

(19) **DANMARK**

(10) **DK/EP 2773253 T3**



(12)

Oversættelse af europæisk patentskrift

Patent- og
Varemærkestyrelsen

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- (51) Int.Cl.: **A 47 L 11/40 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2018-06-18**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2018-03-21**
- (86) Europæisk ansøgning nr.: **11776807.7**
- (86) Europæisk indleveringsdag: **2011-11-02**
- (87) Den europæiske ansøgnings publiceringsdag: **2014-09-10**
- (86) International ansøgning nr.: **EP2011069239**
- (87) Internationalt publikationsnr.: **WO2013064179**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
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- (54) Benævnelse: **Håndført gulvrensgøringsmaskine**
- (56) Fremdragne publikationer:
EP-A1- 2 248 455
DE-U1-202006 011 450
US-A- 6 041 472
US-A1- 2009 078 485
US-A1- 2011 023 248

The invention relates to a manually guided floor cleaning machine, comprising a chassis with a front end and a rear end in relation to a straight ahead forward travel direction, a wheel arrangement, which is arranged on the chassis in the region of the rear end, and a cleaning head, which is pivotably
5 arranged on the chassis in the region of the front end.

A floor treatment machine with a driven floor treatment arrangement with a non-circular treatment face is known from WO 98/43527 A1 or EP 0 926 976 B1, which comprises at least one treatment body that is
10 pivotable about a vertical axis in relation to the floor treatment machine. The floor treatment device has a non-circular treatment face, the width extent of which is oriented transverse to the travel direction. The floor treatment device is pivotable depending on the respective travel direction with its non-circular treatment face about a vertical rotational axis relative to the machine body, in
15 such a way that even when negotiating curves, the width extent of the treatment body in each case remains oriented transversely to the current travel direction.

A drivable carriage with at least one pivotable running wheel and/or a
20 pivotable actuating, working or cleaning unit as well as at least one sensor device is known from EP 1 239 762 B1. The sensor device is arranged in such a way that it is pivotable, at least relatively, with the steerable running wheel and/or the pivotable actuating, working or cleaning unit in the same pivoting direction.

25 A floor scrubber operated from behind is known from WO 2004/073477 A1, which comprises a front region with a first wheel pair and a scrubbing head. A rear region is provided having a second wheel pair. The front region and the rear region are pivotably connected to one another by means of a
30 corresponding mechanism, with a vertical pivot axis. A tank for cleaning liquid is provided. Furthermore, a dirty water tank is provided. An operator can bring about a relative rotary movement between the front region and the rear

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region by means of a steering system. A motor system drives the first wheel pair or the second wheel pair.

5 There is known from US 4,010,507 a floor cleaning machine, which has a seat and a steering device, steering taking place by means of the application of pressure on a handle or on a foot pedal of a yoke arrangement.

10 A floor treatment machine with a variable working width is known from DE 43 37 633 C2, comprising a machine body and an operating device to handle said machine, a floor treatment device, which comprises a treatment body, with a non-circular overall treatment face being provided on the lower side of the machine body. The operating device is position-variable with respect to the machine body in a substantially horizontal plane.

15 A portable polishing device is known from US 4,499,624.

An electrically driven hand-held scrubbing machine is known from US 4,005,502.

20 A carpet scrubbing machine is known from US 2,842,788.

A floor treatment machine is known from EP 1 344 484 A2.

25 An electrically driven, uniaxial vehicle, which has a platform for an operator is known from US 2009/0078485 A1. The vehicle comprises at least one appendage, which is pivotable about at least one axis.

30 A portable floor clearing apparatus, which has an upright handle, which is pivotably arranged on a rearward region of a base, is known from US 6,041, 472.

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The object underlying the invention is to provide a manually guided floor cleaning machine, which is compactly constructed and can be easily operated.

This object is achieved in accordance with the invention in the floor cleaning machine stated hereinabove, in that a steering rod device is provided, which is articulated to the cleaning head, which is supported on the chassis and which extends upwardly in a direction away from the chassis toward the rear end, and which forms a pushing rod device for pushing the floor cleaning machine and/or forms a pulling rod device for pulling the floor cleaning machine.

An operator standing behind the floor cleaning machine and following it can directly bring about a pivotability of the cleaning head by means of the steering rod device and therefore a direction change during a travel movement of the floor cleaning machine. No intermediate elements are then necessary for the steering control of the floor cleaning machine and the latter can be compactly constructed.

Furthermore, the steering rod device can be used directly for pushing or pulling the floor cleaning machine. The steering rod device also forms a pushing rod device or pulling rod device.

The steering rod device can basically be formed with minimized dimensions, in that a one-part or multi-part steering rod is used. This has a small space requirement and corresponding components of the floor cleaning machine can be arranged around the steering rod device and under it. This in turn produces a compact construction with this construction being able to be optimized. A relatively heavy battery device can, for example, be arranged directly above the wheel arrangement.

The steering rod device can be arranged in a structurally simple manner in such a way that it is positively guided and can only carry out a pivoting movement for a pivoting movement of the cleaning head. A pivoting

movement of the steering rod device can then be converted by means of direct coupling to the cleaning head into the pivoting thereof. The structural outlay is minimized.

- 5 In particular, the steering rod device is oriented, at least in portions, at an acute angle to a level base when the floor cleaning machine is standing with the wheel arrangement and the cleaning head on the level base. The steering rod device is then guided away steeply upwardly. This allows a compact construction to be achieved.

10

In particular, the acute angle is in the range between 30° and 60° and in particular in the range between 40° and 50° and in particular at least approximately 45°. As a result, an optimized compact construction is produced, wherein the steering rod device is usable advantageously as a
15 pushing rod device or pulling rod device.

- Basically, the steering rod device can be multi-part, for example with a first rod element and a second rod element. It is then basically possible for the first rod element and the second rod element to be oriented at different acute
20 angles to the base (and therefore the chassis). In a preferred solution, the steering rod device is coaxial during the cleaning operation (the first rod element and the second rod element have a zero angle in relation to one another).

- 25 In particular, a steering wheel arrangement is arranged on the steering rod device on or close to an end, which is remote from an articulation point on the cleaning head. An operator can then bring about a steering movement in an ergonomically advantageous manner and, in particular, an optimized handle area is then also provided in order to be able to carry out a pushing movement
30 or pulling movement of the entire floor cleaning machine. In the simplest case, the steering wheel arrangement is configured as a cross-bar.

It is quite particularly advantageous if the steering wheel arrangement, in a projection onto a base, on which the floor cleaning machine is standing, projects beyond the rear end of the chassis. An operator, who is standing or walking behind the floor cleaning machine, can then operate the floor cleaning machine by means of the steering wheel arrangement (in particular steer and push it). In particular, the steering wheel arrangement projects so far out that an operator's feet do not hit the floor cleaning machine during a treatment process of this type.

- 10 In one embodiment, it is provided that the steering rod device is fixably variable in length and/or is pivotable in relation to the chassis, wherein the steering rod device as a whole is pivotable and/or parts of the parts of the steering rod device are pivotable relative to each other. The steering rod device can then be adapted in an optimized manner to the special ergonomic requirements of an operator in order to allow work with the floor cleaning machine with little fatigue. Furthermore, the steering rod device can then also be positioned in such a way that the outer dimensions of the manually guided floor cleaning machine are minimized for transportation or storage. It is particularly advantageous if the steering rod device is both fixably variable in length and also fixably pivotable and, in particular, parts of the steering rod device can be pivoted relative to one another.

- 25 It is favorable if a pivot axis of a pivot bearing for the pivotability of the steering rod device is oriented at least approximately parallel to a rotational axis of a brush roller of the cleaning head and/or to a wheel axis of the wheel arrangement in a position of the steering rod device for the straight ahead forward travel direction. This allows a height adaptation to be easily achieved. Furthermore, it can thereby be achieved, for example, that the steering rod device is foldable (with, for example, two parts that can be pivoted relative to one another). As a result, the height of a rear end of the steering rod device can in turn be adjusted relative to the chassis and, in particular, also adjusted

in such a way that the outer dimensions are minimized for transportation and storage.

It is furthermore favorable if a pivot bearing is positioned on the steering rod device above (in relation to the direction of gravity when the floor cleaning machine is standing on a level base) a tank, past which the steering rod device is guided and/or is positioned outside a housing casing arranged on the chassis. As a result, a pivotability of the steering rod device can be achieved with minimized outlay. The casing of the floor cleaning machine, through which the steering rod device passes can be configured with minimized structural outlay as no pivotability of the part of the steering rod device, which passes through the casing or is guided past the tank, has to be provided. Furthermore, the fixing of the pivotability can easily be achieved. An operator can directly access the pivot bearing from outside in order to release the pivotability or fix the pivotability.

In one embodiment, the steering rod device has a sleeve, on which a steering wheel arrangement is arranged, wherein a rod element of the steering rod device is inserted in the sleeve, and wherein a longitudinal position of the sleeve is fixably variable on the rod element. A steering rod device that is variable in length can thus be easily realised. The guidance of electric cables and the like within the steering rod device is minimally influenced by the length-variability. By means of the sleeve, the steering wheel arrangement is to a certain extent placed on the rod element and held there. At the same time, a telescopic guidance with a length-variability of the steering rod device can easily be configured.

It is quite particularly advantageous if the steering rod device forms a pushing rod device to push the floor cleaning machine and/or forms a pulling rod device to pull the floor cleaning machine. This produces optimized working possibilities with a compact structure of the floor cleaning machine.

The steering rod device is advantageously articulated by a joint device to the cleaning head and, in particular, the joint device comprises a cardan joint.

The steering rod device has a pivot axis that is oriented in a different direction to the pivot axis of the cleaning head. The two pivot axes intersect one
5 another, in particular. A pivoting movement of the steering rod device and a pivoting movement of the cleaning head can be implemented by the joint device.

10 In a structurally favorable embodiment, the joint device is arranged on a pivot bearing for the pivotability of the cleaning head on the chassis. This produces a compact structure. It can easily be achieved that a pivot axis of the steering device and the pivot axis of the pivot bearing intersect so no transverse offset is present.

15 It is quite particularly advantageous if at least one support element is non-rotatably arranged on the chassis, said support element having a recess, through which the steering rod device is inserted and in which the steering rod device is rotatable. The support element, on the one hand, ensures a support and therefore retention of the steering rod device relative to the chassis.
20 Furthermore, constraints are placed on the steering rod device by a support element of this type so only a rotation about a pivot axis is still possible.

In particular, the steering rod device has a one-part or multi-part steering rod, which is articulated to the cleaning head. This produces a simple and compact
25 structure, the space requirement for the steering rod device being minimized.

In one embodiment, the chassis has a holding element, on which the cleaning head is pivotably arranged and, in particular, the holding element is formed as a holding plate or comprises a holding plate. The holding element is the basic
30 part of the chassis, on which the corresponding components are directly or indirectly fixed.

It is favorable if a first tank and a second tank are arranged on the holding element, wherein the first tank is seated on a first side of the holding element and the second tank is seated on a second side opposite the first side, and wherein the second side faces a base, on which the floor cleaning machine is standing. This produces a compact construction of the floor cleaning machine with optimized utilization of space. Floor areas close to the wall can in turn also be cleaned in an optimized manner owing to the compact structure.

The steering rod device is supported here on the first side and rises above the first side, in particular.

The tank is advantageously shaped in such a way that a free space is formed, through which the steering rod device is guided. The steering rod device can thus to a certain extent be guided through the first tank. This in turn produces an optimized use of space and the floor cleaning machine can be constructed to be compact.

Advantageously, the wheel arrangement is arranged on the second side. The "underside" of the chassis can then also be used.

In particular, the second tank is adapted with respect to its shape to the wheel arrangement. This produces an optimized use of space.

The second tank is advantageously shaped in such a way that a free space is formed for the pivotability of the cleaning head. As a result, the latter can be pivoted in a broad pivoting range, which, in particular, is 360° or more. An optimized operability with an optimized cleaning result is in turn also produced in corner regions that are otherwise difficult to access. Furthermore, the cleaning head can be rotated through 180° in relation to a straight ahead forward travel direction in order to realize a backward travel direction.

For example, the first tank is a dirty water tank and the second tank is a tank for cleaning liquid.

It is favorable if a holding device for a battery device is arranged on the chassis, and, in particular, on the holding element of the chassis, the holding device, in particular, being arranged above the wheel arrangement. The battery device generally has a large mass. It can then be arranged in an optimized manner and, in particular, forces can be supported in an optimized manner because of the relatively high mass of the battery device.

It is favorable if the holding device projects upwardly away from a first side of the holding element, wherein the first side is remote from a second side, which faces a base, on which the floor cleaning machine is standing. The holding device can thus be arranged below the steering rod device. The space available thereby can thus be put to optimized use and a compact structure of the floor cleaning machine is produced.

In particular, the holding device has a wall, which is oriented transversely to the first side of the holding element. This wall to a certain extent separates the holding device with the battery device from a "water region" of the floor cleaning machine. A dirty water tank and a turbine device are, for example, arranged in this water region.

It is favorable if the holding device comprises a holding region for a charging apparatus for the battery device, the charging apparatus being arranged nearer than the battery device to the rear end in relation to a direction between the front end and the rear end of the chassis. As a result, the battery device can be arranged and supported above the wheel arrangement in an optimized manner.

It is furthermore favorable if a turbine device for sucking up dirty water, which is in fluidic connection with a dirty water tank and the cleaning head, is

arranged on the chassis and, in particular, on a holding element of the chassis. A region below the steering rod device can be put to optimal use thereby in order to position further components of the floor cleaning machine.

- 5 It is favorable for the same reason if a pump device, which is in fluidic connection with a cleaning liquid tank and the cleaning head, is arranged on the chassis and, in particular, on a holding element of the chassis. As a result, the pump device can easily be positioned.
- 10 The cleaning head advantageously has at least one driven brush and, in particular, brush roller. This driven brush roller can also be used to drive a movement of the floor cleaning machine in order to allow an operator to work with little fatigue.
- 15 In particular, a rotational axis of the at least one brush is oriented parallel to a wheel axis of the wheel arrangement in the straight ahead forward travel direction. A travel drive of the floor cleaning machine can thus be achieved (also with a pivoted cleaning head) by means of the rotating brush.
- 20 In particular, the steering rod device has a maximum length between an articulation point and the cleaning head and a rear end, which is at least 1.3 times as large as a length of the chassis between the front end and the rear end. As a result, an operator walking behind the floor cleaning machine, ("walk-behind machine"), can bring about a steering movement by means of
- 25 the steering rod device and optionally also push or pull the floor cleaning machine. Basically, the length of the steering rod device may be variable, in other words, smaller lengths than the maximum length can also be settable in order, for example, to reduce the outer dimensions of the floor cleaning machine for transportation and storage purposes.
- 30 In particular, a pivot axis for the pivotability of the cleaning head is oriented transversely and, in particular, perpendicularly to a wheel axis of the wheel

arrangement. As a result, by means of a corresponding pivoting, a change of direction of the floor cleaning machine as a whole can be achieved.

5 It is favorable if, in the straight ahead forward travel direction, a rotational axis of the at least one brush is parallel to a wheel axis of the wheel arrangement. In a configuration of this type it is possible to bring about, or at least to assist, a travel movement of the floor cleaning machine by means of a driven rotation of the at least one brush. This assistance is also present when negotiating a curve and optionally also when travelling backwards. As a
10 result, the expenditure of force for guiding the floor cleaning machine is reduced for an operator.

It is advantageous, if the cleaning head, in relation to the straight ahead forward direction, can be pivoted to the left and/or right by more than 90°
15 and, in particular, by at least 180°. By means of a corresponding high pivoting range, which is, for example, 360° or more, a high degree of maneuverability is obtained and even corner regions that are difficult to access can be cleaned. Furthermore, the cleaning head can be brought into a backward travel position in relation to the forward travel direction.

20 In particular, the cleaning head can be pivoted by more than 180° (to the left and to the right in each case). As a result, an optimized movability of the floor cleaning machine is produced.

25 It is favorable if a drive device for a brush of the cleaning head has at least one electric motor, which is supplied with electric current by means of a battery device arranged on the chassis. The at least one electric motor drives the rotational movement of the brush (brush roller). As a result, a cleaning process is carried out. This rotational movement can also be used to drive a
30 travel movement of the floor cleaning machine as a whole. Further components of the floor device, such as a suction motor of a turbine device

and a pump device can also be supplied with electrical energy by means of the battery device.

5 It is favorable if an application device for cleaning liquid, which is in fluidic connection with a tank arranged on the chassis, is arranged on the cleaning head. Cleaning liquid can thus be discharged at the cleaning head onto a base to be cleaned.

10 The application device advantageously has a vessel, which is non-rotatably arranged on the cleaning head and into which at least one pipe, which is in fluidic connection with the tank for cleaning liquid, opens. As a result, the structural outlay to guide cleaning liquid from the tank for cleaning liquid to the pivotable cleaning head can be reduced. No fluid-tight pipe between the cleaning head and the corresponding tank that also follows the pivotability of
15 the cleaning head has to be provided. The vessel provides a large "application area" for cleaning liquid from the corresponding tank. The sealing outlay is thereby reduced. As the vessel is non-rotatably connected to the cleaning head, the sealing outlay is also reduced here.

20 In particular, a position of a mouth of the at least one pipe into the vessel depends on a pivoting position of the cleaning head relative to the chassis. Depending on the pivoting position of the cleaning head, cleaning liquid is injected at various points of the head into the vessel by means of the pipe.

25 It is favorable if the vessel is seated by a pivot bearing for the pivotability of the cleaning head on the chassis. As a result, a simpler construction is produced. The pipe runs can be minimized.

30 In particular, the vessel has an annular region, which surrounds the pivot bearing. A receiving space for cleaning liquid is provided by means of this annular region. This receiving region is a type of buffer space for cleaning liquid.

A suction device, which is in fluidic connection with the tank for dirty water that is arranged on the chassis, is advantageously arranged on the cleaning head. Dirty water can thus be sucked up and received at the cleaning head.

5

In one embodiment, the suction device comprises at least one suction beam arranged on the cleaning head. The suction beam forms a wiper for cleaning liquid, wiped-off cleaning liquid being sucked up.

- 10 It is favorable if a lifting device is provided for the at least one suction beam, which is arranged on the cleaning head. In a non-operating state, the suction beam can be lifted by the lifting device from a base, so the latter is no longer in contact with the base. As a result, wear to the suction beam or damage to the suction beam is prevented or the corresponding danger is at least reduced,
- 15 in the non-operative operation of the floor cleaning machine.

It is favorable if the lifting device comprises a foot pedal, so an operator can easily bring about a lifting or lifting back of the at least one suction beam.

- 20 It is favorable if a sensor or switch is associated with the lifting device, a sensor signal or a switch signal bringing about a start and/or stop of a suction motor. As a result, suction can automatically be switched off or on when the suction beam is brought into a non-operative or operative position.

- 25 A roller device having at least a first position and a second position is advantageously arranged on the cleaning head, wherein, in the first position, the floor cleaning machine is supported on the roller device and the at least one brush is not in contact with a base, on which the floor cleaning machine is standing and, in the second position, the at least one brush acts on the base.

- 30 In the first position, which is a non-operative position for the floor cleaning machine, the wear to the brushes can then be reduced as the latter do not act

on the base. In particular, the first position and the second position can be achieved by means of a lifting device for a suction beam.

5 The following description of preferred embodiments is used in connection with the drawings to describe the invention in more detail. In the drawings:

- 10 Fig. 1 shows a perspective view of an embodiment of a floor cleaning machine according to the invention;
- Fig. 2 shows a side view of the floor cleaning machine according to Fig. 1;
- 15 Fig. 3 shows the same view as Fig. 2, parts of the floor cleaning machine having been removed;
- Fig. 4 shows the same view as Fig. 2, further parts having been removed;
- 20 Fig. 5 shows a sectional view in the plane 5-5 according to Fig. 1;
- Fig. 6 shows a sectional view in the plane 6-6 according to Fig. 1;
- 25 Fig. 7 shows a sectional view along the line 7-7 according to Fig. 6;
- Fig. 8 shows the same view as Fig. 7, parts having been removed;
- Fig. 9 shows a sectional view along the line 9-9 according to Fig. 8;
- 30 Fig. 10 shows a sectional view along the line 10-10 according to Fig. 8; and

Fig. 11 shows a part view of a variant of a manually guided floor cleaning machine according to the invention with a steering rod device that is variable in length and pivotable.

5 An embodiment of a floor cleaning machine according to the invention, which is shown in Figs. 1 to 10 and designated 10 there, comprises a chassis 12. The chassis 12 has a holding element 14, which is, in particular, configured as a holding plate. The holding element 14, in this case, has a first side 16 and a second side 18 opposite the first side. If the floor cleaning machine 10 is
10 standing on a base 20, the second side 18 then faces the base 20 and the first side 16 is remote from the base 20.

The chassis 12 has a front end 22 and a rear end 24 remote from the front end 22. In a straight ahead forward travel direction 26 of the floor cleaning
15 machine (Fig. 1), the front end 22 is directed to the front and the rear end 24 is directed to the rear. The floor cleaning machine 10 is manually guided. In relation to the straight ahead forward travel direction 26, an operator stands behind the rear end 24 and guides (pushes or pulls) the floor cleaning machine 10, as described in more detail below.

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A wheel arrangement 28 is arranged on the chassis 12 in the region of the rear end 24. The wheel arrangement 28 is a rear wheel arrangement, which is positioned on the holding element 14 and, in particular, the second side 18 of the holding element 14. The wheel arrangement 28, in this case, in relation to
25 the straight ahead forward travel direction 26, has a left rear wheel 30a and a right rear wheel 30b (cf. Fig. 7). The wheel arrangement 28 has a wheel axis 32 (rotational axis), about which the rear wheels 30a, 30b can be rotated. The wheel arrangement 28 is unsteered, in other words the rear wheels 30a, 30b only have the movability of the rotatability about the wheel axis 32. The
30 floor cleaning machine 10 is placed by means of the wheel arrangement 28 in the region of the rear end 24 on the base 20.

In the region of the front end 22, a cleaning head 34 is pivotably arranged on the holding element 14. For this purpose, a pivot bearing 36 is provided. This pivot bearing 36 defines a pivot axis 38 (cf. Fig. 2) for the pivotability of the cleaning head 34 on the chassis 12. This pivot axis 38 is oriented transversely and, in particular, perpendicularly, to the wheel axis 32.

In one embodiment, the pivot bearing 36 comprises a cylindrical journal 40, which is arranged in an upper region 42 of the cleaning head 34. The pivot bearing 36 furthermore comprises an annular element 44 with a cylindrical recess 46, which is arranged on the holding element 14. The journal 40 is inserted through the recess 46.

The floor cleaning machine 10 comprises a steering rod device 48. The steering rod device 48 is articulated at one end 50 (cf. in particular Fig. 4) on the cleaning head 34 by means of a joint device 52. The joint device 52 comprises a cardan joint 54.

A fixing device 56 (cf. Fig. 9) for the joint device 52 (and therefore the steering rod device 48) is formed on the journal 40 of the cleaning head 34. The fixing device 56 for example, comprises one or more eyelets 58, on which the joint device 52 can be fixed by means of a bolt or the like. The eyelet 58 in this case projects, in particular, beyond the annular element 44 of the pivot bearing 36, so the rotatability of the cleaning head 34 by means of the journal 40 on the pivot bearing 36 is not hindered. The joint device 52 is thereby arranged on the pivot bearing 36.

The steering rod device 48 comprises a steering rod 60. The steering rod 60 may, in this case, basically be one-part or multi-part. The steering rod 60 has a direction of extent 62. The steering rod device 48 with the steering rod 60 extends upwardly away from the holding element 14 in the direction of the rear end 24; the steering rod device 48 is articulated on the cleaning head 34, which is arranged in the region of the front end 22 on the chassis 12, in the

region of the front end 22. The steering rod 60 lies at an acute angle 64 (cf. Fig. 2) to the chassis 12 and, in particular, to the holding element 14. The acute angle 64 is in relation to the straight ahead forward travel direction 26 or to a level base 20 when the floor cleaning machine 10 is placed thereon. In particular, the acute angle 64 is to the first side 16 of the holding element 14.

The acute angle 64 is in a range between 30° and 60° and in particular between 40° and 50° . In one embodiment, the acute angle 64 is 45° .

The steering rod 60 can be pivoted about a pivot axis 66 (cf. Fig. 4). This pivot axis 66 coincides with the direction of extent 62, in other words, it is at an acute angle 64 to the chassis 12. One or more support elements 68, on which the steering rod device 48 is supported, are seated on the chassis 12. A support element 70 (Fig. 7), which is non-rotatably fixed to the holding element 14 on its first side 16, is provided in the region of the front end 22. This support element comprises an annular element 72 and has a recess 74, through which the steering rod 60 is inserted. The steering rod 60 is rotatably supported about the pivot axis 66 in the recess 74. The annular element 72 for example has the shape of a capped annular cylinder. The steering rod device 48 is rotatably supported close to its end 50 on the chassis 12 by means of the support element 70.

One or more further support elements 76 (cf. Fig. 5) to rotatably support the steering rod device 48 may be provided on the chassis 12, the at least one support element 76 being spaced apart from the support element 70.

The single degree of freedom of movement of the steering rod device 48 is the pivotability about the pivot axis 66. (The pivotability may basically be limited in this case or allow a rotation through 360° .) The movability is limited to this degree of freedom by the support element(s) 70, 76. By means of the joint device 58, the pivoting movement of the steering rod device 48 is transferred to the cleaning head 34 to allow a pivotability of the cleaning head 34 about

the pivot axis 38. The cardan joint 54 is formed accordingly. The cardan joint 54 comprises, for example, a universal joint arrangement with, for example, two joints with joint axes lying transversely with respect to one another. In another configuration, the joint device 52 is formed by a gearing device, such as, for example, a crown wheel gearing, bevel wheel gearing or the like.

The steering rod device 48 extends from the front end 50 to a rear end 78. At the front end 50, the steering rod device 48 is articulated in the direct vicinity of the holding element 14 on the cleaning head 34. The rear end 78 has a height spacing H (cf. Fig. 2) from the holding element 14. A sort of triangular structure with an equilateral triangle is thus formed.

A steering wheel arrangement 80 is arranged at the rear end 78. This steering wheel arrangement 80 comprises handle elements 82, which are spaced apart from one another. An operator can then in each case grasp a handle element 82 with the left hand and the right hand in order to actuate the steering rod device 48. In particular, the spaced apart handle elements 82 are connected to one another.

It may be provided that further operating elements of the floor cleaning machine 10 are arranged on the steering wheel arrangement 80.

The rear end 78 of the steering rod device 48, and therefore also the steering wheel arrangement 80, projects beyond the rear end 24 of the chassis 12. A projection of the steering wheel arrangement 80 or the rear end 78 onto the base 20, in relation to the straight ahead forward travel direction 26, lies behind the rear end 24. An operator, during operation of the floor cleaning machine 10, walks behind the rear end 24; the floor cleaning machine 10 is a walk-behind machine. He can grip the steering wheel arrangement 80 on the handle elements 82 and thus bring about corresponding direction changes. The height of the steering wheel arrangement 80 in relation to the base 20 is such, in this case, that at least in relation to an average size of an operator,

he can operate the floor cleaning machine 10 with little fatigue. In particular, in relation to the average size, an operator does not need to bend in order to be able to grasp the steering wheel arrangement 80, or does not have to stretch up.

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In one embodiment, it is provided that the steering rod device 48 can be adapted to the special conditions of an operator. In particular, the steering rod 60 is multi-part. Its length between the end 50 and the rear end 78 in the extent direction 62 can be fixably adapted. This is indicated in Fig. 1 by the reference numeral 84. For example, the steering rod 60 is multi-part for this purpose, the position of a second part 84 being fixably displaceable relative to a first part 86.

In one embodiment (Fig. 11), the steering rod device 48 comprises a (first) rod element 162. The steering wheel arrangement 80 is arranged on a sleeve 164, this sleeve 164 being placed on the first rod element 162; the sleeve 164 has a recess 166, in which the first rod element 162 is inserted.

The sleeve 164 is fixably displaceable on the first rod element 162. The length of the combination of the first rod element 162 and sleeve 164, and therefore the spacing between the end 50 and the rear end 78 of the steering rod device 48, can thereby be fixably adjusted.

A fixing device designated 168 as a whole is provided. The latter comprises, for example, a clamping lever 170. The clamping lever 170 is, for example, pivotably arranged on the first rod element 162. The sleeve 164 has a slot-shaped recess 172, on which a clamping region 174 of the clamping lever 170 is located. When the clamping region 174 is inactive owing to a corresponding position of the clamping lever 170, the sleeve 164 can be displaced on the first rod element 162. In the region of the recess 172, the sleeve 164 has a contact face 176 for the clamping region 174 of the clamping lever 170.

To adjust the length of the steering rod device 48 between the end 50 and the rear end 78, the clamping lever 170 is released, so the clamping region 174 is in an inactive position. The sleeve 164 can then be pushed on the first rod element 162 into the desired position. The clamping lever is then

5 correspondingly placed therearound, so the clamping region 174 acts on the contact face 176 and a clamping is achieved. The relative position between the sleeve 164 and the first rod element 162 is thereby fixed.

The clamping lever 170 is, in particular, designed in such a way that when it is

10 placed therearound and the clamping region 174 is acting, a self-locking is achieved.

Basically it is also possible, (with a corresponding configuration of the joint device 52) for the steering rod device 48 to be arranged in a fixably pivotable

15 manner on the chassis 12 with a pivot axis parallel to the wheel axis 32 when the cleaning head 34 is in the straight ahead forward travel direction 26. In particular, the pivot axis 178 is parallel to a rotational axis 130 of a brush roller 128 of the cleaning head 34 (see below). It may be provided that the steering rod device 48 as a whole is fixably pivotable on the chassis 12. In

20 one embodiment, the steering rod device is pivotable "*per se*" (Fig. 11). For this purpose, the steering rod device 48 has the first rod element 162 and furthermore has a second rod element 180. This second rod element 180 is provided with the end 50 and connected to the joint device 52. The first rod element 162 and the second rod element 180 are connected by means of a

25 pivot bearing 182. This pivot bearing 182 has a pivot axis 178, which is parallel to the rotational axis 130 of the brush roller 128 or parallel to the wheel axis 32 of the wheel arrangement 28 when the steering rod device 48 is in a rotational position such that the cleaning head 34 is positioned for the straight ahead forward travel direction 26.

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A fixing device 184 is associated with the pivot bearing 182. As a result, a relative pivoting position between the first rod element 162 and the second

rod element 180 can be fixed. The fixing device 184 has, for example, a clamping device, which clamps the first rod element 162 with the second rod element 180 on the pivot bearing 182. This clamping device comprises, for example, an (in particular manually actuatable) clamping screw. Other possibilities for fixing, such as, for example, a latching engagement fixing and the like are also possible.

The pivot bearing 182 (in relation to the direction of gravity when the floor cleaning machine 10 is placed on a level base 20) is located above a first tank 90 (see below), past which the steering rod device 48 is guided. It is furthermore located outside, and in particular above, a housing casing, which is designated 186 as a whole, of the floor cleaning machine 10. In this case, the only movement possibility allowed of the second rod element 180 relative to the chassis 12 is then a rotation about the pivot axis 66.

The pivot bearing 182 is configured in such a way that the second rod element 180 and the first rod element 162 as well as the steering wheel arrangement 80 and the sleeve 164 have the same rotational axis, namely the pivot axis 66. With respect to a pivoting of the pivot axis 66, the second rod element 180 and the first rod element 162 are rigidly connected to one another, even when the fixing device 184 is released.

That part of the steering rod device 48 located above the pivot bearing 182, in comparison to the second rod element 180, when the fixing device 184 is released and the fixing device 168 is released, has further degrees of freedom of movement: the first rod element 162 is pivotable on the pivot bearing 182. That part of the steering rod device located between the pivot bearing 182 and the rear end 78 is variable in length by means of the relative positionability of the sleeve 164 on the first rod element 162.

Basically, it is possible for only one fixable pivotability of the first rod element 182 with respect to the second rod element 180 to be provided or only one

length-variability of the steering rod device 48 to be provided. In an advantageous embodiment, the steering rod device 48 is variable with respect to its length and a pivotability is provided on the steering rod device 48.

- 5 In the embodiment shown in Fig. 11, the pivot bearing 182 is arranged in such a way that the fixing device 184 is located outside the housing casing 186. Furthermore, the fixing device 168 is arranged in such a way that it is located outside the housing casing 186. An operator can thereby easily and quickly adapt the steering rod device 48 to his requirements.

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In particular, a height position of the steering wheel arrangement 80 can be adapted by means of the length-variability. In addition or alternatively, the adaptation can optionally be carried out by adjusting a relative pivoting angle between the second rod element 180 and the first rod element 162. (In this
15 case, the acute angle 64 relates to the second rod element 180.)

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It is preferred, in order to achieve simple operability with respect to pushing and pulling the floor cleaning machine 10, for the first rod element 162 and the second rod element 180 to be co-linearly oriented during operation and for
the height adaptation to take place by means of the length-variability.

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The relative height of the floor cleaning machine 10 can be reduced by means of the pivotability at the gearing rod device 48, by means of which, in particular, the steering rod device 48 is configured to be foldable. As a result,
the floor cleaning machine 10 can be brought into a form, which is preferred
for transportation processes and storage, in that the second rod element 180
is folded toward the front end 22. In particular, the length of the steering rod
device 48 is also minimized, in that the sleeve 164 is displaced into a
corresponding position.

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The steering rod device 48 projects beyond the rear end 24 of the chassis 12. Basically, the steering wheel arrangement 80, in relation to the straight ahead

forward travel direction 26, forms the rearmost point 88 (cf. Fig. 2) of the floor cleaning machine 10. The steering rod device 48, between the end 50 and the end 78, forms a rigid object, which is mounted about the pivot axis 66. The steering rod device 48 thus forms a pushing rod device; by exerting pressure on the steering wheel arrangement 80, an operator can push the floor cleaning machine 10 as a whole. The steering rod device 48 forms a steering device for the floor cleaning machine 10 and a pushing guidance (or pulling guidance in the case of a backward movement) of the floor cleaning machine 10.

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A first tank 90 and a second tank 92 are arranged on the chassis 12. The first tank 90 is a dirty water tank. The second tank 92 is a tank for cleaning liquid.

The second tank 92 is arranged on the second side of the holding element 14.

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It is adapted with respect to its shape to the wheel arrangement 28. It has corresponding free regions 94, the left rear wheel 30a and the right rear wheel 30b being positioned, in each case, in the free region 94.

Furthermore, the second tank 92 is configured on a side 96, which faces the cleaning head 34 in such a way that a pivotability of the cleaning head 34 about the pivot axis 38 is made possible within a specific pivoting range, this pivoting range comprising at least 180° to the left and right in relation to the straight ahead forward travel direction 26. This will be described in more detail below.

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The second tank 92 is configured in such a way that it can receive an optimized quantity of cleaning liquid and does not thus limit the pivotability of the cleaning head 34, which can be pivoted below the holding element 14.

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A pump device 98 (cf. Fig. 7) is arranged on the chassis 12. The pump device is fluidically connected by a suction side 100 to the second tank 92. From the suction side 100 of the pump device 98, a suction line 102 leads into the tank

92 in order to suck up cleaning liquid. By a pressure side 104, the pump device 98 is in fluidic connection with an application device 106 for cleaning liquid of the cleaning head 34, as will be described in more detail below.

- 5 The first tank 90 for dirty water is arranged on the first side 16 of the holding element 14. It is configured here in such a way that it is adapted with respect to its shape to the guidance of the steering rod device 48. It has a free space 108, through which the steering rod device 48 is inserted.
- 10 Arranged on the holding element 14 is a holding device 110, which holds a battery device 112 (cf., for example, Fig. 3). The holding device 110 is arranged here above the wheel arrangement 28. The battery device 112, which, in particular, comprises one or more rechargeable batteries, generally has a considerable mass proportion of the total mass of the floor cleaning
- 15 machine 10. By means of an arrangement on the holding element 14 directly above the wheel arrangement 28, optimized force ratios can be achieved.

The holding device 110 comprises a wall 114 (cf., for example, Fig. 1), which projects transversely and, in particular perpendicularly, beyond the holding

20 element 14 on its first side 16. The wall 114 and the holding device 110 as a whole are configured in such a way that they are positioned spaced apart from the steering rod device 48 below the latter. The wall 114 is a delimitation from a space, in which the first tank 90 (and elements connected thereto) are arranged.

25 A charging apparatus 116 for the battery device 112 is furthermore rigidly arranged on the holding device 110. The charging apparatus 116 can, in particular, be connected to mains current and, by means of corresponding conversion, ensures the charging of the battery in the battery device 112.

30 The charging apparatus 116, in relation to the straight ahead forward travel direction 26, is arranged behind the battery device 112, in other words, it is

arranged closer than the battery device 112 to an operator who grips the steering wheel arrangement 80.

Arranged between the first tank 90 and the wall 114 below the steering rod device 48 is a turbine device 118 with a suction motor. The turbine is in fluidic connection on a pressure side with the first tank 90; dirty water that has been sucked up is conveyed into the first tank 90. By a suction side, the turbine device 118 is in fluidic connection with a suction device 120 (Fig. 1) of the cleaning head 34.

Arranged between the first tank 92 and the holding device 110 are casing elements, which form a closed housing to protect inner components (such as the turbine device 118, fluid lines, electric lines etc.)

The battery device 112 provides electrical energy for the turbine device 118 with a suction motor, the pump device 98 and a drive device 122 of the cleaning head 34.

The cleaning head 34 comprises a housing 124. The housing 124 has a first housing region 126, which is open at the bottom toward the base 20. A brush 128 (brush roller) is arranged in the first housing region 126. The brush 128 can be rotated about a rotational axis 130. When the cleaning head 34 is in the forward travel direction, in which the floor cleaning machine 10 travels in the straight ahead forward travel direction 26, the rotational axis 130 lies parallel to the wheel axis 32. The rotational axis 130 lies transversely, and in particular perpendicularly, to the pivot axis 38 of the cleaning head 34. The brush 128 is formed by a brush roller with corresponding bristles, which emerge from the region of the first housing region 126, which is open at the bottom, and can act on the base 20 to be cleaned.

A closed second housing region 132 is arranged on the first housing region 126. This second housing region receives the drive device 122 to rotate the

brushes 128. The drive device 128 in this case comprises an electric motor 134, which is supplied with electric current by the battery device 112. Lines corresponding thereto from the battery device 112 to the cleaning head 34 are provided.

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The electric motor 134 is dimensioned in such a way that owing to the rotation of the brush roller 128, an assistance of the travel drive is also achieved. For example, the electric motor 134 has a power of at least 150 W with a torque of at least 1.0 Nm at 1600 rpm.

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Cleaning liquid can be fed to the base 20 in the region of the brush 128 by the application device 106. The application device 106 in this case comprises a vessel 136 (Fig. 8), which is non-rotatably seated on the cleaning head 34. The vessel 136 is arranged here above the second housing region 132. The vessel 136 has an annular receiving space 138, which surrounds the journal 40 of the pivot bearing 36. One or more lines for cleaning liquid lead from the receiving space 138 to the brush (brush roller) 128. The receiving space 138 is correspondingly sealed, so that a fluid path 140 (Fig. 10) is formed in a defined manner and is guided past the electric motor 134.

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A pipe 142 with a mouth 144 is connected to the pressure side 104 of the pump device 98. The pipe 142 is, in particular, rigidly configured and, for example, in the form of a connecting piece. The mouth 144 is oriented in such a way that cleaning liquid can lead into the receiving space 138. The position of the line 142 and the mouth 144 with respect to the receiving space 138 depends here on the pivoting position of the cleaning head 34. The pipe 142 and the mouth 144 are arranged and configured in such a way here that in each pivoting position, cleaning liquid, which is provided by means of the pump device 98, flows into the receiving space 138, the angular position of the mouth 144 (as a rotation angle with respect to the pivot axis 30) varying at different pivoting positions. The sealing outlay for injecting cleaning liquid

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into the application device 106 of the pivotable cleaning head 34 is thereby minimized.

5 The suction device 120 comprises a suction beam 146, which is arranged on the cleaning head 34 and can be pivoted with the latter. The suction beam 146 extends in a direction parallel to the first housing region 126. In one position of the cleaning head 34, in which the straight ahead forward travel direction 26 is realised, the suction beam 146 is at least approximately parallel to the wheel axis 32. The suction beam 146 is arranged here behind the
10 brush 128, in other words, it is closer than the brush 128 to the rear end 24. In the straight ahead forward travel direction 26, the suction beam 146 is positioned between the brush 128 and the side 96 of the second tank 92.

The free region between the cleaning head 34 and the second tank 92 is
15 configured in such a way here that the cleaning head, proceeding from the straight ahead forward travel direction 26 (cf. Fig. 7a), is in each case pivotable to the left (indicated by the reference numeral 148) and to the right (indicated by the reference numeral 150) by more than 90° and preferably at least 180° and, in particular, 180° and more.

20 A connection 152 for a hose is arranged on the suction beam 146. A corresponding hose leads from the connection 152 to the turbine device 118 in order to be able to inject sucked up dirty water into the first tank 90. The hose (not shown in the drawing) is configured and guided here in such a way
25 that it does not hinder the pivotability of the cleaning head 34.

Arranged on the cleaning head is a roller device 154, which has at least one support roller. The roller device 154 is, in this case, in particular positioned between the brush 128 and the suction beam 146. During a cleaning
30 operation of the floor cleaning machine 10, the latter is supported by the roller device 154 on the base 20, specifically in such a way that a cleaning process can be carried out by the brush 128. The cleaning head 34 with the roller

device 154 thus forms a front wheel arrangement of the floor cleaning machine 10.

5 A lifting device, designated 156 as a whole, is arranged on the cleaning head 34. The roller device 154 can be folded with the suction beam 146 by this lifting device 156. In a first position, which is a non-operative position, it can be achieved that the floor cleaning machine is supported on the roller device 154 in the region of the cleaning head 34 and the brush 128 is thus not in contact with the base 20. Furthermore, the suction beam 146 is then spaced
10 apart from the base 20. In this non-operative position, the floor cleaning machine 10 can be moved, the brush 128 and the suction beam 146 being treated with care as they do not touch the base.

In a second position, which has already been described above, the roller
15 device 154 is fixably folded in such a way that the suction beam 146 and the brush 128 act on the base 20 to be cleaned.

For transfer between the first position and the second position or vice versa, a foot pedal 158 is provided, in particular.

20 A sensor or switch 160, which detects whether the first position or second position is present, is associated with the cleaning head 34. During the transition from the second position to the first position, a change in the loading on the switch 160 takes place. This can be used in order, in particular,
25 to automatically switch on the suction motor or to switch it off. If an operator mechanically transfers the roller device 154 and the suction beam 146 from the first position (non-operative position) to the second position by means of the foot pedal 158, the suction motor is switched on. If an operator carries out a transfer from the second position into the first position, the suction
30 motor is switched off by means of the switch 160.

The floor cleaning machine 10 according to the invention functions as follows:

An operator can steer and push or pull the floor cleaning machine 10 by means of the steering rod device 48 arranged at the acute angle 34. Thus there results a compact structure, components of the floor cleaning machine 10, such as, for example, the turbine device 118 and the first tank 90 being positioned on and below the steering rod device 48. Elements of the floor cleaning machine 10 with a large mass and, in particular, the battery device 112, can thus be positioned directly above the wheel arrangement 28 and supported accordingly.

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The brush 128 of the cleaning head 34 is driven, specifically about a rotational axis 130, which, in the straight ahead forward travel direction 26, is parallel to the wheel axis 32. With a corresponding rotational direction of the brush 128, this drive ensures a forward movement of the floor cleaning machine 10 as a whole. As a result, the pushing movement of the operator is assisted and the exertion of force is reduced for the operator. Work with little fatigue results.

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The cleaning head 34, in relation to the straight ahead forward travel direction 26, is pivotable to the left and right by at least 180° and, in particular, by more than 180°. As a result, the cleaning head 34 with the brush 128 can also be guided into corner regions that are difficult to access. Furthermore, a change can be made from a straight ahead forward travel direction 26 to an opposite, driven, backward travel direction (without changing the rotational direction of the electric motor 134).

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The steering rod device 48 is, in particular, arranged in a central region in relation to the projection of the holding element 14. It and the steering wheel arrangement 80 do not project beyond a left and right side of the floor cleaning machine 10. This allows the floor cleaning machine 10 to travel into a corner region without the steering limiting the freedom of movement of the floor cleaning machine 10 as a whole (for example by bumping into a wall).

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The energy-consuming elements of the floor cleaning machine 10 are supplied with electrical current by means of the battery device 112. This produces a compact, self-sufficiently usable floor cleaning machine, which can be used with little fatigue by an operator and is thus maneuverable, so regions close to the wall and corner regions can also be effectively cleaned. Both an application of cleaning liquid to a base 20 to be cleaned and a sucking up of dirty water take place.

Owing to the positioning of the holding device 110 for the battery device 112, batteries with a high energy density (with a correspondingly high space requirement) can also be used.

The steering rod device 48, between the end 50 and the end 78, has a length that is greater than the length of the chassis 12 between the front end 22 and the rear end 24. In particular, said length of the steering rod device 48 is at least 1.3 times, preferably at least 1.35 times and preferably at least 1.4 times greater than the length of the chassis 12 between the front end 22 and the rear end 24.

List of reference numerals

	10	floor cleaning machine
	12	chassis
5	14	holding element
	16	first side
	18	second side
	20	base
	22	front end
10	24	rear end
	26	straight ahead forward travel direction
	28	wheel arrangement
	30a	left rear wheel
	30b	right rear wheel
15	32	wheel axis
	34	cleaning head
	36	pivot bearing
	38	pivot axis
	40	journal
20	42	upper region
	44	annular element
	46	recess
	48	steering rod device
	50	end
25	52	joint device
	54	cardan joint
	56	fixing device
	58	eyelet
	60	steering rod
30	62	direction of extent
	64	acute angle
	66	pivot axis

	68	support element
	70	support element
	72	annular element
	74	recess
5	76	support element
	78	rear end
	80	steering wheel arrangement
	82	handle element
	84	second part
10	86	first part
	88	rearmost point
	90	first tank
	92	second tank
	94	free region
15	96	side
	98	pump device
	100	suction side
	102	suction line
	104	pressure side
20	106	application device
	108	free space
	110	holding device
	112	battery device
	114	wall
25	116	charging apparatus
	118	turbine device
	120	suction device
	122	drive device
	124	housing
30	126	first housing region
	128	brush
	130	rotational axis

	132	second housing region
	134	electric motor
	136	vessel
	138	receiving space
5	140	fluid path
	142	pipe
	144	mouth
	146	suction beam
	148	"to the left"
10	150	"to the right"
	152	connection
	154	roller device
	156	lifting device
	158	foot pedal
15	160	switch
	162	first rod element
	164	sleeve
	166	recess
	168	fixing device
20	170	clamping lever
	172	recess
	174	clamping region
	176	contact face
	178	pivot axis
25	180	second rod element
	182	pivot bearing
	184	fixing device
	186	housing casing

P a t e n t k r a v

5 1. Håndført gulvrengøringsmaskine, omfattende et understel (12) med en i forhold til en ligeud-fremadgående køreretning (26) forreste ende (22) og en bagerste ende (24), en hjulindretning (28), som er anbragt på understellet (12) i området ved den bagerste ende (24), og et rengøringshoved (34), som er anbragt svingbart på understellet (12) i området ved den forreste ende (22), **kendetegnet ved** en styrestangindretning (48), som er ledforbundet med rengøringshovedet (34), og som støtter sig på understellet (12), og som strækker sig 10 i en retning fra understellet (12) væg opad mod den bagerste ende (24), og som danner en skubbestangindretning til at skubbe gulvrengøringsmaskinen og/eller en trækstangindretning til at trække gulvrengøringsmaskinen.

15 2. Håndført gulvrengøringsmaskine ifølge krav 1, **kendetegnet ved, at** styrestangindretningen (48) i det mindste afsnitsvis er orienteret i en spids vinkel (64) i forhold til en plan undergrund (20), når gulvrengøringsmaskinen står på den plane undergrund (20) med hjulindretningen (28) og rengøringshovedet (34), og især, at den spidse vinkel (64) ligger i området mellem 30° og 60° og især i området mellem 40° og 50° og især ved mindst tilnærmelsesvis 45°.

20 3. Håndført gulvrengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på styrestangindretningen (48) på eller i nærheden af en ende (70), som vender bort fra et forbindelsessted på rengøringshovedet (34), er anbragt en styrehjulindretning (80), og især, at styrehjulindretningen (80) i en udragning mod en undergrund (20), som gulvrengøringsmaskinen står på, rager ud over den bagerste ende (24) af understellet (12).

30 4. Håndført gulvrengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** styrestangindretningen (48) er udformet til at være fikseret variabel i længden og/eller er fikseret svingbar i forhold til understellet (12), hvor styrestangindretningen (48) er svingbar som helhed og/eller dele (162, 180) af styrestangindretningen (48) er svingbare i forhold til hinanden, og især, at en svingakse (178) af et svingleje (182) af styrestangindretningens (48) svingbarhed er orienteret i det mindste tilnærmelsesvis parallelt med en drejeakse 35 (130) af en børstevalse (128) af rengøringshovedet (34) og/eller en hjulakse (32) af hjulindretningen (28) ved en stilling af styrestangindretningen (48) til

brug for den ligeud-fremadgående køreretning (26), og især, at et svingleje (182) på styrestangindretningen (48) er positioneret oven over en tank (90), som styrestangindretningen (48) er ført forbi og/eller uden for en husbeklædning (186), som er anbragt på understellet (12), og især, at styrestangindretningen (48) har et hylster (164), på hvilket der er anbragt en styrehjulindretning (80), og at et stangelement (162) af styrestangindretningen (48) rager ind i hylsteret (164), hvor en længdeposition af hylsteret (164) kan varieres fikseret på stangelementet (162).

10 **5. Håndført gulv rengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** styrestangindretningen (48) er ledforbundet med rengøringshovedet (34) via en ledindretning (52), og især at ledindretningen (52) omfatter et kardanled (54).**

15 **6. Håndført gulv rengøringsmaskine ifølge krav 5, **kendetegnet ved, at** ledindretningen (52) er anbragt på et svingleje (36) på understellet (12) med henblik på rengøringshovedets (34) svingbarhed.**

20 **7. Håndført gulv rengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på understellet (12) drejefast er monteret mindst et støtteelement (70), som har en udsparring (74) som styrestangindretningen (48) rager ind igennem, og i hvilken styrestangindretningen (48) er drejelig.**

25 **8. Håndført gulv rengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** styrestangindretningen (48) har en styrestang (60) i en eller flere dele, som er ledforbundet med rengøringshovedet (94).**

30 **9. Håndført gulv rengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** understellet (12) har et holdeelement (14), på hvilket rengøringshovedet (34) er anbragt svingbart, og især at holdeelementet (14) er udformet som en holdeplade eller omfatter en holdeplade, og især, at der på holdeelementet (14) er anbragt en første tank (90) og en anden tank (92), hvor den første tank (90) sidder på en første side (16) af holdeelementet (14), og den anden tank (92) sidder på en anden side (18), der ligger over for den første side (16), og hvor den anden side (18) vender mod en undergrund (20), som**

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gulvrenghøringsmaskinen står på, og især, at styrestangindretningen (48) støtter sig på den første side (16), og især at styrestangindretningen (48) løfter sig over den første side (16), og især, at den første tank (90) er formet således, at der er dannet et frirum, som styrestangindretningen (48) er ført ind igennem, og især, at hjulindretningen (28) er anbragt på den anden side (18), og især, at den anden tank (92) i sin form er tilpasset til hjulindretningen (28), og især, at den anden tank (92) er formet således, at der er dannet et frirum for rengøringshovedets (34) svingbarhed, og især at den første tank (90) er en snavsetvandstank, og den anden tank (92) er en rengøringsvæsketank.

10. Håndført gulvrenghøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på understellet (12) og især på et holdeelement (14) af understellet (12) er anbragt en holdeindretning (110) til en batteriindretning, og især at holdeindretningen (110) er anbragt over hjulindretningen (28), og især, at holdeindretningen (110) rager ud opadtil fra en første side (16) af holdeelementet (14), hvor den første side (16) vender bort fra en anden side (18), som vender mod en undergrund (20), som gulvrenghøringsmaskinen står på, og især, at holdeindretningen (110) har en væg (114), som er orienteret på tværs af den første side (16) af holdeelementet (14), og især, at holdeindretningen (110) omfatter et holdeområde til en ladeindretning (116) til batteriindretningen (112), og især, at ladeindretningen (116) i forhold til en retning mellem den forreste ende (22) og den bagerste ende (24) af understellet (12) er anbragt nærmere ved den bagerste ende end batteriindretningen (112).

11. Håndført gulvrenghøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på understellet (12) og især på et holdeelement (14) af understellet (12) er anbragt en turbineindretning (118) til opsugning af snavsetvand, hvilken er i fluidvirksom forbindelse med en snavsetvandtank (90) og rengøringshovedet (34), og/eller at der på understellet (12) og især på et holdeelement (14) af understellet (12) er anbragt en pumpeindretning (98), som er i fluidvirksom forbindelse med en rengøringsvæsketank (92) og rengøringshovedet (34).

12. Håndført gulvrenghøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** rengøringshovedet (34) har mindst en drevet børste (18) og især børstevalse, og især, at en drejebakke (130) for den mindst ene børste

(118) ved den ligeud-fremadgående køreretning (26) er orienteret parallelt med en hjulakse (32) for hjulindretningen (28).

5 **13.** Håndført gulvrenngøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** styrestangindretningen (48) har en maksimal længde mellem et forbindelsessted på rengøringshovedet (34) og en bagerste ende (78), som er mindst 1,3 gange så stor som en længde af understellet (12) mellem den forreste ende (22) og den bagerste ende (24).

10 **14.** Håndført gulvrenngøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** en svingakse (38) af rengøringshovedets (34) svingbarhed er orienteret på tværs af og især vinkelret på en hjulakse (32) for hjulindretningen (28).

15 **15.** Håndført gulvrenngøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på rengøringshovedet (34) er anbragt mindst en børste (128), og der er anbragt en drivindretning (122) til en drevet drejning af den mindst ene børste (128).

20 **16.** Håndført gulvrenngøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** rengøringshovedet (34) i forhold til den ligeud-fremadgående køreretning (26) kan svinges mod venstre og/eller mod højre respektivt med mere end 90° og især med mindst 180°, og især, at rengøringshovedet (34) kan svinge med mere end 180°, og især, at drivindretningen (122) har mindst
25 en elektromotor (134), som via en batteriindretning (112), som er anbragt på understellet (12), er forsynet med elektrisk strøm.

30 **17.** Håndført gulvrenngøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på rengøringshovedet (34) er anbragt en påføringsindretning (106) til rengøringsvæske, som er i fluidvirksom forbindelse med en tank (92), der er anbragt på understellet (12), og især, at påføringsindretningen (106) har en potte (136), som er anbragt drejefast på rengøringshovedet (34) og i hvilken der udmunder mindst en ledning (142), som er i fluidvirksom forbindelse med tanken (92) til rengøringsvæske, og især, at en position af en
35 munding (144) af den mindst ene ledning (142) i potten (138) er afhængig af en svingposition af rengøringshovedet (34) i forhold til understellet (12), og

især, at potten (138) sidder på et svingleje (36) på understellet (12) til brug for rengøringshovedets (34) svingbarhed, og især, at potten (138) har et ringområde, som omgiver svinglejet (36).

5 **18.** Håndført gulvrengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på rengøringshovedet (34) er anbragt en opsugningsindretning (120), som er i fluidvirksom forbindelse med en tank (90) til snavsetvand, der er anbragt på understellet (12), og især, at opsugningsindretningen (120) omfatter mindst en sugebjælke (146), som er anbragt på rengøringshovedet (34), og især, **kendetegnet ved** en løfteindretning (156) til den mindst ene sugebjælke (146), som er anbragt på rengøringshovedet (34), og især, at løfteindretningen (156) omfatter en fodpedal (158), og især, at der til løfteindretningen (158) er knyttet en sensor eller kontakt (160), hvor et sensorsignal eller et omskiftersignal bevirker en start og/eller et stop af en sugemotor.

15 **19.** Håndført gulvrengøringsmaskine ifølge et af de foregående krav, **kendetegnet ved, at** der på rengøringshovedet (34) er anbragt en rulleindretning (154), som har mindst en første stilling og anden stilling, hvor gulvrengøringsmaskinen i den første stilling støtter sig på rulleindretningen (154) og den mindst ene børste (128) ikke er i kontakt med en undergrund (20), som gulvrengøringsmaskinen står på, og den mindst ene børste (128) i den anden stilling indvirker på undergrunden.

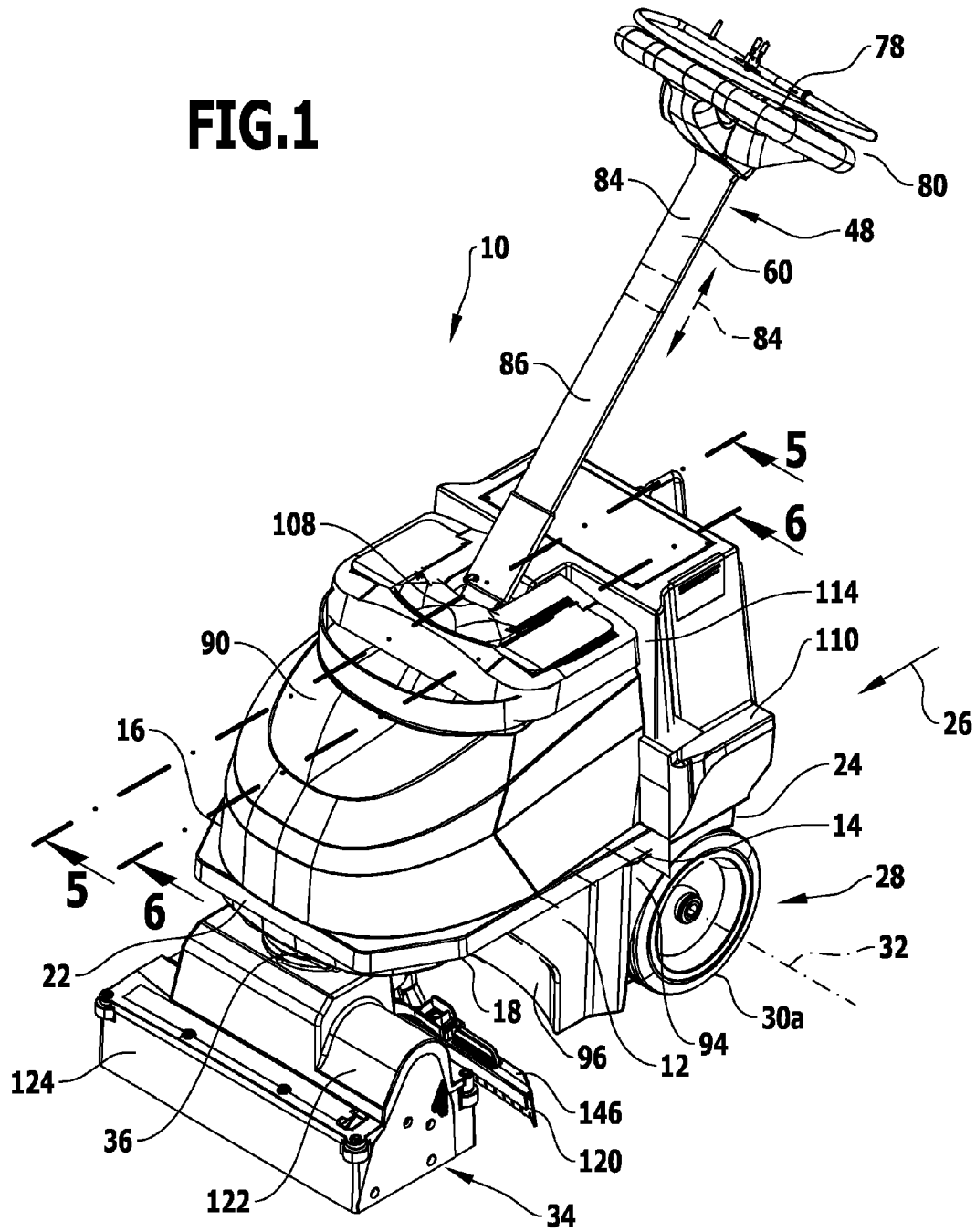
FIG.1

FIG.2

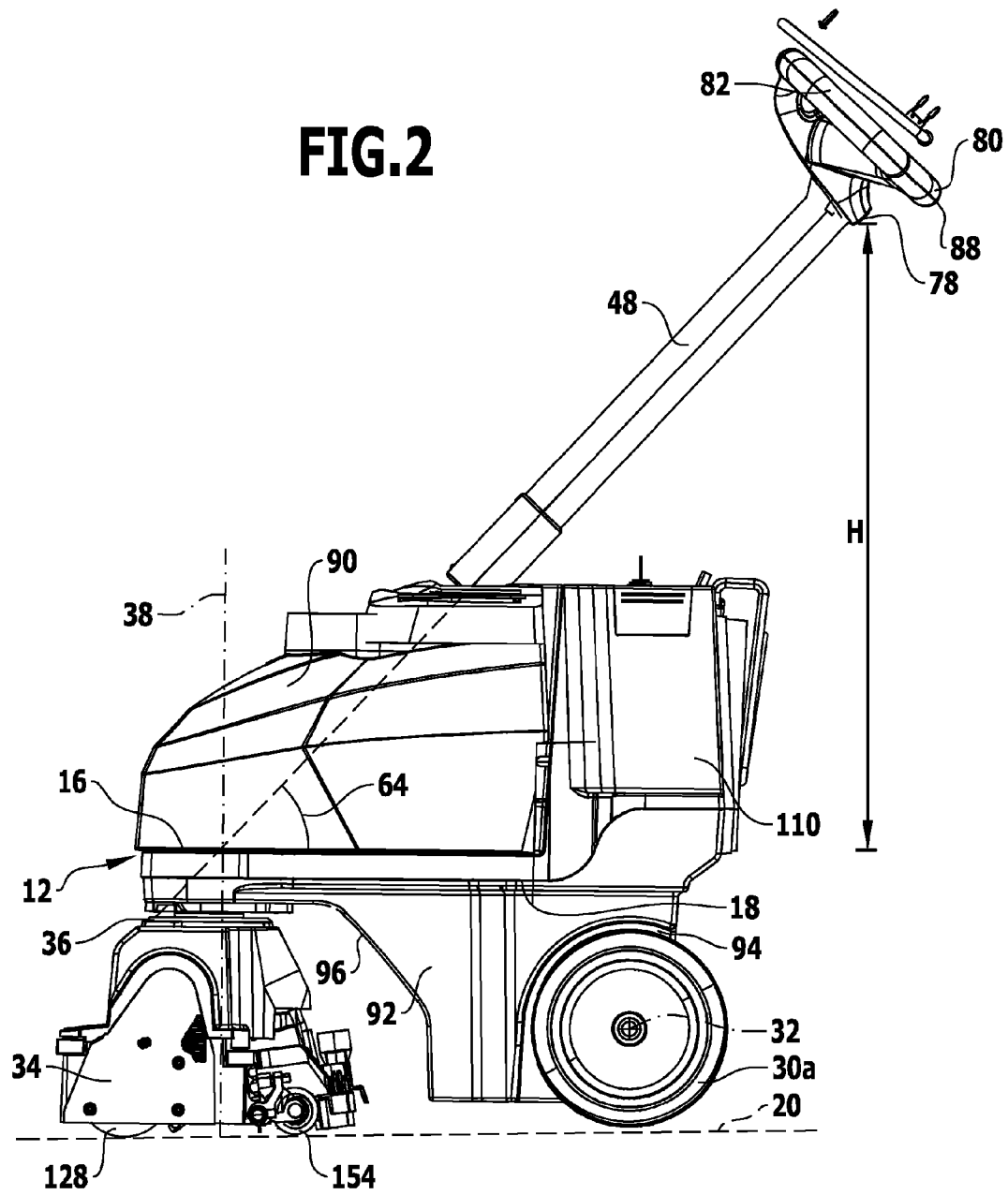


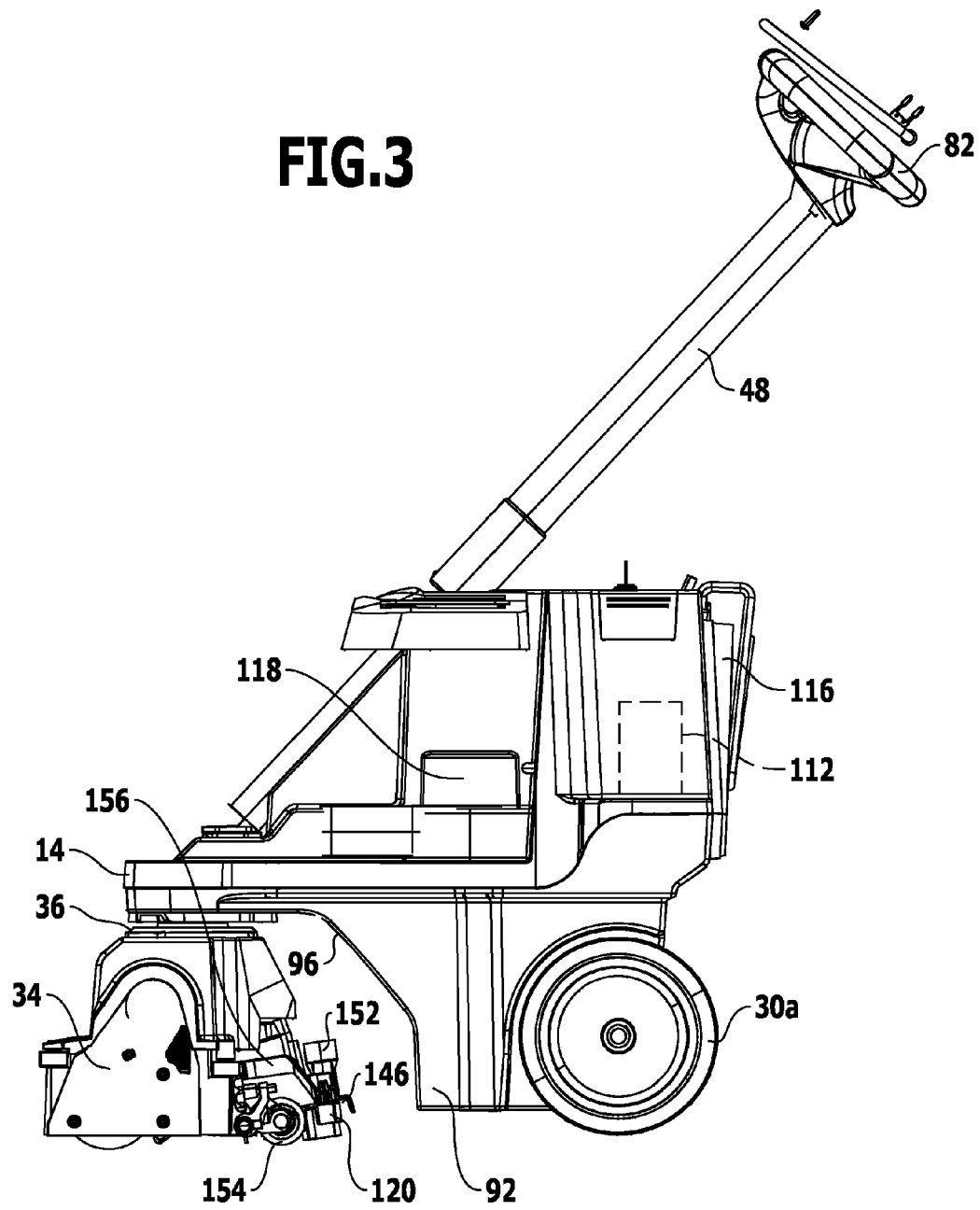
FIG.3

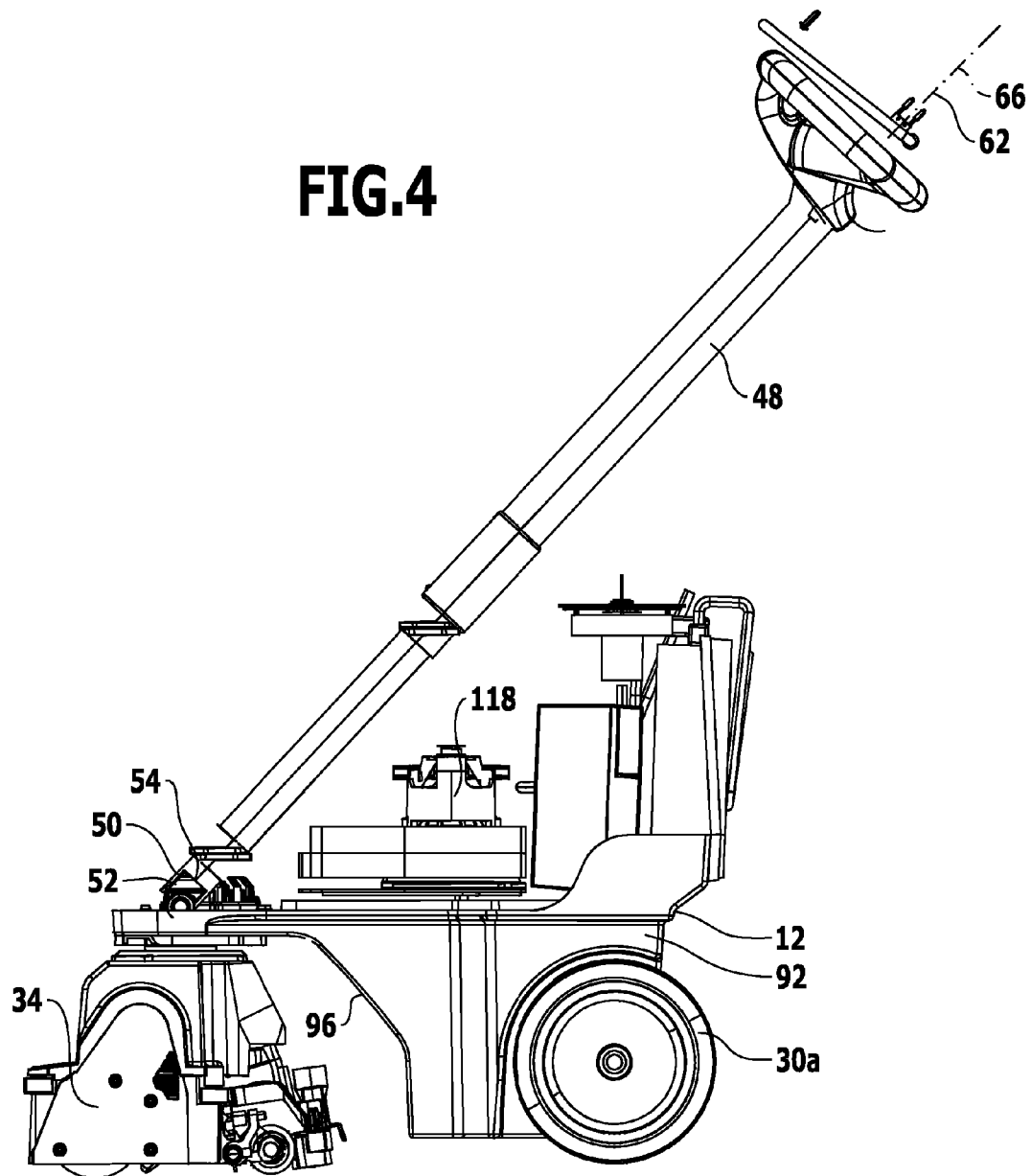
FIG.4

FIG.5

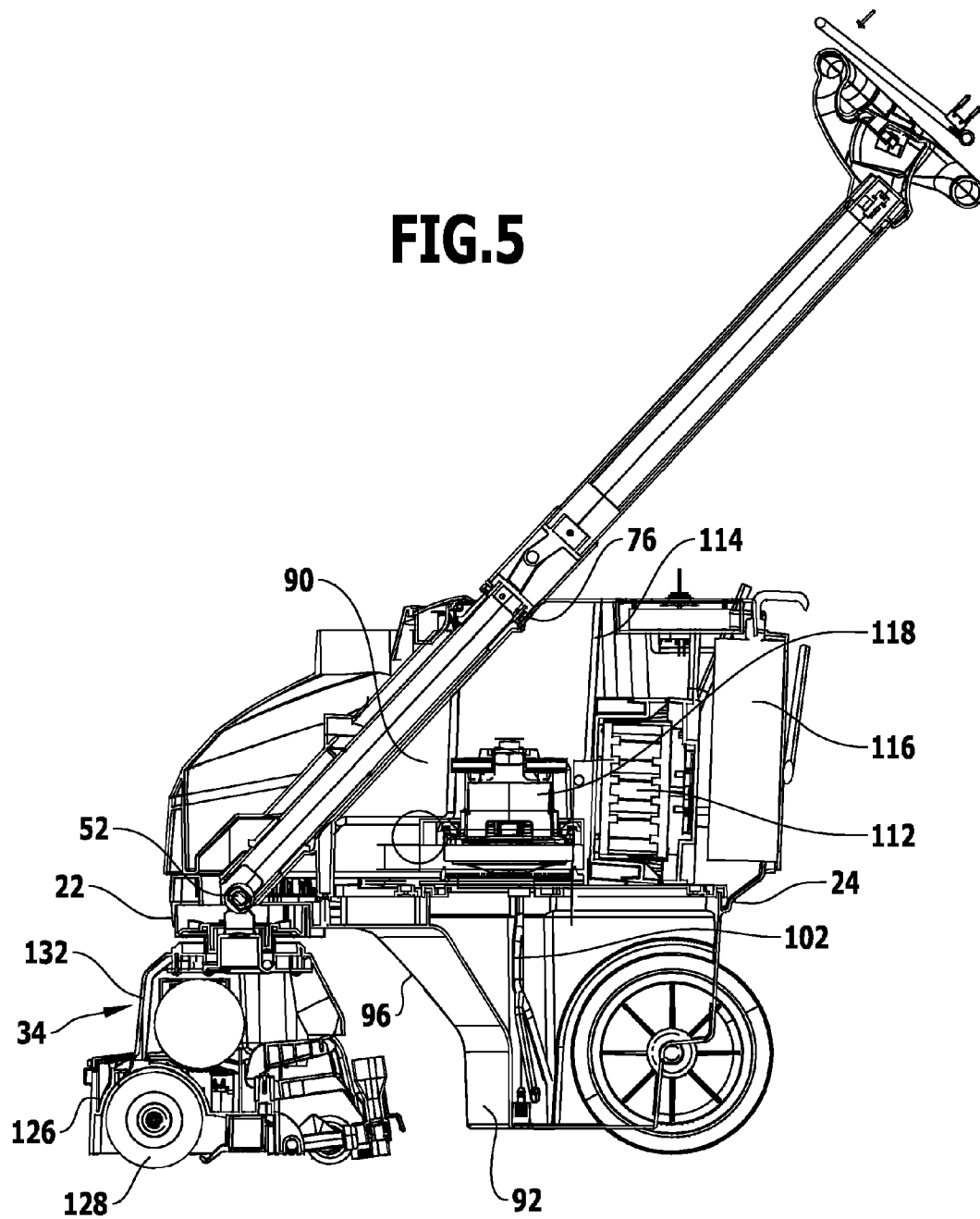


FIG.6

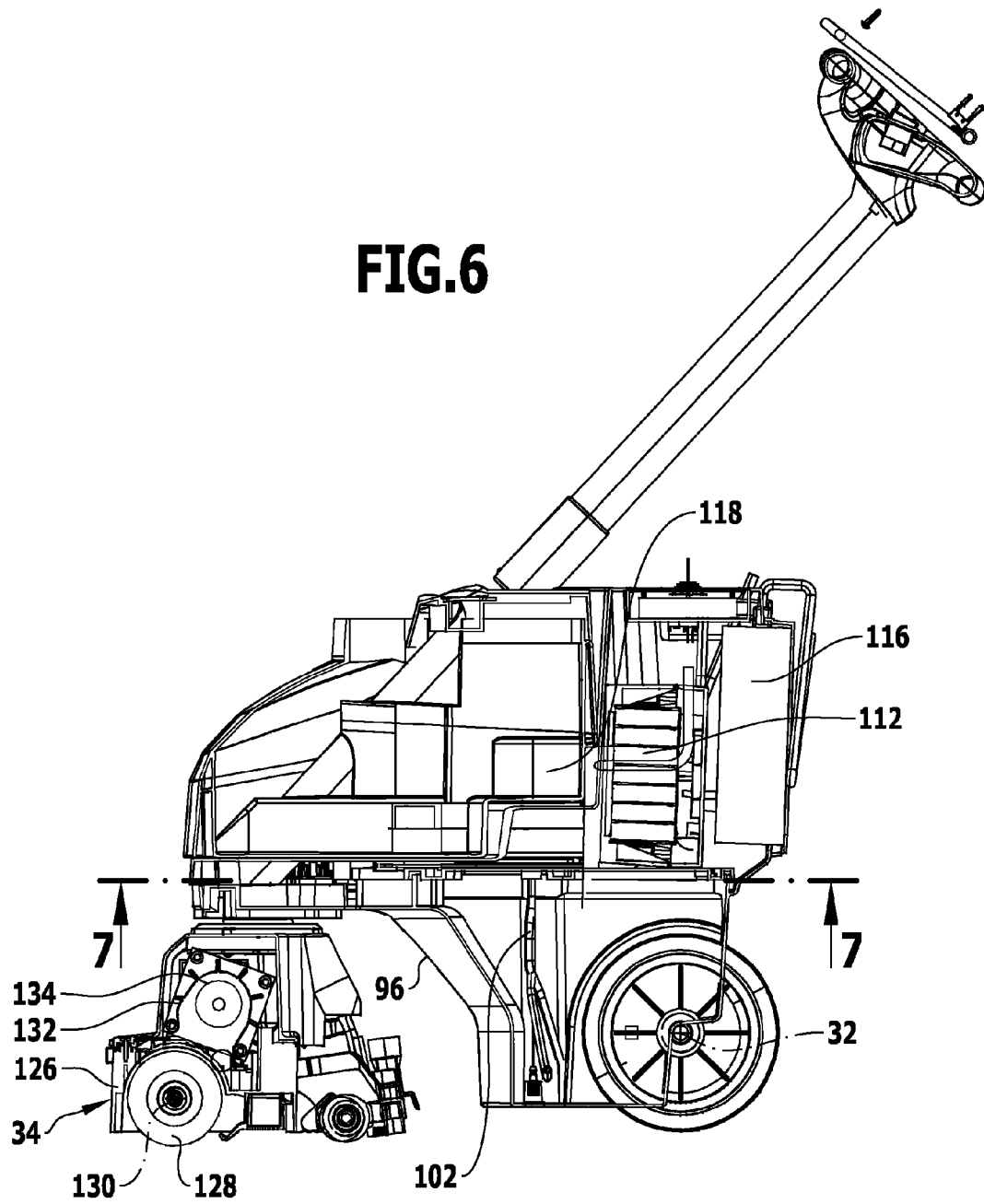


FIG.7

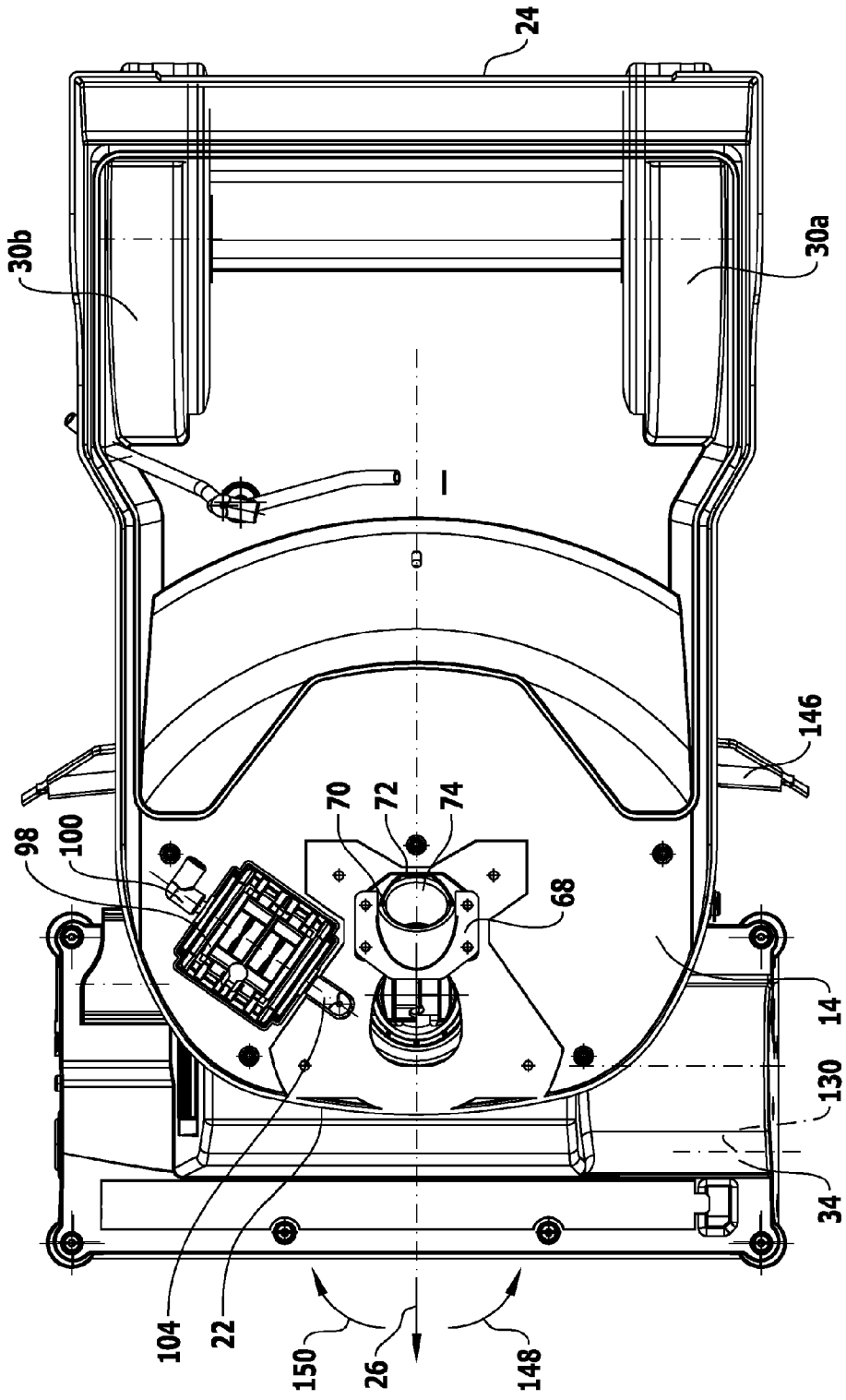


FIG.8

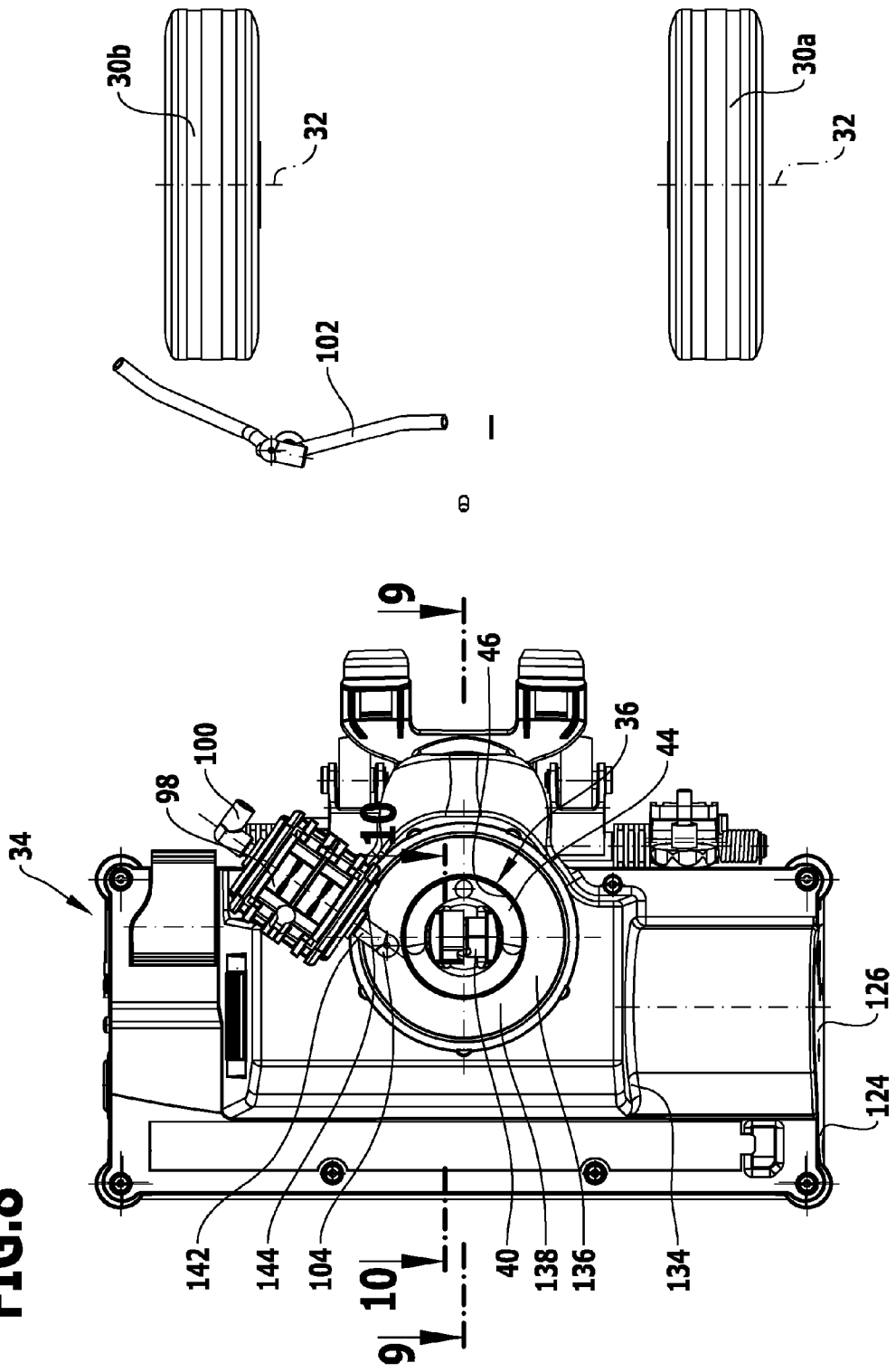


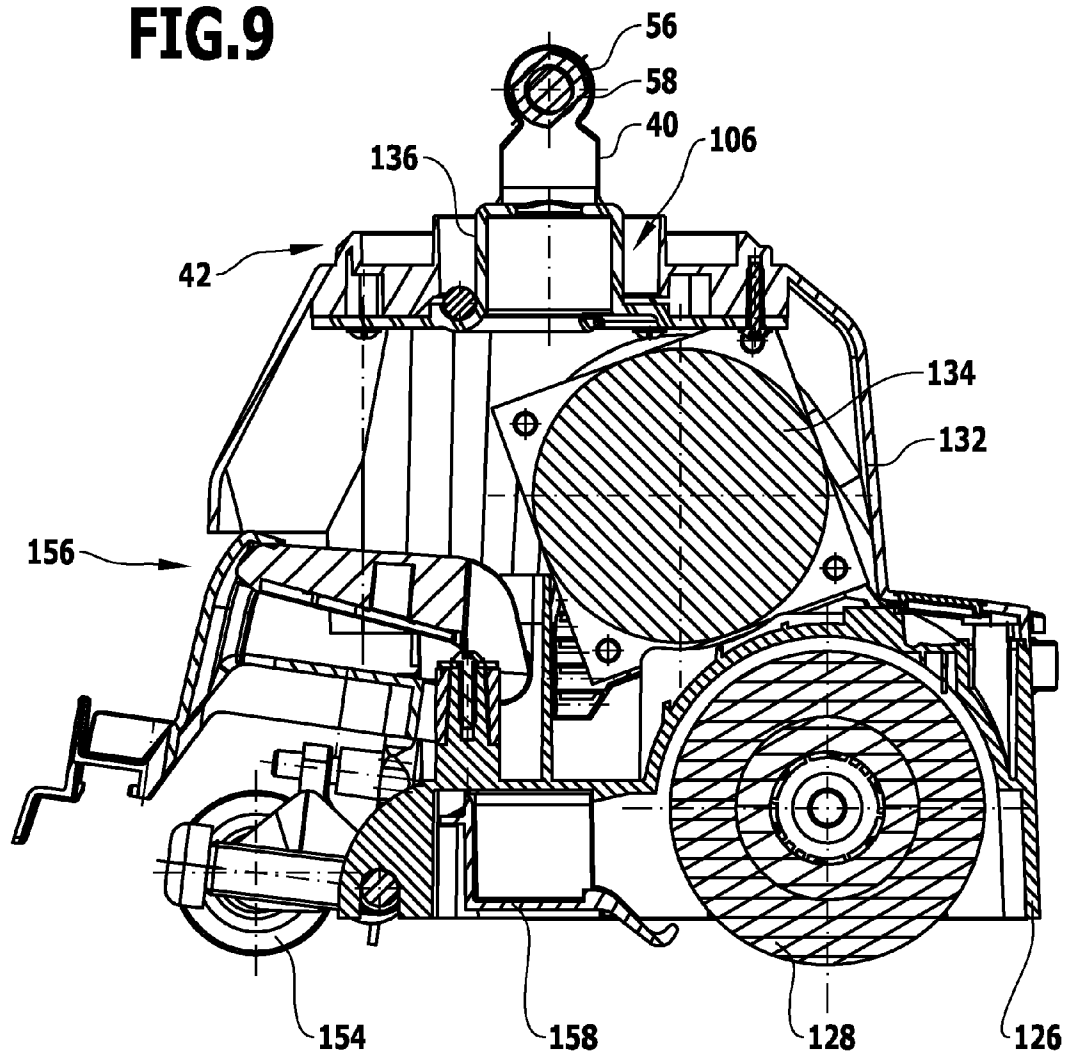
FIG.9

FIG.10