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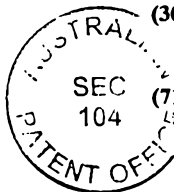
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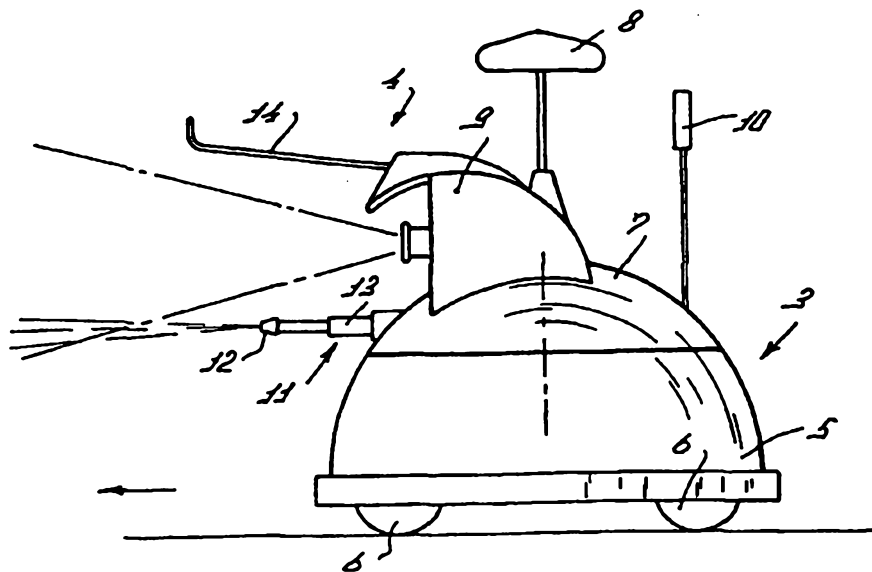
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(54) Title: AN UNMANNED VEHICLE TO BE USED IN A STABLE OR A MEADOW



(57) Abstract: The invention relates to an unmanned vehicle to be used in a stable (1), such as e.g. a cowshed, or in a meadow. The unmanned vehicle (3) is provided with detection means (4) for determining the health and/or the behaviour of animals. The detection means (4) comprise an animal identification system and/or a radar (8) and/or a camera (9). The unmanned vehicle (3) is further provided with driving means (14) for driving animals. On the unmanned vehicle (3) there are further provided disinfecting means (11) for disinfecting at least a part of the stable (1) and/or a part of an animal.

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AN UNMANNED VEHICLE TO BE USED IN A STABLE OR A MEADOW

The invention relates to an unmanned vehicle to be used in a stable, such as e.g. a cowshed, or in a meadow. Such a vehicle is usually employed
5 for cleaning the stable floor.

It would be desirable to provide a multifunctional, unmanned vehicle.

According to a first aspect, the present invention provides an unmanned vehicle to be used in a stable, such as e.g. a cowshed, or in a meadow, said
10 unmanned vehicle being provided with detection means for determining the health and/or the behaviour of animals, wherein the unmanned vehicle includes disinfecting means for disinfecting at least a part of an animal.

Preferably, the disinfecting means are disposed on a telescopic carrier. The latter measure makes it possible to disinfect at places which are difficult to reach.

15 With the aid of its detection means the unmanned vehicle is capable of identifying animals which are ill and/or display abnormal behaviour. According to an inventive feature, the unmanned vehicle comprises alarm means for alarming a supervisor when an animal is ill or displays abnormal behaviour. In this manner it is possible to react quickly and adequately when there is
20 something wrong with an animal.

According to a further inventive feature, the detection means comprise an animal identification system provided with a transmitter and a receiver. By means of the animal identification system there is determined for example
25 whether an animal is lying or standing longer than usually at a certain place. This may be an indication that the animal is ill. According to another inventive feature, the animal identification system comprises a radar as well as reflectors reacting on the radar, which are disposed on the animals. Each of these reflectors has a unique code, so that it is possible to determine per animal how the animal is moving. In this manner it is also possible to determine abnormal
30 behaviour of the animals. According to another inventive feature, the detection means comprise a camera, preferably constituted by an infrared camera. By means of image analysis of the images of the animals recorded by the camera it is possible for example to determine whether an animal has mastitis or is injured or has to be inseminated. It is also possible to track the animals by

means of the camera. For enabling a still better view of the animals, the detection means may be disposed on a telescopic carrier. According to again another inventive feature, the unmanned vehicle comprises driving means for driving the animals. With the aid of the driving means animals can be
 5 separated from a group, eg. for the purpose of being inseminated or examined by a veterinary surgeon. In a preferred embodiment of the invention, the driving means comprise an electric shock device.

For the purpose of rendering the unmanned vehicle still more multifunctional, it may be provided with a manure slide for removing manure
 10 which is lying on a floor. According to another inventive feature, the unmanned vehicle is provided with navigation means for guiding the unmanned vehicle through the stable or the meadow. The navigations means may be the same as the above-described detection means.

The invention will now be explained in further detail with reference to the
 15 accompanying drawings.

Figure 1 is a plan view of a stable with an unmanned vehicle accommodated therein, which vehicle is provided with detections means according to the invention, and

Figure 2 is a side view of the unmanned vehicle shown in Figure 1.

20 Figure 1 is a plan view of a stable 1 provided with a milking robot 2 for automatically milking animals and an unmanned vehicle 3 which is provided with detection means 4 for determining the health and/or the behaviour of animals.

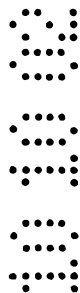
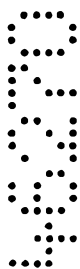
Figure 2 is a side view of the unmanned vehicle 3 according to the
 25 invention, which is provided with a chassis 5 with wheels 6. The wheels 6 are driven by a (non-show) drive unit. On the chassis 5 there is disposed a rotatable upper part 7 on which the detection means 4 are mounted. In the present embodiment the detection means 4 comprise a radar 8 and a camera 9. The unmanned vehicle 3 is further provided with a transmitter unit including a
 30 transmitting element 10. By means of the transmitter unit the supervisor can be alarmed when an animal is ill and/or displays abnormal behaviour. On the

rotatable upper part 7 there are further disposed disinfecting means 11 for disinfecting at least a part of the stable and/or at least a part of an animal. In the present embodiment the disinfecting means 11 comprise a sprayer 12 which is disposed on a telescopic carrier 13.

5 On the rotatable upper part 7 there are further disposed driving means 14 for driving animals. The driving means 14 are fitted to the upper side of the camera 9. The driving means 14 are connected to an electric shock device which is capable of emitting a pulse.

10 In the present embodiment the camera 9 is used to guide the unmanned vehicle through the stable and/or the meadow.

Finally, it is to be understood that various alterations, modifications and/or additions may be introduced into the unmanned vehicle previously described without departing from the spirit or ambit of the invention.



The claims defining the invention are as follows:

1. An unmanned vehicle to be used in a stable, such as e.g. a cowshed, or in a meadow, said unmanned vehicle being provided with detection means for determining the health and/or the behaviour of animals, wherein the unmanned vehicle includes disinfecting means for disinfecting at least a part of an animal.
2. An unmanned vehicle as claimed in claim 1 wherein the disinfecting means are disposed on a telescopic carrier.
3. An unmanned vehicle as claimed in claim 1 or 2, wherein the detection means includes an animal identification system.
4. An unmanned vehicle as claimed in claim 3, wherein the animal identification system includes a transmitter and a receiver.
5. An unmanned vehicle as claimed in claim 3, wherein the animal identification system includes a radar as well as reflectors reacting to the radar.
6. An unmanned vehicle as claimed in claim 3, wherein the detection means includes a camera.
7. An unmanned vehicle as claimed in claim 6, wherein the camera is constituted by an infrared camera.
8. An unmanned vehicle as claimed in any one of the preceding claims, wherein the detection means are disposed on a telescopic carrier.
9. An unmanned vehicle as claimed in any one of the preceding claims, wherein the unmanned vehicle is provided with driving means for driving animals.
10. An unmanned vehicle as claimed in claim 9 wherein the driving means includes an electric shock device.

11. An unmanned vehicle as claimed in any one of the preceding claims, wherein the unmanned vehicle is provided with a manure slide for removing manure which is lying on a floor.

5 12. An unmanned vehicle as claimed in any one of the preceding claims, wherein the unmanned vehicle includes alarm means for alarming a supervisor when an animal is ill or displays abnormal behaviour.

10 13. An unmanned vehicle as claimed in any one of the preceding claims, wherein the unmanned vehicle is provided with navigation means for guiding the unmanned vehicle through the stable or the meadow.

15 14. An unmanned vehicle as claimed in any one of the preceding claims, wherein the unmanned vehicle includes a rotatable upper part on which the detection means are disposed.

15 15. An unmanned vehicle to be used in a stable substantially as herein described with reference to the accompanying drawings.

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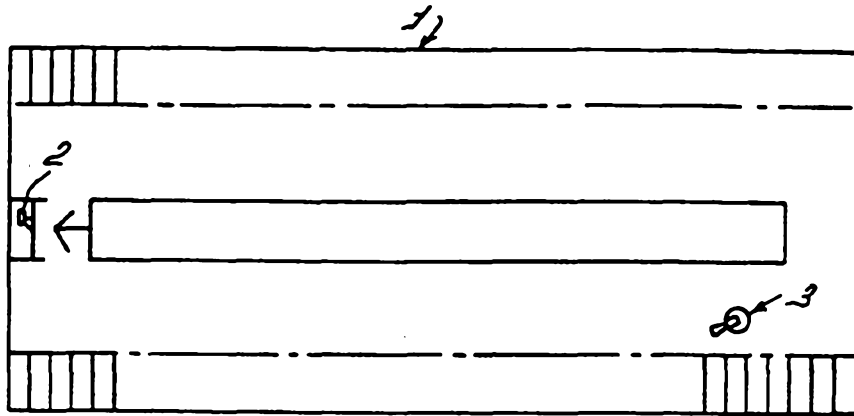


FIG. 1

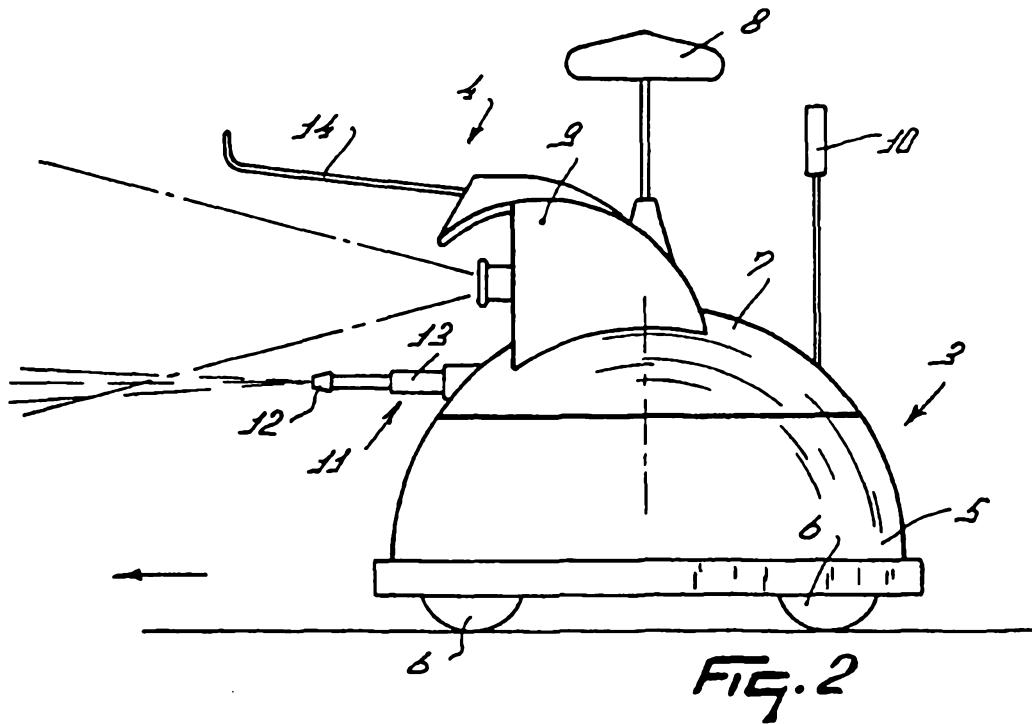


FIG. 2