March 20, 1951 J. P. STEIBEL 2,545,635

ROTARY FLOOR POLISHING MACHINE HAVING HORIZONTALLY POSITIONED MOTOR

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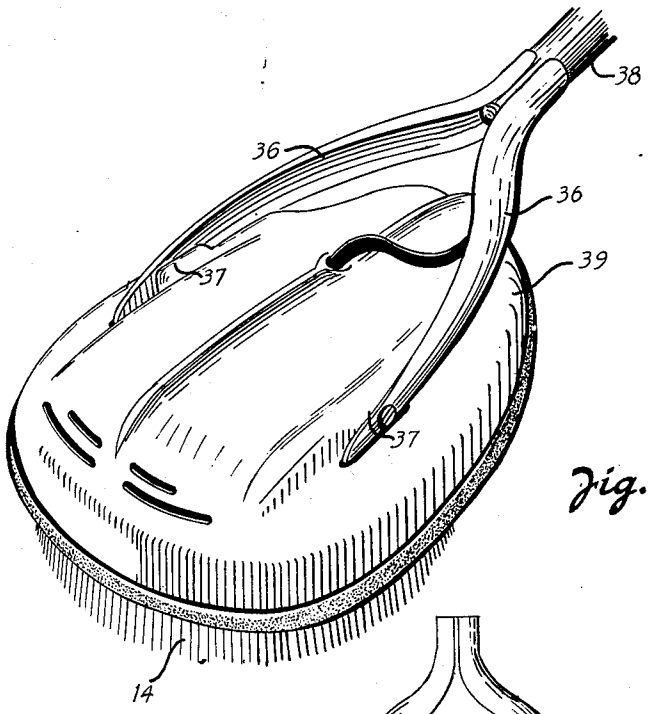
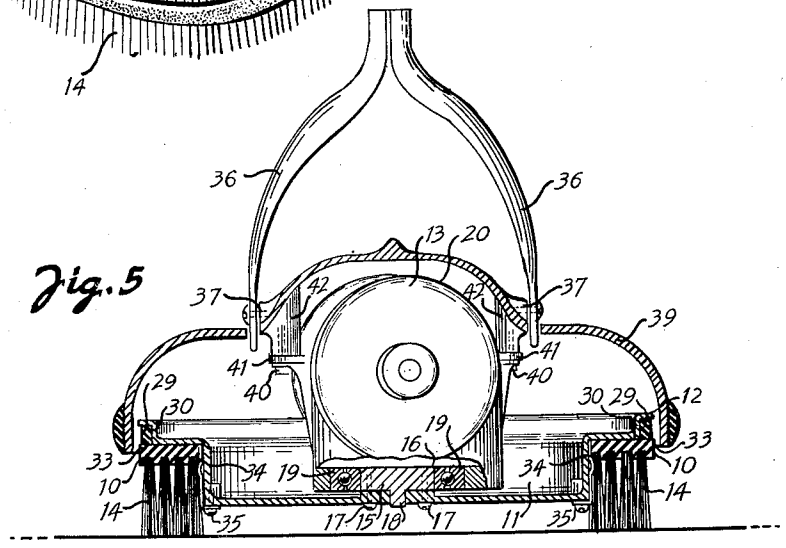


Fig. 1

Fig. 5



INVENTOR
James P. Steibel
BY Robert J. Leahy
ATTORNEY

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Fig. 2

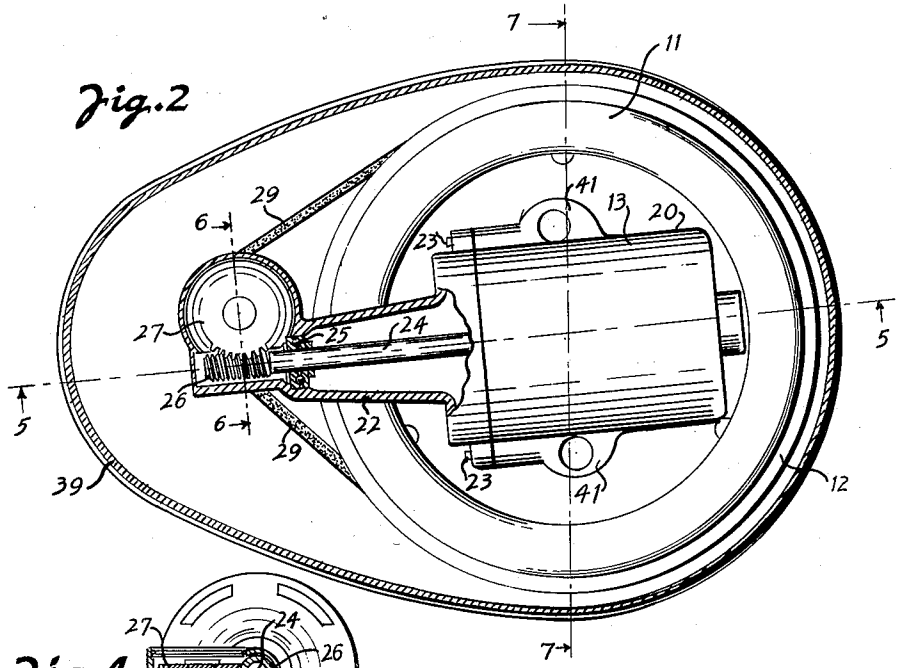


Fig. 4

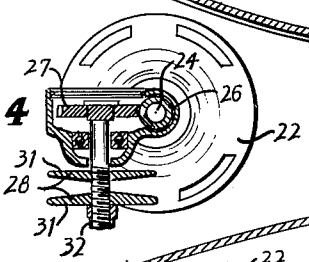
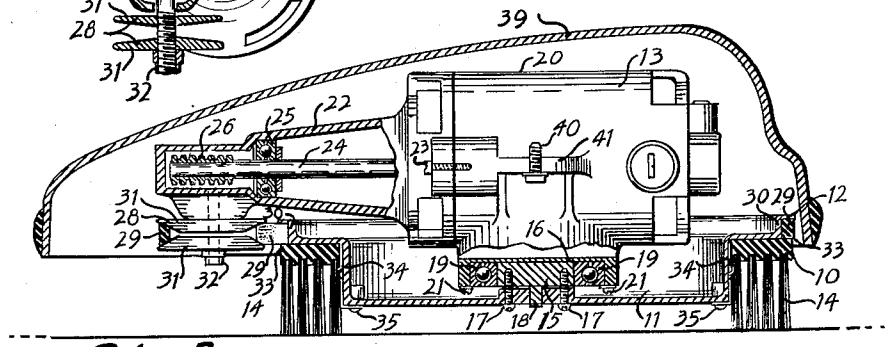


Fig. 3



INVENTOR
James P. Steibel
BY Robert J. Leahy
ATTORNEY

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UNITED STATES PATENT OFFICE

2,545,635

ROTARY FLOOR POLISHING MACHINE HAVING HORIZONTALLY POSITIONED MOTOR

James P. Steibel, Racine, Wis., assignor, by mesne assignments, to S. C. Johnson & Son, Inc., Racine, Wis., a corporation of Wisconsin

Application April 17, 1948, Serial No. 21,594

1 Claim. (Cl. 15—49)

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This invention relates to a floor polishing machine. More particularly, it relates to a novel electric floor polisher, adapted for household use, which employs a rotary brush.

This application is a continuation-in-part of my copending application, Serial Number 664,503 filed April 24, 1946, for Rotary Floor Polishing Machine Having Horizontally Positioned Motor.

Heretofore small machines of this type used a cylindrical brush, for example, as illustrated in U. S. Patent No. 1,588,157 to Beach. While large floor polishing machines have been designed using a rotary brush, as far as known, no machine using a small rotary brush, such as an eight inch diameter brush, has been used commercially. Former attempts to design a satisfactory small rotary brush floor polisher were unsuccessful because when the brush was driven, a gyrating motion developed, with a build up of an oscillating movement so that difficulty was experienced keeping the brush on the floor and in maintaining control of the machine. It was found that the higher the motor was mounted or positioned above the floor, the more severe was the gyrating and oscillating motion.

It is therefore a primary object of my invention to provide an improved lightweight rotary brush polisher wherein the bottom of the motor is positioned below the top of the brush so that the center of gravity of the machine is lowered sufficiently close to the floor to minimize the gyrating and oscillating movement of the machine during operation and including novel details of construction.

Another object of my invention is to provide a lightweight rotary brush floor polisher provided with a manually operated tensioning means for adjusting the tension of a drive belt, to keep it taut.

Another object of my invention is to provide an efficient lightweight rotary brush polisher which can be manufactured economically.

A further object is generally to simplify and improve the construction, arrangement and operation of polishers for one or more of the purposes mentioned, and still other objects will be apparent from the specification.

The invention includes the construction and arrangement of parts as herein illustrated, described and claimed and, since various modifications thereof are contemplated, it will be understood that the invention also includes such modifications as are equivalent to the claim.

The same reference characters have been used for the designation of like parts throughout and in the drawings.

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Fig. 1 is a perspective view of the rotary floor polisher.

Fig. 2 is a top plan view showing the casing and gear housing in section.

Fig. 3 is a vertical cross-sectional view taken along line 5—5 of Fig. 2 and showing the motor in side elevation.

Fig. 4 is a detailed cross-sectional view taken along line 6—6 of Fig. 2.

Fig. 5 is a vertical cross-sectional view taken along line 7—7 of Fig. 2 showing the motor in elevation.

Discussing now in detail the novel combination which makes up the improved rotary brush polisher, the center of a small rotary brush 10, for example, a rotary brush with an 8" outside diameter is cut out to about 6" inside diameter, leaving 2" of bristles around the outside diameter. A motor support 11, which may conveniently be made in the shape of a cup or dished portion with flanged outside portion 12, is preferably made of metal because of the importance of concentrating weight at a low level in the polisher which helps stabilize the machine. The motor support 11 acts both as a support for the motor 13 and as a base for the brush 10. The bottom of the dished portion of the motor support 11 is positioned as close to the floor as practical, but it is preferable to leave at least one-half inch to allow for wearing of the brush bristles 14 before replacement of the rotary brush is necessary. It is to be understood that this describes only one form of the combined brush and motor support, as this complete element may also be made in one piece, if desired.

A cylindrical pivot plug 15, perferably of steel, having a spun or flanged end 16 is centered on and affixed to the inside of the bottom wall of the dished portion of motor support 11, for example, by means of a plurality of screws 17. If desired, a small boss 18 may project from the center of the pivot plug 15 to act as a convenient centering means for easy assembly of the plug to the motor support 11. The outer race of a ball bearing 19 is secured to the motor housing 20 by screws 21, and the motor housing 20 and ball bearing are fitted over the pivot plug 15. Thus the motor 13 is centered and held firmly in position by means of the pivot plug 15 while being supported by the bottom wall of the motor support 11, preferably about one-half inch from the floor.

A worm gear housing 22 is detachably mounted on the motor housing 20 by means of a plurality of screws 23. The gear shaft 24 is supported in the worm gear housing 22 by bearing 25.

The driving means is a conventional right angle

worm gear 26 and worm wheel 27 with a sheave or pulley 28 fixed to the worm wheel shaft. A belt 29 is trained around the pulley 28 and around the outside periphery 30 of the motor support 11 in a peripheral groove therein provided for that purpose. As a tensioning means, the pulley 28 is comprised of two conoid-shaped discs 31 which may be relatively axially moved toward each other by means of an adjusting nut 32, positioned below the lower disc and threaded to the worm wheel shaft. However, if desired, tensioning means may be eliminated providing a belt is used of material which requires no adjustment to keep it taut. The top of the brush 10 serves as the lower flange 33 of a belt groove to engage the bottom edge of the belt 29 while the remainder of said groove is defined by upwardly and outwardly extending flanges on the support 11, as clearly shown in Figs. 3 and 5 of the drawings. The brush 10 is secured to the motor support 11 by means of a plurality of clips 34 held in place by means of screws 35. The brush 10 is thus driven in rotation through its attachment to the motor support 11, which in turn is driven by means of the belt 29.

A bail 36 may be attached to pivot trunnions 37 which are preferably positioned equidistant from the center line of the motor 13 and so arranged as to bring the handle 38 in line with the axis of symmetry of the machine. However, the pivot trunnions 37 may be positioned elsewhere in the assembly if desired.

The assembly is provided with a casing or hood 39 which is secured to the motor 13 by means of a plurality of screws 40 engaging motor lugs 41, formed on the motor housing 20 and recesses 42 formed in the hood 39. Fig. 5 illustrates the casing 39 in position, and also shows the bail 36 attached to the pivot trunnions 37.

From the foregoing description it can be seen that the objects of this invention have been accomplished in this novel rotary brush polisher. By providing means for mounting the motor whereby the bottom is closer to the floor than the top of the rotary brush, the resulting machine has been found to minimize and practically eliminate the heretofore excessive gyrating and oscillating movements resulting from operation of previous small rotary polishers. This machine has provided a long felt need in the art of floor polishing machines, providing the housewife with a compact, attractive and efficient rotary floor polisher.

Many apparently widely different embodiments of this invention may be made without departing from the principle, breadth and spirit thereof, and it is to be understood, therefore, that this invention is not limited to the specific embodiments herein disclosed except as so limited by the following claim:

I claim:

A rotary floor polishing machine comprising, a motor having a housing and a horizontally extending shaft, a rotary structure journalled on said motor housing at the bottom thereof for rotation on a vertical axis, said rotary structure having portions extending upwardly outwardly of the sides of said motor housing to a level above the bottom thereof, an annular brush arranged concentrically about said axis and secured to said upwardly extending portions above the bottom of said motor housing, said brush having bristles extending downwardly from an upper level above the bottom of said rotary structure to a level below said motor and rotary structure and outwardly of the latter, and drive means connecting said horizontal shaft and rotary structure radially outwardly of said motor and above the said bottom of said motor, said upwardly extending portions of said rotary structure terminating in an outwardly extending flange overlying the top surface of said annular brush, the said flange having a portion spaced from the said top surface and defining therewith a peripheral groove to receive a drive belt constituting an element of said drive means.

JAMES P. STEIBEL.

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