

Technology market
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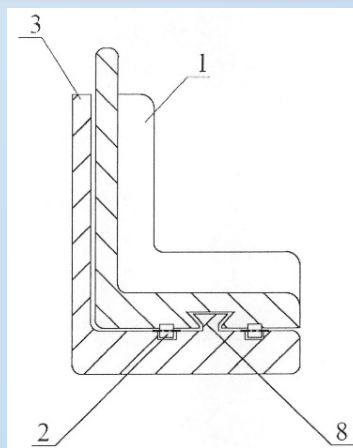
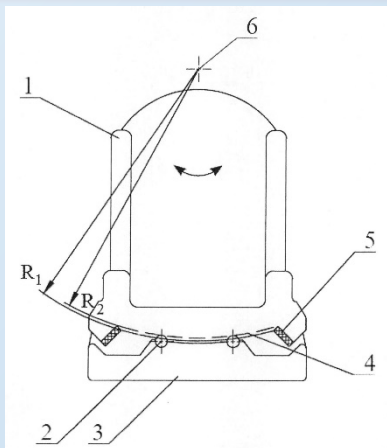
Offer № 010UM

Tilting child car seat with rolling supports

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A tilting car seat with rolling supports, designed both to ensure the passive safety of children traveling by car and to improve their comfort has been developed at Technical University of Sofia, for which a utility model has been issued in Bulgaria.

Application № 5048



The principle of tilting in road curves has been studied and applied in railway transport. In road transport, there have been experimental developments of car body tilting systems, but they have not caught on, as their influence on the vehicle stability has not yet been well studied. Therefore, there are active systems for tilting the seats, in which the information received from the sensors for the speed of the car, the angle of rotation of the steering wheel, etc. serves to form a control signal to a drive that tilts the seat at a certain angle. Because the system is active and requires many components, it has not been widely used.

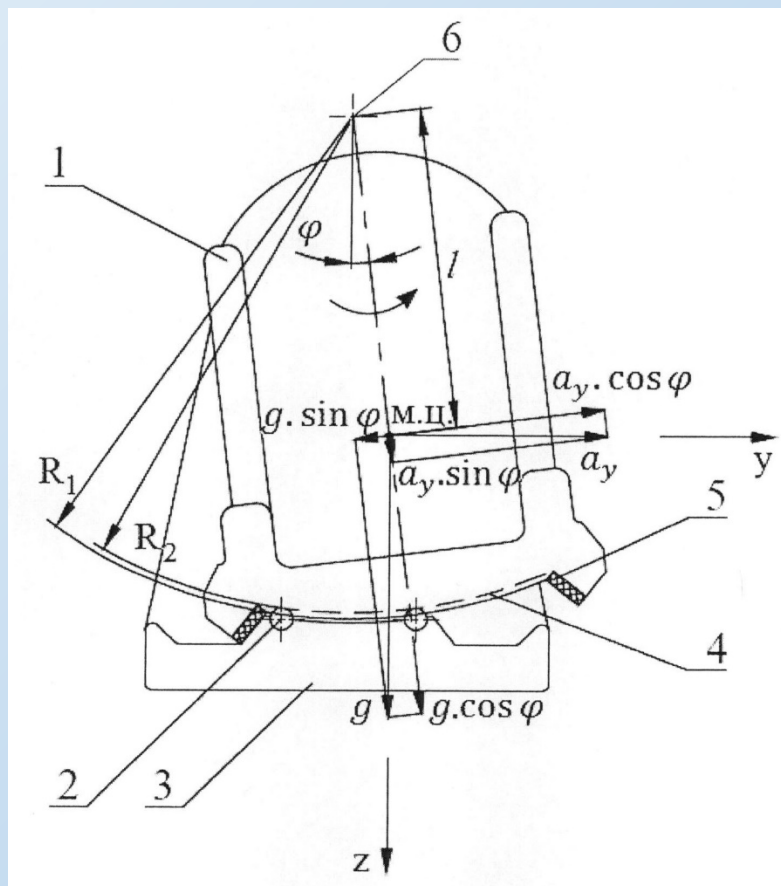
Technical solution

The task of the utility model is to offer a tilting child seat with passive action, for the operation of which no external energy sources, sensors and actuators are required, to ensure the safety and improve the comfort of the child. The task is solved by a tilting car child seat with rolling supports, consisting of a child seat 1, which is assembled at its lower end to the supporting base 3, by means of a dovetail joint 8 and lying on rollers 2, as in the lower cylindrical surface on the seat 1 there are chutes on which the rollers 2 roll. On both sides of the seat 1 there are elastic buffers 5, limiting the two extreme tilting positions of the seat 1. The thus assembled seat is mounted on the back seat of the car. The tilting child car seat with rolling supports improves comfort because when cornering, the centrifugal force tilts the seat. Thus, the lateral acceleration acting on the child is less than the lateral acceleration acting on the car and other passengers.

Application and advantages

Tilting the child car seat in a turn is done by moving the seat along the rolling supports located below it. When the car turns, the centrifugal force acts at the center of mass of the child and causes the seat 1 and the seated child to tilt around the axis of rotation 6 at an angle φ towards the center of the turn. The lateral accelerations acting on the child traveling in the car decrease because the acceleration a_y decomposes into two components. The component $a_y \cdot \cos \varphi$ acts in the transverse direction, and the component $a_y \cdot \sin \varphi$ in a vertical direction relative to the child sitting in the seat 1. When the seat is tilted, the gravitational acceleration g also decomposes into two components. One is $g \cdot \cos \varphi$, which is vertical for the child sitting in the seat, and the other $g \cdot \sin \varphi$, which is in the transverse direction and has a direction opposite to the direction of the transverse acceleration caused by the movement of the car in a turn. Then the resultant acceleration acting in the transverse direction of the traveling child will be: $a_{res} = a_y \cdot \cos \varphi - g \cdot \sin \varphi$. The seat allows the axis of rotation 6 to be located outside the vertical and gauge, thereby increasing the distance l , which is the length of an equivalent physical pendulum. This allows the seat to achieve a lower natural vibration frequency.

Technological images



Contact for this offer



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