

Figure 4 - the X-S on an indicator resistance to attrition, number of attritions

**Conclusion.** Having analysed the received these fig. 2-4 it is possible to draw a conclusion that the considered processes by production of vinyl wall-paper on a paper basis are stable as on all X-S cards there is no exit for regulation borders.

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#### TO THE QUESTION OF ALTERNATIVE ENERGY SOURCES

##### Abstract

There is a scheme of a gravitational-type power plant in this paper which is provided as a potential alternative energy source. The advantage of this design is the ability of setting the desired position of working balls, which distinguishes it from previously created similar structures.

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**Key words:** *self-propelled wheel, energy, ball, axis.*

Nowadays, in a rapidly developing world, the limited resources, and the humanity needs are growing with each passing day, the ways to provide a person with what is necessary for decent life have great significance. A key role here is played by energy, which is the basis of almost any activity of modern society, mainly dependent on it for future development. Energy sources are mostly traditional today: hydropower, thermal, nuclear. Until recently, the main problem of traditional energy, was easy access to fuel and the cost of fuel for the reproduction of energy. Today, another problem, a global problem, has come to the fore, a global problem - climate and environmental changes due to human activities, including because of the increasing human needs for the energy received today in a traditional way that threatens humanity with unpredictability, but also with negative consequences.

This fact causes anxiety in the society, industry and energy, in terms of choosing the further path of energy development on the scale of the whole modern world. This requires a shift from traditional energy resources to resources that are unlimited and less harmful to the environment - alternative energy sources. Alternative sources of energy include hydropower, solar energy, wind energy, geothermal energy, tidal energy, hydrogen energy, biomass energy.

Also, to this energy can be attributed various designs working on the gravitational principle. The history of this issue goes back many centuries. The first mention of the self-rotating wheel is associated with the name of the man Orphireus, who was born in the Czech Republic in 1680 [1].

The appearance of the wheel as a working member is not accidental, since in the first mechanisms created by man there was a rotating wheel. The use of the wheel was the basis of many early mechanisms created by the hands of man, whether driven by a horse wheel to lift a rock or water from a well or mine. Water wheels with the help of which drove in motion millstones in the mill, or various wheels driven by windmills. Crown wheels, a wheel with pins, changing the direction of the axis of rotation, intermittent gears, lifting devices - this is far from a complete list of the simplest mechanisms, based on the use of the wheel. Weight is a great many devices created by the mechanics of the Middle Ages and the Renaissance which have the same idea (the idea of a rotating wheel) led to the practice of such diverse forms [2].

Trying to realize this idea in practice is an important issue today too. In Zhangir Khan West Kazakhstan Agricultural-Technical University there was proposed scheme of the mechanism, in which an attempt is made to take into account the shortcomings of the pre-existing mechanical structures. The general scheme of the mechanism is shown in Figure I. The main advantage of this scheme, the ability to specify the desired position of the balls, due to which the disk moves. The device consists of a disk 1 and a plate 2. The disk 1 is set on the shaft 3 motionless, the latter rests on the supports 4 attached to the frame. The plate 2 is also fixed to this frame. The disk has got grooves which is located evenly along its radii (at an angle of  $120^\circ$ ) relative to each other. In the cross section, the grooves are repeated the shape of the rolling element (ball 5). In plate 2 there is also a groove made with a certain closed curve. The depth of the grooves in the disc 1 and in the plate 2 is approximately equal to  $2/3$  of the diameter of the ball.

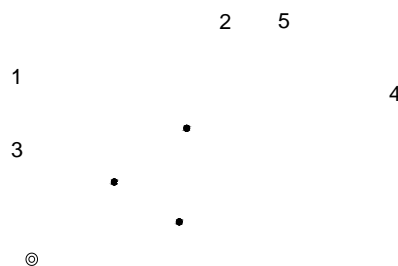


Figure 1 – General scheme of the mechanism

In the plate 2, the groove on which the ball moves is, for example, an "ellipse". These two movements: rectilinear in the disk and curvilinear in the plate provides the desired position of the balls, which allows you to get a moment from the mass of the balls with the right more than the left, which creates a torque on the shaft 3. In the model, the number of balls is taken at a minimum, three, their number needs to be increased - this will give a more uniform movement to the shaft 3. The power set will be convenient only by increasing the number of disks 1 installed on one shaft 3 by placing the disks 1 relative to each other on the shaft 3 with mixing by an angle multiple of the number of disks.

This wheel is most conveniently used in the mechanisms working with constant revolutions - pumps, generators.

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