W. H. STRANGE.

FLOOR SCRUBBING DEVICE.

APPLICATION FILED JAN. 7, 1910.

981,032.

Patented Jan. 10, 1911.

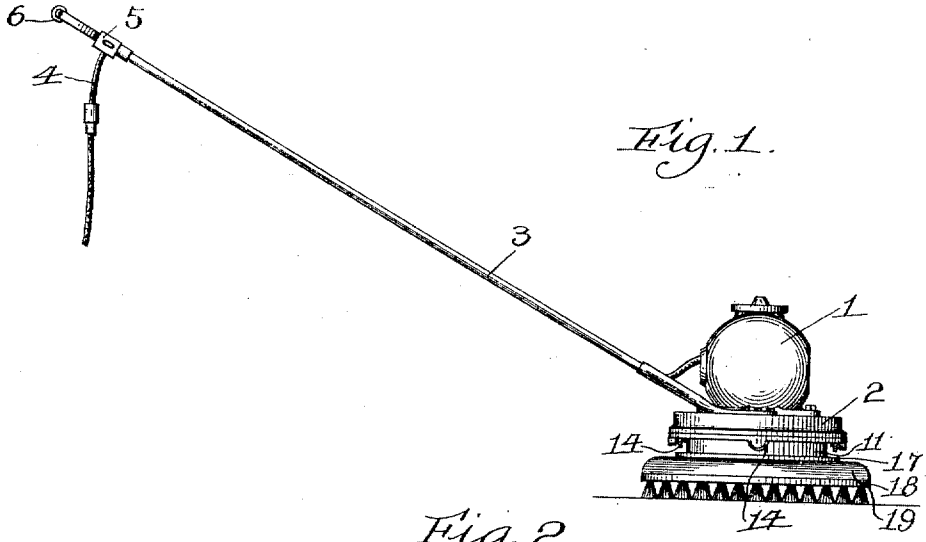


Fig. 1.

Fig. 2.

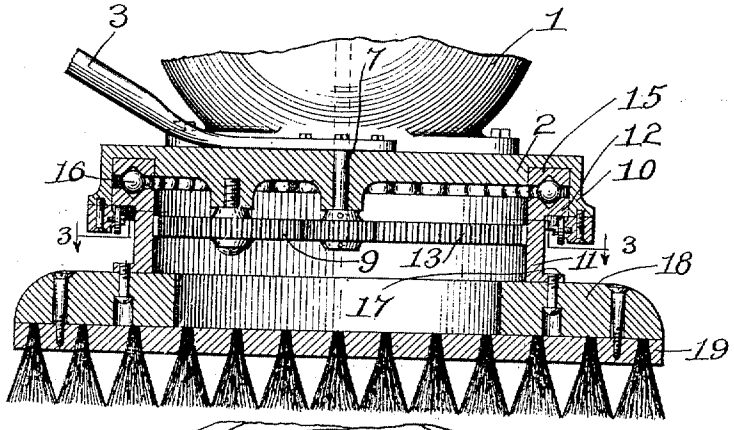
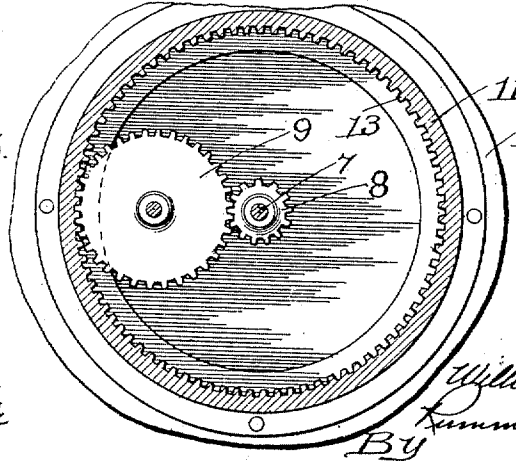


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FLOOR-SCRUBBING DEVICE.

981,032. Specification of Letters Patent. **Patented Jan. 10, 1911.**

Application filed January 7, 1910. Serial No. 536,929.

To all whom it may concern:

Be it known that I, WILLIAM H. STRANGE, a citizen of the United States of America, and a resident of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Floor-Scrubbing Devices, of which the following is a specification.

The main objects of this invention are to provide a rotary machine for scrubbing and polishing floors or like surfaces, or for sandpapering and otherwise smoothing or dressing plane surfaces; to provide a device having an electrical drive from a motor mounted vertically; to provide a device in which the scrubbing or polishing head is securely mounted to rotate within a stationary base on which the driving motor is mounted; and to provide other details of construction insuring reliable and efficient operation of the device, and freedom from exposed gears or other adjuncts dangerous to the operator.

A specific construction embodying this invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine complete with its handle and current supply cord. Fig. 2 is a fragmentary section through the base of the machine showing the gears by which the polishing head is driven. Fig. 3 is a diagram illustrating in plan the position and coöperative relation of the motor pinion, the intermediate gear, and the annular gear of the rotary head.

In the construction shown, the driving motor 1 is of the vertical type and securely bolted to the base 2. A handle 3 is also bolted to the base, and serves as a conduit for the flexible conductor 4, through which electrical energy is supplied to the electric motor 1. A snap switch 5 may be mounted on handle 3 near the hand-hold 6 at the outer end of the handle.

The motor 1 has a vertical shaft 7 passing down through the center of base 2 and carrying on its lower end a pinion 8, serviceable for driving an intermediate gear 9 mounted on the under surface of base 2. The outer edge of base 2 carries a depending flange 10 within which fits an annular head 11 having at its upper end an outstanding flange 12, grooved to form a ball race. On the inner face of this head 11 is an annular gear 13, whereby it can be rotated with respect to the base 2. Antifriction rollers 14 are mounted on lugs secured to the flange 10 and project inward far enough to engage the out-turned flange 12 of the head, thereby preventing the head from dropping away from base 2. Base 2 has an annular recess for the reception of a ball race 15 of suitable hard material. A plurality of balls 16, held between the ball races 12 and 15 permit free rotation of the head 11, and at the same time give to that head a broad and firm support affording little chance for wabbling of the head when in operation. The lower portion of the rotary head comprises a face plate 18. The upper portion 11 of the head has at its lower edge an out-turned flange 17, carrying the face plate 18, to which the scrubbing brush 19 or other working element may be connected in suitable manner.

The operation of the device is as follows: When the switch 5 is closed, admitting electrical energy to the motor 1, the vertical shaft 7 of the motor drives pinion 8, and that operates through the intermediate gear 9, and the annular gear 13 to rotate the head 11, which carries the scrubbing brush 19 or other working element. The rotary motion of the brush 19 insures rapid cleaning and polishing of the floor under treatment. The device as a whole can be pushed over the floor by means of handle 13, and is serviceable to give quick and uniform treatment to floors of large area.

Although but one specific embodiment of this invention is herein shown, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention.

I claim:

1. In a floor dressing machine, the combination of a stationary base having a depending flange, an electric motor mounted on said base and having a vertical shaft, a rotary head having an end inclosed by said flange, means on said flange to support said head within said flange, a working element carried by said head, and means between said motor shaft and said rotary head for imparting motion to said head.

2. In a machine of the class described, the combination of a base, an electric motor mounted on said base and having a vertical shaft passing through the center of said base, a head supporting said base and having an annular gear, gears for imparting the motion of said shaft to said annular

gear, and an anti-friction bearing between said head and said base, said bearing extending around the edge of said head and having a greater diameter than that of said annular gear.

3. In a machine of the class described, the combination of a handle, a base rigidly attached to said handle, a motor secured to said base and having a vertical shaft passing through said base, a rotary head supporting said base and having one end inclosed within said base, a working element carried by the other end of said rotary head for engagement with a floor, an annular gear within said head, an intermediate gear meshing with said annular gear, a pinion on the vertical shaft of said motor and meshing with said intermediate gear, an anti-friction bearing between said head and said base, and anti-friction means for retaining said head in said base when the machine is lifted from the floor.

4. In a machine of the class described, the combination of a working element, a rotary head carrying said element and having an outstanding flange forming a ball-race, an annular gear within said head, a base resting on said head and having a ball-race coöperating with that of said rotary head and having a flange engaging the outstanding flange of said head to prevent lateral movement of said head, an electric motor mounted on said base and having a vertical shaft, means for transmitting power from said shaft to said annular gear, and anti-friction means carried by said base and engaging the under side of said head flange to retain said head in position and permit the head to rotate when the machine is lifted from the floor.

5. In a machine of the class described, the combination of a base, a handle secured to said base, an electric motor mounted on said base and having a vertical shaft passing through the center of said base, a pinion carried by said shaft, an intermediate gear meshing with said pinion and mounted on the under surface of said base, a ball race carried by said base and inclosed by a depending flange on said base, a rotary head, a ball race extending around the outer edge of said head, inclosed by said depending flange, an annular gear within said rotary head in engagement with said intermediate gear, balls between said ball races, means for holding said head in position against said balls, and a working element carried by said rotary head.

6. In a machine of the class described, the combination of a base, a handle secured to said base, an electric motor mounted on said base and having a vertical shaft passing through the center of said base, a pinion carried by said shaft, an intermediate gear meshing with said pinion and mounted on the under surface of said base, a ball race carried by said base and inclosed by a depending flange on said base, a rotary head having a ball race inclosed by said depending flange, an annular gear within said rotary head in engagement with said intermediate gear, balls between said ball races, anti-friction rollers journaled on said flange holding said head in position against said balls, and a working element carried by said rotary head for engagement with a floor.

7. In a machine of the class described, the combination of a base having a handle attached thereto, an electric motor mounted thereon with its armature shaft passing vertically therethrough, a ball-race carried by said base, a circular head supporting said base and having a ball-race extending around its outer edge and facing said first named ball-race, and anti-friction means at the outer edge of said head arranged to permit said head to rotate when the machine is lifted from the floor by the handle or base, said means serving to hold the head and base together.

Signed at Chicago this 31st day of December 1909.

WILLIAM H. STRANGE.

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