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Unipolar Engine of Mende

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Abstract- Application in the unipolar engines of samarium-cobalt magnets opens the new prospects of creating the engines, with the large rotational moment, since such magnets possess the great magnetic field, which cannot they will reach in other magnets. However, the creation of engines with the large diameter of disk runs into the great difficulties connected with the fact that industry does not let out magnets with the large diameter. In the article is proposed the new construction of unipolar engine, in which for creating the magnetic field are used the magnets of small diameter.

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I. INTRODUCTION

Unipolar electric motor presents the variety the electrical machines the direct current. The conducting disk contains, the constant magnetic field, is parallel to the rotational axis of disk, the 1 slip ring on the axis of disk and 2 slip ring, at the edge of the disk 1.

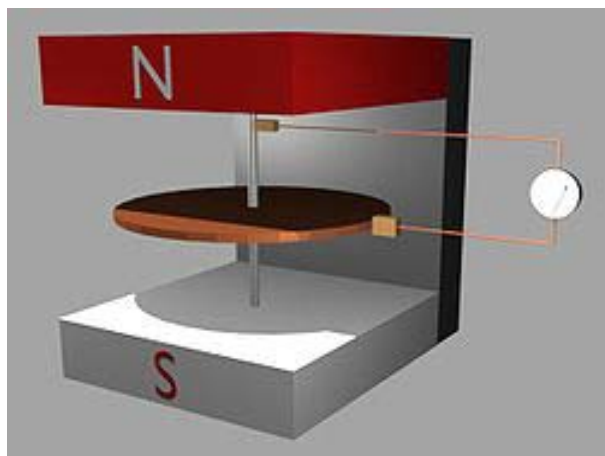


Fig. 1: Conducting disk in the magnetic field

In Fig. 1 the operating principle of unipolar engine is shown. If there is a conducting disk, located in magnetic field, then during the supplying stress on the axis of disk and on its edge through the disk flows current, which leads to its rotation. This rotation is caused by the influence of Lorentz force on the moving charges.

The first unipolar engine, the wheel of Barlow, created Peter by Barlow, after describing him in the book "study of the magnetic attractions", published in 1824 to the year.

Barlow's wheel was two copper gears, which are located on one axis. As a result interaction of current, passing through wheels, with the magnetic field

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of permanent magnets, wheels they revolve. Barlow explained that with change in contacts or position of magnetic poles the replacement of the direction of rotation of wheels to the opposite occurs.

II. UNIPOLAR ENGINE OF MENDE

The kinematic and electrical diagram of the unipolar engine of Mende is shown in Fig. 2.

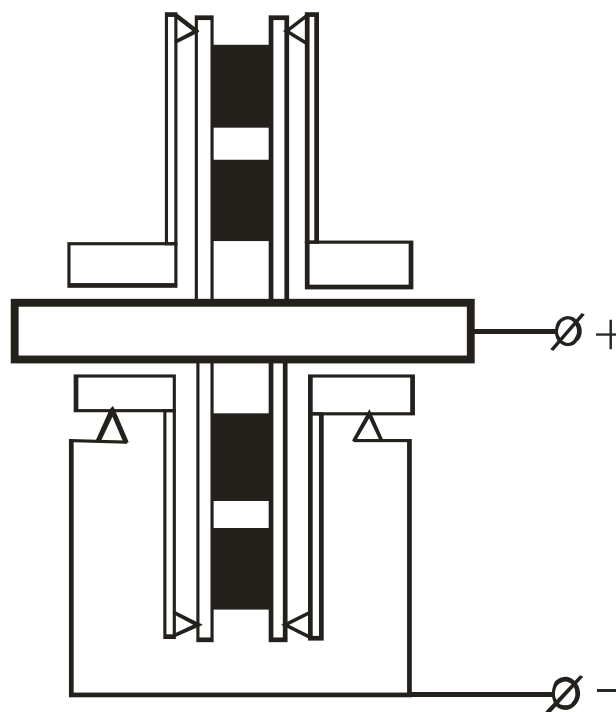


Fig. 2: Kinematic and electrical diagram of the unipolar engine of Mende

Engine consists of two conducting disks, dressed to the common axis, between which the permanent cylindrical magnets (they are flooded by black color) are stopped up. These magnets are located in the circle of disk and such circles it can be several. The number of magnets, located on one circle is determined by diameter of a circle and by diameter of magnets. Along the conducting disks slide the brushes, fastened to the knitting needles, which are fixed on the conducting bushings, which do not have galvanic contact with the axis. There are terminals, connected to the brushes, which slide along the bushings and the axis of engine. If we to these terminals connect the power source, then knitting needles and bushings fastened to them begin to revolve in opposite directions.

This they give the possibility to use this device as the engine.

To the photograph of the experimental model of engine it is presented in Fig. 3. In the engine they are

used 4 the cylindrical samarium-cobalt of the magnet with a diameter 25 mm. Their arrangement on the disk is shown in Fig. 4.



Fig. 3: Photographs of the experimental model of the engine



Fig. 4: Arrangement of magnets on the disk

III. CONCLUSION

Application in the unipolar engines of samarium-cobalt magnets opens the new prospects of creating the engines with the large rotational moment, since such magnets possess the great magnetic field, which cannot they will reach in other magnets. However, the creation of engines with the large diameter of disk runs into the great difficulties connected with the fact that industry does not let out magnets with the large diameter. In the article is proposed the new construction of unipolar engine, in which for creating the magnetic field are used the magnets of small diameter.

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