT IS CLAIMED IS:

1. An electric motor, comprising:

a disc having a circumference;

a central shaft for the disc to rotate about;

at least two permanent magnets mounted at the circumference of the disc, wherein

each of the at least two permanent magnets has a north pole and a south pole along a longitudinal axis pointing from the south pole to the north pole, and defines a channel, the channel extending along the longitudinal axis, a cross-section of each of the at least two permanent magnets, perpendicular to the longitudinal axis, is curved around the channel,

and

the pointing of the longitudinal axes of all of the permanent magnets mounted at the circumference of the disc point from the south pole to the north pole in a same circumferential direction;

a controllable power supply; and

at least two electromagnets, each of the at least two electromagnets comprising a solenoid, wherein

the at least two electromagnets are disposed circumferentially adjacent to the disc,

for each of the at least two electromagnets, an electromagnet north pole and an electromagnet south pole are generated upon receiving electricity from the power supply,

an electromagnet longitudinal axis pointing from the electromagnet south pole to the electromagnet north pole for all of the electromagnets points in the same circumferential direction as the pointing of the longitudinal axes of the at least two permanent magnets;

wherein when the electromagnet longitudinal axis of one of the at least two electromagnets is substantially circumferentially aligned with the longitudinal axis of one of the at least two permanent magnets, the electromagnet longitudinal axis of the one of

the at least two electromagnets and the longitudinal axis of the one of the at least two permanent magnets are parallel, and the one of the at least two electromagnets is disposed within the channel of the one of the at least two permanent magnets; and

wherein

the electricity from the power supply is off to one of the at least two electromagnets when the one of the at least two electromagnets is circumferentially offset from one of the at least two permanent magnets, and

the electricity from the power supply is supplied to the one of the at least two electromagnets when the electromagnet longitudinal axis of the one of the at least two electromagnets is substantially circumferentially aligned with the longitudinal axis of the one of the at least two permanent magnets or within a circumferential threshold of being circumferentially aligned.

2. The electric motor of claim 1, further comprising a shielding material disposed between each of the at least two permanent magnets.

3. The electric motor of any one of claims 1 to 2, wherein the cross-section of each of the at least two permanent magnets is "C"-shaped or horseshoe-shaped.

4. The electric motor of any one of claims 1 to 3, wherein a respective cross-section of each of the at least two electromagnets, perpendicular to the longitudinal axis, is circular or rectangular.

5. The electric motor of any one of claims 1 to 4 , wherein the channel defines a central longitudinal axis, and wherein the central longitudinal axis and the electromagnet longitudinal axis are on a same plane.

6. The electric motor of any one of claims 1 to 5, wherein the longitudinal axes of the at least two permanent magnets are tangential to the circumference of the disc.

7. The electric motor of any one of claims 1 to 6, wherein each of the at least two electromagnets comprises a solid soft iron core integral with flanges or end washers.

8. The electric motor of any one of claims 1 to 7, further comprising an optical and/or one or more proximity sensors for detecting the alignment of the at least two permanent magnets and the at least two electromagnets.

9. The electric motor of any one of claims 1 to 8, wherein each of the at least two permanent magnets generates a flux field, and at least one of the at least two electromagnets generates a electromagnet flux field upon receiving the electricity, and the flux field and the electromagnet flux field interact to produce lateral displacement of the permanent magnets relative to the at least one of the at least two electromagnets, thereby causing disc rotation.

10. The electric motor of any one of claims 1 to 11, wherein the power supply is a battery.

11. The electric motor of any one of claims 1 to 10, wherein the electricity is supplied to the at least two electromagnets in a sequential order such that the disc rotates.

12. The electric motor of any one of claims 1 to 11, wherein while the electricity is supplied, one of the at least two electromagnets repels one of the at least two permanent magnets, and another of the at least two electromagnets attracts the one of the at least two permanent magnets in a relay handover action.

13. The electric motor of any one of claims 1 to 12, wherein each of the at least two permanent magnets curve to generally correspond to the circumference of the disc.

14. An electric motor, comprising:

a disc having a circumference;

a central shaft for the disc to rotate about;

at least two permanent magnets mounted at the circumference of the disc, wherein

each of the at least two permanent magnets has a north pole and a south pole along a longitudinal axis pointing from the south pole to the north pole,

and

the pointing of the longitudinal axes of all of the permanent magnets mounted at the circumference of the disc point from the south pole to the north pole in a same circumferential direction;

a controllable power supply; and

at least two electromagnets, each of the at least two electromagnets comprising a solenoid having a solid soft iron core with flanges or end washers at both ends of the solenoid, wherein

the at least two electromagnets are disposed circumferentially adjacent to the disc,

for each of the at least two electromagnets, an electromagnet north pole and an electromagnet south pole are generated upon receiving electricity from the power supply,

an electromagnet longitudinal axis pointing from the electromagnet south pole to the electromagnet north pole for all of the electromagnets points in the same circumferential direction as the pointing of the longitudinal axes of the at least two permanent magnets, and

each of the at least two electromagnets defines a channel, the channel extending along the electromagnet longitudinal axis, a cross-section of each of the at least two electromagnets, perpendicular to the longitudinal axis, is curved around the channel;

wherein when the electromagnet longitudinal axis of one of the at least two electromagnets is substantially circumferentially aligned with the longitudinal axis of one of the at least two permanent magnets, the electromagnet longitudinal axis of the one of the at least two electromagnets and the longitudinal axis of the one of the at least two permanent magnets are parallel, and the one of the at least two permanent magnets is disposed within the channel of the one of the at least two electromagnets; and

wherein

the electricity from the power supply is off from one of the at least two electromagnets when the one of the at least two electromagnets is circumferentially offset from one of the at least two permanent magnets, and

the electricity from the power supply is supplied to the one of the at least two electromagnets when the electromagnet longitudinal axis of the one of the at least two electromagnets is substantially circumferentially aligned with the longitudinal axis of the one of the at least two permanent magnets or within a circumferential threshold of being circumferentially aligned.

15. The electric motor of claim 14, wherein the channel defines a central longitudinal axis, and wherein the central longitudinal axis and the electromagnet longitudinal axis are on a same plane.

16. The electric motor of any one of claims 14 to 15, wherein the longitudinal axes of the at least two permanent magnets are tangential to the circumference of the disc.

17. The electric motor of any one of claims 15 to 16, wherein each of the at least two permanent magnets generates a flux field, and at least one of the at least two electromagnets generates a electromagnet flux field upon receiving the electricity, and the flux field and the electromagnet flux field interact to produce lateral displacement of the permanent magnets relative to the at least one of the at least two electromagnets, thereby causing disc rotation.

18. The electric motor of any one of claims 14 to 17, wherein the electricity is supplied to the at least two electromagnets in a sequential order such that the disc rotates.

19. The electric motor of any one of claims 14 to 18, wherein while the electricity is supplied, one of the at least two electromagnets repels one of the at least two permanent magnets, and another of the at least two electromagnets attracts the one of the at least two permanent magnets in a relay handover action.

20. An electric motor system comprising two or more of the electric motor of any one of claims 1 to 19, wherein the disc of each electric motor shares the central shaft.