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(54) Floor-treating machine

(57) The present invention is directed to a floor-treating machine, comprising: a frame (70), a housing (62) attached to the frame (70) and rotatable about a substantially vertical axis, one or more heads (64) mounted in the housing (62) and rotatable about a substantially vertical axis, a motor (50) with a motor shaft (51) for driving a housing shaft (54), said housing shaft (54) connected to the one ore more heads (64) by means of a transmission, an auxiliary shaft (57) for driving the housing (62), characterized in that the auxiliary shaft (57) is connected via a first auxiliary transmission (52, 53, 55, 56) to the housing shaft (54) and via a second auxiliary transmission (58, 59, 60) to the housing (62).

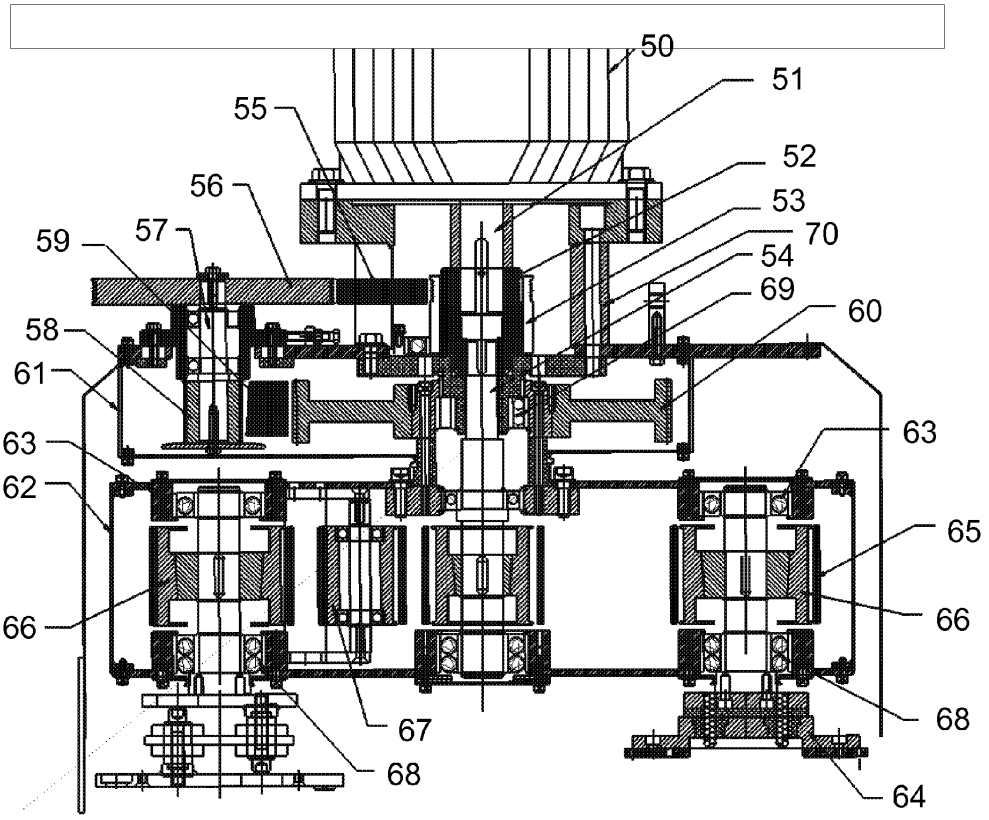

FIG 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a floor-treating machine, more particular a floor grinding, polishing or surfacing machine.

BACKGROUND OF THE INVENTION

[0002] Conventional floor-treating machines usually comprise a frame, a housing attached to the frame, one or more heads holding an abrasive disk mounted in the housing and rotatable about a substantially vertical axis, and a motor for driving the heads.

[0003] A general disadvantage of such conventional floor-treating machine is that it is difficult to operate due to its relatively unstable behavior.

[0004] Therefore, floor-treating machine were developed of which the housing is rotatable about a substantially vertical axis such that the housing rotates in one direction and the heads rotate in the reverse direction (so-called contra-rotation) via respective transmissions.

[0005] However, a great disadvantage of these machines is that the two belt transmissions used in such machine for driving the heads and housing are usually situated inside the housing, making these belt transmissions relatively inaccessible. Particularly, this is a drawback with regards to the belt transmission which drives the housing. This belt transmission has a relatively high risk of breaking, particularly if the floor-treating machine is used on an uneven floor or a floor with protrusions and the like. Replacing the belt for this transmission is rather time-consuming, in view of the difficulty to get access to it.

[0006] In an attempt to overcome the above problem, W00187540 proposes a floor-treating machine wherein the motor is centrally positioned and wherein the housing is driven by an auxiliary shaft which is positioned in parallel to and at a distance from the center axis of the frame and which is connected via a first auxiliary belt transmission to the motor shaft and via a second auxiliary belt transmission to the housing. These auxiliary belt transmissions for driving the housing are mounted outside the housing.

[0007] However, a first drawback of the floor-treating machine as described in the above patent application is that, because the first auxiliary transmission is connected to the motor shaft, assembling and maintaining this machine is difficult and time consuming. A person skilled in the art will recognize that, on the one hand, in order to install the transmission belt connecting the auxiliary shaft and the motor shaft, obviously the motor has to be mounted. On the other hand, if the motor is already mounted, obviously the transmission belt cannot be installed around the motor shaft. Consequently, the only way proper way to decently install motor and transmission belt is mounting them simultaneously, which is obviously quit difficult and time consuming. So, if during maintenance the auxiliary transmission belts have to be changed, always motor and first auxiliary transmission belt have to dismounted and mounted simultaneously.

[0008] A second drawback caused by the fact that motor and first auxiliary transmission belt have to mounted simultaneously, is that completely pre-assembling the frame including housing is impossible. With respect to ease and cost of transportation, it would be beneficial if the frame including housing could be pre-assembled completely. Moreover, it would be beneficial with respect to dealer's convenience that dealers upon receiving the motor and the pre-assembled frame including housing simply would have to install the motor on the frame to make the machine ready for use.

[0009] Therefore, considering the above drawbacks, it is a first object of the present invention to provide a floor-treating machine of which assembling and maintenance is less difficult and less time consuming.

[0010] It is another object of the present invention to provide a floor-treating machine of which frame including housing can be completely pre-assembled resulting in easier transportation, transportation cost saving, and ease of installation of the motor to make the machine ready for use.

[0011] Further, it is another object of the present invention to provide a floor-treating machine which also behaves stable in operation and which has an easily accessible auxiliary transmission for driving the housing.

[0012] The present invention meets the above objects by providing a floor-treating machine wherein the auxiliary shaft for driving the housing is connected via a first auxiliary transmission to the housing shaft.

SUMMARY OF THE INVENTION

[0013] The present invention is directed to a floor-treating machine, comprising: a frame (70), a housing (62) attached to the frame (70) and rotatable about a substantially vertical axis, one or more heads (64) mounted in the housing (62) and rotatable about a substantially vertical axis, a motor (50) with a motor shaft (51) for driving a housing shaft (54), said housing shaft (54) connected to the one ore more heads (64) by means of a transmission, an auxiliary shaft (57) for driving the housing (62), characterized in that the auxiliary shaft (57) is connected via a first auxiliary transmission (52, 53, 55, 56) to the housing shaft (54) and via a second auxiliary transmission (58, 59, 60) to the housing (62).

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

FIG 1 shows a cross section through the device according to the invention.

DESCRIPTION OF THE INVENTION

[0015] As illustrated in FIG 1, as a first embodiment the present invention provides a floor-treating machine, comprising:

- a frame (70),
- a housing (62) attached to the frame (70) and rotatable about a substantially vertical axis,
- one or more heads (64) mounted in the housing (62) and rotatable about a substantially vertical axis,
- a motor (50) with a motor shaft (51) for driving a housing shaft (54), said housing shaft (54) connected to the one ore more heads (64) by means of a transmission,
- an auxiliary shaft (57) for driving the housing (62),

characterized in that the auxiliary shaft (57) is connected via a first auxiliary transmission (52, 53, 55, 56) to the housing shaft (54) and via a second auxiliary transmission (58, 59, 60) to the housing (62).

[0016] Because the auxiliary shaft is connected via a first auxiliary transmission to the housing shaft and not to the motor shaft, the first auxiliary transmission does not have to be connected simultaneously with the motor. In case parts of the auxiliary transmission have to be repaired or replaced, it is only required to dismount the motor. Obviously assembling and maintaining the machine becomes less difficult and less time consuming.

[0017] Another advantage is that it is possible now to completely pre-assemble the frame including housing resulting in easier transportation, transportation cost saving, and ease of installation of the motor to make the machine ready for use.

[0018] The motor may be positioned concentrically with respect to the vertical axis of the frame (70). In combination with the rotation of the housing and the contra-rotation of the heads, this may result in even more stable behavior of the floor-treating machine.

[0019] The auxiliary shaft may be positioned parallel to and at a distance from the centre axis of the frame (70).

[0020] The auxiliary transmissions may be any kind of transmission adapted for connecting the auxiliary shaft to the housing shaft and to the housing, such as a pulley and belt transmission, or a gear wheel and chain transmission.

[0021] In an embodiment in accordance with the present invention, the auxiliary transmission (52, 53, 55, 56) may be situated outside the housing (62), making the transmission easily accessible.

[0022] In an embodiment of the present invention, the housing shaft (54) may bear a driving pulley or gear wheel (53) fixed to the housing shaft directly or, in case the length of the housing shaft is not sufficient, mounted on a bus (52) fixed to the housing shaft. The driven pulley or gear wheel (56) may be connected via a belt or a chain (55) to the driving pulley or gear wheel. The driven pulley or gear wheel (56) may be fixed to the auxiliary shaft (57) which is rotatably attached to the frame (70) and which drives the housing.

[0023] The auxiliary shaft (56) may drive the housing be means of a pulley and belt transmission, or a gear wheel and chain transmission (58, 59, 60).

[0024] Alternatively, the driven pulley or gear wheel (56) may be connected to the housing via a speed reduction mechanism, resulting in easier leveling of the speed reduction between housing shaft rotation and housing rotation.

[0025] According to an embodiment, the shaft of the motor may be connected via a plug or claw coupling to a journal on the housing for driving the heads, and the belt transmission for driving the housing coincides with the shaft of the motor.

EXAMPLE

[0026] The floor-treating machine in accordance with the present and as illustrated in FIG 1 has a frame 70, to which an actuating lever is attached. The device can be advanced and steered over a surface to be treated by means of this lever. The frame 70 also bears a motor 50 which is connected to a drive roll via a motor shaft 51 and housing shaft (54).

[0027] The housing 62 is mounted rotatably on the frame by means of bearing 69. This housing accommodates three rolls 66 which each bear a head 64, and the drive roll. An abrasive disk, by way of example, can be coupled to each head 64 by means of coupling means (not shown).

[0028] The rolls 66 are mounted in the housing 62 by means of bearings 68, 63. The belt 65 can be held at the desired tension by means of the tensioning rollers 11, 12.

[0029] The housing 62 also bears a pulley 60 which is connected to the pulley 58 via the belt 59. This pulley 58 is attached to the auxiliary shaft 57.

[0030] The housing shaft 54 bears a driving pulley 53 which is connected via a belt 55 to the driven pulley 56. The driven pulley 56 is fixed to the auxiliary shaft 57 which is rotatably attached to the frame 70 and which drives the housing via pulley 58, belt 59 and pulley 60. The driving pulley 53 is mounted on bus 52 fixed to the housing shaft 54.

[0031] Dust, waste, etc. which is produced during the abrasive movement can be collected by means of an apron connected to the frame 70.

Claims

1. Floor-treating machine, comprising:

- a frame (70),
- a housing (62) attached to the frame (70) and rotatable about a substantially vertical axis,
- one or more heads (64) mounted in the housing (62) and rotatable about a substantially vertical

axis,
- a motor (50) with a motor shaft (51) for driving a housing shaft (54), said housing shaft (54) connected to the one ore more heads (64) by means of a transmission,
- an auxiliary shaft (57) for driving the housing (62),

characterized in that the auxiliary shaft (57) is connected via a first auxiliary transmission (52, 53, 55, 56) to the housing shaft (54) and via a second auxiliary transmission (58, 59, 60) to the housing (62).

2. Floor-treating machine according to claim 1, in which the auxiliary transmission (52, 53, 55, 56) is situated outside the housing (62).

3. Floor-treating machine according to claims 1 or 2, in which the auxiliary transmissions (52, 53, 55, 56; 58, 59, 60) are belt transmissions.

4. Floor-treating machine according to claims 1 to 3, in which the housing shaft (54) bears a driving pulley (53) which is connected via a belt (55) to the driven pulley (56), said driven pulley (56) fixed to the auxiliary shaft (57) which is rotatably attached to the frame (70) and which drives the housing.

5. Floor-treating machine according to claim 4, wherein the driving pulley (53) is mounted on a bus (52) fixed to the housing shaft (54).

6. Floor-treating machine according to any of the above claims, in which the shaft of the motor is connected to the housing shaft via a plug or claw coupling.

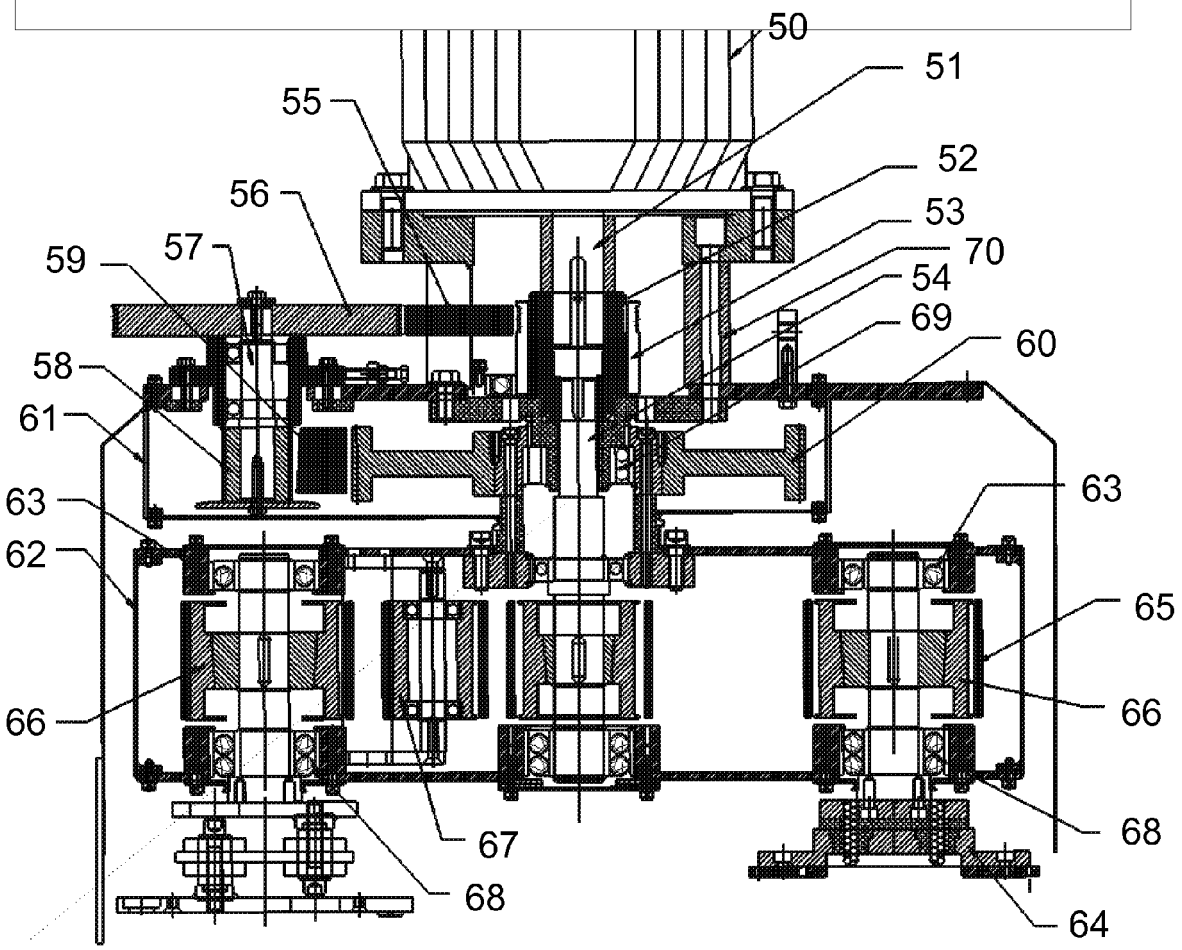

FIG 1

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EUROPEAN SEARCH REPORT

Application Number
EP 10 15 4214

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y,D	WO 01/87540 A1 (HOLLAND IND DIAMANTWERKEN BV [NL]; VLIET JOHANNES PETRUS VAN [NL]; MUL) 22 November 2001 (2001-11-22) * abstract; figure 1 * -----	1-6	INV. B24B7/18 B24B47/12 A47L11/14
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TECHNICAL FIELDS SEARCHED (IPC)

B24B
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 August 2010	Zeckau, Jochen

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 4214

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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03-08-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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