

June 25, 1929.

W. A. LACY

1,718,695

FLOOR POLISHER

Filed Feb. 20, 1926

3 Sheets-Sheet 1

*Fig. 1.*

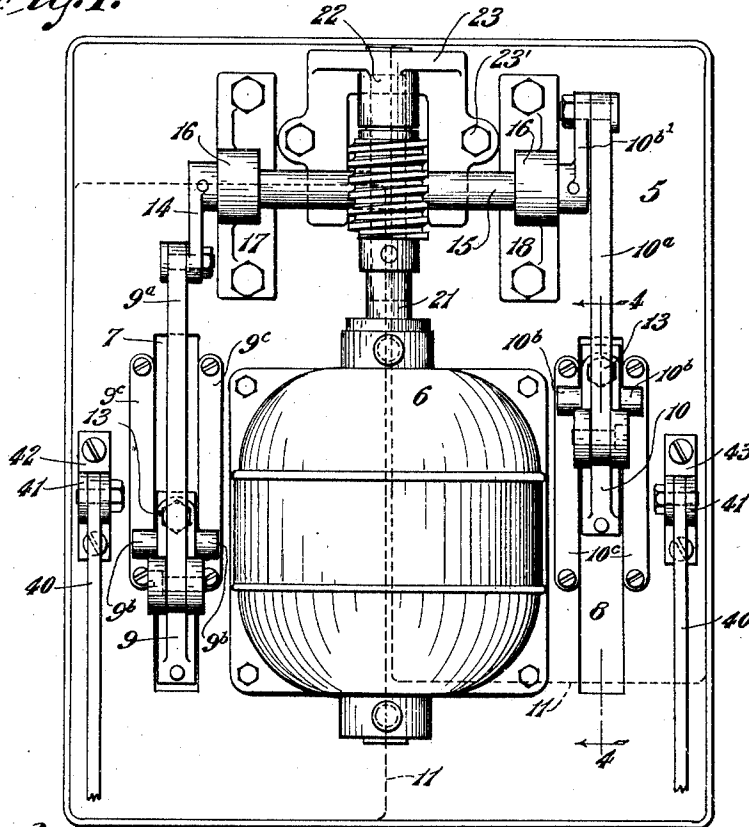


*Fig. 3.*

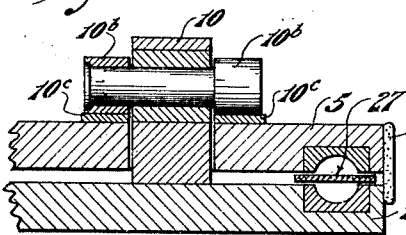
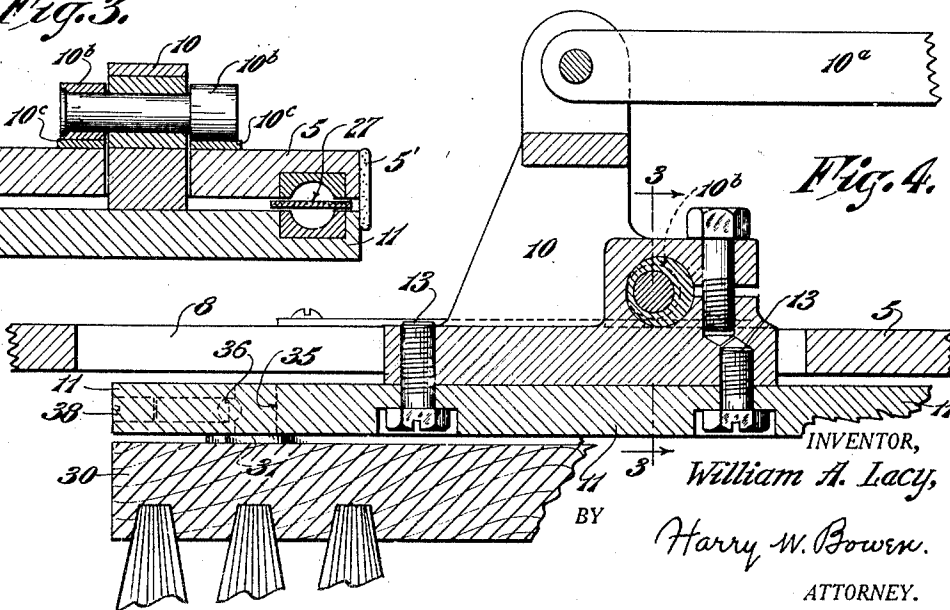


*Fig. 4.*



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*Fig. 2.*

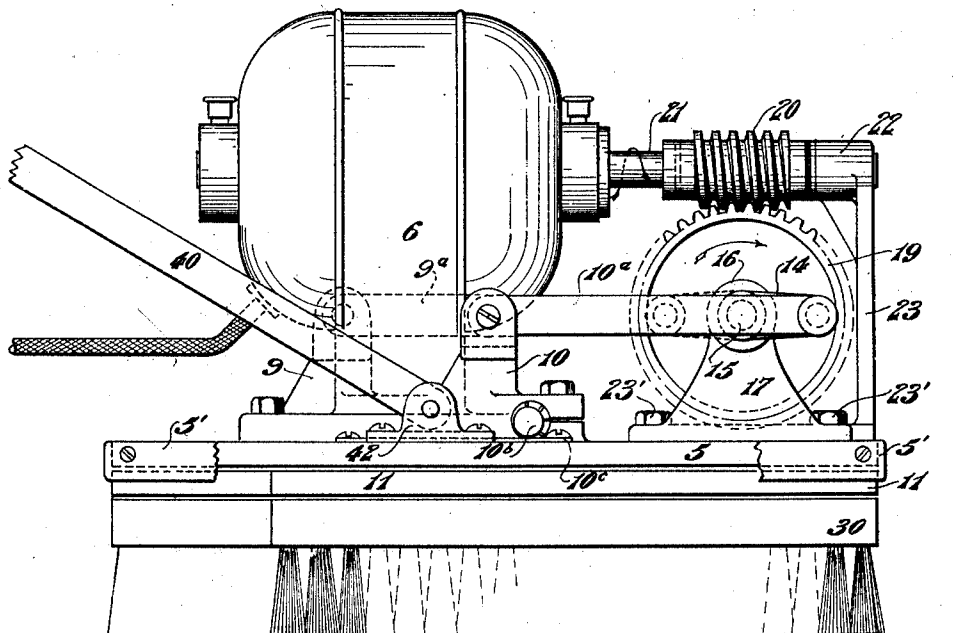
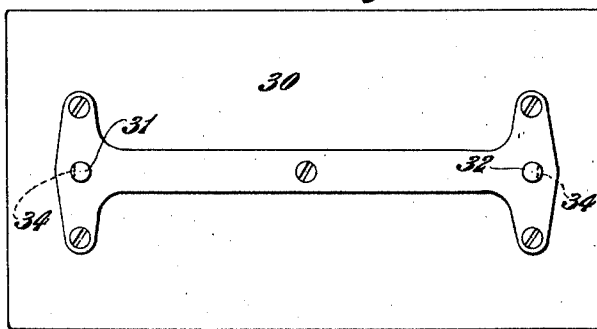
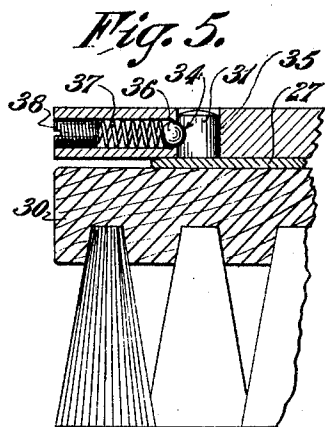


*Fig. 6.*



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## UNITED STATES PATENT OFFICE.

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## FLOOR POLISHER.

Application filed February 20, 1926. Serial No. 89,813.

This invention relates to improvements in floor polishing devices, and one of its objects is to provide a motor operated machine for polishing floors, which may be readily adapted by the house wife to the work of scrubbing, rubbing, and finishing of floors, without structural change in the machine itself.

Another object of the invention is in the provision of a floor polishing machine having a working tool or brush, or rubber, which is reciprocated against the surface of the floor, and which can be operated to polish the square corners of floors or surfaces.

A still further object of the invention is the provision of a machine of this character with a plurality of reciprocating rubbers or work tool supporting slides, which will work against the floor surface in parallel planes.

Other objects of the invention are to improve the motor drive of the work operating slides, to provide a detachable connection between the brushes or work tools and these slides, to eliminate friction between the slides and the body of the machine, and to simplify the working parts, to permit of the production of a light weight machine capable of being easily handled by the housewife or other person.

With the above and other objects in view the invention consists in certain new and useful combinations, constructions, and arrangement of parts, clearly described in the following specification and fully illustrated in the accompanying drawings, in which:—

Fig. 1 is a plan view of the floor polisher.

Fig. 2 is a side elevational view of the same.

Fig. 3 is a detail sectional view on the line 3—3 of Fig. 4 of the roller bearing.

Fig. 4 is a longitudinal sectional view on the line 4—4 of Fig. 1 showing the slotted base member and associated parts.

Fig. 5 is a detail sectional view on the line 5—5 of Fig. 7 of the releasable connection between the polisher carrying member or floor tool and the reciprocable member.

Fig. 6 is a top plan view of the floor tool

or polisher carrying member showing the upwardly extending notched attaching pins.

Fig. 7 is a bottom plan view of the base member and reciprocable members.

Fig. 8 is a sectional view on the line 8—8 of Fig. 7 showing the ball bearings between the base member and the reciprocable member, and

Fig. 9 is a detail view on the line 9—9 of Fig. 8.

Referring to the accompanying drawings illustrating the practical embodiment of my invention 5 designates a base of suitable material on which the electrical motor 6 is mounted in an approximately central position. The base is shown to be of rectangular form, but it is obvious that it may be of any other form required for given operations. The rectangular form is best adapted, however, for the great majority of floors which have square corners and straight sides.

This base is formed with a slot 7 on one side thereof and a similar slot 8 on the other side thereof which are parallel with the side edges thereof, which is located distantly from the ends thereof. In the slot 7 a driving arm 9 is located, and in the slot 8 a driving arm 10 is located. The driving arm 9 is secured to the slide 11 and the driving arm 10 is secured to the slide 12, by means of the screws 13. See Figs. 1, 4 and 7. The arms 9 and 10 are relatively narrow so as to readily slide in the slots in which they work, and these arms are reciprocated by means of the pitmen 9<sup>a</sup> and 10<sup>a</sup>. The pitman 9<sup>a</sup> is connected to the crank arm 14 of the drive shaft 15, and the pitman 10<sup>a</sup> is connected to the crank arm 10<sup>b</sup> of the same drive shaft 15, these crank arms being secured to the opposite ends of the drive shaft.

The drive shaft 15 is journaled in bearings 16 which are supported on the bearing brackets 17 and 18, secured to the base 5. This drive shaft is equipped with a worm wheel or gear 19 which is driven by means of the worm 20 formed or mounted on the motor shaft 21, the outer end of which is supported in the thrust bearing 22 on the

upper end of the bracket 23, secured at its lower end to the base 5.

The driving arm 9 is provided with a roller 9<sup>b</sup> which rolls on the upper surface of the base 5, and the driving arm 10 is provided with a similar roller 10<sup>b</sup> for a like purpose. At the forward end portion of the slide 11 a bearing ball 24 is located between the slide and the underside of the base 5, and a similar bearing ball 25 is located between the rear end portion of said slide and the adjacent face of the base. These balls are retained by means of a fibre strip retainer 27, between the slide and the base, reciprocating freely under the rolling action of the bearing.

The entire machine is supported by the floor treating tool whether this be a brush, rubber, or polishing device. In each instance the work tool is provided with a back or base 30, and this back or base is provided with upstanding holding pins or posts 31 and 32 on the opposite end portions thereof. Each pin or post is formed with a groove or recess 34 in its side, see Fig. 5. The pins or posts are inserted in openings 35 formed in the slide to which the holder is to be connected, each slide having similar openings. Across each opening a ball 36 works under the tension of the spring 37, which is held in place by means of the screw plug 38, threaded into the end of the slide.

By forcing the pins or posts against the balls the work tool is quickly secured in place, and by applying slight pressure against the work tool it may be quickly detached from the slide.

The pitmen and driving cranks are so arranged that the slides will be reciprocated in opposite directions. The edge of the base is protected by means of carpet or felt, secured in the form of a buffer strip 5' to the edge thereof. The slides are designed to move the work tools to the extreme corner of the floor, when the machine is being applied to finish the corner. That is, the area of wiping or polishing action of the work tools is designed to be approximately equal to or if desired slightly greater than the under surface area of the base 5.

By reciprocating the work tools in opposite directions the thrust of one work tool against the floor is neutralized by the thrust of the other work tool, and the machine can be moved forwardly or readily in any direction desired, without difficulty.

The reciprocating rubbing or wiping stroke provides a better finishing action, as the grain of the wood is not forced in one direction only, but is finished so that it remains in its natural condition, and the final polish obtained is cleaner and more attractive than can be obtained by rotating wiping or polishing movements.

The machine is manipulated about the

floor by means of the handle 40, the lower end of which is pivoted to the brackets 42 and 43 on the sides of the base 5.

The motion of each pitman varies in speed, while the motion of the driving shaft is constant, producing a relatively slow reverse at the end of each polishing or wiping stroke, and a relatively rapid movement during the major part of the stroke. This is due to the fact that the rotary movement of the crank arm on the driving shaft produces its greatest throw on the pitman, when the crank arm is passing through its upper and lowermost zones of its orbit, and the smallest movement when the crank arm is passing through the intermediate zones of its orbit or path. As shown in Fig. 1 the longitudinal movement of the pitman slows up during the period when the crank arm is moving from the high position in this figure to the next quarter position below the high position thus shown, and the motion increases when the crank arm is moving through the third quarter of its revolution, and again slows up when the crank arm swings through the fourth quarter of the revolution. Thus, the upper and lower quarters of the revolution of each crank arm produces a fast movement of the pitman connected to it, and the intermediate quarter produces a relative slow motion, during the reversing period when the slide is reaching the end of its stroke in one direction and enters into the next succeeding stroke in the opposite direction.

The driving motion thus generated produces a polish, and prevents any sudden jerking which would cause a pounding against the floor and increase the difficulty of controlling and steering the device.

Having described my invention I claim:—

1. In a floor polishing machine, the combination of a base piece, slidable members mounted on the base piece and formed with recesses extending upwardly from the under side thereof, holders to which polishing elements are secured, the holders having upwardly projecting pins with recesses formed thereon which enter said first named recesses, means for securing the projecting pins in the upwardly extending recesses comprising balls which are located in the slidable members, and spring means for forcing the balls against the recesses in the pins, whereby the slidable members may be detachably secured to the base piece, a motor on the base piece and operative connecting means between the slidable members and the motor.

2. In a floor polishing machine, in combination, a base piece provided with two parallel slots extending therethrough, a driving motor on the base piece, two members slidable on said base piece and located therebelow, floor polishing means carried by the slidable members, arms on the slidable mem-

bers which project upward through the slots in the base piece, operative driving connections including pitmen between the motor and the said arms on the slidable members, 5 the lower side of the base piece and the upper sides of the slidable members being provided with opposed longitudinal grooves, balls in the grooves, ball retaining members between the upper and lower grooves for holding the balls in place, the slidable mem- 10 bers travelling to the edges of the base when operated, and being driven in opposite directions.

In testimony whereof I affix my signature.

WILLIAM A. LACY.