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A device for brushing animals

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ABSTRACT

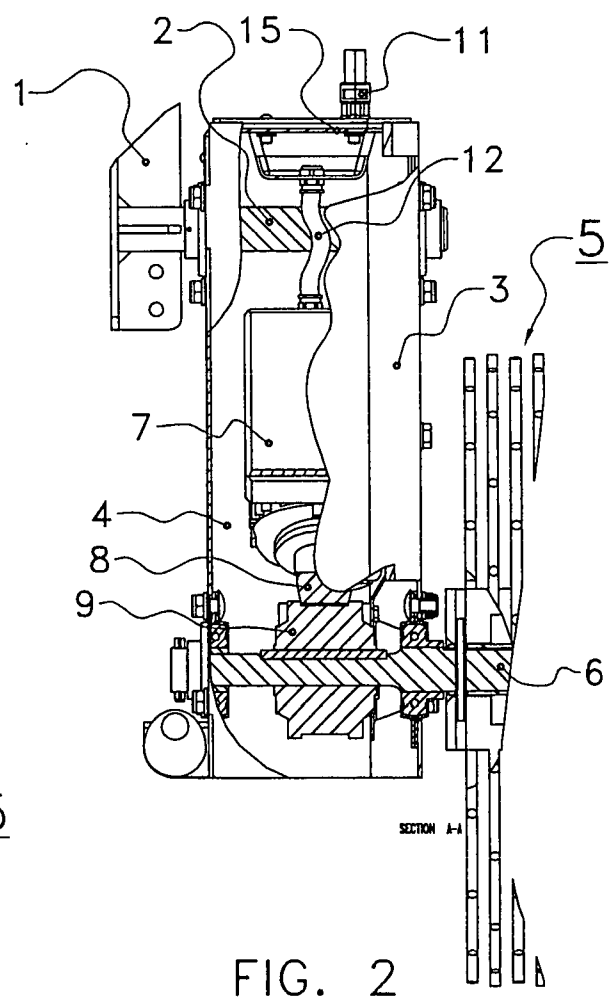
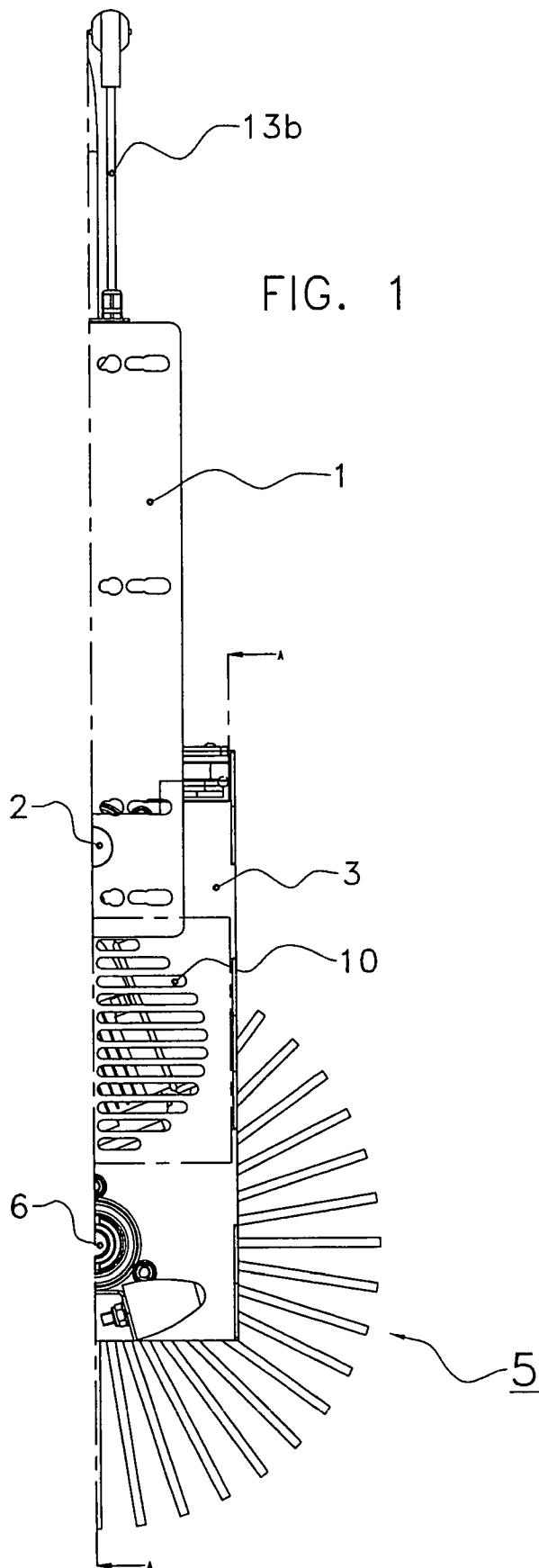
A DEVICE FOR BRUSHING ANIMALS

5 A device for brushing animals, provided with a mounting unit (1) for mounting the device to a stationary construction element. A pivot element (2) is connected with the mounting unit (1). A frame (3) is connected with the pivot element (2) in such a way that it is pivotable about said pivot element and comprises a hollow, internal space (4). A brushing unit (5) is fastened on the frame (3), and comprises a driven axis (6), which extends into the space (4). The device is further provided with a driving motor (7) with a drive shaft (8) for driving the brushing unit (5) and a transmission element (9), which is disposed between the drive shaft (8) of the driving motor (7) and the driven axis (6) for transmitting rotation from the drive shaft (8) to the driven axis (6). The transmission element (9) and the driving motor (7) are disposed in the hollow, internal space (4) of the frame (3).

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(Figure 2)



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**COMPLETE SPECIFICATION
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A DEVICE FOR BRUSHING ANIMALS

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The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

A DEVICE FOR BRUSHING ANIMALS

This application claims priority from The Netherlands Patent Application No.1029371 filed on 29 June 2005, the contents of which are to be taken as incorporated herein by this reference.

A reference herein to a patent document or other matter which is given as prior art is not to be taken as an admission or a suggestion that that document or matter was, known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.

Throughout the description and claims of the specification, the word "comprise" and variations of the word, such as "comprising" and "comprises", is not intended to exclude other additives, components, integers or steps.

Conventionally, in a device for brushing animals, such as cows, the driving motor is fastened near an end of a frame and the brushing unit is fastened near the other end of said frame. The driving motor has a drive shaft, which extends into the hollow space of the frame and which is connected with the driven axis of the brushing unit via a chain. Although this device functions properly, the device nevertheless proves to be subjected to relatively high maintenance costs, owing to the fact that the driving motor of the device is fastened on the outside of the frame, said driving motor is subjected to all sorts of environmental contamination. In particular in a stable, this contamination can be considerable. It has been found that, as a result, the driving motor of the device has to be cleaned and/or replaced frequently in order to guarantee a correct functioning of the device for brushing animals. This cleaning and/or replacement is not only time-consuming, but also unnecessarily costly.

It would therefore be desirable to provide a device for brushing animals which involves relatively low maintenance costs.

By disposing, according to the invention, the driving motor in the hollow, internal space of the frame, the driving motor is protected against contamination and, consequently, the maintenance costs are strongly reduced.

The present invention relates to a device for brushing animals, such as cows, which device is provided with:

- a mounting unit for mounting the device to a stationary construction element, such as a wall or a beam,
- a pivot element, which is connected with the mounting unit,
- a frame, which is connected with the pivot element in such a way that it is

pivotal about said pivot element, the frame comprising a hollow, internal space,

- a brushing unit, which is fastened on the frame, and comprises a driven axis, which extends into the hollow, internal space of the frame,
- a driving motor with a drive shaft for driving the brushing unit, and
- a transmission element disposed between the drive shaft of the driving motor and the driven axis of the brushing unit for transmitting rotation from the drive shaft to the driven axis, the transmission element being disposed in the hollow, internal space of the frame, wherein the driving motor is disposed in the hollow internal space of the frame between the pivot element and the driven shaft.

A preferred embodiment of the device for brushing animals according to the invention, in which the brushing unit is fastened near an end of the frame, is wherein driving motor is disposed near the same end of the frame in the hollow, internal space. The end of the frame where the brushing unit is fastened always being the lower end of the frame, there is thus realised a low centre of gravity.

One embodiment of a device for brushing animals according to the invention is wherein in that the transmission element has a recess for removably including the driven axis of the brushing unit. In this manner a worn brushing unit can quickly be removed, which strongly reduces the time for replacing a brushing unit. It is pointed out that, in the known device, the driven axis is fastened on the frame via bearing elements, which bearing elements are fastened on the frame by means of bolts; in this case, dismounting and replacement of a brushing unit take relatively much time. The transmission element is preferably a worm wheel transmission. This makes it possible to realise a cheap and reliable, direct drive of the driven axis.

One embodiment of a device for brushing animals according to the invention is wherein the frame is provided with ventilation apertures. This makes it possible for the heat developed by the driving motor to leave the hollow, internal space of the frame, so that the driving motor will not break down because of overheating.

For connection with an external supply source, a wall of the frame is provided with a connector element for connecting thereto a feeder cable for connection with the external supply source. The feeder cable preferably comprises two feeder cable portions, which are interconnected by means of a connecting

element, which is fastened on the mounting unit. In this manner there is realised a safe and robust fastening of the feeder cable in the device.

In one embodiment of a device for brushing animals according to the invention, the driving motor is electrically connected with the connector element via a line, the line being completely located in the hollow, internal space of the frame. Possible damage caused to the line by external influences is thus prevented.

In a further embodiment of a device for brushing animals according to the invention, the driving motor is suitable for rotating the drive shaft in two opposite directions of rotation, and the device is provided with a switch mechanism for alternately rotating the drive shaft in the opposite directions of rotation. It has been found that, owing to the fact that the driving motor is rotated in two directions, less wear is caused to the driving motor. The reversal of the direction of rotation can take place at fixed (or variable), periodically established points of time, for example controlled by means of a timer circuit, or can take place at each brushing run. It is pointed out here that, as described in the above-mentioned state of the art, a brushing run is activated by activating a switch that is operatively connected with the driving motor to activate the driving motor when pressure is exerted on the brushing unit.

The invention will now be described by way of example with reference to an exemplary embodiment shown in the drawing of a device for brushing animals, in which:

Figure 1 is a schematic rear view of a device for brushing animals according to the present invention,

Figure 2 is a, partially cross-sectional, side view of the device for brushing animals shown in Figure 1, and

Figure 3 is a schematic perspective view of the device for brushing animals as shown in Figures 1 and 2.

Figure 1 shows a device for brushing animals, such as cows. The device is provided with a mounting unit 1 for mounting the device to a stationary construction element, such as a wall or a beam, of for example a stable. A pivot element 2, for example a rotatable axis, is connected with the mounting unit 1. A frame 3, which is connected with the pivot element 2 in such a way that it is pivotable about said pivot element, comprises a hollow, internal space 4.

A brushing unit 5 is fastened on the frame 3 near an end of said frame 3 and comprises a driven axis 6, which extends into the hollow, internal space 4 of the frame 3. It is pointed out here that by brushing unit is not only meant a unit provided with brush hairs, but also a unit provided with a roll with projections, a unit provided with a roll with sponge-like material, and the like.

A driving motor 7 with a drive shaft 8 for driving the brushing unit 5 is disposed in the hollow, internal space 4 of the frame 3, preferably near the same end of the frame 3 where the brushing unit 5 is disposed.

A transmission element 9, preferably a worm wheel transmission, is disposed between the drive shaft 8 of the driving motor 7 and the driven axis 6 of the brushing unit 5 for transmitting rotation from the drive shaft 8 to the driven axis 6. The transmission element 9 is disposed in the hollow, internal space 4 of the frame 3. It will be obvious that, instead of a worm wheel transmission, other direct transmissions, or for example a chain, rope or belt transmission are also applicable.

The transmission element 9 has a recess for removably including the driven axis 6 of the brushing unit 5, so that, by removing a fastening element, such as a locking pin, the brushing unit 5 can quickly be inserted into and/or quickly be removed from the recess of the transmission element 9.

The frame 3 is provided with ventilation apertures 10, formed by slotted apertures in the exemplary embodiment shown, although any other shape is also applicable, for removing the heat generated by the driving motor 7 from the hollow, internal space 4 of the frame 3. If desired, there can be provided a cooling fan or a fluid cooling.

A wall of the frame 3 is provided with a connector element 11 for connecting thereto a feeder cable, comprising two feeder cable portions 13a, 13b, for connection with an external supply source. The feeder cable portions 13a, 13b are interconnected by means of a connecting element 14, which is fastened on the mounting unit 1. The driving motor 7 is electrically connected with the connector element 11 via a line 12, the line 12 being completely located in the hollow, internal space 4 of the frame 3. Although an electric motor is used in the exemplary embodiment described, the present invention is also applicable while using a pneumatic or hydraulic motor.

A control circuit 15 for controlling the driving motor 7 is included in a housing in the hollow, internal space 4 of the frame 3. The driving motor 7, which is preferably suitable for rotating the drive shaft 8 in two opposite directions of rotation, is controlled by a switch mechanism of the control circuit 15 in such a way that the drive shaft 8 is alternately rotated in opposite directions. This reversal of the direction of rotation can be controlled by a timer circuit located in the control circuit 15. The direction of rotation can also be reversed after each brushing run. It is pointed out here that, as described in USA patent 6,318,298 B1, a brushing run is activated by activating a switch that is operatively connected with the driving motor 7 to activate the driving motor 7 when pressure is exerted on the brushing unit 5 by a cow. The switch mechanism can also have an alarm function: there is switched a potential-free contact if a temperature protection is switched on or in case of failure of the power supply.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A device for brushing animals, such as cows, which device is provided with:

5 - a mounting unit for mounting the device to a stationary construction element, such as a wall or a beam,

- a pivot element, which is connected with the mounting unit,

- a frame, which is connected with the pivot element in such a way that it is pivotable about said pivot element, the frame comprising a hollow, internal space,

10 - a brushing unit, which is fastened on the frame, and comprises a driven axis, which extends into the hollow, internal space of the frame,

- a driving motor with a drive shaft for driving the brushing unit, and

- a transmission element disposed between the drive shaft of the driving motor and the driven axis of the brushing unit for transmitting rotation from the drive shaft to the driven axis, the transmission element being disposed in the hollow, internal space of the frame,

15 wherein the driving motor is disposed in the hollow, internal space of the frame between the pivot element and the driven shaft.

20 2. A device for brushing animals as claimed in claim 1, the brushing unit being fastened near an end of the frame, wherein the driving motor is disposed near the same end of the frame in the hollow, internal space.

25 3. A device for brushing animals as claimed in claims 1 and 2, wherein the transmission element has a recess for removably including the driven axis of the brushing unit.

4. A device for brushing animals as claimed in any one of the preceding claims, wherein the transmission element is a worm wheel transmission.

30 5. A device for brushing animals as claimed in any one of the preceding claims, wherein the frame is provided with ventilation apertures.

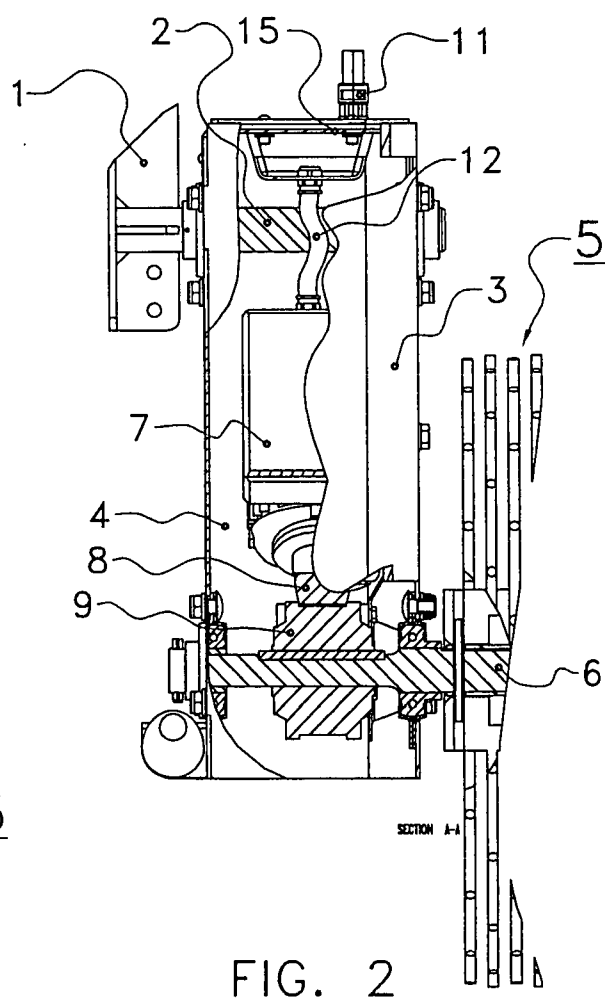
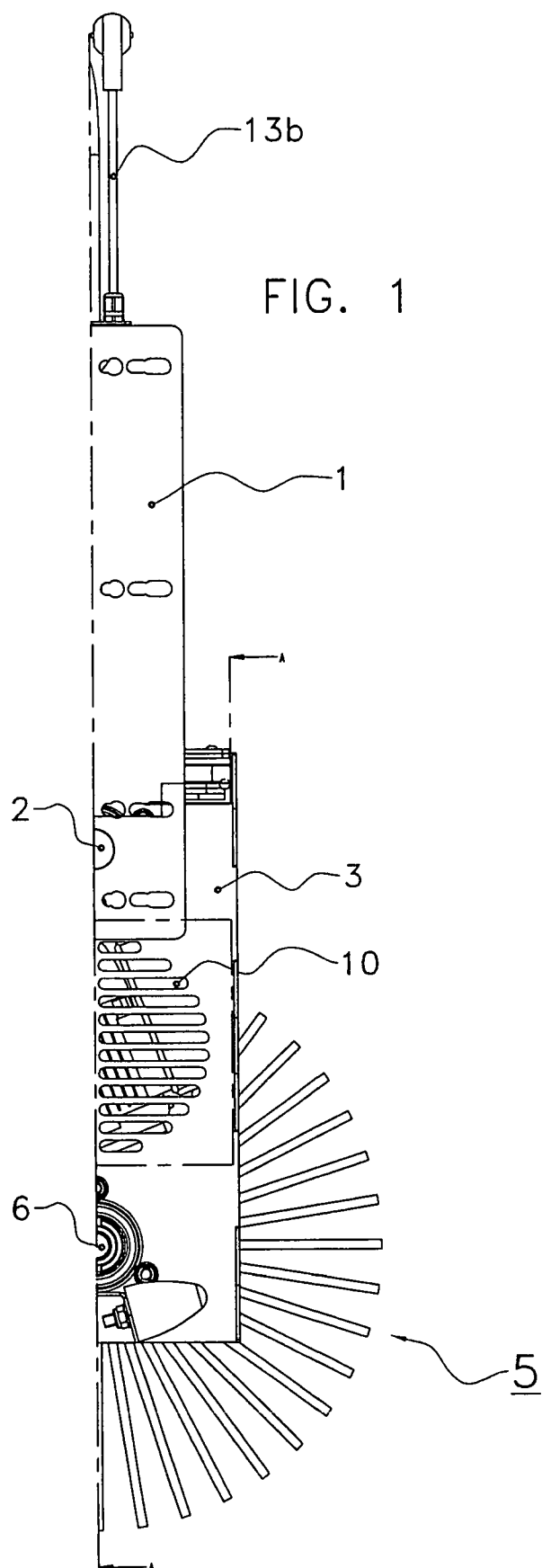
6. A device for brushing animals as claimed in any one of the preceding claims, wherein a wall of the frame is provided with a connector element for connecting thereto a feeder cable for connection with an external supply source.

5 7. A device for brushing animals as claimed in claim 6, wherein the feeder cable comprises two feeder cable portions, which are interconnected by means of a connecting element, which is fastened on the mounting unit.

10 8. A device for brushing animals as claimed in claim 6 or 7, wherein the driving motor is electrically connected with the connector element via a line, the line being completely located in the hollow, internal space of the frame.

15 9. A device for brushing animals as claimed in any one of the preceding claims, wherein the driving motor is suitable for rotating the drive shaft in two opposite directions of rotation, and in that the device is provided with a switch mechanism for alternately rotating the drive shaft in the opposite directions of rotation.

10. A device for brushing animals according to any one of the embodiments substantially as herein described with reference to the accompanying drawings.



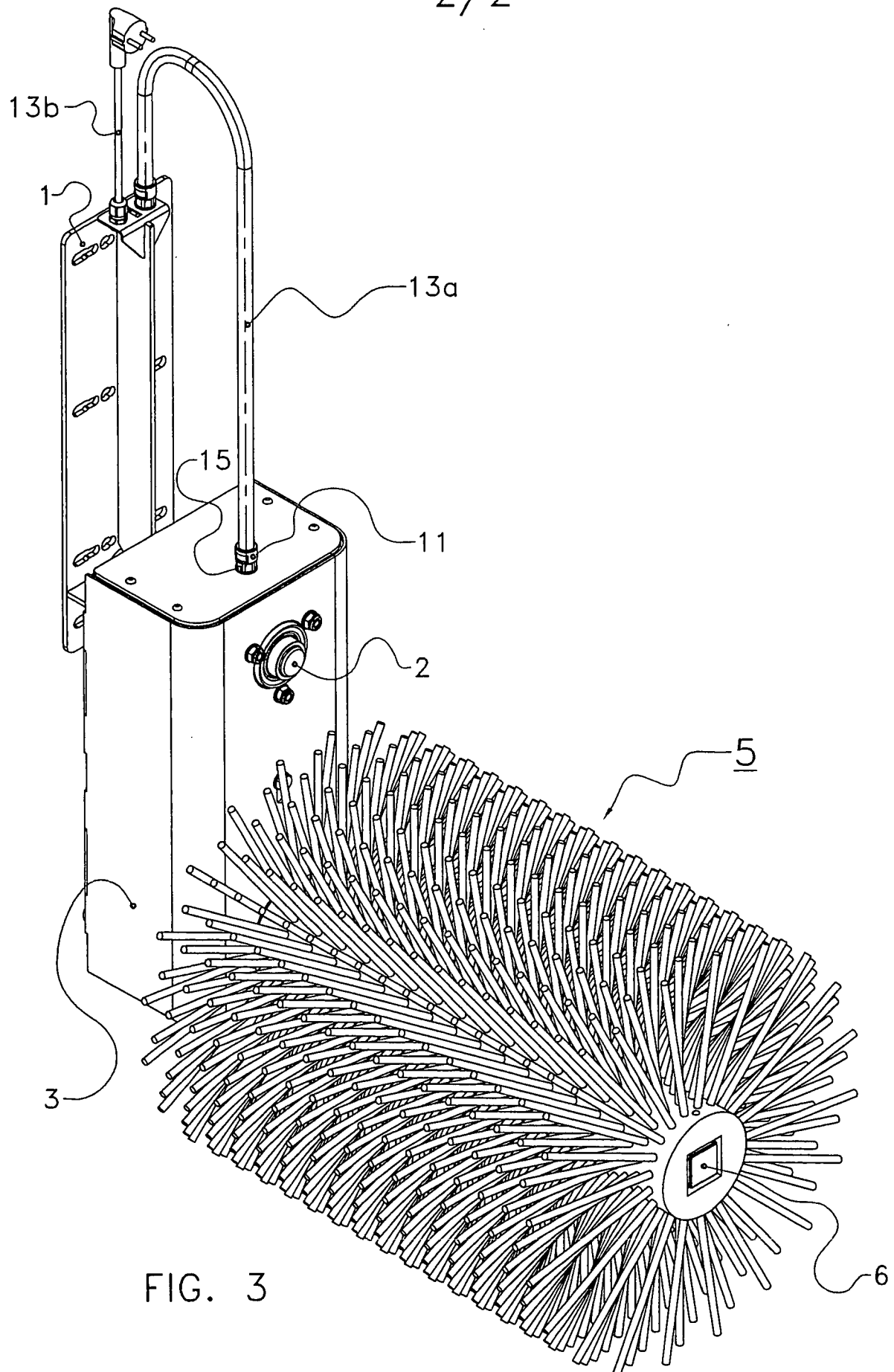


FIG. 3