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- (54) Benævnelse: **WIND TURBINE FOR VEHICLES**
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DESCRIPTION

Wind turbine for vehicles

The invention relates to a wind turbine for vehicles.

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A large number of wind turbines are known.

Various wind turbines for vehicles are also known.

DE 202012012303U1 describes wind turbines for trucks and
10 commercial vehicles in which several rotor blades have been
installed in a larger housing above the sleeping compartment
of a truck or on the truck driver's cab roof.

Savonius rotors are described in DE202010004972U1, which use
15 the wind in vehicles to generate energy.

EP1108890A2 describes the generation of energy and electricity
using the air currents under a vehicle.

Further examples of the state of the art will be finding in
20 the documents of CN110017248A, CN109398116A and
US2017/114776A1.

Disadvantages of the known wind turbines are the mostly
complicated designs, which make it difficult for consumers to
25 attach a small-scale wind turbine to the vehicle with simple
means and to use the wind or wind power as an energy supplier.
In addition, the known wind turbines for vehicles are very
expensive.

30 The task therefore arose of making available a (small) wind
turbine for vehicles which is both inexpensive and easy to
attach to the vehicle, i.e. can be attached by the consumer
himself.

The task could be solved by means of the features of patent claim 1.

The wind turbine for vehicles consists of a kit, which
5 includes a rotor unit, a control unit and a mounting unit.
The rotor unit and the control unit are plugged together and attached to the vehicle using a bracket.

The rotor unit is connected to the control unit via a
10 trapezoidal thread rod.

The control unit has a housing, preferably made of aluminum, which is surrounded by a designer housing.

15 The generator can be inside or outside the control unit.

The rotor unit can be extended and retracted via the trapezoidal threaded rod using a hand crank or a lifting knob via a guide bush or electrically.

20 The lifting and rotating movement through the trapezoidal threaded rod is supported by a roller bearing.
When the rotor unit is retracted, the housing is closed with a magnetic cover.

25 The rotor unit can be locked using a lever.

The wind turbine according to the invention for generating electrical energy through wind power is attached, for example, to the rear of the vehicle or on the roof and connected to the
30 vehicle electrical system.

The rotor blades, which can be made of metal or plastic, and the mechanical and electrical components are safe from the weather in a stable housing, preferably a round housing, in

particular made of metal or plastic, particularly preferably aluminum, which is surrounded by a design housing, which can consist of different materials, for example metal or plastic.

5 With a lever or a hand crank provided for this purpose or via an electric drive, the rotor blades can be raised and lowered again if necessary using a self-locking trapezoidal thread rod in combination with a worm drive by turning the crank or the lever.

10 Likewise, the startup and shutdown can be carried out by means of an appropriate electrical system.

In special embodiments of the invention, the trapezoidal threaded rod can also be lengthened or extended and retracted like a telescopic rod.

15

A guide bush located in the housing, preferably made of a copper alloy, ensures axial guidance when the screw drive is moved out.

The lifting and rotating movement generated is additionally
20 supported by a roller bearing, preferably a lower and an upper bearing.

Depending on the design, the generator for generating electricity has an output of 100 to 1500 W and is located in a
25 special embodiment above the screw drive and below the rotor unit.

If the rotor blades are not sufficiently extended, they can be adjusted to an individual lifting height in a further
30 embodiment in the form of extension shafts by means of a form-fit locking mechanism and force-fitting clamps under the main shaft.

An opening flap is mounted in said housing, in which the crank, the rotor blades for mounting on the lifting shaft and the extension rods are located.

5 One can use vertical or horizontal rotor units.

As soon as the rotor blades are safely extended, they can be started using an unlocking button if the wind is present.

This ensures that the rotor blades do not turn when the wind
10 is present during start-up.

If the rotor blades are driven by the wind, the resulting rotary motion is transmitted via the extended shaft to a generator located inside or outside the housing.

15 The generator generates electricity and forwards it to the on-board voltage, the battery, etc.

A speed sensor monitors the speed of the rotor blades.

If the wind speed intended for the system is exceeded, this is
20 detected and the system is stopped.

The rotor unit according to the invention and the control unit are plugged together before being attached to the vehicle and are attached to the vehicle by means of a holder.

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Drawings

Figure 1 shows the entire wind turbine according to the invention in plan view without the mounting unit.

5 FIG. 2 shows the side view of the wind turbine according to the invention without a design housing.

FIG. 3 shows the side view of the wind turbine according to the invention with a design housing.

10 FIG. 4 shows the side view of the wind turbine according to the invention, mounted on a vehicle.

FIG. 5 shows the top view of the wind turbine according to the invention, attached to the rear of a vehicle.

15 FIG. 6 shows the view of the wind turbine according to the invention, which belongs to FIG. 5, seen from the roof of the vehicle.

FIG. 7 shows the top view of the wind turbine according to the invention, mounted on the roof of a vehicle.

20 FIG. 1 shows the entire wind turbine 1 according to the invention in a plan view, without the mounting unit.

The rotor unit 2 with the rotor blades 3 can be seen, which is connected to the control unit 4 via the trapezoidal threaded rod 5, which has a design housing 7.

25 The guide bushing 6 with the lifting knob 8 is integrated in the design housing 7.

In Figure 2 the wind turbine 1 according to the invention with the rotor unit 2 and the control unit 4 is shown.

30 The control unit consists of the generator 9, which is located outside the aluminum housing 10 above the screw drive and below the rotor unit 2 in this particular embodiment.

The following components are located in the aluminum housing 10: With the lever 12 or the hand crank 14, the rotor blades 3

can be raised using the trapezoidal threaded rod 5 in combination with a worm drive 13 by moving the lever 12 or the crank 14.

5 The guide bushing 6 in the housing provides axial guidance when the screw drive is moved out.

The lifting and rotating movement generated is additionally supported by means of a lower bearing 16 and an upper bearing 11.

This figure also shows a socket 15.

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FIG. 3 shows the wind turbine 1 according to the invention in a side view, with the rotor unit 2 and the control unit 4, which are located in the design housing 7, being visible in this particular embodiment of the invention.

15 You can also see the trapezoidal threaded rod 5.

The guide bushing 6 and the lifting knob 8 are integrated in the design housing 7.

20 The wind turbine 1 according to the invention can be seen on the roof of a vehicle 21 in FIG. 4

Also shown is the design housing 7 (indicated), the threaded rod 5 and the rotor unit 2.

This view also shows the rear of a vehicle 17, such as a caravan, with a ladder 18 to the right.

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FIG. 5 shows the rear of a vehicle 17, for example a caravan. The wind turbine 1 according to the invention is fastened at the rear.

30 Shown is the design housing 7, as well as the opening flap for the hand crank 20 and the magnet cover 19.

FIG. 6 also shows the wind turbine 1 according to the invention, which is attached to the rear of the vehicle 17. The view is from the roof of vehicle 21.

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You can also see the design housing 7 in this view.

FIG. 7 shows the roof of a vehicle 21 on which the wind turbine 1 according to the invention is located.

5 The rotor unit 2 and the trapezoidal threaded rod 5 are located in the design housing 7.

The rear 17 and a ladder 18 of the vehicle can also be seen.

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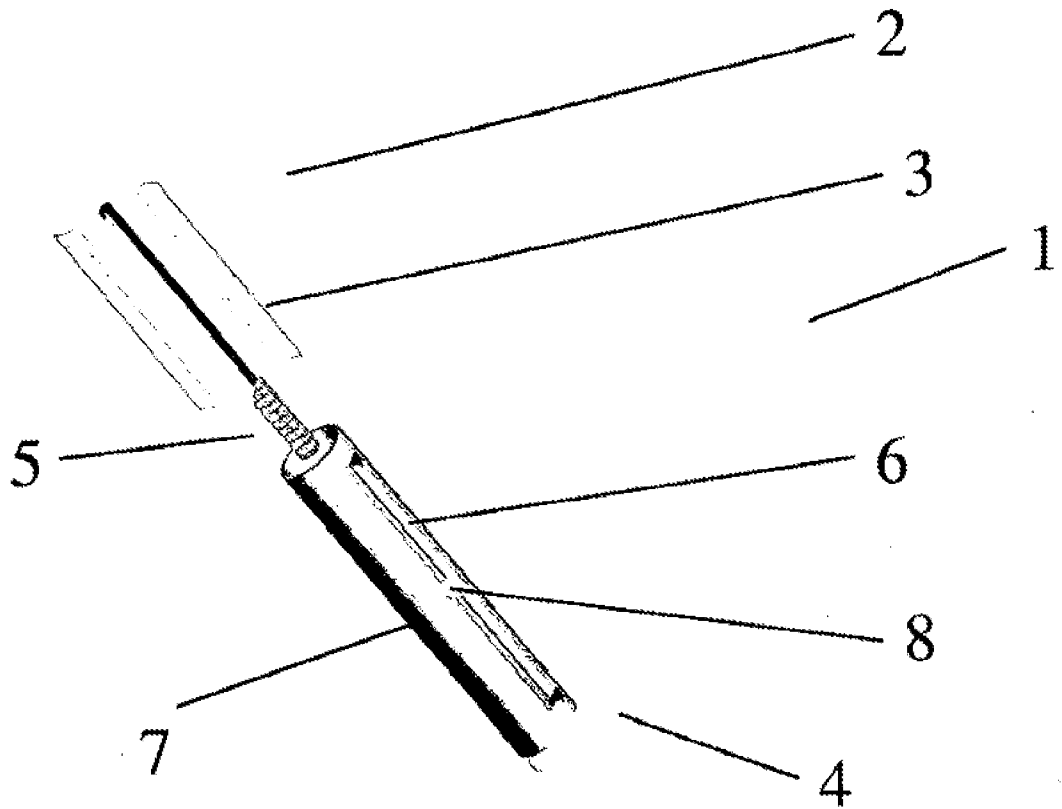
Designation list

wind turbine	1
rotor unit	2
rotor blades	3
control unit	4
trapezoidal thread rod	5
guide bush	6
design housing	7
lifting knob	8
generator	9
aluminum casing	10
upper camp	11
lever	12
worm drive	13
hand crank	14
socket	15
Lower camp	16
rear of a vehicle	17
ladder	18
magnetic lid	19
opening flap for crank	20
roof of a vehicle	21

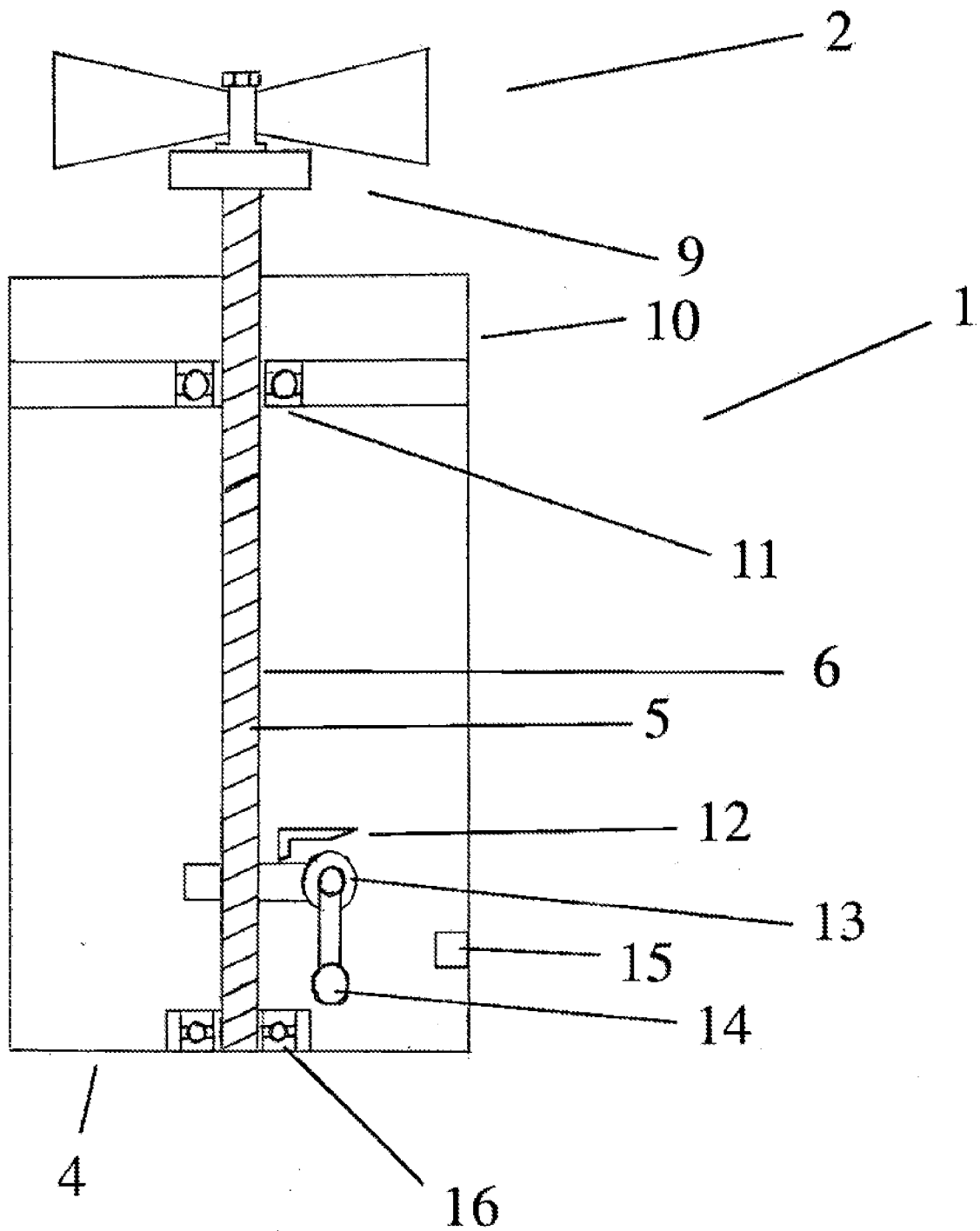
By means of the wind turbine according to the invention, it
5 has been possible to provide an elegant and inexpensive
solution for generating electricity for vehicles using wind
power.

PATENTKRAV

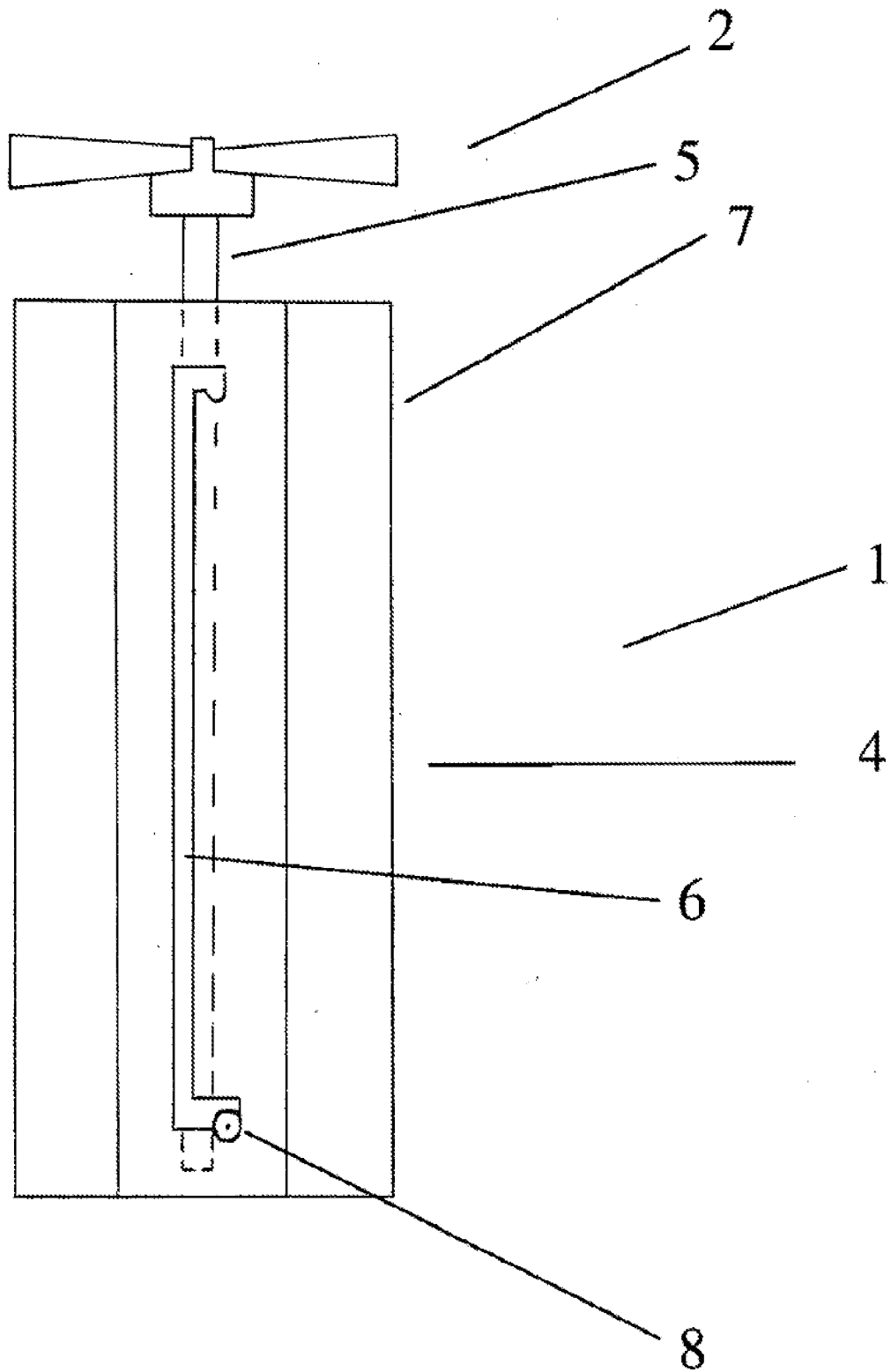
1. Vindkraftanlæg til køretøjer (1), bestående af et system af en rotorenhed (2), en styringsenhed (3) og en holderenhed, kendetegnet ved, at rotorenheden (2) er forbundet med styringsenheden (3) via en trapezgevindstang (5).
2. Vindkraftanlæg til køretøjer (1) ifølge krav 1, kendetegnet ved, at styringsenheden (3) omfatter et kabinet (10), der er omgivet af et designkabinet (7).
3. Vindkraftanlæg til køretøjer (1) ifølge krav 1 og/eller krav 2, kendetegnet ved, at der befinder sig en generator (9) inden i eller uden for styringsenheden (3).
4. Vindkraftanlæg til køretøjer (1) ifølge et og/eller flere af kravene 1 til 3, kendetegnet ved, at rotorenheden (2) via trapezgevindstangen (5) ved hjælp af et håndsving (14) eller en løfteknop (8) kan køres ud og ind via en føringsbøsning (6).
5. Vindkraftanlæg til køretøjer (1) ifølge et og/eller flere af kravene 1 til 4, kendetegnet ved, at rotorenheden (2) kan køres ud og ind elektrisk.
6. Vindkraftanlæg til køretøjer (1) ifølge et og/eller flere af kravene 1 til 5, kendetegnet ved, at løfte- og drejebevægelsen ved hjælp af trapezgevindstangen (5) understøttes af et rulleleje.
7. Vindkraftanlæg til køretøjer (1) ifølge et og/eller flere af kravene 1 til 6, kendetegnet ved, at rotorenheden (2) kan låses ved hjælp af et håndtag (12).



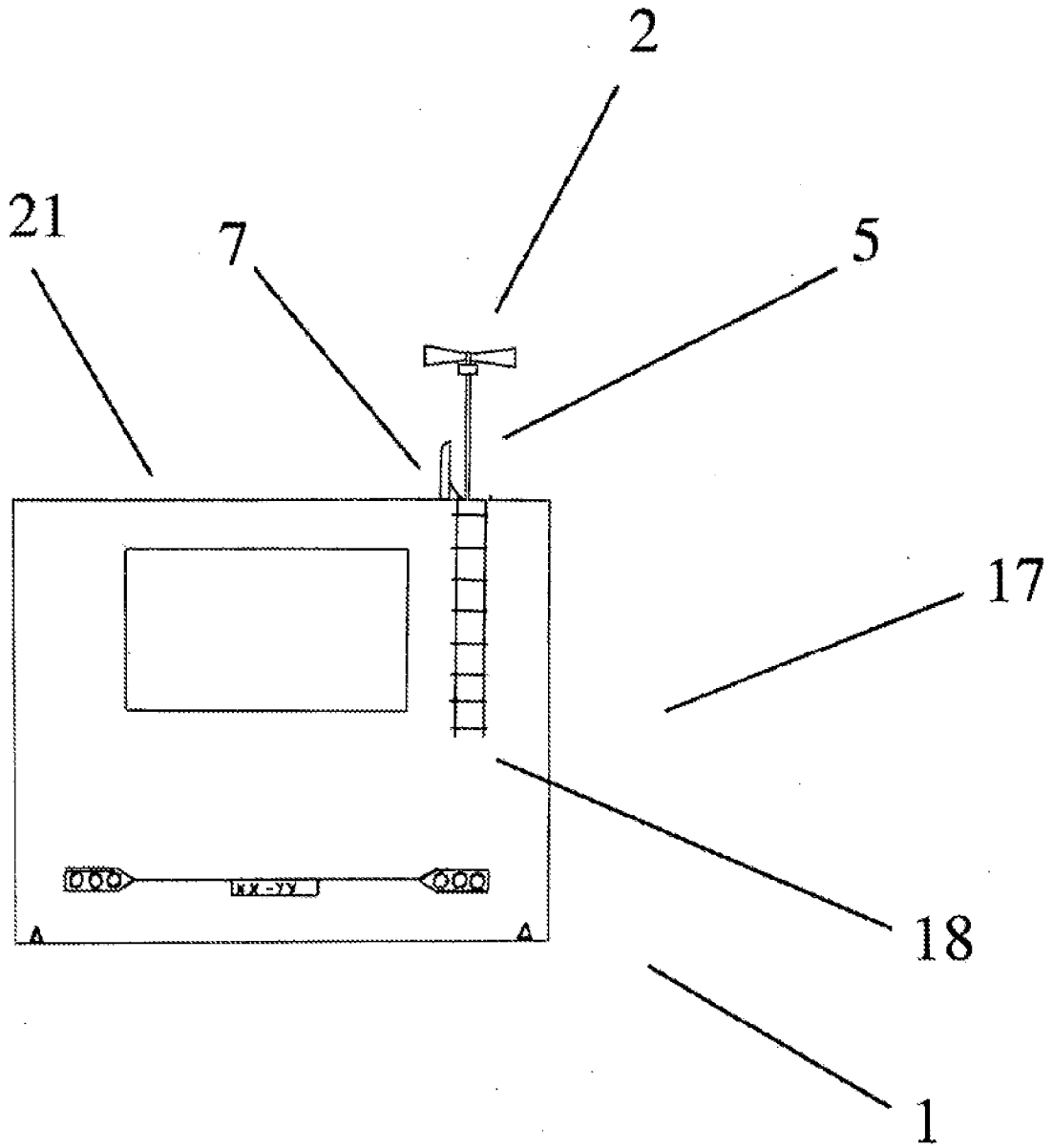
Figur 1



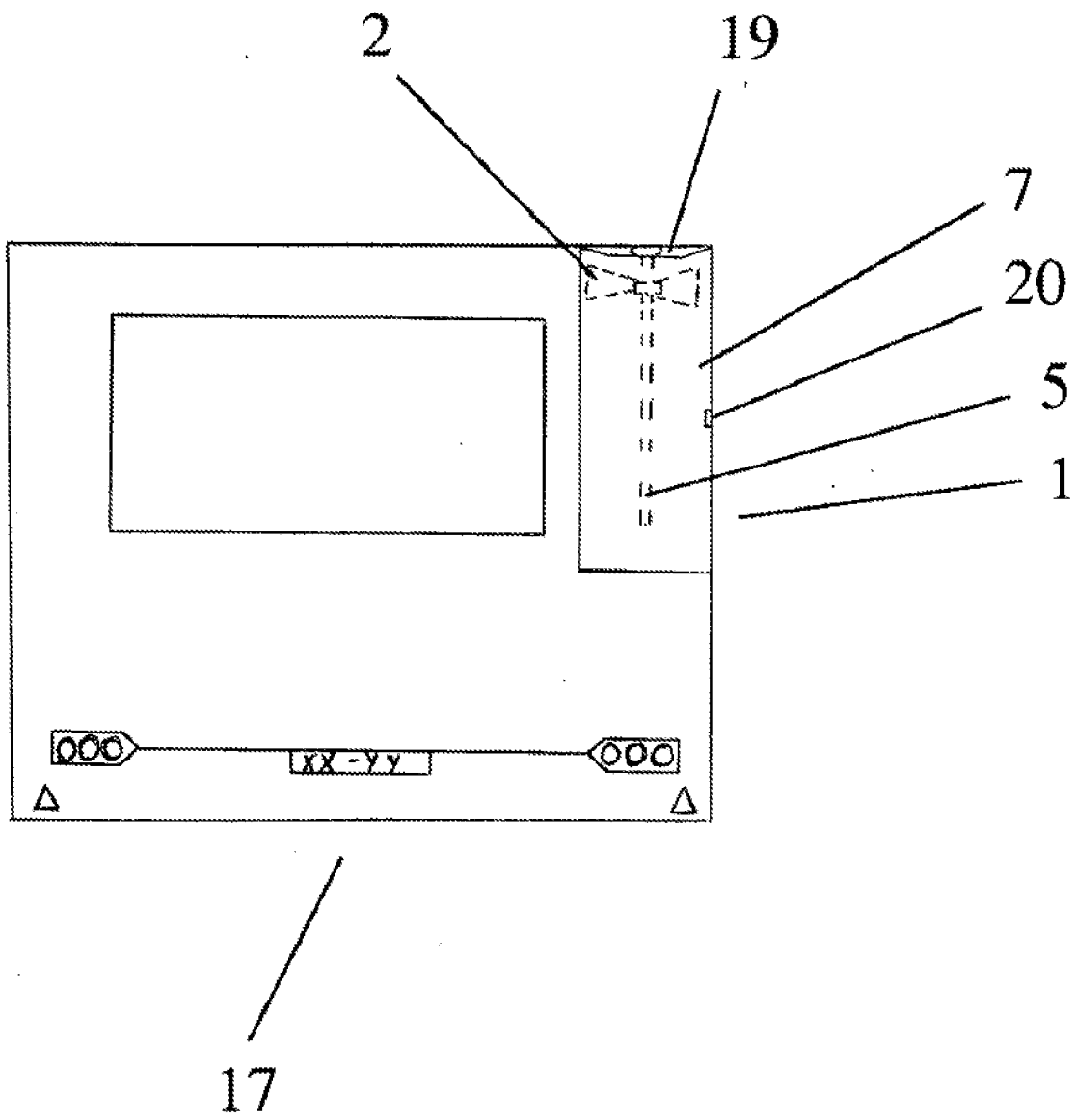
Figur 2



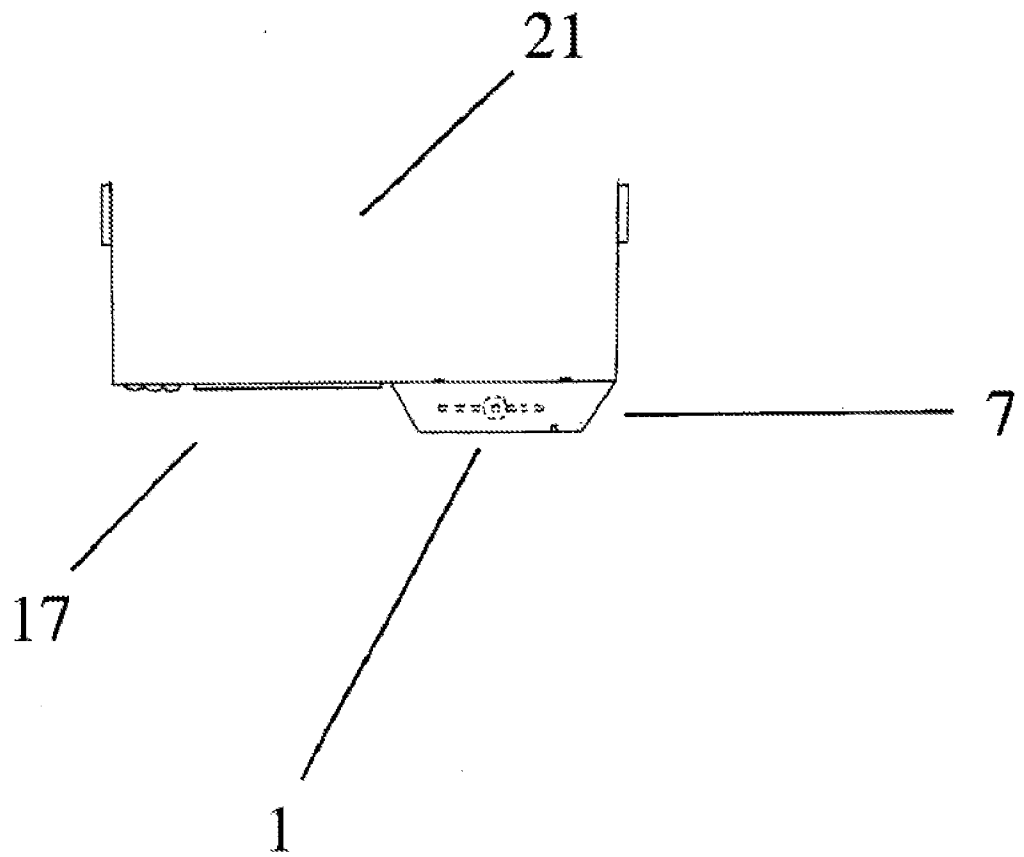
Figur 3



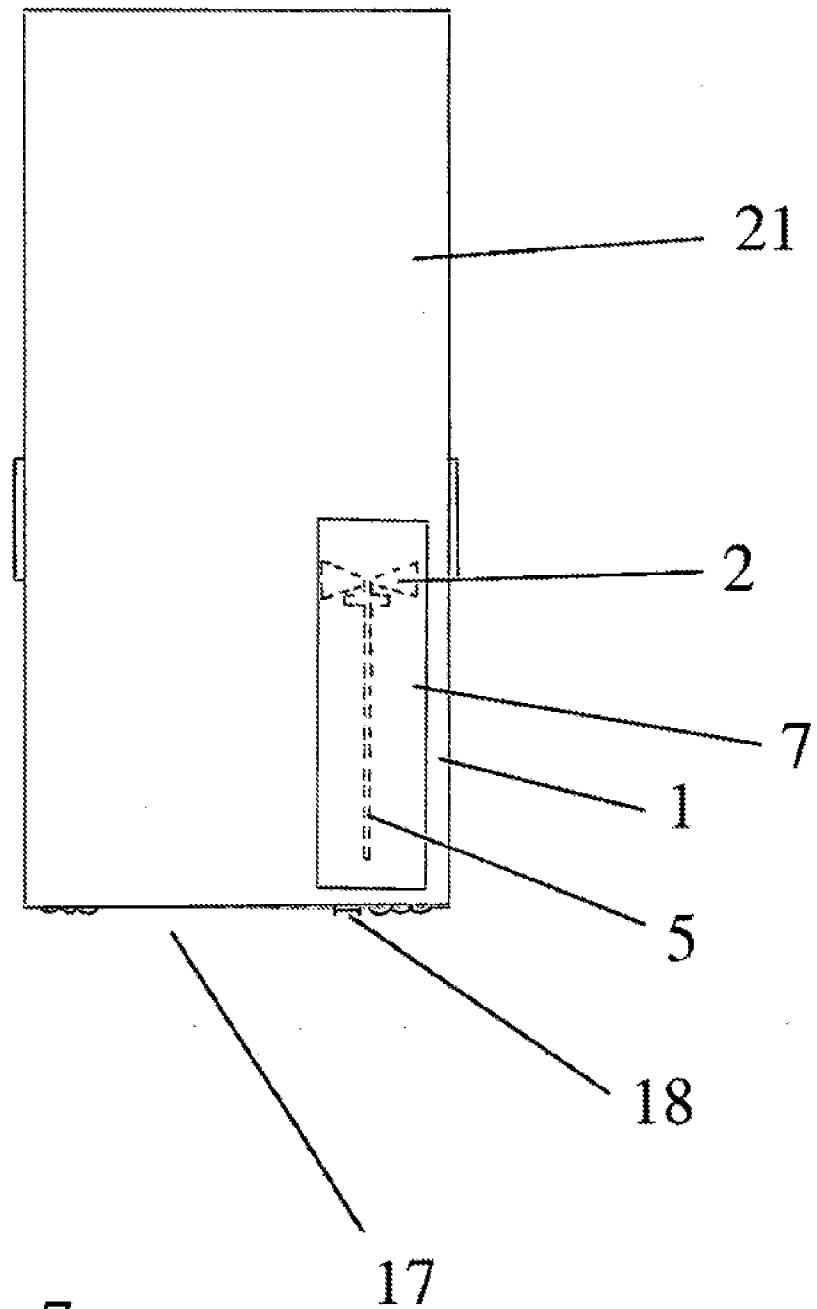
Figur 4



Figur 5



Figur 6



Figur 7