

SCREW STAND FOR GEODETIC DEVICES

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SUMMARY

The article presents a prototype of a device protected with the following utility model: **W 116699: Screw stand for geodetic devices by Anigacz W, Marszałek Ł.** It is used to ensure smooth and controlled change of height of the sight line axis of various geodetic devices, especially leveling instruments. Height can be adjusted within the range of 60 mm. The screw stand is especially useful at execution works where height of the sight line axis of a leveling instrument can be adjusted to reach the required level. In comparison to other stands of adjustable height, the herein presented device additionally gives the possibility of moving the vertical axis of the measuring instrument in horizontal plane, also within the range of 60mm.

STRESZCZENIE

W artykule przedstawiono prototyp chronionego wzorem użytkowym W 116699, urządzenia pt.: Statyw do przyrządów geodezyjnych; twórców: Anigacz W., Marszałek Ł. Statyw umożliwia płynną i kontrolowaną zmianę wysokości osi celowej geodezyjnych przyrządów pomiarowych, zwłaszcza niwelatorów. Zmianę wysokości można dokonać w zakresie 60 mm. Statyw jest szczególnie przydatny w pracach realizacyjnych gdzie wysokość osi celowej niwelatora można ustawić na zadanej wysokości. W stosunku do znanych statywów o zmiennej wysokości prezentowane urządzenie umożliwia również przesunięcie pionowej osi instrumentu pomiarowego w płaszczyźnie poziomej, również o 60 mm.

1. INTRODUCTION

The presented device is especially useful at execution works consisting in setting out of a flat horizontal space, for example a hall floor. In this case it is advantageous to adjust the leveling instrument axis to the level which would not require estimation of the sights on a leveling staff. Fig. 1 a, b show two sights: one requiring estimation, the other one, so called complete, which does not require estimation provided the described screw stand was used. A standard tripod with extensible legs, as in Fig. 2 and a screw tripod of adjustable height, Fig. 3. A bad side of this type of stands is vibration of the head. Therefore they are used with light devices like leveling instruments. They are very practical in majority of geodesic works and constitute standard equipment of a land

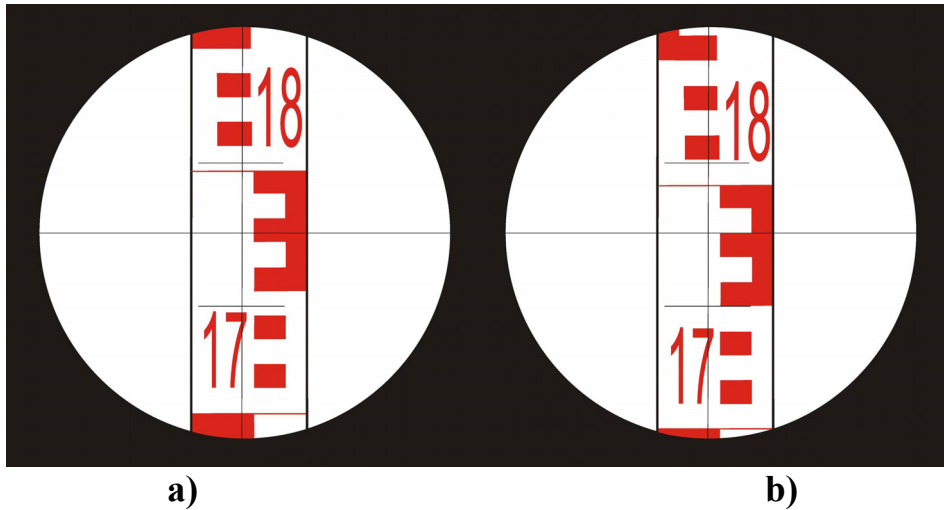


Fig. 1. Example sights of a leveling staff a) with estimation, b) without estimation, as a result of application of the described device.



Fig. 2. A traditional tripod with extensible legs.

surveyor. In survey works which require higher accuracy and multiple identical sights, standard equipment appears not to be enough. That is why the author and his team have worked out and constructed a prototype of a screw stand which enables changing the sight line axis of a leveling instrument with the accuracy amounting at 0,01 mm.

2. THE STRUCTURE OF THE STAND

The designed and constructed screw stand is composed of two cubicooids, one inside the other. The internal one tightly matches the external cubicooid which constitutes the bearing structure. The external cubicooid is fixed to a traditional geodetic stand. The internal cubicooid can move along slides as shown at Fig. 4. Movement of the internal element is inspired by a fine-winded screw. The slides and the screw are situated in a plane with a 45° deviation from the perpendicular. It is very advantageous as relocation in the vertical plane equals relocation in horizontal plane. Fig. 5 shows successive phases of the device at work.



Fig. 3. A tripod with a vertically adjustable head.



Fig. 4. The stand slides.

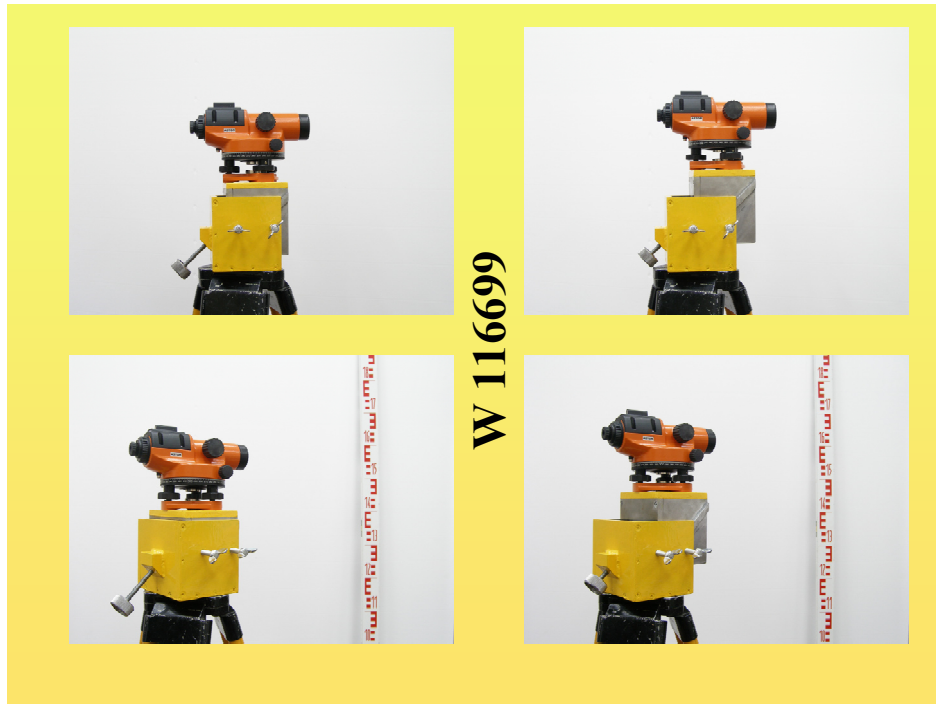


Fig. 5. Successive phases of the screw stand.

3. APPLICATION

The screw stand can be used in all measurements which require multiple same results i.e. of the same level. For instance, the norm PN-ISO 7976-2, 1994 quotes a number of example situations where the presented device can be especially useful.

4. FINAL REMARKS

The described prototype of a geodetic stand can constitute a supportive device to the standard equipment of a surveyor. It makes many geodetic measurements faster and more accurate.

REFERENCES

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