M. L. SMITH.

ROTARY BRUSH.

APPLICATION FILED OCT. 2, 1918.

1,369,567. Patented Feb. 22, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

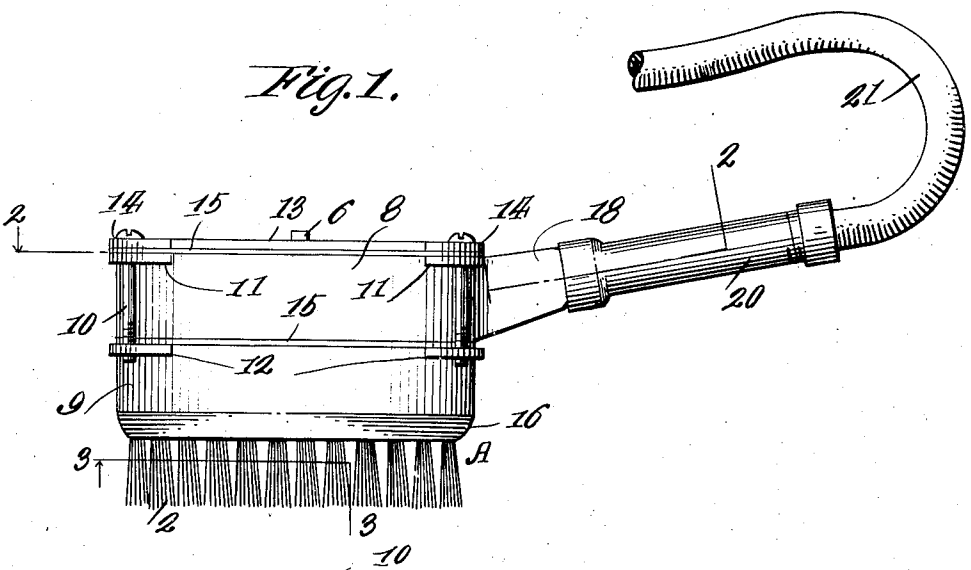


Fig. 2.

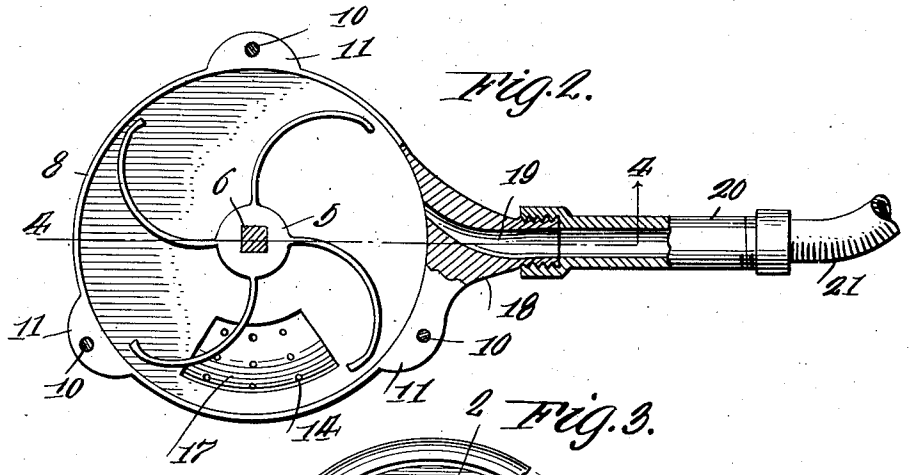
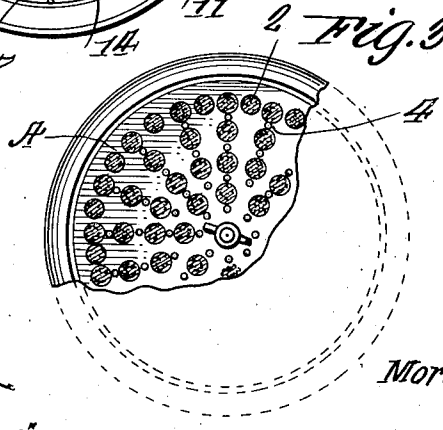


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

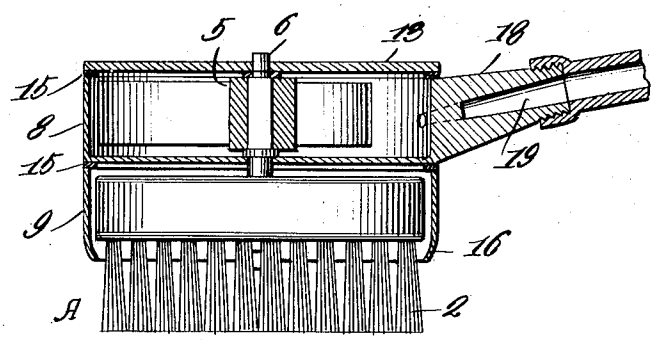


Fig. 5.

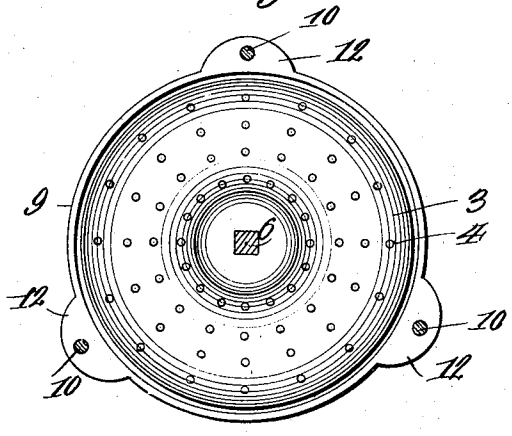
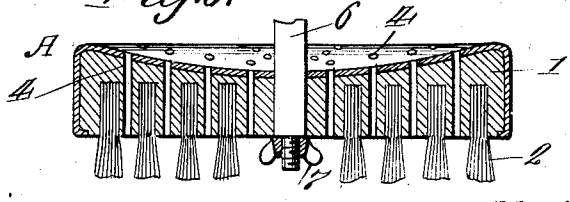


Fig. 6.



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ROTARY BRUSH.

1,369,567. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed October 2, 1918. Serial No. 256,543.

To all whom it may concern:

Be it known that I, MORTIMER L. SMITH, a citizen of the United States, residing at Portland, in the county of Multomah and State of Oregon, have invented certain new and useful Improvements in Rotary Brushes, of which the following is a specification.

This invention relates to a brush of the type embodying a casing, a motor and a rotary brush adapted to be driven by the motor.

The object of the invention is to devise a brush of the class aforesaid which may be operated by a fluid medium, such as water, and which utilizes such medium after it has expended its force as a cleansing agent for removing soil from floors, walls, decks and like surfaces.

The drawings illustrate a preferred embodiment of the invention, however, it is to be understood that in adapting the same to meet different conditions, various changes in the form, proportion, and minor details of construction may be resorted to without departing from the nature of the invention as claimed hereinafter.

Referring to the drawings hereto attached,

Figure 1 is a view in elevation of a rotary brush embodying the invention.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is an under side view a portion being broken away on the line 3—3 of Fig. 1.

Fig. 4 is a vertical longitudinal section on the line 4—4 of Fig. 2.

Fig. 5 is a top plan view of the lower section of the casing with the brush therein, the shaft being in section.

Fig. 6 is a transverse section of the brush showing a portion of the shaft to which the brush is attached.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by like reference characters.

The device comprises a rotary brush, a motor therefor and a casing. The brush and motor are suitably incased and the latter is provided with a handle for convenience of manipulation. The brush is indicated generally at A and comprises a body or back 1 and tufts 2. The body or back 1 may be of any material and size and is usually of circular formation preferably disk shaped and the tufts 2 of brush material are secured thereto in any desired way. In the present instance the back or body 1 of the brush is covered by means of a jacket 3 preferably of metal. The body 1 and its jacket 3, if employed, are preferably penetrated by numerous small ducts 4, which admit passage therethrough of a portion of the spent fluid which is primarily employed for driving the motor. The size and specific structure of the brush are unimportant within the purview of the invention and will depend largely upon the specific purpose for which the device is intended.

The motor preferably consists of a wheel 5 having blades or wings radiating from a hub and is connected with the brush so as to impart a rotary movement thereto. The motor wheel 5 is, in the form of the embodiment of my invention illustrated, secured to the upper end of a shaft 6 and the brush A is secured to the lower end of the shaft. Likewise, as indicated most clearly in Fig. 6, the lower end of the shaft 6 is reduced and threaded to receive a nut 7 by means of which the brush is held to the shaft in a manner to admit of the brush being readily removed, and replaced, as for cleaning or for any other purpose.

While the casing may be of any construction, it is preferred to form it of two compartments 8 and 9 secured together as by means of fastening bolts 10. I prefer to make the two compartments 8 and 9 of separable sections, as illustrated, and to provide each section with lugs 11 and 12 for reception of the bolts 10, which pass through openings formed in registering lugs projecting outwardly from the respective sections. The section 8 is provided with a plurality of lugs 11, and the section 9 has a corresponding number of lugs 12. The upper section 8 is closed at the top by means of a cover 13 which is formed with offstanding lugs 14. The several lugs 11, 12 and 14 are in coincident position to receive the fastenings 10. Gaskets 15 of suitable packing material are interposed between the cover 13 and the section 8 and between the two sections 8 and 9 in order to maintain close joints. The section 8 and its cover 13 afford a complete closure for the motor wheel 5 with its blades, provision being made for discharge of spent motive fluid as through an opening 17 in

the bottom of said section. The shaft 6, mounted in suitable journal bearings in the cover 13 and in the bottom of section 8 and being operatively spaced to accommodate the wheel 5, projects through the bottom of the section 8 a sufficient distance into the section 9 to afford accommodation therein for the disk shaped body 1, of the brush, which, in practice, is circumferentially inclosed by the side wall of the section 9. The disposition of the body 1 within the casing defines between its perimeter and the inclosing wall of the casing an annular crevice through which, in passing out of the casing, the spent motive fluid is formed into a sheet that is discharged in that form into the tufts 2 of the brush. The section 9 preferably comprises a ring or band which is open at the top and bottom and which has its lower edge 16 inturned below the body 1 of the brush to deflect the fluid medium against the tufts of the brush with the effect of a nozzle. The opening 17 in the bottom of the section 8 provides an escape for the water or other fluid medium employed as an agent for propelling the motor. Provision is made for delivery of a motive fluid, preferably water, to the interior of section 8 against the blades of the motor wheel 5 for imparting rotation to said wheel. A passage 19 in a coupling extension 18 provided for section 8 affords suitable and convenient means for such delivery. The delivery end of the passage 19 is deflected as indicated most clearly in Fig. 2 so as to direct the jet approximately at a tangent to the motor wheel, whereby the impact against the blades or wings is utilized to the best possible advantage for driving the motor.

A handle 20 is adapted to be coupled in any manner to the extension 18, and may be of any length and construction best suited to the particular use for which the brush is intended. A flexible tube 21 is connected with the handle 20 and is adapted to be coupled to a source of supply of the motive medium whereby the brush is driven. It is preferred to utilize water as the motive medium, hence the tube 21 is adapted to be coupled to the outlet of a service pipe in any well known manner. It is an important object of my invention to provide means for utilization to advantage of the water as a detergent liquid after it has spent its force in driving the motor. To this end the inturned edge 16 imparts a constricted or nozzle-like discharge opening to the casing, and is designed and adapted to effect the discharge of the water into the tufts of the brush. The inturned edge 16 is also disposed beyond the body 1 and about the tufts 2 of the brush, as shown in Fig. 4 of the drawings. In consequence of the relative shape and disposition of the body 1 and its casing the tufts 2 of said body are made to revolve at all times in service in the midst of a constant and abundant flow of water discharged in a sheet converging toward the axis about which the body 1 revolves and without any obstruction thereto on the part of said body.

In this connection it may be observed with general reference to the foregoing specification, where, for example, the section 8 is referred to as being located above the section 9 and as being provided with a top 13, that such language is intended for convenient brevity only to apply to such relative disposition of the device as is illustrated in Figs. 1 and 4. In point of fact the device may be used upside down or in any mode of application desired.

The preferred construction of two sections 8 and 9 made separable by aid of their lugs 11 and 12 and bolts 10, is employed in order to provide for convenient removal and replacement of the brush A, which by reason of the constriction at 16 of the wall of the section 9, is confined therein so long as the sections 8 and 9 are united.

It is to be understood that the invention provides an article which may be used for a variety of purposes, and which materially reduces the labor because of the automatic operation of the brush due to the rotary movement imparted thereto. It is to be understood that air under pressure may be utilized as the fluid means for operating the brush, and in this case the air escaping carries off dust that may be dislodged by the brush. When water is the operating medium, the brush may be used for scrubbing purposes, the water after expending its force in driving the brush being utilized as a washing agent in the manner well understood. It may be used as a bath and a tooth brush.

The foregoing description and the drawings have reference to what may be considered the preferred, or approved, form of my invention. It is to be understood that I may make changes in construction and arrangement and combination of parts, materials, dimensions, et cetera, as may prove expedient and fall within the scope of the appended claims.

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

1. A brush comprising a substantially cylindrical casing having an inwardly deflecting discharge end, a fluid motor wheel mounted within the casing, and a rotatable brush comprising a disk-shaped body operatively disposed within the casing and connected with the fluid motor wheel, and having tufts projecting through and extending beyond the discharge end of the casing, the inwardly deflected open end of the said casing extending beyond the said body of the

brush and arranged to direct spent fluid after leaving the motor wheel in an annular sheet against the said tufts.

2. A brush comprising in combination with a rotatable, disk-shaped brush body having a concave back and provided with tufts projecting from the opposite side thereof, said body being also provided with a plurality of openings extending from the concave back to the tufts, of a fluid motor connected with the brush, means for supplying motive fluid to said motor, means for discharging the spent motive fluid against the concave back of the brush body, and a casing having its outer end constricted and extending beyond the brush body and arranged to discharge a portion of the spent water in an annular sheet against the sides of the tufts at an angle to the same.

In testimony whereof I affix my signature in presence of two witnesses.

MORTIMER L. SMITH.

Witnesses:
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F. A. DEANE.