



(11) **EP 2 090 697 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
17.05.2017 Bulletin 2017/20

(51) Int Cl.:
E01B 35/00 ^(2006.01) **E01B 35/02** ^(2006.01)

(21) Application number: **09460002.0**

(22) Date of filing: **14.01.2009**

(54) **Device for indirect indication of rail axis**

Vorrichtung zur indirekten Anzeige der Schienenachse

Dispositif pour l'indication indirecte d'un axe de rail

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**

(30) Priority: **14.02.2008 PL 38445808**

(43) Date of publication of application:
19.08.2009 Bulletin 2009/34

(73) Proprietor: **Politechnika Opolska
45-271 Opole (PL)**

(72) Inventors:
• **Anigacz, Wojciech
45-267 Opole (PL)**
• **Okos, Daniel
45-217 Opole (PL)**

(74) Representative: **Surmiak, Wiesława Halina et al
Ul. Stanisława Mikołajczyka 5
45-271 Opole (PL)**

(56) References cited:
**EP-A2- 0 383 749 WO-A1-96/31655
DE-A1- 2 301 786 RU-C1- 2 114 234
SU-A1- 1 661 576**

EP 2 090 697 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] A device for indirect indication of rail axis, in particular a bridge rail, is an object of this invention.

[0002] Such a device, referred to in the publication titled "Engineering Geodesy" by W. Janusz, collective work, volume II, PPWK, Warsaw 1994, page 445, a special levelling head for indirect reproduction of rail head, namely a scissor clamp, provided with immovable grips at the end of the arms, touching lateral surfaces of the rail head. The levelling head is aligned on the rail the way that, once aligned, the centre of the target is situated in the vertical plane containing the rail axis.

Also known is a levelling head, namely a scissor clamp provided with four rotating rolls at the end of the arms, two pieces at each end. The rolls move along lateral surfaces of the bridge rail head. A geodesic aiming device is installed on the clamp.

[0003] The known special levelling heads provided with grips at the end of the arms have to be moved along the rail and fixed in other measuring point, which is tedious and time-consuming, and also requires the staff intervention. The known levelling heads, though enable movement of the instrument along the rail, do not assure stability of the device, which is not propitious to safe and failure-free realization of measurements.

[0004] The essence of the invented device for indirect indication of rail axis consists in that at the end of each arm of the scissor clamp located is a rectangular prism roll tilt limiter with an opening. The rolls are installed on self-aligning bar.

[0005] The invented device for indirect indication of rail axis enables its safe movement and a stable position on the rail, by pressing the device to the upper surface of the rail head, thanks to self-aligning rolls that change the deflection direction, according to the turn of the device movement direction. At the same time, it allows to more precisely indicate the rail head, and thus the rail axis, which helps to obtain more accurate results of the measurement.

[0006] The invention object, a real model, has been described on the drawing that illustrates a scheme of the device for indirect indication of rail axis.

The invented device is composed of scissor clamp 2 with rolls 5 located on self-aligning bar that are connected with the arms ends. The scissor clamp 2 has been installed on trolley 4. At the end of each arm located is a rectangular prism roll 5 tilt limiter 3 with an opening that points out magnitude of the roll 5 deflection of the vertical. A target 1 is located at intersection of the scissor clamp 2, that indicates the axis of the rail head, and thereby the rail axis. Rolls 5 rotate along lateral surfaces of the rail head, and their deflection from the vertical is changing according to the turn of direction of the invented device movement. Location of the target 1, and thereby that of the rail head, which corresponds to the rail axis position, are readable at determined places.

Claims

1. A device for indirect indication of rail axis is provided with a scissor clamp (2) having arms, a target (1) and with rotating rolls (5) at the end of the arms, it is characterized as follows: at the end of each arm of the scissor clamp (2) located is the roll (5) tilt limiter (3), a rectangular prism with an opening, while the rolls (5) are located on self-aligning bar.

Patentansprüche

1. Vorrichtung zur indirekten Anzeige der Schienenachse ist ausgerüstet mit Scherenschluss (2), mit den Armen, Scheibe (1) und Drehrollen (5) am Ende der Arme, charakteristisch wegen: am Ende jedes Arms des Scherenschlusses (2) befindet sich eine Rolle (5) Neigungsbegrenzer (3), Winkelprisma mit Loch, wobei die Rollen (5) befinden sich an den Schwingachsen.

Revendications

1. Dispositif pour l'indication indirecte de l'axe du rail est pourvu d'une griffe de la paire de ciseaux (2), comportant des bras, un blindage (1) et des rouleaux rotatifs (5) dans l'extrémité de la pointe, **caractérisé en ce que:** en extrémité de chaque bras de l'agrafe de la paire de ciseaux (2) pour un rouleau (5) un limiteur d'inclinaison (3), un rectangulaire avec un trou, mais les rouleaux (5) sont situés sur les axes d'oscillation.

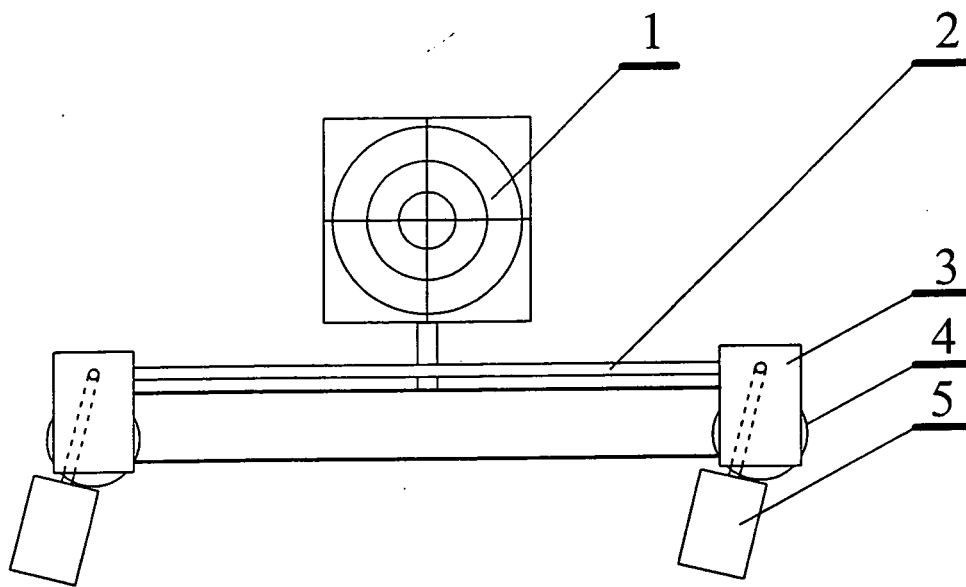


Fig. 1

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Non-patent literature cited in the description

- **W. JANUSZ.** *Engineering Geodesy*, 1994, vol. II, 445
[0002]