

Feb. 10, 1925.

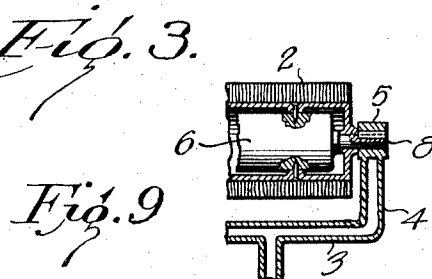
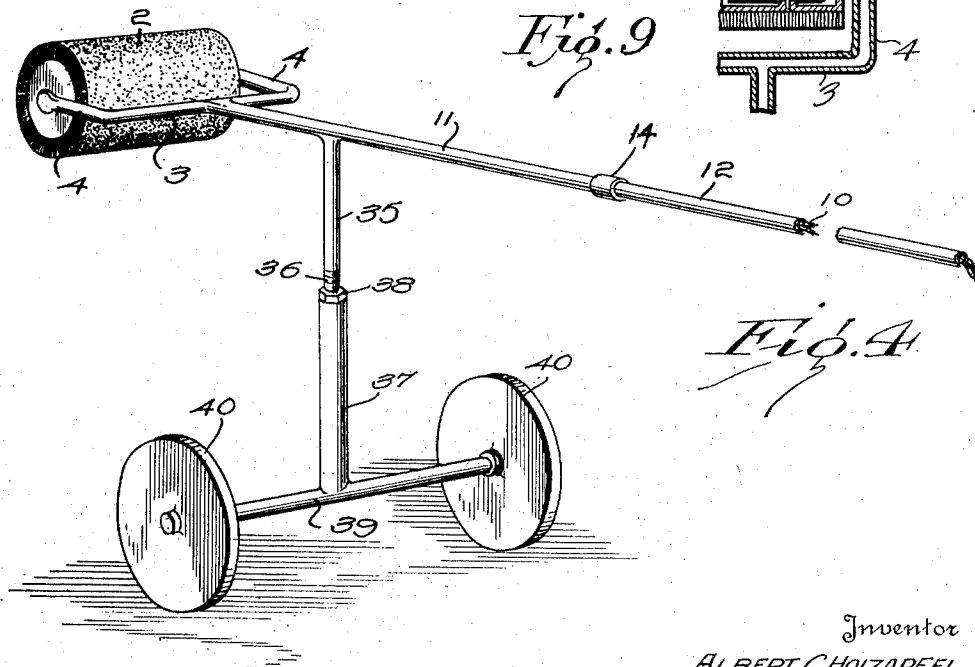
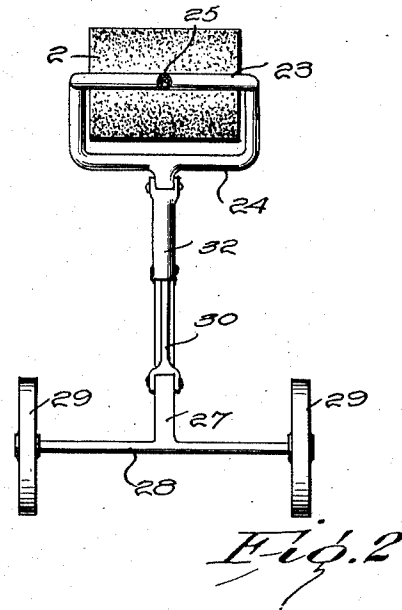
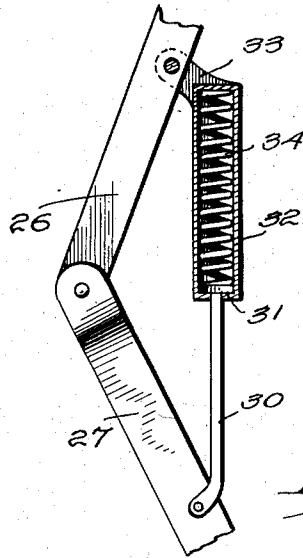
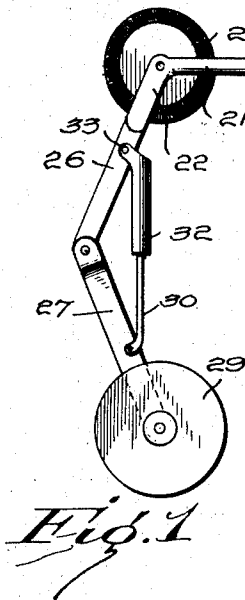
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1,526,285

ROTARY BRUSH

Filed Dec. 2, 1921

2 Sheets-Sheet 1



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ROTARY BRUSH

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2 Sheets-Sheet 2

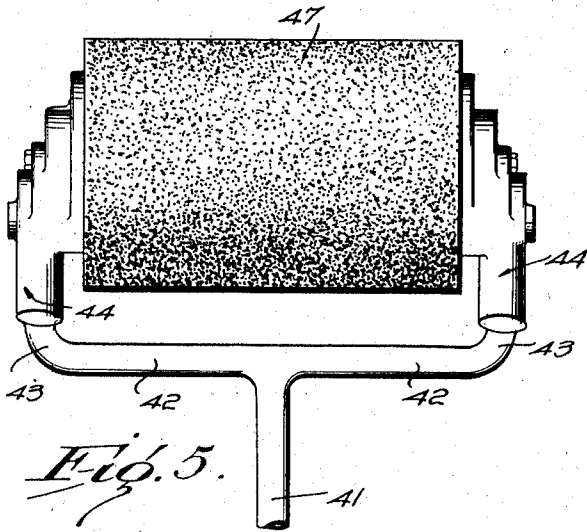


Fig. 5.

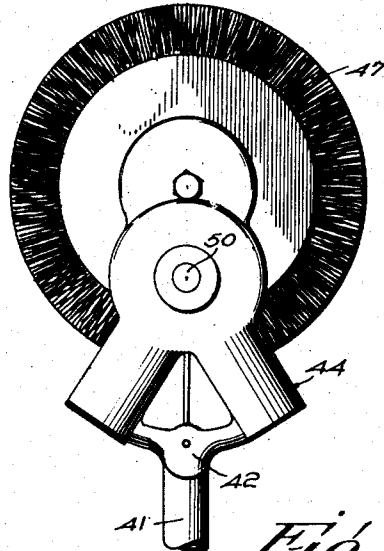


Fig. 6.

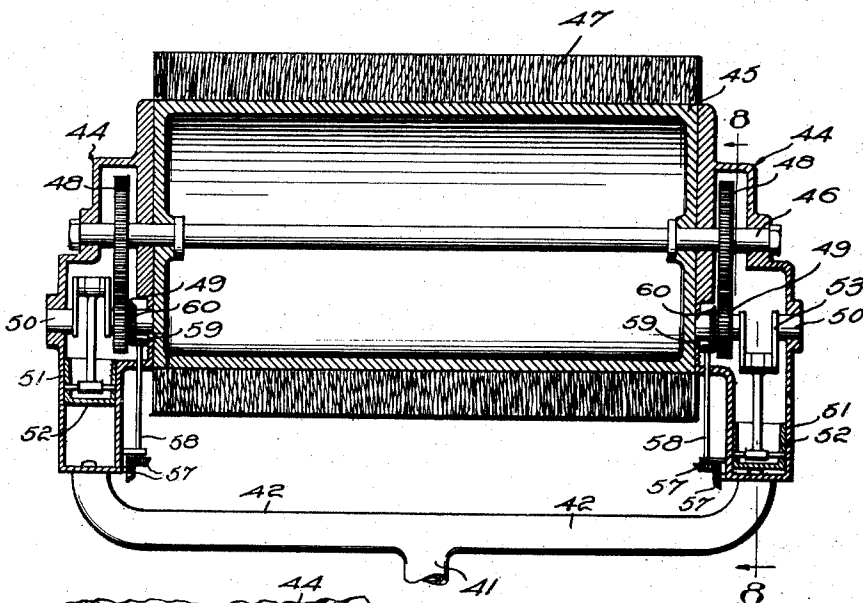


Fig. 7.

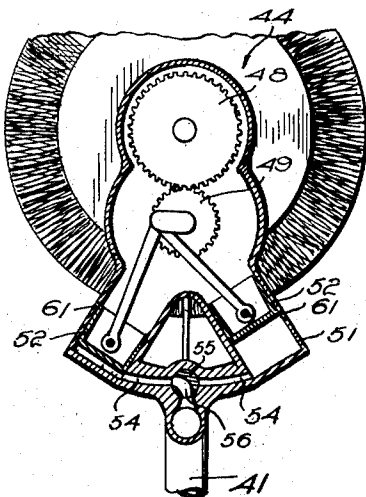


Fig. 8.

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UNITED STATES PATENT OFFICE.

ALBERT C. HOLZAPFEL AND ARTHUR M. N. HOLZAPFEL, OF NEW YORK, N. Y.

ROTARY BRUSH.

Application filed December 2, 1921. Serial No. 519,554.

To all whom it may concern:

Be it known that we, ALBERT CHARLES HOLZAPFEL and ARTHUR MAX NATHANIEL HOLZAPFEL, a citizen of the United States and a subject of the King of Great Britain, respectively, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Rotary Brushes, of which the following is a specification.

This invention relates to rotary brushes and scrapers, and more particularly to brushes and scrapers for cleaning the bottoms and sides of ships and similar surfaces. Such cleaning is at present mostly done by hand scrubbers and owing to the somewhat firm adhesion of barnacles, grass and decayed paint, this work is generally not performed in a satisfactory manner, and the surface on which the new paint is to be applied is not cleaned as thoroughly as is desirable.

In the present invention, we provide a brush of cylindrical form adapted to be driven by an electric or pneumatic motor, the brush being mounted on the motor and driven directly or connected by gears to a revolving part of the motor. The brush and motor are mounted in a suitable yoke, or similar support to which is secured an extensible handle whereby the brush may be operated at a distance from the platform on which the operator stands.

In the accompanying drawings, we have shown several embodiments of the invention. In this showing:

Figure 1 is a side elevation of one form of the invention in which the brush is mounted on wheels,

Figure 2 is an end elevation,

Figure 3 is a detail view,

Figure 4 is a perspective view of another form of the invention,

Figure 5 is a front elevation of another form of the invention,

Figure 6 is an end elevation,

Figure 7 is a longitudinal sectional view,

Figure 8 is a sectional view on line 8—8 of Figure 7, and

Figure 9 is a detail sectional view showing the keyed connection between the motor shaft and supporting yoke.

Referring to Figures 1 to 4 inclusive the brush comprises a cylindrical or barrel shaped member 1 having bristles 2 arranged thereon. The brush is supported in a yoke

3 preferably formed of hollow tubing and having a pair of parallel arms 4. These arms are provided with keyed bearings 5 at their outer ends. A motor 6 is arranged within the cylindrical brush and the motor casing is suitably attached to the brush or is connected thereto by means of gearing, the spindle of the motor being stationary while the outer casing thereof revolves. One end of the motor is provided with a shaft 8 keyed to the adjacent member 5. The arm 3 of the yoke is provided with an extension 11 forming a section of the handle. Any number of additional handle sections 12 are adapted to be secured to the section 11 and to each other by coupling members 14.

In the form of the invention shown in Figures 1 to 3 of the drawings, the brush is mounted on wheels to permit it to be run under the bottom of a ship being cleaned. The brush is mounted in a double yoke consisting of arms 21 and 22, arranged at each end of the brush and connected by cross arms 23 and 24. A handle 25 is connected to the cross arm 23 and a standard 26 is connected to the cross arm 24. This standard is provided with a lower section 27, pivotally connected to the upper section and the lower section is connected to a cross member 28, carrying wheels 29. An arm 30 is connected to the lower section 27 of the standard and the upper end of this arm is provided with a plunger 31 adapted to be received in a cylinder 32, secured to the upper section of the standard by brackets 33. A spring 34 is arranged in the cylinder and normally retains the plunger at the lower end.

In the form of the invention shown in Figure 4 of the drawings, the main handle section 11 is provided with an offset arm 35 arranged at right angles thereto and provided with a lower threaded or plain end 36. This threaded or plain end is received in a tube 37 and is retained in position by suitable means, such as lock nut 38. The tube is provided with a cross member 39, on which are mounted wheels 40.

In the form of the invention shown in Figures 5 to 8 of the drawings, the brush is driven by a pneumatic motor. As shown, a main handle 41 is provided, and this handle is formed of hollow piping for the passage of air or other fluid under pressure. The end of the handle is connected to a cross member 42 having offset ends 43,

forming a yoke. A motor casing 44 is secured to each of the offset ends. The brush comprises a cylinder 45 which is mounted on a shaft 46, journaled in the walls of the motor casing. The brush is provided with cleaning elements 47 on its exterior. The gear 48 is arranged adjacent each end of the shaft within the motor casing. These gears mesh with pinions 49 mounted on crank shafts 50. The crank shafts are journaled in the walls of the motor casing. A pair of cylinders 51 are formed on each of the motor casings, and pistons 52 are mounted in these cylinders. The pistons are connected to crank portions 53, formed on the crank shaft to rotate the crank shaft when the piston is reciprocated. Each of the cylinders are connected to the offset ends 43 of the tubing through which the air is conveyed by means of passages 54. A valve casing is formed at the inner section of the passages 54 and the passage 43 and a rotary valve 55 is arranged in this casing. This valve is provided with a suitable port 56. The valve is adapted to be driven by means of bevel gears 57, meshing with each other, one of which is arranged on the valve stem and the other carried by a valve shaft 58. The opposite end of the valve shaft is provided with a bevel gear 59, meshing with a similar gear 60 on the crank shaft. The cylinder is provided with ports 61 arranged adjacent the inner end and adapted to be uncovered by the piston when it approaches the inner end of the power stroke.

In the use of the form of the invention shown in Figures 1 to 3, the brush is run beneath the bottom of the ship and the spring 34 exerts a pressure to retain the brush in engagement with the ship's surface.

In the form of the invention shown in Figure 4 of the drawings, the brush travels on the rollers or wheels 40, and is brought into engagement with the surface of the ship by raising or lowering the handle portion.

When a pneumatic motor is employed, the air or other fluid is fed through the tubing 41 and 42 to the valve 55. The revolution of the crank shaft rotates the valve 55 to alternately bring the valve port 56 into communication with the passages 54. Air is thus alternately supplied to the cylinders 51, causing the pistons 52 to reciprocate. As the piston approaches the end of its inward stroke, the ports 61 are uncovered, permitting the air to exhaust to the atmosphere. The rotation of the crank shaft is transmitted to the main shaft 46 through pinion 49 and gear 48.

It is to be understood that the forms of

our invention herewith shown and described are to be taken as preferred examples of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

We claim:

1. A rotary brush comprising a cylindrical member, bristles arranged on the exterior of said member, a motor mounted therein, a yoke in which said member is mounted, a handle secured thereto said handle and said yoke forming a supporting member, a standard secured to said supporting member, the standard being formed in two sections pivotally connected to each other, a cylinder mounted on one of said sections, a rod connected to the other of said sections, a plunger mounted on said rod and arranged in said cylinder, a spring arranged in said cylinder and engaging said plunger, and traction wheels carried by said standard.

2. A rotary brush comprising a cylindrical member, bristles arranged on the exterior of said member, a motor mounted therein, a yoke in which said member is mounted, a handle secured thereto, said handle and said yoke forming a supporting member, a standard secured to said supporting member, said standard being formed of pivotally connected upper and lower sections arranged at an angle to each other, and traction wheels carried by the lower section of said standard, said lower section being arranged at a substantial angle to the vertical.

3. A rotary brush comprising a cylindrical member, bristles arranged on the exterior of said member, a motor mounted therein, a yoke in which said member is mounted, a handle secured thereto, said handle and said yoke forming a supporting member, a standard secured to said supporting member, said standard being formed of pivotally connected upper and lower sections arranged at an angle to each other, traction wheels carried by the lower section of said standard, said lower section being arranged at a substantial angle to the vertical, and resilient means connecting the upper and lower sections of said standard.

In testimony whereof we affix our signatures in presence of two witnesses.

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ARTHUR M. N. HOLZAPFEL.

Witnesses:

WM. MARTIN.
H. A. McCANN.