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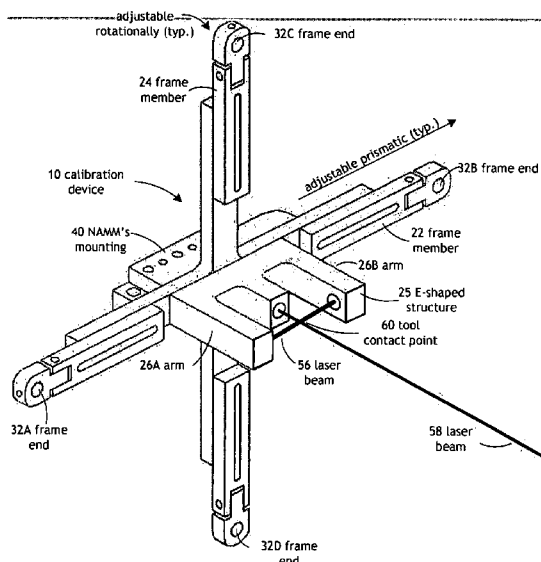
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(54) Title: ROBOTIC WORK OBJECT CELL CALIBRATION DEVICE, SYSTEM, AND METHOD

**FIGURE 1**

(57) Abstract: The robotic work object cell calibration system includes a calibration device that emits a pair of beam-projecting lasers acting as a crosshair, intersecting at a tool contact point. The calibration device also emits four plane-projecting lasers, which are used to adjust the yaw, pitch, and roll of the robot tool relative to the tool contact point. Initially, the calibration device is placed in a selected position on a fixture or work piece on the shop floor. The robotic work object cell calibration method increases the accuracy of the off-line programming and decreases robot teaching time. The robotic work object cell calibration system and method are simpler, involve a lower investment cost, entail lower operating costs than the prior art, and can be used for different robot tools on a shop floor without having to perform a re-calibration for each robot tool.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/000140**A. CLASSIFICATION OF SUBJECT MATTER****B25J 9/16(2006.01)i, G06F 19/00(2011.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B25J 9/16; A61B 6/02; G06F 19/00; A61N 5/10; G05B 15/00; G05B 19/00; G01C 15/00; F41G 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: calibrat*, computat*, robot*, laser, ray, emission, radiation, intersect, overlap, converge, intercross, baem

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0276473 A1 (RASCHELLA MICHAEL et al.) 13 November 2008 See abstract, paragraphs 44, 46-48, 50, 55, claims 1-4, figures 1-5	1-24
A	US 7620144 B2 (BODDULURI MOHAN) 17 November 2009 See abstract, column 3 lines 35-67, column 4 lines 5-25, column 5 lines 28-36, claims 1, 3, 4, 7, 23, figures 2-5	1-24
A	US 06070109 A (MCGEE H. DEAN et al.) 30 May 2000 See the whole document.	1-24
A	US 6321137 B1 (DE SMET; PIERRE) 20 November 2001 See the whole document.	1-24

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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