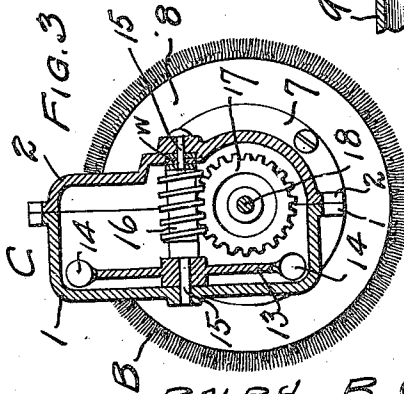
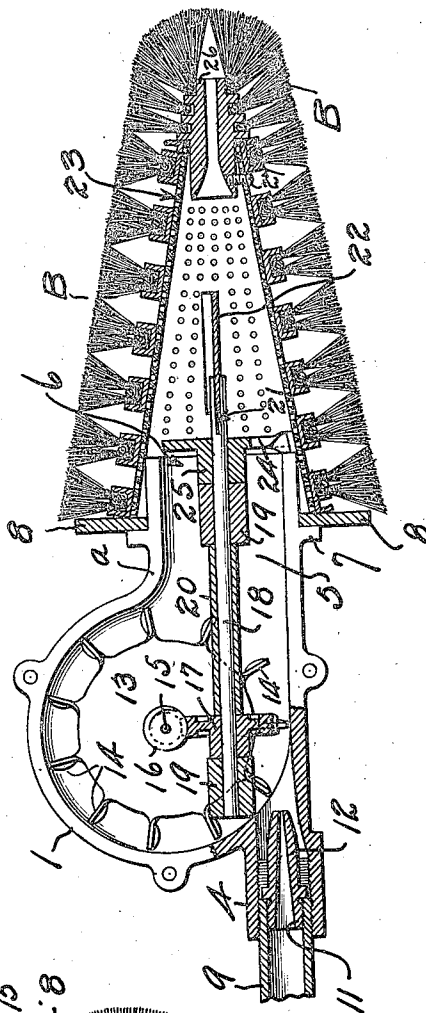
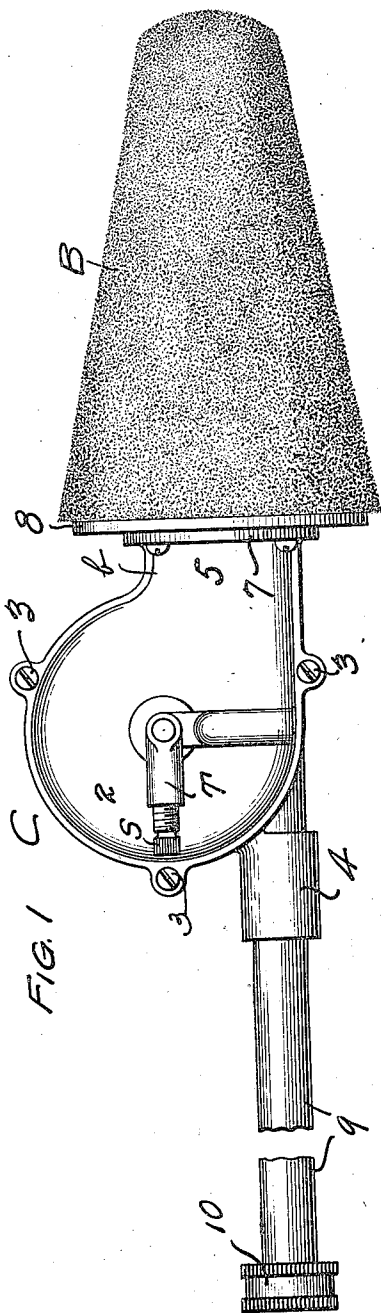


R. B. GOODRICH.  
 ROTARY BRUSH,  
 APPLICATION FILED OCT. 20, 1915.

Patented Oct. 3, 1916.  
 2 SHEETS—SHEET 1.

1,199,780.



Inventor

RALPH B. GOODRICH

Witness  
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By

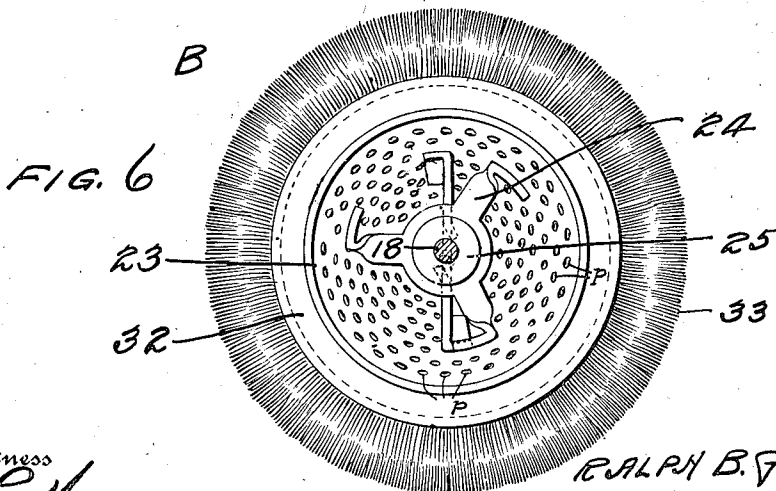
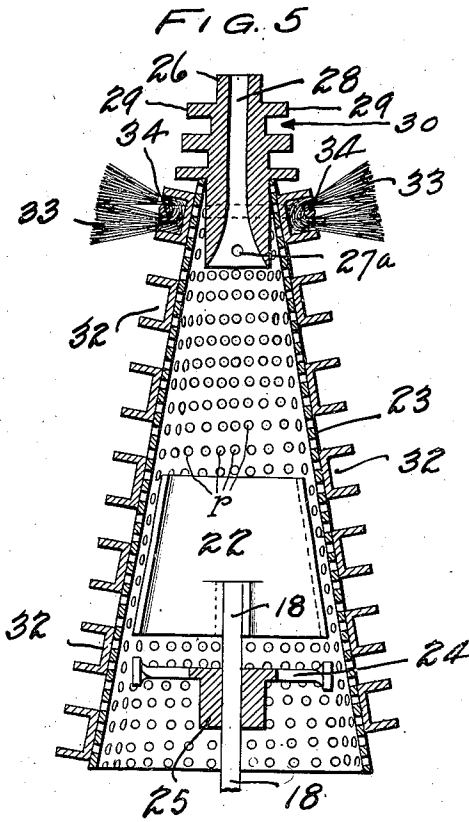
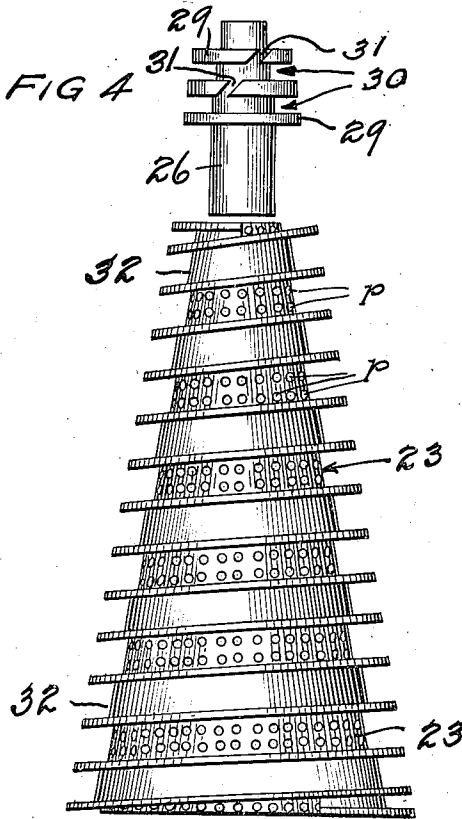
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# UNITED STATES PATENT OFFICE.

RALPH B. GOODRICH, OF COLLEGE HILL, OHIO.

## ROTARY BRUSH.

1,199,780.

Specification of Letters Patent.

Patented Oct. 3, 1916.

Application filed October 20, 1915. Serial No. 56,916.

*To all whom it may concern:*

Be it known that I, RALPH B. GOODRICH, a citizen of the United States, residing at College Hill, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Rotary Brushes, of which the following is a specification.

This invention relates to a novel improvement in brushing and scrubbing devices of the type which employ a rotary brush, and which are particularly adapted for washing automobiles or other vehicles, although susceptible to a wide range of other uses.

To this end, the invention contemplates a simple and practical device which utilizes a supply of running water for the two-fold purpose of rotating the brush element, and also supplying thereto the necessary water for the washing operation. That is to say, the invention has in view a novel construction whereby the same water which actuates the brush-operating instrumentalities, is fed to the brush without waste or leakage, thereby providing a device of this character that not only economizes the consumption of water but gives a maximum cleaning efficiency for the water used in a safe and convenient manner.

Another object of the invention is to provide a novel brush operating device that is easily made and assembled, and capable of being readily taken apart to facilitate repairs and renewals. In this connection, the invention proposes to utilize a special brush which constitutes an essential part of the apparatus, and may be easily and quickly connected or disconnected from the brush operating device when desired, but when coupled therewith, is positively held or locked so that all of the power from the operating device is carried direct to the brush.

A further object of the invention is to provide a novel rotary brush, the body of which is made of a material that will not be affected by the water, and which is so constructed that the same may freely pass from the interior thereof to and through the bristles to assist in the cleaning operation. Furthermore, it is proposed to make the brush of such a design that it will readily fit into the corners and more or less concealed places usually found on a vehicle.

With the above and other objects in view which will more readily appear as the na-

ture of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the present invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved rotary brush, and the means for operating the same. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a vertical sectional view. Fig. 4 is an enlarged detail elevation of the core of the rotary brush, showing the end plug detached. Fig. 5 is a vertical sectional view of the construction shown in Fig. 4 with the end plug in place, and the bristles shown in one of the channels. Fig. 6 is an elevation of the rear end of the complete brush.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

A novel and distinctive feature of the present invention resides in the provision of a suitable casing having at one side an inlet connection, and an oppositely located outlet extension having fitted thereto a rotatable brush which is capable of distributing the water passing through the casing for the washing operation, after it has operated the brush actuating mechanism.

As will be observed from the several figures of the drawings, this casing is designated generally as C, and essentially comprises the complementary sections 1 and 2 which may be secured together by suitable fastening elements 3. Referring to the novel features of construction of the casing, it will be noted that the section 1 thereof is provided with an inlet connection 4, while the portion of the section directly opposite this connection is formed with an extended neck portion *a* which together with a corresponding neck portion *b* of the complementary section 2 provides an outlet extension 5 having an open discharge mouth 6. It will thus be apparent that water supplied to the casing through the inlet connection 4 will have a substantially direct passage through the same to exhaust through the discharge mouth 6. The said outlet extension 5 is provided with an annular flange 7, which constitutes an abutment for a suitable washer 8, that is intended to protect or shield the part of the vehicle being washed

from being scratched or marred by the metal casing, but at the same time has another function which will hereinafter more fully appear.

5 The inlet connection 4 is interiorly threaded as shown in Fig. 2, to detachably receive the threaded end of a hollow pipe 9 which constitutes a handle for manipulating the present device. This pipe 9 is provided  
10 at one end with a suitable coupling member 10 for connecting with a hose or other convenient source of water supply, and is provided at the opposite end with internal threads for receiving the threaded shank  
15 11 of a jet nozzle 12. As will be clear from Fig. 2, this jet nozzle 12 is located within the inlet connection 4, and is adapted to direct a jet of water into the interior of the casing C.

20 The water fed into the casing by means of the nozzle 12 is adapted to actuate a brush operating motor which is housed and concealed within the casing. This motor essentially comprises a water wheel 13 having  
25 a plurality of cupped impact blades 14 which are disposed directly in the path of discharge of the jet nozzle 12. The said wheel 13 is carried by a transmission shaft 15 having its opposite ends respectively  
30 journaled in the sections 1 and 2, and also carrying a worm 16. In connection with the end of the shaft journaled in the section 2 it will be observed that the same may be provided with a plurality of bearing washers *w*, and may also be supplied with lubricant from the tube T formed on the exterior  
35 of the section by the adjustment of the screw S. This arrangement of the shaft 15 causes the same to be disposed transversely of the interior of the casing, and facilitates the meshing of the worm 16 carried thereby  
40 with a worm pinion 17 mounted on a motor driven shaft 18. This shaft 18 is carried in suitable brackets 19 formed from the inner side of the section 2, and is also provided  
45 with a shaft casing 20 which not only facilitates the assembling of the device inasmuch as it holds the worm pinion 17 in position, but also protects the said shaft from rust and corrosion and provides a more substantial and steady bearing therefor. It will  
50 also be noted that this shaft is disposed longitudinally of the casing, and therefore at right angles to the transmission shaft 15, and is located in the center of the outlet extension 5, and therefore in the direct line of discharge or passage of the water through the casing.

60 The front end of the motor shaft 18 is provided with a slot 21 for engaging with the locking plate 22 which is secured within the hollow conical body of the rotary brush designated in its entirety by the reference character B. This brush essentially comprises a hollow perforated conical core 23,  
65

and is provided at its rear end with a suitable spider 24, which is rigidly secured to the said core and has a centrally disposed bearing member 25, which is adapted to fit  
70 over the front end of the shaft 18 and thus guide the locking plate 22 carried by the brush into the slot 21 in the end of the shaft. It will accordingly be apparent that the brush D is detachably locked with the motor shaft 18, and that the hollow perforated  
75 core 23 of the brush fits over the discharge end of the outlet extension 5 so that water issuing from the discharge mouth 6 thereof flows into the interior of the core, and makes its way to the brush bristles through the  
80 plurality of perforations *p* therein. In this connection it will also be noted that the spider 24 and locking plate 22 are arranged within the interior of the core so as to permit the rear end of the core to fit over the  
85 end of the extension 5 and abut against the washer 8 which may be of leather, rubber, or any other suitable material, to thus protect the operator by preventing water from splashing back over the casing C.

90 Referring to the additional features of construction involved in connection with the brush B, particular reference may be made to Figs. 4, 5 and 6. From these figures it will be observed that the hollow core 23 is  
95 substantially frusto-conical. That is to say, the upper end thereof is cut off to provide for receiving an end plug 26, which may be made fast to the core by means of a suitable fastening element 27 fitting into the opening 27<sup>a</sup>. This end plug 26 is provided with  
100 a discharge passage 28, and is also provided with a series of spaced annular flanges 29 which gradually diminish in diameter and have therebetween the grooves 30 which are  
105 connected by means of an oblique slit 31 in the flanges 29. These grooves 30 are adapted to receive the bristles to form the ends of the brush, and correspond to the continuous channel member 32 on the core. This channel  
110 member is spirally wound from one end of the core 23 to the other, and is preferably made of light metal, as is also the core or brush body 23, thus making it possible for the channel member to be soldered or otherwise  
115 secured to the brush body, in a manner which will not be affected by the water.

The bristles designated generally as 33 in the brush B are held in position by means of a retaining wire 34. That is to say, a single  
120 continuous retaining wire having one end made fast to the core, preferably at its bottom end, is wound into the channel, thus pressing the bristles laid across the same into such a position that they stand outwardly  
125 from the core body as shown in Fig. 5, and also in Fig. 2. The plug 26 which is fitted in the end of the core or brush body, carries its own bristles in the grooves 30 by a separate retaining wire similar to the wire 34  
130

which in practice has one end secured to the shank of the plug and then passes through each groove and to the adjoining one by means of the oblique slots 31. Thus, after  
5 the core 23 is fitted with its bristles, the end plug may be placed in position.

From the foregoing, it will be apparent that water issuing from the jet nozzle 12 will strike against the cupped impact blades  
10 14 of the water wheel 13, and thus turn the shaft 15 which carries the worm 16. The worm pinion 17 on the shaft 18 will of course be rotated, thus turning the brush B through the means already described. Ac-  
15 cordingly, it will be obvious that the same water which operates the water wheel 13 passes on through the outlet extension 5 of the casing to the brush to be used in the washing operation, thus utilizing the water  
20 for the two-fold purpose of operating the brush and assisting the same in the cleaning operation.

Without further description, it is thought that the many features and advantages of  
25 the present invention will be readily apparent, and it will also be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the  
30 invention or scope of the appended claims.

I claim:

1. A washing device of the class described comprising a casing including longitudinally separable sections, an inlet connection carried by one section, a common outlet formed by both sections, a shaft disposed transversely of the casing and journaled in the sides of each section, a water wheel carried by said shaft, a worm also carried by  
40 said shaft, a driven shaft supported within the casing at right angles to the transverse shaft, a worm pinion on said driven shaft, and a hollow perforated brush fitting over the outlet connection of the casing and detachably connected with the end of the  
45 driven shaft.

2. A washing device of the class described comprising a casing including complementary sections, means for detachably securing said sections together, an inlet connection carried by one section, an outlet connection formed by complementary extension portions of both casing sections opposite the inlet connection, a hollow perforated  
55 brush fitting over the discharge mouth of said outlet connection, and means within the casing for rotating the brush.

3. A washing device of the class described comprising a casing including complementary sections, means for securing said sections together, an inlet connection carried by one section, an outlet extension formed by both casing sections opposite the inlet

connection, a flange formed on said outlet extension, a washer fitting over the outlet  
65 extension and abutting against said flange, a hollow perforated brush fitting over the end of said outlet extension and abutting the said washer, and means within the casing for rotating the brush. 70

4. A washing device of the class described comprising a casing having an inlet connection, an outlet connection, a motor within the casing and having a motor driven shaft disposed in the line of water passage  
75 through the casing and provided with an end slot, a hollow perforated brush fitted over the end of the outlet connection, a spider having a central bushing carried with the brush and fitting over the end of  
80 the motor driven shaft, and a locking plate permanently carried by the brush and detachably engaging the slot in the end of the motor driven shaft.

5. A washing device of the class described comprising in combination, a casing having  
85 an outlet connection and a motor driven shaft in said outlet connection, a brush device including a hollow frusto-conical metal core having a plurality of perfora-  
90 tions and adapted to fit over the outlet connection, and also having internal means for detachably connecting with said motor driven shaft comprising a spider arranged to slidably engage said shaft, and a locking  
95 plate for detachably engaging the end of said shaft.

6. A washing device of the class described comprising a motor casing having an outlet extension, a motor therein having a motor  
100 driven shaft extending through and beyond said outlet extension of the casing, a brush including a hollow frusto-conical metal core having a plurality of perforations, a spider at one end of the core arranged to  
105 slidably engage the shaft, and a locking plate secured to the core at one side of the spider and adapted to detachably engage the motor driven shaft.

7. A washing device of the class described comprising in combination, a casing having  
110 an outlet connection and a motor driven shaft in said outlet connection, a brush device including a hollow core having a plurality of perforations adapted to fit over  
115 the outlet connection, said core being further provided with an interior rigid member detachably engaging the motor driven shaft, and brush holding means carried by the core. 120

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

RALPH B. GOODRICH.

Witnesses:

C. R. SPICER,  
EDWD. GARDNER.