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[73] Proprietor 專利所有人

The Hong Kong Polytechnic University Shenzhen Research  
Institute  
CHINA

香港理工大学深圳研究院

中國內地/中國

南山區高新園南區

粵興一道 18 號

香港理工大學產學研大樓 205 室

[72] Inventor 發明人

JING, Xingjian 景興建

[74] Agent and / or address for service 代理人及/或送達地址

中一聯合國際知識產權有限公司

香港九龍

尖沙咀漆咸道南 45-51 號

其士大廈 803 室

[54] NONLINEAR STIFFNESS DAMPING DEVICE BASED ON THE IMITATION LEG STRUCTURE 基於仿腿型結構的非線性剛度阻尼裝置

[57] The utility model relates to the technical field of vibration isolation device, and relates to a nonlinear stiffness damping device based on the imitation leg structure, including a long and a short linkage mechanism, a horizontal and a vertical elastic members; the long linkage mechanism includes a long linkage group connected to a vibration isolating object and a vibration source; the short linkage mechanism includes a short linkage group connected to the top long linkage group, a short linkage group connected between the top long linkage group and the bottom long linkage group, and a short linkage group connected to the bottom long linkage group; the horizontal elastic member and the vertical elastic member are respectively connected between the short link mechanism and the short link mechanism. The utility model can realize characteristics of adjustable nonlinear stiffness and damping, realize the nonlinear stiffness characteristic of high load capacity and low dynamic stiffness, and realize a high damping at the resonant frequency and low damping at the other frequency, and realize an ideal nonlinear damping characteristics which changes with frequency and vibration displacement, so that the vibration isolation effect is obvious, the carrying capacity and stability is great and the application range is wide.

本實用新型涉及隔振裝置技術領域，涉及基於仿腿型結構的非線性剛度阻尼裝置，包括長、短連杆機構、水平和垂直彈性件；長連杆機構包括與隔振對象連接的和用於與振動源連接的長連杆組；短連杆機構包括連接於頂端長連杆組的短連杆組、連接於頂端長連杆組和底端長連杆組之間的短連杆組以及連接於底端長連杆組的短連杆組；水平彈性件和垂直彈性件分別連接於短連杆機構與短連杆機構之間。本實用新型可以實現可調節的非線性剛度和阻尼特性，實現高承載能力和低動剛度的非線性剛度特性，並實現在諧振頻率處高阻尼在其他頻率處低阻尼、隨頻率隨振動位移而變化的理想非線性阻尼特徵，從而使得隔振效果明顯，同時具有良好承載能力和穩定性，適用範圍廣。

