



ISTITUTO ITALIANO
DI TECNOLOGIA

TITLE

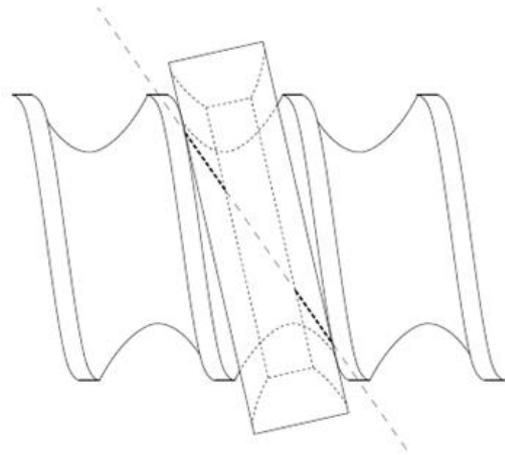
Meccanismo di azionamento lineare a vite e madrevite con contatto di puro rotolamento

INVENTORS

Roy Featherstone

DESCRIPTION

The invention consists of a screw rod and a nut, the latter containing a number of rings that make perfect rolling contact with the rod when it is inside the nut. In particular, the nut contains a number of ball bearings, the outer races of which are fixed in the nut housing, while the inner races hold the rings. The bearings are positioned so that their rotation axes are both tilted and offset relative to the central axis of the rod when it is inside the nut. The inner surface of each ring and the profile of the screw thread on the rod are designed so as to achieve theoretically perfect rolling contact along a line fixed in the nut (a different line for each ring). The net effect is that the rod can make a nearly frictionless screwing motion relative to the nut, thereby providing a highly efficient conversion of mechanical power between rotational and translational motion. Furthermore, the device can operate at higher speeds than other similar components, such as ball screws.



APPLICATIONS

Robotic, mechanical conversion, automotive

KEYWORDS

Screw, perfect rolling contact, bearings, frictionless, rotational, translational

BIBLIOGRAPHIC DATA

Ring Screw Mechanism with Perfect Rolling Contact

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Applicants Fondazione Istituto Italiano di Tecnologia

CONTACTS

Technology Transfer Office

Matteo Faccenda

Matteo.faccenda@iit.it

+39 010 71781 968