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(54) Title: DEVICE FOR ALIGNING A TWO-MIRROR CENTERED OPTICAL SYSTEM

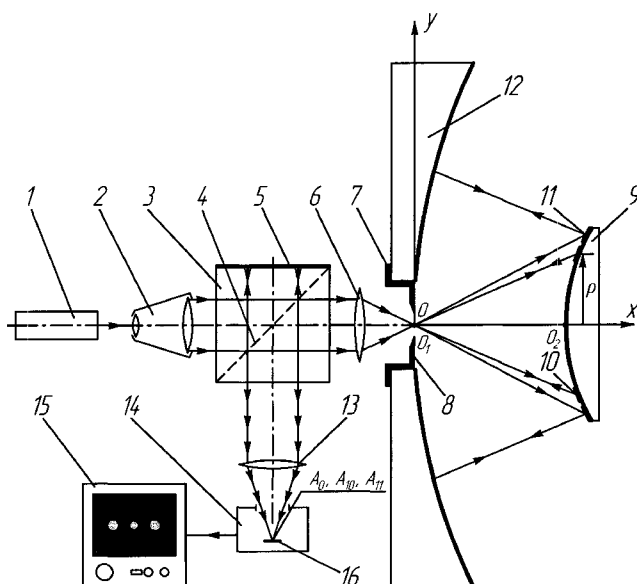


Fig. 1

(57) Abstract: A device may be used for aligning two-mirror telescopes in process of their assembly and operation at observatories, including spacebased observatories. The device contains a monochromatic light source, a collimator and a beamsplitter to form a reference branch and a working one. The working branch includes a focusing objective, two on-axis reflective adjusting computer-generated holograms, fabricated on the reflecting surface of a secondary mirror, mostly in its edge zone, arranged in alignment with its optical axis. Holograms apertures may be made either as circular rings or as couples of diametrically opposite portions of respective circular rings, which are slewed around each other at a definite angle. The central hole of the primary mirror contains a holed stop, whose centre is arranged in alignment with the reflecting surface vertex of said mirror and the focus of the focusing objective. The reference branch contains a flat reference mirror mounted perpendicular to light beams radiating from the beamsplitter, which may be made as a prism-cube, whose edge surface, containing a reflective coating on the reference branch side, is a flat reference mirror. A registering unit contains a second focusing objective, a position photodetector connected to a data imaging and processing unit. The technical result is a highly reliable and efficient alignment of two-mirror centered optical systems due to a high-precision unified optical element which is time invariant. Such being the case, it provides a decrease in the

number of elements and a reduction in the number of segments, being under control, to a single one.

**Declarations under Rule 4.17:**

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols)				
G01B 11/00, 11/27, G02B 27/00, 27/62, 7/00-7/182, 23/00				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
PatSearch (RUPTO internal), Esp@cenet, PAJ, USPTO				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	V. P. Ivanov et al. Yustirovka dvukhzerkalnykh tsentrirovannykh opticheskikh sistem s ispolzovaniem sintezirovannykh gologrammnykh opticheskikh elementov. Journal of Optical technology, June 2010, Number 6, Volume 77, p. 14-18	1-5		
A	RU 2375676 C2 (FEDERALNOE GOSUDARSTVENNOE UNITARNOE PREDPRIYATIE "NAUCHNO-PROIZVODSTVENNOE OBIEDINENIE "GOSUDARSTVENNY INSTITUT PRIKLADNOI OPTIKI" (FGUP "NPO GIPO")) 10.12.2009	1-5		
A	US 5282016 A (HUGHES AIRCRAFT COMPANY) 25.01.1994	1-5		
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.				
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