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(54) **MULTIFUNCTIONAL COLUMN FOR URBAN USE**

(57) The invention relates to a multifunctional column for urban use, which includes: a one-piece metal body (1) which is hollow, provided with a lower segment (2) having a quadrangular section and an upper segment (3) consisting of two tubular elements (31, 32) which are quadrangular and parallel, form a clevis, and define an intermediate opening (33) that is open toward two opposing sides; said tubular elements (31, 32) having two surfaces facing one another in which inspection windows provided with exchangeable inspection covers are defined; and mountings (63) suitable for being mounted at various heights in the intermediate opening (33) of the upper segment (3) of the column (1) and for securing the various lighting and/or communication elements (51, 52).

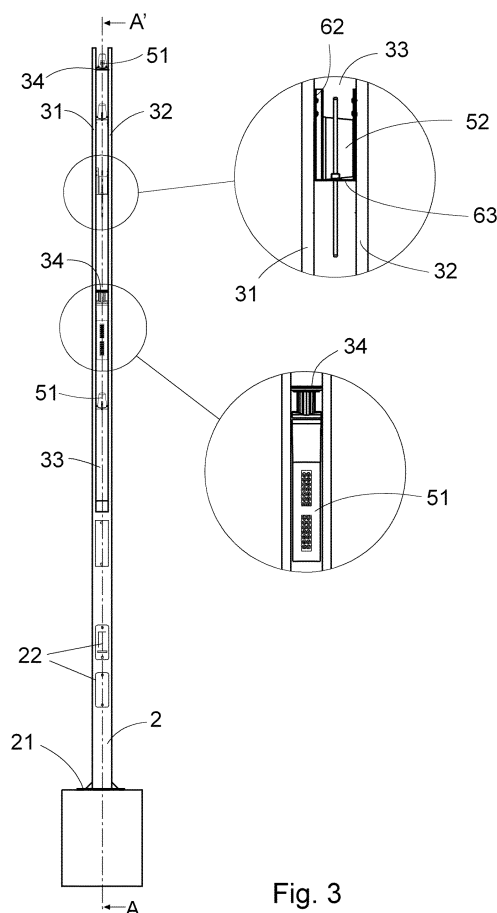


Fig. 3

Description

Subject-matter of the invention

[0001] The present invention relates to a multi-functional column for urban use, applicable for fastening various elements and, in particular and without limitation, lighting and/or communication elements.

[0002] This column bears specific construction-based characteristics intended to afford suitable versatility in order to allow for the integration and supporting of various types of lighting and/or communication elements, adapting to the needs of each installation and location area.

Field of application

[0003] This invention is applicable in the sector of manufacture of columns for urban use, suited for supporting various elements, essentially for lighting and/or communication.

Prior art

[0004] At present, various types of support are used, such as lampposts or columns, for fastening lighting, communication and other additional elements.

[0005] For instance, document ES 1062478 U describes a lamppost comprising a curved neck and flanges for supporting flags, traffic lights and a range of accessories, said flanges being formed by two half-shells that grip the body of the neck and incorporate holes on the sides for affixing clamping bolts; and at least one of the half-shells incorporates a hole for affixing the pertinent accessory.

[0006] This solution has a number of drawbacks, such as the arrangement of accessories in a clearly protruding position with respect to the lamppost, giving a visually overloaded appearance or one of disproportionate volume. This type of support is also inappropriate if the aim is to achieve substantial versatility for installing various types and number of devices and accessories according to the needs in each location point.

[0007] It is also known for specific columns to be used for the assembly and supporting of various elements of urban furniture, for instance, the multi-functional column for elements of urban furniture described in utility model ES 1078320 U, which incorporates an initial cast-iron segment with a second steel tubular segment affixed on it, on which longitudinal profiles of uniform section are placed which have rails on the outside for the sliding assembly and attachment at a variable height, with differing side orientations, of tools to support the various elements of furniture to be mounted on top of the column.

[0008] This multi-functional column carries a number of benefits compared to the aforementioned prior art as it allows accessories to be assembled by sliding them along the rails on the upper segment, affixing them at the desired height. It also bears the same drawbacks as the

aforesaid prior art because the various accessories protrude from the column sideways leaving them completely exposed and unprotected. The column with the accessories together give the impression of an overloaded, excessively bulky installation.

[0009] A further drawback of the aforementioned prior art ES 1078320 U is that the structure of the upper segment of the column, formed by a steel tubular body and longitudinal exterior profiles, with potential for affixing accessories at different heights, prevents the signal and power cables for said accessories from being fed up inside the column and running down the outside to the point where the specific accessory is mounted, meaning that the data and/or power cables need to be much longer.

[0010] The technical problem raised is the development of a multi-functional column for urban use which affords a light appearance without being overladen, with additional protection for the elements affixed to it, whilst offering substantial versatility in terms of the various elements that may be mounted on it, essentially for lighting and/or communication.

Description of the invention

[0011] In order to achieve the aims proposed, the multi-functional column for urban use addressed in this invention, applicable in the fastening of various elements, essentially for lighting and/or communication, albeit not exclusively, has been conceived. The column comprises a metallic, hollow single-piece body consisting of a quadrangular-shaped lower segment and an upper segment formed by two quadrangular-shaped parallel tubular elements in the form of a fork which outline an intermediate hollow area in the upper segment open on both sides of the column; wherein said tubular elements have two facing surfaces with inspection windows fitted with interchangeable inspection covers.

[0012] Said upper segment has a full aligned outer surface, the size of which matches that of the lower segment.

[0013] This multi-functional column allows various supports to be incorporated at differing heights in the intermediate hollow area in the upper segment of the column, suitable for affixing a range of lighting and communication elements.

[0014] The arrangement of these supports in the intermediate hollow area of the upper segment means that at least part of the supports are housed in the intermediate hollow area, allowing various communication and/or lighting elements to be affixed to them. The supports and lighting and communication elements are housed or aligned in relation to the intermediate hollow area, meaning that the outer surface of the column is free from any element affecting its overall appearance over its full height, a factor which, in addition to the intermediate hollow area on the upper segment, affords the installation a light appearance, not being overladen, unlike the prior art mentioned above.

[0015] Another feature of the invention is that the in-

terchangeable inspection covers, which can be affixed to the inspection windows of the tubular elements in the upper segment of the column, are formed by blank covers and covers comprising: fasteners suitable for mounting the supports for the lighting and/or communication elements in the intermediate hollow area mentioned, and holes with protective tabs for the cables to run through.

[0016] It is necessary to mention that the blank covers and the covers with fasteners for the supports are interchangeable, and one or other type may be used depending on the number and arrangement of the lighting and/or communication elements to be mounted on the column.

[0017] The invention also envisages the column incorporating horizontal strips for strutting the tubular elements of the upper segment of the column, giving them greater strength, said horizontal strips forming suitable tools for supporting the lighting and/or communication elements.

[0018] One of the embodiments of the invention envisions the column incorporating at least one holding bracket for the lighting and/or communication elements, attached in the intermediate hollow area of the upper segment, protruding from it crosswise by at least one of the open sides of said upper segment.

[0019] In a preferred embodiment of the invention, the holding bracket would be fastened on one end to the upper end of the intermediate hollow area, preferably to a bracing strip on the tubular elements, with the bracket protruding towards one side lending the column an L-shaped arrangement.

[0020] This bracket incorporates luminaries underneath, preferably LEDs, placed horizontally facing downward; with said luminaries constituting elements for lighting the road.

Description of the drawings

[0021] In order to add to the description made and to make it easier to understand the characteristics of the invention, enclosed with this descriptive report is a set of drawings depicting the following aspects by way of indication, without limitation:

- Drawing 1 shows an elevation view of a basic embodiment of the multi-functional column for urban use according to the invention.
- Drawing 2 shows a profile view of the multi-functional column of Drawing 1.
- Drawing 3 shows a profile view of the multi-functional column of the above drawings in the position of use, with enlargements of some of the elements placed within it.
- Drawing 4 shows vertical cross-section A-A' referred to in Drawing 3 of the multi-functional column in a position of use.

- Drawings 5, 6, 7 and 8 show cross-sections B-B'; C-C', D-D' and E-E', respectively, referred to in Drawing 4.

- 5 - Drawings 9 and 10 show two profile and elevation views of an alternative embodiment of the multi-functional column of the invention in a position of use with a swivel bracket carrying lighting elements on the upper end of the column.

- 10 - Drawing 11 shows cross-section F-F' referred to in Drawing 10.

- 15 - Drawing 12 shows cross-section G-G' referred to in Drawing 9.

Preferred embodiment of the invention

[0022] In the embodiment example shown in drawings 1 to 4, the multi-functional column for urban use comprises a metallic body (1) with a lower quadrangular segment (2) and an upper segment (3) formed by two tubular elements (31, 32) outlining a hollow area (33) towards two opposite sides of the column (1).

- 25 **[0023]** Both the lower segment (2) and the tubular elements (31, 32) of the upper segment (3) are hollow and are linked internally in order to allow power and data cables to be fed through.

- 30 **[0024]** As shown in more detail in Drawing 2, the lower segment (2) of the column (1) is fitted with specific tools (21) suitable for fastening to the ground, represented in this instance by an anchoring plate, and inspection covers (22) to introduce various equipment inside (4) which are visible in the cross-sections of drawings 4 and 5.

- 35 **[0025]** Said equipment (4) may consist of connecting and control elements for the various components to be mounted on the column (1).

- 40 **[0026]** In a specific embodiment example, the lower segment (2) of the column has a section measuring 25 x 25 cm and each of the tubular elements (31, 32) in the upper segment (3) have a section measuring 5 x 25 cm, allowing an intermediate hollow area (33) measuring 15 x 25 cm.

- 45 **[0027]** As shown in Drawing 3, the tubular elements (31, 32) are strutted by means of horizontal strips (34) arranged thus: one near the top end of the column, and the other in an intermediate segment; the second horizontal strip is supporting a lighting element (51) shown on one of the enlarged images of the aforementioned Drawing 3, in this case consisting of a luminary of LEDs with the light beam directed towards the ground.

- 50 **[0028]** The tubular elements (31, 32) have opposing surfaces with inspection windows which, as illustrated in Drawing 4, can be closed by means of blank covers (61), or covers (62) incorporating fasteners suitable for mounting supports (63) for lighting (51) or communication (52) elements.

[0029] These covers (62) bearing supports (63) also

incorporate openings with protective tabs (64) and said covers (62) can be seen with several supports (63) and the openings with protective tabs (64) in drawings 6, 7 and 8, relating to the cross-sections of the multi-functional column referred to in Drawing 3.

[0030] The cross-sections of drawings 6, 7 and 8 show the ground plan arrangement of the tubular elements (31, 32) in the upper segment with respect to the lower segment (2) and the covers (62) bearing supports (63) for fastening lighting and/or communication elements (51, 52).

[0031] In the alternative embodiment shown in drawings 9, 10 and 11, the column (1) incorporates a holding bracket (7), affixed to the top horizontal strip and to the top end of the tubular elements (31, 32). Said support bracket protrudes outwards from the column towards one of the open sides of the upper segment (3).

[0032] As shown in the cross-section of Drawing 12, said holding bracket (7) incorporates lighting elements below (51), in this case consisting of LED luminaries arranged horizontally and focussed downwards to light up the road.

[0033] Having described the nature of the invention and a preferred embodiment example in adequate detail, it is hereby stated for all pertinent purposes that the materials, shape, size and arrangement of the elements described may be modified, provided this does not involve altering the essential characteristics of the invention claimed below.

Claims

1. A multi-functional column for urban use; applicable for fastening various elements and, in particular, lighting and/or communication elements; **characterized by** the fact that it comprises: - a metallic, hollow single-piece body (1) with a lower quadrangular segment (2) and an upper segment (3) formed by two parallel quadrangular tubular elements (31, 32) in the form of a fork which outline an intermediate hollow area (33) in the upper segment (3) open on both sides of the column (1); wherein said tubular elements (31, 32) have two facing surfaces with inspection windows fitted with interchangeable inspection covers; wherein said upper segment (3) has a full aligned outer surface, the size of which matches that of the lower segment (2); - supports (63) suitable for being mounted at differing heights in the intermediate hollow area (33) in the upper segment (3) of the column (1) and for affixing a range of lighting or communication elements (51, 52).
2. A column according to claim 1, **characterized by** the fact that the interchangeable inspection covers incorporate blank covers (61) and covers (62) comprising: fasteners suitable for mounting the supports (63) for the lighting and/or communication elements

(51, 52) in the intermediate hollow area (33) in the upper segment (3), and openings with protective tabs (64) for the cables to run through.

3. A column according to any of the above claims, **characterized by** the fact that the tubular elements (31, 32) in the upper segment (3) of the column (1) are strutted at differing heights by horizontal strips (34), suitable for supporting lighting and/or communication elements (51, 52).
4. A column according to any of the above claims, **characterized by** the fact that it incorporates at least one holding bracket (7) for lighting elements (51), affixed in the intermediate hollow area (33) in the upper segment (3), protruding from it crosswise by at least one of the open sides of said upper segment (3).
5. A column according to any of the above claims, **characterized by** the fact that the lower segment (2) is fitted with specific tools (21) suitable for fastening to the ground and inspection covers (22) to introduce various equipment (4).

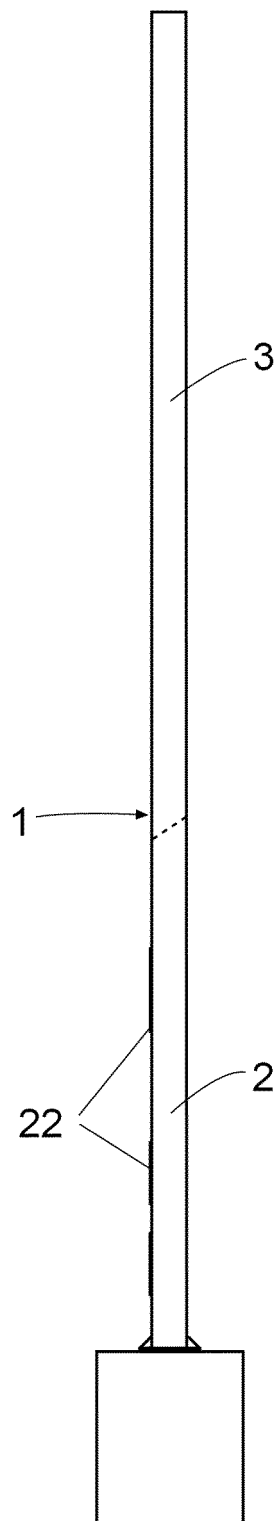


Fig. 1

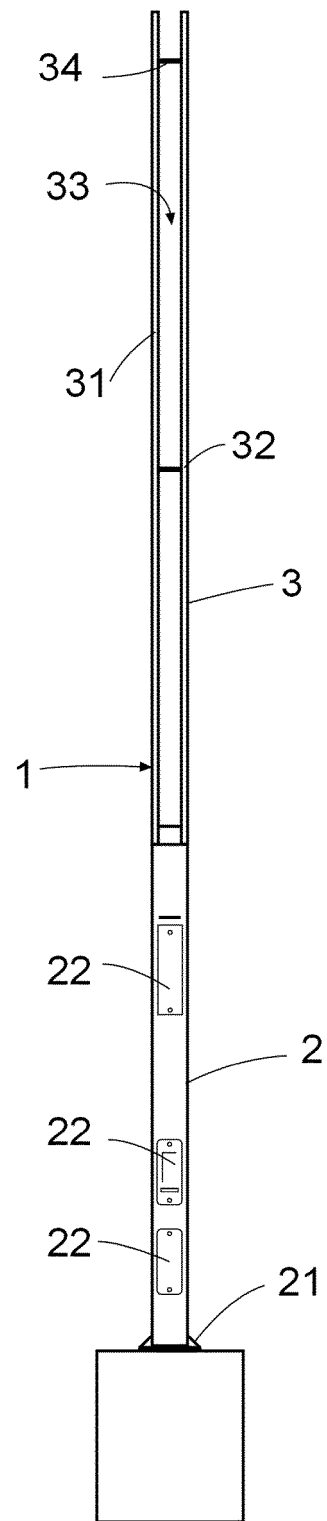


Fig. 2

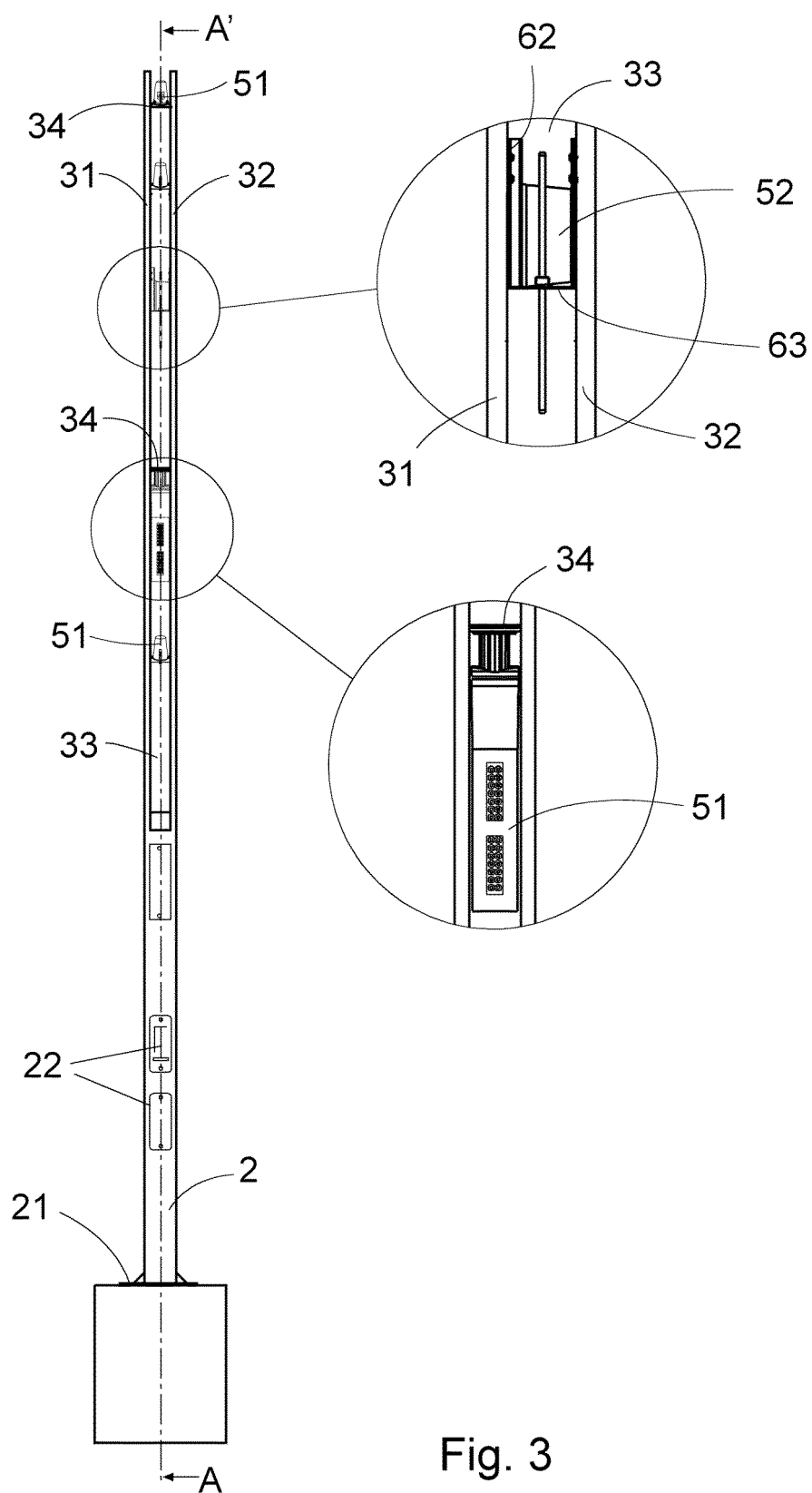


Fig. 3

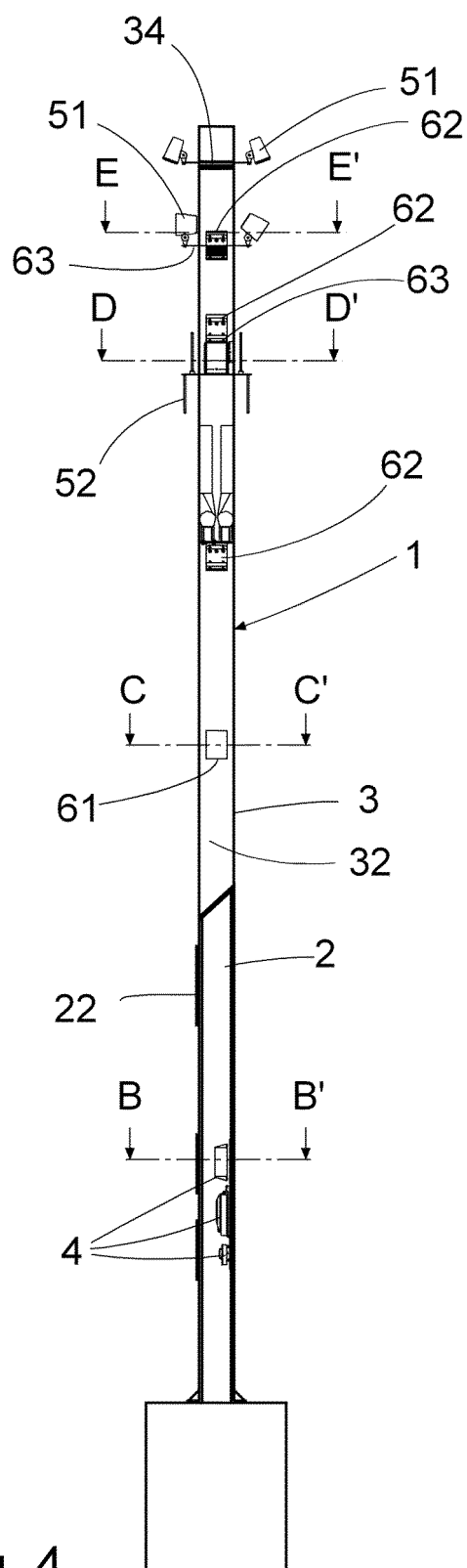


Fig. 4

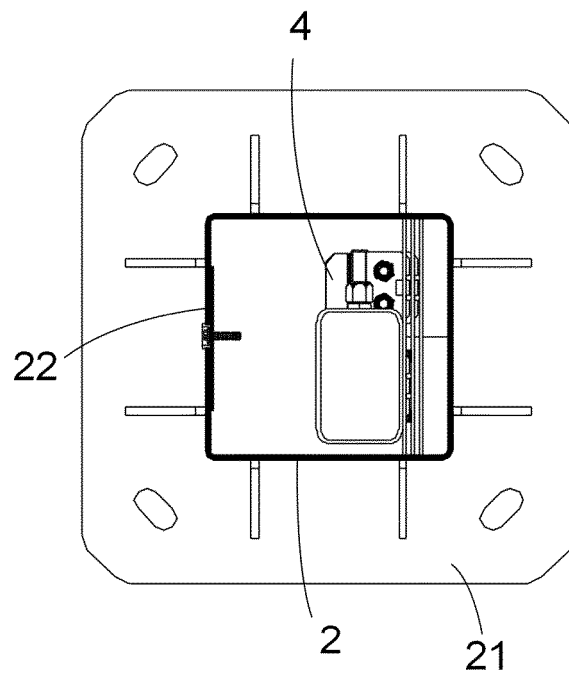


Fig. 5

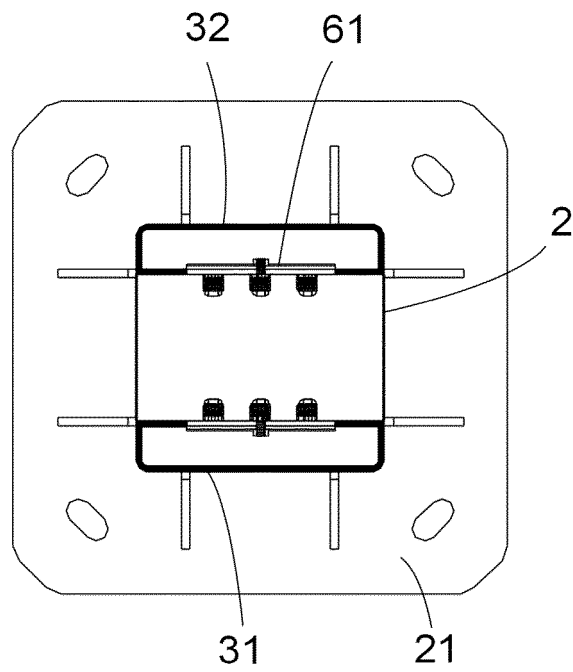


Fig. 6

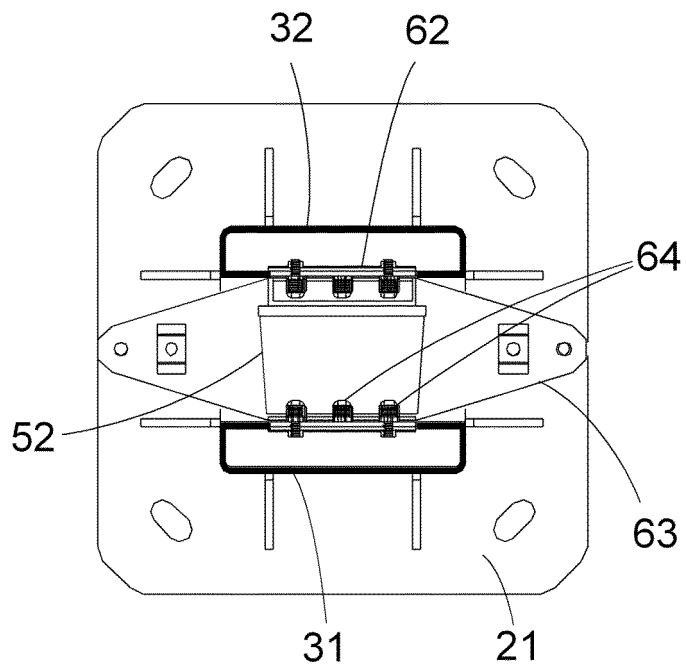


Fig. 7

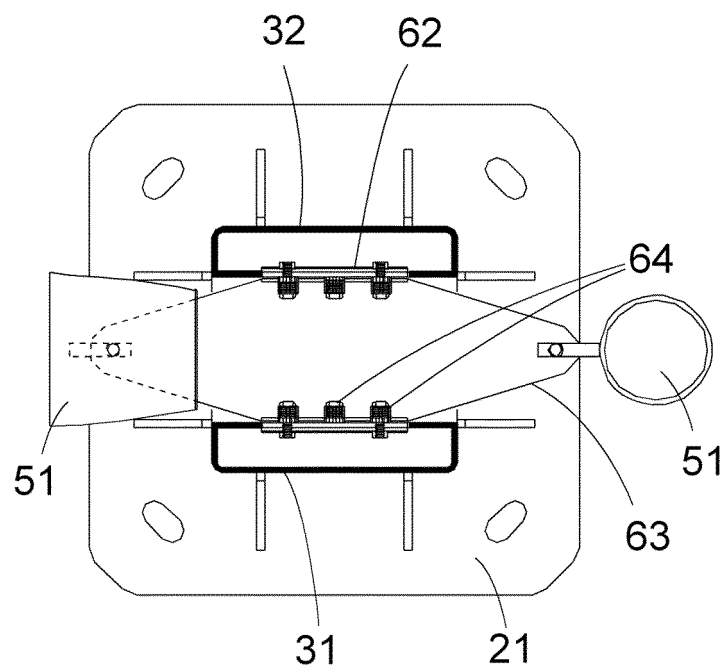


Fig. 8

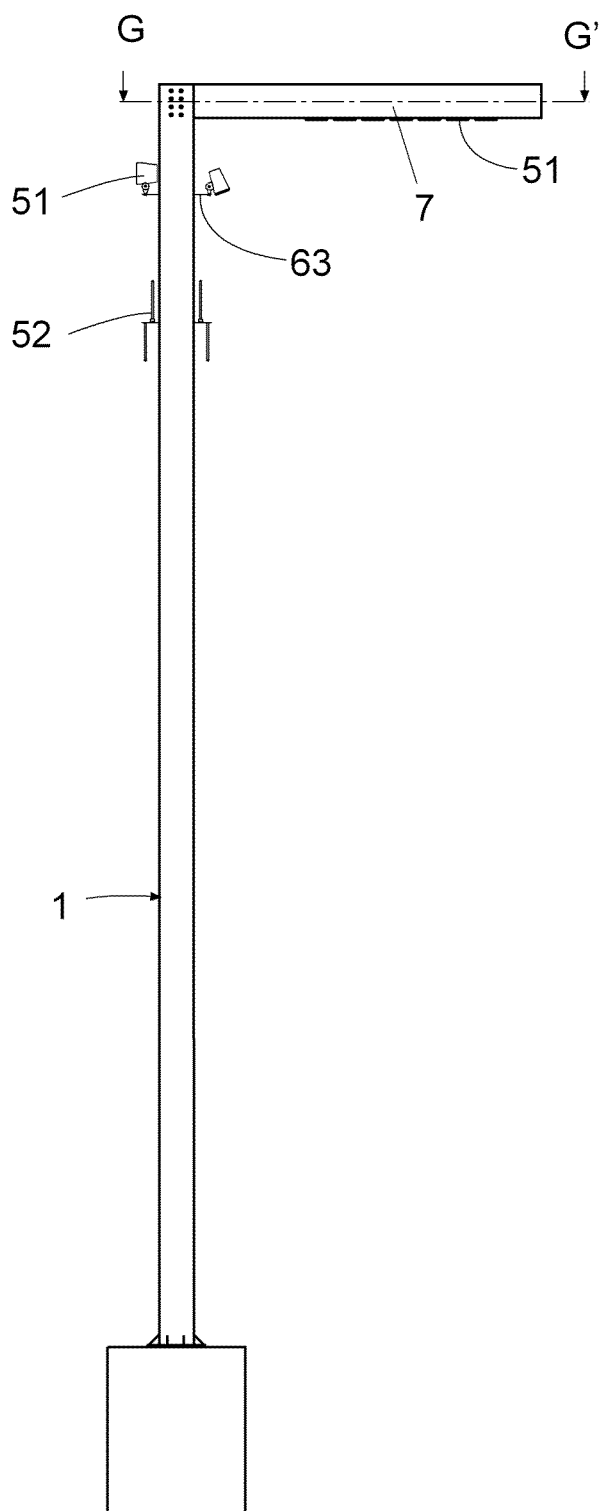


Fig. 9

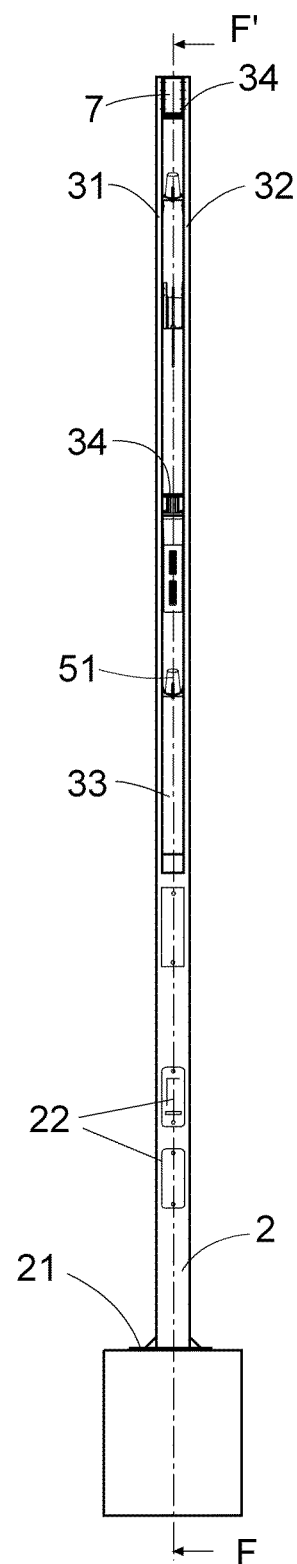


Fig. 10

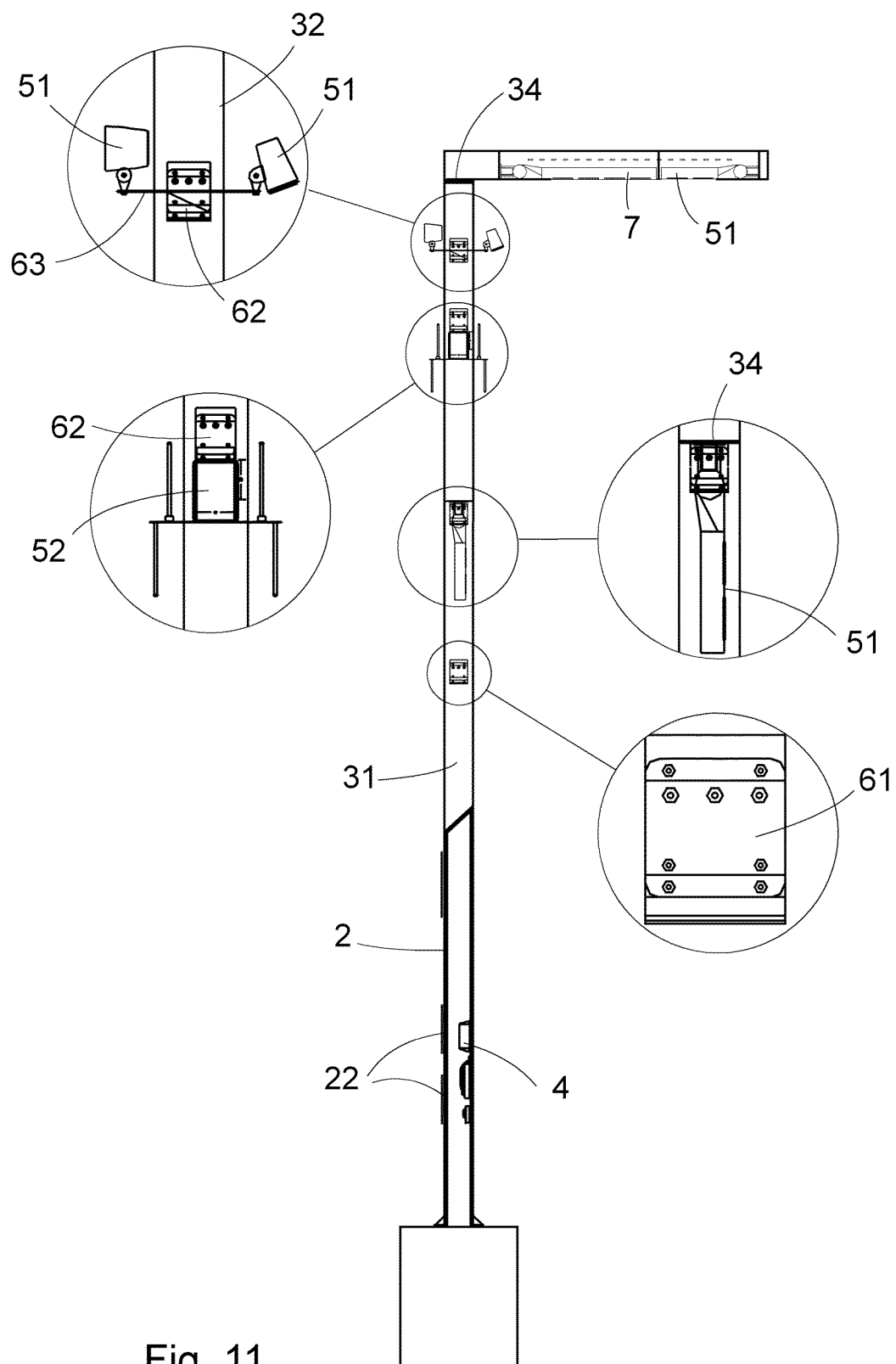


Fig. 11

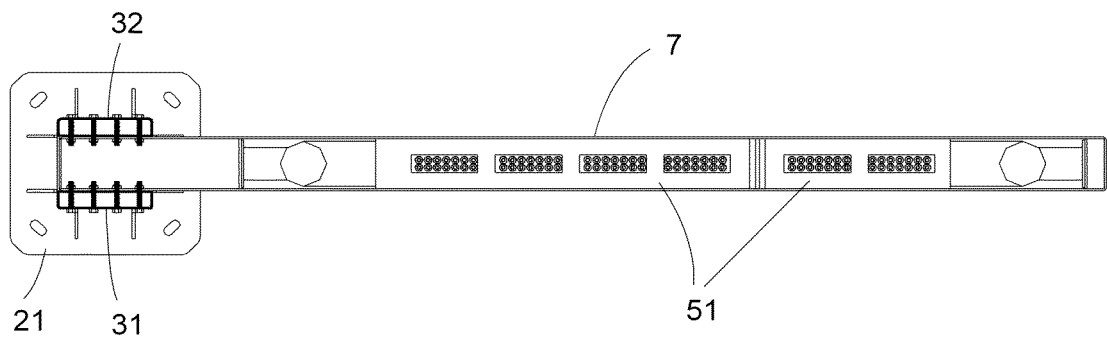


Fig. 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2014/070922

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)
F21S, E04H, F21V

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)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ES 1069274U U (ROS CASANOVAS JUAN ET AL.) 01/03/2009, page 1, line 41 - page 2, line 29; page 2, line 51 - page 3, line 17; figures.	1,5
Y	US 2010296274 A1 (YU CHING-HUI ET AL.) 25/11/2010, paragraph [0023]; paragraphs[0028 - 0029]; paragraph [0036]; abstract; figures.	1,5
A	CN 201487876U U (SHANDONG HUADING WEIYE ENERGY TECHNOLOGY CO LTD) 26/05/2010, Abstract from DataBase WPI. Retrieved from EPOQUE; figures.	1-5
A	JP 2003346511 A (YAMAGIWA CORP ET AL.) 05/12/2003, Abstract from DataBase WPI. Retrieved of EPOQUE; figures.	1-5

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
"E" earlier document but published on or after the international filing date	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O" document referring to an oral disclosure use, exhibition, or other means.	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search
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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2014/070922

C (continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	
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A	WO 2012033241 A1 (WOOJEON GREEN CO LTD ET AL.) 15/03/2012, paragraph [1]; paragraph [5]; paragraphs[14 - 15]; paragraph [24]; abstract; figures.	1-5
A	EP 1764545 A2 (SEMPERLUX AG) 21/03/2007, abstract; figures.	1-5
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International application No.

PCT/ES2014/070922

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2014/070922

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CLASSIFICATION OF SUBJECT MATTER

E04H12/08 (2006.01)

F21S8/08 (2006.01)

F21V21/10 (2006.01)

REFERENCES CITED IN THE DESCRIPTION

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- ES 1078320 U [0007] [0009]