
Development of Zhukovsky's problem on flat sieving

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In 1896 N.E. Zhukovsky published an article «A note on the flat sieving» in which he examined the motion of the particle material (material point) on a horizontal flat support with circular translational vibrations on the plane. This paper being a natural generalization of the problem considers the motion of the body of finite size on the same plane, when the friction contact is carried out on a surface and the center of gravity of the body rises above this surface. As an example, it is shown that a real body taken in the form of a right circular cylinder in a steady movement doesn't only perform a circular motion (as in Zhukovsky's problem), but also rotates around a vertical axis with some angular velocity. The formulas of speed determining of both components of the motion are received.

Keywords: *vibration, dry friction, distributed frictional contact, the local law of Coulomb, force and friction moment.*

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