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(54) Multi-functional illuminating lamp

(57) This new pragmatic invention refers to a kind of multi-functional illuminating lamp (2), especially a kind of illuminating lamp fixed on the parasol. The lamp panel (1) is consisted of two separate structures, the left lamp panel (1a) and the right lamp panel (1b) jointed by means of flexible connection. There is a concave hole (4a,4b) at the appropriate position at the junction plane of the left lamp panel (1a) and the right lamp panel (1b), which will form a through hole (4) housing the bar after the two lamp panels (1a,1b) are attached together. On the lamp panel (1) there is a locking device (3) to lock the lamp panel (1) onto the bar and adjust it as well as the storage batteries (9) to provide power for the lamps (2). The multi-functional lamp can be fixed on bars of various sizes and is convenient to assemble and disassemble. Moreover, it is easy to use and carry with storage batteries (9) as the power supply and is elegant and beautiful in look for concealing power cord inside.

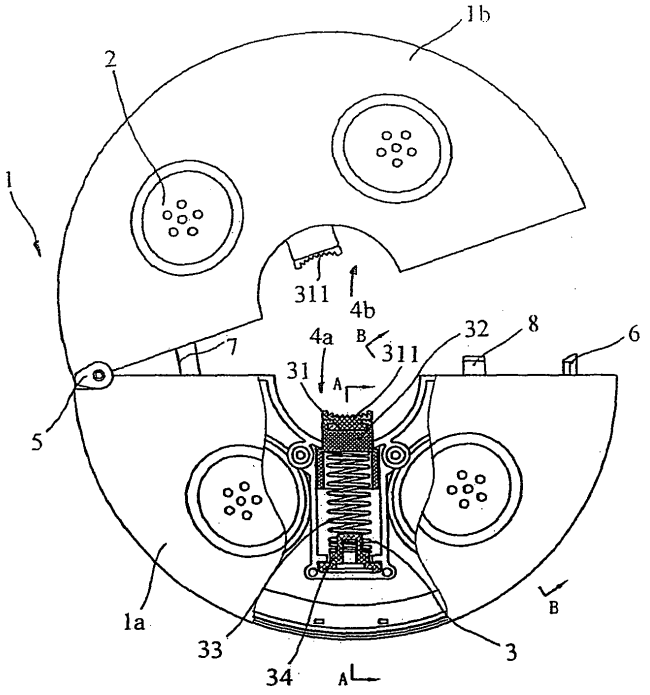

Figure 1

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Description

Field of technology

[0001] This invention refers to a kind of illuminating lamp, especially the illuminating lamp used for parasol.

Background of technology

[0002] As is known to all, parasols are widely used in all kinds of outdoors resting and-catering areas. The parasols can provide shelter from the scorching sun and rain while people are taking on leisure activities, thus to create a comfortable environment for rest. Without illumination structure and special-purpose lamp for nowadays' parasols, a small lamp is usually hung inside the parasol to provide appropriate illumination at night. Simple as it is, the power cord of the lamp will hang all over the places which not only obstructs the sight but also destroys the overall aesthetic feeling and atmosphere. Moreover, sometimes it is troubled for lack of sockets outdoors.

Content of invention

[0003] The technological problem to be solved by this new pragmatic invention is to come up with a kind of multi-functional illuminating lamp easy to use and carry. It can be fixed on bars of various sizes and it is convenient to assemble and disassemble. It is elegant and beautiful in look for concealing the power cord inside.

[0004] The technical proposal adopted by this new pragmatic invention to solve the above technological problem is as follows: the multi-functional illuminating lamp includes the lamp panel, the lamp on the lamp panel and the power supply for the lamp. The foresaid lamp panel is consisted of two separate structures, the left lamp panel and the right lamp panel connected by means of flexible connection. There is a concave hole at the appropriate position of the junction plane of the left lamp panel and the right lamp panel, which will form a through hole housing the bar after the two lamp panels are attached together. On the lamp panel there is a locking device to lock the lamp panel onto the bar and adjust it.

[0005] The foresaid lamp can be powered by the storage batteries in the lamp panels.

[0006] The foresaid lamp panel can also be equipped with solar power system which can charge the storage batteries.

[0007] The foresaid locking device is consisted of a pair of elastic jackcatch structure located respectively on the left and right lamp panels. This structure includes a spring spacer block fixed in the lamp panel, a sliding block, rubber jackcatches and springs. The sliding block in a vallecular cavity in the lamp panel which allows it to move forth and backward is connected with the spring spacer block through two springs. The rubber jackcatch is fixed to the sliding block with its head extending to the through hole of the lamp panel. And the foresaid rubber jackcatch's head is arc-shaped with latch in it.

[0008] The foresaid locking device is consisted of a pair of elastic jackcatch structure located respectively on the left and right lamp panels. This structure includes moveable jackcatches, a sliding block, a rocking handle and a transmission component driven by the rocking handle. The sliding block, set in a vallecular cavity in the lamp panel where it can move forth and backward, is connected with the transmission component through studs. The moveable jackcatch is fixed to the sliding block with its head extending to the through hole of the lamp panel. And the foresaid rubber jackcatch's head is arc-shaped with latch in it.

[0009] The foresaid left lamp panel and right lamp panel can adopt intercross shaft connection on one side and dissociable buckle connection on the other side.

[0010] The foresaid solar power system is consisted of several solar power crystal plates and the solar power charging circuit. The solar power crystal plates, evenly distributed over the lamp panel, are connected to the solar power charging circuit in the lamp panel with conducting wire.

[0011] The foresaid lamp panel is a disc structure consisted of the symmetrical left and right lamp panels with a round through-hole in the center. The foresaid left and right lamp panels are both consisted of the lamp panel cover and the lamp panel base.

[0012] Between the foresaid left and right lamp panels, there is a stopper A which is used to restrict the distance when the two panels part. Another stopper B is used to prevent the panels from moving up and down after the left and right lamp panels combine at the spring buckle.

[0013] The foresaid transmission component is mainly consisted of a gearwheel and a pair of small gears to mesh with the gearwheel. The gearwheel is fixed in the gearbox through a connection shaft while the two small gears are connected with a stud respectively.

[0014] Comparing with the current technology, this new pragmatic invention enjoys the following advantages: the adjustable locking device makes it possible to fix this invention onto bars of various sizes, to lock and position it at ease and to assemble and disassemble conveniently. The adoption of storage batteries as the power supply makes it more convenient and secure to use and carry the illuminating lamp. Moreover, the storage batteries can be charged with solar power system or backup charger, and the concealed batteries and power cord make it more elegant and beautiful in look.

Drawings Illustrations

[0015]

Figure 1 is the structural diagram of practice case 1 of the new pragmatic invention.

Figure 2 is the A-A sectional view of figure 1.

Figure 3 is the B-B revolving sectional view of figure 1.

Figure 4 is the diagram of the base structure of practice case I of the new pragmatic invention.
Figure 5 is the three-dimensional diagram of practice case 1 of the new pragmatic invention.
Figure 6 is the C-C sectional view of figure 3.
Figure 7 is the position diagram of the practice case 1 applying on the parasol.
Figure 8 is the structural diagram of practice case 2 of the new pragmatic invention.
Figure 9 is the A-A sectional view of figure 8.
Figure 10 is the B- B sectional view of figure 8.
Figure 11 is the C-C sectional view of figure 8.
Figure 12 is the three-dimensional diagram of substructure of practice case 2 of the new pragmatic invention.

Concrete methods of implementation

[0016] Next we will elaborate on the new pragmatic invention with reference to the illustrations.

[0017] Practice case 1: as shown in figure 1, 2 and 3, this illuminating lamp is mainly made up of lamp panel1, locking device 3 and storage batteries9. The lamp panel 1 is a flying disc shaped structure consisted of two identical or symmetrical half disc shaped left lamp panel 1 a and right lamp panel 1b. The two panels are connected with an intercross shaft5 on the one side and spring buckle6 on the other side for the easy opening and locking. At the center position of the junction plane of the two panels there is a half round concave hole 4a and 4b respectively. The two panels combine to form an axial round through-hole4 so as to fix the lamp base onto bar articles. On both panels there is a radial rectangle groove impenetrating the concave hole, where there is a locking device3 to lock the lamp base to bar articles of various sizes. The left and right lamp panels are made up of lamp panel cover 111 and lamp panel base 112 of identical or symmetrical structure combined with screws, inside which there is enough space for the locking device3, lamp2 and storage batteries9. Between the left and right lamp panels, there is a stopper A7 which is used to restrict the distance when the two panels part. Another stopper B8 is used to prevent the panels from moving up and down after the left and right lamp panels combine at the spring buckle.

[0018] Lamps2, evenly distributed on lamp panel1 , are several energy-saving, compact and super bright LED lamps, respectively powered by a responding storage battery9 which is fixed in the battery hole in the lamp panel (as shown in figure 3). As shown in figure 6, both ends of the storage bactery9 contact with battery spring tabs92 which are stuck in the ribs93 of the lamp panel cover 111. The structure of one side of the spring tab contacting with the storage battery9 and the other side being welded to the electrical wire95 with solder94 makes it convenient to assemble, disassemble and maintain. In addition, there is also an external charging connection91 at one side of the lamp panel cover111. When the storage battery 9 is short of energy, it can be charged with external charger via this charging connection91. it is cost effective and convenient to maintain, as well as prolongs the use life of the storage battery.

[0019] The foresaid locking device3 is consisted of a pair of elastic jackcatch structure respectively in the rectangle groove of the left and right lamp panel which plays the role of positioning the lamp. As shown in figure 1 and 2, the detailed structure of the elastic jackcatch includes the spring spacer block34, sliding block32, spring33 and rubber jackcatch31. There are teeth311 in the arch-shaped head of the rubber jackcatch31. The spring spacer block34 sets itself in the slot at one side of the rectangle groove of the lamp panel base. There are two raised columns at the inner surface of the spring spacer block34 which interact with the two concave holes in the sliding block to fix the spring33. The sliding block32 is fixed in the vallecular cavity at the inner surface of the rectangle groove of the lamp panel. Spring33 is between sliding block32 and spring spacer block34. With the help of the reset force when the spring is compressed or released, the rubber jackcatch31 will move forth and backward propelled by sliding block32 inside the rectangle groove so as to clutch the bar articles.

[0020] This illuminating lamp can apply to many occasions. We take the illuminating lamp in the parasol as an example. When putting it into use, open the left lamp panella and right lamp panel 1b at the spring buckle6, clutch onto the parasol bar and then lock it at the spring buckle6. According to the size of the parasol bar, the locking device 3 on the lamp panel 1 will make adjustment automatically with the help of spring force to make the sliding block 32 move in straight line so that the rubber jackcatch 31 will clutch onto the bar appropriately. Moreover, the storage batteries will supply power for the super-bright LED lamps.

[0021] Practice case 2: as shown in figure 8 to figure 12, this illuminating lamp is mainly consisted of lamp panel1, lamp2, locking device3 and solar power system 10. The lamp panel is also a flying disc shaped structure consisted of two symmetrical half disc shaped left lamp panel 1a and right lamp panel 1b. The left and right lamp panel can be connected with intercross shaft5 and spring buckle6 as in practice case 1. It can also be connected with a hinge 11 on one side and a movable hinge buckle12 on the other side.

[0022] There is also storage batteries9 in the lamp panel 1 to supply power to corresponding lamps. The storage batteries9 are mainly charged by the solar power system10 on the lamp panel as well as the backup electric-supply charger. The solar power system10 is mainly consisted of several solar power crystal plates102 evenly distributed on the lamp panel and the solar power charging circuit101 which is connected in series to the crystal plates with conducting wire103. The solar power stored by the crystal plates 102 can be transformed into electricity through the charging circuit101 and then stored in the batteries. The solar power crystal plates102 are

plugged and glued in the slots on the lamp panel1.

[0023] The locking device3 of this practice case takes a different structure from that of practice case1. It is consisted of a pair of movable jackcatches set respectively in the ladder groove of the left and right lamp panel. As is shown in the figure, the detailed structure includes a rocking handle38, transmission component37, sliding block36 and movable jackcatches35. The transmission component37 includes a gearbox374, a gearwheel371, two small gears372 and the connecting shaft373. The gearbox374, whose outer surface is arch-shaped and corresponds with the outer surface of the lamp panel1, is fixed on the lamp panel with screws. The gearwheel371 is fixed inside the gearbox374 through connecting shaft373 on which the rocking handle is set. The two small gears372 are set at the two sides of the gearwheel371 via a stud375 and mesh with the gearwheel. The rectangle-shaped sliding block36 can move up and down in the vallecular cavity of the ladder groove. At both sides of the sliding block36 there is a sand grip362, and together with the groove363 of the vallecular cavity to play the role of slide rail. The lower part of the studs375 connected on the small gears is plugged into the two stud holes361 on the sliding block36, thus the small gear372 will drive the stud375 to make the sliding block36 move in straight line. The movable jackcatches35 are connected to the bottom of the sliding block36 with screws. The jackcatches are rectangle-shaped with teeth351 on its arch-shaped head. Driven by sliding block36, the jackcatches 35 will move inward or outward inside the groove. Adjust the length of the jackcatch head sticking out of the lamp base at the through hole so as to make the teeth351 clutch the bar article. For installation, first connect the movable jackcatches35 to the sliding block36 with screws, next connect the sliding block36 and the jackcatches35 with stud375 to the gearbox374 with gearwheel and small gears in it, then put them all as a whole into the ladder groove of the lamp base and lastly fix the gearbox and lamp base with screws.

[0024] When put it into use, open the hinge buckle 12 and clutch the lamp panel onto the parasol handle. According to the size of the bar, put the rocking handle onto the connecting shaft373 of the gearbox374, rotate the rocking handle to revolve the gearwheel and small gears which will propel the sliding block36 through stud 375 to move in straight line, thus to push the jackcatches35 to clutch onto the bar article. Moreover, the solar power stored by the solar power crystal plates102 will be transformed into electricity through charging circuit101 and then stored in batteries9 which will power the super bright LED lamps.

[0025] At day time, if there is sunshine, the illuminating lamp could be removed and put in sunshine and the solar power crystal plates will charge the batteries ceaselessly. The storage batteries will provide electricity for the LED lamps at night or when it is underlit. In consideration of the situation that the batteries are not sufficiently charged with solar power for lack of sunshine or not being used for a long time, we can resort to the backup electric supply charger to charge the batteries.

[0026] Not limited to the detailed structures of the foresaid two practice cases, this new pragmatic invention also has several variants and models.

Claims

1. Multi-functional illuminating lamp, including a lamp panel (1), at least one lamp (2) on the lamp panel and a power supply for the lamp, wherein the lamp panel (1) comprises a left lamp panel and a right lamp panel (1 a, 1 b) being two separate structures jointed by means of flexible connection, a concave recess (4a, 4b) is provided at an appropriate position of a junction plane of the left lamp panel respectively the right lamp panel, forming a through hole (4) housing a bar after the two lamp panels are attached together, and a locking device (3) is provided on the lamp panel to lock the lamp panel onto the bar and adjust it.

2. Multi-functional illuminating lamp according to claim 1, wherein at least one of the lamps (2) is a LED lamp powered by storage batteries (9) on or in the lamp panel.

3. Multi-functional illuminating lamp according to claim 1 or 2, comprising a solar power charging system (10) for the storage batteries on the lamp panel (1).

4. Multi-functional illuminating lamp according to any of claims 1 to 3, wherein the locking device (3) comprises at least one structure located on the left or on the right lamp panel (1a, 1b) interacting with a corresponding element on the respective other side, the structure including a spring spacer block (34) fixed in the lamp panel, a sliding block (32), a rubber jackcatch (31) and a spring (33), the sliding block (32) being movable forth and backward in a cavity in the lamp panel and being in connection with the spring spacer block (34) by means of at least one spring (33), the rubber jackcatch (31) being fixed to the sliding block (32) with its head extending to the through hole of the lamp panel and the head of the rubber jackcatch (31) being arc-shaped with corrugations (311).

5. Multi-functional illuminating lamp according to any of claims 1 to 4, wherein the locking device (3) comprises at least one structure located on the left or on the right lamp panel interacting with a corresponding element on the respective other side, the structure including a moveable jackcatch (35) with a sliding block (36), a rocking handle (38) and a transmission component (37) driven by the rocking handle, the

sliding block (36) being movable forth and backward in a cavity in the lamp panel and being in connection with the transmission component (37) by means of a stud (375), the moveable jackcatch (35) being fixed to the sliding block (36) with its head extending to the through hole (4) of the lamp panel and the head of the rubber jackcatch (35) head being arc-shaped with corrugations (351).

6. Multi-functional illuminating lamp according to any of the preceding claims, wherein the left lamp panel (1a) is connected by means of a shaft (5) to the right lamp panel (1 b) on the one side and by means of a dissociable buckle (6) on the other side.

7. Multi-functional illuminating lamp according to any of claims 3 to 6, wherein the solar power system (10) comprises several solar power crystal plates (102) on the lamp panel and a solar power charging circuit (101) which is connected to the crystal plates by means of a conducting wire (103).

8. Multi-functional illuminating lamp according to any of the preceding claims, wherein the lamp panel (1) has a disc structure comprising symmetrical left and right lamp panels (1 a, 1b) with a round through-hole (4) in the center, wherein the left and right lamp panels both comprise a lamp panel cover (111) and a lamp panel base (112).

9. Multi-functional illuminating lamp according to any of the preceding claims, wherein a stopper (7) is located between the left and right lamp panels, restricting the parting distance when the two panels part while another stopper (8) is used to prevent the panels from moving up and down after the left and right lamp panels combine at the spring buckle.

10. Multi-functional illuminating lamp according to any of claims 5 to 9, wherein the transmission component (37) comprises a gearwheel (371) and a pair of small gears (372) configured to mesh with the gearwheel; the gearwheel being fixed in a gearbox (374) by means of a connection shaft (373) and the two small gears (372) being connected by means of a stud (375), respectively.

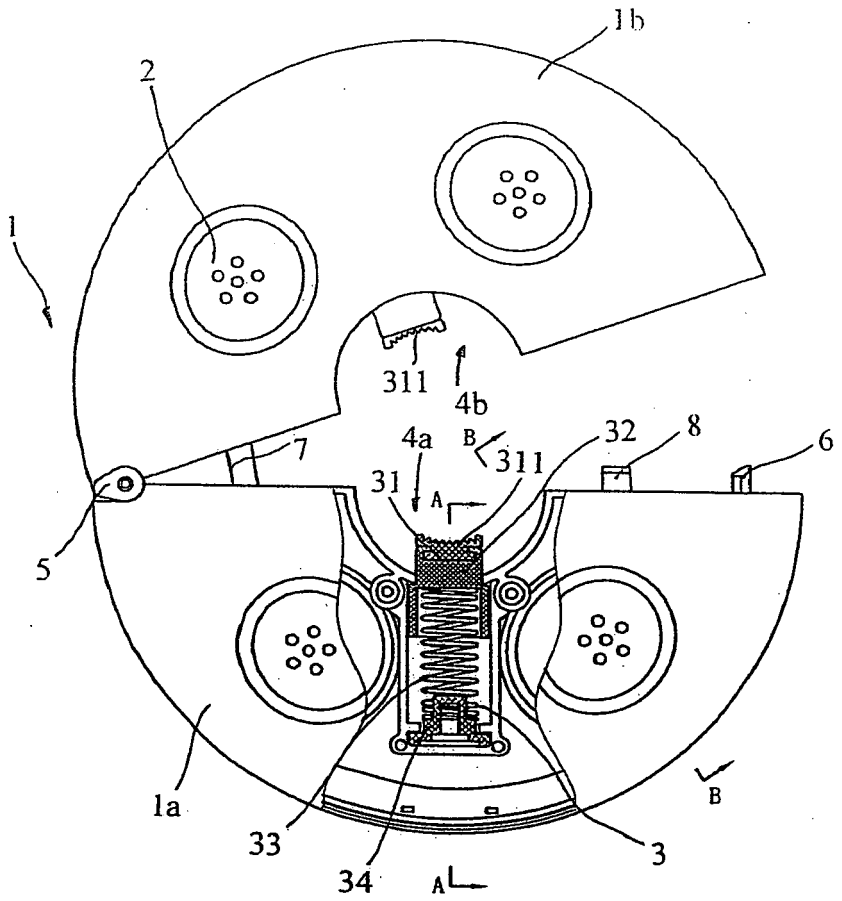

Figure 1

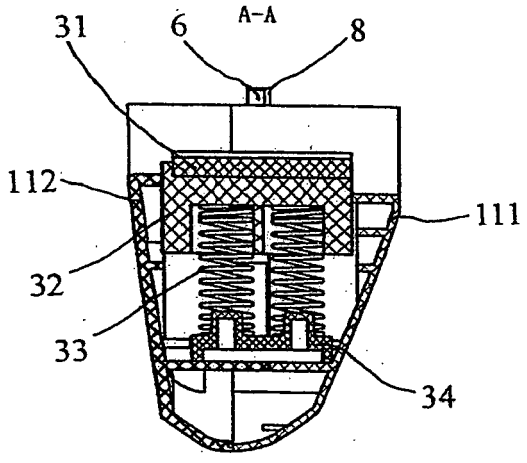

Figure 2

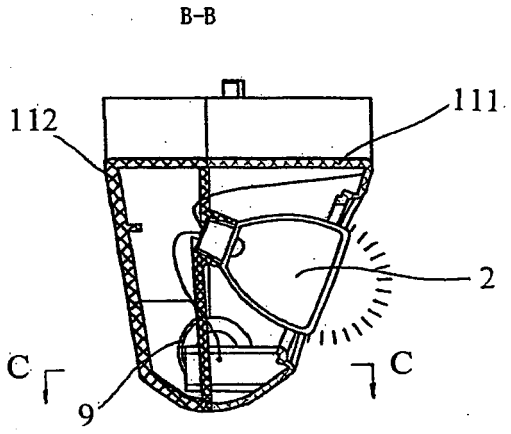

Figure 3

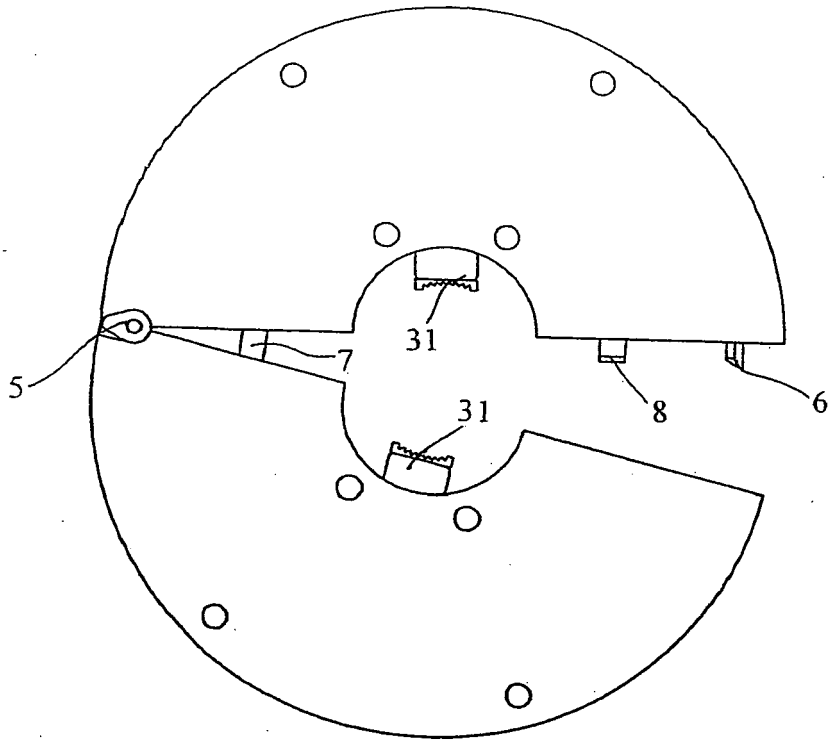

Figure 4

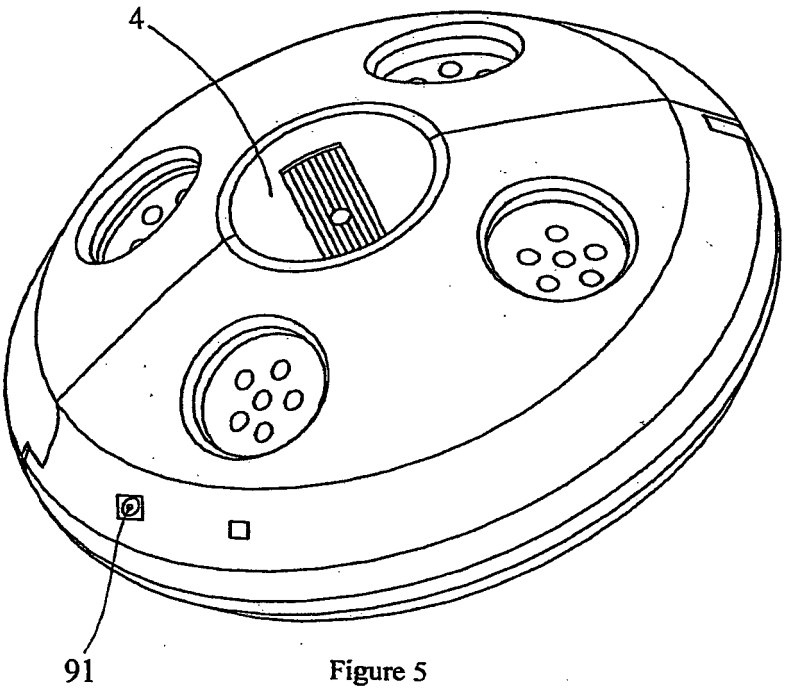

Figure 5

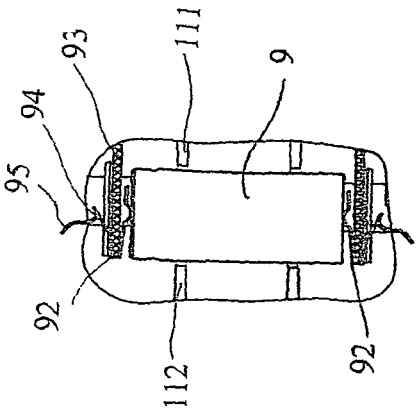

Figure 6

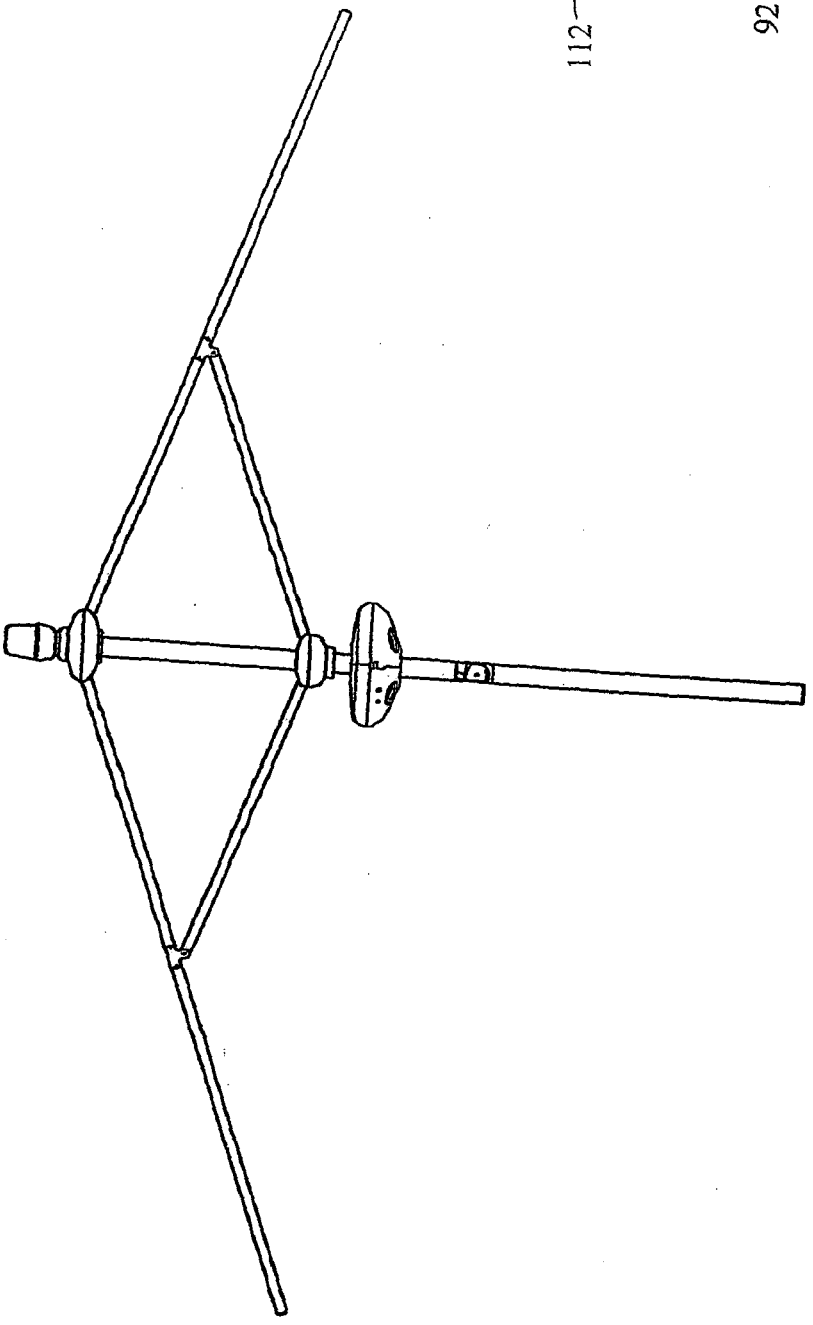

Figure 7

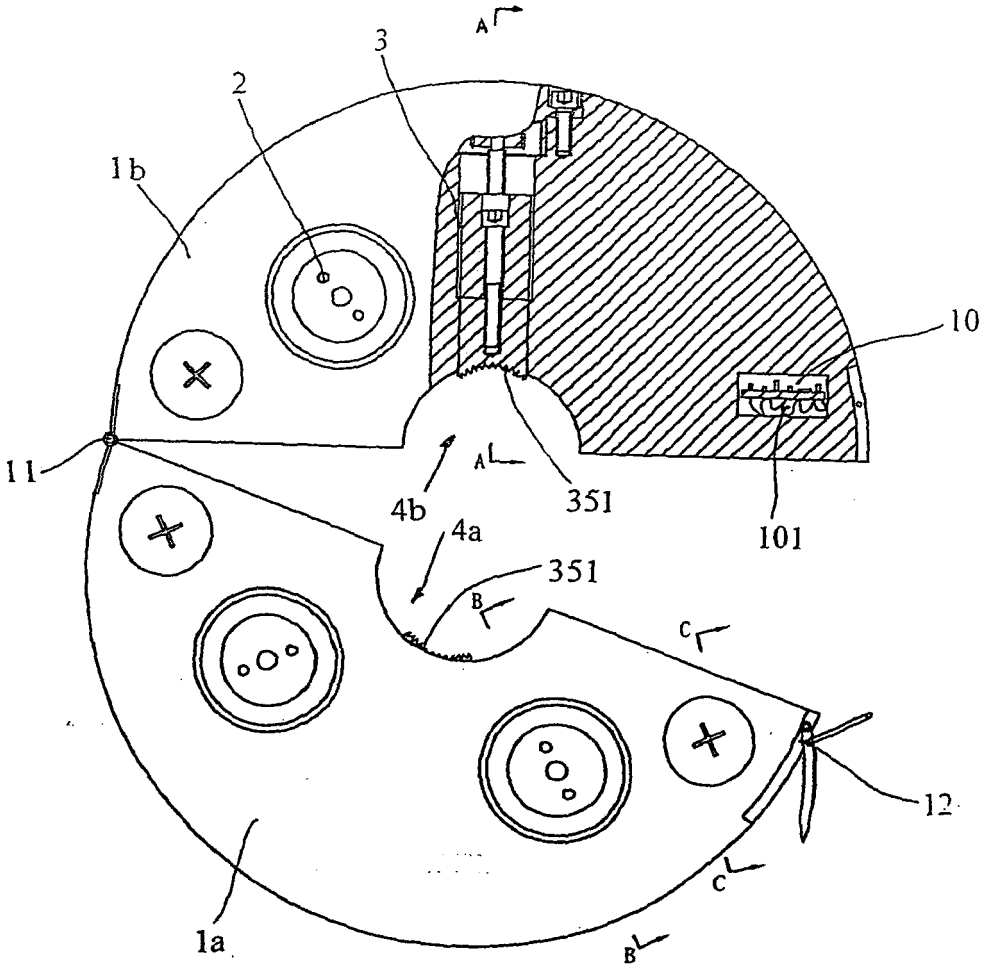

Figure 8

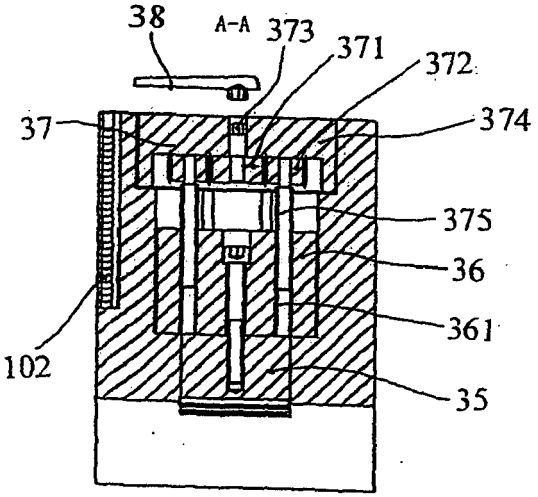

Figure 9

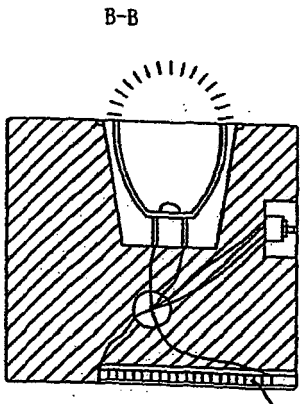

Figure 10

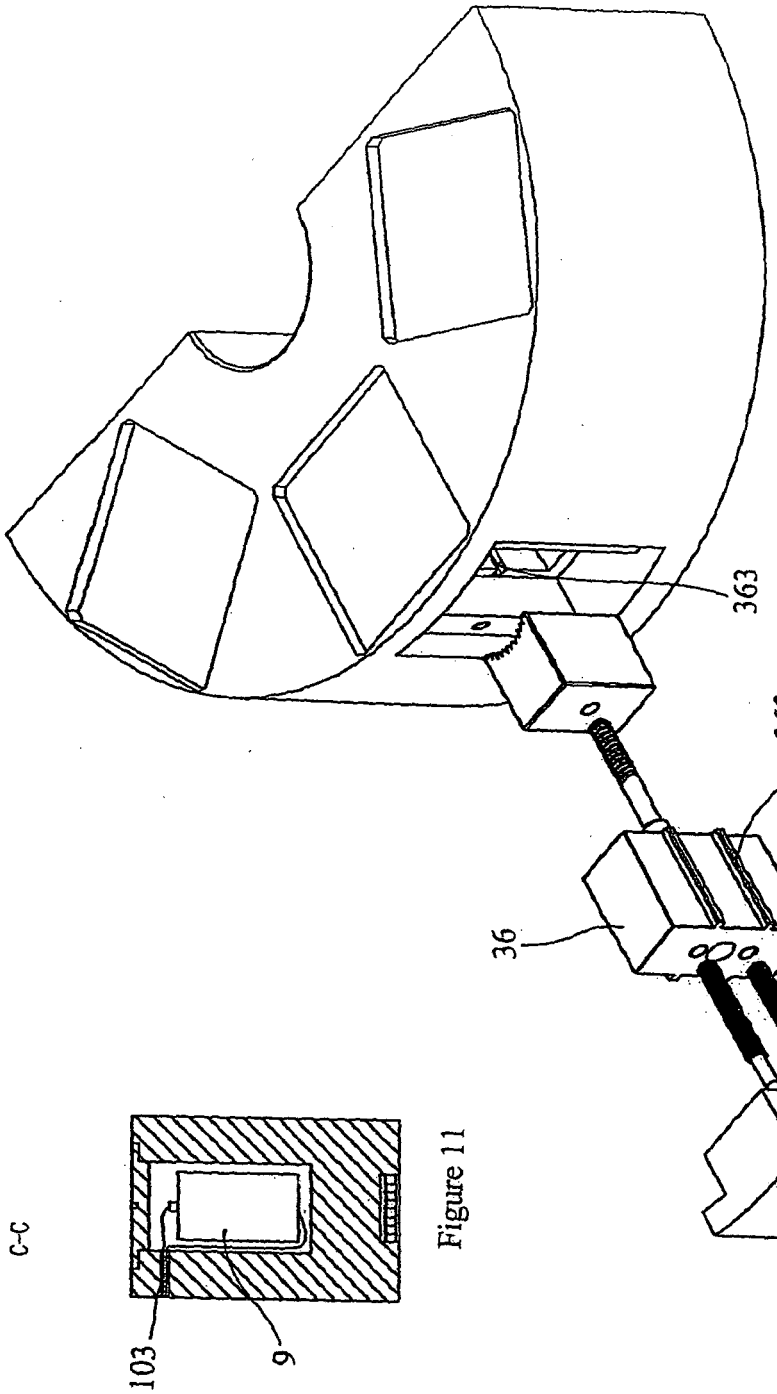

Figure 12

Figure 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 01 9669

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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	25 November 2005	Lange, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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