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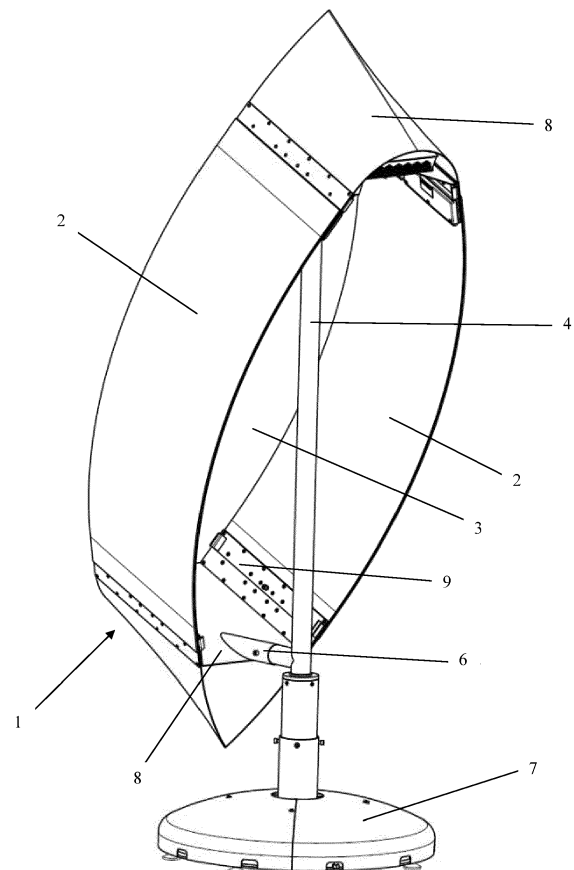
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(54) **DEVICE FOR DISPLAYING A MESSAGE**

(57) Device for displaying a modifiable message, comprising a rotatable screen body (1) with a three-dimensional screen area, in which the screen body (1) comprises at least one flexible holder (2) which forms an enclosing sleeve around an open passage (3), and in which a number of controllable image elements are provided, at least on the outward-facing three-dimensional surface of the flexible holder (2), so that this surface acts as the screen area.



**Fig. 1**

## Description

**[0001]** The present invention relates to a device for displaying a modifiable message, comprising a rotatable screen body with a three-dimensional screen area.

**[0002]** The present invention relates in particular to such a mobile device. The present invention also relates to an assembly of several devices for displaying a modifiable message.

**[0003]** Such devices are mainly used for promotional purposes. Thus, they may be positioned at shops, petrol stations, festivals, gigs, events, etc. However, these devices may also be used for (road) signalling. Since the message is modifiable, it is possible to always display the desired message and it is not necessary to replace the entire device or a part of the device in order to display a different message. Due to the rotatable screen body, these devices are eye-catching, ensuring that the message displayed thereon is communicated.

**[0004]** These existing devices comprise a rigid screen area on which wind-forces may act. However, at moderate or strong winds, these devices may become damaged, as a result of which such devices regularly have to be taken indoors. In regions where the winds are often strong, for example on the coast, this means that these devices cannot be used for prolonged periods of time.

**[0005]** In addition, a rigid screen area is seen by many as not being aesthetically pleasing. Therefore, devices for displaying messages are often used, in which the message is not modifiable, but where the screen area is not rigid, such as for example printed flags.

**[0006]** It is therefore also an object of the invention to manufacture a device for displaying a modifiable message, in which the device comprises a rotatable screen body with a three-dimensional screen area, the appearance of which is seen as being more aesthetically pleasing and in which the device is less susceptible to damage by wind-forces.

**[0007]** This object is achieved by providing a device for displaying a modifiable message, comprising a rotatable screen body with a three-dimensional screen area, in which the screen body comprises one or more flexible holders which delimit an open passage, and in which a number of controllable image elements are provided, at least on an outward-facing three-dimensional surface of the one or more flexible holders, so that this surface acts as a three-dimensional screen area.

**[0008]** The one or more flexible holders delimit an open passage. This means that these one or more flexible holders form a kind of enclosing sleeve around an open passage. The screen body may comprise one flexible holder or may comprise two or several flexible holders. The open passage may be delimited, for example, only by the one or more flexible holders. However, there may also be additional structures, such as for example support structures to which the one or more flexible holders are attached, which then delimit the open passage together with the one or more flexible holders.

**[0009]** An open passage is understood to be a passage which is open on both sides, so that a flow of air (wind) can move through this passage. The advantage of having such a passage is that wind can enter the passage from one side and exit the passage on the other side, so that the device will not become damaged at moderate or relatively high wind-forces. At the same time, the wind is still able to exert sufficient force on the one or more holders, so that the screen body rotates and the device will catch the eye. The three-dimensional screen area is visible from different viewing directions around the device and, at the same time, the screen area is also moved by the wind. As a result thereof, the displayed message is visible to the greatest possible degree and also catches the eye.

**[0010]** A passage may also be defined as a kind of tunnel. However, it is not necessary for the passage to be annularly closed all around. A passage which is delimited, for example, by a spiral wall with openings between the successive turns is also deemed to be a passage according to the present invention. A passage with a wall having a U-shaped cross section is also a passage according to the invention. A specific example of a passage according to the invention is a passage which surrounds an inner space which is accessible from the outside, so that wind can enter the inner space via at least one access opening and can exert a force on the inwardly directed sides of the one or more flexible holders which delimit the passage and thus aids in bringing about rotation of the screen body, and so that the wind can leave this inner space again via one or more exit openings.

**[0011]** The surface which acts as a screen area is at least partly situated on a flexible holder. The expression flexible holder indicates a holder which cannot be deemed to be rigid. When the wind exerts a force on this holder, the holder will therefore be visibly deformed. Thus, for example, during rotation of the screen body, the flexible holder may ripple and/or flutter slightly, so that the device assumes more of the appearance of a flag. Rippling or fluttering is seen as aesthetic by many people. This device may here have the appearance of a flag, whereas the message is still modifiable. Moreover, flexible material may have a particularly low weight, as a result of which the total weight of this device can be low and the installation of this device may be carried out quickly. If the device is a mobile device, this means that the device can also be made more lightweight so that it is easily movable. In addition, such light, flexible material is easily rotatable by the wind, as a result of which the device will rotate so a sufficient degree even at relatively low wind speeds. If desired, the device may in addition also be provided with a motor which renders the screen body rotatable, so that the screen body can still rotate even during a lull.

**[0012]** The image elements comprise a sign or emit a signal, such as light, which is visually perceivable and which can be changed automatically to form a text and/or an image on its own or together with other image ele-

ments. Image elements which do not comprise a light source, but, for example, reflect light emanating from an external light source (e.g. sunlight) may also be deemed to be image elements according to the present invention. The term controllable is understood to mean that the message is controllable and therefore modifiable. Preferably, these image elements are remotely controllable and modifiable, so that there is no need to go to the device in order to change the message. However, these elements may also be controlled and modified at the location of the device itself. Preferably, the message is modifiable by means of electrical/electronic control signals. This allows the message to be controllable and modifiable by means of wireless communication. If use is made, for example, of the internet to control the image elements, this has the advantage that the image elements can be controlled at all locations where an internet connection can be made.

**[0013]** In a highly preferred embodiment, the device is a mobile device. By using at least one flexible holder, which may be configured to be lightweight, the device can thus be designed in such a way that it is movable and installable by one man. The advantage of mobile devices is that they are also usable at temporary events, such as festivals, gigs, sales periods, etc. Such devices are also highly suitable for hiring.

**[0014]** Preferably, the screen body is annularly closed, so that the outwardly directed three-dimensional surface of the screen body is infinite and uninterrupted. An uninterrupted outwardly directed surface is clearly visible from all viewing directions. Thus, a message can be made visible in an eye-catching manner in a space of virtually 360° around the device. The displayed message is then visible from any angle, as a result of which such a device will readily catch the attention. To this end, the one or more flexible holders may be configured to be, for example, annularly closed.

**[0015]** In a preferred embodiment, the screen body is arranged so as to be rotatable about an axis A and the passage extends along a specific direction B which makes an angle  $\alpha$  with said axis. Here, the passage is at an angle to said axis. Said angle  $\alpha$  may be any arbitrary angle which is greater than 0° and smaller than 90°. The angle  $\alpha$  is preferably between a lower limit and an upper limit, in which case the lower limit may be, for example, 1°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9° or 10°, and in which case the upper limit may be, for example, 89°, 88°, 87°, 86°, 85°, 84°, 83°, 82°, 81° or 80°, and in which case any of the listed lower limits are combinable with any of the listed upper limits.

**[0016]** More preferably, the angle  $\alpha$  is between 10° and 80°. Most preferably, the angle  $\alpha$  is between 35° and 70°.

**[0017]** The device may then be configured in such a manner that the screen body is also at an angle to said axis and makes the same angle with said axis as the passage. This is considered to be aesthetical by many people. In addition, wind can readily access such an oblique passage and exert forces on the one or more flexible

holders, so that the screen body rotates effectively. Normally, the device will be positioned on a surface in such a manner that said axis extends virtually at right angles to the ground surface. The passage then extends at an angle with respect to the ground surface.

**[0018]** Preferably, the controllable image elements are light-generating elements. By means of light-generating elements, it is easy to display modifiable messages. In addition, a message formed by light-generating elements is clearly visible, even in the dark.

**[0019]** Furthermore preferably, the light-generating elements are LEDs. LEDs use little energy, as a result of which they may be powered, for example, by means of one or more batteries. However, the device may also be connected to, for example, the electricity network. By using LEDs, it is possible to produce a mobile device which requires only one or a few batteries, so that the mobile device can also be lightweight. By using one or more batteries, this device can also be used at locations which are not connected to the electricity network. Another advantage of using LEDs is the fact that the one or more flexible holders can be made very thin. As a result, these one or more flexible holders may have the appearance of a piece of fabric.

**[0020]** In a preferred embodiment, the device comprises a mast which is arranged so as to be rotatable with respect to an axis, with the screen body being mechanically connected to the mast by means of one or more connecting elements and thus being arranged so as to be rotatable with respect to said axis. By means of such a mast, the screen body is arranged around said axis so as to be easily rotatable. This mast preferably extends through the passage, so that the device is compact and has a pleasant appearance. Obviously, in this case the mast does not fill the entire passage, so that wind can still pass through this passage and exert forces on the screen body.

**[0021]** Furthermore preferably, the controllable image elements are electrically controllable and at least one connecting element is also provided to electrically connect the screen body to the mast, so that the screen body may be provided with electrical power via the mast. This electrical connection is preferably achieved by means of power cables. Here, the mast therefore not only ensures that the screen body can rotate, but also that the screen body is provided with electricity. In this case, there is no need to provide an additional part in order to be able to supply power to the screen body. This power may come from one or more batteries which form part of the device, but may, for example, also come from the electricity network or a separate generator.

**[0022]** Still further preferably, the device comprises a base, with the mast being connected to the base so as to be rotatable, and with the connection between the mast and the base being configured to be electrically conductive by means of a slip ring and carbon brushes. The base may, for example, be provided with one or more batteries and/or with an electrical power cable. By using

a slip ring and carbon brushes, it is possible to transfer electricity from a fixed component to a rotating component. If the base is provided with one or more batteries, the base has a certain weight, as a result of which the device is securely placeable on a surface and will not fall over quickly, even at relatively high wind-forces. If no batteries are used, it is also possible to make the base sufficiently heavy, so that the device will not fall over quickly.

**[0023]** Preferably, at least one of said connecting elements comprises a resilient component which is situated between the screen body and the mast in order to resiliently connect the screen body to the mast. The connection between the screen body and the mast is then no rigid connection, so that movement of the screen body by, for example, the wind can readily be absorbed by means of the connecting body. The connection by means of said connecting element will also not become damaged by relatively high wind-forces, as the movement of the screen body is effectively absorbed by the resilient component.

**[0024]** In a specific embodiment, at least one flexible holder comprises an inwardly directed three-dimensional surface on which a number of controllable image elements are provided. In this way, the message is not only visible on the outer side of said flexible holder, but also on the inner side. If several flexible holders are present, controllable image elements are preferably provided on all inwardly directed three-dimensional surfaces of the several flexible holders. As a said passage is present, the inner side of the one or more flexible holders is also (partly) visible. By then also providing controllable image elements hereon, an additional surface is obtained for displaying the message and the overall impression of the device is improved. The controllable image elements which are situated on the inwardly directed three-dimensional surface may display letters and/or logos, but may, for example, also only display a certain colour.

**[0025]** In an alternative embodiment, at least one flexible holder comprises an inwardly directed three-dimensional surface on which a non-modifiable message is displayed. Preferably, the device comprises two flexible holders, in which respective opposite end edges of one flexible holder are connected to corresponding opposite end edges of the other flexible holder, so that the flexible holders together form a single entity. The connection between said end edges of the flexible holders may or may not be direct. It is simple to form a single entity from two components. Thus, the two flexible holders may, for example, be flexible pieces of fabric having the same rectangular shape, in which case these rectangular pieces of fabric are then connected to each other.

**[0026]** In a preferred embodiment, the outwardly directed three-dimensional surface of at least one of the flexible holders is convexly curved. The outer side is thus curved outwards, as a result of which a message is directed outwardly and is clearly visible. In this case, the message is communicated very well.

**[0027]** In a highly preferred embodiment, the outwardly directed three-dimensional surface of the screen body is essentially in the shape of the sleeve of an oblique elliptical cylinder. The screen body then essentially has the shape of a body which is obtained by making two oblique cuts in a hollow cylinder, in which case these cuts extend parallel to each other. This shape is an innovative shape for such devices. In addition, this is a particularly attractive shape which essentially ensures that an area of virtually 360° around the device is made visible in an eye-catching way. The inwardly directed side of said flexible holder is also visible here. Such a shape ensures an aesthetic appearance due to the shadows it creates. Such a screen body can also be readily installed in such a manner that it is arranged so as to be rotatable about an axis such that the screen body makes an angle of between 10° and 80° with said axis. Here, the passage then makes the same angle with said axis. Such a shape may, for example, be produced by connecting two rectangular flexible pieces of fabric to one another.

**[0028]** The present invention also relates to an assembly of several devices for displaying a modifiable message, in which the devices for displaying a modifiable message are devices as described above and the controllable image elements are centrally controllable so that the displayed messages of the devices are adaptable to one another. Here, it is then possible, for example, to distribute one message across several devices. This has an appealing effect and catches the attention, as a result of which the message will be conveyed more efficiently. It is also possible to display the same message on all devices or to control the controllable image elements in such a way that the message or messages appear in each case to jump to the neighbouring device. By means of such an assembly, a message thus becomes very eye-catching and a message is conveyed very efficiently.

**[0029]** The present invention will now be explained in more detail by means of the following detailed description of a preferred embodiment of a device according to the present invention. The sole aim of this description is to give illustrative examples and to indicate further advantages and particulars of this device and can therefore by no means be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

**[0030]** Reference numerals are used in this detailed description to refer to the attached drawings, in which:

- **Fig. 1** shows a perspective view of a device according to the invention from a first angle;
- **Fig. 2** shows a perspective view of the device illustrated in Fig. 1 from a second angle;
- **Fig. 3** shows a perspective view of the device illustrated in Figs 1 and 2 from a third angle;
- **Fig. 4** shows a perspective view of the device illustrated in Figs 1 to 3 from a fourth angle;
- **Fig. 5** shows a cut-away perspective view of the device illustrated in Figs 1 to 4.

[0031] The device as illustrated in Figs 1 to 5 is used for displaying a modifiable message. To this end, the device comprises a rotatable screen body (1) with a three-dimensional screen area. In order to form this three-dimensional screen area, the screen body (1) comprises two flexible rectangular holders (2). The opposite end edges of the one said flexible holder (2) are connected to corresponding opposite end edges of the other said flexible holder (2) by means of support structures (8), so that the flexible holders (2) and the support structures (8) together form an uninterrupted single entity. The flexible holders (2) form an enclosing sleeve around an open passage (3). The support structures (8) support and connect the flexible holders (2) at the top and bottom and ensure that the screen body (1) assumes the shape of a hollow oblique elliptical cylinder. In addition, the support structures (8) ensure that the screen body (1) approximately retains its desired shape when wind-forces act on the screen body (1). The flexible holders (2) ripple or flutter slightly when wind-forces act on them. This is regarded by many people as being aesthetic.

[0032] The top and bottom of the rotatable screen body (1) are connected to a mast (4) by means of a top connecting element (5) and a bottom connecting element (6), respectively. The mast (4) extends through the open passage (3). The mast (4) is arranged so as to be rotatable about an axis (A) which extends along the longitudinal direction of the mast (4), so that the screen body (1) is also arranged so as to be rotatable about said axis (A) by means of the mast (4).

[0033] Furthermore, the passage (3) extends along a certain direction (B) which makes an angle ( $\alpha$ ) of  $\pm 65^\circ$  with said axis (A). The rotatable screen body (1) thus extends obliquely with respect to said axis (A). This is regarded by many people as being aesthetic. The wind will also be able to act on the inwardly directed sides of the flexible holders (2) well and will thus be readily able to rotate the screen body (1) about said axis (A). Since the passage (3) is designed to be open, the risk of the wind exerting too much force on the screen body (1) is small, as the wind can easily leave the passage (3) again.

[0034] In order to be better able to absorb the changing wind-forces, the bottom connecting element (6) is additionally provided with a resilient element, so that the screen body (1) is resiliently connected to the mast (4) at the bottom. As the screen body (1) is connected to the mast (4) both at the bottom and at the top, components of the screen body (1) will not be able to move away far from the mast (4) if wind-forces act upon them. At the location of the bottom connecting element (6), the screen body (1) will be able to be slightly resilient with respect to the mast (4).

[0035] Furthermore, the outwardly directed three-dimensional surfaces of the flexible holders (2) are provided with a number of controllable LEDs, so that this surface acts as the three-dimensional screen area. In addition, the inwardly directed three-dimensional surfaces may also be provided with controllable LEDs. The LEDs

are controllable by means of a control system (9) which is fitted on the flexible holders (2). The operation of this control system (9) may be effected remotely, for example by means of wireless communication. As a result thereof, the displayed message can be controlled from a distance. The bottom connecting element (6) provides the mechanical and electrical connection between the mast (4) and the screen body (1), so that the screen body (1) is also electrically coupled to the mast (4) and power can also be supplied to the control system (9) and to the LEDs.

[0036] Furthermore, the device comprises a base (7), with the mast (4) being rotatably connected to the base (7). This connection is electrically conductive by means of a slip ring and carbon brushes. Current can thus be delivered here to the mast (4) via the base (7). The base (7) furthermore comprises one or more batteries or an electrical power cable. Power is thus supplied to the mast (4) and to the screen body (1) via the base (7), so that the LEDs can emit light. Here, the supply of electricity is provided by means of power cables, except at the location of the slip ring and carbon brushes.

[0037] Furthermore, the device is a mobile device which is easily displaceable and installable. In addition, the connection between the base (7) and the mast (4) is detachable and the connection between the screen body (1) and the mast (4) may also be detachable, so that the device can be stored in a compact manner.

[0038] Optionally, it is also possible to place several such devices next to each other, in which case the illustrated messages on the devices are adapted to each other. Thus, it is for example possible to control these devices from a control room.

## Claims

1. Device for displaying a modifiable message, comprising a rotatable screen body (1) with a three-dimensional screen area, **characterized in that** the screen body (1) comprises one or more flexible holders (2) which delimit an open passage (3), and **in that** a number of controllable image elements are provided, at least on an outward-facing three-dimensional surface of the one or more flexible holders (2), so that said surface acts as a three-dimensional screen area.
2. Device according to Claim 1, **characterized in that** the device is a mobile device.
3. Device according to Claim 1 or 2, **characterized in that** the screen body (1) is annularly closed, so that the outwardly directed three-dimensional surface of the screen body (1) is infinite and uninterrupted.
4. Device according to one of the preceding claims, **characterized in that** the screen body (1) is arranged so as to be rotatable about an axis (A), and

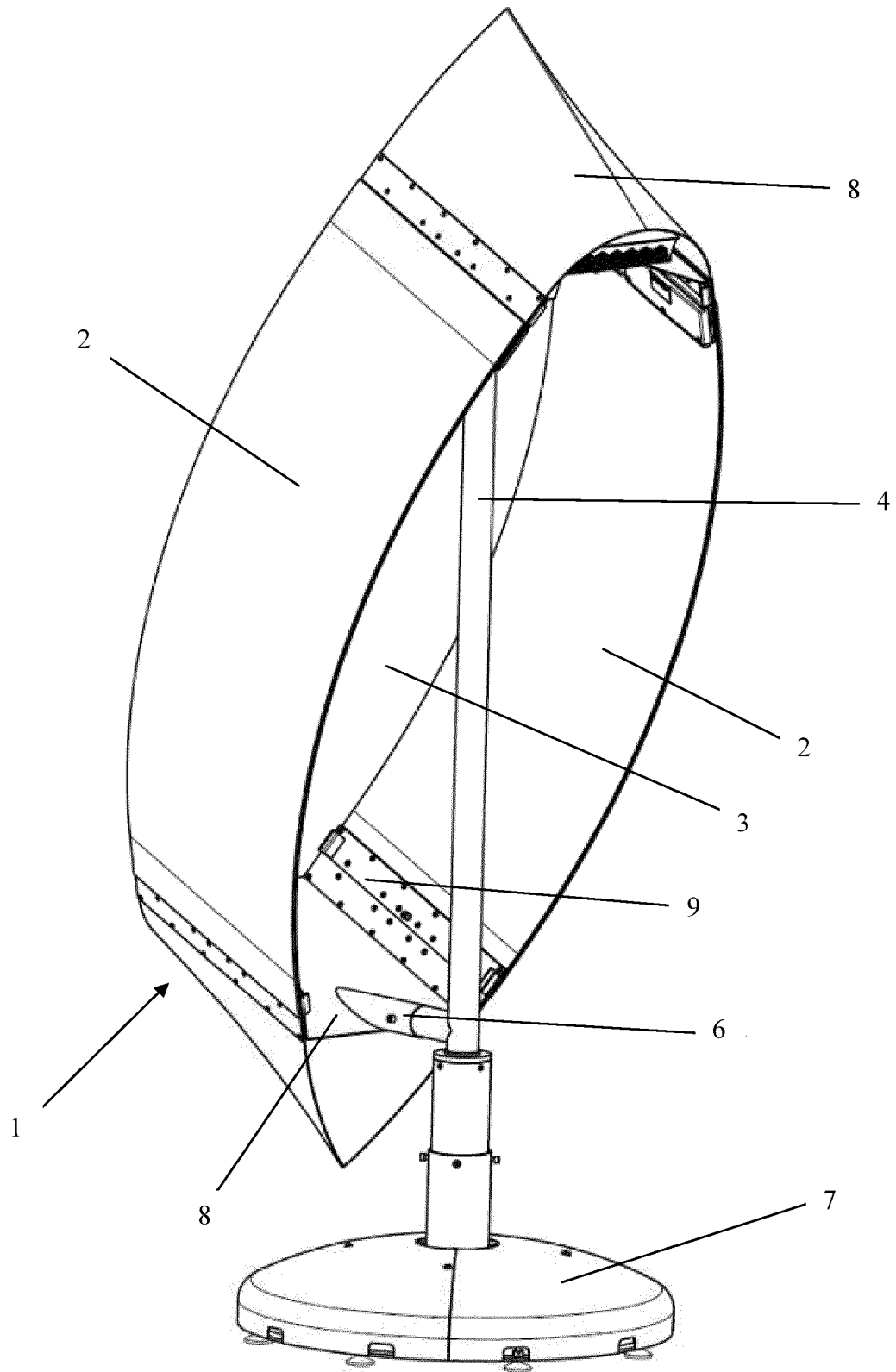
**in that** the passage (3) extends along a specific direction (B) which makes an angle ( $\alpha$ ) with said axis (A), which is between 0° and 90°.

5. Device according to Claim 4, **characterized in that** the angle ( $\alpha$ ) is between 10° and 80°, preferably between 35° and 70°. 5
6. Device according to one of the preceding claims, **characterized in that** the controllable image elements are light-generating elements, preferably LEDs. 10
7. Device according to one of the preceding claims, **characterized in that** the device comprises a mast (4) which is arranged so as to be rotatable with respect to an axis (A), in which the screen body (1) is mechanically connected to the mast (4) by means of one or more connecting elements (5, 6) and is thus arranged so as to be rotatable with respect to said axis (A). 15  
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8. Device according to Claim 7, **characterized in that** the controllable image elements are electrically controllable, and **in that** at least one connecting element (6) is also provided to electrically couple the screen body (1) to the mast (4), so that the screen body (1) can be provided with electrical power via the mast (4). 25  
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9. Device according to Claim 8, **characterized in that** the device comprises a base (7), in which the mast (4) is connected to the base (7) so as to be rotatable, and **in that** the connection between the mast (4) and the base (7) is electrically conductive by means of a slip ring and carbon brushes. 35
10. Device according to one of Claims 7 to 9, **characterized in that** at least one said connecting element (6) comprises a resilient component which is situated between the screen body (1) and the mast (4) in order to resiliently connect the screen body (1) to the mast (4). 40
11. Device according to one of the preceding claims, **characterized in that** at least one flexible holder (2) comprises an inwardly directed three-dimensional surface on which a number of controllable image elements are provided. 45  
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12. Device according to one of the preceding claims, **characterized in that** the device comprises two flexible holders (2), in which respective opposite end edges of one flexible holder (2) are connected to corresponding opposite end edges of the other flexible holder (2), so that the flexible holders (2) together form a single entity. 55

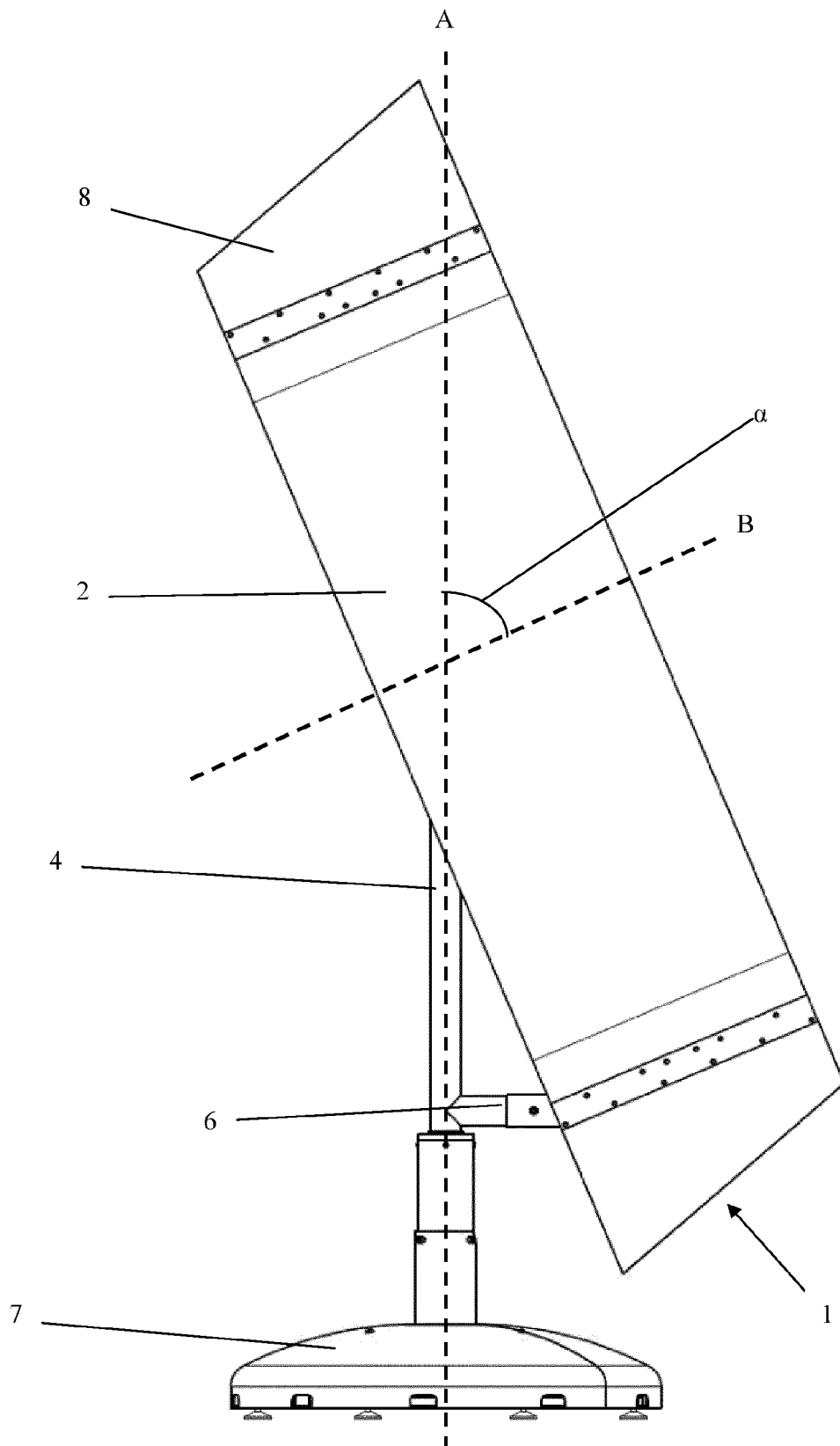
13. Device according to one of the preceding claims, **characterized in that** the outwardly directed three-dimensional surface of at least one of the flexible holders (2) is convexly curved.

14. Device according to one of the preceding claims, **characterized in that** the outwardly directed three-dimensional surface of the screen body (1) is essentially in the shape of the sleeve of an oblique elliptical cylinder.

15. Assembly of several devices for displaying a modifiable message, **characterized in that** the devices for displaying a modifiable message are devices as described in one or more of Claims 1 to 14, and **in that** the controllable image elements are centrally controllable so that the displayed messages of the devices are adaptable to each other.

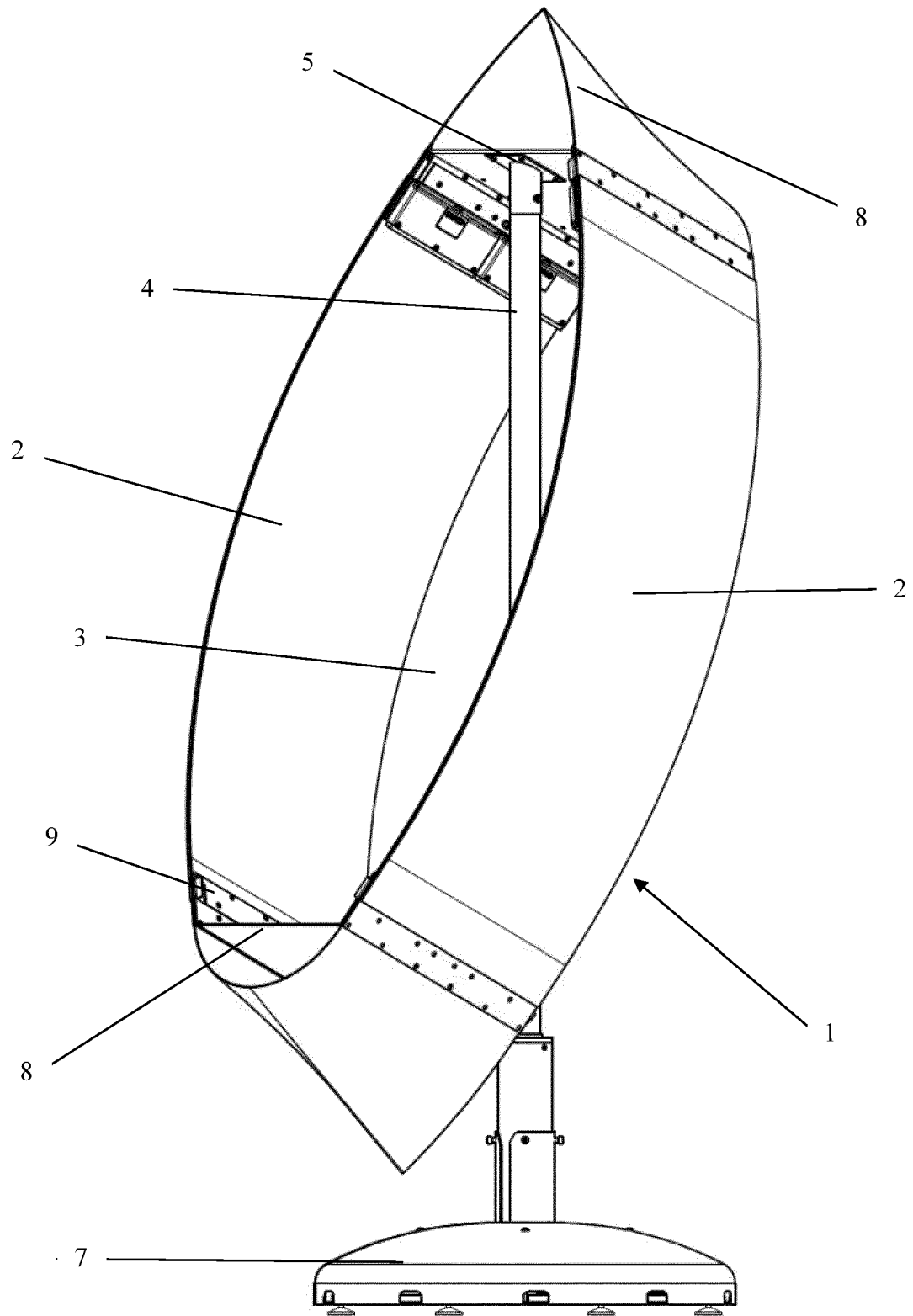


**Fig. 1**

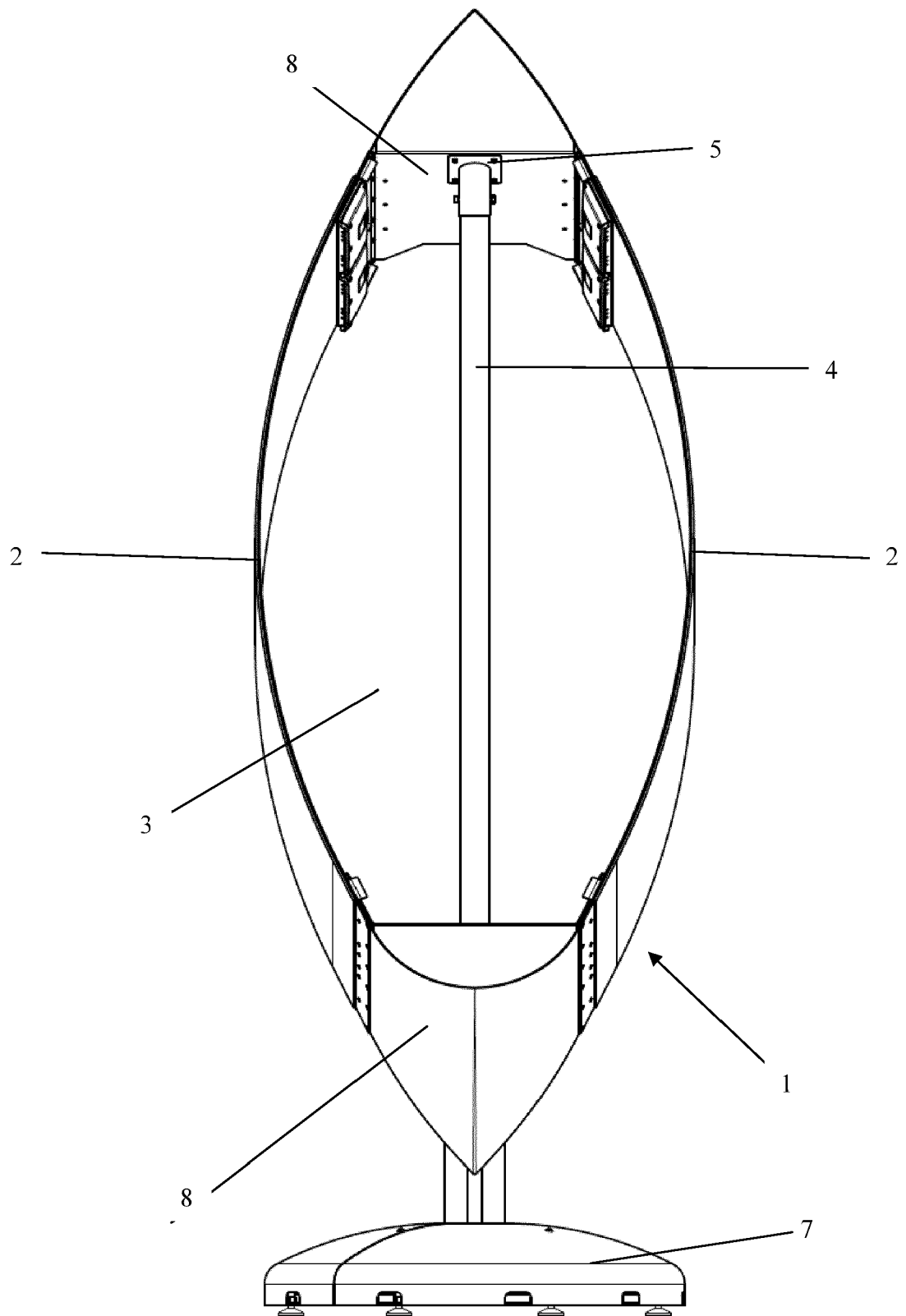


**Fig. 2**

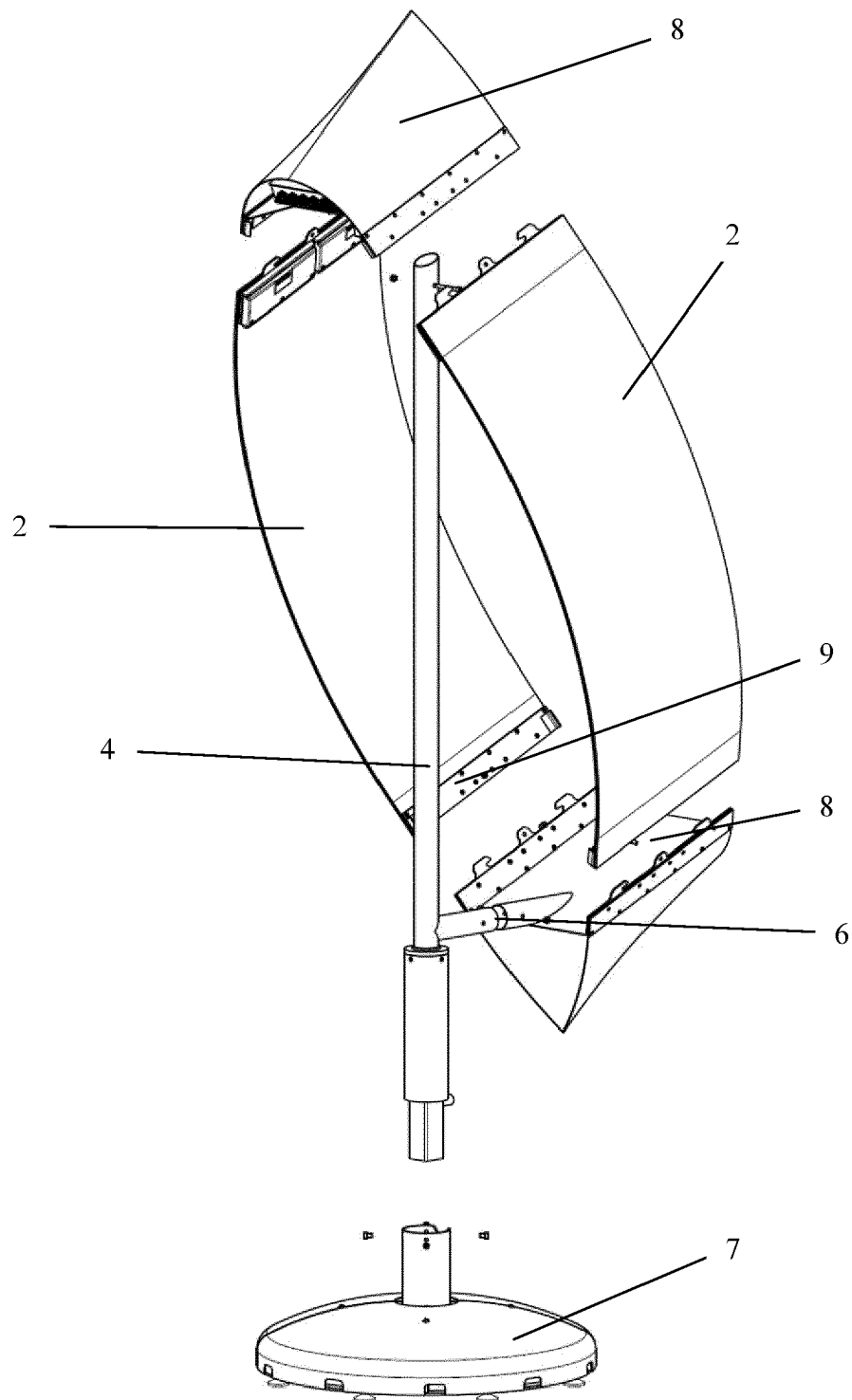




**Fig. 3**



**Fig. 4**



**Fig. 5**



## EUROPEAN SEARCH REPORT

Application Number  
EP 16 17 7532

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Place of search <b>The Hague</b>		Date of completion of the search <b>27 September 2016</b>	Examiner <b>Demoor, Kristoffel</b>
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			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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