

March 23, 1926.

1,578,013

P. CASE

PORTABLE ELECTRIC BRUSH

Filed Nov. 8, 1923

2 Sheets-Sheet 1

Fig. 1.

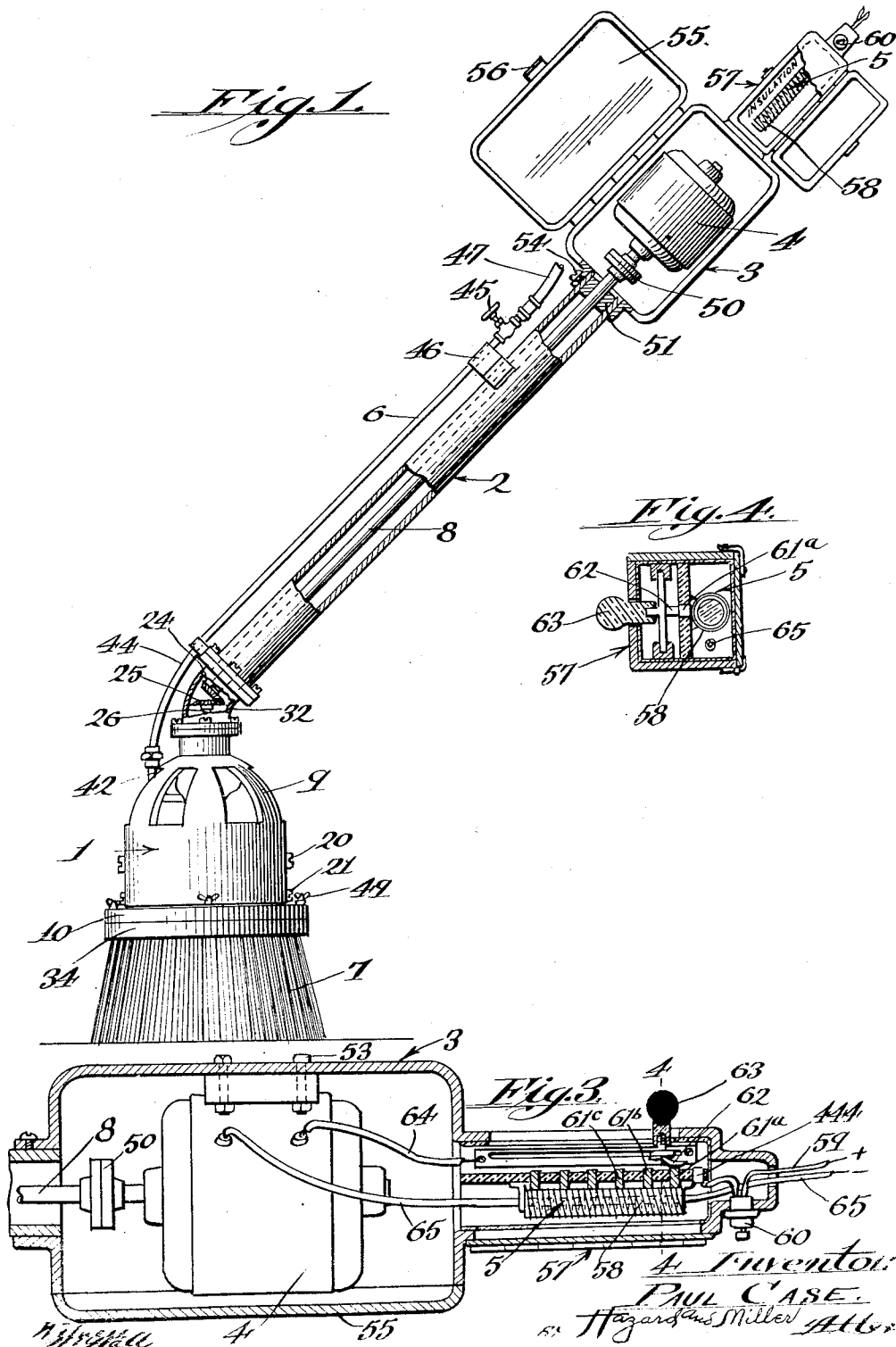


Fig. 3.

Fig. 4.

Fig. 5.

Inventor:
PAUL CASE.
Hazard and Miller Attys.

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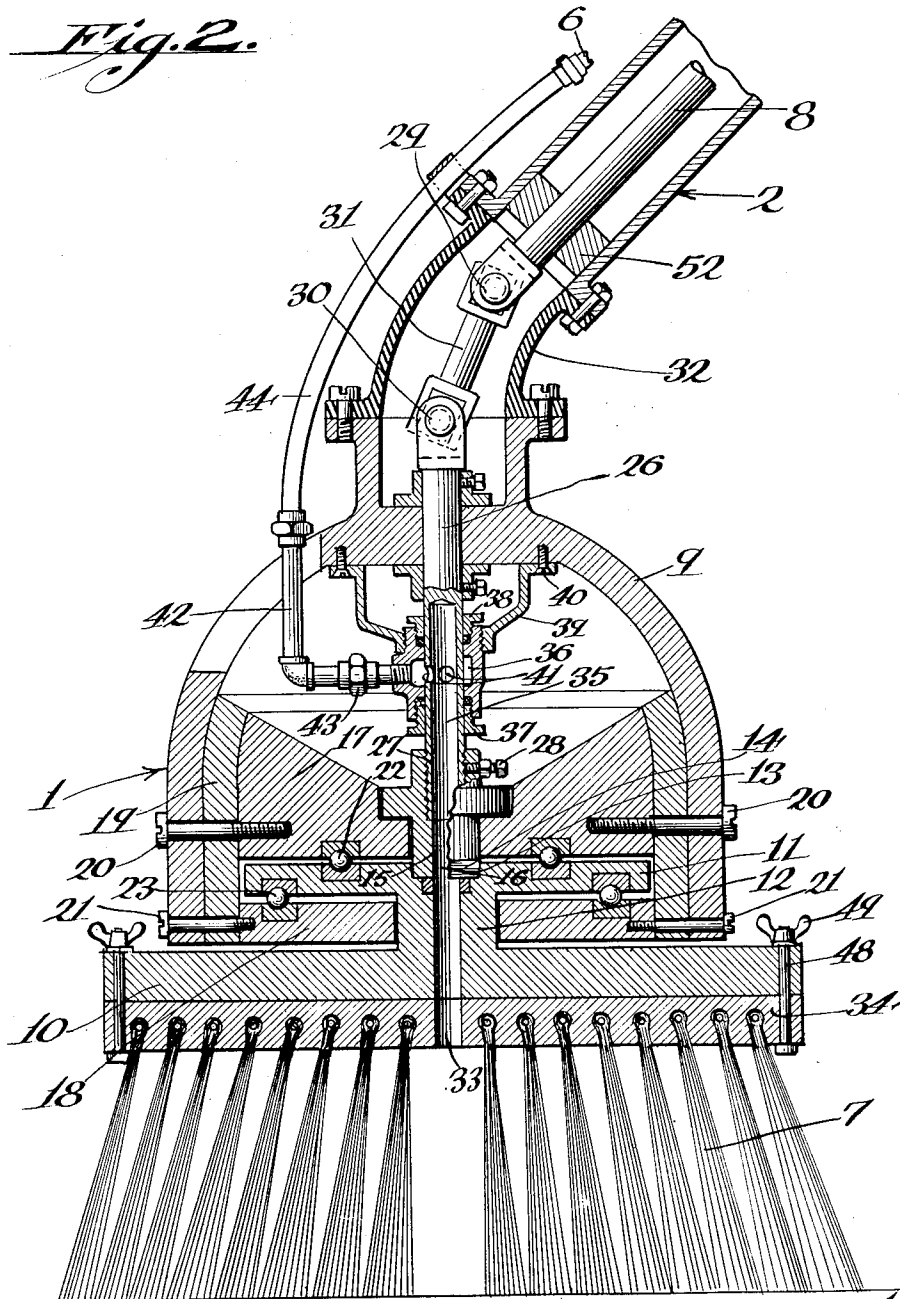
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2 Sheets-Sheet 2



Witness
W. H. Hall

Inventor:
PAUL CASE.
BY *Hazard & Miller*
Attorneys

UNITED STATES PATENT OFFICE.

PAUL CASE, OF SAN QUENTIN, CALIFORNIA.

PORTABLE ELECTRIC BRUSH.

Application filed November 8, 1923. Serial No. 673,619.

To all whom it may concern:

Be it known that I, PAUL CASE, a citizen of the United States, residing at San Quentin, in the county of Marin and State of California, have invented new and useful Improvements in Portable Electric Brushes, of which the following is a specification.

My present invention being referred to as a portable electric brush, it should be understood to be an object of this invention to provide a novel rotary brush suitable for a variety of uses and especially suitable for such uses as the scrubbing and polishing of floors. My invention is also capable of use, either in the form hereinafter described, or in a suitably modified form, in such work as the cleaning of pots, pans and other kitchen utensils, milk cans and other dairy equipment, and even in the currying and cleaning of stock or the washing of walls and windows, as well as in the perfecting of metallic parts, or the polishing of furniture, automobiles, and the like.

It is an object of this invention to provide a rotary brush operated by an electric motor positioned above the same and preferably within or on the handle thereof; and one preferred embodiment of my invention comprises a revolving head removably secured to a housing and provided with a central opening through which water, soap suds, or another desired fluid may be delivered, and optionally provided also with circular brushes, polishers, buffer pads and sander pads adapted to be alternatively and expeditiously secured thereon, the entire construction being preferably such that all parts can be cleaned, oiled and reassembled with facility.

It is an object of this invention to provide a rotary brush having a hollow handle with an electric motor and transmission means housed in said handle or an extension thereof, said motor being preferably provided with circuit closing and other control means similarly mounted, and said transmission means being optionally adapted to extend as by the inclusion of a universal joint or joints, through a hollow handle extending at an angle relatively to the operating face of the brush revolved thereby.

It is a further object of this invention to provide a brush handle extending at a suitable or variable angle and equipped with

convenient means both for electrical control and for the control of the fluid admitted through said brush.

It is a further object of this invention to provide a brush with an electric motor so positioned as to apply pressure to said brush while nevertheless obviating the danger of a wetting of said motor.

It is a further object of this invention to provide a rotary brush comprising a revolving head with a removable face and with a bearing plate preferably integral with a drive extension retained between inner and outer bearing blocks, the latter being preferably removably secured in such manner that the said bearing plate may be rotated by a squared or similar drive element interfitting therewith, and all of the mentioned bearing elements being preferably secured by removable means extending through both an outer housing or shell and an inner or assembling shell engaging the same.

Other objects and advantages will appear from the following description of a preferred embodiment of my invention, and alternative details thereof, and from the appended claims, taken in connection with the accompanying drawings, in which

Fig. 1 is an elevation of one form of rotary brush embodying my invention.

Fig. 2 is a vertical section on an enlarged scale, showing a form of my invention in which transmission is effected by means of shafts provided with universal joints.

Fig. 3 is a detail view showing a preferred type of electric motor and associated control means, suitable for use within or upon the handle of my novel rotary brush.

Fig. 4 may be regarded as a transverse section on the line 4-4 of Fig. 3.

Referring to the details of that specific embodiment of my invention which I have chosen for purposes of illustration, 1 is a fixed head, shown as secured to a hollow handle 2, which is provided with a motor housing 3, to confine and support an electric motor 4, governed by control devices 5, also secured within or upon said handle; and 6 is a pipe for the optional introduction of water or another preferred fluid into the interior of the fixed head 1 and through a rotating brush 7, or the like, removably secured thereon, and adapted to be

rotated by means comprising a transmission shaft 8, extending through said hollow handle.

Although various equivalent constructions might be employed, I prefer to use, in the fixed head 1, comprising an outer housing or shell 9, an interior organization including a revolving head 10, provided with a bearing plate 11, connected thereto by a drive extension 12, the said bearing plate being provided with a squared or similar aperture 13, adapted to be engaged by a cooperating head 14, capable of imparting rotation thereto, both the mentioned drive extension and the mentioned squared head being provided with central apertures 15, 16, through which water, or the like, may be introduced, and the retaining or bearing plate 11 being secured and supported by any suitable means such as the inner bearing block 17 and the outer bearing block 18, both of which may fit within an inner or assembling shell 19, within which all of the mentioned bearing parts may be retained by any suitable means such as the screws 20, 21, shown as extending through the mentioned outer shell and the mentioned inner shell into the respective bearing blocks. Between the bearing plate 11 and the adjacent surfaces of the respective bearing blocks, roller bearings 22, 23, or their equivalent, may advantageously be interposed, in the manner suggested in Fig. 3, and the block 18 may optionally be integral with shell 19.

Although other means might be employed for the transmission of rotary motion from the shaft 8, driven by means of the motor 4, or its equivalent, to the squared rotating element 14, by which the revolving head 10 is driven, I have suggested in Fig. 1 the employment for this purpose of a pair of beveled gears 24, 25, the former of these being shown as secured to the shaft 8, and the latter as secured to a substantially vertical shaft 26, to the lower end of which the squared head 14 may be secured in any suitable way, as by means of a threaded connection 27, optionally supplemented by the use of a set screw 28, in the manner suggested in Fig. 3; and, in the last mentioned figure, I have suggested the alternative employment of a pair of universal joints 29, 30, connected by an additional short shaft 31, these last mentioned parts being shown as housed within a forty-five degree bend 32, which may be either entirely rigid or may optionally be formed of a yieldable material, such as a suitable grade of vulcanized rubber, whereby a slight relative movement between the hollow handle 2 and the fixed head 1 may be permitted, if desired.

In order to provide for the admission of water or another fluid through the aligned

apertures 15, 16 and through a corresponding aperture 33 in the removable brush face 34, or its equivalent, I may provide a longitudinal aperture 35, in the lower end of the shaft 26, optionally surrounding the same by a chamber 36, provided with glands 37, 38, and shown as secured by a cone or bracket 39, through which the screws 40 extend into the housing or outer shell 9, a lateral aperture or apertures 41 being provided to permit a movement of fluid, introduced through the pipe 42 into the chamber 36, and downward through the mentioned aligned channels 35, 16, 15 and 33. To facilitate the making of a desired connection, a union 43 may advantageously be interposed in the pipe 42, and I may optionally provide this pipe with a section 44 of rubber pressure hose, or its equivalent, and I may interpose in the pipe 6, which may be integral or connected with the pipe 42, a fluid control means such as the hand valve 45, secured to the hollow handle 2 by means of a bracket 46, and connected with an inlet hose or conduit 47, extending to any suitable source of supply, water, soap suds, or the like, or optionally to a suction means.

Although, for purposes of illustration, I have shown my device as provided with a rotary brush face 34, it will be understood that, this face being removably secured by means such as the bolts 48, extending through the revolving head 10 and shown as provided with wing nuts 49, any desired alternative tool, such as a buffing face or a sanding face, may be substituted therefor.

Although I have shown my electric motor 4 as coupled at 50 directly to the shaft 8, supported by suitable bearing blocks 51, 52, within the hollow handle 8, it will be obvious that any desired reducing gear may be interposed, and obvious also that the mentioned motor, shown as secured by bolts 53, extending through the motor housing 3, retained by screws 54, might optionally be positioned, if desired, comparatively near to the fixed head 1, the described and illustrated construction being, however, advantageous as diminishing the danger of a wetting of the motor 4 by any spattering or leakage of water delivered through the pipe 6. The motor housing 3 may optionally be provided with a hinged cover 55, retained by a clip 56, or other engaging or locking means; and the upper end of the motor housing 3 may advantageously be provided with an extension 57, capable of serving as a hand grip and also as a housing for the electrical control 5, which latter may consist essentially of a variable resistance 58, connected with a conductor 59, provided with a switch 60, through which a current may pass to any one of the contacts 61^a, 61^b, 61^c, etc., according to the position of the slider 62, shown as movable by means of an insulated

knob 63, the slider 62 being in conductive relationship with a wire 64, leading to the motor 4, from which a return wire 65 may deliver the current to a flexible cord, or the like, connected with the conductors 59 and 65.

The switch 60 may be of a known type adapted either to break or to reverse the current through the motor, thereby giving, in conjunction with the slider 62, an ample range of rates of rotation in either direction; and, although I have herein referred to the pipe 6 as designed for the introduction of a desired fluid, it should be understood that this pipe, or an equivalent pipe, may optionally be alternatively employed (with or without the use of suitable gaskets, such as the washer 66, employed between the inter-fitting squared elements 12 and 14) to connect with any suitable suction device, thereby enabling my rotating brush to serve additionally as a vacuum cleaner, or the like, if desired. A safety fuse 44a may advantageously be provided at some convenient point to avoid risk of blowing out a main or house fuse, the point of its insertion being immaterial to the present invention.

Although I have described one complete embodiment of my invention and certain alternative features, it will be understood that various elements of my invention might be independently employed, and also that various alternative constructions of specific parts, such as my fixed brush head and the bearing elements housed therein, and the means for transmitting power thereto, and the means for supporting and housing and controlling my said motor, might be employed without departure from the spirit and scope of my invention, as the same is indicated above and in the following claims.

What I claim is:

1. A rotary brush comprising a dome-shaped shell having an opening, a brush head rotatably supported by said shell, a hollow shaft having apertures therethrough adapted to rotate said brush and to convey a liquid to the said brush head, a fluid conduit extending through the opening of the shell, a sleeve surrounding the hollow shaft and having a chamber communicating with said conduit, the apertures in the shaft being located within said chamber, a head mounted on the shell and curved at an angle thereto,

a hollow handle secured to the head, a shaft adapted to operate within said hollow handle and universal joints for coupling the shaft with the hollow shaft.

2. In a rotary brush a dome-shaped shell having an opening therethrough, a brush head rotatably supported in said shell, a hollow shaft having an opening therethrough adapted to rotate said brush head and to convey liquid to the said head, a fluid conduit extending through the opening in the shell, a sleeve surrounding the hollow shaft and having a chamber therein, said chamber communicating with the said conduit and surrounding the said apertures in the hollow shaft, a head mounted on the shell and curved at an angle thereto, a hollow handle secured to the head, a shaft adapted to operate within said hollow handle, means for coupling the shaft with the hollow shaft, a bearing block rigid in the shell, a revolving head supporting the brush head, said revolving head composed of a pair of discs connected by a neck with a passage therethrough from the hollow shaft, the upper disc bearing against the rigid block.

3. In a rotary brush, a dome-shaped shell having an opening therethrough, a brush head rotatably supported by said shell, a hollow shaft having apertures therethrough, adapted to rotate said brush head and to convey a liquid to said brush head, a fluid conduit extending through the opening in the shell, a sleeve having a chamber surrounding the hollow shaft and said apertures and communicating with the conduit, a head mounted upon the shell curved at an angle thereto, a hollow handle secured to the head, a shaft adapted to operate within said hollow handle, means for coupling the shaft with the hollow shaft, an inner bearing block rigid with the shell, an outer bearing block also rigid with the shell and a revolving head supporting the brush head, said head having inner and outer disc-like members connected by a neck having a passage therethrough from the hollow shaft, the inner disc having bearings on the inner and outer bearing blocks.

In testimony whereof I have signed my name to this specification.

PAUL CASE.