J. A. CAMPBELL.

FLOOR GRINDING AND POLISHING MACHINE.

APPLICATION FILED JUNE 2, 1916.

1,195,555. Patented Aug. 22, 1916.

FIG. 1.

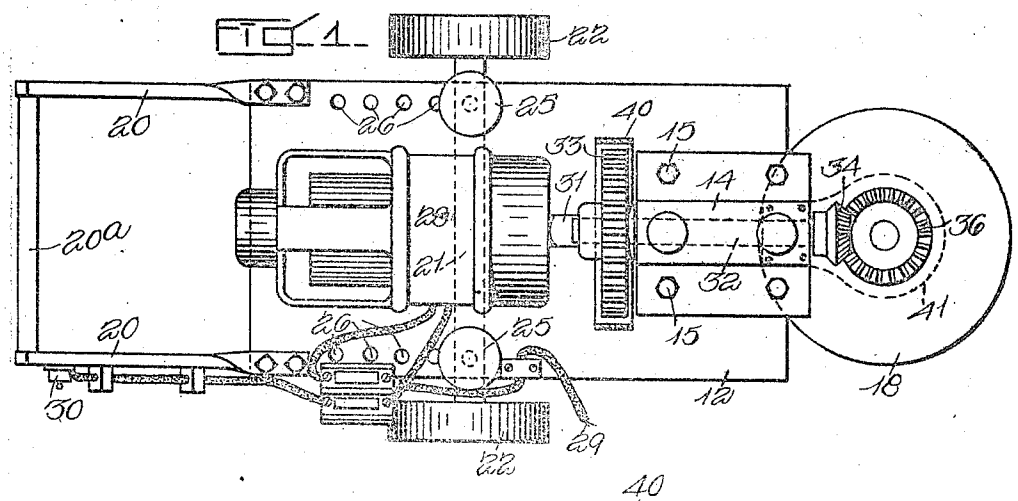


FIG. 2.

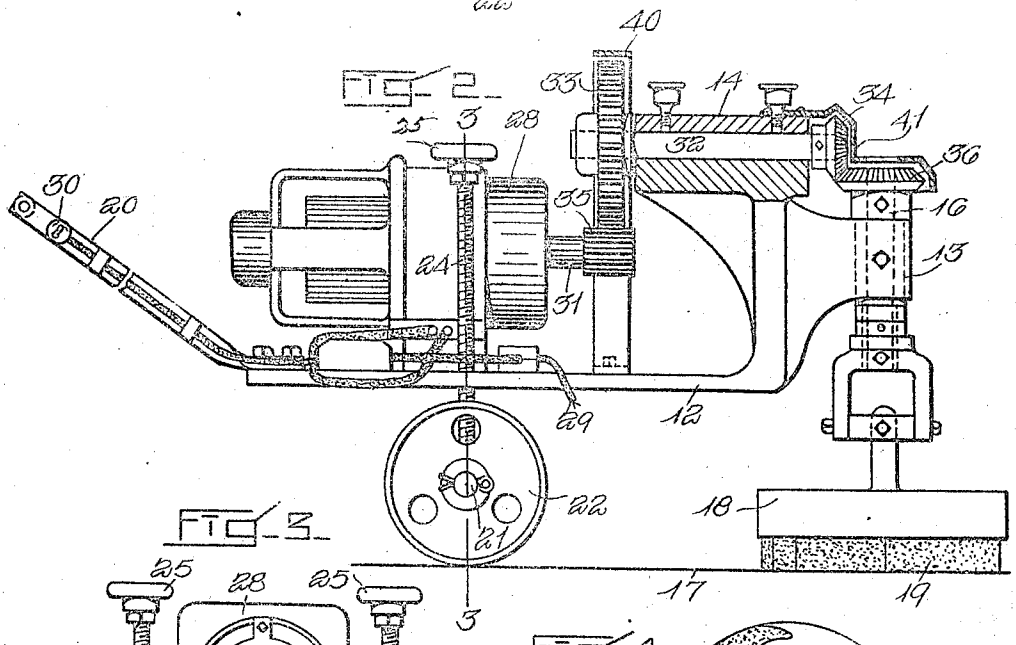


FIG. 3.

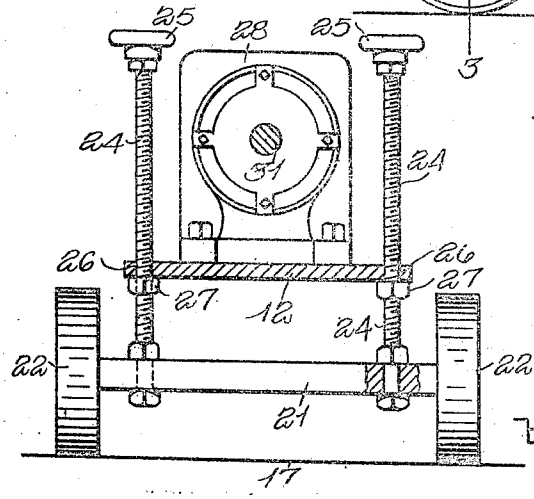
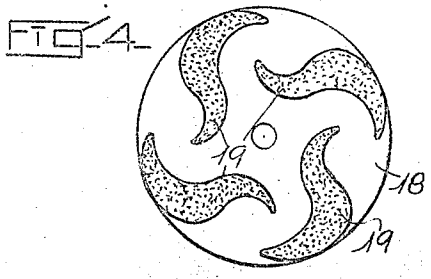


FIG. 4.



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FLOOR GRINDING AND POLISHING MACHINE.

1,195,555. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed June 2, 1916. Serial No. 101,272.

To all whom it may concern:

Be it known that I, JOHN A. CAMPBELL, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Floor Grinding and Polishing Machines, of which the following is a specification.

This invention relates to a machine for grinding and polishing floors and other horizontal structures composed of stone or like material, or of a combination of materials capable of being ground and polished by the flat side of a tool mounted to rotate on a vertical axis and pressed while rotating against the surface on which it acts, the machine being movable by the operator, to extend the grinding and polishing action in various directions.

The invention is embodied in the improvements hereinafter described and claimed.

Of the accompanying drawings forming a part of this specification: Figure 1 represents a plan view of a machine embodying my invention; Fig. 2 represents a side view of the same, parts being shown in section; Fig. 3 represents a partial section on line 3—3 of Fig. 2; Fig. 4 represents a bottom view of an abrading tool suitable for use as a part of the machine.

The same reference characters indicate the same or similar parts in all the views.

In the drawings: 12 represents a body adapted to be supported by and to tilt lengthwise on the running gear hereinafter described, said body being preferably oblong, as shown by Fig. 1, and provided at one end with a vertical bearing 13, and above this with a horizontal bearing 14. I use the terms vertical and horizontal relatively, it being understood that when the body is tilted or inclined from a horizontal position the bearing 13 is not absolutely vertical and the bearing 14 is not absolutely horizontal. Said bearings are parts of an upstanding bracket the base of which is secured to the body. The removable top portion of the bearing 14 is secured to the lower portion thereof by bolts 15. The vertical bearing 13 projects forward from the body portion of the bracket, and the bearing 14 is located at the upper end of said body portion. Each bearing is therefore exposed and adapted to be conveniently lubricated.

In the bearing 13 is journaled a vertical tool-operating shaft 16, the lower end of which is provided with the usual or any suitable members of a swivel joint adapted to flexibly connect a rotary abrading tool to said shaft, in such manner that the bottom side of the tool has a flat bearing on the floor 17 to be ground or polished, whether the body be horizontal or slightly inclined. The tool as here shown includes a discoidal body 18 and blocks 19 of carborundum or other suitable material attached to said body, and forming the acting portions of the tool. A tool of this nature, flexibly connected with an operating shaft so that the axis of the shaft may be more or less inclined while the acting face of the tool is horizontal, is so well known that further description of the tool and the flexible connection between it and the shaft is deemed needless.

The end of the body opposite the end having the bearing 13 is provided with rigidly attached push bars 20 connected by a cross-bar 20^a, the whole forming a controlling handle.

The body 12 is provided with running gear permitting its convenient transportation, and also permitting it to tilt and exert downward pressure on the tool, and compensate for wear thereof. Said running gear includes a transverse axle 21 located under the body between the ends thereof, and provided with a pair of traction wheels 22 which may have rubber tires, if desired. The axle is rigidly connected with the body, and the arms of the axle on which the wheels are journaled, by turning slightly in the wheel hubs, permit a longitudinal tilting of the body.

The connections between the axle and the body are preferably of such nature that the body is adjustable toward and from the axle to vary its height. As here shown, said connections comprise vertical twin standards 24, journaled at their lower ends in the axle, and provided at their upper ends with hand wheels 25 whereby they may be manually rotated. The standards are screw-threaded above the axle, and their threads are engaged with internal threads in orifices 26 in the body 12, so that rotation of the standards either raises or lowers the body. Lock nuts 27 are preferably engaged with the standards below the body, and are set up against the under side of the body when the desired adjustment has been effected. The said orifices and standards constitute adjust-

ing means having screw threaded portions permitting as minute adjustments of the body toward and from the axle as may be required by the wear of the tool.

The vertical adjustability of the body 12 enables the body to be raised to a maximum height when the operating tool is practically unworn, and to be lowered to compensate for wear of the acting faces of the tool.

The body 12 is preferably adjusted lengthwise relatively to the running gear to regulate the degree of downward pressure exerted by the body and its adjuncts on the tool, this pressure increasing with an increase of the distance between the tool-operating shaft 16 and the running gear. As here shown, the body 12 is provided with a plurality of screw-threaded orifices 26 arranged in longitudinal rows so that the threaded studs 24 may be engaged with the body at different points, or at different distances from the axis of the tool.

A motor 28 of any suitable type is mounted on the body at a suitable point between the ends thereof. I have here shown more or less conventionally an electric motor supplied with current through a flexible cable 29, the circuit connections including a switch 30 mounted on one of the push bars 20 and so arranged that the current can be turned on and off conveniently by an operator grasping the controlling handle. A gasolene or other suitable motor may be used instead of an electric motor.

The shaft 31 of the motor is connected with the tool-operating shaft 16 by the means next described.

32 represents a horizontal shaft journaled in the bearing 14 and provided at one end with a spur gear 33 and at the other end with a bevel gear 34. The motor shaft 31 is provided with a spur gear 35 meshing with the gear 33 and the tool-operating shaft 16 is provided with a bevel gear 36 meshing with the gear 34. The said gears are proportioned to suitably reduce the speed between the motor shaft and the tool-operating shaft, the gear 35 being of considerably smaller diameter than the gear 33 and the gear 34 being also of smaller diameter than the gear 36.

It will be seen that the above-described machine is of simple construction and adapted to maintain the acting portions of a rotary grinding or polishing wheel in suitable contact with a floor regardless of the reduction in the height of the tool due to wear. It will also be seen that the downward pressure of the tool against the floor may be conveniently varied as the work may require.

Shields or guards 40 and 41 are provided to prevent injury or damage by the gears 33, 35, and 34, 36.

Having described my invention, I claim:

1. A machine of the character stated, comprising a body having at one end a vertical bearing and at the opposite end a controlling handle, a tool-operating shaft journaled in said bearing and having means at its lower end for flexibly engaging a rotary tool, running gear on which the body is adapted to tilt to exert downward pressure on said tool, and compensate for wear thereof, means including screw threaded portions adjustably connecting the body with the axle and permitting minute adjustments of the body toward and from the axle, a motor mounted on the body, and connections between the motor shaft and the tool-operating shaft.

2. A machine of the character stated, comprising a body having at one end a vertical bearing and at the opposite end a controlling handle, a tool-operating shaft journaled in said bearing and having means at its lower end for flexibly engaging a rotary tool, running gear on which the body is adapted to tilt to exert downward pressure on said tool, and compensate for wear thereof, twin standards journaled at their lower ends in the axle and having screw-thread connections with the body, whereby when said standards are rotated the body is adjusted toward or from the axle, the standards being manually rotatable, and the adjustments being more or less minute as may be required by the wear of the tool, a motor mounted on the body, and connections between the motor shaft and the tool-operating shaft.

3. A machine of the character stated, comprising a body having at one end a vertical bearing and at the opposite end a controlling handle, a tool-operating shaft journaled in said bearing and having means at its lower end for flexibly engaging a rotary tool, running gear including an axle and a pair of wheels on which the body is adapted to tilt to exert downward pressure on said tool, and compensate for wear thereof, adjustable connections between the axle and the body, permitting longitudinal adjustments of the body relatively to the axle to vary the distance between the rotary tool and the axle and the downward pressure of the body on the rotary tool, a motor mounted on the body, and connections between the motor shaft and the tool-operating shaft.

4. A machine of the character stated, comprising a body having at one end a vertical bearing and at the opposite end a controlling handle, a tool-operating shaft journaled in said bearing and having means at its lower end for flexibly engaging a rotary tool, running gear including an axle and a pair of wheels thereon on which the body is adapted to tilt to exert downward pressure on said tool, and compensate for wear there-

of, the body being provided with longitudinal rows of screw threaded orifices, twin standards journaled at their lower ends in the axle and threaded to engage said orifices, whereby when the standards are rotated the body is adjusted toward and from the axle, each standard being transferable from one orifice to another to longitudinally adjust the body relatively to the axle, a motor mounted on said body and connections between the motor shaft and the tool-operating shaft.

In testimony whereof I have affixed my signature.

JOHN A. CAMPBELL.