Angular Positioning Module For an Optical Bench

Technological advantages

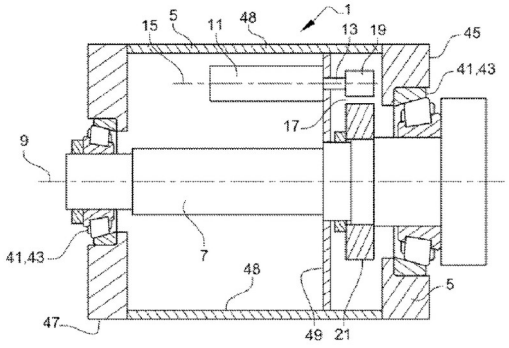
- **Fewer maintenance required for the optical bench,**
- **Reduction in mechanical wearing,**
- **Cable based transmission instead of gearing,**
- **Large gear ratio,**
- **Suited for highly out-of-sight optical systems.**

Invention synthesis

The positioning module is based on a fixed frame with a mobile rotating drive shaft and a rotary motor including an output rod configured to rotate around the drive shaft.
A transmission device allows winding and unwinding a cable on a pulley mounted onto the output rod of the rotary motor. A wheel is mounted onto the mobile rotating shaft, coupled in rotation to the pulley with a cable. The pulley and the wheel are connected by two separate strands of the cable.
The rotating shaft allows guiding in the 2 rotation directions the angular positioning module as to align with a target point in space.

Potential applications

- Satellite tracking with high alignment frequencies,
- Stellar tracking and surveillance with high alignment frequencies,
- Ground / space communications,
- Sky quality and stability monitoring for earth observations.



Schematic view of an angular positioning module
1) module
5) fixed frame
9) angular positioning axis
11) rotary engine
13) output rod
15) driving axis parallel to the angular positioning axis
17) transmission device
19) pulley
21) wheel
41) bearing system / 43) conical bearing
45) upper bed / 47) lower bed
48) support columns
49) spacer between columns and engine

Commercial benefits

- Less frequent and simplified maintenance,
- Permanent cable grease lubrication (made during manufacturing),
- Improved reliability of the angular positioning module,
- Components can be manufactured using standard machining tools,
- Angular positioning module light and solid.

Patented invention - under license.

For more information :

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