June 26, 1934. E. A. FOWLER 1,964,318

FLOOR POLISHING MACHINE

Original Filed Aug. 13 1929 5 Sheets-Sheet 1

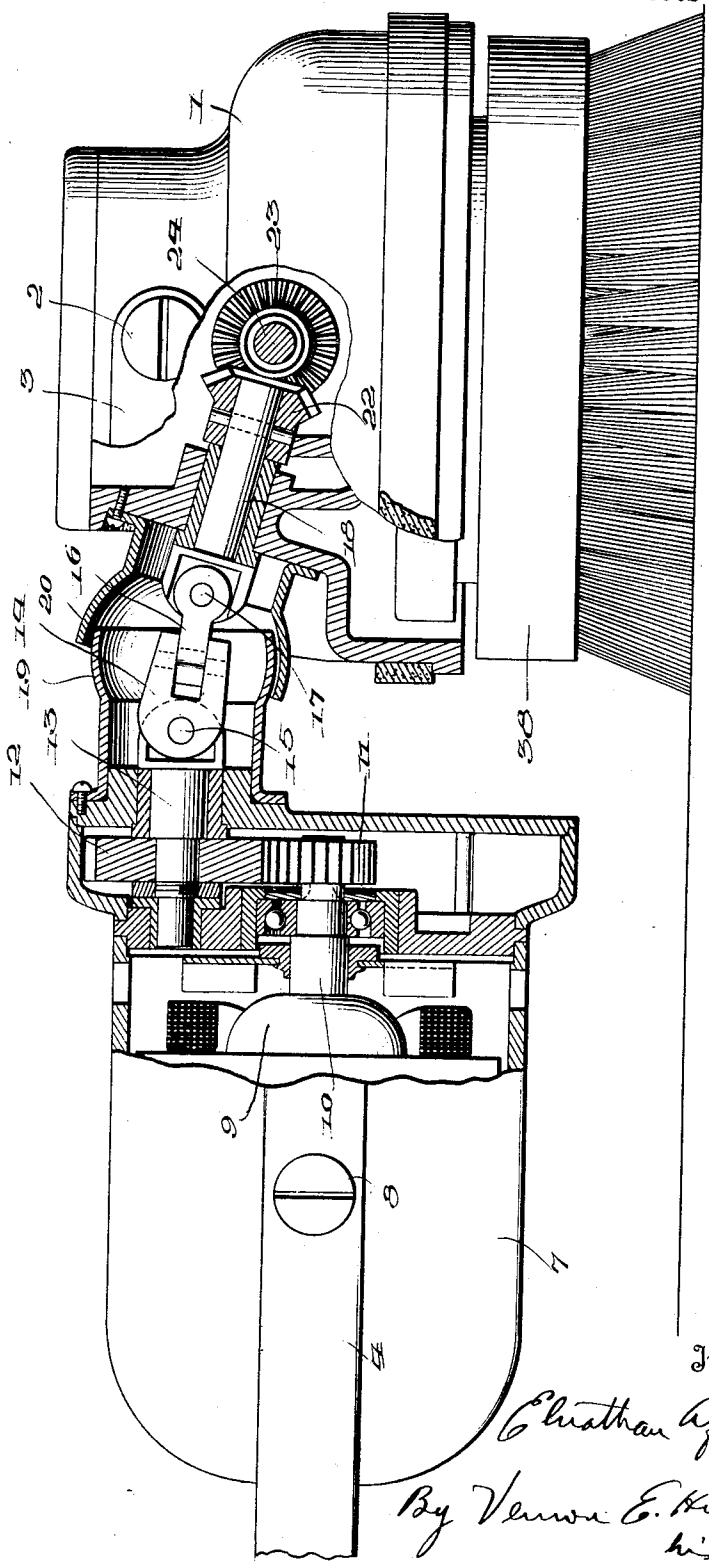


Fig. 1.

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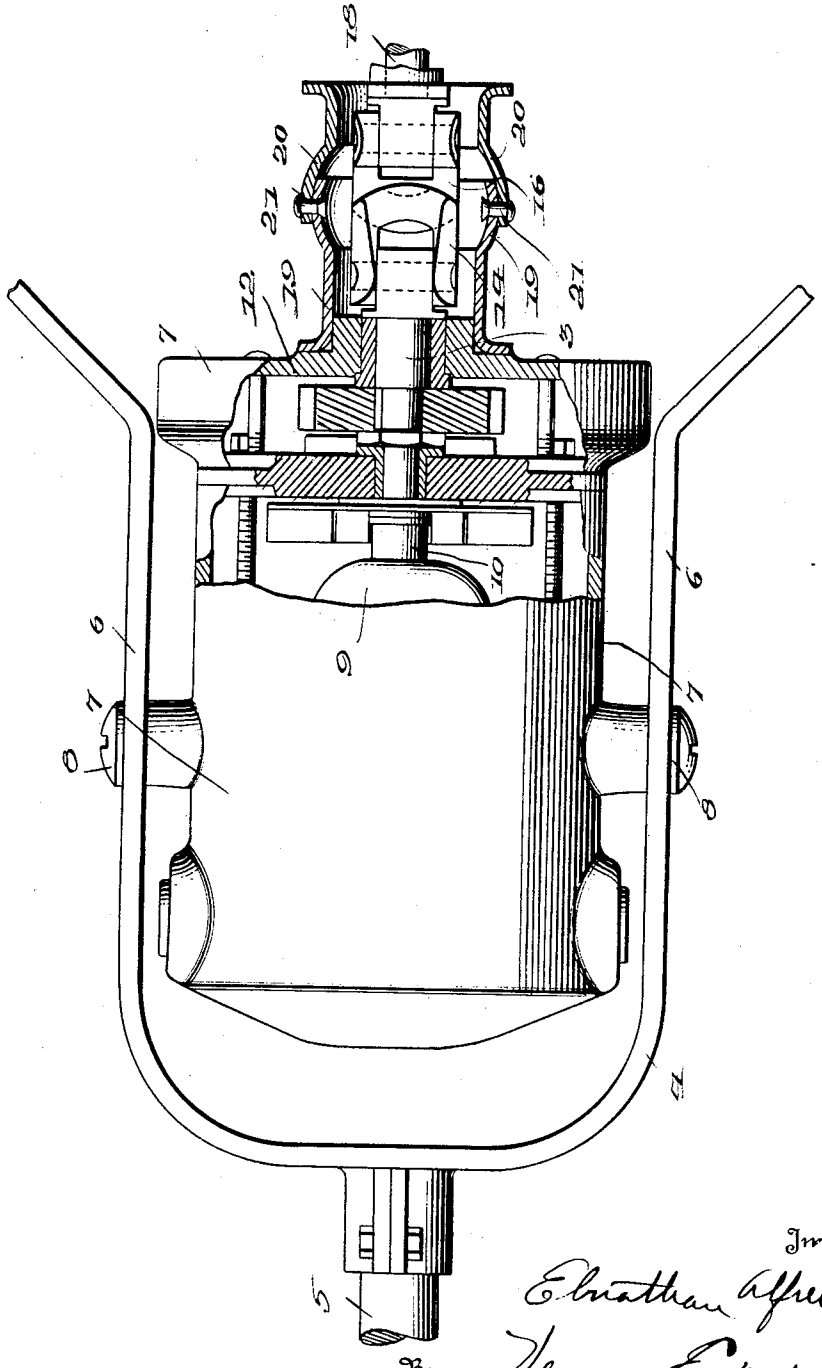


Fig. 2.

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FLOOR POLISHING MACHINE

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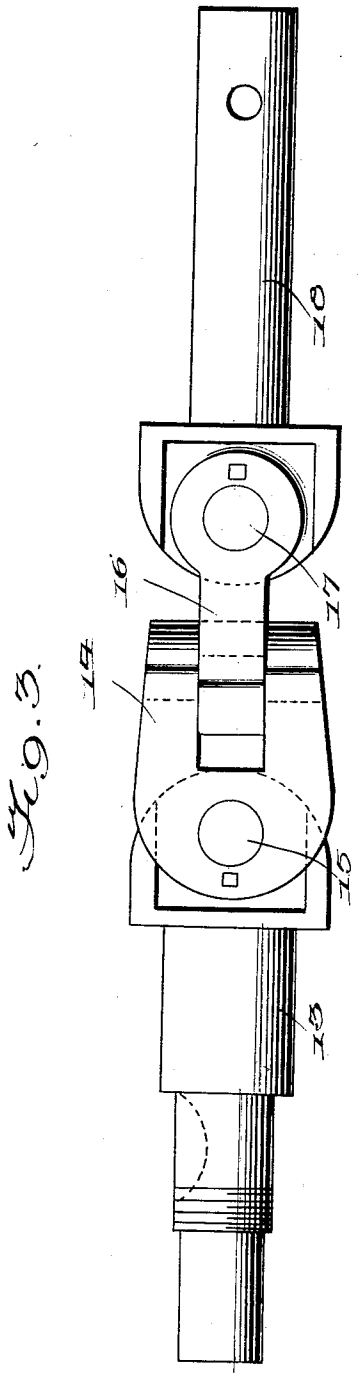


Fig. 3.

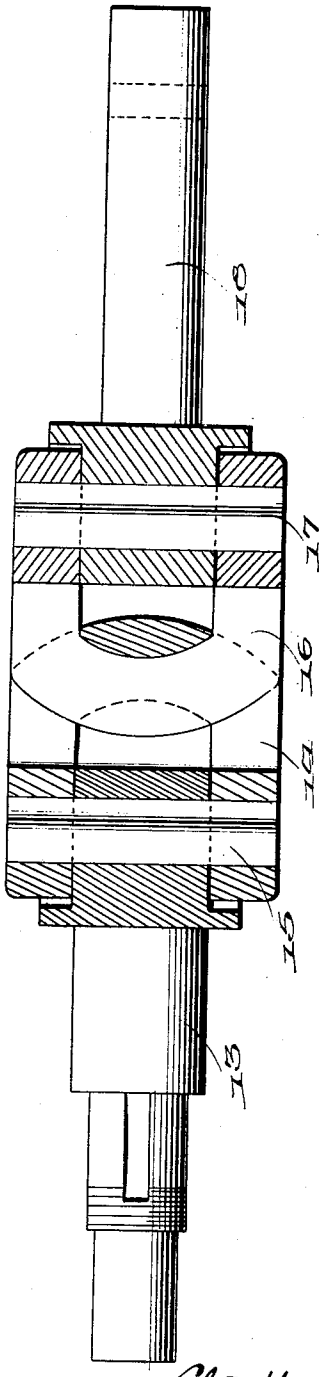


Fig. 4.

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FLOOR POLISHING MACHINE

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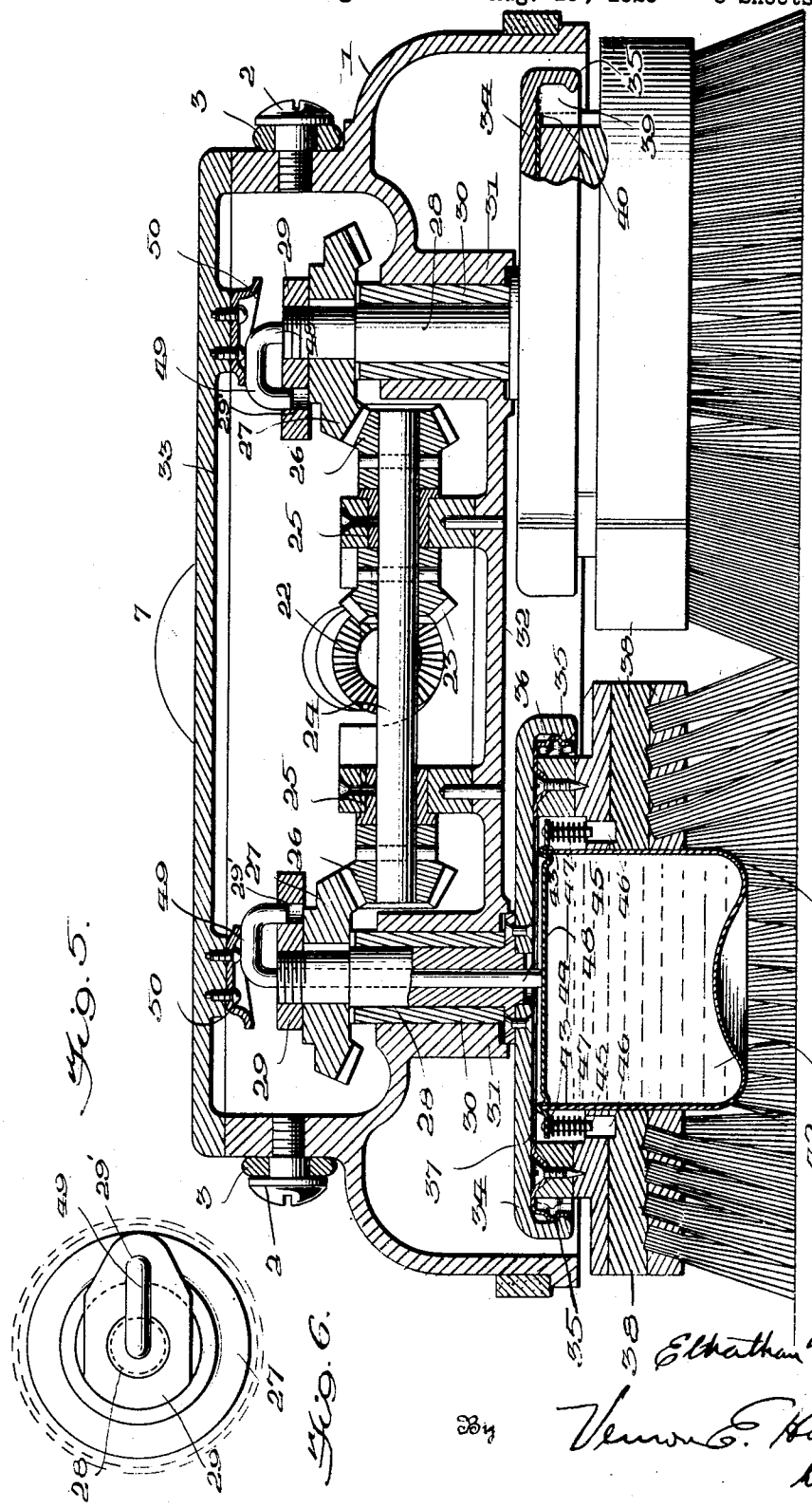


Fig. 5.

Fig. 6.

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FLOOR POLISHING MACHINE

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Fig. 6.

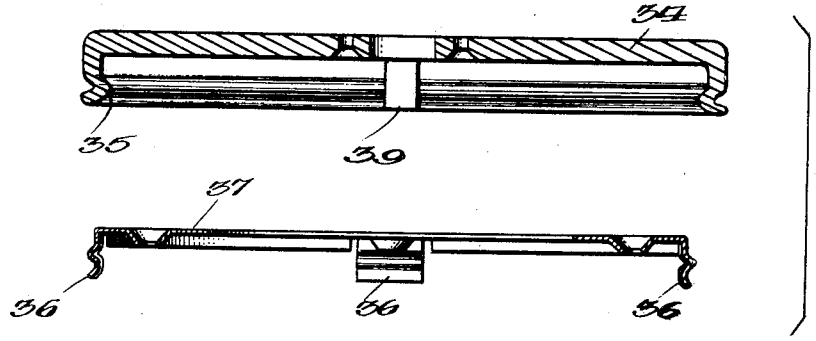
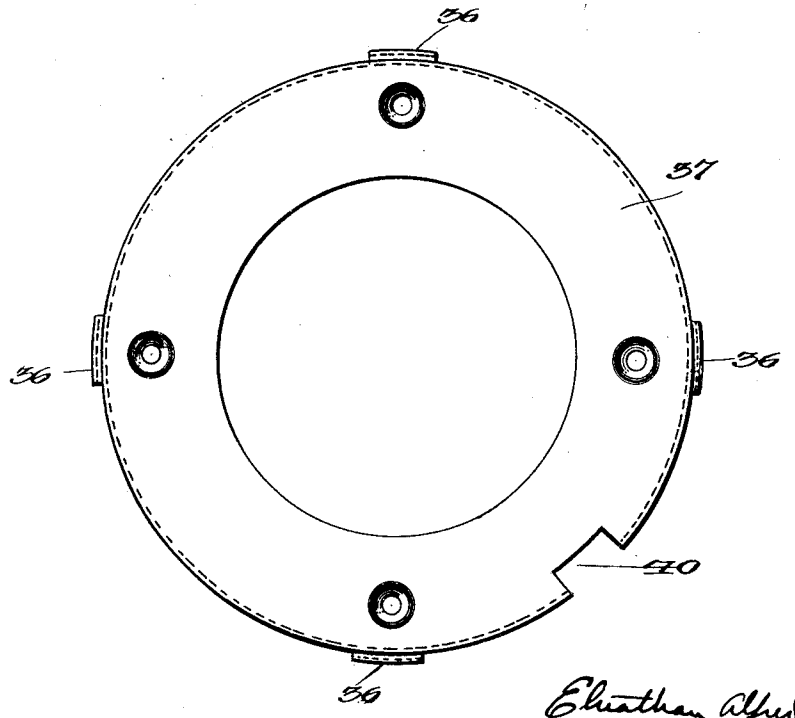


Fig. 7.



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Patented June 26, 1934 1,964,318

UNITED STATES PATENT OFFICE

1,964,318

FLOOR POLISHING MACHINE

Elnathan Alfred Fowler, York, Pa., assignor to The Floorola Corporation, Baltimore, Md., a corporation of Delaware

Application August 13, 1929, Serial No. 385,604
Renewed November 10, 1933

26 Claims. (Cl. 91—39)

This invention relates to an improvement in floor polishing machines.

One of the objects of the invention is to provide a floor waxing and polishing machine so constructed that the machine may operate under very low objects, such as beds, chairs or other articles of furniture, and so that the machine may be easily moved and withdrawn from under such objects while continuing and permitting the operation thereof.

This is accomplished by the mounting of the driving motor at one side and laterally of the brushes and the gearing, which are enclosed within the brush casing, and by supporting the motor in this way and by the handle of the machine, this permits the machine to be readily moved under very low objects or withdrawn therefrom. At the same time, and by supporting the motor in this way, the weight of the motor is placed on the brushes so as to increase the force of the rubbing or polishing process. The carrying or suspending of the motor from the handle of the machine and at one side of the brush mechanism accomplishes these objects and allows also for readily moving the machine about and prevents overbalancing the machine or applying too great a weight on any one side, this being compensated for by a slight additional effort on the part of the operator in holding and moving the handle.

A further object of the invention is to cause proper discharge of the contents of the wax containers onto the surrounding walls of bristles of the brushes, which is accomplished by a reciprocating or jogging action on the containers or the covers thereof, which aids the discharge of the contents by centrifugal force during rotation of the brushes and containers, and in that way serves to effectively discharge approximately all of the wax from the containers and to force the wax onto the surrounding walls of bristles of the brushes.

In the accompanying drawings:

Fig. 1 is a side elevation partly in section of the invention;

Fig. 2 is a plan view partly in section of the driving mechanism;

Fig. 3 is a side elevation of a universal driving shaft;

Fig. 4 is a plan view partly in section of the same;

Fig. 5 is a transverse sectional view through the brush casing;

Fig. 6 is a detail plan view of the brush shaft nut and plunger;

Fig. 7 is a plan view of the brush top plate; and

Fig. 8 is a sectional view of the plate and holder.

The casing enclosing the brushes and the driving mechanism therefor is designated generally by the numeral 1 and is shown as somewhat elongated in Fig. 5. Pivoted to the opposite ends of this casing 1 by means of screws or similar pivots 2 are the outer ends 3 of handle-yoke 4, which yoke is of the general form shown in Fig. 2. The yoke 4 has the usual handle 5 secured thereto as also shown in Fig. 2. The yoke 4 receives the driving motor casing 7 within the sides 6 thereof and to which it is secured by the screws 8.

This casing 7 carries the usual driving motor 9, which, in turn, actuates a drive shaft 10 provided with a pinion 11 meshing with a gear 12.

The gear 12 is fixed to one end 13 of a universal driving shaft, which end is mounted in suitable bearings in the motor casing 7, as shown in Figs. 1 and 2. A double yoke 14 is pivoted to the end 13 of the driving shaft, as at 15, as shown in Figs. 3 and 4, and enclosed within the double yoke 14 is a link 16 having its end pivoted as at 17 to the inner end 18 of the universal drive shaft. This form of drive shaft has a double pivotal connection between the two ends 13 and 18 thereof, allowing pivotal action along parallel and horizontal axes, being the axes of the pivots 15 and 17, and the yoke 14 and link 16 are pivoted together and move as a unit but allowing vertical tilting movement of the two ends 13 and 18 of the drive shaft relative to each other as the handle 5 is tilted or raised or lowered.

This drive shaft is enclosed within the universal housing, one part 19 of which is fixed to the motor housing 7 while the other part 20 is fixed and secured to the housing or casing 1. The two parts of this universal housing 19—20 are pivoted together as at 21, which pivots are arranged in alignment, as shown in Fig. 2, so as to permit parts of the housing to be moved about an approximately horizontal axis, as the motor housing is tilted relative to the brush housing 1.

The inner end 18 of the universal drive shaft has a beveled pinion 22 fixed thereto meshing with a beveled pinion 23, shown in Fig. 5, which beveled pinion 23 is secured to a driven shaft 24, extending transversely of the brush casing or housing 1 and mounted in suitable bearings 25 therein. Fixed to the opposite ends of the driven shaft 24 are bevel pinions 26 meshing with gears 27, which are fixed to brush shafts 28 and held thereon by nuts 29, which preferably have at least two flat sides or a portion thereof that is

not rounded to be engaged by a wrench for turning.

The brush shafts 28 are mounted in bearings 30, extending vertically in bushings 31, forming a part of a transverse partition 32 of the housing or casing 1 and which, likewise, carries the bearings 25 for the driven shaft 24.

This transverse partition 32 is preferably cast integral with the housing or casing 1 and is closed at the top by a cover 33, forming a chamber within the upper portion of the housing or casing 1, enclosing the gearing or other driving mechanism for the brushes of the machine, which chamber may be packed with lubricant, such as grease, and effectively retains this lubricant and supplies it to the operating parts, keeping the shafts and bearings properly lubricated.

Brush holders 34 are fixed to the brush shafts 28 and have the downturned flanges thereof provided with a complete annular rib or head 35 as shown in Figs. 7 and 8 for receiving the downturned flanges 36 of brush plates 37, which are secured to the brushes 38. The flanges 36 are spaced from the extreme edges of the brushes 38 to provide a slight resilience therebetween and are crimped to snap into place over the rib 35, which facilitates the securing of the brushes to the brush holders.

When in place, the brushes 38 are normally held against turning relative to the brush holders 34 by lugs 39 carried by the brush holders 34 and adapted to fit into corresponding notches 40, provided in the plates 37.

The wax containers 41 are disposed within the centers of the brushes 38 with the discharge openings 42 thereof in positions to discharge the contents laterally onto the surrounding walls of bristles, primarily by centrifugal force, as the brushes are rotated. The wax containers 41 have laterally projecting flanges 43 formed either on the walls of the containers or the caps 44 thereof, which flanges 43 have pins 45 secured thereto and normally extending into openings 46 in the heads of the brushes 38. Springs 47 are sleeved over the pins 45 and are interposed between the flanges 43 and the heads of the brushes 38, normally tending to move the containers upward. Slidably mounted through the brush shafts 28 are plungers 48, which extend into abutting relation with the caps 44 of the containers at their lower ends and at their upper ends extend through the brush shafts 28 and have hook-shaped portions 49 extending into openings 29' in the nuts 29, so as to prevent relative turning of the plungers 48 and the brush shafts 28, and to cause the hook-shaped portions 49 of the plungers to turn with the brush shafts 28.

The springs 47, forcing the wax containers 41 upward against the lower ends of the plungers 48, also tend to force these plungers 48 upward and cause the hook-shaped portions 49 thereof to bear and ride against cams 50 secured to the cover 33 of the casing or housing 1.

These cams 50 are of proper shape so that upon rotation of the brush shafts and the plungers, they will cause a downward movement of the plungers with each revolution normally tending to force the wax containers downward, or at least the caps thereof, and the spring mounting of the containers will cause them to be returned when the cams have turned sufficiently to permit of this.

The rotation of the brushes in this way causes a reciprocating movement of the plungers 48, which acts to jar the wax containers as they are rotated with the brushes facilitating the discharge of the contents of the containers.

The brushes are driven through the universal drive shaft from the motor 9, which is disposed at one side of the brush housing or casing 1 and is carried thereby through the medium of the handle yoke 4, which, in turn, is pivoted to the housing. This supporting of the motor by means of the handle and at one side of the brush housing or casing reduces the height of the machine and facilitates the operation of the machine under very low objects, such as pieces of furniture. At the same time, the weight of the motor is disposed on the brushes primarily so as to give the proper weight to the machine for working the wax into the surface.

I claim:

1. In a floor polishing machine, the combination of a casing, rubbing means associated therewith, driving mechanism for said rubbing means and enclosed within the casing, a driving motor for said driving mechanism extending radially and at one side of the casing, a flexible drive shaft forming a driving connection between the motor and the driving mechanism within the casing, and a housing for said flexible drive shaft and having portions pivotally connected together permitting tilting of the motor relative to the casing.

2. In a floor polishing machine, the combination of a casing, rubbing means associated therewith, driving mechanism for said rubbing means and enclosed within the casing, a driving motor for said driving mechanism extending radially and at one side of the casing, a flexible drive shaft forming a driving connection between the motor and the driving mechanism within the casing, a housing for said flexible drive shaft and having portions pivotally connected together permitting tilting of the motor relative to the casing, and a handle for moving the machine over the surface to be treated and pivotally connected with the casing and supporting the motor.

3. In a floor polishing machine, the combination with rubbing means and a driving motor therefor, of a flexible shaft arranged between and for driving the rubbing means from the motor, said shaft having end sections connected together by inter-connected and double pivoted links.

4. In a floor polishing machine, the combination with rubbing means, and a motor for driving said rubbing means, of a flexible drive shaft arranged between and for transmitting motion from the motor to the rubbing means, said drive shaft having end sections, and links pivoted along parallel axes with the end sections and pivotally connected together.

5. In a floor polishing machine, the combination with rubbing means, and a motor for driving said rubbing means, of a flexible drive shaft arranged between and for transmitting motion from the motor to the rubbing means, said drive shaft having end sections, links pivoted along parallel axes with the end sections and pivotally connected together, and a sectional housing for said flexible drive shaft having the sections thereof pivotally connected together, permitting tilting of the motor relative to the rubbing means.

6. A floor polishing machine including a casing having a transverse partition extending across the casing and forming a chamber extending across and in the top thereof, a cover for said

chamber, transversely arranged bosses formed in said partition, rubbing means, shafts connected with said rubbing means and journaled within the bosses and having a relatively tight running fit therewith to prevent the escape of lubricant from the chamber, a drive shaft for the first mentioned shafts and mounted within the chamber.

7. A floor polishing brush including a head, polish applying media carried thereby, a distributing container mounted within the head, and resilient means for supporting said container within the head.

8. A floor polishing brush including a head, polish applying media carried thereby, a wax distributing container mounted within the head and having an outwardly extending flange, and resilient means interposed between the head and said flange for supporting the container.

9. In a floor polishing machine, a polishing brush, a container connected with said brush, means for rotating the brush and container for discharging the contents thereof, and means for intermittently depressing at least a portion of the container to facilitate the discharge of the contents thereof.

10. In a floor polishing machine, a polish applying brush, a container connected with said brush, driving means for said brush and container for discharging the contents of the container, and means for intermittently engaging and depressing said container during the rotation thereof to facilitate the discharge of the contents.

11. In a floor polishing machine, a polish applying brush, a drive shaft therefor, a wax container resiliently supported within the brush for the discharge of its contents by centrifugal force upon the rotation of the brush, said container having a cap, a plunger slidably mounted longitudinally in the drive shaft for intermittently engaging and depressing the cap of the container, and a cam for actuating the plunger.

12. In a floor polishing machine, a brush holder having a downwardly extending internally beaded flange, a brush having a plate projecting laterally therefrom and provided with resilient fasteners in spaced relation from the brush for engagement with the bead, the plate having a notch formed therein, and a lug carried by the flange of the brush holder to engage in said notch to prevent displacement of the brush from the holder.

13. In a floor polishing machine, a brush-holder, a brush, and resilient means for supporting the brush from the holder and permitting slight relative movement of the brush and holder in supported position.

14. In a floor polishing machine, a brush holder, a brush, and resilient means for supporting the brush from the holder and permitting slight up and down movement of the brush relative to the holder.

15. In a floor polishing machine, a brush-holder, a brush, fastening means carried by the brush and extending beyond the periphery thereof, means for connecting said fastening means with the brush holder, said fastening means permitting slight relative up and down movement between the brush and brush-holder.

16. In a floor polishing machine, a brush-holder, a brush, fastening means carried by the brush and extending beyond the periphery thereof, means for connecting said fastening means with the brush-holder to support the brush thereby, and resilient means connecting the fastening means with the brush to permit slight up and down movement of the brush relative to the holder.

17. In a floor polishing machine, a brush holder having a downwardly extending internally beaded flange, and a brush having a plate projecting laterally therefrom and provided with resilient fasteners in spaced relation from the brush for engagement with the bead.

18. In a floor polishing machine, the combination of a container, means for causing a discharge of the contents of the container, and means for intermittently jogging the container to facilitate the discharge of the contents thereof.

19. In a floor polishing machine, the combination of a container, means for causing a discharge of the contents of the container, and means for intermittently depressing at least a portion of the container to facilitate the discharge of the contents thereof.

20. A floor polishing machine comprising a casing, having a transverse partition extending across and within said casing and forming a chamber within the upper portion of the casing, vertically arranged shafts journaled in said partition, driving mechanism arranged in the chamber for driving said shafts, and rubbing means connected with the shafts and arranged beneath the casing.

21. A floor polishing machine comprising a casing, rubbing means connected with the casing, a yoke pivotally connected with the casing, and a driving motor operatively connected with the rubbing means and mounted within the yoke.

22. A floor polishing machine comprising a casing, rubbing means connected with the casing, a yoke straddling the casing on the outside thereof, and a driving motor operatively connected with the rubbing means and fixed within the yoke, being supported thereby.

23. A floor polishing machine comprising a casing, rubbing means connected with the casing, a yoke pivoted to the casing and extending approximately horizontally therefrom, and a driving motor for the rubbing means, and carried by the yoke, said motor being arranged in approximately the same horizontal plane as the casing and yoke.

24. A floor polishing machine comprising a casing, a plurality of rubbing elements mounted under the casing for rotation about approximately vertical axes, a drive-shaft connected with said rubbing elements, a yoke pivoted to the casing and adapted to be connected with a handle, and a driving motor supported by the yoke and connected with the drive-shaft.

25. A floor polishing machine comprising a casing, a plurality of rubbing elements mounted in the casing for rotation about approximately vertical axes, a flexible drive-shaft connected with said rubbing elements, a handle-yoke straddling the casing and pivoted thereto, and a driving motor supported by the yoke and connected with the drive-shaft.

26. A floor polishing machine comprising a casing, a plurality of rubbing elements mounted in the casing for rotation about approximately vertical axes, drive-gearing housed in the casing and connected with said rubbing elements, a flexible drive-shaft connected with the drive gearing, a handle yoke straddling the casing and pivoted thereto, and a driving motor supported by the yoke and connected with the drive-shaft.

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