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(54) **Apparatus for treating floor surfaces along a wall**

(57) A surface treating apparatus comprising:
(a) a frame with at least one wheel (3), roll or track mounted thereon and supporting the frame;
(b) a utility tool (5) mounted on the frame, the utility tool comprising a functional surface (23) facing a surface to be treated in a working condition of the apparatus;

(c) driving means (4) mounted on the frame and enabling driving the utility tool; wherein the width of the frame and wheel, roll or track is defined by the distance between virtual lines (X,X') extending in a direction (D) parallel to the rolling direction of the wheel, roll or track, wherein the functional surface (23) of the utility tool (5) at least partially extends beyond one of said virtual lines (X,X').

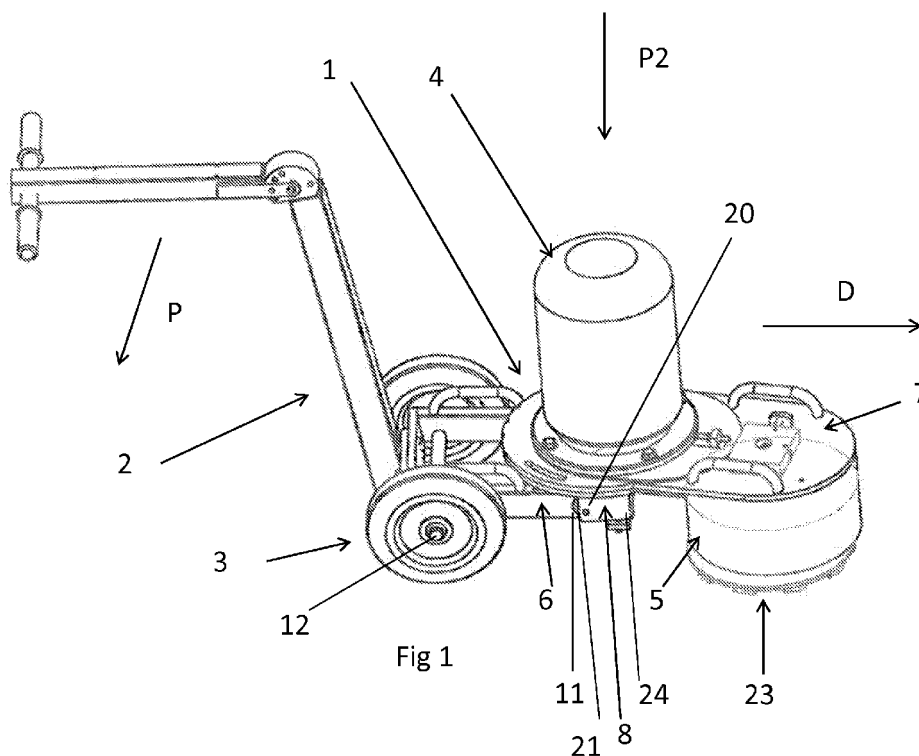


Fig 1

Description

FIELD OF THE INVENTION

[0001] The invention relates to surface treatment apparatuses, more particularly to apparatuses used for polishing, grinding, sanding or otherwise treating surfaces such as concrete or wooden floors.

BACKGROUND OF THE INVENTION

[0002] With increasing interest in renovation of old buildings and houses, there is a need for craftsmen to treat floor surfaces efficiently and with high quality. Up to date several types of apparatuses are commercially available for treating floors, these apparatuses comprise (a) a frame supported by one or more wheels or rolls, (b) driving means such as a motor, (c) one or more utility tools mounted on the frame and driven by said driving means.

[0003] The known apparatuses are available in a broad variety of the apparatuses varying in dimensions, number of utility tools driven simultaneously, weight and power. A major inconvenience of the known apparatuses is their inability to treat surfaces close to a wall. Indeed wheel or roll supported floor treatment apparatuses are usually restricted by their frame to treat a floor surface no closer than 2 cm or 1,5 cm from a wall. For treating floors next to walls use is made of smaller hand-held tools.

[0004] Especially when treating surfaces comprising asbestos, the use of hand-held tools is absolutely undesirable as this implies very stringent protection for the user against inhalation of asbestos fibers due to the close proximity of the treated surface and the user. The stringent protection measures include not only the use of rather expensive clothing, they also severely increase working time.

[0005] It should, therefore, be appreciated that there remains a need for an apparatus for treating floors that addresses the above problems. It is an object of the invention to provide an apparatus for treating floor surfaces along or in close proximity (less than 1,5 cm) of a wall, wherein the distance between the user and the treated surface remains above 1,5 m. The invention particularly relates to apparatuses used for polishing, grinding, sanding or otherwise treating surfaces such as concrete or wooden floors which address one or more of the above problems.

DESCRIPTION OF THE INVENTION

[0006] A surface treating apparatus comprising: (a) a frame with at least one wheel, roll or track mounted thereon and supporting the frame; (b) a utility tool mounted on the frame, the utility tool comprising a functional surface facing a surface to be treated in a working condition of the apparatus; (c) driving means mounted on the frame and enabling driving the utility tool; wherein the width of

the frame and wheel, roll or track is defined by the distance between virtual lines extending in a direction parallel to the rolling direction of the wheel, roll or track, and wherein the functional surface of the utility tool at least partially extends beyond one of said virtual lines.

[0007] Preferably, the apparatus comprises means for moving the utility tool and its functional surface from a first position wherein the functional surface extends at least partially beyond one of said virtual lines to a second position wherein the functional surface is positioned entirely between said virtual lines. Said means for moving the utility tool preferably comprise a spindle.

[0008] More preferably the frame comprises two members, a first member whereon the wheel, roll or track is mounted and a second member whereon the utility tool and driving means are mounted and wherein means are provided allowing swiveling of the first member in view of the second member in a plane substantially parallel to the functional surface.

[0009] According to a preferred embodiment, the utility tool is movably mounted on a guide, the guide being fixed to the second frame member. The guide allows moving the utility tool and its functional surface beyond a side edge of the second frame member.

[0010] Preferably, bolts are provided for fixing the utility tool to the second frame member in a desired position along the guide

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

Fig 1 represents a perspective view of a surface treating apparatus according to the present invention;

Fig 2 represents a view according to arrow P2 in Fig. 1 on a larger scale;

Fig. 3 represents the same view as Fig. 2 but in another position of the apparatus according to the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0012] Figure 1 represents an apparatus according to the present invention, said apparatus comprising a frame 1 with an actuating lever 2, two wheels 3, a motor 4 and a utility tool 5.

[0013] The frame comprises at least two and in this particular case three members 6, 7 and 8. In the present embodiment, and as represented in Figure 3, the first frame member 6 comprises a U-shaped rigid profile with a lateral beam 9 and two side beams 10 provided thereon. As represented in figure 2, each of said beams is in this case provided with a hole 11 at a distance of its front end.

[0014] The lateral beam is situated at the back end of the apparatus; it is the back end of the apparatus defined

in view of a usual driving direction D during use of the apparatus. Said wheels 3 are movably, in particular rotatably or otherwise pivotably connected to the first member by a wheel shaft 12 or the like supported in the side beams 10. In this case, the actuating lever 2 is also fixed to the first member 6.

[0015] The second member 7, essentially consisting of a rigid plate element with a front end 13 and a back end 14. Said motor 4 is mounted on the this rigid plate element by means of bolts or the like.

[0016] The second member 7 further comprises one or more slits 15. On said plate element, along one of said slits 15 is provided a spindle 16 that can be operated by means of an adjustment screw 17 allowing driving the spindle and blocking the spindle in a desired position. The spindle is preferably fixed on the plate by means of bushing allowing rotation of the spindle. Movably cooperating to said spindle 16 is an ax 18 that extends through the slit 15 and is readily fixed to the utility tool 5.

[0017] Typically, the motor is mounted on one surface of the plate element, whereas the utility tool extends from the opposite surface of the plate element. In use, the utility tool extends downwards, whereas the motor is mounted on the top surface of the plate. According to a preferred embodiment of the present invention, the motor 4 is mounted near or at the back end 14 of the second member 7, whereas the utility tool 5 is mounted near or at the front end 13 of the second member 7.

[0018] It is known to persons skilled in the art that the motor 4 comprises a motor shaft (not shown) extending perpendicularly through a protrusion in the plate element, whereas the utility tool 5 has a driving shaft (not shown) extending parallel to the motor shaft. Both shaft are connected in rotation by a belt, preferably a toothed belt (not shown).

[0019] The third member 8 in this case comprises a plate element having two upstanding protrusions 20, wherein a hinge shaft 21 is rotatably lodged, the hinge shaft extending through damped bushings (not shown) lodged in holes 11 provided in the side beams 11 of the first frame member 6. The third frame member further comprises a hole (not shown) where through the motor shaft extends and one or more slits 22 near its circumference.

[0020] In an assembled state of the apparatus, the back end 14 of the second member 7 rests on the third member 8, whereby the interface defined between the second and third member 7, 8 is provided with a lubricant oil or a lubricant coating for allowing swiveling, rotating or hinging of the second member over the first member in a direction perpendicular to and around the motor shaft.

[0021] As represented in figure 3; the width of the frame and wheel, roll or track is defined by the distance between virtual lines X, X' extending in a direction D parallel to the rolling direction of the wheel, roll or track.

[0022] According to the present invention, the utility tool 5 can be a polishing, a grinding, a sanding or other tool that typically comprises a disk defining a functional

surface 23 for acting on a surface to be treated. Depending on the intended surface treatment, the functional surface of the utility tool is defined by a certain roughness and/or abrasive capacity for grinding, sanding, polishing or otherwise treating a given surface. The disk is mounted on the driving shaft of the utility tool and is generally known in the field of treating surfaces such as floors. Preferred disks have a diameter ranging between 5 and 70 cm.

[0023] The apparatus according to the present invention is very user friendly and allows treating surfaces up to against a wall. Indeed, the apparatus of the invention comprises means for means for moving the utility tool and its functional surface from a first position (Fig. 2) wherein the functional surface extends at least partially beyond one of said virtual lines X, X' to a second position (Fig. 3) wherein the functional surface is positioned entirely between said virtual lines X and X'. In the described embodiment, this means comprise the swiveling cooperation between the second and third frame members 7 and 8 and said spindle 16 allowing moving the utility tool and its functional surface beyond the edges of the second frame member 7.

[0024] It will be appreciated that by swiveling the second frame member 7 in view of the first frame member 6, the utility tool can be positioned outside the pathway of the wheels 3. The rotation between the second and third members 7, 8 around the motor shaft can be blocked by means of bolts (not shown) or such interacting in the slits 22 in the second frame member 7. When releasing said bolts, a rotation of the second member around the motor shaft and in view of the first member can be obtained. By subsequently moving the utility tool in view of the second frame member 7 by means of the spindle 17, the functional surface of the utility element is positioned partially beyond the virtual line X or X' and as such forms an outer side edge of the apparatus in a driving direction D, thus allowing the functional surface to be moved against a wall, without the wheels or frame hindering the utility tool.

[0025] It is clear that the movement of the utility tool beyond a virtual line X or X' can be realized in two senses perpendicular to the driving direction allowing optimal user friendliness.

[0026] The fact that part of the movement of the utility tool in view of the wheels can be realized by swiveling the second frame member 7 is believed to increase stability of the apparatus in view of an embodiment wherein the entire movement of the utility tool would be achieved by a spindle alone, when the apparatus is driven with the utility tool extending partially beyond one of the lines X or X'.

[0027] According to a preferred embodiment, the second frame member 7 further comprises means for adjusting the downward pressure on the front end 13 of the second member. Such means can for example comprise a slot or shaft provided on the second member and configured for releasably providing weight elements thereon.

Adjustment of the pressure exerted on the front end of the second member 7 and thus on the utility tool, allows for an increased control of the grinding, sanding and/or polishing by the utility tool. To even further increase adjustment of the (down) pressure exerted on the utility tool, the motor is preferably provided near or at the back end of the second member, proximate to the connection of the first and second members 6, 7. As such, the weight of the motor 4 is essentially supported by the supporting wheels 3 rather than by the utility tool 5 during use of the apparatus.

[0028] In case the disk of the utility tool needs to be accessed for replacement or control, or in case the working surface has to be lifted from the floor, the apparatus can easily be tilted by pressing down the actuating lever in a direction according to arrow P. In this case, the first and second member will first hinge in view of each other around the hinge shaft 21, until the front end of the side beams of the first member will abut the second or third member thereby preventing further hinging of the second member in view of the first member and lifting the second member when pressing the actuating lever further downwards. The distance between the hole 11 for the hinge shaft 17 and what is defined as the abutment surface 24 of the beams with the second member 7 or third member 8 (both are rigidly fixed to each other in a direction of rotation around the hinge shaft 21) determines the limitation on the angle of rotation between the first and second members 6, 7.

[0029] It is clear that instead of providing wheels, a roll or track can also be applied for supporting the apparatus.

NUMERICAL REFERENCES

[0030]

- 1 frame
- 2 actuating lever
- 3 wheels
- 4 motor
- 5 utility tool
- 6 first member (wheel)
- 7 second member (utility tool)
- 8 third member (intermediate)
- 9 lateral beam (first member)
- 10 side beams (first member)
- 11 holes (for hinge bushings)

- 12 wheel shaft
- 13 front end (second member)
- 5 14 back end (second member)
- 15 slits
- 16 spindle
- 10 17 adjustment screw
- 18 ax
- 15 19 Upstanding protrusions
- 20 Hinge shaft
- 21 Slits
- 20 22 Functional surface
- 23 Abutment surface

Claims

1. A surface treating apparatus comprising:

- 30 (a) a frame with at least one wheel (3), roll or track mounted thereon and supporting the frame;
- (b) a utility tool (5) mounted on the frame, the utility tool comprising a functional surface (23) facing a surface to be treated in a working condition of the apparatus;
- 35 (c) driving means (4) mounted on the frame and enabling driving the utility tool; wherein the width of the frame and wheel, roll or track is defined by the distance between virtual lines (X, X') extending in a direction (D) parallel to the rolling direction of the wheel, roll or track,

characterized in that the functional surface (23) of the utility tool (5) at least partially extends beyond one of said virtual lines (X, X').

2. The surface treating apparatus according to claim 1, wherein the apparatus comprises means for moving the utility tool and its functional surface from a first position wherein the functional surface extends at least partially beyond one of said virtual lines to a second position wherein the functional surface is positioned entirely between said virtual lines.

3. The surface treating apparatus according to claim 1, wherein the frame comprises two members, a first member whereon the wheel, roll or track is mounted

and a second member whereon the utility tool is mounted and wherein means are provided allowing swiveling of the first member in view of the second member in a plane substantially parallel to the functional surface.

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4. The surface treating apparatus according to claim 1, wherein the utility tool is movably mounted on a guide, the guide being fixed to the second frame member.

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5. The surface treating apparatus according to claim 4, wherein the guide is such that it allows moving the utility tool and its functional surface beyond a side edge of the second frame member.

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6. The surface treating apparatus according to claim 5, wherein bolts are provided for fixing the utility tool to the second frame member in a desired position along the guide

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7. The surface treating apparatus according to claims 2 and 5, **characterized in that** the means for moving the utility tool comprise a spindle allowing moving the utility tool along said guide.

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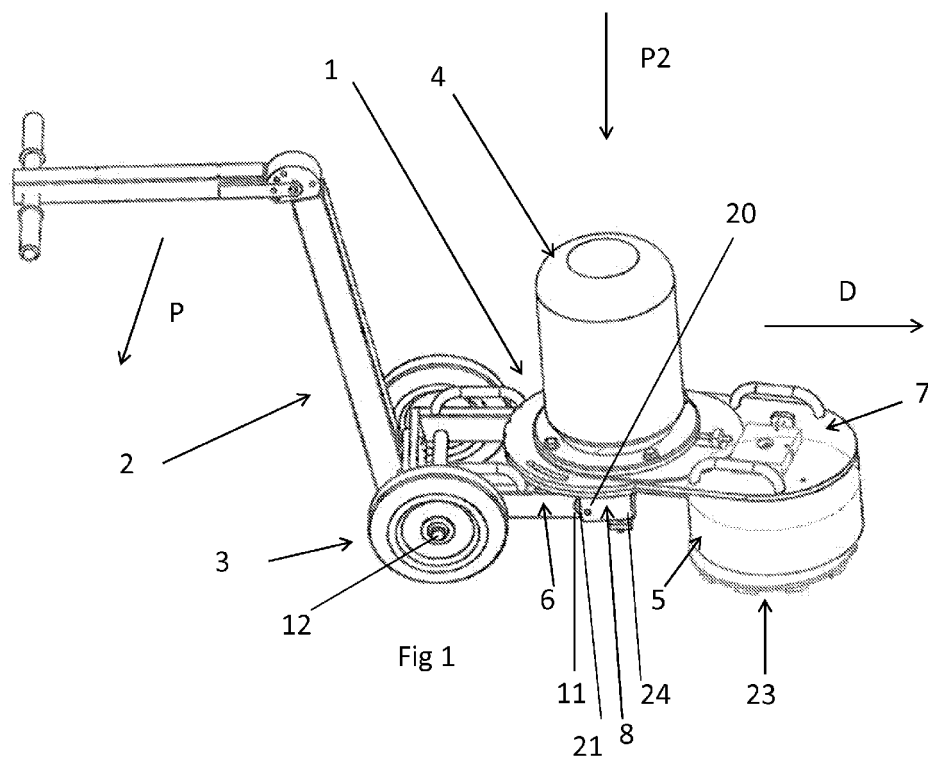
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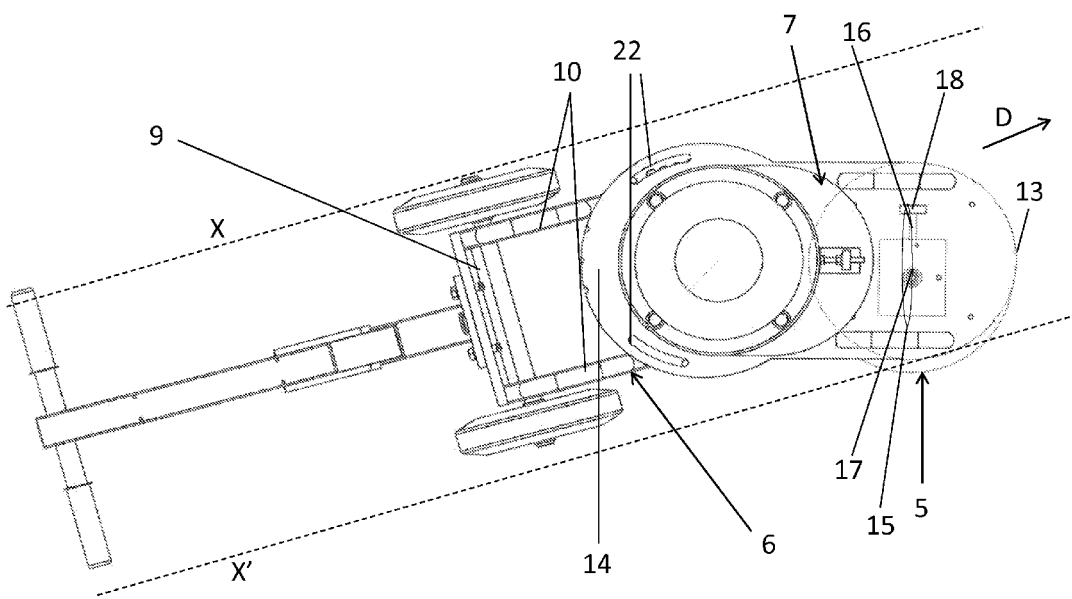


Fig 2

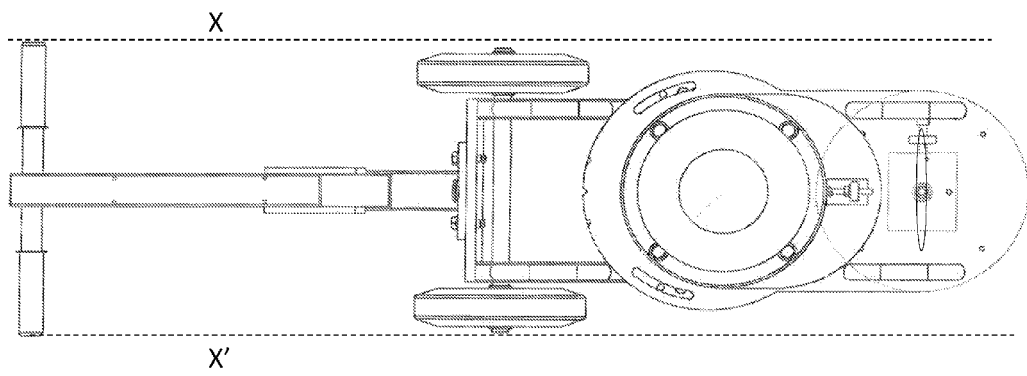


Fig 3



EUROPEAN SEARCH REPORT

Application Number
EP 11 16 1028

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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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