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(54) **OUTDOOR ROTATING DISPLAY DEVICE**

IM FREIEN AUFSTELLBARE DREHBARE ANZEIGEVORRICHTUNG

DISPOSITIF D'AFFICHAGE ROTATIF POUR L'EXTERIEUR

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Description

[0001] The invention relates to an outdoor rotating advertising device which contains a hollow supporting frame fixed in one place, an information carrier element connected to the supporting frame with the help of a bearing device so that it can be rotated, and a moving unit placed in the hollow of the supporting frame, the moving unit has a driving subassembly and a motion transfer mechanism connected to the driving subassembly, the driving subassembly is connected to the information carrier element with the motion transfer mechanism, and between the driving subassembly and/or the driving subassembly and the information carrier element a moment limiting subassembly is inserted.

[0002] With the development of the business life, the advertisements and promotions that propose and attract the attention to various goods and services play an increasing part. In our days, a large variety of such advertising boards giving information or impulse to purchase is already available.

[0003] For example, the US patent description registered under No. 4.827.644 describes a design in which the equipment serving for displaying the information includes: a motor accommodated in a casing; an information carrier surface composed of a specified number of mosaic elements e.g. trihedral prisms connected by means of a linkage to the motor. Its essence is that, under the effect of the motor drive, the mosaic plates turn around their own axis in a coordinated manner, thus making the device suitable to display several kinds of information on the same surface in sequence or to change them in groups as well.

[0004] However, the disadvantage of this design is, that it is not well visible but viewed only from within a specified angular range and a relatively short distance. In addition, due to its dimensions and the existence of rotating parts being in fixed connection, it is very cost intensive in respect of both its production and operation, especially in the case of larger sizes.

[0005] It is also unfavourable that the gaps established between the moving surfaces allow polluting materials to get access into the casing which, in turn, sets restrictions to the outdoor use. In fact, the high probability of failures will be further increased due to the wear of moving parts caused by pollution.

[0006] Advertising devices consisting of an information carrier surface arranged on a stationary supporting structure are also widely used. A large number of solutions of this kind is shown e.g. on walls of buildings and lamp posts of public lighting.

[0007] However, they have the disadvantage that the information displayed is visible only from a specified direction which reduces the efficiency of the advertisement.

[0008] A further disadvantage of the devices of such kind is, that they are stationary; thus, their capability of attracting the attention is reduced as compared to those

that move, which reduces the probability of obtaining successful solution to the problem.

[0009] It is also unfavourable that, as a result of wind pressure, the surfaces located at larger height are subject to deformation and damage as well as straddle, thus endangering the passengers and the environmental safety.

[0010] To eliminate these disadvantages, an attempt is made by the advertising board described in the patent description US 4.910.898, which consists of a rotatable shaft and a fixed casing that accommodates the lower shaft end. Between the casing and the shaft, shearing pins are arranged that break in the case of excessive wind pressure, thus allowing the information carrier part to be freely rotated in relation to the fixed lower supporting part.

[0011] However, this design has the disadvantage that, in the case of larger sizes, the upper rotating part once set free represents high risk; in fact, the swinging motion generated by the undamped rotation and unbalanced masses may lead to breaking of the structure and, in extreme cases, may also involve catastrophic consequences.

[0012] It shall also be considered to be disadvantageous that, as in the solutions described above, the information carrier of relatively small area is visible only from a restricted distance.

[0013] The patent description with the registration number US 2.556.472 introduces a construction in which the carrier element created for the information intended to be released is connected with a shaft which is fixed to the frame structure, practically a supporting post, so that it can be rotated. At the upper end of the supporting post, at the carrier element there is a driving subassembly which is connected to the shaft and so it can rotate it.

[0014] However, the deficiency of this construction is that as a result of the significant weight of the drive unit situated at the upper end of the supporting post, an oversized supporting post is needed which does not only increase the cost, but also spoils the aesthetic appearance of the advertising device.

[0015] Another disadvantage is that it is difficult to check and maintain the drive unit at the top of the supporting post, and it is even dangerous when the supporting post is higher.

[0016] The invention aims at eliminating the deficiencies of the information carrier devices known so far and at creating a version provided with a rotating information carrier surface - being thus suitable to attract the attention - which is also visible from larger distances and, in spite of its large surface located at a great height, operates reliably and its aesthetic appearance is favourable, and as a result of its structural construction its maintenance and repairing can be solved in a simple way.

[0017] The implementation according to the invention was based on the recognition that, by using a supporting frame of large height and arranging a properly se-

lected motion transfer mechanism inside it and by connecting the motion transfer mechanism with both the driving subassembly and the information carrier element in a manner that differs from the methods known so far, the problem can be solved.

[0018] If a connecting shaft is used as a motion transfer mechanism which is provided with suitable hinged coupling elements at the ends, then the drive unit can be placed at the bottom of the supporting post, and in this way the disadvantages can be prevented.

[0019] According to the objective set, the outdoor rotating advertising display device according to the invention - which contains a hollow supporting frame fixed in one place, an information carrier element connected to the supporting frame with the help of a bearing device so that it can be rotated, and a moving unit placed in the hollow of the supporting frame, the moving unit has a driving subassembly and a motion transfer mechanism connected to the driving subassembly, the driving subassembly is connected to the information carrier element with the motion transfer mechanism, and between the driving subassembly and/or the driving subassembly and the information carrier element a moment limiting subassembly is inserted- is designed in a manner that the supporting frame is a supporting post provided with a guide channel, the motion transfer mechanism is a driving shaft placed in the guide channel and the driving subassembly is placed at the bottom of the guide channel of the supporting frame, at least one of the upper end or the lower end of the driving shaft is supplemented with a hinged coupling element.

[0020] A further criterion of the outdoor rotating advertising device may be that the information carrier element is supplemented with a luminous body.

[0021] In an exemplary embodiment of the outdoor rotating advertising device, the a current lead element is connected to the driving shaft of the motion transfer mechanism, near the lower end of the driving shaft a current input profile, for example a sliding ring, which is connected to the power source is fixed, and one end of the current lead element is connected to the current input profile, and its other end is connected to the luminous body.

[0022] The outdoor rotating advertising device according to the invention has a number of advantageous features. The most important one is that, due to its structural design, the rotating information carrier element enables the desired advertisement to be recognized and read even from larger distances.

[0023] It must be considered as an advantage that as a result of the special arrangement it is possible to construct a supporting post which has a more favourable inertia, is less unstable, has a more aesthetic appearance and so it makes it possible for the information intended to be released to have a better effect.

[0024] It is also favourable that as a result of that the drive unit is placed near the ground, it is simpler to do repairs and so there is a greater chance of continuous

operation.

[0025] It is a further advantage that the rotation of the information carrier element not only calls the attention but, due to the rotational motion, it makes the displayed information visible from every direction; thus, the device fulfills its function with significantly higher efficiency than the stationary devices.

[0026] It is also favourable that the operation involves no risk; in fact, due to the original arrangement, the wind pressure acting on the large advertising surface is unable to result in any deformation of the supporting frame or the failure of and damage to the driving subassembly even in the case of heavy blasts of wind.

[0027] It shall also be considered to be advantageous that the device can be assembled in a simple way of parts manufactured by using traditional equipment and its service also sets no difficulty.

[0028] It is also advantageous that, in contrast to the versions known so far, the problem associated with the continuous and evenly distributed illumination of the rotating information carrier element is also solved, which enables the advertising device to fulfill its task even at evening time and during night.

[0029] In the following, the invention will be described in detail in connection with an exemplary embodiment, based on drawings.

[0030] Fig. 1 shows the partly sectional side view of an exemplary embodiment of the invention.

[0031] In Fig. 1, one exemplary version of the outdoor rotating advertising device according to the invention is represented. It is well shown that the 1 supporting frame fastened stationary to the ground consists in the 1a supporting post of large height formed from a single piece, which is provided with the 1b guide channel.

[0032] At the top of the 1a supporting post, the 3 bearing device fits into the 1b guide channel - and also closes it - ,having said 3 bearing device the task of accommodating the 2b stub of the 2 information carrier element arranged over the 1a supporting post, thus enabling the information carrier element to be freely rotated in relation to the 1 supporting frame.

[0033] In this embodiment, the 3 bearing device consists in a combination of bearings suitable to withstand forces in both radial and axial directions, built with either slide bearings or ball bearings or even roller bearings and their combination.

[0034] The 1b guide channel accommodates the 5 motion transfer mechanism and the 7 driving subassembly as well. The 7 driving subassembly that includes the 7a gearbox and the 7b motor is suspended on the 1c coupling plate protruding into the 1b guide channel of the 1a supporting post at a place easy to access near the 12 door.

[0035] In this embodiment, the 5 motion transfer mechanism, which has the task of coupling the 7a gearbox of the 7 driving subassembly to the 2b stub of the 2 information carrier element, consists in the 5c driving shaft coaxial with the 1a supporting post of the 1 sup-

porting frame. At the 5a upper end of 5c driving shaft facing the 2b stub of 2 information carrier element as well as at the 5b lower end nearer to the 7a gearbox of the 7 driving subassembly, the 4 hinged coupling element each that serves the connection is fastened.

[0036] At least one of the 4 hinged coupling elements is designed preferably as a cardan joint which has the task of allowing the long 5c driving shaft to be declined during its rotation, thus preventing any remaining deformation resulting from possible jamming and elastic deformation.

[0037] Of course, it is not required to provide the 5c driving shaft with 4 hinged coupling elements at its both ends; however, at least either the 5a upper end or the 5b lower end of the 5c driving shaft shall be provided with a 4 hinged coupling element. Furthermore, it is preferable to form the 4 hinged coupling element in a manner so as to be capable of equalizing the dimensional changes due to the thermal expansion of the 5c driving shaft. In the interest of this at least one of the hinged coupling elements, preferably the bottom four elements, is equipped with an axial slot in the direction of the 5c driving shaft.

[0038] Fig 1 also shows that, between the 7a gearbox of the 7 driving subassembly and the 4 hinged coupling element mounted at the 5b lower end of the 5c driving shaft of 5 motion transfer mechanism, the 6 moment limiting subassembly is inserted. The 6 moment limiting subassembly has the function that, in the case of excessive external forces e.g. wind pressure acting on the 2 information carrier element if the moment exceeds a predetermined value, it enables the 2 information carrier element and the 5 motion transfer mechanism to perform rotational motion which, although independent of the 7 driving subassembly, is still damped.

[0039] The use of the 6 moment limiting subassembly is important and indispensable in order to protect the 7 driving subassembly and to ensure the safe operation of the complete device without any risk of accident.

[0040] The 7b motor of the 7 driving subassembly is powered by the 8 power source which, preferably, consists in the mains supply; nevertheless, in another possible embodiment, wind energy is used as 8 power source, where the energy thus generated will be used for the operation of the device.

[0041] For the evening illumination, the 2a luminous body is fixed in the environment of the 2 information carrier element, fastened thereto in this embodiment. For the power supply of the 2a luminous body, the 10 current lead element is arranged in the 5 motion transfer mechanism, which consists of a wire connected to the 5c driving shaft in this version.

[0042] The current will be led to the 5c driving shaft by means of the 9 current input profiles consisting of the sliding rings mounted on the 5c driving shaft as well as the carbon brushes fastened to any of the stationary parts, not shown in Fig. 1.

[0043] The control of power supply to both the 7b mo-

tor and the 2b stub will be implemented by means of the 11 electric control panel which is also arranged in the 1b guide channel at the bottom of the 1 supporting frame near the 7 driving subassembly.

[0044] During the operation of the outdoor rotating advertising device according to the invention, when the 7b motor of the driving subassembly is switched on, the 7b motor sets the 5c driving shaft of the 5 motion transfer mechanism into motion through the 7a gearbox, the 6 moment limiting subassembly and the 4 hinged coupling element mounted at the 5b lower end of the 5c driving shaft of 5 motion transfer mechanism. The 5c driving shaft, in turn, by means of the 2b stub fastened to its 5a upper end, forces the 2 information carrier element to rotate which, while rotating continuously, transmits the advertisement displayed to each direction.

[0045] Should an increased wind pressure act on the 2 information carrier element - either in the rotational direction or inversely -, the 2 information carrier element would tend to rotate at a higher, or even, lower speed in relation to that forced by the 7 driving subassembly. If the rotational speed of the 2 information carrier element were different from that of the 7a gearbox of 7 driving subassembly to the extent that the risk of damaging the 5 motion transfer mechanism or the 7 driving subassembly would exist, the elements capable of displacing in relation to each other of the 6 moment limiting subassembly - which, preferably, consists of a sliding plate clutch - will slip, thereby preventing any harmful forces from being transferred to the 5 motion transfer mechanism or the 7 driving subassembly.

[0046] With the strain released, the 2 information carrier element and the 5 motion transfer mechanism as well as the 7 driving subassembly will be synchronized again, to continue the normal operation.

[0047] It shall be noted here that the 7 driving subassembly can also be arranged at a place other than the bottom of the 1 supporting frame. In another possible version, the 7 driving subassembly is arranged near the 2 information carrier element. Of course, the 5 motion transfer mechanism is also of different design. However, in respect of putting into service and inspection as well as servicing, the embodiment presented here is more advantageous.

[0048] The outdoor rotating advertising device according to the invention is well suitable to be used in cases that the information, advertisement or signaling shall be visible from long distance and any direction.

Claims

1. Outdoor rotating advertising device which contains a hollow supporting frame fixed in one place, an information carrier element connected to the supporting frame with the help of a bearing device so that it can be rotated, and a moving unit placed in the hollow of the supporting frame, the moving unit has

a driving subassembly and a motion transfer mechanism connected to the driving subassembly, the driving subassembly is connected to the information carrier element with the motion transfer mechanism, and between the driving subassembly and/or the driving subassembly and the information carrier element a moment limiting subassembly is inserted, **characterised by** that the supporting frame (1) is a supporting post (1a) provided with a guide channel (1b), the motion transfer mechanism (5) is a driving shaft (5c) placed in the guide channel (1b) and the driving subassembly (7) is placed at the bottom of the guide channel (1b) of the supporting frame (1), at least one of the upper end (5a) or the lower end (5b) of the driving shaft (5c) is supplemented with a hinged coupling element (4) for allowing the driving shaft (5c) to be declined during its rotation.

2. Outdoor rotating advertising device according to claim 1, **characterised by** that the information carrier element (2) is supplemented with a luminous body (2a).

3. Outdoor rotating advertising device according to claim 1 or 2, **characterised by** that a current lead element (10) is connected to the driving shaft (5c) of the motion transfer mechanism (5), near the lower end (5b) of the driving shaft (5c) a current input profile (9), for example a sliding ring, which is connected to the power source (8) is fixed, and one end of the current lead element is connected to the current input profile (9), and its other end is connected to the luminous body (2a).

Patentansprüche

1. Rotierende Freilichtwerbeträgervorrichtung, bestehend aus einer Hohltragkonstruktion, die an einer Stelle befestigt ist, einem Informationsträgerelement, das über eine Lagervorrichtung an die Hohltragkonstruktion angeschlossen ist, so daß sie drehbar ist, sowie einer in dem Inneren der Tragkonstruktion befindlichen Bewegungseinheit. Die Bewegungseinheit weist ein Antriebssystem und einen Bewegungsübertragungsmechanismus auf, der an das Antriebssystem angeschlossen ist. Das Antriebssystem ist durch den Bewegungsübertragungsmechanismus an das Informationsträgerelement angeschlossen. Zwischen dem Antriebssystem und/oder dem Antriebssystem und dem Informationsträgerelement ist eine Drehmomentbegrenzungseinheit eingebaut. Charakterisierung der Einrichtung: Der Tragrahmen (1) ist eine Säulenkonstruktion, in der sich ein Führungskanal (1b) befindet. Der Bewegungsübertragungsmechanismus (5) ist eine in dem Führungskanal (1b)

angeordnete Antriebswelle (5c). Das Antriebssystem (7) ist am Boden des Führungskanals (1b) des Tragrahmens (1) untergebracht. Mindestens eines der Enden der Antriebswelle (das untere Ende (5b) oder das obere Ende (5a) ist mit einem Gelenkanschluß (4) versehen, der das Abwinkeln der Antriebswelle (5c) während der Drehung ermöglicht.

2. Rotierender Freilichtwerbeträger nach Anspruch 1, wonach das Informationsträgerelement (2) mit einem Leuchtkörper (2a) versehen ist.
3. Rotierender Freilichtwerbeträger nach Anspruch 1 oder 2, wonach das Stromleitungselement (10) mit der Antriebswelle (5c) des Bewegungsübertragungsmechanismus (5) verbunden ist. An dem unteren Ende (5b) der Antriebswelle (5c) befindet sich ein Stromzuführungsprofil (9) z.B. ein Schleifring, der an die eingebaute Stromquelle (8) anschließt. Das eine Ende des Stromführungselements schließt an das Stromzuführungsprofil (9) an, das andere Ende an den Leuchtkörper (2a).

Revendications

1. Un appareil publicitaire rotatif de plein air, composé d'une construction à poutre creuse, fixée sur une place, d'un élément portant d'information, attaché à la construction à poutre creuse par un mécanisme de palier, ce que le rend rotatif, et d'une unité de mouvement positionnée dans l'intérieur de la construction à poutre, ladite unité de mouvement se composant d'un sous-système moteur et d'un mécanisme de transmission de mouvement, joint au sous-système moteur, ledit sous-système moteur étant joint à l'élément portant d'information par le mécanisme de transmission de mouvement, dont entre le sous-système moteur et/ou le sous-système moteur et l'élément portant d'information une unité limiteur de couple est installée, l'appareil étant **caractérisé en ce que** le cadre porteur (1) est une construction à colonnes dans laquelle se trouve un canal de conduite (1b), le mécanisme de transmission de mouvement (5) est un arbre moteur (5c) positionné dans le canal de conduite (1b), le sous-système moteur (7) est positionné au fond du canal de conduite (1b), et en ce que au moins un des bouts de l'arbre moteur, ou le bout inférieur (5b) ou le bout supérieur (5a), est muni d'une jonction articulée qui permet l'arbre moteur (5c) être plié pendant le mouvement rotatoire.
2. Un appareil publicitaire rotatif de plein air selon revendication 1, **caractérisé en ce que** l'élément portant d'information (2) est muni d'un élément lumineux (2a).

3. Un appareil publicitaire rotatif selon les revendications 1 ou 2, **caractérisé en ce que** l'élément de la conduction de courant (10) est connecté avec l'arbre moteur (5c) du mécanisme de transmission de mouvement (5), sur le bout inférieur (5b) du l'arbre moteur (5c) se trouve un élément d'amenée du courant (9), par exemple une bague collectrice, joint à la source de courant (8) y installée, et l'un des bouts de la conduction de courant est joint à l'élément d'amenée du courant (9), l'autre est joint à l'élément lumineux (2a).

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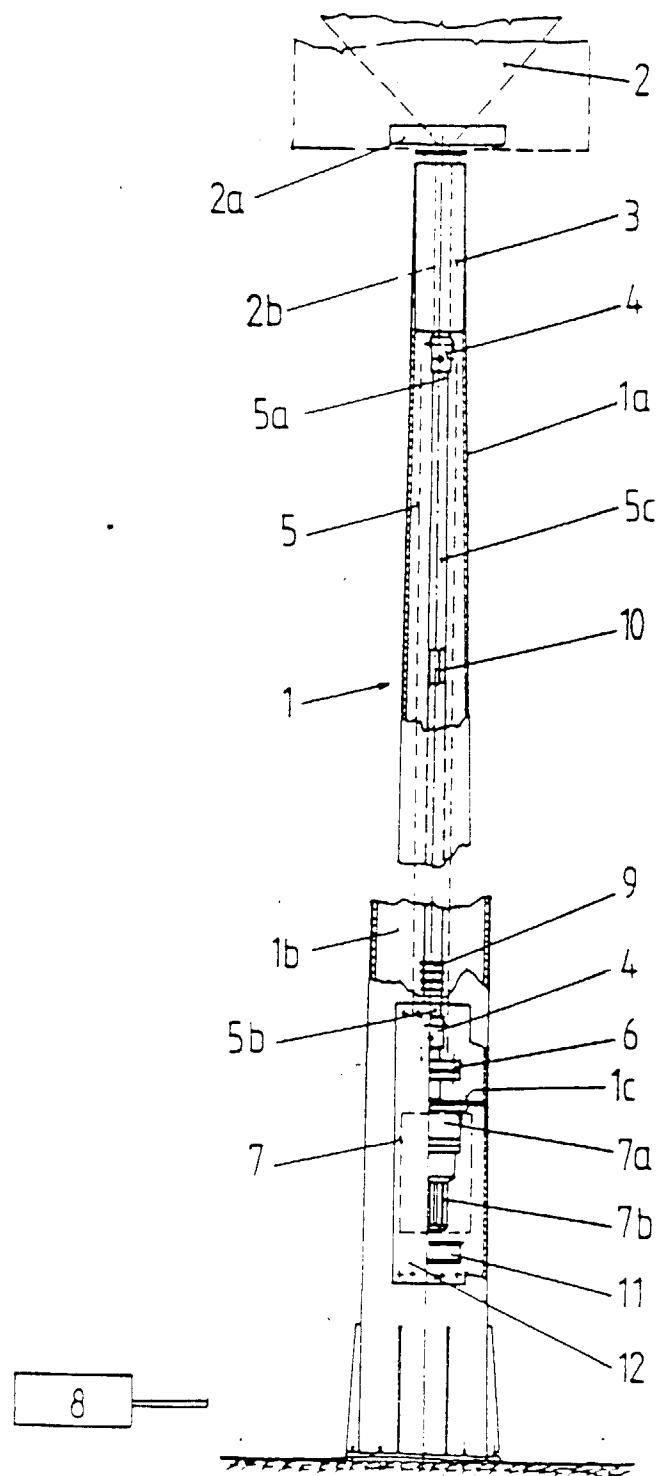


Fig. 1