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(71) Applicant: **Sokolov, Yuriy Borisovich**
Moskovskaya obl. 141195 (RU)

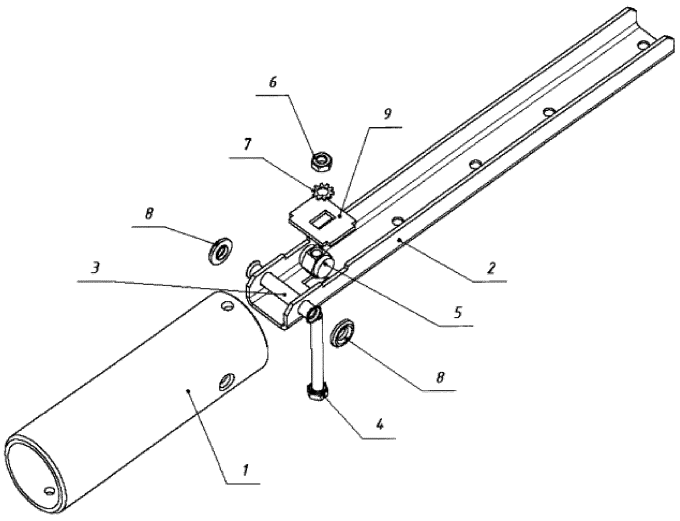
(72) Inventor: **Sokolov, Yuriy Borisovich**
Moskovskaya obl. 141195 (RU)

(74) Representative: **Spengler, Robert**
Küfergasse 11
89073 Ulm (DE)

(54) DEVICE FOR SECURING A LIGHT FITTING

(57) The invention relates to the field of lighting technology. The aim of the invention is to create a device for securing a light fitting, which has a simpler and cheaper design and is also easier to use as a result of the presence of only one adjusting screw (4), said screw being designed such that it can be screwed or unscrewed, thereby making it possible to adjust the inclination of a bracket (2) of the light fitting relative to a main bracket (1) and thus to adjust the inclination of the light fitting relative to the surface to be illuminated.

FIG.1



EP 3 163 159 A1

Description

[0001] The invention refers to the illuminating engineering sphere, notably to luminaire fastening devices, and may be used for luminaires, including LED, fixation at lamp poles and other external structures and to alter the angle of slope of a luminaire relatively to the illuminated surface.

[0002] When dealing with lamp poles on the roads when angle of slope of outlet pipes towards the road surface is unequal, it is necessary to have a possibility of alignment of this angle with the help of a luminaire. As a rule, it is enough to have a $\pm 15°$ angle alignment. Luminaires fastening devices, known from the technical level, have overdesign, because in this case, luminaire angle of scope alignment is done with the help of two or more screws.

[0003] The device that is the closest to the claimed invention is the luminaire fastening device, described in the claim TW201329388 (A), that contains a main cantilever and a luminaire cantilever, connected with each other by an articulated joint, and the main cantilever is hollow and has a rear end, produced with a possibility of connection with an external bearing element, and a front end, produced open, and the luminaire cantilever has a front end, connected with the luminaire and a rear end, inserted into the main cantilever through its open front end, and a part of the luminaire cantilever is inside the main cantilever, and the luminaire cantilever is produced with a possibility to oscillate inside the main cantilever relatively to the horizontal shaft of the articulated joint, and alteration of the luminaire cantilever angle of scope relatively to the main cantilever. The device also contains two adjusting screw, bolted into the threaded through bores, located in the bottom and top parts of the main cantilever and pressing the luminaire cantilever at the bottom and top sides, and adjusting screws are produced with a possibility of bolting in and out, and because of this luminaire cantilever angle of slope (location) alignment relatively to the main cantilever. This device is chosen as a prototype of the claimed utility model.

the disadvantage of the prototype luminaire fastening device is presence of additional element of construction, notably the second adjusting screw, that complicates and raises the price the device structure, and complicates device operation due to the necessity of adjustment (bolting in and out) of the additional element of construction (adjusting screw).

[0004] The task of the claimed action is to create a luminaire fastening device with a more plain and cheap construction, that is easier in operation due to presence of only one adjusting screw, produced with a possibility of bolting in and out and due to this alteration of luminaire cantilever angle of slope relatively to the main cantilever and alteration of a luminaire angle of slope relatively to the illuminated surface.

[0005] The set problem is solved by creating a luminaire fastening device, containing a main cantilever and a luminaire cantilever, and the main cantilever is produced hollow and has a rear end, produced with a possibility of connection with an external bearing element, and a front end, produced open, and luminaire cantilever has a front end, connected with the luminaire and a rear end, inserted into the main cantilever through its open front end, and a part of luminaire cantilever is located inside the main cantilever, and the luminaire cantilever and the main cantilever are connected by an articulated joint, and the luminaire cantilever is produced with a possibility to oscillate inside the main cantilever relatively to the horizontal shaft of the articulated joint, differentiating by the fact, that it also contains n adjusting screw with a profile nut and a fastening nut, and the profile nut is movably connected with a luminaire cantilever, and the adjusting screw is inserted from the outside of the main cantilever into the through openings, produced in the main cantilever and in the luminaire cantilever, bolted in the profile nut and the fastening nut and is located perpendicularly to the articulated joint shaft, and the adjusting screw is produced with a possibility of bolting in and out from the profile nut and because of this alteration of luminaire cantilever angle of slope relatively to the main cantilever, and the fastening nut is located at the outside of the main cantilever and produced with a possibility of adjusting screw fixation relatively to the main cantilever, and bolting to the outside of the main cantilever, and with a possibility of releasing the adjusting screw in case of this bolting out from the outer side of the main cantilever.

In the preferred embodiment, the device contains a lock washer, put on the adjusting screw, located between the fastening nut and the outer side of the main cantilever and produced with a possibility of adjusting screw fixation.

[0006] In the preferred embodiment, the device contains two bearing sockets, each of which is put on the articulated joint shaft, located between the main cantilever and the luminaire cantilever and produced with a possibility of transverse looseness elimination between the luminaire cantilever and the main cantilever.

[0007] In the preferred embodiment, the main cantilever is produced as a pipe with a cross section, selected from the number of cross sections, containing a rectangular cross section and a round cross section.

[0008] In the preferred embodiment, the luminaire cantilever is produced as a form with a cross-section, selected from a number of cross- sections, containing a U-shape cross-section and a cross-section, shape of which copies the shape of the main cantilever cross section.

[0009] In the preferred embodiment, the luminaire cantilever is produced as a form, having a U-shape cross-section, and a profile nut is produced as a cylinder or a hexagonal prism, having a through radial threaded opening and one cylindrical cusp per every base, and the diameter of cylindrical cusps is less than the base diameter, and there are openings in luminaire cantilever sidewalls, where cylindrical cusps are inserted, producing a shaft-bushing type joint of a profile nut and luminaire cantilever,

and the profile nut is produced with a possibility of rotation in the openings relatively to the luminaire cantilever.

[0010] In the preferred embodiment, the openings in the luminaire cantilever sidewalls are produced as long slots, and the profile nut is produced with a possibility of rotation and longitudinal movement in the slots relatively to the luminaire cantilever.

[0011] In the preferred embodiment, the luminaire cantilever is produced as a form, having a U-shape cross-section, and in the luminaire cantilever bottom wall a through longitudinal opening is produced, and a plate is welded to the sidewalls edges, which has a longitudinal opening, located in the opposite to the longitudinal opening in the luminaire cantilever bottom wall, and the adjusting screw is inserted in both longitudinal openings, and the profile nut side parts and the adjusting screw are produced with a possibility of moving inside the longitudinal opening.

[0012] In the preferred embodiment, the luminaire cantilever is produced as a form, having a rectangular cross-section, and in the luminaire cantilever bottom and top walls longitudinal through openings, located opposite to each other are produced, and the adjusting screw is inserted in both longitudinal openings, and the profile nut side part and the adjusting screw are produced with a possibility of moving inside the longitudinal openings. In the preferred embodiment, external bearing element is the element, selected from the number of elements, containing a lamp pole and a wall.

[0013] In the preferred embodiment, the main cantilever and luminaire cantilever articulated joint contains through openings, produced in the main cantilever and luminaire cantilever sidewalls and a shaft, inserted in the openings.

[0014] In the preferred embodiment, the articulated joint shaft is produced as a cylindrical fastening element, selected from a number of elements, containing a bushing with dowels at the ends or expanded at the edges; a bolt with a nut.

[0015] In the preferred embodiment, the adjusting screw is located between the articulated joint shaft and the rear end of the main cantilever. In the preferred embodiment, the adjusting screw is located between the articulated joint shaft and the front end of the main cantilever.

[0016] Further, for a better understanding of the claimed decision, a detailed description is presented with relevant graphic material.

Fig. 1. Isometric view of the luminaire fastening device embodiment with adjusting screw, located between the articulated joint shaft and the main cantilever front end and with a plate, welded to the luminaire cantilever.

Fig. 2. Image of the luminaire fastening device embodiment variant with adjusting screw, located located between the articulated joint shaft and the main cantilever rear end and with a plate, welded to the luminaire cantilever: a) side view and front view; b) top view; c) sectional side view.

Fig. 3. Image of the luminaire fastening device embodiment variant with adjusting screw, located between the articulated joint shaft and the main cantilever front end and with a plate, welded to the luminaire cantilever: a) side view and front view; b) top view; c) sectional side view.

Fig. 4. Image of the luminaire fastening device embodiment variant with adjusting screw, located between the articulated joint shaft and the main cantilever front end and with cylindrical cusps on the profile nut: a) side view and front view; b) top view; c) sectional side view.

Fig. 5. Isometric view of the luminaire fastening device embodiment variant with adjusting screw, located between the articulated joint shaft and the main cantilever front end and with cylindrical cusps on the profile nut.

[0017] Let's examine the claimed luminaire fastening device embodiment variants, presented in the Fig.1-5, more detailed. In all variants the claimed luminaire fastening device contains a main cantilever 1 and a luminaire cantilever 2. The main cantilever 1 is produced hollow and has a rear end, produced with a possibility of connection with the external bearing element, and the front end, produced open. Luminaire cantilever 2 has a front end, connected with the luminaire and the rear end, inserted into the main cantilever 1 through its open front end. A part of the luminaire cantilever 2 is located inside the main cantilever 1. Luminaire cantilever 2 and the main cantilever 1 are connected via articulated joint. Luminaire cantilever 2 is produced with a possibility of oscillation inside the main cantilever 1 relevantly to the articulated joint shaft 3, and changing the angle of slope relevantly to the main cantilever 1. The claimed luminaire fastening device also contains an adjusting screw 4 with a profile nut 5 and fastening nut 6. The profile nut 5 is movably connected with the luminaire cantilever 2. The adjusting screw 4 is inserted into the through openings of the outer side of the main cantilever 1, which are produced in the main cantilever 1 and in the luminaire cantilever 2, bolted in the profile nut 5 and the fastening nut 6 and located perpendicularly to the articulated joint shaft 6. During bolting in and out of the adjusting screw 4 by a user, the profile nut 5 is moving, carrying the luminaire cantilever 2, so that the luminaire cantilever 2 and the luminaire itself angle of slope is changed relevantly to the main cantilever 1. The fastening nut 6 is located on the outer side of the main cantilever. By bolting in the fastening nut 6 to the outer side of the main cantilever 1 by the user, the adjusting screw 4 is being fixed relevantly to the main cantilever 1, and by bolting out he fastening nut

6 of the outer side of the main cantilever 1 by the user, releasing of the adjusting screw 4 is done.

[0018] The claimed device (Fig. 1) contains lock washer 7, put on the adjusting screw 4, located between the fastening nut 8 and the outer side of the main cantilever 1 and allowing to strengthen the adjusting screw 4 fixation.

[0019] Articulated joint (Fig. 1-3) of the main cantilever 1 and luminaire cantilever 2 contains through openings, produced in the side wallsof the main cantilever 1 and luminaire cantilever 2 and the shaft 3, inserted in the openings. The shaft 3 of the articulated joint (Fig. 1-3) is performed as a bushing, expanded at the edges.

[0020] The claimed device (Fig. 1) contains two bearing sockets 8, each of which is put on the articulated joint 3 shaft, located between the main cantilever 1 and the luminaire cantilever 2 and allows eliminating transverse looseness between the luminaire cantilever 2 and the main cantilever 1.

[0021] The main cantilever 1 is produced as a pipe with a round cross section (Fig. 1-3).

[0022] Luminaire cantilever 2 (Fig. 1-3) is produced as a U-shape with cross section. Adjusting screw 7 may be located between the articulated joint shaft 3 and the rear end of the main cantilever 1 (Fig. 1, 3, 4, 5) or between the articulated joint shaft 3 and the front end of the main cantilever 1 (Fig. 2).

[0023] In the variants of the claimed device embodiment, presented in Fig. 1-3 the luminaire cantilever 2 is performed as a U-shape with a cross section. The profile nut 5 is produced as a hexagonal prism, having a threaded radial through opening. In the luminaire cantilever 2 bottom wall a longitudinal through opening is done, and the edges of the shape sidewalls plate 9 is welded to, which has a longitudinal opening, located in the opposite to the longitudinal opening in the bottom wall of the luminaire cantilever 2. Adjusting screw 4 is inserted in both longitudinal openings. Profile nut 5 hexagonal side and adjusting screw 4 may move inside the longitudinal openings.

[0024] In the variants of the claimed device embodiment, presented in Fig. 4-5, luminaire cantilever 2 is performed as a U-shape with a cross section. Profile nut 5is performed as a cylinder, having a threaded radial through opening, and one cylindrical cusp 10 on every base. Cylindrical cusp 10 diameter is less than the base diameters. In the luminaire cantilever 2 side walls long slot shape openings are made, where cylindrical cusps 10 are inserted, producing a profile nut 5 and luminaire cantilever 2 shaft-bushing connection, and the profile nut 5 is produced with a possibility of rotation and moving inside the long slots relatively to the luminaire cantilever 2.

[0025] Despite of the fact that the described above variant of embodiment was presented to illustrate the claimed decision, the specialists should realize, that different modifications, additions and alterations, not out of the scope and sense, presented in the appended claim, are possible.

Claims

1. Luminaire fastening device, containing main cantilever and a luminaire cantilever, and the main cantilever is produced hollow and has a rear end, performed with a possibility of connection with an external bearing element, and a front end, performed open, and luminaire cantilever has a front end, connected with the luminaire, and a rear end, inserted into the main cantilever through its open front end, and a part of the luminaire cantilever is located inside the main cantilever, and the luminaire cantilever and the main cantilever are connected by an articulated joint, and the luminaire cantilever is performed with a possibility of oscillation inside the main cantilever relatively to the articulated joint shaft, and changing of angle of slope relatively the main cantilever, differing by the fact, that it also contains an adjusting screw with the profile nut and fastening nut, and the profile nut is movably connected with the luminaire cantilever, and the adjusting screw is inserted from the outer side of the main cantilever in the through openings, produced in the main cantilever and in the luminaire cantilever, bolted in the profile nut and the fastening nut and located perpendicularly to the articulated joint shaft and the adjusting screw is performed with a possibility of bolting in and out of the profile nut, and because of this alteration of angle of slope of the luminaire cantilever relatively the main cantilever, and the fastening nut is located on the outer side of the main cantilever and is performed with a possibility of the adjusting screw fixation relatively to the main cantilever, and bolting to the outer side of the main cantilever, and with a possibility of releasing the adjusting screw in case of bolting out of the outer side of the main cantilever.

2. Device according to p. 1 differs by the fact, that it contains a lock washer, put on the adjusting screw, located between the fastening nut and the outer side of the main cantilever and produced with a possibility of the adjusting screw fixation.

3. Device according to p.1, differs by the fact, that it contains two bearing sockets, each of which is put on the articulated joint shaft, located between the main cantilever and the luminaire cantilever and is produced with a possibility of transversal looseness elimination between the luminaire cantilever and the main cantilever.

4. Device according to p.1, differs by the fact, that the main cantilever is produced as a pipe with a cross-section, selected from the number of cross sections, containing rectangular cross section and round cross section.

5. Device according to p.1, differs by the fact, that the

luminaire cantilever is produced as a form with cross-section, selected from the number of cross sections, containing U-shape cross section and a cross-section, shape of which copies the shape of the main cantilever cross section.

6. Device according to p.1, differs by the fact, that the luminaire cantilever is produced as a form, having a U-shape cross-section, and a profile nut is produced as a cylinder or hexagonal prism, having a threaded radial through opening, and one cylindrical cusp on every base, and the diameter of the cylindrical cusps is less than the diameter of the bases, and there are openings in the side walls of the luminaire cantilever, where cylindrical cusps are inserted, forming a shaft-bushing type joint of the profile nut and the luminaire cantilever, and the profile nut is produced with a possibility of rotation in the openings relatively to the luminaire cantilever.

7. Device according to p.6, differs by the fact that the openings in the side walls of the luminaire cantilever are produced as long slots, and the profile nut is produced with a possibility of rotation and longitudinal moving inside the slots relevantly to the luminaire cantilever.

8. Device according to p.1, differs by the fact, that the luminaire cantilever is produced as a form, having a U-shape cross-section, and in the bottom wall of the luminaire cantilever there is a longitudinal through opening, and a plate is welded to the edges of the side walls of the form, and the plate has a longitudinal opening, located opposite the longitudinal opening in the bottom wall of the luminaire cantilever, and the adjusting screw is inserted in both longitudinal openings, and the side part of the profile nut and the adjusting screw is produced with a possibility of moving inside the longitudinal opening.

9. Device according to p.1, differs by the fact, that the luminaire cantilever is produced as a form, having a rectangular cross-section, and in the bottom and top walls of the luminaire cantilever there are longitudinal through openings, located opposite each other, and the adjusting screw is inserted in both longitudinal openings, and the side part of the profile nut and the adjusting screw are produced with a possibility of moving inside the longitudinal openings.

10. Device according to p.1, differs by the fact, that the external bearing element is the element, selected from a number of elements, containing a lamp pole and a wall.

11. Device according to p.1, differs by the fact, that the articulated joint of the main cantilever and the luminaire cantilever contains through openings, produced in the side walls of the main cantilever and the luminaire cantilever, and a shaft, inserted in the openings.

12. Device according to p.1, differs by the fact, that the shaft of the articulated joint is produced as a cylindrical fastening element, selected from a number of elements, containing a bushing with dowels at the ends or expanded at the edges; bolt with a nut.

13. Device according to p.1, differs by the fact, that the adjusting screw is located between the articulated joint shaft and the rear end of the main cantilever.

14. Device according to p.1, differs by the fact, that the adjusting screw is located between the articulated joint shaft and the front end of the main cantilever.

FIG.1

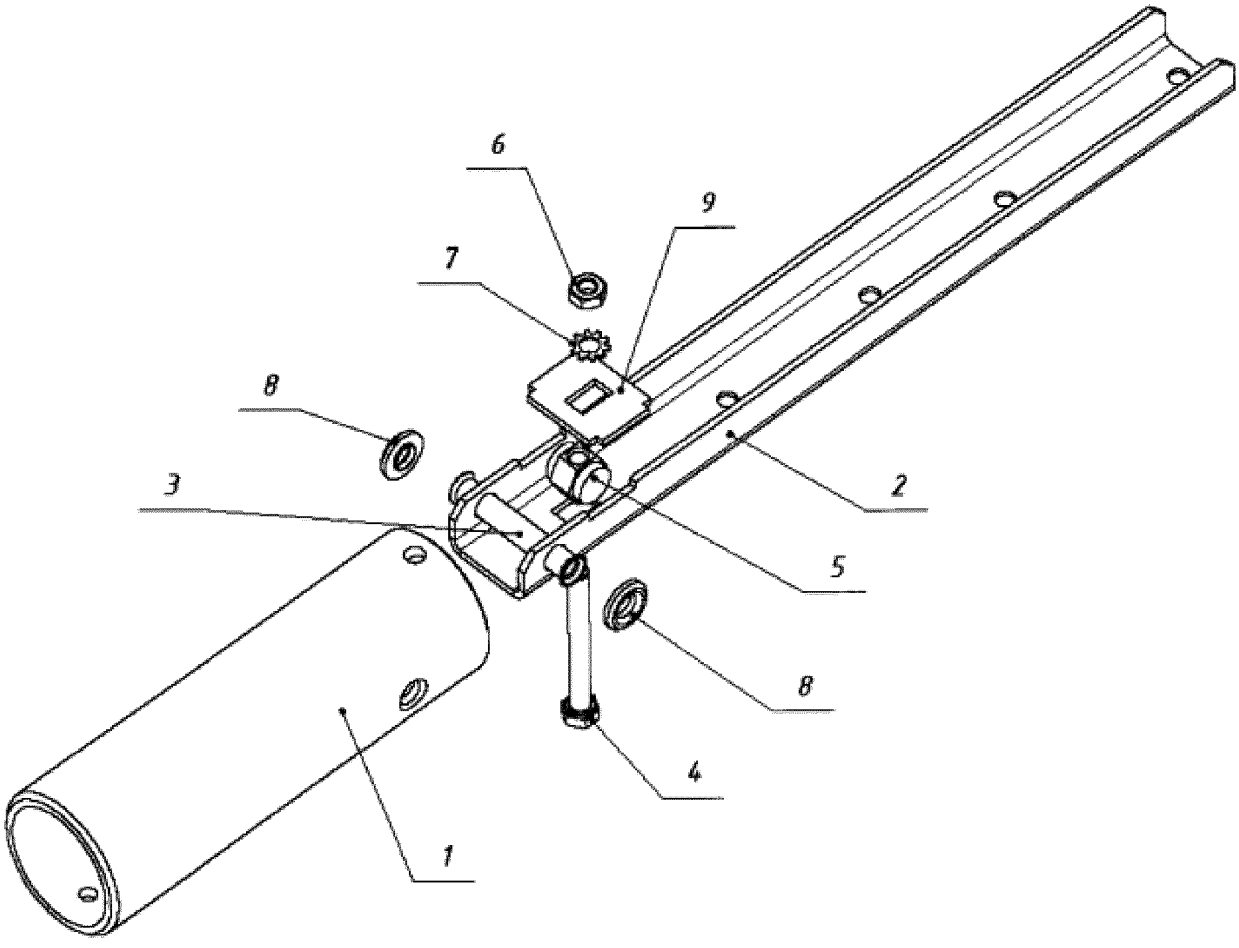


FIG.2

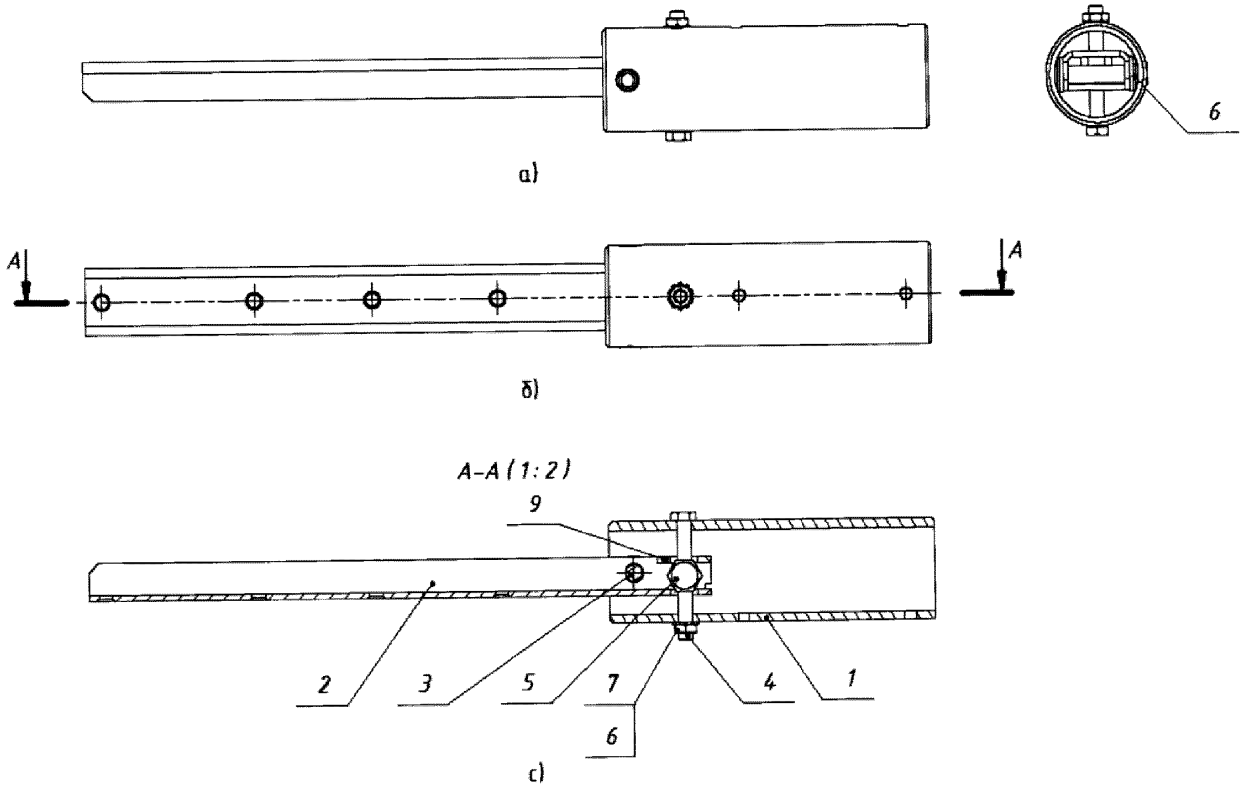


FIG.3

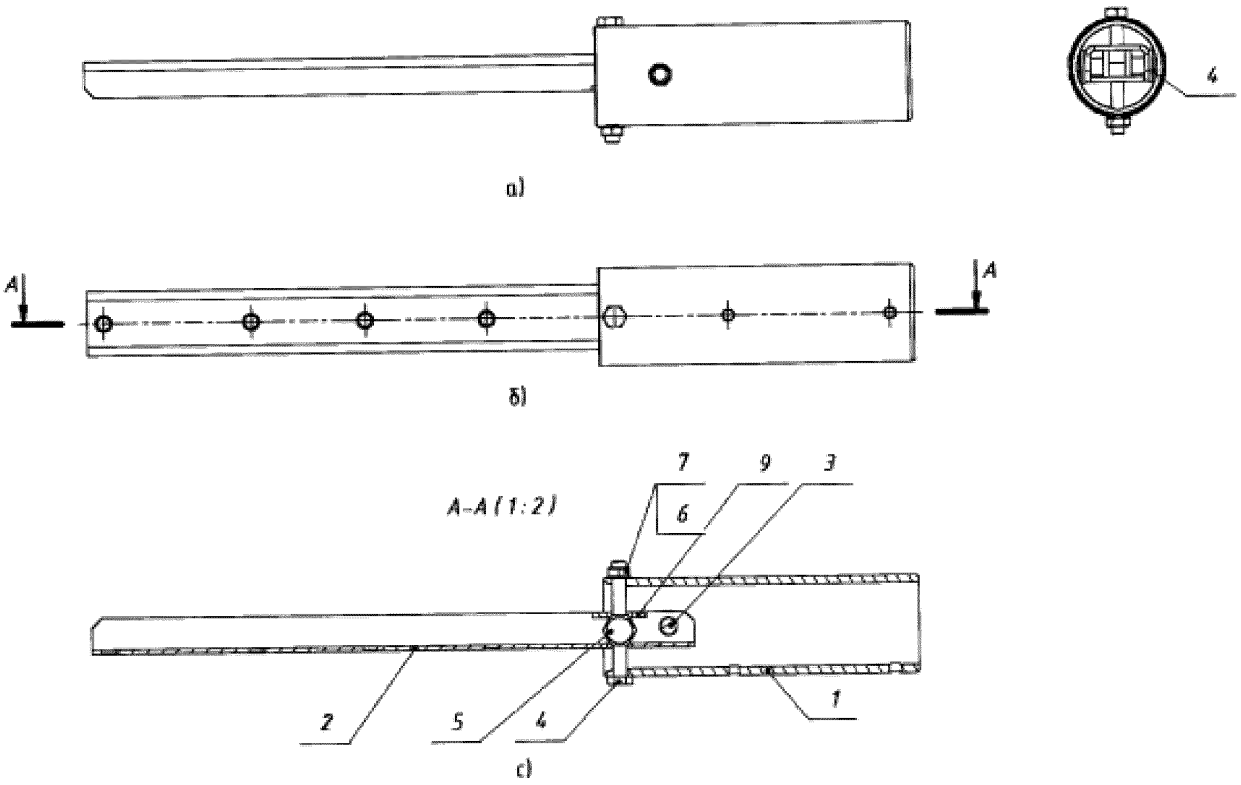


FIG.4

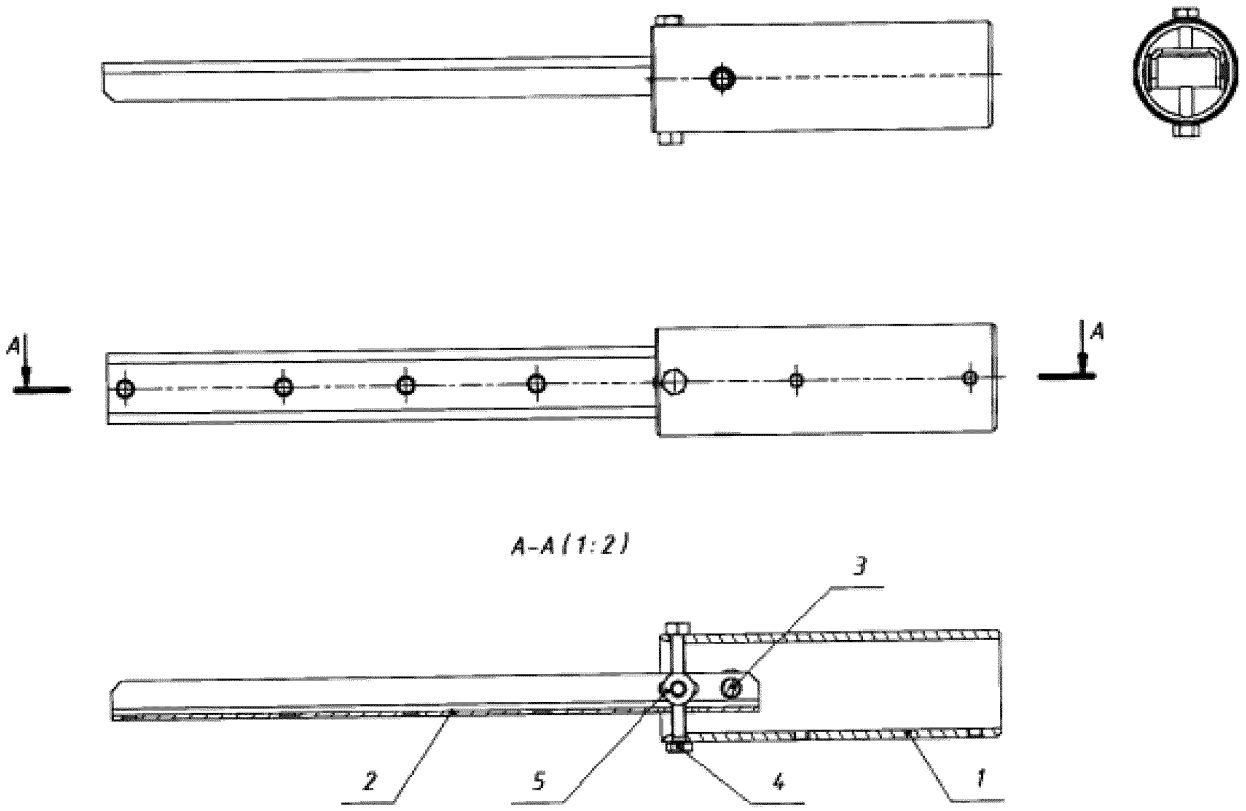
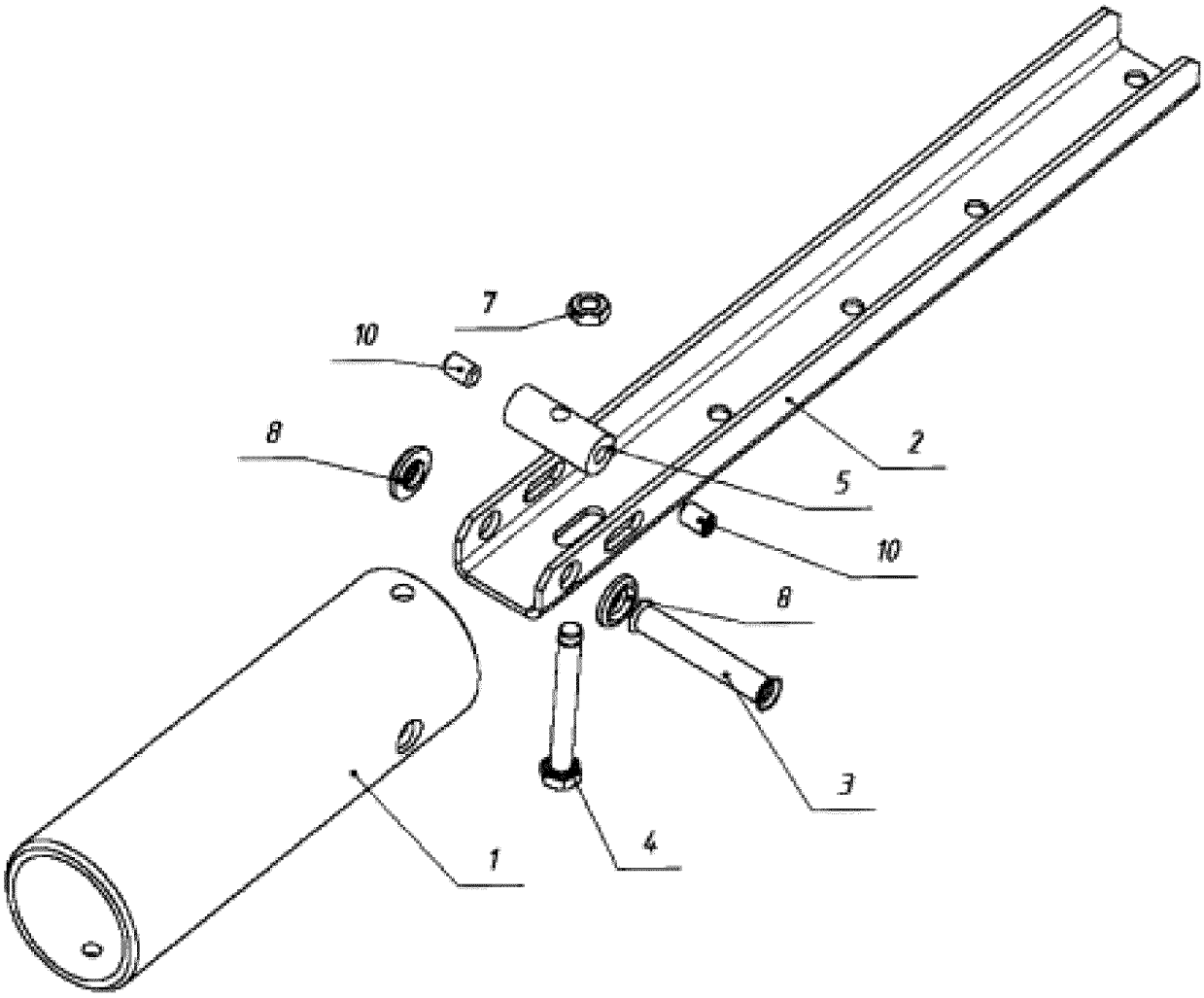


FIG.5



INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 2015/000217

A. CLASSIFICATION OF SUBJECT MATTER

F21V 21/10 (2006.01) F21V 21/14 (2006.01) F21W 131/10 (2006.01)

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)

F21V 21/00, 21/10, 21/14, 21/34, 33/00, F21W 131/10

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)

PAJ, Espacenet, DWPI, Patentscope, USPTO DB, CIPO, SIPO DB, PatSearch (RUPTO internal)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
D, A	TW 201329388 A (HUANG HONG-CHANG) 16.07.2013	1-14
A	SU 629403 A1 (PREDPRIYATIE P/YA V-2108) 25.10.1978	1-14
A	SU 1227910 A1 (TSENTRALNOE PROEKTNO-KONSTRUKTORSKOE BIURO TRESTA ELEKTROMANTAZHKONSTRUTSHCHIIA) 30.04.1986	1-14
A	WO 1988/002460 A1 (GRAUT T.) 07.04.1988	1-14
A	GB 2348272 A (STRAND LIGHTING) 27.09.2000	1-14
A	JP 2008091185 A (ITOKI CORP) 17.04.2008	1-14
A	CN 201014370 Y (DU W) 30.01.2008	1-14

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

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Date of the actual completion of the international search	Date of mailing of the international search report
10 July 2015 (10.07.2015)	23 July 2015 (23.07.2015)
Name and mailing address of the ISA/	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1998)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- TW 201329388 A **[0003]**