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(54) **SELF-SUPPLIED MULTIFUNCTIONAL DIGITAL PARASOL**

(57) Self-supplied multifunctional digital parasol that consists of a pole (5), a laminated roof (1) with a fabric that incorporates photovoltaic units (32) with capacity to generate and accumulate energy and arranged in a folding support structure (3) and means for conducting the energy generated to an autonomous electric power generation unit (34) located on the pole (5) and which self-supplies electricity to electric/electronic power units of services to the parasol.

The pole (5) consists of an upper compartment (14), a central compartment (33), a lower compartment (11) and a spire (6) located on the higher part of the pole (5) and equipped with an inner pole (15) movable by an opening and closing mechanism.

The opening and closing mechanism consists of radial straps (4) that are articulated with rods (38), to a mobile core (31) arranged on the end of the inner pole (15).

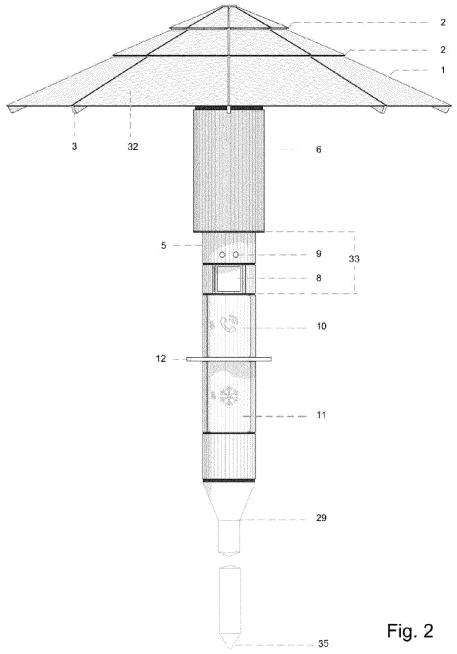

Fig. 2

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Description

Object of the invention

[0001] The object of the invention refers to a self-supplied multifunctional digital parasol.

[0002] This present invention is related to the large facilities of parasols present at beaches, hotel swimming pools, solariums, water parks, etc. Proposing a multifunctional digital parasol, with an autonomous unit for electric power generation for self-supply, and connected to internet.

Background of the invention

[0003] In the current state of the art, various means or elements for outdoor solar protection are already known, developed to provide shaded zones where their user can enjoy the advantages of being outdoors, avoiding the risks of exposure to high temperatures or direct sunlight.

[0004] These types of structures, known as parasols, are used like an umbrella installed in the ground in a fixed and secure manner, creating shaded areas. With the aim of facilitating their use, parasols have evolved in materials and accessories, always maintaining their standard and known position overtime.

[0005] However, over time, these parasols have scarcely evolved to adapt to the new applicable needs and technologies.

[0006] In the current state of the art are known, for example, among others, document ES1060738 describing a perfected parasol with an autonomous light on the pole; in document ES1011422 a parasol is described with lateral protection; or document WO2008099029 describing an aerodynamic parasol with a flat frame.

Technical problem to be resolved

[0007] Known parasols present an unimaginative and outdated concept, as well as scarce utilisation of the new technologies to offer solutions for current problems, little or no energy utilisation which would produce photovoltaic solar energy and outdated management of them without taking into account the services that are currently required by the user.

[0008] Currently, there exist some models of technological parasols that incorporate photovoltaic systems, remote control systems, etc. There are also others with multifunction accessories such as safe deposit box, lighting, etc. Nevertheless, there does not exist a multifunction parasol of similar characteristics and with a digital control system connected to internet that allows its complete on-line management, providing novel functionalities to the sector of large parasol installations.

Description of the invention

[0009] According to the invention a multifunction digital parasol is proposed, with an autonomous electric generation unit for self-supply and connected to internet.

[0010] The technical problem resolved by this invention is to obtain a parasol that utilizes technologies to offer solutions for the current problems of their users, such a space for safe storage, connectivity, etc....

[0011] Likewise, the object of the invention is a self-supplied multifunctional digital parasol, characterized in that it consists of a pole structured in telescopically in compartments to which is joined in an articulated manner, a laminated roof, which consists of a folding structure with a fabric that incorporates photovoltaic units with capacity to generate and accumulate energy, transporting by conductive means the energy generated to an autonomous electric power generation unit located on the pole, said autonomous unit self-supplying electricity to units of electric/electronic power of services to the parasol; a system for anchoring of the pole to the ground.

[0012] The pole consists externally of an upper compartment, a central compartment, under which is located a cross-shaped table and some hangers, an inner compartment and a spire located on the highest part of the pole.

[0013] The pole consists internally of an inner pole that is internally movable by an opening and closing mechanism;

[0014] The opening and closing mechanism consists of radial straps that are articulated with rods, to a mobile core at the end of the inner pole; said mobile core moves along the length of the inner pole to a stop; where an electric motor with a shaft turns a tensioned cable on a pulley system fastened to the inner pole, causing it to raise or lower the mobile core depending on the direction of the rotor of the motor, determining the opening and closing position of the parasol.

[0015] The laminated roof is joined in an articulated manner to the upper compartment and consists of the folding structure with the radial straps, where some electric cables are located which conduct the energy generated to batteries that comprise the autonomous electric power generation unit.

[0016] The electric/electronic supply units of services to the parasol comprise a unit of digital control, a touchscreen, a 12 V USB connection, a led lighting line, ultraviolet lights, a cooling unit and the electric motor.

[0017] The upper compartment has a water drainage system, comprised of a sump, a gutter and a drain, and the led lighting line.

[0018] The central compartment is comprised of the digital control unit, the touchscreen, a remote assistance button and a safe deposit box with the 12 V USB connection powered by the autonomous electric power generation unit, and the ultraviolet light with capacity to disinfect after each use.

[0019] The lower compartment is comprised of a thermally insulated refrigerator box with a cooling unit, which incorporates the ultraviolet light with capacity to disinfect after each use.

[0020] The object of the invention utilizes the photovoltaic solar energy resulting from its prolonged exposure to solar radiation, fully self-supplying.

[0021] Due to the high demand among users for full management of all resources by mobile applications, the object of the invention is fully managed by one of the applications.

[0022] In addition to its main function as a solar protection roof, the invention includes other uses, such as a small refrigerator, USB charger, safe deposit box, LED lighting, support table and hangers.

[0023] The opening and closing mechanism of the laminated roof is automatic thanks to the drive of a small electric motor. The roof of the parasol integrates an autonomous unit for electric power generation by conversion of solar radiation.

[0024] The parasol which is the object of the invention is highly advantageous for use by mobile application, acquiring a preferential character as compared to conventional parasols currently in use.

[0025] This is a great novelty with numerous applications in the sector, such as:

- The option of the operator supervising and controlling telematically, by internet, the state of each parasol in real time.
- The option of the user carrying out the entire procedure, from booking their parasol to finalizing the service, with a mobile application.
- The option of automating some processes of the installation; for example, the automatic closing of the laminated roofs in case of strong winds, self-management of the electric charging available at all times of the day, automatic disinfection of the boxes with UV light after each use, etc.

[0026] The steps to be followed by the user during use of the mobile application will be as follows:
The user makes the booking through the application and indicates on a map of the installation the exact parasol they would like to hire.

[0027] On the day booked, the application will give the user the exact instructions to arrive at the parasol from their starting point by GPS.

[0028] Subsequently the application will explain to the user the different functions of the parasol and how to operate each element: opening the laminated roof, switching on the refrigerator, etc.

[0029] Finally, the application will allow the user to rate and comment the service received, cleanliness and state of the components, etc.

[0030] Other configurations and advantages of the invention can be deduced from the following description, and from the dependent claims.

Description of the drawings

[0031] To better understand the object of the invention, is represented in the accompanying figures, a preferential form of embodiment, subject to accessory changes that do not essentially alter it. In this case:

Figure 1 represents a perspective view of the parasol object of the invention.

Figure 2 shows an elevated view of the parasol object of the invention with the laminated roof unfolded.

Figure 3 shows an elevated view of the parasol object of the invention with the laminated roof folded up.

Figure 4 represents a sectioned view of the inside of the parasol object of the invention with the laminated roof unfolded.

Figure 4a represents, in enlarged detail, a schematic view of the opening and closing mechanism according to indication A of figure 4.

Figure 5 shows a sectioned view of the parasol with the laminated roof folded up.

Figure 6 shows a plan view of the upper face of the parasol object of the invention.

Figure 7 shows a plan view of the lower face of the parasol object of the invention.

Detailed description of a preferential embodiment

[0032] Described below is an example of practical, non-limiting, embodiment of the invention. Other modes of embodiment in which accessory changes are introduced that do not essentially alter it are in no way ruled out.

[0033] The object of the invention is comprised mainly of a cylindrical structure of hollow section or pole (5) which, in addition to supporting the assembly, integrates the different elements that comprise the invention.

[0034] Articulated on the upper part of the pole (5) joined to an upper compartment (14) there is an inverted umbrella type folding support structure (3), on which a laminated roof is supported (1), in such a manner that the assembly can be arranged in open or unfolded position for the function of parasol, and in closed or folded position when not in use.

[0035] The pole (5) externally consists of an upper compartment (14), a central compartment (33), under which there is a table (12) and some hangers (13), a lower compartment (11) and a spire (6) located on the highest part of the pole (5) and internally consists of an inner pole (15) movable internally by an opening and closing mechanism.

[0036] The folding support structure (3) is comprised of a series of radial straps (4) that make up the laminated roof (1) and that are articulated with rods (38), to a mobile

core (31) arranged on the end of the inner pole (15).

[0037] The mobile core (31) moves along the length of the inner pole (15) to the folding support structure (3) to a stop (36).

[0038] An electric motor (23) with a shaft (37) turns a tensioned cable (16) on a pulley system (39) fastened to the inner pole (15), raising or lowering the mobile core (31) depending on the direction of the rotor of the motor (23).

[0039] When the movement of the mobile core (31) is upwards, the straps (4) are unfolded, and when the movement of said core (31) is downward, the straps (4) fold up, determining the opening and closing position of the parasol.

[0040] In any case, the opening and closing mechanism can also be operated manually inserting a crank, from the outside of the shaft (37) of the motor (23).

[0041] The opening and closing mechanism consists of springs (17) joined at one end to the fixed upper compartment (14) and at the other end, directly or indirectly, to the folding support structure (3) that folds up and unfolds.

[0042] When the laminated roof (1) is folded up, the springs (17) of the opening and closing mechanism keep the spire (6) high.

[0043] The springs (17) pull, moving the spire (6) downward, due to the pressure of the straps (4) as component of the folding support structure (3), when the laminated roof (1) is in unfolded position.

[0044] On the upper part of the pole (5) the upper compartment (14) is placed, where the laminated roof (1) is stored.

[0045] The upper compartment (14) has a water drainage system, comprised of a sump (22), a gutter (25) and a drain (27). It also has a screw cap type accessory piece, not represented graphically, which allows the upper compartment (14) to be sealed fully from its upper part to prevent the entry of any external agent during the storage periods of the parasols or in other specific situations.

[0046] Around the pole (5), at its highest part, is the telescopically articulated spire (6). This element moves simultaneously at the opening and closing of the laminated roof (1), the movement being downwards due to pressure of the radial straps (4) and returning to its original position due to the pull of the corresponding springs (17).

[0047] Its functions are varied: on the one hand, it allows reduction of the height to which the laminated roof (1) unfolds; on the other hand, it increases the section of the upper compartment (14) in the zone where it accumulates the greatest amount of canvas when the laminated roof (1) is closed and finally it is used to incorporate a led lighting line (7) in its lower part.

[0048] This lighting system incorporates a variable-step electric current selector to regulate the lighting intensity as well as a switch to provide variable light colour.

[0049] The laminated roof (1) is composed of a fabric that incorporates a series of embedded photovoltaic units (32), with capacity to generate and accumulate electricity by conversion of solar radiation. Electric charges are conducted from these units (32), by cables integrated in the radial straps (4) of the folding support structure (3) and in the inner pole (15), to batteries (24), integrating an autonomous electric power generation unit. (34).

[0050] With this arrangement, the parasol is autonomous with respect to the electric power supply for its operation; nevertheless, and maintaining the concept, it can complementarily have a connection to take electric power supply from the grid in places where this is possible, which does not alter the object of the invention.

[0051] The type and the power of the photovoltaic units (32) can vary depending on the needs and autonomy desired.

[0052] The object of the invention incorporates horizontal openings (2) in the laminated roof (1), allowing the passage of air, avoiding the occurrence of the sail effect.

[0053] In the middle part of the pole (5), just underneath the spire (6), is the central compartment (33), where there is a digital control unit or CPU (18). It is a small electronic device that allows each of the electric components of the parasol to be operated by the orders indicated given to it. The digital control unit (18) has a 5G mobile internet connection, which allows its telematic control in real time.

[0054] Connected to the digital control unit (18), there is a touchscreen (8) that offers specific information on the state of the parasol, while allowing the operation of some functions, such as opening a safe deposit box (10) with a numeric password, etc.

[0055] On the screen (8) there is a remote assistance button (9). On pressing it, a mobile phone device, located in the central compartment (33) of the pole (5), allows the user to communicate with the user attention service, who, in case of malfunction or a particular situation, can access the state of the parasol and even manage it telematically.

[0056] Under the screen area (8) is the safe deposit box (10). This is a compartment where the user can store objects of value or any other element of small size. The opening of the safe deposit box (10) is controlled with a numeric password which is keyed on the screen 8). The door of the safe deposit box (10) pivots on corresponding hinges and includes a spring mechanism to open on pressing from the outside.

[0057] Inside the safe deposit box (10) there is a 12 V USB connection outlet (26), supplied by the autonomous electric power generation unit (34), for the charging of mobile devices.

[0058] In turn, inside the safe deposit box (10), there is an ultraviolet light (19) with capacity to disinfect the space after each use.

[0059] Also, there are some small orifices on the door that allow the devices stored inside the safe deposit box (10) to be heard from the outside (10).

[0060] Under the safe deposit box (10) there is a small cross-shaped table (12). In addition to serving as a support surface, its particular shape allows several parasols

to be assembled and stacked in the process of their storage.

[0061] Under the table (12) are the hangers (13) to place articles of small size, such as bags, caps, etc.

[0062] On the lower part of the pole (5) is the lower compartment (11) where the refrigerated box or cooler is located. This compartment (11) is perfectly thermally insulated and incorporates under its base a thermoelectric cooling unit (21), such as Peltier type, among others. The electricity necessary to supply the lower compartment (11) is supplied from the batteries (24) through an electric gutter (28) located on the back of the pole (5). Likewise, some small openings (30) are incorporated in the pole (5) to ventilate the lower compartment (11) to outside.

[0063] Inside it there is also an ultraviolet light (20) with capacity to disinfect the compartment (11) after each use.

[0064] The door of the lower compartment (11) pivots on corresponding hinges and includes a spring mechanism to open on pressing from the outside.

[0065] The pole (5) consists of a system for anchoring (29) to the ground, and can vary depending on the function of the area where its support is planned, whether it is sand, firm ground, etc.

[0066] The anchoring system (29) is comprised of a helical base (35) when the surface is sandy; if the surface of the terrain is earthy or clay the helical base (35) can be toothed.

[0067] When the parasol object of the invention is located on firm ground, such as concrete, among others, the anchoring system (29) will have a base (35) in the shape of a stand/pedestal.

[0068] The materials, dimensions, proportions and in general, those other accessory or secondary details that do not essentially alter, change or modify the proposal can vary.

[0069] The terms in which this report is written are a true and accurate reflection of the object described, and must be taken in their broadest sense, and never in a limited way.

Claims

1. Self-supplied multifunctional digital parasol, **characterized in that** it consists of:

   a) a pole (5) structured telescopically in compartments to which is joined in an articulated manner,
   b) a laminated roof (1), that consists of a folding support structure (3) with a fabric that incorporates photovoltaic units (32) with capacity to generate and accumulate energy, transporting by conductive means the energy generated, to an autonomous electric power generation unit (34) located on the pole (5), said autonomous unit self-supplying electricity (34) to units of electric/electronic power of services to the parasol;

2. Parasol according to claim 1, **characterized in that** the pole (5), externally consists of an upper compartment (14), a central compartment (33), under which his located a table (12) and some hangers (13), a lower compartment (11) and a spire (6) located on the highest part of the pole (5) and internally consists of an interior pole (15) movable internally by an opening and closing mechanism;

3. Parasol according to claim 1, **characterized in that** the laminated roof (1) is joined in an articulated manner to the upper compartment (14) and consists of a folding support structure (3) with radial straps (4), where some electric cables are located that conduct the energy generated to batteries (24) that comprise the autonomous electric power generation unit (34);

4. Parasol according to claim 2, **characterized in that** the opening and closing mechanism consists of the radial straps (4) that are articulated with rods (38) to a mobile core (31) arranged on the end of the inner pole (15); said mobile core (31) moves along the length of the inner pole (15) to a stop (36), where an electric motor (23) with a shaft (37) turns a tensioned cable (16) on a pulley system (39) fastened to the inner pole (15), raising or lowering the mobile core (31) depending on the direction of the rotor of the motor (23), determining the opening and closing position of the parasol.

5. Parasol according to claim 1, **characterized in that** the electric/electronic supply units of services to the parasol comprise: a digital control unit (18), a touchscreen (8), a 12 V USB connection (26), a led lighting line (7), ultraviolet lights (19) (20), a cooling unit (21) and the electric motor (23);

6. Parasol according to claims 2 and 5, **characterized in that** the upper compartment (14) has: a water drainage system, comprised of a sump (22), a gutter (25) and a drain (27), and the led lighting line (7);

7. Parasol according to claims 2 and 5, **characterized in that** the central compartment (33) consists of the digital control unit (18), the touchscreen (8), a remote assistance button (9) and a safe deposit box (10) with the 12 V USB connection (26) powered by the autonomous electric power generation unit (34), and the ultraviolet light (19) with capacity to disinfect after each use;

8. Parasol according to claims 2 and 5, **characterized in that** in the lower compartment (11), there is a thermally insulated refrigerator box incorporating the cooling unit (21), that incorporates the ultraviolet light (20) with capacity to disinfect after each use.

9. Parasol according to claim 1, **characterized in that** the pole (5) consists of a system for anchoring (29) to the ground;

10. Parasol according to claim 9, **characterized in that** the system for anchoring (29) to the ground consists of a base/support (35);

11. Parasol according to claim 2, **characterized in that** the opening and closing mechanism consists of springs (17) joined at one end to the fixed upper compartment (14) and at the other end, directly or indirectly, to the folding support structure (3) that folds up and unfolds.

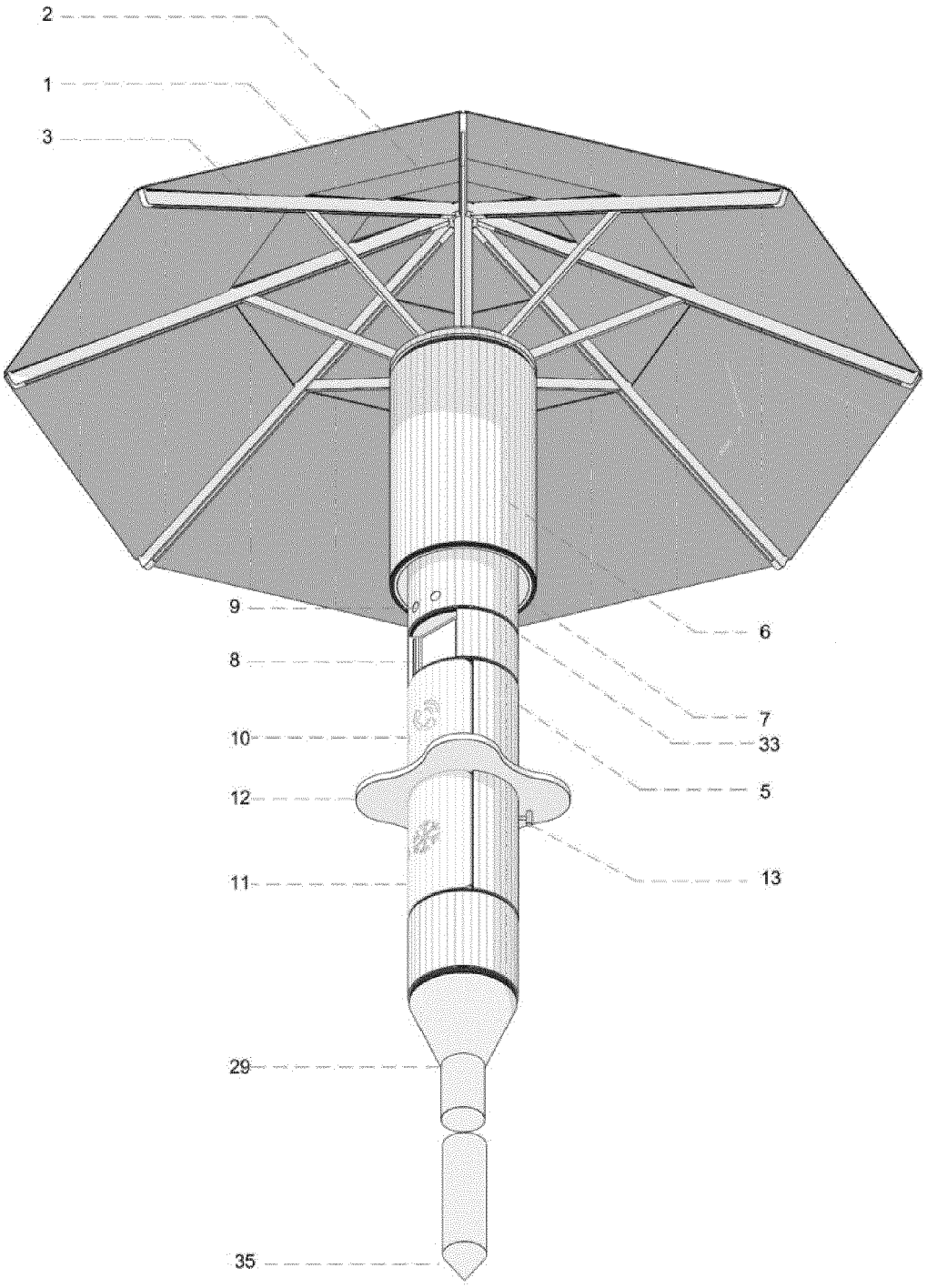

Fig. 1

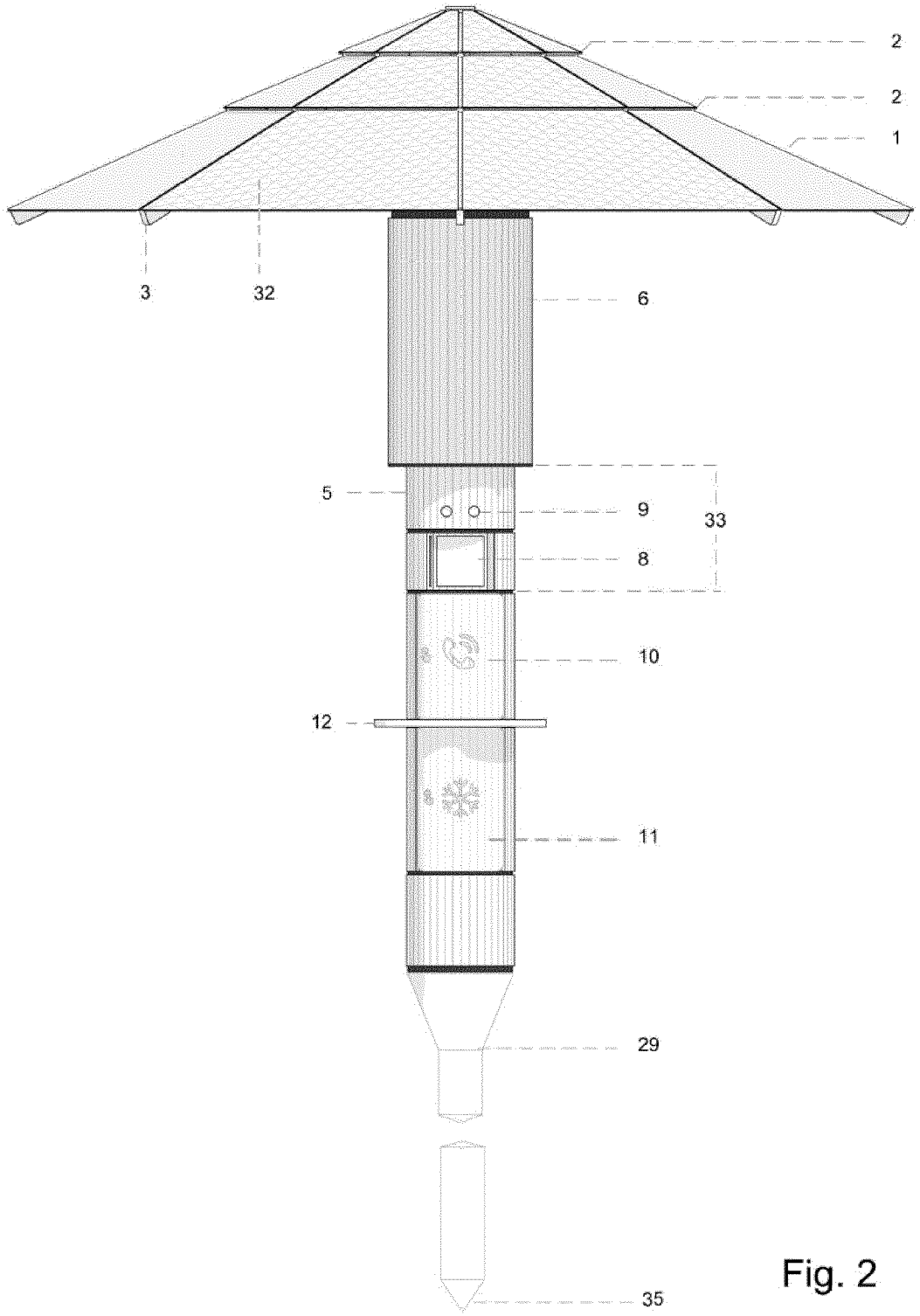

Fig. 2

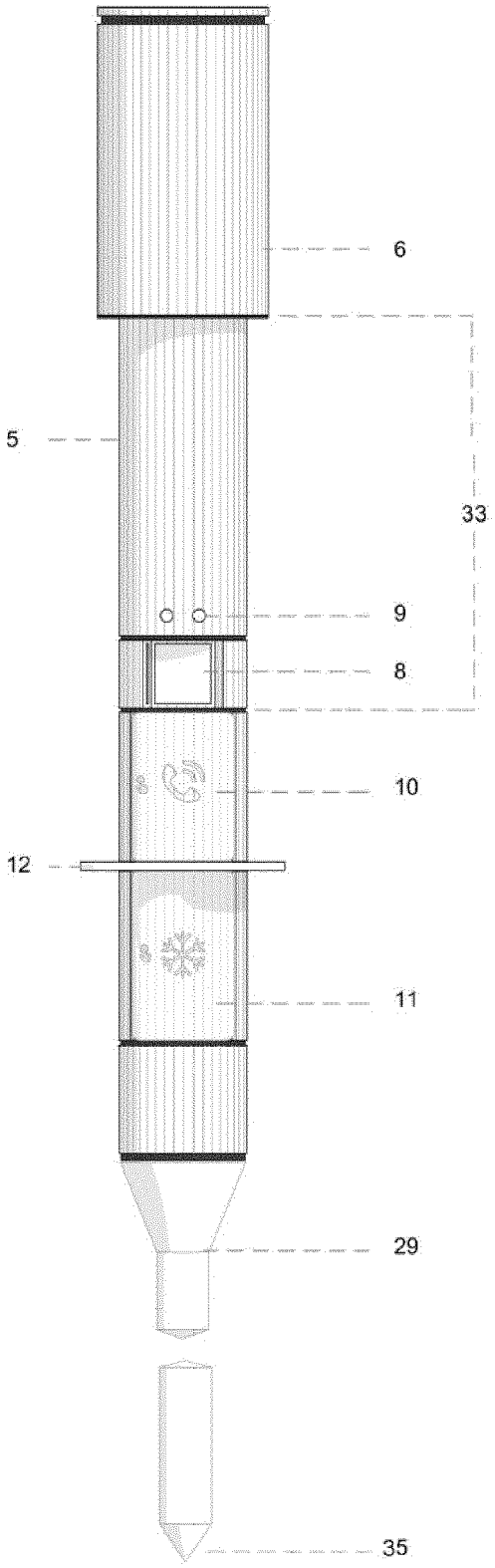

Fig. 3

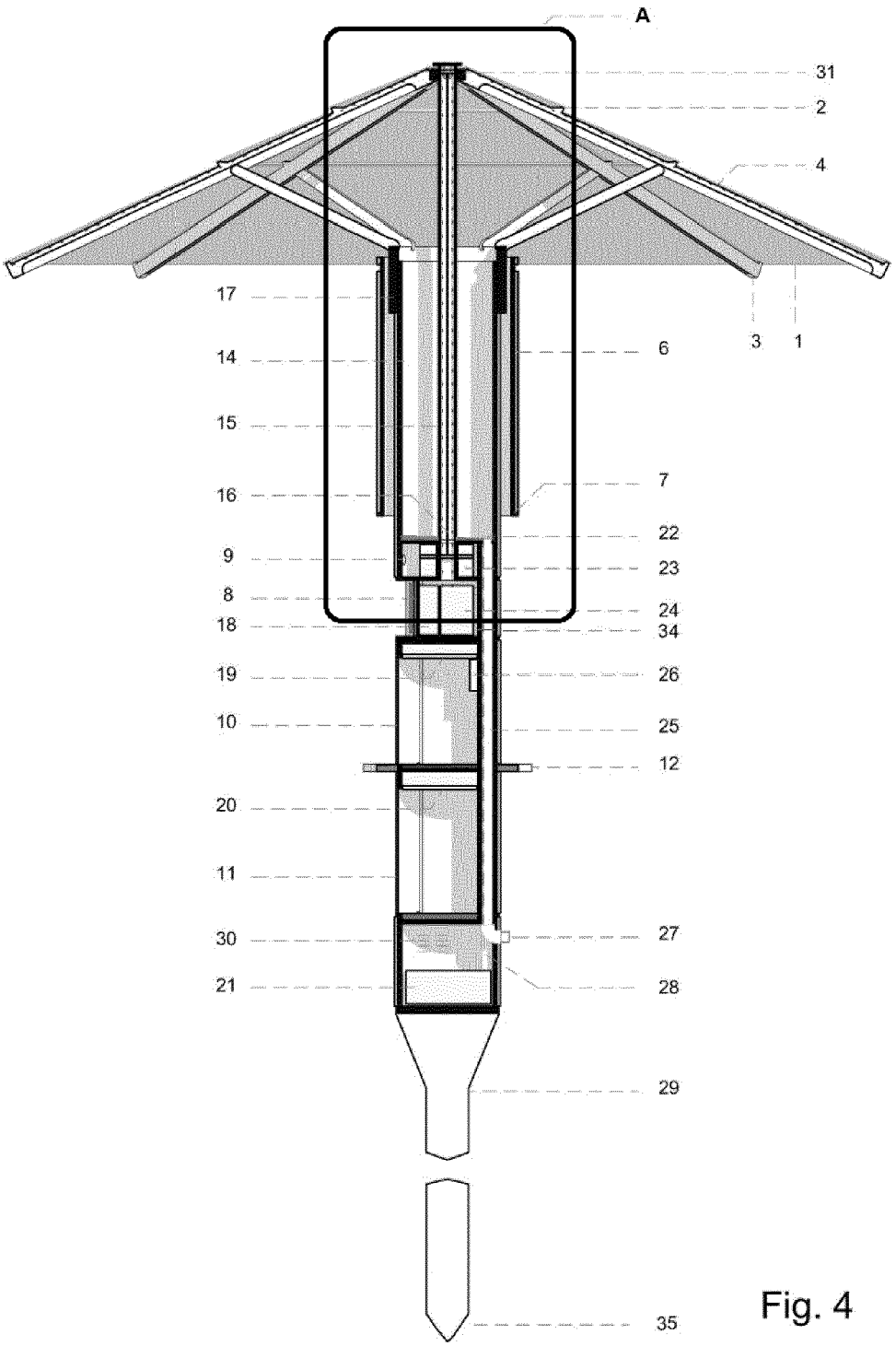
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Fig. 4

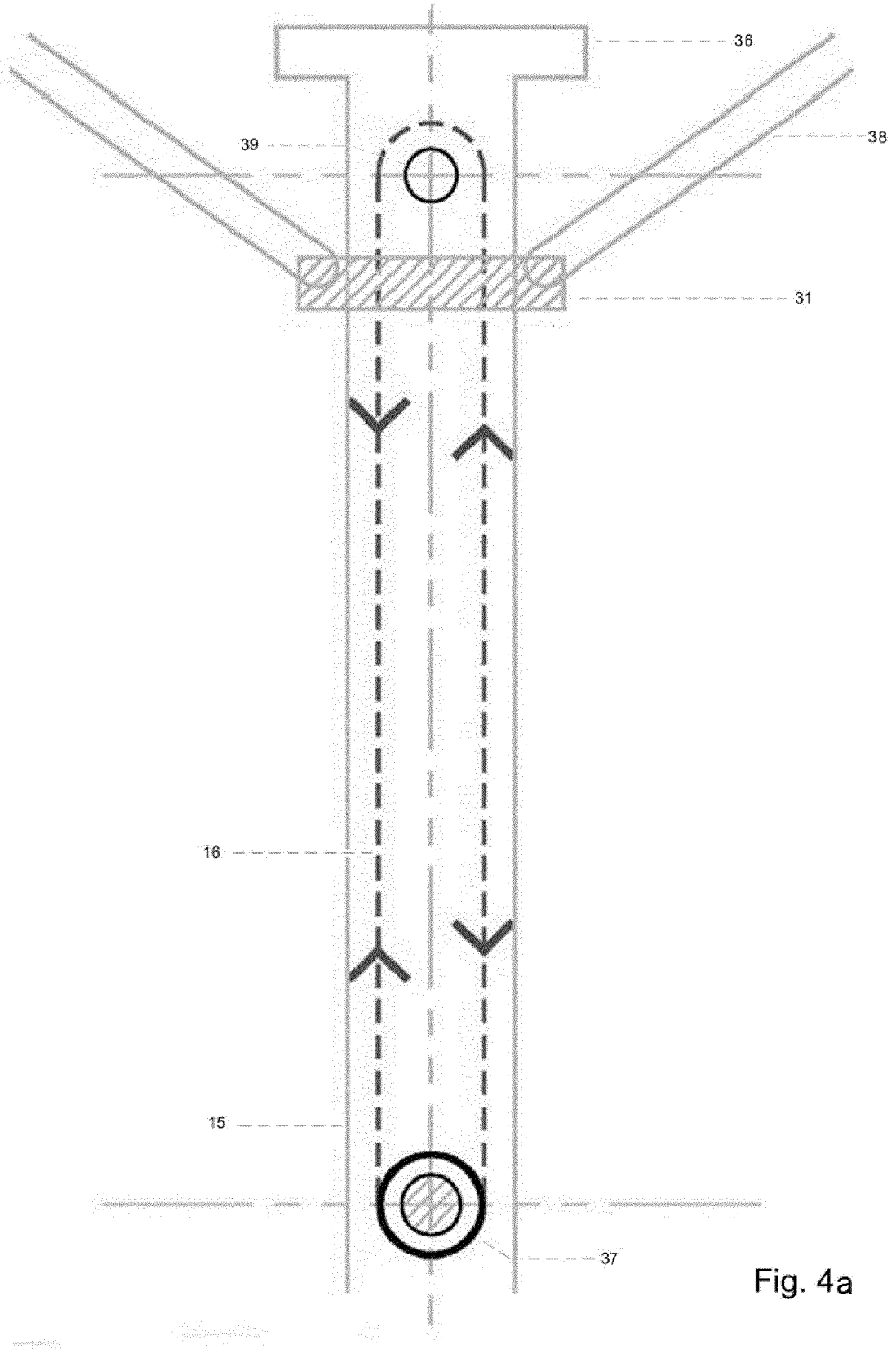

Fig. 4a

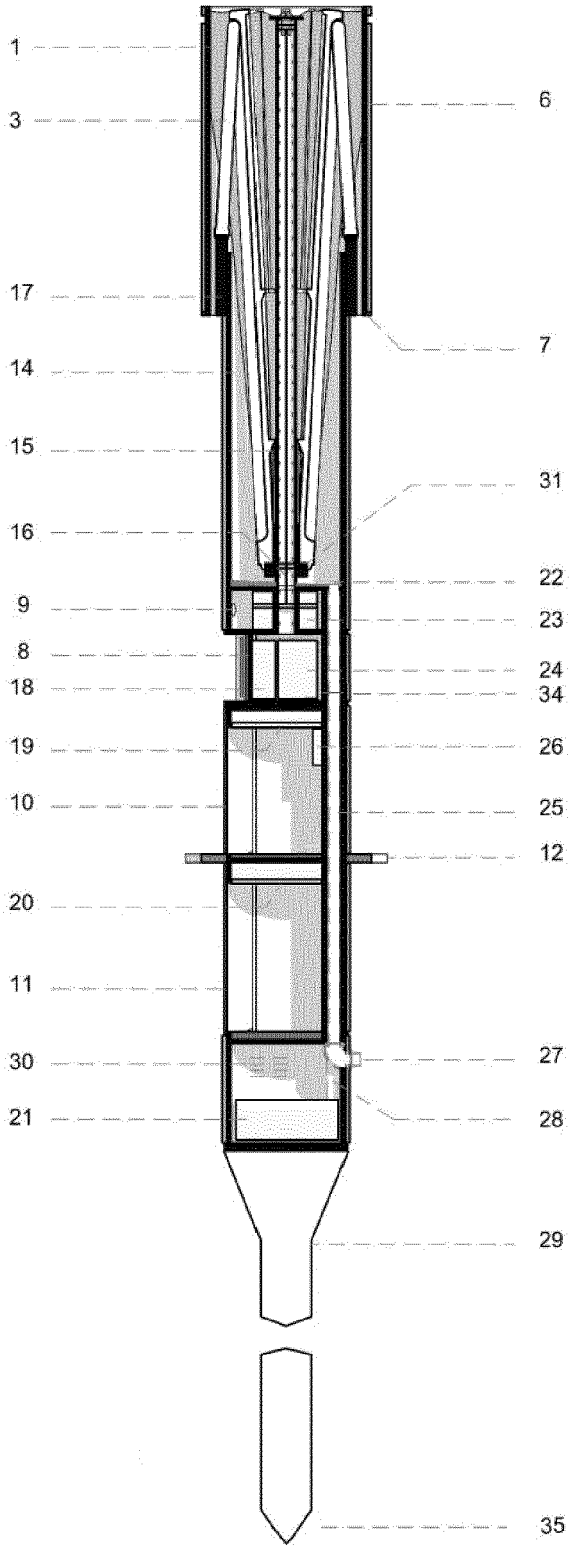
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Fig. 5

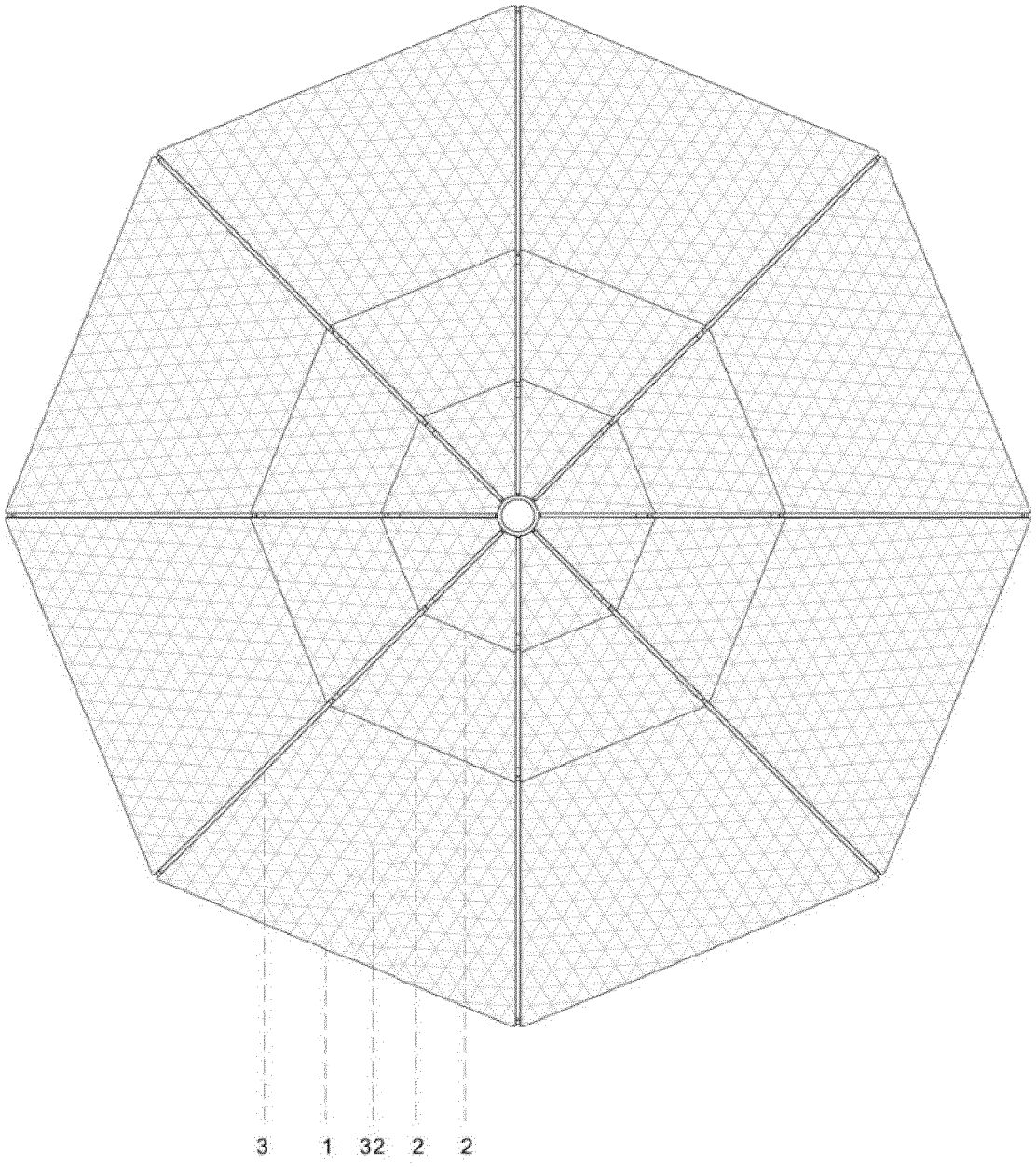

Fig. 6

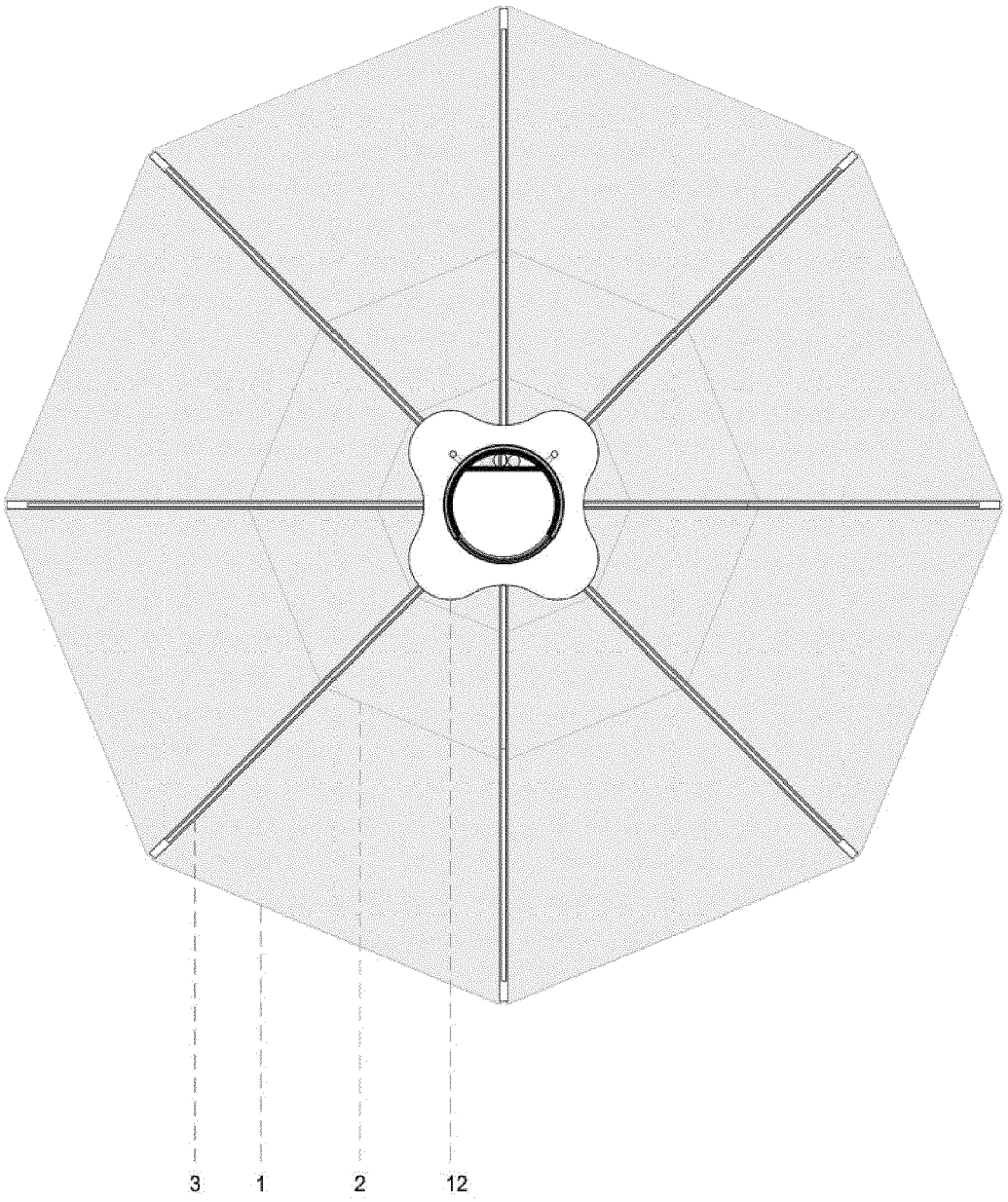

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 22 38 2396

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	CN 201 332 764 Y (LANXING GAN [CN]) 28 October 2009 (2009-10-28) * figure 1 *	6	TECHNICAL FIELDS SEARCHED (IPC) A45B
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 September 2022	Witkowska-Piela, A

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 38 2396

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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