

Design of A Powder Metallurgy Bearing

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Abstract

The utility model discloses a powder metallurgy support, which comprises a mounting base and a base plate, wherein the top outer wall of the mounting base is provided with a plurality of thread grooves near both side edges, and the top of the mounting base is provided with four strip grooves which are distributed on both sides of the thread grooves in pairs, and rubber pads are embedded in the inner walls of the strip grooves; and the bottom outer wall of the mounting base is provided with two rows of damping mechanisms. The bottom outer wall of the mounting base is provided with a height adjusting device near four corners, and the bottom outer wall of the mounting base is provided with round grooves near four corners, and the height adjusting device comprises a supporting seat which is fixedly connected with the top of the substrate. This utility model is a powder metallurgy bearing, which has good shock absorption performance and good stability, which is convenient for workers to adjust the installation height of metallurgical equipment on the bearing and improves the practicability of the bearing.

Keywords

Powder metallurgy bearing; Height adjustment; Good stability.

1. Introduction

Background: The utility model relates to the technical field of powder metallurgy bearings, in particular to a powder metallurgy bearing. Powder metallurgy is a technology of metal forming process by heating and compacting metal powder to lower than its melting point. This technology has existed for more than 100 years and has been recognized as a high-quality technology for producing various high-quality parts in the past 25 years. Compared with other metal forming technologies, such as forging and casting, this technology has advantages in material utilization, shape complexity and size control, etc. Because of its property of promoting sustainable development, powder metallurgy is recognized as a green technology. At present, powder metallurgy technology has been widely used in transportation, machinery, electronics, aerospace, weapons, biology, new energy, information and nuclear industry, and has become one of the most dynamic branches of new materials science. In the installation of powder metallurgy equipment, it is necessary to install the equipment on the support. Most of the existing bearings for powder metallurgy equipment installation have the following shortcomings: the height of the bearings is fixed, which is not convenient for workers to adjust the height according to the installation requirements of related equipment; during installation, the device needs to be raised before being installed and fixed. To sum up, most of the existing bearings for powder metallurgy equipment installation can not meet the actual needs well.

Research content: The purpose of this utility model is to solve the shortcomings existing in the prior art, and put forward this kind of powder metallurgy bearing.

In order to achieve the above purpose, the utility model adopts the following technical scheme: A powder metallurgy support comprises an installation base and a substrate, wherein the top outer wall of the installation base is provided with a plurality of thread grooves near two side edges; the top of the installation base is provided with four strip grooves which are distributed

on two sides of the thread grooves in pairs; rubber pads are embedded in the inner walls of the strip grooves; Round grooves are formed on the outer wall of the bottom of the mounting base near four corners; the height adjusting device comprises a support seat which is fixedly connected to the top of the base plate; the top of the support seat is provided with a fixing hole; the inner wall of the fixing hole is fixedly connected with a riser; a threaded rod is inserted into the inner thread of the riser; the top end of the threaded rod is rotatably connected in the round groove through a bearing; and the bottom end of the threaded rod is fixedly connected with a hexagonal nut head. Furthermore, the height adjusting device also comprises a plurality of plug rods, the top of the support seat is provided with a plurality of plug holes distributed annularly, the bottom ends of the plug rods are distributed and inserted through the plug holes, and the outer side walls of the plug rods are all provided with scales. Furthermore, the damping mechanism is located between the four height adjusting devices. Further, the damping mechanism comprises an upright post and a cover barrel, wherein the bottom end of the upright post is welded on the top of the base plate, and the top end of the cover barrel is welded on the bottom of the installation base. Furthermore, the bottom end of the cover barrel is provided with a through hole, the top end of the upright post penetrates through the through hole, the outer wall of the upright post is sleeved with a spring, and the spring is positioned in the cover barrel. Furthermore, transverse blocks are welded on the outer walls of both sides of the upright post near the top end, and one end of the transverse blocks far away from the upright post is in contact with the inner side wall of the cover barrel. Furthermore, the specification of the substrate is smaller than that of the mounting base, and the end surface structure of the mounting base is isosceles trapezoid.

Brief description of drawings:

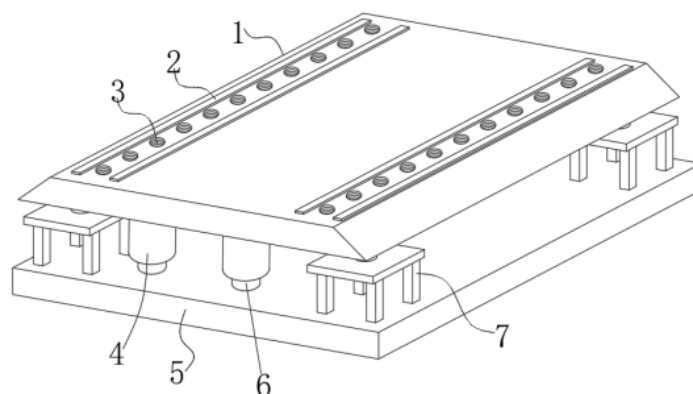


Figure 1. A schematic diagram of the three-dimensional structure of embodiment 1 of a powder metallurgy support proposed by the utility model

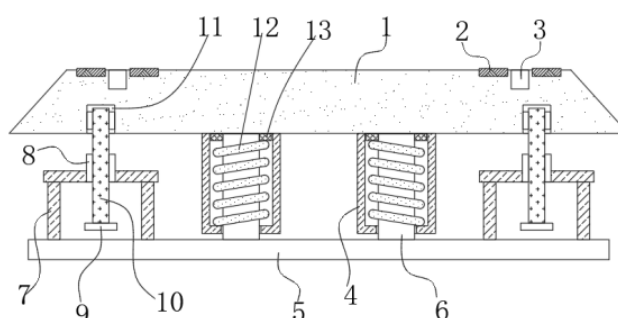


Figure 2. A schematic cross-sectional structure diagram of embodiment 1 of a powder metallurgy support proposed by the utility model

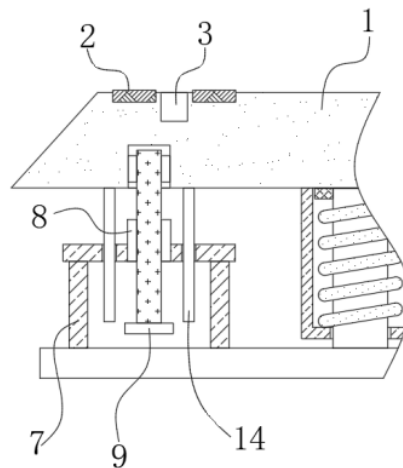


Figure 3. A partial sectional structural schematic diagram of the second embodiment of a powder metallurgy support proposed by the utility model

In the drawing: 1- mounting base, 2- rubber gasket, 3- threaded groove, 4- cover cylinder, 5- base plate, 6- upright post, 7- support seat, 8- riser, 9- hexagon nut head, 10- threaded rod, 11- round groove, 12- spring, 13- cross block, and

Scheme: The technical scheme in the embodiment of the utility model will be described clearly and completely with the drawings in the embodiment of the utility model. Obviously, the described embodiment is only a part of the embodiment of the utility model, not all embodiments. Embodiment 1 referring to fig. 1-2, a powder metallurgy support comprises an installation base 1 and a base plate 5, wherein the top outer wall of the installation base 1 is provided with a plurality of screw grooves 3 near both side edges; when installing metallurgical equipment, a fixing hole at the bottom of the metallurgical equipment faces the screw grooves 3, and then the equipment is fixed by bolts; the top of the installation base 1 is provided with four strip grooves which are distributed on both sides of the screw grooves 3 in pairs, and rubber pads 2 are embedded in the inner walls of the strip grooves. In the process of fixing the equipment with bolts, the bottom of the equipment will squeeze the rubber cushion strip 2, which is an elastic element, which increases the surface area in contact with metallurgical equipment and assists the damping mechanism in damping. The bottom outer wall of the installation base 1 is provided with two rows of damping mechanisms, and the bottom outer wall of the installation base 1 is provided with height adjustment devices near four corners, which can facilitate workers to adjust the installation height according to the actual needs of the equipment. Round grooves 11 are formed on the outer wall of the bottom of the mounting base 1 near four corners. The height adjusting device includes a support seat 7 welded on the top of the base plate 5. The top of the support seat 7 is provided with a fixing hole. The inner wall of the fixing hole is welded with a vertical pipe 8. A threaded rod 10 is inserted into the internal thread of the vertical pipe 8. The top end of the threaded rod 10 is rotatably connected in the round groove 11 through a bearing, and the bottom end of the threaded rod 10 is welded with a hexagonal nut head 9. In the utility model, the shock absorbing mechanism is located between four height adjusting devices. Among them, the damping mechanism includes an upright post 6 and a cover cylinder 4, the bottom end of the upright post 6 is welded on the top of the base plate 5, and the top end of the cover cylinder 4 is welded on the bottom of the mounting base 1. A through hole is formed at the bottom of the cover cylinder 4, and the top end of the upright 6 penetrates through the through hole. The outer wall of the upright 6 is sleeved with a spring 12, which is located in the cover cylinder 4. During the working process of metallurgical equipment, some vibrations will be generated, which will cause great noise. During the vibration process, the cover cylinder 4 will be driven to compress the spring 12 in a

reciprocating manner, and the deformation of the spring 12 will consume vibration energy, thus realizing shock absorption of metallurgical equipment. Cross blocks 13 are welded to the outer walls of both sides of the upright 6 near the top end, and the ends of the cross blocks 13 far away from the upright 6 are in contact with the inner side wall of the cover tube 4. The specification of the substrate 5 is smaller than that of the mounting base 1, and the end surface structure of the mounting base 1 is isosceles trapezoid.

Working principle: the height adjustment device can facilitate the workers to adjust the installation height according to the actual needs of the equipment. When adjusting, the hexagonal nut head 9 is clamped by a wrench and then rotated. With the rotation of the hexagonal nut head 9, the threaded rod 10 will drive one corner of the installation base 1 to move upwards while rotating, thus repeatedly adjusting the height adjustment devices at other corners. When adjusting the support to the required height, stop rotating the hexagonal nut head 9. When installing metallurgical equipment, The fixing hole at the bottom of metallurgical equipment faces the screw groove 3, and then the equipment is fixed by bolts. During the working process of metallurgical equipment, some vibrations will be generated, which will cause greater noise. During the vibration process, the cover cylinder 4 will be driven to compress the spring 12 in a reciprocating manner, and the deformation of the spring 12 will consume the vibration energy, thus realizing the shock absorption of metallurgical equipment. In the process of fixing the equipment with bolts, the bottom of the equipment will squeeze the rubber gasket 2, which is an elastic element. Embodiment 2: referring to fig. 3, a powder metallurgy support. compared with embodiment 1, the main difference of this embodiment is that in this embodiment, the height adjusting device also includes a plurality of plug rods 14, the top of the support seat 7 is provided with a plurality of plug holes distributed annularly, the bottom ends of the plug rods 14 are distributed and inserted through the plug holes, and the outer side walls of the plug rods 14 are provided with scales.

When the mounting height is adjusted, the insertion rod 14 moves along the insertion hole along with the elevation of the mounting base 1. When it is not adjusted, the top surface of the support seat 7 stays at the new scale of the insertion rod 14, and other height adjustment devices can be adjusted based on this degree, thus ensuring the level of the mounting base 1.

2. Conclusion

1. By setting the height adjustment device, it is convenient for the staff to adjust the installation height according to the actual needs of the equipment. 2. By setting the damping mechanism, some vibrations will be generated in the working process of metallurgical equipment, and the vibration will generate larger noise. In the vibration process, the cover cylinder will be driven to compress the spring in a reciprocating manner, and the spring will consume the vibration energy, thus realizing the damping of metallurgical equipment. 3. By setting rubber gasket, when installing metallurgical equipment, the fixing hole at the bottom of metallurgical equipment faces the screw groove, and then the equipment is fixed by bolts. In the process of fixing the equipment with bolts, the rubber gasket will be squeezed at the bottom of the equipment, and the rubber gasket is an elastic element, which not only increases the surface area in contact with metallurgical equipment, but also assists the shock absorption mechanism to absorb shock.

Acknowledgments

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