Dec. 16, 1924. 1,519,616

J. HERR

SCRUBBING MACHINE

Filed Dec. 13, 1923 2 Sheets-Sheet 1

Fig. 1.

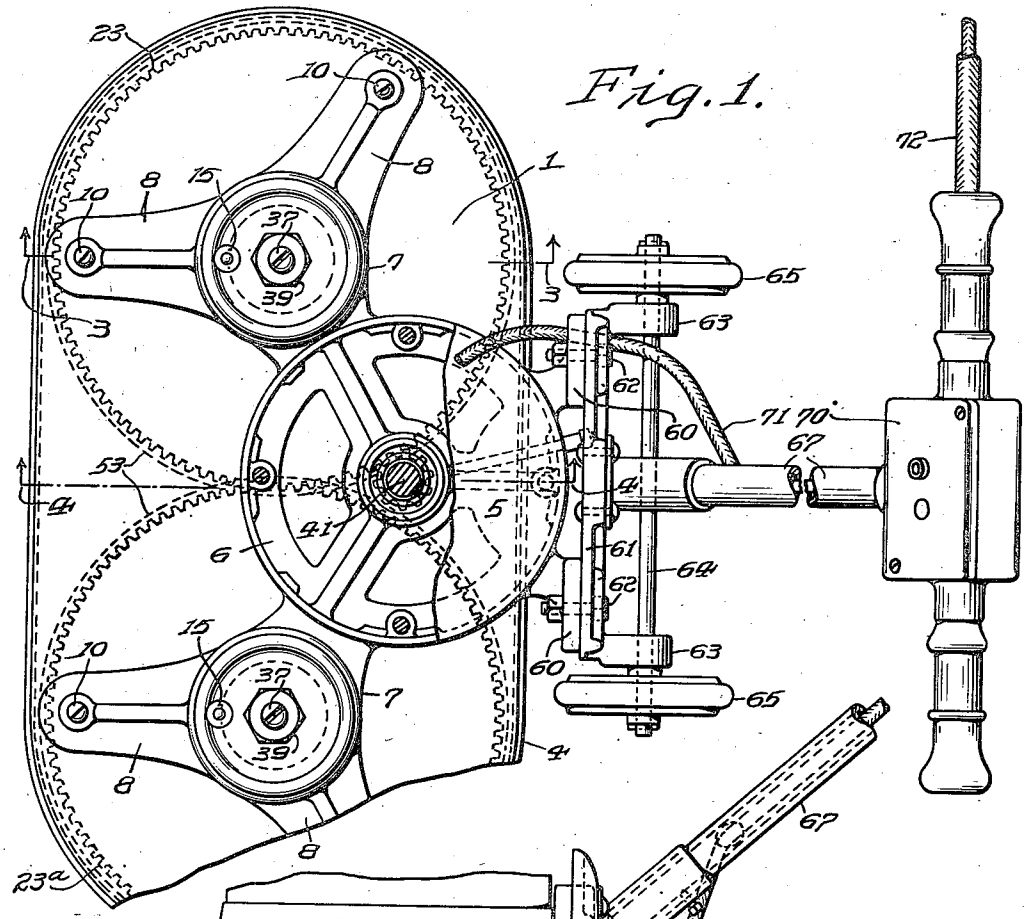
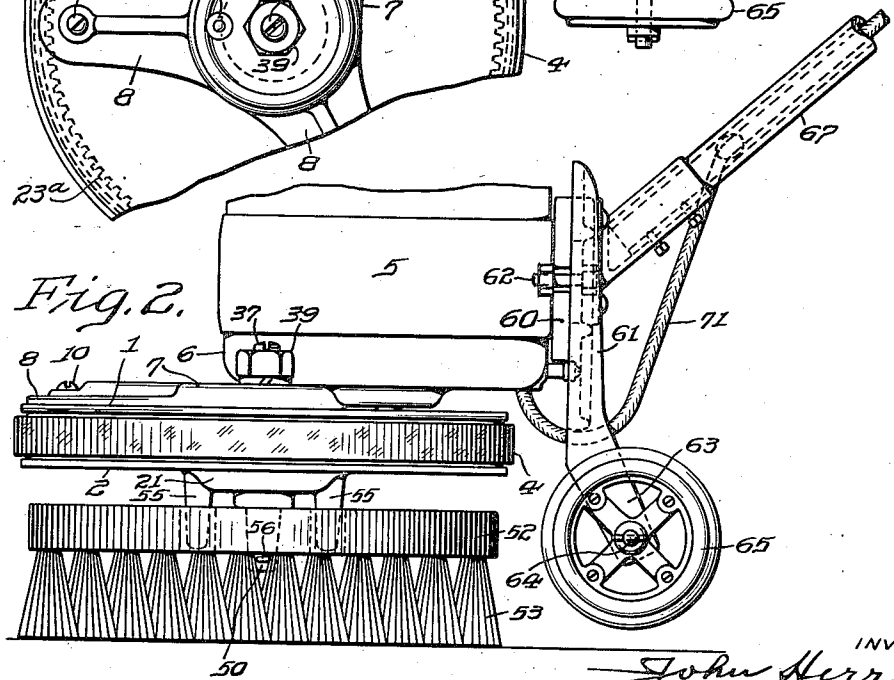



Fig. 2.




INVENTOR

John Herr

WITNESS

F. J. Hartman.

BY

Cyrus W. Anderson

ATTORNEY

Dec. 16, 1924. 1,519,616

J. HERR

SCRUBBING MACHINE

Filed Dec. 13, 1923 2 Sheets-Sheet 2

Fig. 3.

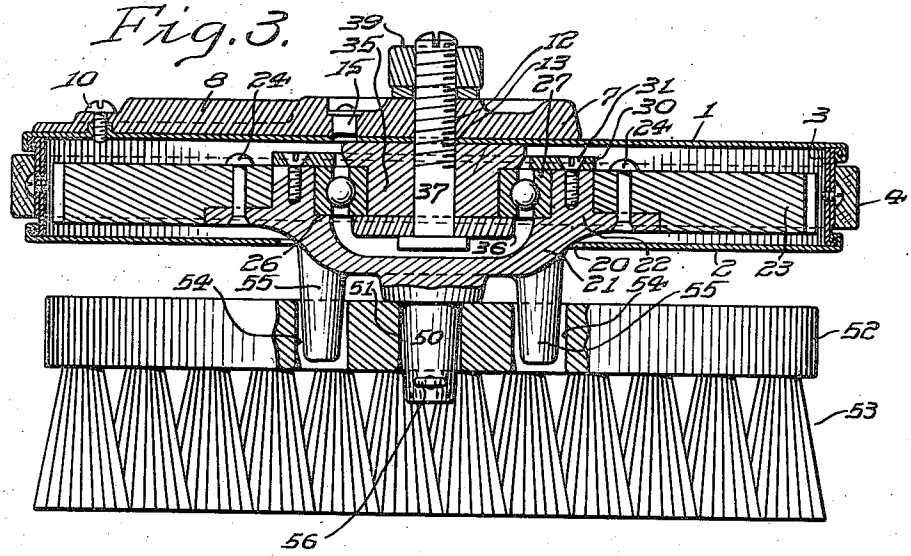
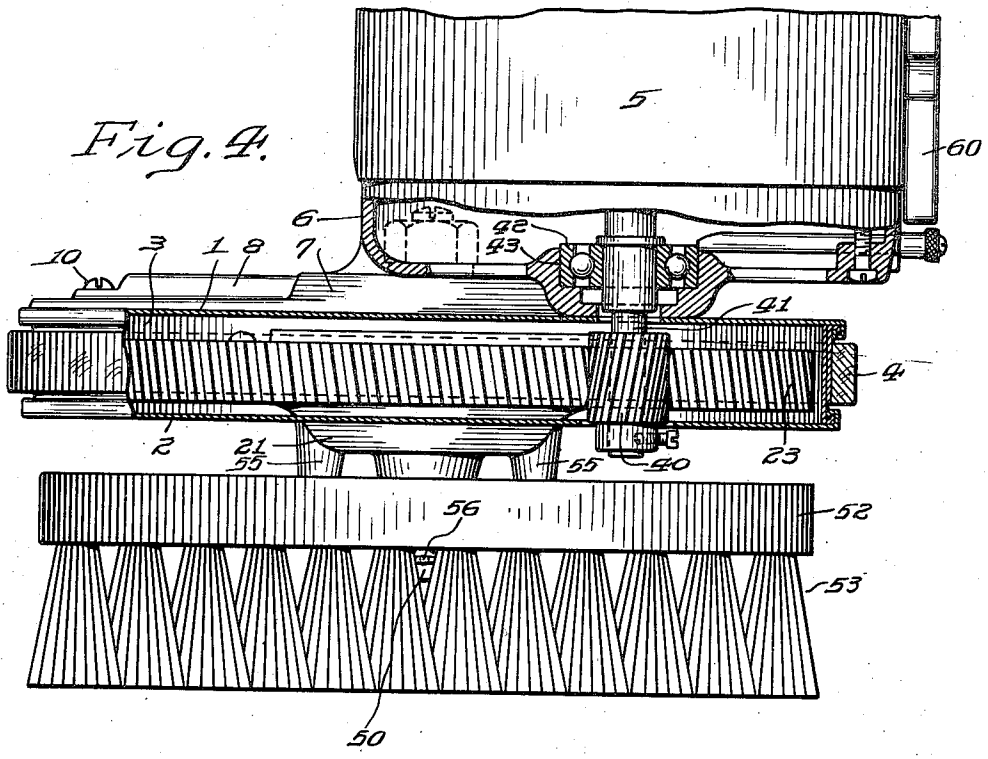



Fig. 4.




INVENTOR

John Herr

BY Cyrus A. Anderson

ATTORNEY

WITNESS

F. J. Hartman.

Patented Dec. 16, 1924. 1,519,616

# UNITED STATES PATENT OFFICE.

JOHN HERR, OF PHILADELPHIA, PENNSYLVANIA.

## SCRUBBING MACHINE.

Application filed December 13, 1923. Serial No. 680,290.

*To all whom it may concern:*

Be it known that I, JOHN HERR, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented an Improvement in Scrubbing Machines, of which the following is a specification.

My invention relates to scrubbing machines which are adapted for scrubbing and washing floors and the like, and it has for its general object to provide a machine of simple construction which is efficient in operation and which is not likely to get out of repair.

It is an object of the invention to provide a scrubbing machine comprising a couple of circular scrubbing brushes arranged side by side and each having rocking connection with the base or frame of the machine.

It is also an object of the invention to provide an improved and novel construction of means for connecting the said brushes to the said base or frame.

A further object of the invention is to provide an improved and novel construction of means for securing an electric motor to the said base or frame.

Other objects and advantages of the invention will be pointed out in the detailed description thereof which follows or will be apparent from such description.

In order that the invention may be readily understood and its practical advantages fully appreciated, reference should be had to the accompanying drawings in which I have illustrated one form of mechanical embodiment thereof. However, it will be understood that changes may be made in the details of construction within the scope of the claims without departing from the said invention.

In the drawings,

Fig. 1 is a view partly in top plan and partly in horizontal section of a scrubbing machine embodying my invention;

Fig. 2 is a view in side elevation of the same, a portion only of the handle being shown;

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1; and

Fig. 4 is a similar view taken on the line 4—4 of Fig. 1.

Referring to the drawings, 1 designates the top, 2 the bottom and 3 the side portions or walls of the base or frame of the machine embodying my invention. The side walls are situated between and at their opposite edges are interlocked with the edges of the tops and bottoms 1 and 2. These portions 1, 2 and 3 combine to produce a hollow body member, as is clearly shown in Fig. 3 of the drawings.

The side walls 3 are surrounded by a band of suitable non-metallic material 4 which constitutes a buffer so that in the use of the device, if the edges contact with furniture or with any other object, there is no injury thereof.

An electric motor 5 is mounted upon the top of the base or frame portion previously referred to. The bottom or header 6 of the said motor which is detachably connected to the main or body portion of the casing of the said motor is provided with outwardly extending triangular brackets 7, the flaring arms 8 of which are connected to the top portion 1 of the base or frame by means of screws 10. The central portions of these brackets are provided with openings 12 which register with openings 13 in the top 1 of the base or frame. For the purpose of oiling the interior portion of the structure which will be hereafter referred to, oil cups 15 are provided which extend through the central portion of the brackets 7 and through openings in the top 1.

The bottom 2 of the base or frame structure is provided with openings 20 through which the downwardly projecting portions 21 of the hubs 22 of gears 23 and 23ª extend. These hubs 22, in the construction shown, are formed separately from the outer annular portions of the gears and the said annular and hub portions are connected together by rivets 24. The upper sides of the hubs 22 are hollow and are provided with annular shoulders 26 within which are seated the outer rings of the ball bearing structures 27. The said ball bearing structures are held in place by flat rings 30 which are secured by means of screws 31 to the upper sides of the hubs 22. The inner rings of the ball bearing structures surround and are rigidly connected with boss-like members 35 which are situated underneath and in contact with the top one. Washers 36 are located in contact with the lower ends of the boss-like members 35 and their edges overlap the inner rings of the ball bearing structures 27. The said washers and boss-like members 35 are held in position by means of headed bolts 37. The heads of said bolts bear against the

under sides of the washers 36 and the upper screw threaded end portions thereof project through the openings 12 and 13, previously referred to. Nuts 39 upon the upper ends of the said bolts operate to cause the heads of the said bolts to clamp and hold the boss-like members 35 in contact with the under side of the top 1. The ball bearing structures 27 together with the boss-like members 35, bolts 37 and nuts 39 operate to support the gears 23 and $23^a$ in place within the casing formed by the parts 1, 2 and 3 of the base or frame of the structure.

A worm pinion 40 secured upon the lower end portion of the shaft 41 of the electric motor 5 is in engagement with the gear 23 so that rotation of the said motor shaft causes rotation of the gear 23. The latter is in engagement with the gear $23^a$ from which it follows that rotation of the gear 23 causes rotation of the gear $23^a$.

The portion of the shaft 41, directly above the worm pinion 40, is supported in a ball bearing structure 42 mounted in an opening 43 in the under side of the detachable bottom 6 of the motor casing.

Each of the downwardly projecting portions 21 of the hubs 22 is provided with a depending tapered spindle 50 which extends through a cylindrical opening 51 at the center of the base 52 of a brush 53. The said base 52 of each brush is provided with a couple of openings 54 situated upon the opposite sides of the cylindrical opening 51 into which extend tapered projections 55 which project downwardly from the portions 21 of the hubs 22. The diameters of the projections 51 are considerably less than the diameters of the openings 54 in consequence of which a considerable amount of rocking motion of the brushes 53 with respect to the spindles 50 is permitted. This is desirable in case the machine is being employed for scrubbing or washing a surface which is uneven. The ability or capacity of the brushes to rock permits them to adjust themselves to the surface over which the machine is being operated even though such surface shall be uneven. The brushes are retained on the spindles 50 by means of cotter pins 56.

The casing of the motor is also provided with brackets or feet 60 with which a frame 61 is adjustably connected by means of bolts 62. The lower end of the frame 61 is provided with arms 63 within openings of which a shaft 64 is journaled. Wheels 65 are mounted upon the opposite ends of the said shaft which wheels, in the operation of the machine, are shaped a short distance from the surface which is being washed. When however, it is desired to move the machine from one place to another it may be tilted so as to support the same upon the said wheels with the brushes 53 elevated from such surface.

For the purpose of operating the machine, that is, pushing or pulling it in one direction or the other over the surface to be washed, I have provided a handle 67 which is connected with the central portion of the frame 61. A switch 70 for controlling the operation of the motor is mounted upon the outer end of the said handle. A conductor 71 extends from the motor to the switch 70 and a conductor 72 extends from the latter to a source of electric current, not shown.

The adjustment of the frame 61 previously referred is to permit raising or lowering of the handle 67 as may be desired. It will be seen that by my invention, I have provided a construction of scrubbing machine in which the bottom portion of an electric motor is provided with triangular shaped brackets which co-operate with the base or frame of the machine in the supporting of the gears from and by which the disk shaped scrubbing brushes are rockingly supported.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a scrubbing machine, the combination of an electric motor having brackets extending laterally from a header thereof, a supporting frame for the said motor, connections between the said brackets and the said frame, gears having connection with the said brackets and with the said frame and being supported thereby, a connection between the said motor and the said gears whereby the latter are adapted to be driven, and brushes having rocking connection with the said gears.

2. In a scrubbing machine, the combination of an electric motor having a detachable header provided with radially extending brackets, a gear casing upon the top of which the said motor is supported, means for connecting the said brackets to the said casing to secure the motor in place thereon, gears situated in the said gear casing, each of the said gears being provided with projections arranged in spaced relation to each other and extending downwardly therefrom, one of which projections of each gear is situated concentrically thereof and is tapered, and brushes each of which has a central cylindrical opening through which a concentrically situated projection extends, and the said brushes also each having openings into which the other projections of each gear extend, the said openings being of greater diameter than the said projections, substantially as described.

3. In a scrubbing machine, the combination of a gear casing, gears situated within the said casing, which gears are in mesh with each other and one of which is adapted to be driven, each of the said gears being provided with a downwardly projecting portion from which project a plurality of projec-

tions, one of which is located concentrically of the gear from which it projects, and the others of which are located eccentrically thereof, the first of said projections being tapered, and brushes, the backs of each of which are provided with a plurality of cylindrical openings arranged in spaced relation to each other with which the said projections are adapted to engage.

4. In a scrubbing machine, the combination of a gear casing provided with top and bottom portions, the bottom of which is provided with openings, which openings are situated adjacent the opposite ends of the casing, a couple of gears located in the said casing, which gears are in mesh with each other, means for rotating the said gears, each of the said gears being provided with a centrally located downwardly extending portion having depending projections in spaced relation to each other, one of which is concentrically located with respect to the gear from which it projects and is tapered, and brushes, each of which is provided with a plurality of openings, one of which is concentrically located with respect to the said brushes and is adapted to be engaged by the said concentrically situated tapered projection, and the others of which are adapted to be engaged by the eccentrically situated projections, substantially as described.

5. In a scrubbing machine, the combination of a gear casing having top and bottom portions, the latter of which is provided with openings arranged in adjacent relation to the opposite ends of the said casing, a couple of gears rotatably supported within the said casing each of which is provided with a depending central portion having tapered depending projections, one of which is located concentrically of the gear from which it depends, brushes, the backs of which are provided with cylindrical openings arranged in spaced relation to each other and with which the said projections are adapted to be engaged, means for retaining the said brushes upon the said projections, and means for causing rotation of the said gears.

6. In a scrubbing machine, the combination of a flat closed casing, the bottom of which is provided with a couple of openings arranged in adjacent relation to the opposite ends of the said casing, a couple of gears rotatably mounted within said casing, which gears are in mesh with each other and each of which is provided with a depending portion which projects through one of the said openings, each depending portion being provided with a centrally located tapered projection and with projections situated upon opposite sides of the said centrally located projection, brushes, the backs of which are each provided with openings, one of which is located centrally of the back in which it is located and is cylindrical, and the others of which are located upon the opposite sides of the centrally located openings, which openings are adapted to be engaged by the said projections, means for securing the said brushes to the said projections, and means for causing rotation of the said gears and of the said brushes.

7. In a scrubbing machine, the combination of an electric motor having a detachable header provided with laterally extending brackets, a gear casing, means for securing said brackets to said casing, brushes, means intermediate the said motor and the said brushes whereby the latter are adapted to be rotated, and a wheel supporting frame having connection with the side of the said motor at the rear of the said scrubbing machine, the said frame being vertically adjustable with respect to the said motor.

8. In a scrubbing machine, the combination of an electric motor having a header provided with radially and horizontally arranged brackets, a gear casing, means for securing said brackets to the said casing, a couple of gears located within said casing, which gears are in mesh with each other, the upper sides of which gears are provided with recesses therein, and the lower sides of which are provided with depending portions, cylindrical members projecting from the top of said casing into the said recesses, bolts extending through the said cylindrical members and through the top of the casing and the said brackets for supporting the said cylindrical members against the under side of the said top, bearings interposed between the said cylindrical members and the said gears whereby the latter are rotatably supported thereon, and a gear pinion mounted upon the shaft of the said motor and being in engagement with one of the said gears to effect rotation thereof in one direction, the other gear being thereby rotated in the opposite direction, and the brushes respectively having rocking connection with the said gears, substantially as described.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 12th day of December, A. D., 1923.

JOHN HERR.