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L. N. GILLIS

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FLOOR POLISHING AND SCRUBBING MACHINE

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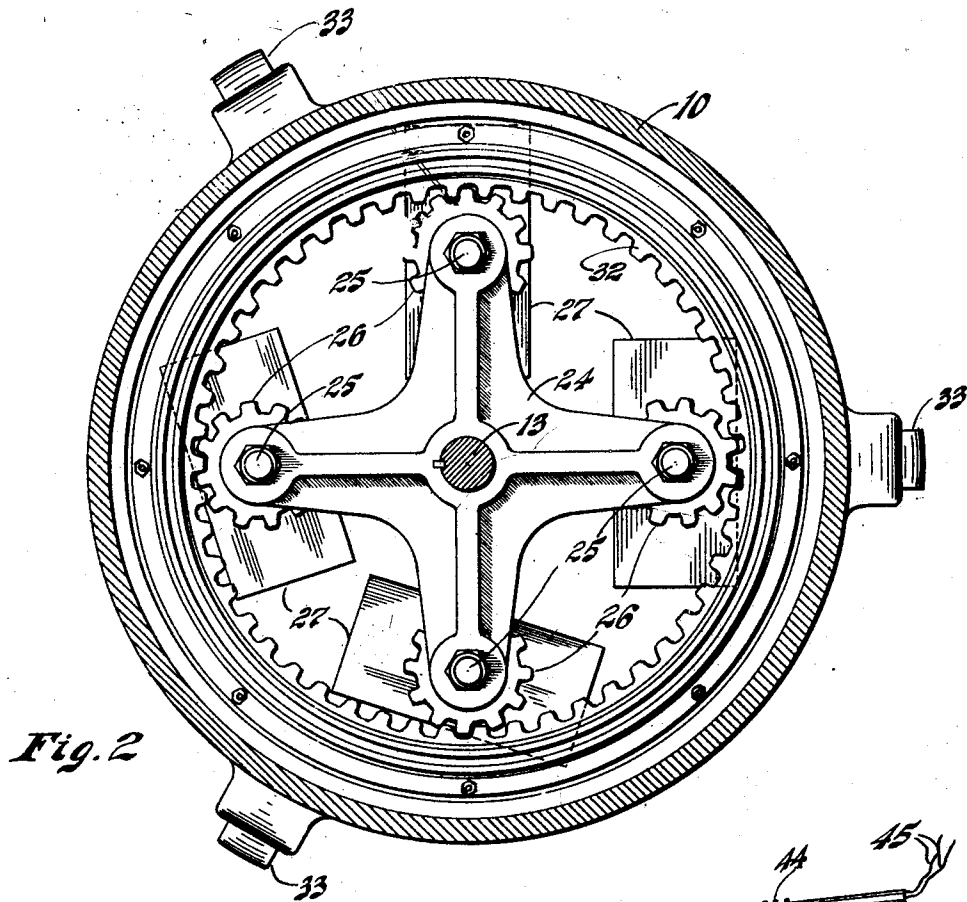


Fig. 2

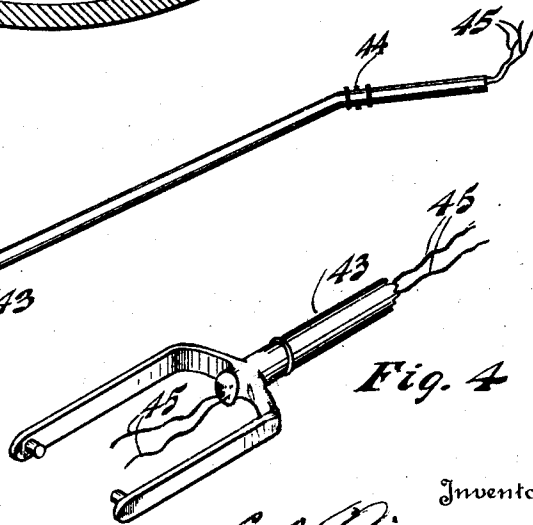
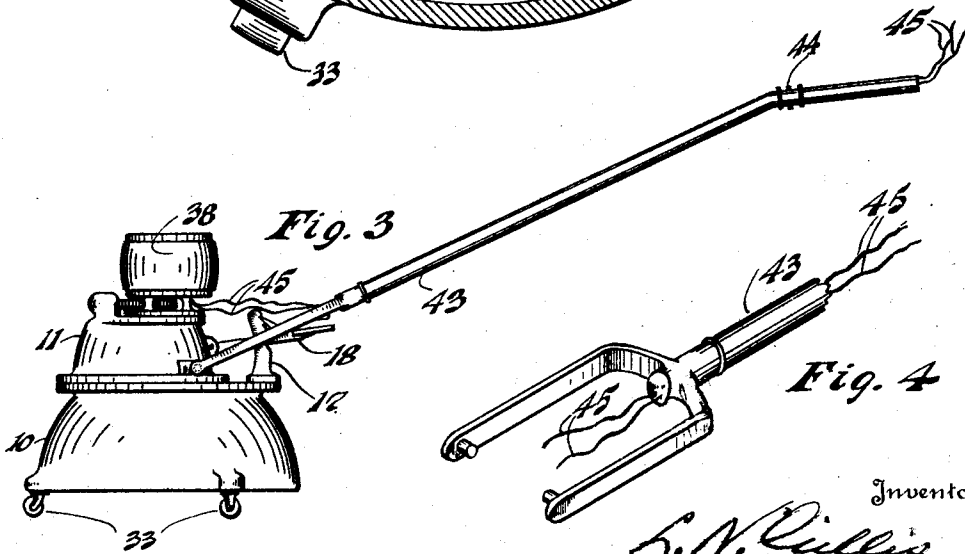


Fig. 4

Inventor

L. N. Gillis

UNITED STATES PATENT OFFICE

LYLE N. GILLIS, OF ALEXANDRIA, VIRGINIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO THE FLOOROLA CORPORATION, OF BALTIMORE, MARYLAND, A CORPORATION OF DELAWARE, AND ONE-HALF TO ERNEST J. NEWCOMER, OF BALTIMORE, MARYLAND

FLOOR POLISHING AND SCRUBBING MACHINE

Application filed September 7, 1923. Serial No. 661,424.

This invention relates to floor polishing machines and has special reference to a combined floor polisher and scrubber.

One important object of the invention is to provide an improved and simple form of floor polisher which is sufficiently light in weight to be readily operated by a woman using but one hand, which is of extremely simple construction so that the various adjustments which may be made thereon can be made without the use of tools of any sort.

A second important object of the invention is to provide a device of this description wherein certain rubbing elements will be provided which, by the peculiar construction of the invention, are given a planetary motion over the floor.

A third important object of the invention is the provision of an improved arrangement for regulating the pressure of the rubbing elements on the floor and for lifting said elements entirely out of contact with the floor.

With the above and other objects in view as will be hereinafter apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter more fully described, illustrated in the accompanying drawings and specifically claimed.

In the accompanying drawings like characters of reference indicate like parts in the several views, and:

Fig. 1 is a side elevation partly broken away and in section of the body of the machine.

Fig. 2 is a horizontal section through the lower part of the machine.

Fig. 3 is a side elevation on a small scale of the complete device.

Fig. 4 is a perspective view of the forked end of the operating handle.

In the embodiment of the invention herein disclosed, there is provided a main housing 10 to which is secured an upper housing 11, these housings constituting what may be termed the frame of the machine. In the top of the housing 10 is provided a bearing 12 wherethrough extends a vertical shaft 13 having at its upper end a pair of collars

14 to provide a groove for a shipper 15 pivoted to the upper housing at 16. Extending upward from the top of the housing 10 is a ratchet arc 17 which passes through a suitable opening in the shipper lever 18 carrying a fork 15, and is engaged by a pawl 19 carried by a treddle lever 20 pivoted to the lever 18. This pawl is kept normally in engagement with the ratchet arm by a spring 21. Thus by depressing the treddle lever 20, the pawl is freed and the lever 18 may be moved to raise or lower the shaft 13. On this shaft 13 below the bearing 12 is a collar 22 and the spring 23 surrounds the shaft between the collar and bearing so as to constantly urge the shaft downward. On the lower end of the shaft is a spider 24 forming a head, and this spider preferably has four arms, each of which is provided at its outer end with a depending stub shaft 25. Mounted on this stub shaft are gears 26 to which are secured block holders 27 receiving the removable blocks 28. These blocks may each be provided on one side with one type of rubbing element, such as the polishing felt, shown at 29, and on the other side with a second type of rubbing element, such as the brush 30 for use in scrubbing a floor, or they may be provided with sand paper on one or both sides. These blocks are slidably fitted in the block holders or carriers 27, and are held therein by means of a spring clip 31. The gears 26 mesh with an internal gear 32 fixed at the bottom of the housing 10, and the housing is supported on suitable wheels 33, one of which is a caster wheel. Screwed on the shaft 13 just below the collar 22 is a knurled nut 34 against which presses the upper end of a spring 35 of less power than the spring 23, the lower end of said spring 35 pressing against the head 24, which has a spline connection with the shaft. At the lower end of the shaft is another knurled nut 36 which limits the downward movement of the head on the shaft. By means of these two nuts and the spring, the pressure of the rubbing elements on the floor can be regulated since it is obvious that by slacking off the lower end and tightening down on the upper nut, the pressure will be increased.

Fixed on the upper end of the shaft 13 is a gear 37. Mounted on the top housing 11 is a motor 38 on the shaft of which is a pinion 39 meshing with a gear 40 fixed on the shaft 41 suitably journaled in the housing and provided at its lower end with a gear 42 meshing with the gear 37. Thus the operation of the motor drives the shaft 13 and consequently turns the head 24 carrying around the gears 30. Now as these gears revolve around the axis of the shaft 13, the engagement of the gears with the gear 32 causes rotation of the carriers 27 and thus imparts to the blocks 28 a planetary motion.

The device is provided with the usual pivoted forked handle 43, the latter being preferably hollow and provided at its upper end with an electric switch 44, and the feed wires 45 extending down through the handle to the motor 38.

In operation it will be seen that by lowering the polishing device until it comes in contact with the floor and moving the apparatus around by means of the handle over the floor, the rapid rotation of the rubbers will impart high polish to the surface over which they act. It will also be obvious that by simply moving the blocks and placing them so that the scrubbing element is downward a floor may be scrubbed. Still further by the substitution of sand paper blocks, the floor may be sanded, and it will be observed that these various substitutions and the adjustments are all such as can be readily made by the operator without the use of tools.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of the invention without in any way departing from the material spirit thereof. It is not, therefore, desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:

1. In a floor polishing machine, a casing, a rotatable shaft slidably supported thereby, a head carried by said shaft, rubbing means carried by said head, a nut on said shaft, a spring interposed between said nut and said casing for forcing the rubbing means into contact with the floor, and a second spring interposed between the opposite side of said nut and the head.

2. In a floor polishing machine, the combination of a casing, a rotatable shaft slidably supported thereby, a head carried by said shaft, rubbing means carried by said head, a nut mounted on said shaft above the head, a spring interposed between said nut and said casing for forcing the rubbing means into contact with the floor, means connected

with said shaft for moving said rubbing means out of contact with the floor against the pressure of said spring, and a second spring of less resiliency than the first-mentioned spring, interposed between the nut and the head for applying a substantially constant pressure to said head not affected by a movement of said rubbing means out of contact with the floor.

3. In a device of the kind described, a housing constituting a main frame, said housing being adapted to travel over a floor, a plurality of rubbing elements carried by the housing, means for imparting planetary movement to said elements, spring means in the housing for varying the pressure of the elements on the floor, means for controlling the range of action of the spring and means for regulating the tension thereof, other means within the housing for holding the spring means yieldingly forced downwardly, and means for raising said elements without increasing the tension on the spring means.

4. In a device of the kind described, a housing provided with a plurality of floor engaging wheels, a vertical shaft in said housing, means to revolve said shaft, a head splined to the lower end of said shaft to rotate therewith, a nut threaded on said shaft above said head, a spring surrounding said shaft between said head and nut, rubbing elements carried by the head to engage said floor, a second nut screwed on the lower end of the shaft beneath the head to limit the downward movement of the head with respect to the shaft, a second spring of greater strength than the first and located above the first nut to bear thereon, and means to bodily lift the shaft, the head and first spring means against the action of the second spring.

5. A floor polishing machine including a casing having a ring gear mounted therein, a vertical shaft journaled in said casing, a laterally extending support carried by the shaft, vertical brush shafts rotatably mounted in the support and carrying brushes, and pinions mounted on the brush shafts and meshing with the ring gear.

6. A floor polishing machine including a casing having a stationary ring gear mounted therein, a shaft journaled centrally in the casing, driving means for said shaft, a laterally extending support carried by the shaft, brush shafts rotatably mounted in the support for carrying floor engaging brushes, and pinions carried by the brush shafts within the ring gear and meshing with said ring gear to be rotated thereby upon the rotation of the main shaft and in the opposite direction therefrom.

7. A floor polishing machine including a casing having a drive shaft mounted therein, a plurality of shafts carried by the drive shaft and carrying rubbing means, means for driving the drive shaft, and a stationary gear

geared to said shafts for causing a rotation thereof in a direction opposite to the direction of the rotation of the drive shaft.

5 8. A floor polishing machine including a casing, having a drive shaft mounted therein, driving means therefor, a plurality of shafts carried by the drive shaft and extending approximately parallel therewith, rubbing means carried by said shafts, and a
10 ring gear surrounding the shafts and geared thereto for causing a rotation thereof in a direction opposite to the rotation of the drive shaft.

15 9. A floor polishing machine including a casing having a central vertical drive shaft arranged therein, a plurality of shafts carried by the drive shaft and extending approximately parallel therewith, rubbing means carried by said shafts, said shafts
20 being rotated as a unit about the axis of the drive shaft, and a ring gear surrounding the shafts and geared thereto for causing a rotation of said shafts about their individual axes in a direction opposite to the direction
25 of the rotation of the unit.

10. In a portable floor polishing machine to be moved over and for operating on a floor, the combination of a casing, a central vertical drive shaft arranged therein, a support carried by said drive shaft, a plurality
30 of stub shafts carried by the support about the drive shaft, rubbing means carried by the stub shafts, said stub shafts being turned in an orbit about the drive shaft, and a stationary ring gear arranged about the casing
35 and geared to the stub shafts for causing rotation of said shafts about their individual axes in a direction opposite to the direction of the rotation of the unit.

40 11. In a portable floor polishing machine to be moved over and for operating on a floor, the combination of a casing, a main drive shaft arranged vertically therein, stub shafts carried by said main drive shaft and
45 extending approximately parallel therewith, and being turned in an orbit by said drive shaft, means for operating said drive shaft, and means for causing rotation of the stub shafts about their individual axes in a direction
50 opposite to the direction of the rotation of the drive shaft and unit.

In testimony whereof I affix my signature.

LYLE N. GILLIS.

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