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Polishing-Machine for Floors.

1,126,615.


Application filed December 12, 1913. Serial No. 806,327.

To all whom it may concern:

Be it known that I, Ercole Cavicchi, a citizen of the United States, residing in Quincy, county of Norfolk, State of Massachusetts, have invented an Improvement in Polishing-Machines for Floors, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to improvements in grinding or polishing machines of the type in which a rotating grinding or polishing member is supported upon a truck and pushed backward and forward over the surface to be polished, such as mosaic or composition flooring. In machines of this character the wearing away of the grinding tools necessitates the adjustment of the supporting base for the motor and gearing relative to the floor and one of the objects of this invention is to provide a convenient adjustable support which the operator may release by means of a foot lever, leaving his hands free to raise and lower the base as required.

Another object of the invention is to provide a polishing tool which may be reversed when one side of the face becomes worn in such a manner as to utilize another portion of the surface and at the same time even up the grinding face of the tool.

Another object of the invention is to provide a rotating polishing machine of the class described with a series of three non-revolving polishing tools, whereby said tools will remain constantly in contact with the surface being polished notwithstanding the irregularities of such surface.

In the drawings: Figure 1 is a side elevation partly in section of a machine embodying my invention, and Fig. 2 is a plan view of the same.

The polishing machine illustrated herein comprises a truck carrying a base plate upon which is mounted a motor and suitable gearing connecting the same with a rotating head the shaft of which is journaled in a vertical bearing in the base plate, the grinding members being attached by universal couplings, preferably ball and socket joints to said rotary head.

The base plate comprises a substantially horizontal body, 1, which is desirably provided with a depression 2 in which a suitable strap 3 for supporting the handle 4 is secured, and a forward depressed portion 5 adapted to accommodate the gearing for driving the grinding tool. The base plate 1 is preferably provided with an upwardly extending integral rib 6 in which is journaled a countershaft 7 upon which is mounted a sleeve carrying a beveled gear 8 which meshes with a horizontally disposed gear 9 mounted upon a vertical shaft 10 which extends through a bearing 11 projecting downwardly from the forward extension 5 of the base plate.

A suitable motor such as an electric motor 15 is rigidly secured to the base plate and its shaft 16 carries a gear 17 which meshes with a gear 18 fixed upon the sleeve which carries the beveled gear 8. The gearing above described is preferably enclosed by a suitable cap 20 which is secured to the bed plate by bolts 21. The cap 20 is preferably provided with a cylindrical boss 22 in alignment with the journal 11 and which serves as a journal to support the upper end of the shaft 10.

In some instances it is desirable that greater weight be placed upon the polishing tools than is furnished by the weight of the driving mechanism, and to accomplish this result a weight 25 of iron or other metal suitably fashioned to fit upon the upper portion of the casing and surround the boss 20 may be placed upon said cap. This weight is desirably provided with a handle 23 by which it may be lifted from the machine.

The lower end of the shaft 10 is provided with a driving head 25 which has three radial arms 26 provided with downwardly projecting shafts 27 preferably having spherical ends 28 adapted to fit in sockets in suitable tool supporting members 29. By reason of the fact that three arms are provided and consequently three polishing tools utilized, and of the fact that the connection between said arms and the tools are universal joints, all of the grinding tools will necessarily remain in contact with the surface being polished notwithstanding such irregularities as may be present therein.

The polishing tools 30 are preferably elliptical in form and are made hollow and secured to the members 29 by cement or in any other usual manner. Near the ends of each of the polishing tools studs 31 are provided and the forward stud of each tool is connected by a link 32 preferably with the shaft 27 on the arm 26 next in advance of
said polishing tool. By this construction the axes of the elliptical polishing tools are maintained at an angle, preferably a substantially right angle, to the radial lines of their connection to the head. They are prevented from revolution about the shaft 27 and consequently travel in an endwise direction thus presenting the greatest possible amount of their abrading surface to the portion of the floor being polished.

The rotation of the polishing tools about the axis of the rotating head causes the tools to wear away more rapidly upon the inner side, but by reason of the symmetrical construction of the grinding tools, the sides of the tool may be alternately worn down by merely detaching the link 32 from the forward projection 31 and reversing the position of the polishing tool to cause the end which was previously at the rear to become the forward end of the tool. The tool may thus be caused to wear down evenly without wasting abrading material. As the polishing tools wear away the forward end of the machine gradually becomes lower and lower and in order to maintain the shaft 10 about which the tool rotates in a substantially vertical position means are provided for adjusting the rear end of the carriage. In the preferred form of the invention shown herein such adjustment is permitted by securing the axle 40 which carries the wheels 41 at the lower end of a pair of arms 42 which are pivoted to the base plate upon a shaft intermediate of the ends of said carriage and preferably adjacent to and beneath the upward projection 6. A locking rack 45 having recesses 46 is pivoted to a shaft 47 journalled in lugs 48 upon the rear end of the base portion and a spring 49 surround- ing said shaft tends to keep the recess of the rack in engagement with the axle 40. The shaft 47 is also provided with a rearwardly extending lever 49 adapted to be depressed by the foot of the operator to disengage the rack from the axle 40. It will be obvious that to adjust the rear end of the base plate upwardly it is only necessary for the operator to depress the lever 49 and at the same time raise or lower the handle until the next upper or next lower recess in the rack comes into engagement with the axle 40. Upon removing the foot from the lever the spring 49 will immediately cause the rack to engage the axle at the new point of adjustment.

In order to more readily secure the handle to the base plate the end of the latter is preferably provided with a beveled and thickened portion 50 to which a strap 51 is secured by a suitable screw said strap extending upwardly beneath the handle member 4. The handle member is preferably secured between said strap 51 and the strap 3 by bolts 53 passing through the handle and said straps. The handle is provided at its upper end with the usual hand piece and an electric switch may desirably be placed upon said handle adjacent to the hand piece for controlling the motor.

The axle of the truck may be provided with a latch 54 attached to the lower side of the base plate and having a projection 55 extending beneath a cross piece 56 uniting the arms 42 so that if the rear end of the base member is raised too far while the rack is held out of engagement with the axle the parts will be prevented from becoming wholly detached.

A guard 60 is preferably provided to prevent the polishing members from coming in contact with the edges of the wall or other objects in the room. Said guard may be attached to lugs 61 extending downwardly from the forward portion 5 of the base plate and extended laterally therefrom beyond the field of the rotating polishing members and thence in a circle or curve around the forward end of the machine at such a distance therefrom as to contact with any object which may be in the path of the machine before the polishing members can reach the same. The forward portion of the guard being supported by an integral arm 62 having an eye embracing the bolt 21 to secure the same to the base plate. The guard may desirably be covered with rubber, felt, or any other suitable soft material to prevent injury to the walls or objects in the room.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described comprising a rotating driving head and means for actuating the same, a series of three non-revoluble elliptically flexibly united polishing tools connected to said head by universal couplings to permit the tilting of said tool in any direction, and means for preventing rotation of said tool about the axis of a universal coupling whereby said tool will be caused to remain in operative contact with the surface being treated and to move uniformly about the axis of the driving head.

2. In a machine of the class described comprising a rotating driving head and means acting the same, a series of three non-revoluble elliptically flexibly united polishing tools connected to said head by universal couplings whereby said members will remain in operative contact with the surface being treated notwithstanding irregularities in said surface.

3. In a machine of the class described comprising a rotating driving head and means for actuating the same, a series of substantially elliptical hollow grinding tools connected to said head by universal couplings and flexibly united in such a manner that the axis of each elliptical tool will be main-
obtained at an angle with the radial line of its connection with the rotary head.

5. In an apparatus of the class described comprising a rotary driving head and means for actuating the same, a series of three hollow elliptical grinding tools, a universal joint connecting each of said tools to said rotary head, means connecting the forward apex of each polishing member to the rotating head whereby the elliptical grinding members will be caused to travel in circular paths the axes of said members being maintained at substantially right angles to the radial line of their connection with the rotating head.

6. In a machine of the class described comprising a rotating driving head having radial arms and means for actuating said head, a series of elliptical polishing members connected to said radial arms by universal couplings, a tie rod connecting the forward end of each elliptical grinding tool with the arm next in advance of the rotating grinding head whereby the axis of the elliptical grinding tool will be maintained at substantially right angles to the radial line of its connection with a rotating head.

7. In an apparatus of the class described comprising a base member having depending polishing mechanism mounted thereupon, a truck for said base member comprising a pair of arms pivotally secured at one end to said base member intermediate of its length, an axle supported in the opposite ends of said arms and a rack pivotally mounted at the end of said base member having teeth adapted to engage said axle to support the end of said base member whereby the position of the base member and the grinding head may be adjusted.

8. In an apparatus of the class described comprising a base member having depending polishing mechanism mounted thereon, a truck for said base member comprising a pair of arms pivotally secured, one end to said base member intermediate of its length, an axle supported in the opposite ends of said arms, a rack pivotally mounted at the end of said base member having teeth adapted to engage said axle to support the end of said member, a foot lever connected with said rack whereby the same may be readily disengaged from the axle and a handle attached to the rear of said base member.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ERCOLE CAVICCHI.

Witnesses:
NATHAN HEARD,
NATHAN C. LOMBARD.