

Perfect Plane Mechanism

This technology offers a mechanical linkage for perfect movement. This device can be used to move a point in a plane, on a large diameter sphere, or on a line or circle, and combines movement to reduce constraint.

What is the Problem?

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Precise movement of mechanical linkages are essential to a variety of applications in a number of technical fields. However, existing mechanical linkages that are able to deliver high levels of precision of movement are typically reserved for expensive high-end machines. Therefore, an improved low-cost mechanical linkage allowing for precise movements may be desirable.

What is the Solution?

The solution is a mechanical linkage allowing movement in a perfect plane, or large diameter sphere, of one end of the mechanism relative to the other. This mechanical linkage structure constrains the movement of a point to the plane referencing only a ground link. It is the physical manifestation of the idea that a normal can define a plane. It is the generalization of the first straight line Mechanism developed in the 1800s known as the Peaucellier-Lipkin linkage. The device can be used to move a point in a plane, on a large diameter sphere, or on a line or circle. Combining them makes a movement device that can constrain a body to a plane and uses no shafts for parallel movement. This has applications in automotive suspensions, MEMS devices, Measurement tools, Machining tools, 3D printers and more.

What is the Competitive Advantage?

Current mechanical linkages offer high precision but are high cost, and so are not used in lower-cost machines. This solution brings a level of precision reserved for high-end machines costing hundreds of thousands of dollars down to the tens of dollars level, enabling use of this high precision mechanical linkage technology in a variety of new lower-cost products instead of only high cost products.

Patent Information:

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Technology ID

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Category

Device/Other

Hardware/Other

Selection of Available

Technologies

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