(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 138 439 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.03.2017 Bulletin 2017/10

(51) Int Cl.:
A47B 13/12 *(2006.01)* ***A47B 37/04*** *(2006.01)*
A47B 97/00 *(2006.01)*

(21) Application number: **16182037.8**

(22) Date of filing: **29.07.2016**

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **01.09.2015 CN 201520673276 U**
01.09.2015 CN 201520673693 U

(71) Applicant: **Yotrio Group Co., Ltd.**
Linhai City
Zhejiang 317004 (CN)

(72) Inventor: **XIE, Jianping**
317007 Linhai, Zhejiang (CN)

(74) Representative: **Schulz Junghans**
Patentanwälte PartGmbB
Großbeerenstraße 71
10963 Berlin (DE)

(54) **WEATHERPROOF MULTIFUNCTIONAL TABLE**

(57) A Weatherproof multifunctional table is presented. It comprises a tabletop (106), a framing structure (101, 102) which encloses a hollow space, at least one solar module (5), at least one electric storage device (8) and at least one wireless charging device (7). The solar module (5) is integrated into the tabletop (106). It is suitable to charge and/or recharge the electric storage device (8) and the electric storage device (8) is suitable to supply the wireless charging device (7) with electricity. The tabletop (106) is in sealing connection with the framing structure (101, 102), sealing the hollow space at least towards the tabletop (106), wherein at least parts of the electrical connections are located in the hollow space.

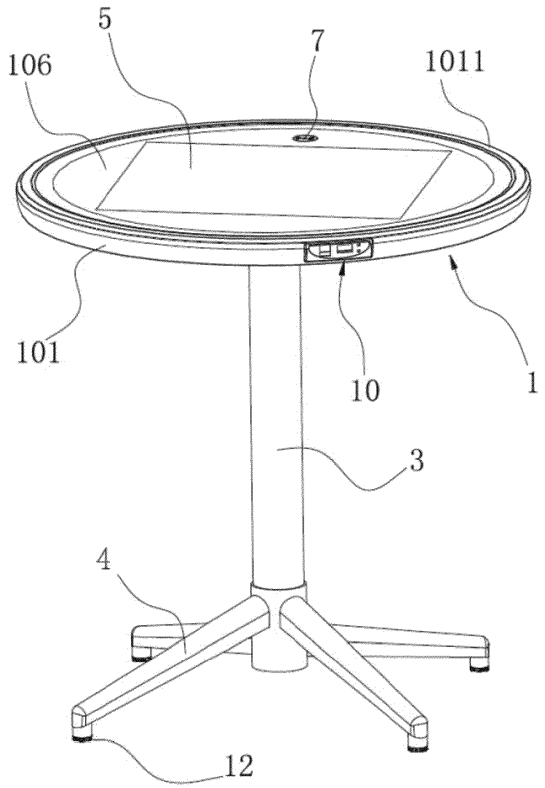

FIG. 1

EP 3 138 439 A1

Description

[0001] The invention relates to a weatherproof multifunctional table.

[0002] Today, smart devices are ubiquitous. Battery runtimes, particularly of smartphones, tablets, e-readers or laptops are, however, often a limiting factor. Especially outdoors, without a connection to the power grid, there is often no charging opportunity available. The integration of solar modules into tables is known and it is known to charge smart devices with a USB socket or a power socket connected to a solar table.

[0003] In CN 204 169 327 U and CN 104 273 941 A, a solar wireless charging table comprising a solar module, a storage battery and a wireless charging transmitting module is described. This table is suitable to wirelessly charge electronic devices. However, it is not suitable for outdoor use, and thus an efficient and constant use of the solar energy cannot be ensured.

[0004] The problem to be solved by the invention is to provide a table suitable to charge electronic devices independently of weather conditions or external power supply.

[0005] The problem is solved by the subject matter of the weatherproof multifunctional table as claimed in claim 1. Specific embodiments are claimed by the dependent claims 2-15.

[0006] According to the invention, a weatherproof multifunctional table is presented; comprising a tabletop, a framing structure which encloses a hollow space, at least one solar module, at least one electric storage device and at least one wireless charging device. The solar module, which is integrated into the tabletop, is suitable to charge and/or recharge the electric storage device and the electric storage device is suitable to supply the wireless charging device with electricity. The tabletop is in sealing connection with the framing structure, sealing the hollow space at least towards the tabletop, wherein at least parts of the electrical connections are located in the hollow space.

[0007] Particularly, the framing structure is realized as circumferential hollow profile. Electrical connections and/or control devices are arranged inside the hollow profile that is sealed towards the tabletop. The electric connections are protected from rain, enabling outdoor use of the weatherproof multifunctional table. Particularly, the table and all connected devices are realized in a waterproof manner, so that the table is suitable for outdoor use independently of the weather conditions.

[0008] Particularly, the profiles are realized in a way that potentially infiltrating water can drain off easily, e.g. through suitably arranged drill holes.

[0009] The solar module is integrated into the tabletop. The electric storage device is particularly a rechargeable battery. The solar module is able to generate electricity and charge the storage device. The storage device is suitable to ensure power supply for the wireless charging device. Particularly, the weatherproof multifunctional table is suitable to be operated independently of an external power supply.

[0010] The table is suitable for wireless charging of digital devices, such as mobile phones, e-readers, tablet computers or laptops. Wireless charging devices may particularly be realized with inductive coupling technology and may further be compliant with one or more wireless charging standards.

[0011] In one embodiment of the invention, the weatherproof multifunctional table is equipped with a device suitable to receive internet data and provide Wi-Fi signals, which is electrically connected to the electric storage device. Particularly, the electric storage device supplies electricity to the device suitable to receive internet data and provide Wi-Fi signals. For instance, said device is suitable to wirelessly receive internet data, particularly compliant to the fourth generation of mobile telecommunications technology, also known as the 4G standard, and to transmit Wi-Fi signals based on the received internet data. Particularly, the device is furthermore able to receive, amplify and transmit Wi-Fi data.

[0012] The device suitable to receive internet data and provide Wi-Fi signals may be realized by means of an integrated circuit. Particularly, the table comprises a device suitable to receive a SIM card for the reception of 4G internet data. The weatherproof multifunctional table is particularly suitable to provide and/or amplify Wi-Fi services in outdoor environments.

[0013] Furthermore, the table may be equipped with at least one communication device suitable to execute internet communication services. The internet communication software may allow for cloud-data functionality.

[0014] Particularly, all functional devices are installed in a modular way which allows for easy installation and disassembly and/or easy integration of further digital devices.

[0015] In one embodiment, the weatherproof multifunctional table is equipped with at least one socket suitable for the transmission of data and/or electricity. Particularly, a socket compliant to the universal serial bus standard is used. This means, in addition to wireless charging, cable-based charging and/or data transfer is possible by connecting a USB cable. This is for instance advantageous, if a device to be charged does not support wireless charging.

[0016] In another embodiment, the weatherproof multifunctional table is equipped with at least one power outlet. Electricity may be supplied by the battery and/or directly by the solar module. This enables the use of cable-based electrical or electronical devices independently of an external power supply.

[0017] In another embodiment, the weatherproof multifunctional table is equipped with at least one illuminating device. Illuminating devices may be realized as atmospheric lighting and/or lighting devices suitable to illuminate the weatherproof multifunctional table or parts thereof and/or the surrounding of the table. Particularly, illuminating devices may be sealed to achieve waterproof

properties.

[0018] The table may further comprise at least one Bluetooth device and/or at least one loudspeaker and/or one or more further functional digital components. Some or all devices may be connected to at least one integrated circuit. Particularly, the functional devices are supplied with electricity from the battery and/or the solar module. This technical solution aims to create a multifunctional and service platform, and to be compatible with various digital features. Furthermore, it may possess a built-in cloud service platform, which enables the collection and transmission of information in order to provide service such as health index and weather broadcast based on the user preference. It is a foundation for future cloud service products, creating a smart service platform.

[0019] In another embodiment, the weatherproof multifunctional table is equipped with a controlling device that allows for controlling at least one of the functional devices.

[0020] The control device may be suitable to perform automatic control functions, such as automated battery status and charging control and/or battery protection. Particularly, the controlling device is suitable to control operating parameters of some or all of the functional devices. All functional devices may be functionally connected with an integrated circuit. Said integrated circuit may be suitable to control operating parameters of the devices.

[0021] In another embodiment, the weatherproof multifunctional table is equipped with a user interface. This user interface particularly allows for manual control operations. That is, one or more of the functional devices and/or the controlling device may be connected to a user interface suitable to execute manual control operations. The user interface may comprise a main switch and/or displays for one or more of the following or other functions: battery, Wi-Fi signal, wireless charging status. Furthermore, it may comprise switches and/or controls for operating parameters of functional devices.

[0022] In a specific embodiment, the sealing between tabletop and framing structure is realized by an adhesive material. Particularly, the tabletop is attached on the framing structure by an adhesive material that allows for fixing and sealing.

[0023] In specific embodiment, the tabletop's material is essentially glass. Particularly, the tabletop is entirely made of glass. Alternatively, the tabletop's material may be plastic.

[0024] In one embodiment, the solar module is positioned under at least one protective layer. This may for instance be a glass surface. Particularly, the solar module is integrated into the tabletop, which is made of glass, and a glass layer above the solar module constitutes the protective layer.

[0025] In another embodiment, the solar module constitutes more than one third of the tabletop's surface.

[0026] In another embodiment, the electric storage device, the wireless charging device and at least parts of the electrical connections are attached within, or directly or indirectly below the tabletop. Particularly, all functional devices are attached within or below the tabletop. Certainly, the solar module remains integrated into the tabletop. This is, in particular, that no functional devices are attached on the table leg or table stand. In the case of an indirect attachment, mounting devices are mounted between the tabletop and the respective functional devices. The devices may e.g. be attached to framing structures and/or support tubes.

[0027] In another embodiment, the tabletop is foldable with respect to the table stand. The tabletop is particularly part of a table superstructure comprising the tabletop, framing structures and/or support tubes and functional devices. The table superstructure can alternatively comprise only the tabletop and integrated functional devices, if applicable. The table superstructure is particularly supported by one table stand and the mechanical connection between the table superstructure and the table stand is realized in a foldable way by a joint, particularly a hinge. Alternatively, the table may comprise more than one table stand. In this case, all table stands or table legs may be foldable with respect to the table superstructure. This enables to store or transport the table in a space-saving manner.

[0028] In a specific embodiment, the table comprises a locking mechanism that enables locking of the tabletop with respect to the table stand. Particularly, the tabletop can be locked in an essentially horizontal alignment. Besides, the tabletop may be lockable in an essentially vertical or oblique alignment in order to store or transport the table in a space-saving manner without the potential risks of moving parts.

[0029] Particularly, if all functional devices and electrical connections are permanently mounted below the tabletop, folding of the table can be realized in a simple and safe way without the danger of bending cables.

[0030] In another embodiment, the locking mechanism comprises a lever. This lever is particularly in operative connection with a spring that allows for releasing the lock. For example the lever is arranged on the lower side of the table superstructure and connected to a tension spring. In an unfolded state, the tension spring may exert a force on the lever, engaging it with a suitable protrusion on the table stand, so that the table superstructure is locked in a horizontal alignment with respect to the table stand. To release the lock, the lever can be pulled against the spring force to remove it from the protrusion. Alternatively, the lever can be arranged on the table stand. In this case, it can be engaged with a suitable protrusion on the table superstructure.

[0031] In the following, in some cases, alternative designations are used. The corresponding designations as explanation are represented in brackets at the respective first reference.

[0032] In a first special embodiment, a solar energy multi-function table gives an ordinary table the functions to use solar energy to charge through USB and wireless,

Wi-Fi internet and lighting control. Structures include table-rack (table stand), inside casing pipe (inner frame), wireless charging support pipe (wireless charging device), integrated circuit box (controlling device), lateral bracing tube (fixing tube), light bar (illuminating device), table top, wireless charging supporting box (bracket for wireless charging device), control panel (user interface). The special features are: the table top is comprises solar cells; the table top uses a double colored silk screen to display lighting and wireless charging symbols. The table-rack comprises a control panel; the inside casing pipe comprises a light bar. The lateral bracing tube comprises an integrated circuit box, the inside casing pipe comprises a welded joint with the wireless charging support pipe in order to install the wireless charging supporting box.

[0033] In a second special embodiment based upon the first special embodiment, the solar energy multifunctional table furthermore comprises solar cells within the particular table top which able to generate electricity to the lithium battery (electric storage device) being arranged in the integrated circuit box. The lithium battery is arranged in the integrated circuit box and works as an electric power storage and supply unit which provides power to the whole equipment. The circuit board is installed within the integrated circuit box to carry out the functions. A Wi-Fi unit is included within the circuit chip (part of the controlling device) and the circuit board connects the peripheral control panel. The control panel is a touch panel which is used as switching circuit and lighting control as well as displaying Wi-Fi, wireless charging status, and it also includes a USB charging plug. The wireless charging supporting box is connected to the circuit board within the integrated circuit box in order to achieve wireless charging function. Light bars are installed in the inside casing pipe, being connected to the circuit board within the integrated circuit box and controlled by the switch on the touch panel on the control panel in order to be switched on and off.

[0034] In another special embodiment based upon the first special embodiment, the solar energy multifunctional table furthermore comprises a control panel which uses hardware and software in the circuit board. The latter is arranged within the integrated circuit box to operate the USB charging and wireless charging supporting box, Wi-Fi internet from the circuit chip in the integrated circuit box and the light bars.

[0035] In another special embodiment based upon the first or the second special embodiment, the solar energy multifunctional table furthermore comprises the particular integrated circuit box, light bars, a wireless charging supporting box, and a control panel, all components being modular components which are installed independently on this table. The table top is packaged with the solar cells as a whole. This product is based on independent solar power system such as monocrystalline silicon, photovoltaic film, etc. It comprises an integrated chip platform and uses modular electronic components. It uses circuit and electronic process control to achieve adjustment of lighting, wireless charging, USB charging, Wi-Fi internet, Bluetooth, speakers and other smart digital functions, combining outdoor equipment and the function of digital devices. A software service platform is established within the chips. It allows for cloud database functions, which may suggest and collect information for the customer such as health index, weather conditions etc. It provides better and smarter service and enables the digital functions of outdoor equipment.

[0036] In the following, again, some alternative designations are used. The corresponding designations as explanation are represented in brackets at the respective first reference.

[0037] In a first particular embodiment, the solar outdoor multi-function folding table includes a table board (table superstructure), a column (table stand) for supporting the folding base and legs arranged below the column. The folding base is connected to the bottom of the table board. The table board comprises a frame (outer frame), an inner frame, an oblique branch, a support tube (first support tube), two oblique support tube (second support tube), a glass table board (tabletop), a circuit assembly line box (controlling device) and the four fixed tubes (fixing tube). The inner frame located inside of the outer frame. The slant support tube and two oblique support tube are cross-connected to the inner frame inside the fixed tube connected at one end in oblique branch a support tube (first support tube) and the other end connected to the two oblique support tube. Four fixed tube is provided to enclose a photovoltaic chip (solar module) of the frame structure. The folding base is connected to a support tube and two oblique support tube below. The glass table board comprises the photovoltaic chip on the glass table board of the lid inner frame (inner frame) and outer frame relative to the inner wall. The inner frame is connected to the inner side of the bracket (bracket for wireless charging device) which comprises a wireless charger (wireless charging device). The circuit junction box which is fixedly connected in a fixed tube on the frame is provided with a control panel (user interface), being connected to the integrated 4G wireless network transceiver module, the battery, the control circuit junction box, system chips and a DC/AC circuit. The photovoltaic chip, a wireless charger, the circuit conductor and the control panel are connected to the junction box. The photovoltaic chip is used to convert light energy into electrical energy, controlling the electric energy stored in the battery. The DC/AC circuit is connected to a wireless charger. The wireless charger converts electrical energy into electromagnetic waves emitted to the load charging.

[0038] In a second particular embodiment based upon the first particular embodiment, the wireless charger of the multifunctional solar outdoor folding table comprises a display lamp, a buzzer and a wireless charging transmitting terminal. The display lamp, a buzzer and the wireless charging transmitting terminal are provided in the bracket.

[0039] In a third particular embodiment based upon the

first or the second particular embodiment, the inner frame of the multi-function folding table is equipped with a light bar (illuminating device), the light bar being connected to the circuit junction box through a wire.

[0040] In a fourth particular embodiment based upon the third particular embodiment, the control panel of the multifunctional solar outdoor folding table comprises an integrated power display unit, a wireless signal display unit, a lighting control switch, a wireless charging status display unit and a master control switch (power switch).

[0041] In a fifth particular embodiment based upon the fourth particular embodiment the control panel of the multifunctional solar outdoor folding table comprises a USB charging port.

[0042] In a sixth particular embodiment based upon the first or the second particular embodiment, said circuit junction boxes of the multifunctional solar outdoor folding table are locked and secured fixed to the outer tube through the junction box side tabs (bracket).

[0043] In a seventh particular embodiment based upon the first or the second particular embodiment, said outer frame of the multifunctional solar outdoor folding table comprises an inner edge of the cover (side cover). The glass edge of the table board is located at the edge within a cover side and a Bolivia Glass table board of the junction with a plastic glass package.

[0044] In an eighth particular embodiment based upon the first or the second particular embodiment, the glass table board of the multifunctional solar outdoor folding table is made of two-color silk screen of glass, having a thickness between 4 and 8 mm.

[0045] In a ninth particular embodiment based upon the first or the second particular embodiment, the column of the multifunctional solar outdoor folding table has a hollow cylindrical shape. The folding base, the column and the legs are connected to a screw through the column axis. The upper end of the screw is fixed with a nut to the folding base. The lower end of the screw is connected to the legs by a nut.

[0046] In a tenth particular embodiment based upon the first or the second particular embodiment, said legs comprise at the bottom an adjustment nut (adjusting nut).

[0047] In a first specific embodiment, the solar wireless charging table comprises an amorphous silicon thin film solar cell, an input-output controller, a battery, a wireless charging transmitter module and receiver module. The tabletop comprises thin-film amorphous silicon solar cells. For the tabletop, two types of non-transparent and translucent materials are possible. The amorphous thin-film solar cells are placed on and integrated into the tabletop. A wireless charging transmitter module is installed in the back of a desktop electronic control box.

[0048] Electrical control box input output controllers, batteries, amorphous silicon thin film solar cell are connected with cables. The input and output lines are connected to the controller. The controller input and output is connected, respectively, with the battery through a cable. Power supply for the wireless transmitter module is provided via cable from the electric storage device.

[0049] In a second specific embodiment based upon the first specific embodiment, the solar module is sandwiched between two glass plates of which the thickness is between 3.2 mm and 6 mm and which is fixed and/or glued with at least one layer of polyvinyl butyral.

[0050] In a third specific embodiment based upon the first specific embodiment, four corners of the desktop comprising the amorphous silicon thin film solar cell are attached to four legs with telescopic function.

[0051] The product added a built-in electric storage device and solar cells to common furniture products in order to generate electricity. It possesses an independent electric system and a multifunctional integrated circuit platform. Using built-in internet communication software, it allows furniture to run cloud data function. With the help of the electric supply system, this solar energy multifunctional foldable table possesses the four main functions as follows: 1. Wireless charging, 2.USB charging, 3. Atmospheric lighting and 4. 4G Wi-Fi Internet surfing. These program controls are integrated into the circuit chip and it can be adjusted through a control panel located on the table rack. All the features are combined with modular components which can be installed and dismounted easily. It is also compatible with all kinds of other digital devices.

[0052] The solar energy multifunctional foldable table is able to adjust accordingly to the operation duration, location and user-types. It allows customers to charge digital devices, surf the internet, provides lighting at night, and atmospheric lighting. Furthermore, with the help of this technical solution, it is able to achieve more functions by installing the relevant digital devices.

[0053] The solar energy multifunctional foldable table has a table top made with 5mm double coloured silk stalinite. Solar photovoltaic cells are sealed in the middle of it. In the daytime outdoors, the program will check the integrated battery box to examine the battery. If the battery is not full, it will connect the solar photovoltaic cells and allows the solar photovoltaic cells charging the battery. After the battery is full, it will automatically disconnect the charging circuit in order to protect the battery which capacity is for example 7800mA/H.

[0054] This solar energy multifunctional table has two parts of the wireless charging transmitter components installed below the table surface and attached with the wireless charger fixed tube on the table frame. The wireless charging transmitter uses inductive coupling technology to provide stable charging current for electronic devices that have wireless charging receivers. In order to charge please place the receiving end upon the screen printing logo of the wireless charging transmitter components. In the case of a metal block, the device will raise the alarm and flash red lights, on the other hand, it will sound normal tones and flash blue lights if it operates well.

[0055] The control panel possesses one USB port, and it provides stable cable charging current for common

electric devices. There are battery display, Wi-Fi signal display, lighting control switch, wireless charging status display and a main switch on the integrated panel. In addition, the technical solution derived from this patent allows adding various and even more devices, the control and displays on the panel can also be increased accordingly.

[0056] The integrated battery box comprises a 4G Wi-Fi chip module inside its internal circuit chips. By purchasing a SIM card from service provider, the customers is able to make use of stable 4G internet after inserting SIM card into the chip. Moreover, it also solves the problem of weak WIFI connection at home by receiving and strengthens the WIFI signal using specific integrated chips.

[0057] The complete outer frame tube parts is produced through roll forming process. The inside of this pipe is a cap structure. It is combined with a glass table surface in through special glass glue material in order to achieve absolute waterproof effects. The inside table frame is drilled with holes and inserted rivets for assembly process later.

[0058] The outer frame tube is a U-shaped structure, and it is used to contain circuit in the assembly process later. Above the circuit are light bars, the short oblique support is cross-welded with long oblique supporting pipe inside the inside casing pipe. Then place lateral bracing tube horizontally in the middle of the short oblique support and long oblique supporting pipe and weld them together. Wireless charging support pipe is weld inside the inside casing pipe, for the assembly of wireless charging device. The lower part of the lateral bracing tube is drilled with hole and welded with threaded aluminium in order to obtain this inner frame item.

[0059] Table Leg, table columns and folding base are connected with a screw connection, both side is locked with M8 screw nut to obtain the table body. The inside frame components and outside frame is combined together with hex head screws to obtain the table surface. At last, place the table surface upon the table body, using the screw hole on the folding base, and lock it with hex head screws to obtain the complete outline of the product. Integrated circuit box is locked on both sides using integrated box bolts, then install table surface, connect the circuit within the table frame with the integrated circuit box directly using extension cord to assembly circuits.

[0060] The items above are all semi-finished products made with the process of stoving varnish, finally assembled into complete product. In order to achieve the particular performance, the instalment of integrated circuit platform and modular components based on this technical solution is necessary.

[0061] All the functions described above are all installed inside this particular foldable table, and all the relevant digital features are all modularised, the connection method is quick-release ribbon cable structure which is hidden inside the pipe. In addition, the section pipes with cover is sealed with glass in order to achieve complete water-proof performance of the table surface, it ensures rainy weather will not affect its normal function. At the same time, components such as lighting bars are also made by water-proof material. With the help of its foldable structure below the table surface, it allows the table to take up less space when it is not needed.

[0062] The described table comprises not only the normal functions of a table, but it also possesses digital functions which most furniture does not have. Base on the technical solution of this solar energy multifunctional table, the main functions are achieved as follows: cable charging, wireless charging, atmospheric lighting and Wi-Fi signal.

[0063] The table possesses an independent electric supply system and an integrated platform and all the digital components are modularised. It is possible to add more digital features on this product according to the different requirements, such as Bluetooth, speakers and other digital functional components. This technical solution aims to create a multifunctional and service platform, and to be compatible with various digital features through well-considered design. Furthermore, it possesses a built-in cloud service platform, which enables the forward and collection of information in order to provide service such as health index and weather broadcast based on the user preference. It has established a nice foundation for the future cloud service products, which creates a smart service platform, emphasises the user experience of the costumer, and through furniture products it will provide long-term service for the user.

[0064] The whole appearance of the product is simple and elegant and the use of curvy tubing gives the table a nice and modern figure. The edge of the table as well as the glass table is completely waterproof. The electronic device installed into the table makes it outstanding, and the double coloured silk screen glass makes it convenient for the customers to operate it.

[0065] This product is using a separate solar energy supply system. The integrated chip uses modularisation electronic building bricks. With the help of electric circuit and electronic control system it can achieve gradual change lightning, wireless charging, USB charging, Wi-Fi internet access, Bluetooth, speakers and other smart electronical functions, it successfully combined outdoor equipment with modern technologies.

[0066] The built-in chips are installed with a software service platform which provides cloud data function, deliver and collect information for customers such as health index, weather broadcast and so on. It provides a better customer experience and achieves platform digitisation of outdoor equipment.

[0067] The invention is not limited to the alternatives described herein. Furthermore, all described embodiments and alternatives of the invention may be combined.

[0068] The invention is further illustrated and characterized by the following figures that show a certain example from which further embodiments and advantages

can be drawn. These figures are meant to illustrate the invention but not to limit its scope.

Figure 1 shows a perspective view of a round weatherproof multifunctional table according to the invention.

Figure 2 shows a perspective view of the round table from below.

Figure 3 shows a side view of the round table.

Figure 4 shows a sectional drawing of the round table.

Figure 5 shows a magnified sectional view of a detail pictured in Fig. 4.

Figure 6 shows a perspective view of a rectangular weatherproof multifunctional table according to the invention.

Figure 7 shows a perspective view of the rectangular table from below.

Figure 8 shows a magnified sectional view of the framing structure.

[0069] Figure 1 shows a perspective view of the table. The table superstructure 1 is mounted on the table stand 3. The legs 4 are equipped with adjusting nuts 12 to compensate uneven surfaces, particularly when setting up the table outdoors. The solar module 5 is integrated into the table superstructure 1, protected by the tabletop 106 which is realized as glass plate. The wireless charging device 7 is integrated into the table superstructure 1 and optically indicated so that the user can position electronical devices to be charged on the right spot on the table superstructure 1. A user interface 10 is positioned on the side of the table superstructure 1 and comprises a USB socket.

[0070] The framing structure is subdivided into the outer frame 101 and the inner frame 102, shown in Fig. 2. Both the outer frame 101 and the inner frame 102 are realized as hollow profiles which are arranged circumferential. At least parts of the electrical connections are positioned inside. The outer frame 101 is connected to a side cover 1011.

[0071] Figure 2 shows a perspective view of the table from below. A controlling device with electric storage device 8 is mounted below the table superstructure 1 by brackets 801. It comprises a battery, an integrated circuit, a controlling device and a device suitable to receive internet data and provide Wi-Fi signals. The folding base 2 is placed centrally below the table superstructure 1. The table stand 3 connects the folding base 2 to the legs 4 and is fixed with a nut 11. The wireless charging device 7 is arranged in a bracket 6 and comprises a wireless charging transmitting terminal 703, a buzzer 702 and an indicator light 701. When, e.g. by mistake, a metal object is placed on the wireless charging device, a flashing light and an acoustic alarm signal will be emitted.

[0072] The tabletop 106, realized as a glass plate which includes the solar module 5, is supported by a first support tube 103 and a second support tube 104. The support tubes are connected to the inner frame 102 and the fixing tube 105. The inner frame 102 is connected to the outer frame 101 by means of screws 107. The user interface 10 is included in the outer frame 101.

[0073] Figure 3 shows a side view of the table. The table superstructure 1 is fixed to the folding base 2 which is connected to the legs 4 by the table stand 3. The legs 4 comprise adjusting nuts 12. The side cover 1011 covers the outer frame 101.

[0074] Figure 4 shows a sectional drawing of the table. Besides the mentioned parts, a screw 13 is visible, which connects the folding base 2 with the legs 4, and which is fixed with a nut 11. The solar module 5 is positioned below the tabletop 106, which is realized as glass plate, and protected by it.

[0075] Detail B is shown in a magnified view in Fig. 5. The framing structure is subdivided into the outer frame 101 and the inner frame 102. The tabletop 106, which is realized as glass plate, is in sealing connection with the inner frame 102 that is realized as U-shaped hollow profile. The tabletop 106 is fixed with an adhesive. The illuminating device 9 is integrated into the hollow profile. Also the side cover 1011 is fixed to the tabletop 106 with an adhesive and connected with the outer frame 101. A screw 107 is visible, connecting the outer frame 101 to the inner frame 102.

[0076] Figure 6 shows a perspective view of a rectangular weatherproof multifunctional table according to the invention. The solar module 5 is integrated into the tabletop 106. Two wireless charging devices 7 are integrated into the tabletop 106 and optically indicated so that the user can position electronical devices to be charged on the right spot. The user interface 10 is included in the outer frame 101.

[0077] Figure 7 shows a perspective view of the rectangular table from below. The wireless transmitting terminal 703 and the controlling device with the electric storage device 8 is positioned below the tabletop 106. The table legs 4 are positioned in the corners of the rectangular table superstructure 1.

[0078] Figure 8 shows a magnified sectional view of the frame. The framing structure is subdivided into the outer frame 101 and the inner frame 102. The tabletop 106, which is realized as glass plate, is in sealing connection with the inner frame 102, enclosing a hollow space. A screw 13, sealed with an O-ring 131, enables access to the inner frame.

List of reference signs

[0079]

1	table superstructure
2	folding base
3	table stand
4	leg
5	solar module
6	bracket for wireless charging device
7	wireless charging device
8	controlling device with electric storage device
9	illuminating device
10	user interface with USB socket
11	nut
12	adjusting nut
13	screw
101	outer frame
102	inner frame
103	first support tube
104	second support tube
105	fixing tube
106	tabletop
107	screw
131	O-ring
701	indicator light
702	buzzer
703	wireless charging transmitting terminal
801	bracket
1011	side cover

Claims

1. Weatherproof multifunctional table, comprising

- a tabletop (106),
- a framing structure (101, 102) which encloses a hollow space,
- at least one solar module (5),
- at least one electric storage device (8)
- and at least one wireless charging device (7),

wherein the solar module (5) is integrated into the tabletop (106),
the solar module (5) is suitable to charge and/or recharge the electric storage device (8) and the electric storage device (8) is suitable to supply the wireless charging device (7) with electricity,
characterized in that
the tabletop (106) is in sealing connection with the framing structure (101, 102), sealing the hollow space at least towards the tabletop (106), wherein at least parts of the electrical connections are located in the hollow space.

2. Weatherproof multifunctional table according to claim 1, **characterized in that** the table is equipped with a device suitable to receive internet data and provide Wi-Fi signals, which is electrically connected to the electric storage device (8).

3. Weatherproof multifunctional table according to at least one of the claims 1-2, **characterized in that** the table is equipped with at least one socket suitable for the transmission of data and/or electricity (10).

4. Weatherproof multifunctional table according to at least one of the claims 1-3, **characterized in that** the table is equipped with at least one power outlet.

5. Weatherproof multifunctional table according to at least one of the claims 1-4, **characterized in that** the table is equipped with at least one illuminating device (9).

6. Weatherproof multifunctional table according to at least one of the claims 1-5, **characterized in that** the table is equipped with a controlling device (8) that allows for controlling at least one of the electronical and/or electrical devices.

7. Weatherproof multifunctional table according to at least one of the claims 1-6, **characterized in that** the table is equipped with a user interface (10).

8. Weatherproof multifunctional table according to at least one of the claims 1-7, **characterized in that** the sealing between tabletop (106) and framing structure (101, 102) is realized by an adhesive material.

9. Weatherproof multifunctional table according to at least one of the claims 1-8, **characterized in that** the tabletop's (106) material is essentially glass.

10. Weatherproof multifunctional table according to at least one of the claims 1-9, wherein the solar module (5) is positioned under at least one protective layer.

11. Weatherproof multifunctional table according to at least one of the claims 1-10, wherein the solar module (5) constitutes more than one third of the tabletop's (106) surface.

12. Weatherproof multifunctional table according to at least one of the claims 1-11, **characterized in that** the electric storage device (8), the wireless charging device (7) and at least parts of the electrical connections are attached within, or directly or indirectly below the tabletop (106).

13. Weatherproof multifunctional table according to at least one of the claims 1-12, wherein the tabletop (106) is mounted on at least one table stand (3), **characterized in that** the tabletop (106) is foldable with respect to the table stand (3).

14. Weatherproof multifunctional table according to claim 13, wherein the table comprises a locking

mechanism that enables locking of the tabletop (106) with respect to the table stand (3).

15. Weatherproof multifunctional table according to claim 14, wherein the locking mechanism comprises a lever, particularly in operative connection with a spring, that allows for releasing the lock.

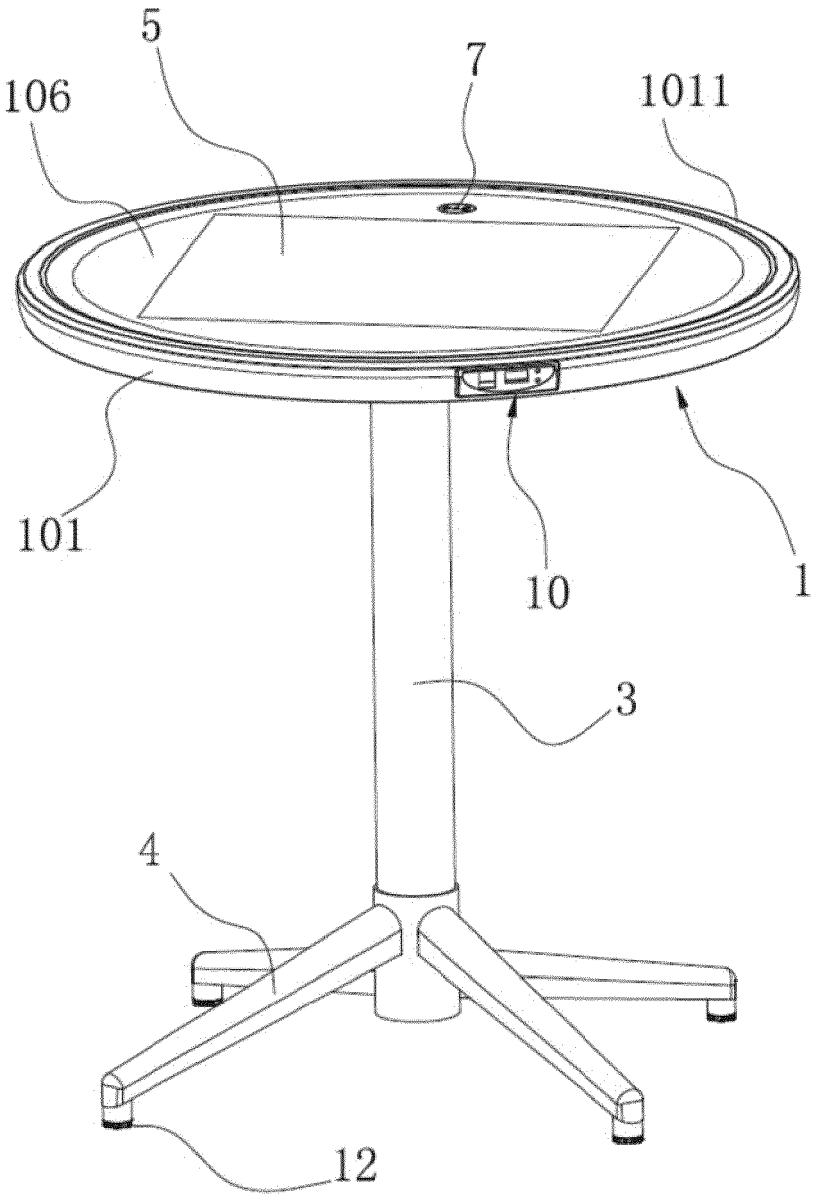

FIG. 1

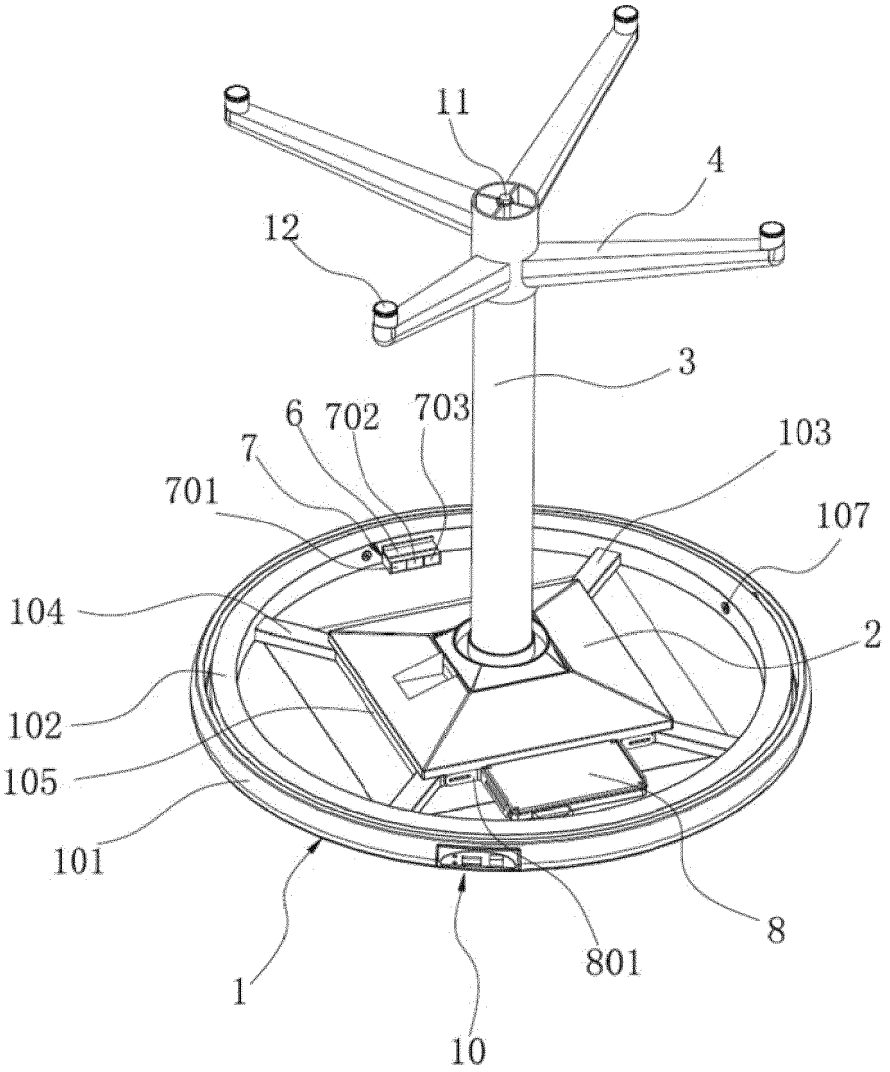

FIG. 2

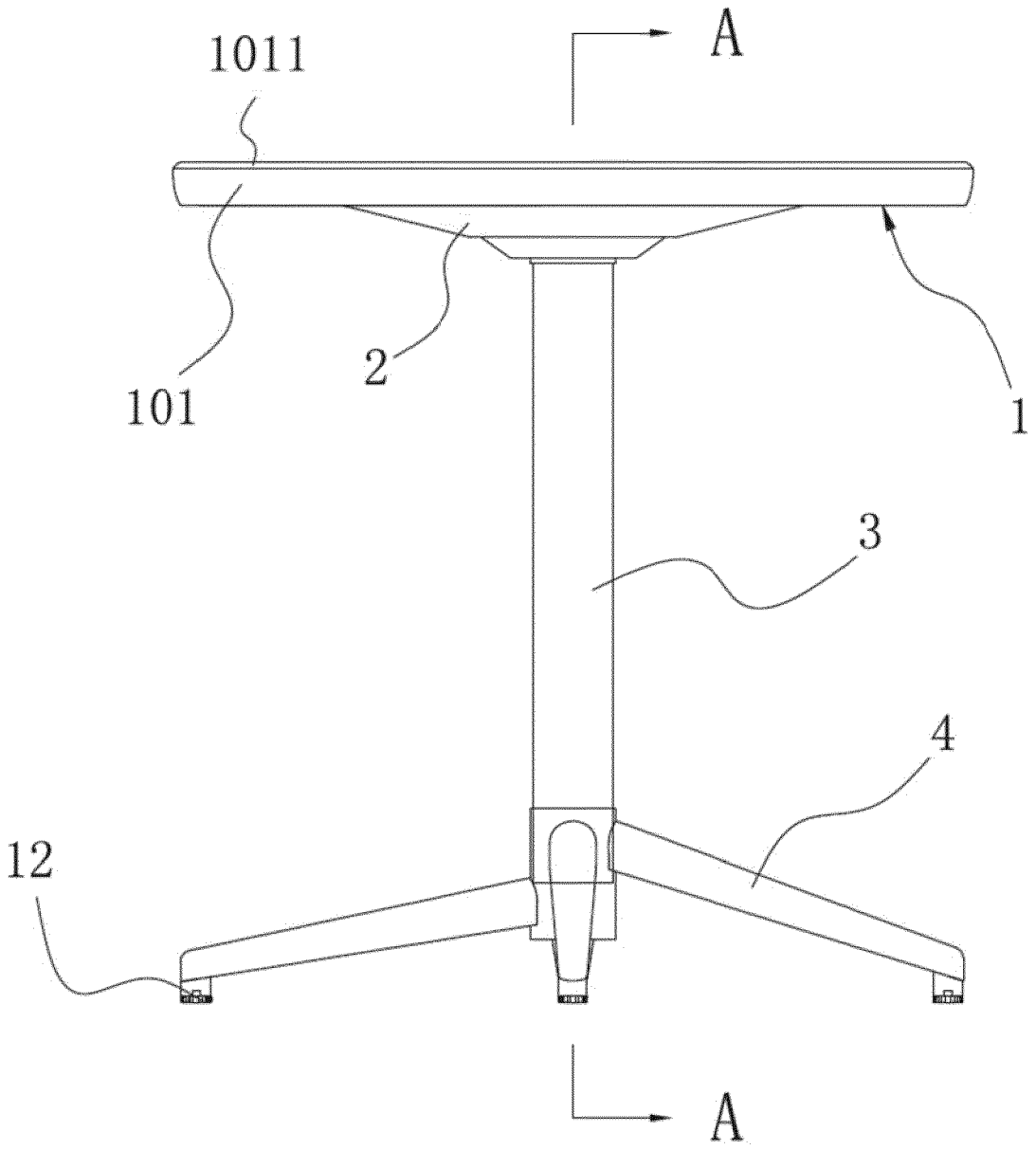

FIG. 3

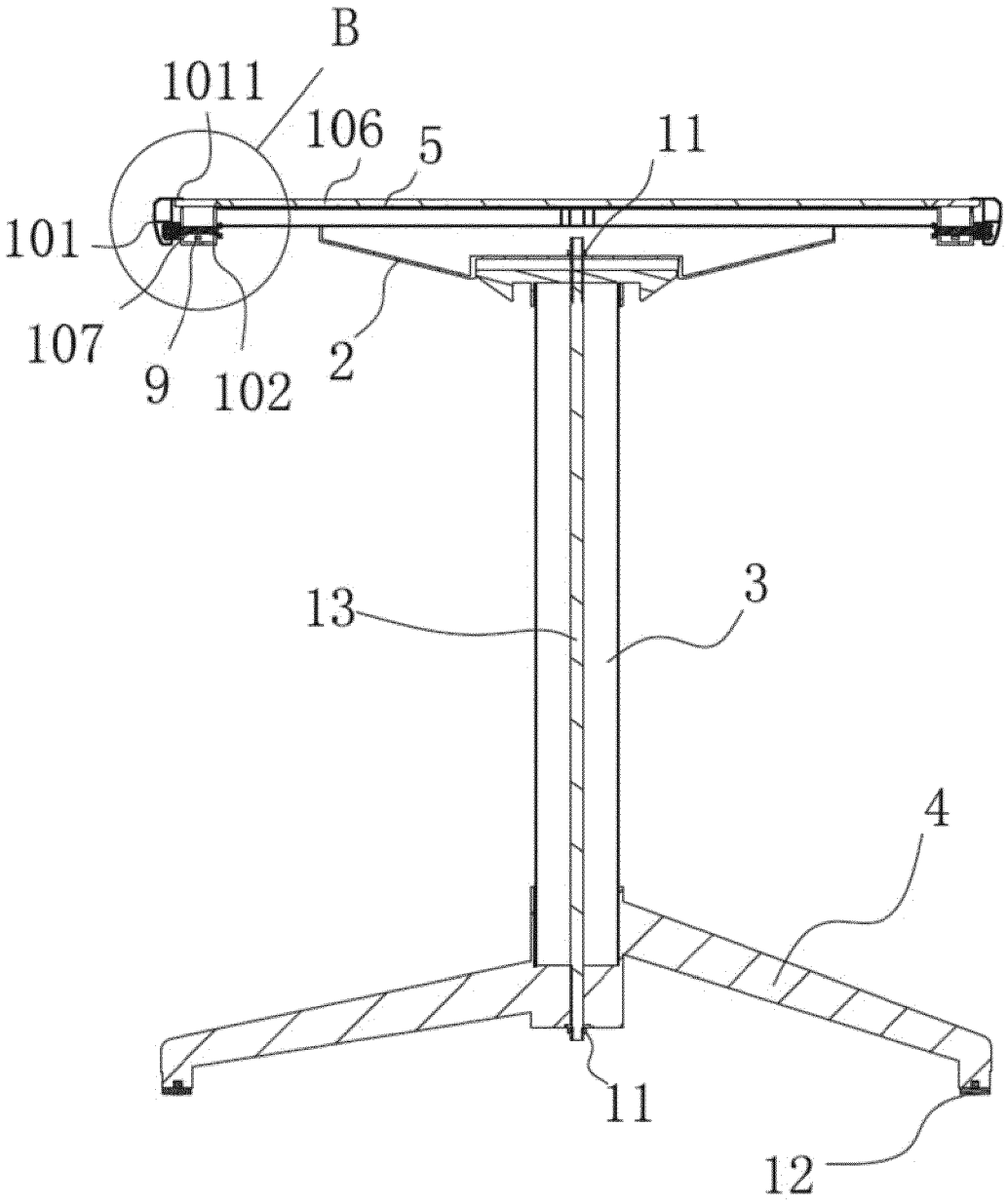

FIG. 4

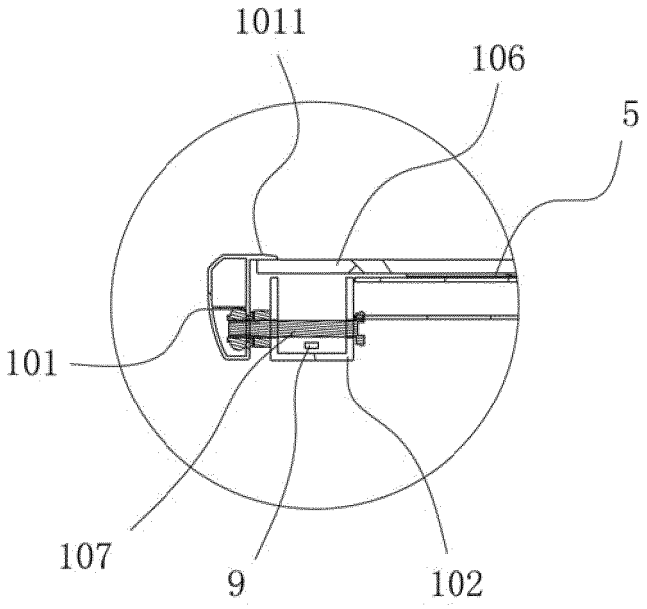

FIG. 5

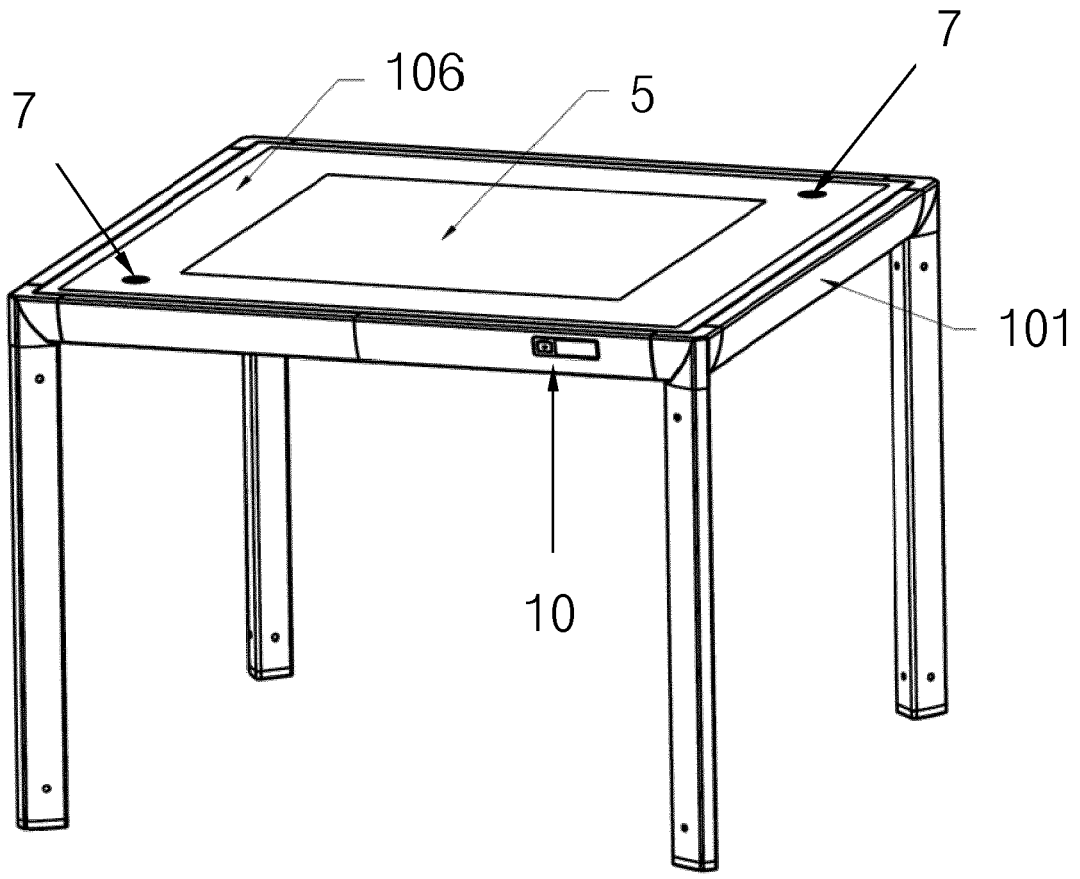

FIG. 6

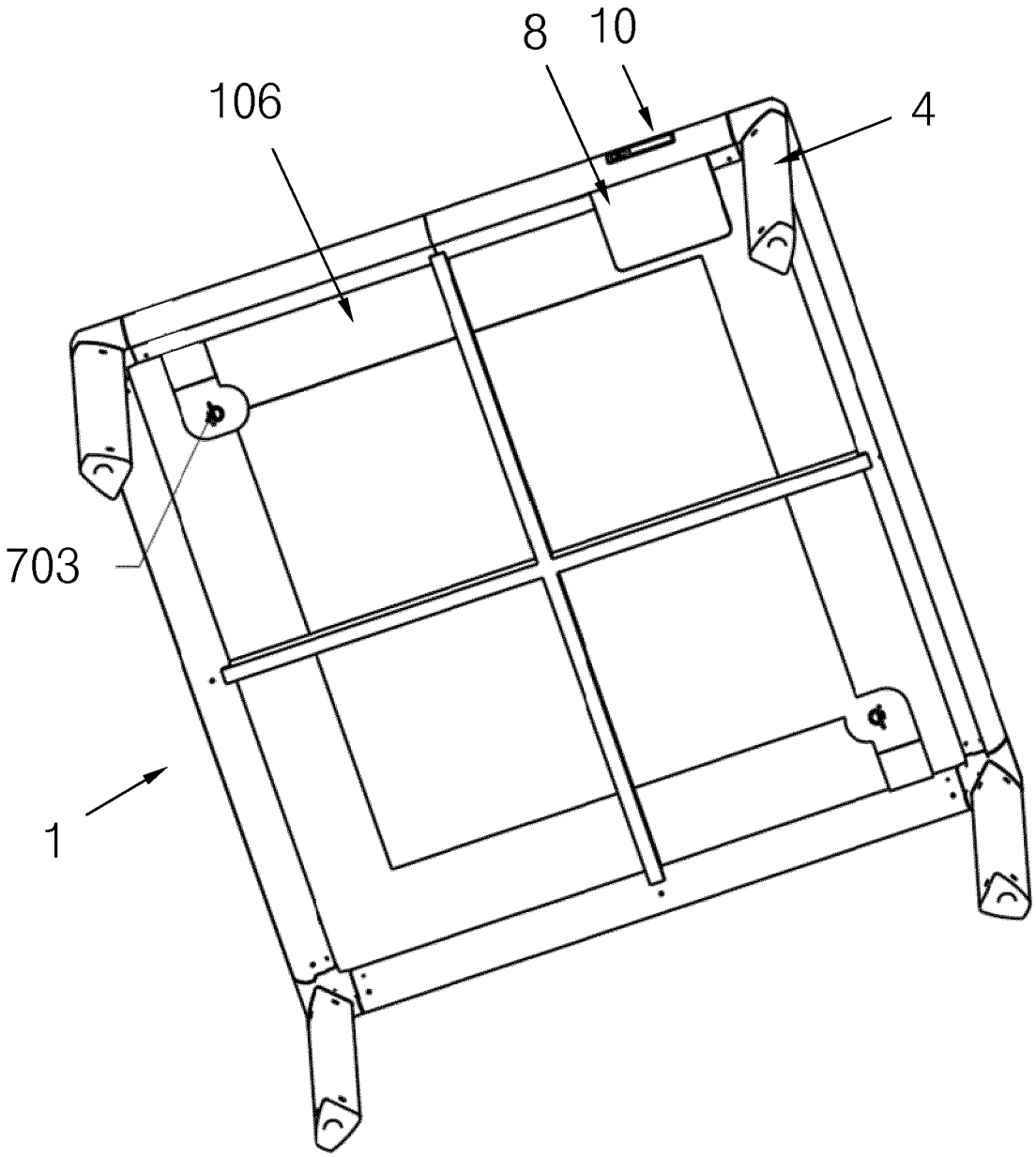

FIG. 7

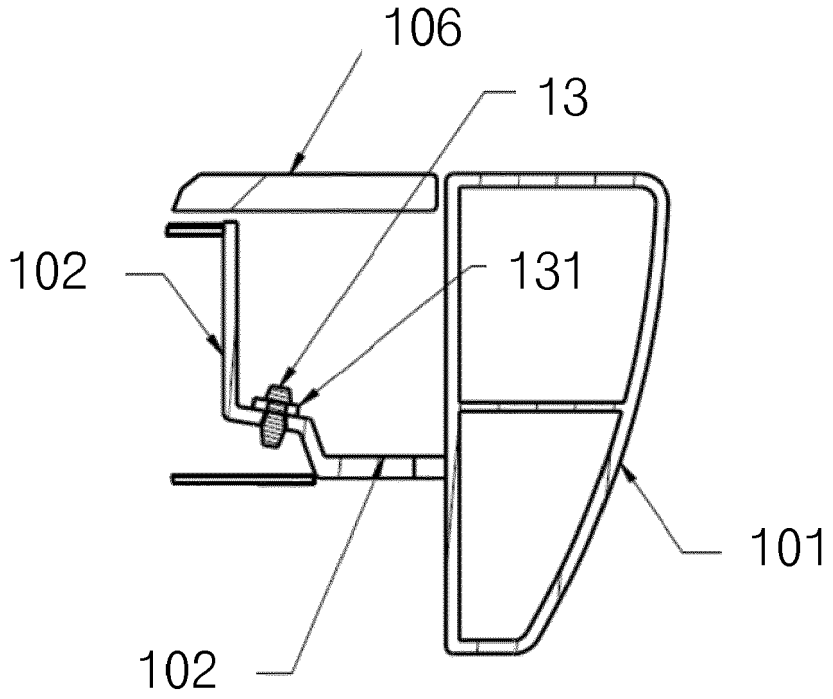

FIG. 8

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 16 18 2037

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	Katie Gatto: "Panasonic releases wireless solar charging table", , 23 May 2011 (2011-05-23), XP055280339, Retrieved from the Internet: URL:http://phys.org/news/2011-05-panasonic-wireless-solar-table.html [retrieved on 2016-06-14] * the whole document *	1-15	INV. A47B13/12 A47B37/04 A47B97/00
Y	CN 201 256 742 Y (QUANZHOU GOLDEN SUN ELECTRONIC [CN]) 17 June 2009 (2009-06-17) * the whole document *	1-15	
Y	US 2010/064945 A1 (SIERENBERG RALF [DE]) 18 March 2010 (2010-03-18) * the whole document *	1-15	
Y	FR 2 441 810 A1 (ROQUES MAURICE) 13 June 1980 (1980-06-13) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC) A47B H02S A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 January 2017	van Hoogstraten, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 18 2037

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-01-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 201256742 Y	17-06-2009	NONE	
US 2010064945 A1	18-03-2010	NONE	
FR 2441810 A1	13-06-1980	NONE	

EPO FORM P0459

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

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.

Patent documents cited in the description

- CN 204169327 U **[0003]**
- CN 104273941 A **[0003]**