

## SisBA. Avoiding involuntary movements of tribachs

This locking system prevents tribach movements of topographic tripods of motorized measurement equipment.

*Researchers from the Polytechnic University of Madrid (UPM) have developed a non-rotating lock system for a modified tribrach. The system developed prevents movement of the topographic locking device regarding its stand-by position, as it is much more firmly held than with previous systems. The system avoids the device's rotation with respect to tribrach, integrating and establishing a single reference system during the whole observation period.*

Technology solution driven by the Technical University of Madrid

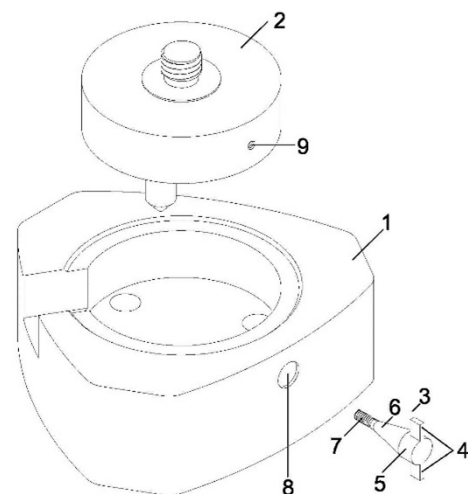
### Technology solution

The anti-rotation blocking system proposed in the present invention comprises a locking element which fixes its tribrach adapter. It consists of the following parts:

- A cylindrical neck with plates that increase the set pressure without additional tools, such as screwdrivers or any other wrench.
- The main body with a truncated cone configuration that allows exerting greater pressure on the tribrach. This truncated cone shape allows greater fixation than a cylindrical shape.
- And a cylindrical threaded portion, which will allow attachment to the tribrach adapter.

This locking system is firstly introduced in the tribrach and subsequently in the tribrach adapter. The first hole is frusto-conically shaped and the second is screw-shaped to be screwed in.

*"This invention prevents rotation of the tribrach adapter and the device, integrating them"*



### Application areas

- **Construction and infrastructure:** application to tribachs of scanner tripods of topographic or other purposes.

## Market needs

- Measuring tools have evolved and many of them move independently, rotating around its rotation axis to perform measurements in all space directions.
- As with topographic devices such as tachometers, total stations, GPS receivers ..., terrestrial scanners rest on leveling platforms, the stability and immobility of which is extremely important in the measurement result.
- Although measuring tools have evolved, it has not been the same with fixation elements. These are not prepared to bear movements such as those scanners perform when measuring.



*"Globally, the demand for infrastructure requires 57 trillion by 2030"*

## Market potential

### Global expectations

- Meteoric growth in construction sector (around 70%) concentrated mainly in China, USA and India [Oxford Economics and Global Construction Perspectives].
- An employment increase by 33% is expected in the USA during the period 2010-2020, reaching a total of 1.8 million jobs in the sector in 2020 [Department of Statistics, USA].

### Spain

- Expected growth of the sector in Spain by 2.5% in 2015-2020 [Oxford Economics and Global Construction Perspectives].
- Potential housing demand will be located above 300,000 households between 2011 and 2016 [BBVA Bank, 2011].

## Competitive advantages

- There is no other technology on the market that solves the problem of bearing the movements made with measuring scanners.
- The locking system is easily enforceable.
- It is an easy to set-up device.
- The invention prevents the equipment movements as a result of measurement.
- It impedes a change in the measurement origin of horizontal angles, thus losing no instrument coordinate system.

## References

- Extensive research activities and collaboration with industry.
- Research group oriented to technological innovation and implementation of patents.

## IPR

- Utility Model granted in Spain [ES1087005U]

## Development stage

- ☐ Concept
- ☐ R & D
- ☒ Lab Prototype
- ☐ Industrial Prototype
- ☐ Production

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