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[54] MULTI-DEGREE OF FREEDOM NON-LINEAR PASSIVE VIBRATION ISOLATION DEVICE BASED ON AN X-SHAPED STRUCTURE 基於 X 型結構的多自由度非線性被動隔振裝置

[57] The utility model relates to the technical field of vibration isolation device, and relates to a multi-degree of freedom non-linear passive vibration isolation device based on an X-shaped structure, comprising a lower base, an upper platform and a vibration isolation unit, the vibration isolation unit including a bottom linkage group hinged to the bottom base, a top linkage group hinged to the top of the upper platform, and an intermediate linkage group hinged between the bottom linkage group and the top linkage group, the end of the linkage of the intermediate linkage group, the end of the linkage of the bottom linkage group, and the end of the linkage of the top linkage group are hinged to form an X-shaped structure, the X-shaped structure has a plurality of hinges at the end of the linkage, the vibration isolating unit further comprises a transversely stretched elastic member stretched between two laterally distributed hinges and a longitudinally stretched elastic member stretched between two longitudinally distributed hinges. The utility model has the advantages of high load capacity and low resonant frequency of a six-degree of freedom, so as to realize the advantages of low cost, easy maintenance and good effect, and greatly improve the vibration isolation effect and extend application range of the vibration isolation device.

本實用新型涉及隔振裝置技術領域，其涉及基於 X 型結構的多自由度非線性被動隔振裝置，包括下基座、上平臺及多個隔振單元；各隔振單元包括鉸接於下基座的底端連杆組、鉸接於上平臺的頂端連杆組及連接於底端連杆組與頂端連杆組之間的至少一個中間連杆組，底端連杆組的連杆末端、中間連杆組的連杆末端以及頂端連杆組的連杆末端依次鉸接形成連杆末端具有鉸接處的 X 型結構，隔振單元還包括拉伸連接於兩個橫向分佈的鉸接處之間的橫向拉伸彈性件及拉伸連接於兩個縱向分佈的鉸接處之間的縱向拉伸彈性件。本實用新型具有高承載能力和六個自由度的低共振頻率，從而實現被動隔振的低成本、易維護及效果好的優點，極大改善隔振裝置的隔振效果和擴展應用範圍。

