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(54) A MACHINE FOR WASHING FLOORS

(57) The invention relates to a machine (10) for washing floors, comprising a support structure (14) for a washing unit (12), wherein the washing unit (12) comprises a motor (100), which drives at least one brush (72, 74) and an apparatus (92, 94) for conveying the solid or liquid dirt. In the machine (10), the rotating brush (72, 74) lifts both

the liquid and solid dirt and projects it onto the conveying apparatus (92, 94), which is driven by said motor (100), to rotate in the opposite direction to the brush (72, 74) so as to take said dirt, by means of a centrifugal force, into a container (90) associated with the washing unit (12).

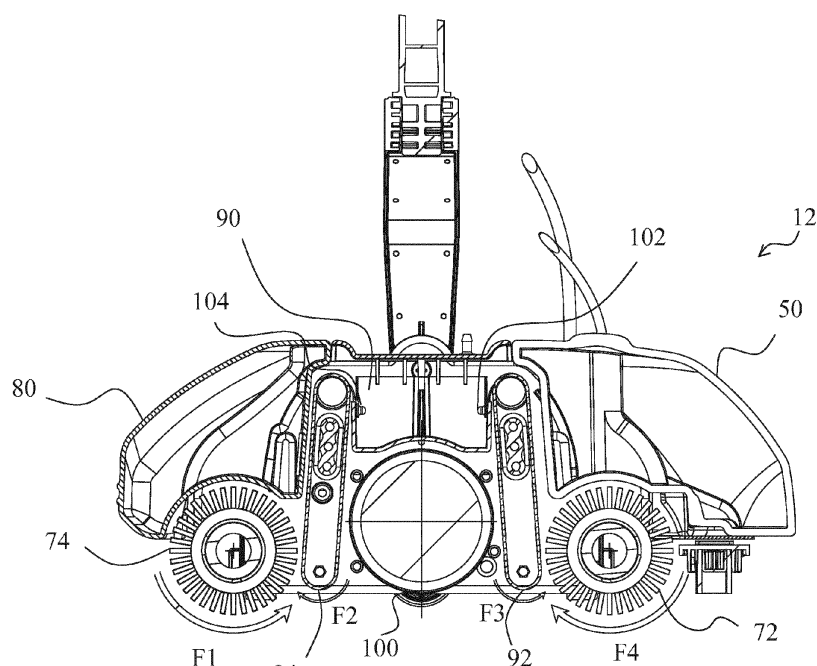


FIG 2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a machine for washing floors.

BACKGROUND ART

[0002] Various types of machines are known for washing floors, operable by an operator inside the areas to be cleaned.

[0003] A known type comprises a washing unit, which houses a motor for actuating one or more circular brushes, acting on a surface to be cleaned, typically a floor, and means for releasing a cleaning liquid with a relative filling tank, means for sucking in the cleaning liquid after being rubbed onto said surface and a relative collection tank.

[0004] Such machines further comprise a support frame to which the washing unit is connected, allowing the movements thereof by means of wheels. A handlebar or handle is also connected to the machine body for an operator to command and control the machine.

[0005] It is an object of the present invention to provide a machine for washing floors, which allows an increase in the cleaning performance and flexibility of use with respect to existing machines for washing floors.

[0006] It is a further object of the present invention to provide a machine for washing floors, which allows an increase in the productivity of use with respect to existing machines for washing floors.

BRIEF SUMMARY OF THE INVENTION

[0007] These and other objects are achieved, in particular, with a machine for washing floors, comprising a support structure for a washing unit, where the washing unit comprises a motor, which drives at least one brush to rotate, acting on at least one conveying apparatus (92,94) for conveying the solid or liquid dirt, characterized in that the rotating brush lifts the solid and liquid dirt and projects it onto the conveying apparatus, wherein said conveying apparatus is driven by said motor to move in the opposite direction to the rotation direction of the brush to which it is coupled, so as to take said solid and liquid dirt, by means of a centrifugal force, into a container associated with the washing unit.

[0008] According to one embodiment of the invention, the motor drives a pair of brushes, wherein each of the brushes is symmetrically coupled to a respective conveying apparatus for conveying the dirt into the container to form a respective mechanical recovery unit for the solid and liquid dirt.

[0009] According to another embodiment of the invention, each conveying apparatus for conveying the dirt into the container comprises a conveyor belt driven by the motor.

[0010] An advantage of this solution is given by the fact that the described machine generates a mechanical recovery of the solid and liquid dirt and said mechanical recovery reduces the quantity of water to be sucked in through the rubber blades or scrapers, allowing a less powerful suction motor and a more efficient drying.

[0011] A further important advantage of the described solution is that it allows excellent washing performance, also on carpets.

[0012] A further advantage given by the mechanical recovery for the dirt is that it also offers a pre-brushing function, thus allowing the drying function of the rubber blades to be maintained, which, as happens with traditional washer-driers, is constantly challenged by solid particles of dirt lodged between the blades, with a consequent loss in the drying performance.

[0013] Further features of the invention can be deduced from the dependent claims.

BRIEF DESCRIPTION OF THE FIGURES

[0014] Further features and advantages of the invention will become apparent from a reading of the following description, given by way of a non-limiting example, with the aid of the figures illustrated in the appended tables, wherein:

- figure 1 illustrates a front view of a machine for washing floors according to one embodiment of the invention;
- figure 2 illustrates a sectional view along a vertical plane of a washing unit belonging to the machine in figure 1;
- figure 3 illustrates a view from below of a washing unit belonging to the machine in figure 1;
- figure 4 illustrates a further axonometric view of the machine in figure 1;
- figures 5-6 illustrate axonometric views of the washing unit belonging to the machine in figure 1; and
- figure 7 illustrates a side view of the machine in figure 1.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE PRESENT INVENTION

[0015] The invention will now be described with initial reference to figures 1 and 2.

[0016] A machine for washing floors is shown in said figures, globally indicated with numerical reference 10.

[0017] The machine 10 comprises a support structure 14 for a washing unit 12.

[0018] The support structure 14 comprises an adjustable handle 15 provided with a handgrip 20. The handle 15 can take different inclined positions, exploiting the presence of the hinge 17.

[0019] A suction unit 40 is positioned on the handle 15.

[0020] Preferably, the suction unit 40 is connected to a suction recovery tank 50 by means of a suction tube 45.

[0021] A battery 30 is positioned on the handle 15 to provide the washing machine 10 with operational autonomy.

[0022] The washing unit 12, more clearly visible in the section in figure 2, and in figure 3, comprises a motor 100, which drives at least one brush 72, 74 and at least one apparatus 92,94 for conveying the solid or liquid dirt.

[0023] Each rotating brush 72, 74 lifts both the liquid dirt and the solid dirt and projects it onto the conveying apparatus 92,94, which rotates in the opposite direction to the brush 72,74 and takes said dirt, by means of a centrifugal force, into a container 90 associated with the washing unit 12.

[0024] Preferably, the washing unit 12 has a symmetrical structure formed by a pair of brushes 72,74 each of the brushes 72,74 is coupled to a respective conveying apparatus 92,94 for conveying the dirt into the container 90 to allow the washing machine 10 to function in both directions of travel.

[0025] The conveying apparatus 92,94 for conveying the dirt into the container 90 comprises a conveyor belt driven by the motor 100.

[0026] Each conveyor belt 92,94 is associated with a respective scraping member 102,104 adapted to recover the solid or liquid dirt and convey it into the container 90.

[0027] Figures 4 and 7 offer additional views of the machine 10 from different angles to better appreciate the overall structure thereof.

[0028] The washing unit 12 further comprises a tank 80 for containing a liquid detergent, in particular an aqueous solution of a detergent for floors (figures 5 and 6).

[0029] The dispensing of the detergent during operation of the machine 10 allows the dirty liquid to be collected, in an immediately successive step, by means of the rotating brushes 72,74, and deposited on the active surfaces of the conveyor belts 92,94, and then collected by the respective scraping members 102,104 and finally deposited in the container 90.

[0030] The suction unit 40 is designed to allow a bi-directional suction function, enabling the machine 10 to work in both directions since the operator can adjust the handle 15, exploiting the hinge 17.

[0031] This feature allows the opposite ends of areas where the floor is being cleaned to be reached easily.

[0032] In particular, the motor 100 is placed below the container 90 and it is placed between two symmetrical mechanical recovery units for the solid and liquid dirt, each comprising a respective conveying apparatus 92,94 associated with the relative brush 72,74.

[0033] This element complex is contained inside the washing unit 12 so that the suction unit 40 can act symmetrically on the elements of the washing unit 12, allowing the machine 10 to work in both directions.

[0034] The washing unit 12 also comprises a squeegee 60, or wiping member, which cooperates with the washing unit 12 to increase the performance of the machine 10.

[0035] The machine 10 concentrates the concept of

mechanical recovery for dirt with the concept of bi-directional suction into highly reduced dimensions with respect to the market standard.

[0036] Such result was also obtained by positioning the suction unit on the handle 15 to create a highly ergonomic product.

[0037] The concepts of mechanical recovery, bi-directional suction and compact dimensions create a highly versatile and innovative product.

[0038] The development and combination of these technical concepts has enabled the creation of a multi-purpose machine, which allows all types of floors to be washed, with a pre-brushing function, which results in elevated machine productivity.

[0039] In fact, it avoids the need for manual floor brushing (as is the case with traditional machines).

[0040] Furthermore, the configuration of the machine 10 allows a significant reduction in the maintenance of the suction blades.

[0041] Clearly, modifications or improvements dictated by contingent or specific needs can be made to the invention thus described, without thereby departing from the scope of the invention as claimed below.

Claims

1. A machine (10) for washing floors, comprising a support structure (14) for a washing unit (12), wherein the washing unit (12) comprises a motor (100), which drives at least one brush (72,74) to rotate, and acts on at least one apparatus (92,94) for conveying the solid or liquid dirt, **characterized in that** the rotating brush (72,74) lifts the solid and liquid dirt and projects it onto the conveying apparatus (92,94), wherein said conveying apparatus (92,94) is driven by said motor (100) to move in the opposite direction to the rotation direction of the brush (72,74) to which it is coupled, so as to take said solid and liquid dirt, by means of a centrifugal force, into a container (90) associated with the washing unit (12).
2. A machine (10) according to claim 1, wherein the motor (100) drives a pair of brushes (72,74), wherein each of the brushes is symmetrically coupled to a respective conveying apparatus (92,94) for conveying the dirt into the container (90) to form a respective mechanical recovery unit for the solid and liquid dirt.
3. A machine (10) according to claims 1 or 2, wherein each conveying apparatus (92,94) for conveying the dirt into the container (90) comprises a conveyor belt driven by the motor (100).
4. A machine (10) according to claim 3, wherein each conveyor belt of the respective conveying apparatus (92,94) is associated with a scraping member (102,104) adapted to recover the solid or liquid dirt

and convey it into the container (90).

5. A machine (10) according to claim 1, wherein the support structure (14) comprises an adjustable handle (15) provided with a handgrip (20). 5
6. A machine (10) according to claim 5, wherein a suction unit (40) is positioned on the adjustable handle (15), the suction unit (40) being connected by a suction tube (45) to a suction recovery tank (50) . 10
7. A machine (10) according to claim 6, wherein the motor (100) is placed at the bottom of the container (90) for containing solid and liquid dirt and it is located between two symmetrical units for mechanically recovering the solid and liquid dirt, each comprising a respective conveying apparatus (92,94) associated with the corresponding brush (72,74), the whole being inside the washing unit (12) so that the suction unit (40) can symmetrically act on the members of the washing unit (12) to allow the machine (10) to work in both directions. 15
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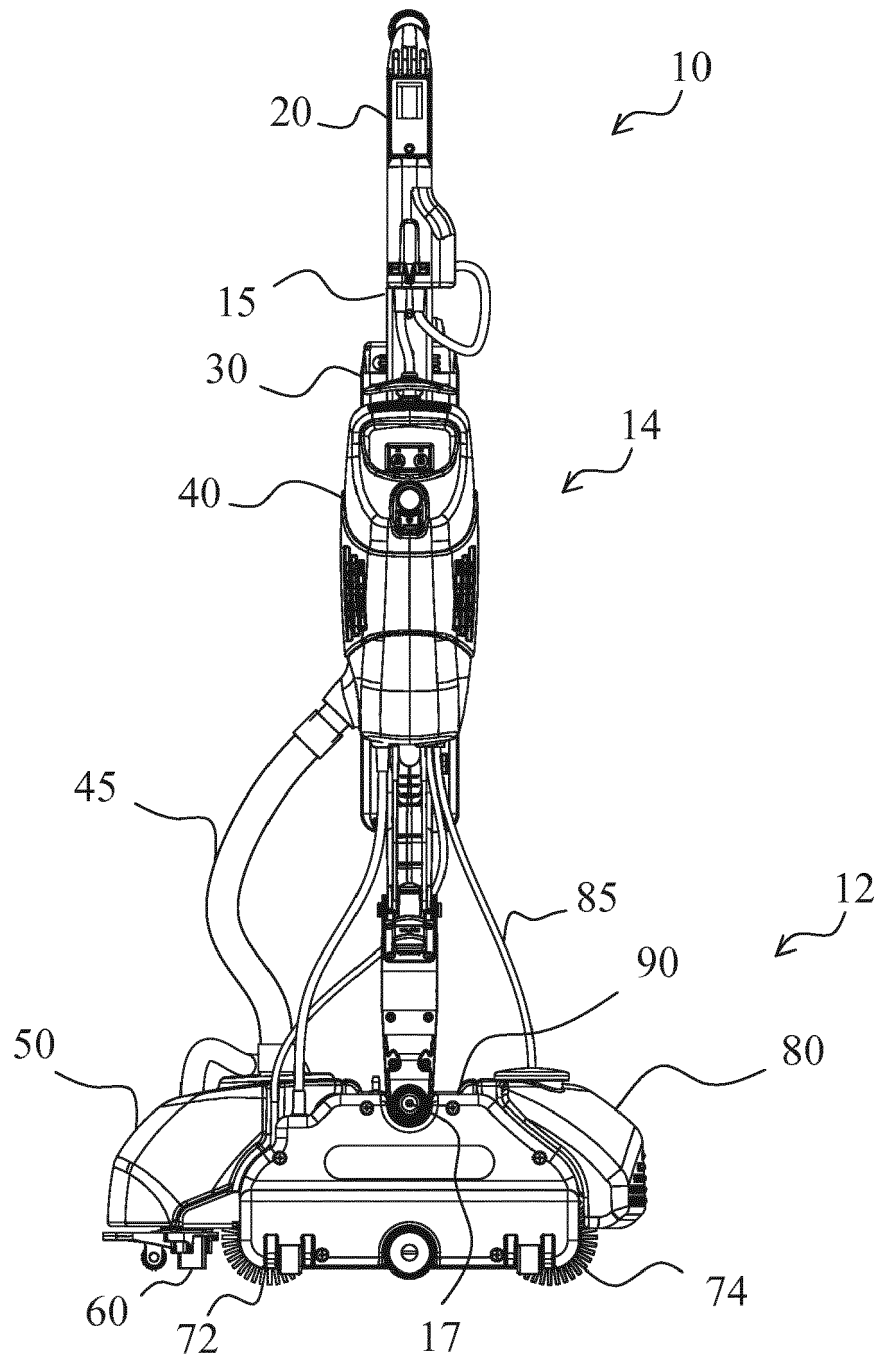


FIG 1

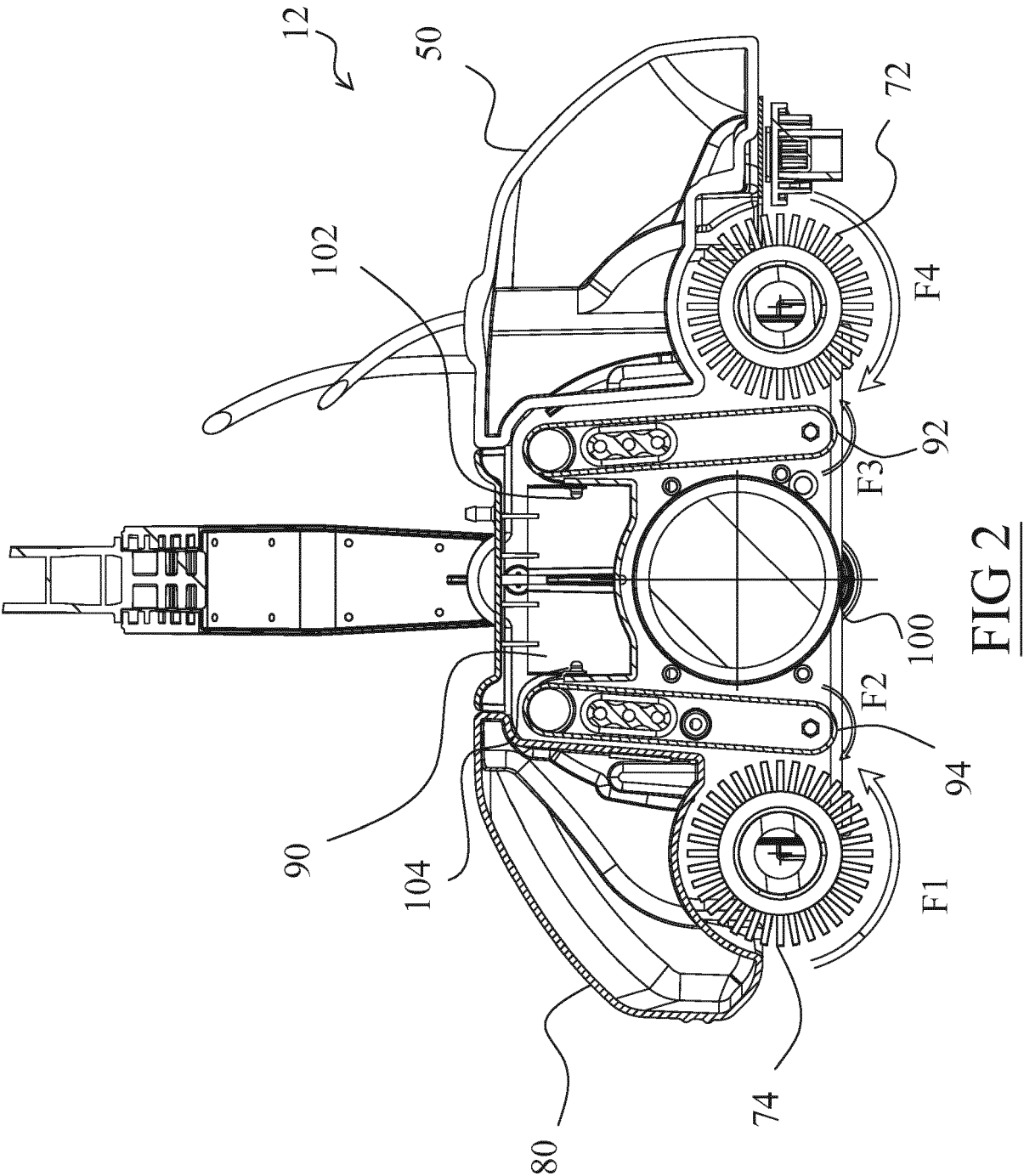


FIG 2

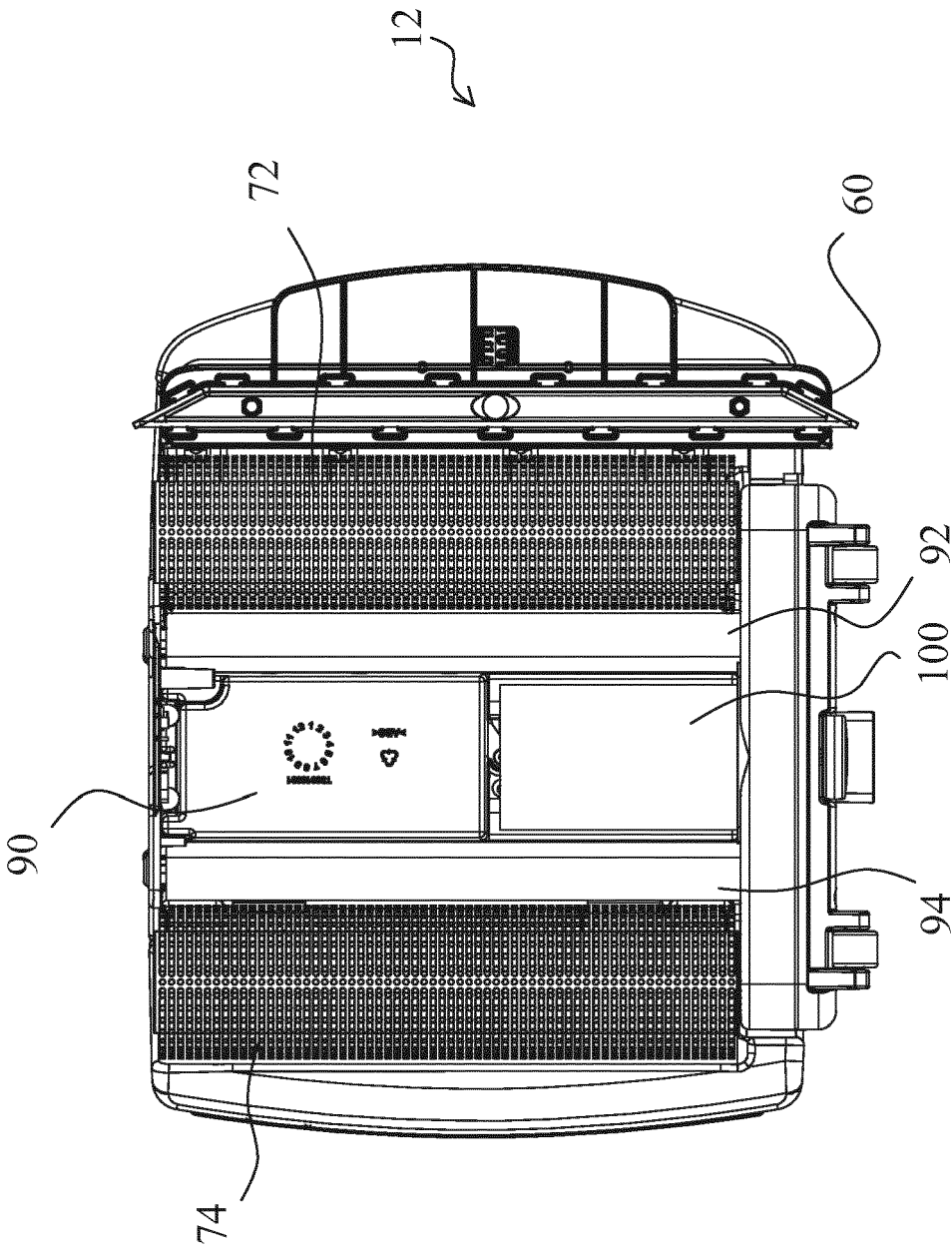


FIG 3

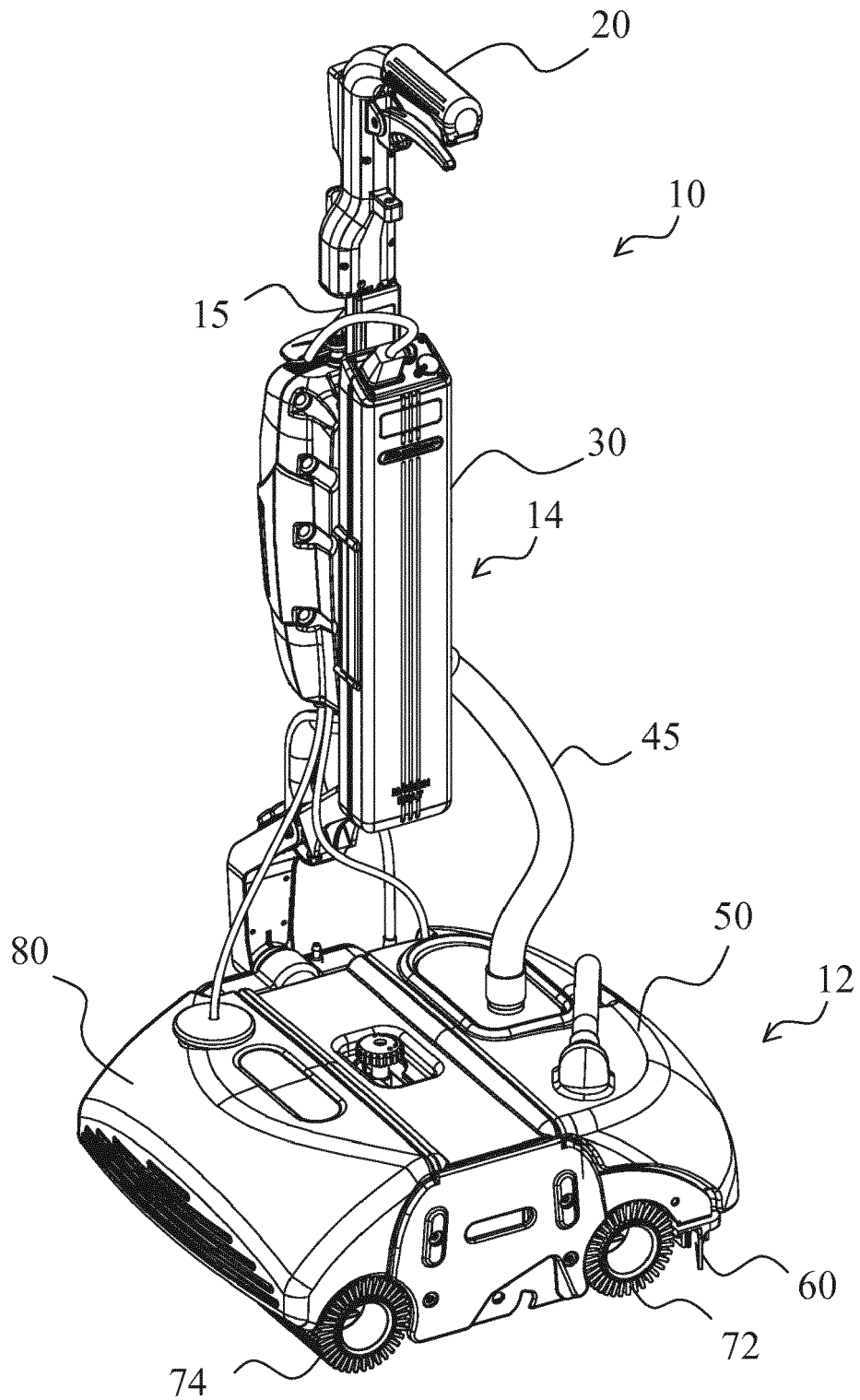


FIG 4

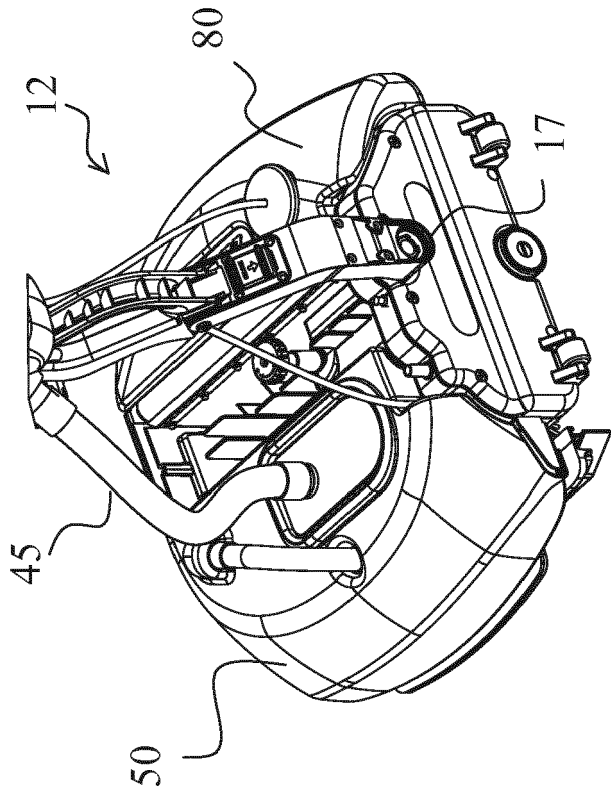


FIG 6

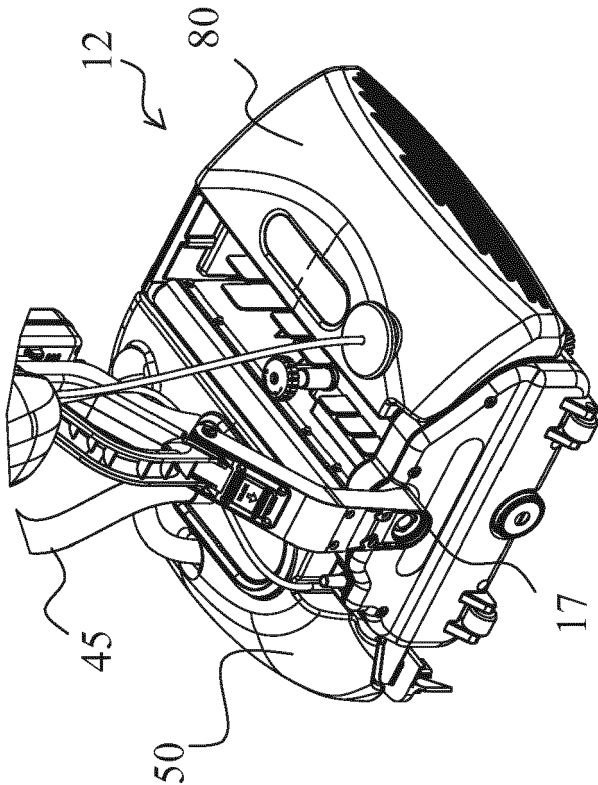


FIG 5

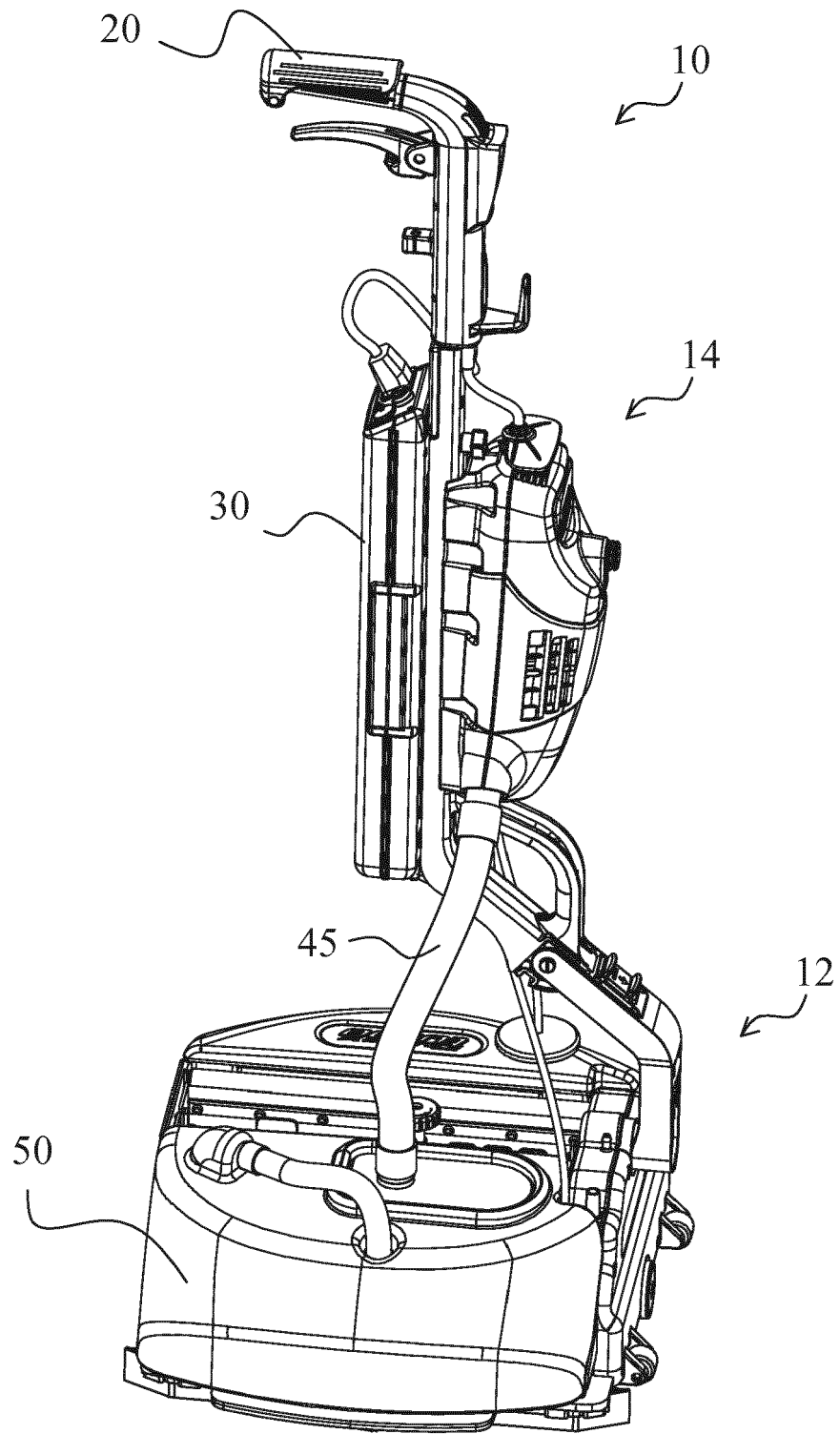


FIG 7



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Application Number
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Place of search Munich		Date of completion of the search 9 August 2019	Examiner Lopez Vega, Javier
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