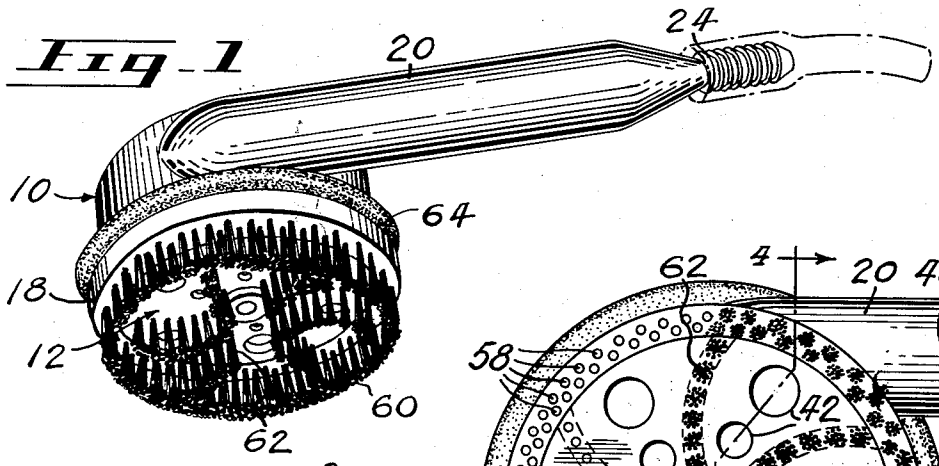
July 6, 1954 F. PRUCHA 2,682,675

HYDRAULICALLY DRIVEN ROTARY CLEANING BRUSH

Filed Feb. 13, 1953

Fig. 1



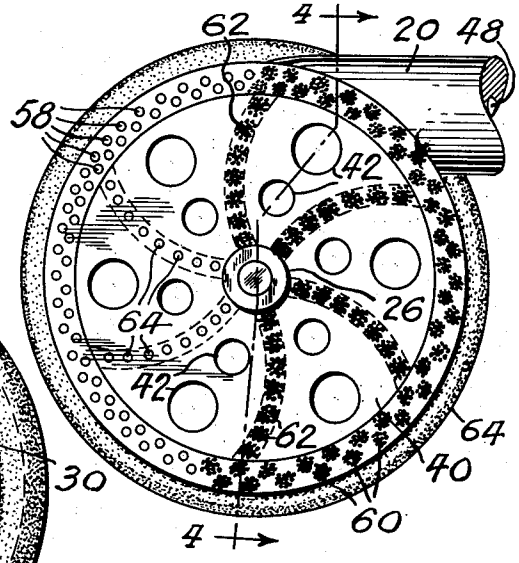


Fig. 2

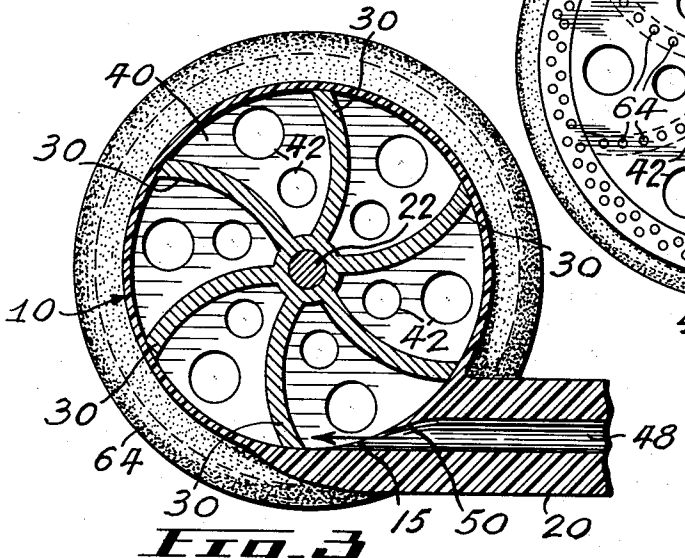


Fig. 3

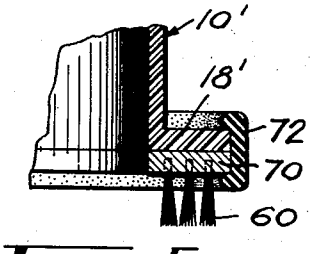


Fig. 5

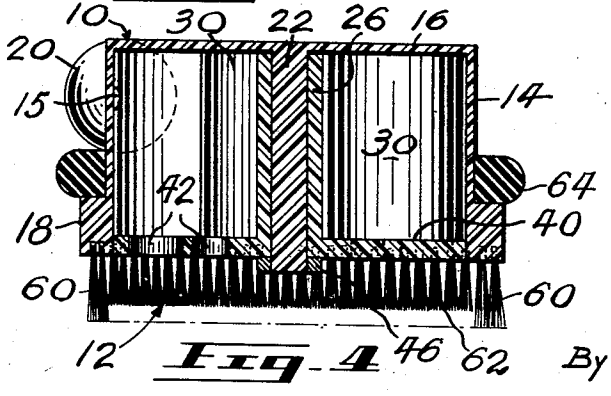


Fig. 4

INVENTOR
FRANK PRUCHA
By Alan Swabey
ATTORNEY

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HYDRAULICALLY DRIVEN ROTARY CLEANING BRUSH

Frank Prucha, Montreal, Quebec, Canada

Application February 13, 1953, Serial No. 336,787

1 Claim. (Cl. 15—29)

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The present invention relates to hydraulically driven rotary brushes adapted for use in cleaning motor vehicles or the like.

Many rotary brushes of this type have been made in the past for the purpose of washing automobiles, windows or for various scrubbing purposes.

A common disadvantage with many of these prior art brush constructions is that they are complicated in design having several moving parts. This type of construction necessarily makes the brush heavy and further, expensive to manufacture.

Applicant's development

The present invention aims to provide a rotary brush construction of simple and efficient design wherein the structure is reduced to the minimum number of interconnectible parts making it easy to manufacture and light and easily handled.

Accordingly, the present invention comprises a rotary cleaning brush adapted to be driven by hydraulic pressure, for example, the flow from a standard water outlet, which consists essentially of two parts, a main casing and an inner rotary brush.

More specifically, and in accordance with a preferred embodiment of the invention, the casing comprises of an annular body shell having an opening adapted for connection to a source of pressure and a concentric shaft extending from the shell, and the rotary brush portion is of circular formation having integral impelling blades which extend outwards from the center of the brush. The brush is mounted for rotation to the shell body by a center opening which slidably receives the shell shaft or axle so that the two parts are interconnected merely by sliding the brush portion unto the shaft portion of the casing and securing it in this position by a retaining cap which fits over the end of the shaft protruding beyond the front surface of the brush portion.

The shell or casing portion is provided with an annular arrangement of bristles about the edge surrounding the rotary brush and the rotary brush portion is provided with a set of spaced apart bristles corresponding to the bristles provided on the casing. The brush portion is also provided with a number of perforations so that as it is rotated by the delivery of fluid from the supply source the fluid also escapes from the lower facing of the brush in a steady stream while the brush is in action.

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Description

Having thus generally described the nature of the invention, particular reference will be made to the accompanying drawings showing by way of illustration preferred embodiments thereof and in which:

Figure 1 is a diagrammatic view and perspective of a preferred construction of a rotary brush according to the invention,

Figure 2 is an enlarged view of the brush construction shown in Figure 1 as it would appear in plan with the bristle portion uppermost with certain of the bristles omitted to show the construction in more detail,

Figure 3 is a cross-section in top plan of the brush construction shown in Figures 1 and 2 to illustrate the internal construction and relative position of the impeller blades,

Figure 4 is a sectional view of the construction shown in Figure 2 along the line 4—4 to show the construction in more detail,

Figure 5 is a sectional view of a modified construction with the rotary brush removed for clarity in which a ring containing the stationary bristles is secured to the flange of the casing by means of a rubber band.

With particular reference to Figure 1, the preferred construction of a brush in accordance with the present invention comprises essentially of a casing 10 and a rotary brush portion 12. The casing 10 which is preferably made from molded plastic is shaped so as to have a main cylindrical body or shell portion 14 having one end closed by a solid wall 16 with the other end open and surrounded by an outstanding annular flange 18. A liquid receiving inner opening 15 is provided in the main casing portion 14 and an integral handle and conduit portion 20 extends substantially tangentially outwards from the side of the casing main portion 14 so as to provide a means of conveying liquid to the interior of the casing and also to provide a supporting handle for the device when in use.

The interior of the member 20 is bored centrally as indicated at 48 with the end adjacent the interior of the casing 14 being narrowed at one side by a deflector portion 50 so as to guide the driving fluid with the maximum efficiency.

The casing 10 also includes a centrally located shaft 22 which extends beyond the top surface of the flanges 18 and in the present construction is integral with the bottom portion 16. This shaft 22 supports the rotary brush as will now be described in more detail.

The inner or rotary brush portion 12 also comprises of a single member, preferably of molded plastic which includes a circular top plate 40, a central cylindrical sleeve 26 and equally spaced apart curved impeller blades 30 which extend from the hub 26 to terminate in substantial alignment with the outer circumference of the top plate 40. The top plate 40 includes a plurality of spaced apart openings 42 which are arranged in a regular pattern between the impeller blades 30.

The inner brush portion is mounted within the casing 10 by the placing of the hub 26 over the shaft 22 and is retained in this condition by an annular locking disc 46 placed over the end of the shaft 22 and secured thereto. In the plastic type casing construction illustrated, this is done by heating a small portion of the locking disc 46 and the end of the shaft 22. As will be appreciated, this arrangement can be varied for example, if the shafts 22 were hollow the upper edge could be flanged outwards to keep the brush 12 in position thus eliminating the necessity of having the locking disc 46.

The casing flange 18 is provided with a plurality of equally spaced apart holes 58 about the circumference on the lower face and a plurality of bristles 60 are mounted in these openings. The top plate 40 of the brush 12 is also provided with a plurality of openings 64 following the outline of the impeller blades 30 and bristles 62 are secured in these openings. With this arrangement, a brush surface is provided for a stationary outer ring and a revolving circular inner ring between the bristles of which liquid is allowed to flow while the brush is in use. Preferably the bristles 60 are slightly longer than the bristles 62.

In order to avoid scratching or defacing any surface to be cleaned by the direct contact of the casing against the object there is provided an annular resilient bumper band 64 which surrounds the casing portion 14 and rests on the upper surface of the outstanding flange 18. The member 20 is preferably provided with a tapering serrated connecting portion 24 so as to give a firm grip to a hose leading from the liquid supply.

As will be apparent, from the preceding description and the accompanying drawings when the device is connected to a suitable source of fluid under pressure, usually a water outlet, the water flows through the bore 48 of the member 20 and contacts the curved impeller blades 30 forcing the brush portion to spin about the shaft 22 relative to the casing 10. As the liquid drives the impeller blades 30 it also immerges from the openings 42 and is disposed in an even swirling flow between the bristles 62 of the brush portion.

Referring particularly to Figure 5, there is shown an alternative construction in which the bristles 60 are secured to a circular ring 70 which is slightly larger than a flange 18' of a casing 10' and overlaps the rotary brush. The circular ring 70 is placed over flange 18' and held in place by means of a rubber band 72 which grips the outer end of the ring 70 and the shoulder of flange 18'.

The advantages of this arrangement are obvious in that say for example, cleaning a car it is only necessary to run the brush over the surface which is to be cleaned and the water is supplied with the brushes releasing the dust and dirt.

I claim:

A rotary brush comprising in combination, a main cylindrical casing having imperforate side walls and a bottom wall, an integral tubular member extending substantially tangentially from said casing side wall and including a central opening therethrough, providing a fluid passage inlet to the interior of said casing, said casing bottom wall being provided with an integral central extension constituting an axle, said axle extending from the bottom of said casing to beyond said side walls, the upper circumferential periphery of said side walls remote from said bottom wall being provided with an outstanding flange having a first portion integral with said side walls and a second annular portion mounted on said first portion by means of an annular resilient ring surrounding and overlapping both portions, a plurality of bristles mounted in said flange second annular portion so as to extend outwardly therefrom in spaced apart relationship; an inner rotary member having a central cylindrical hub portion adapted to slidably fit over said axle portion of said casing and a flat circular plate extending outwardly from said hub portion at one end thereof, said plate being of substantially equal diameter to the interior diameter of said casing side walls, a plurality of equally spaced apart curved impeller members integral with and extending radially outwards from said hub portion to terminate flush with the outer periphery of said plate, said plate including a plurality of equally spaced apart holes disposed between said impeller blades and a plurality of spaced apart bristles mounted thereon on the opposite side therefrom and in alignment with said curved impeller blades and means to retain said center hub portion on said casing axle portion, whereby fluid delivered through the fluid passage in said tubular member contacts said impeller blades and causes a rotation of said plate and bristles relative to said stationary bristles mounted on said casing flange portion with a constant stream of said liquid passing through said holes in said plate.

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