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FLOOR POLISHING MACHINES

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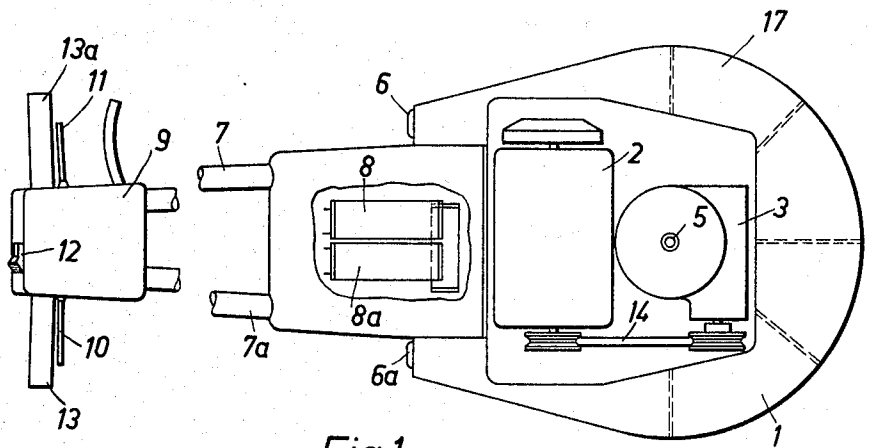


Fig.1

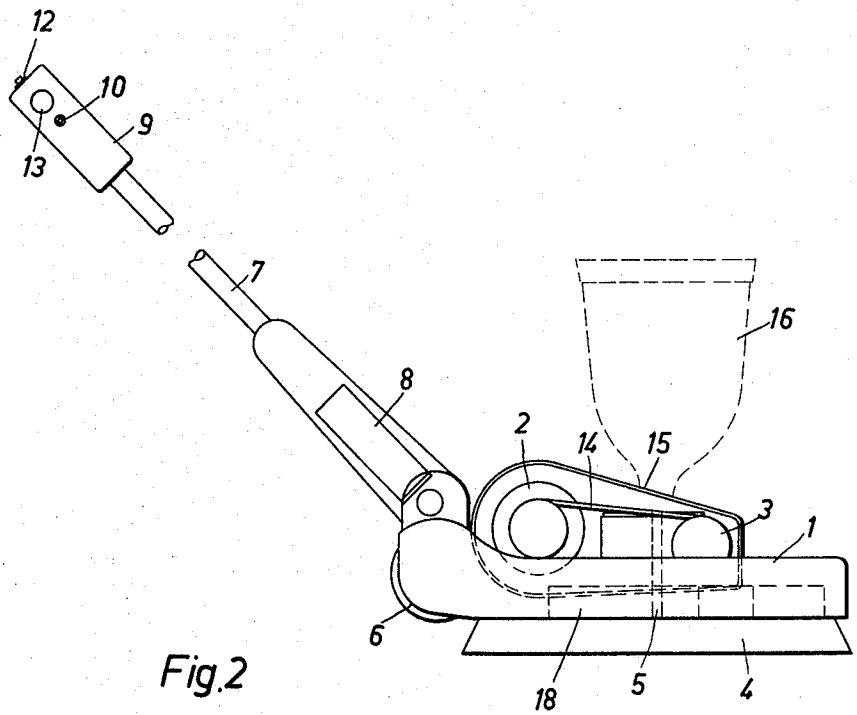


Fig.2

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FLOOR POLISHING MACHINES

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The present invention concerns a floor polishing machine having a single rotating tool disc which is connected to the driven shaft of a worm gearing, which in turn is driven by an electric motor arranged horizontally above the tool disc.

A fundamental difference between floor polishing machines having only one tool disc and those having two tool discs consists, apart from the technical structure, in its varying behavior during operation. Whilst a two-disc machine having oppositely rotating discs shows no tendency to automatic driving, the tool disc of a single disc machine simultaneously acts as a drive due to the torque effect. The result of this is that the machine fundamentally tends to allow its housing to rotate or, when the housing is held firmly, for the machine to move in a particular direction i.e. forwardly, rearwardly or sideways, according to the direction of rotation of the tool disc, and in which it is, even if only slightly, tilted.

Particular importance is attached to the fast that the handling of the machine is facilitated due to it being as extensively balanced as possible with regard to its longitudinal axis.

A further requirement consists in that the overall height of such a machine must be kept as low as possible in order to permit polishing underneath radiators, cupboards or the like. This applies at least to the front part of the machine. These fundamental requirements are not realized in known single disc machines.

The present invention is based on the clear knowledge of these conditions and on the problem of providing a construction of a single disc floor polishing machine which avoids the disadvantages of known constructions and fulfills the above stated requirements.

According to the present invention there is provided a floor polishing machine having a single rotary tool disc characterized by the feature that the electric motor is arranged substantially symmetrically and transversely relative to the direction of travel of the machine and connected by means of a V-belt reduction gear extending in the direction of travel to the worm gearing, the worm wheel of which is centrally arranged in the housing and the worm of which is arranged transversely to the direction of travel of the machine and in front of the worm wheel, the tool disc being mounted directly on the driven shaft of the worm wheel and the electrical control and switching elements for the electric motor being mounted behind the latter on the lower end of a handle grip hingeably mounted on the rear of the housing.

This construction ensures a good balance about the longitudinal axis and provides a machine which is of low over-all height and easy to handle.

Preferably the machine in accordance with the invention has a housing with a flat, low, horizontal edge surface which equals at least a third of the housing diameter and which does not extend beyond the effective diameter of the tool disc.

A further development of the invention is seen in that the motor is arranged in a housing trough above the tool disc, and in that a flat hood rising only slightly rearwardly for a worm wheel, V-belt drive and electric motor is provided.

A further feature is that on the rear surface of the housing below the mounting of a handle grip, two rigid transport rollers are provided in such a manner that they make contact with the floor only when the tool disc is properly tilted.

The invention will now be described further, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a plan view of a floor polishing machine in accordance with the invention; and

FIGURE 2 is a side elevation according to FIGURE 1.

In a trough-like depression of a housing **1** a motor **2** is horizontally arranged, which drives a worm gear **3** via a V-belt **14**. The motor **2** is so arranged that it is disposed between a driving shaft **5** and the rear end of the housing **1**, on which a handle grip **7** is pivotally mounted.

The handle grip **7** consist of two stable tubes **7**, **7***a* which at the lower end are enclosed by a housing in which two capacitors **8**, **8***a* are arranged.

On the same end of the housing **1** two fixedly mounted rollers **6**, **6***a* are provided which are so arranged that, when the apparatus is in a working position, they are out of contact with the floor and contact the floor only when the housing **1** is tilted rearwardly.

At the upper end of the handle grip **7** a switch box **9** is provided and two grip members **13**, **13***a* are arranged, from which a lever **10**, a lever **11** and a sliding switch **12** may be actuated. The lever **11** serves to release a suitable stop means of any approved form which locates the angular position of the handle grip **7**.

In the switch box **9** two microswitches are arranged which serve to switch the operating capacitors **8**, **8***a*, and via the switch **12** which acts on the microswitch, the starting capacitor is switched to start up the motor **2**.

The special arrangement of motor **2** hence results in a very low over-all height of the whole machine and a favorable distribution of weight for the floor treatment.

The motor **2** and the worm bearing **3** are covered by a hood **15**, which above the driven shaft of the worm has an opening, in which a liquid container **16** shown in FIGURE 2 in dotted lines may be mounted, the latter serving to supply the liquid required for treating the floor via a bore in the shaft **5** and leading to the tool disc, for example a brush. By reason of the fact that the cover hood **15** is drawn closely over the worm gearing and leaves a wide edge of the housing exposed, the floor is still satisfactorily treated even beneath lower opening heights of 12 cm. This makes it possible for the floor to be polished perfectly underneath low shop counters, radiators, etc.

In the housing **1** compartments **18** are provided which accommodate balancing weights **17**, The housing **1**, seen from above, has the shape of a horseshoe and the cover hood **15** mounted thereon is constructed in the shape of a flat travelling typewriter.

While preferred part structures and arrangements are disclosed herein it is to be understood that variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What I claim is:

1. A floor polishing machine comprising a housing, an electric motor supported upon the housing, said motor being positioned substantially symmetrically and transversely to the direction of travel of the machine and with an output shaft thereof disposed in a generally horizontal plane, a single rotary tool disc mounted for rotation by a vertical shaft, means for drivably coupling said shafts to each other, said coupling means including a drive belt disposed in a position generally parallel to the direction of travel of the machine, said coupling means further

including a meshed worm and a worm wheel, said worm wheel being secured to said vertical shaft and being centrally arranged relative to said housing, said worm being disposed transversely of the direction of machine travel, a handle, means hingeably mounting said handle to said housing adjacent said motor and remote from said worm and worm wheel, said handle including a lower end portion adjacent said mounting means defining a chamber, and electrical control elements completely housed by said chamber.

2. The machine as defined in claim 1 wherein the housing has a flat, low horizontal edge surface which amounts to at least ⅓ of the housing diameter and does not exceed the effective diameter of the tool disc, and said housing including a plurality of chambers generally diametrically opposite said handle for receiving balancing weights.

3. The machine as defined in claim 2 wherein two rigid transport rollers are mounted on said housing adjacent and below the mounting means mounting said handle to said housing, and said rollers having peripheral surfaces normally disposed in space relationship to a supporting surface whereby contact between the peripheral surfaces and the supporting surface is effected only upon the machine being tilted rearwardly.

4. The machine as defined in claim 3 wherein said housing includes an upper panel, said upper panel being recessed to define a generally upwardly opening trough, and said motor and coupling means being positioned in said trough.

5. The machine as defined in claim 4 including a hood covering said motor and said coupling means, said hood including a generally flat top wall, and said top wall being inclined in an upward direction toward said motor.

6. The machine as defined in claim 1 wherein said housing includes an upper panel, said upper panel being recessed to define a generally upwardly opening trough, and said motor and coupling means being housed in said trough.

7. The machine as defined in claim 1 wherein said housing includes an upper panel, a portion of said upper panel being recessed to define a generally upwardly opening trough, and said motor and coupling means being housed in said trough.

8. The machine as defined in claim 7 including a hood covering said motor and said coupling means, said hood including a generally flat top wall, and said top wall being inclined in an upward direction toward said motor.

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