June 13, 1939. B. S. REYNOLDS 2,162,677

ROTARY EXPANDING FOUNTAIN BRUSH

Filed July 21, 1936

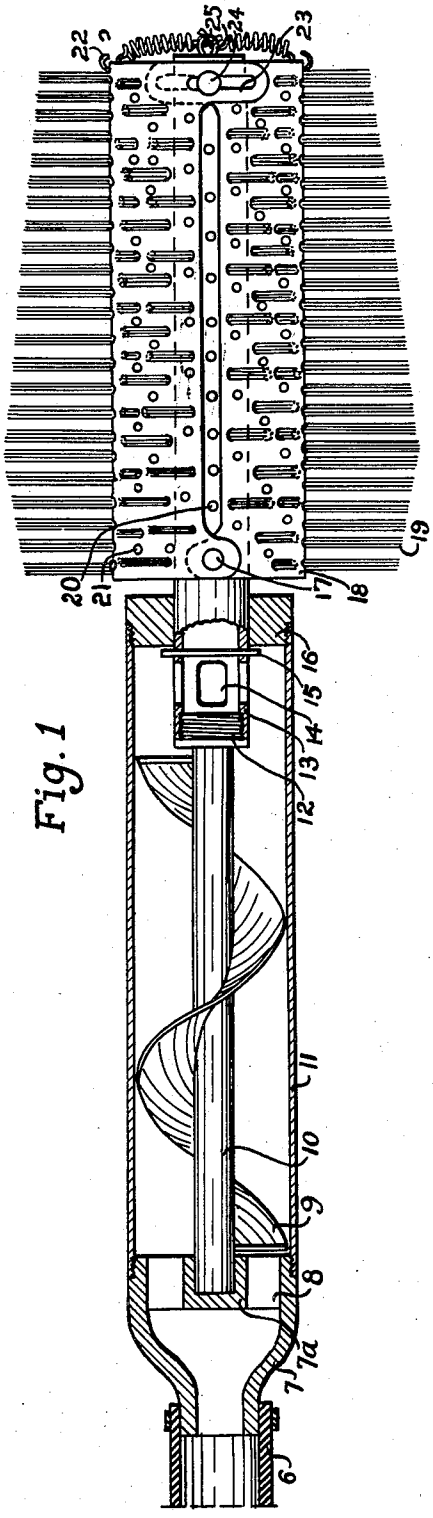


Fig. 1

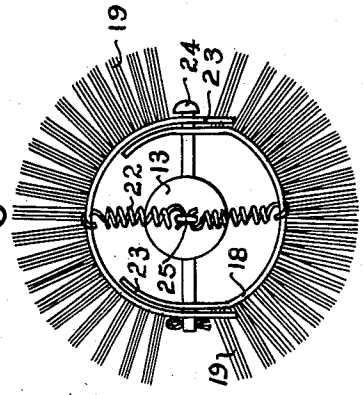


Fig. 4

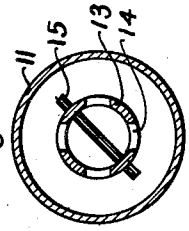


Fig. 3

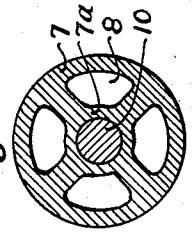


Fig. 2

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ROTARY EXPANDING FOUNTAIN BRUSH

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8 Claims. (Cl. 15—104.14)

This invention relates to a rotary expanding fountain brush for cleaning the interior of pipes, etc.

The primary object of the invention is to provide a brush which may be attached to a hose or pipe and inserted into a pipe or the like to clean or scour the interior thereof.

Another object of the invention is to provide a brush that has an expansible brush member that will expand by centrifugal force upon rotation thereof so as to obtain an even pressure throughout, add pressure to the friction of the brush and increase its efficiency in scouring the inside of the pipe.

Another object is to provide a brush, the bristles of which are so shaped as to present a uniform pressure when the brush is expanded to its working position.

With the foregoing objects in mind, it will be readily appreciated that the brush has great value in cleaning pipes that are used for transmitting fluids, such as milk and the like.

Referring to the drawing, in which like reference characters designate like parts in the several views:—

Fig. 1 shows a central longitudinal section, partly in elevation, of the brush with parts broken away to show construction.

Fig. 2 is a cross-section taken through the inlet end of the casting of Fig. 1.

Fig. 3 is a cross-section taken through the outlet end of said casting of Fig. 1.

Fig. 4 is an end view of the brush.

In the drawing the numeral 6 designates a hose, and 7 a casting in which center member 7*a* is formed for use as a bearing. Holes 8 are formed in this casting around the center thereof, as shown in Fig. 2. A screw member or turbine 9 is formed around shaft 10 within housing 11, one end of which is journaled in the center member 7*a* while the other end has a threaded connection at 12 with a pipe or tube 13 having holes 14 disposed therein within the housing 11 for admission of water into the interior of the pipe. A pin 15 limits end play of shaft 10 relative to the housing. An end member 16 closes the outer end of housing 11 to prevent escape of fluid and forms a bearing member for pipe 13. Housing 11 is threadedly connected to end members 7 and 16 which are readily removable for the replacement of brushes, to make repairs or for any necessary purpose. A pivot 17 passing through pipe 13 connects the inner ends of expansible brush heads 18 to the pipe. Bristles 19 are inset in the heads 18 preferably to form a brush of frusto-conical shape. Pipe 13 is provided with a plurality of perforations 20 while the heads 18 also have a multiplicity of perforations 21 intermediate the bristles, providing outlets for flow of water or fluid from pipe 13 to the bristles. The brush heads are connected at their outer ends to the pipe 13 by springs 22 to draw them toward each other normally tending to hold the brush contracted, thus permitting easy initial insertion. The outer ends of the brush heads are provided with ears 23 having elongated guide slots therein, a pin 24 passing through said slots, which allows the brush heads to be thrown outward or spread by centrifugal action to a desired limit. An eye 25 is provided in the closed end of pipe 13 to which the inner ends of the springs are anchored.

From the foregoing description it will be understood that the form of the brush and its construction facilitates its admission into a pipe in a collapsed or contracted condition, and that upon the flow of water or other fluid under pressure through the hose 6 into the housing 11 the impeller 9 will be operated to rapidly rotate the brush, whereby through the action of centrifugal force the brush will be expanded within the pipe to secure an even and increased pressure of the brush bristles on the surfaces of the pipe to be cleaned or scoured. The fluid supplied to the housing 11 to operate the impeller 9 flows through the openings 14 into the hollow brush shaft and thence discharges through the openings 20 and 21 into the spaces between the brush bristles, thus keeping such bristles constantly saturated with the fluid and also furnishing a supply of fluid to the interior of the pipe being cleaned for the cleansing or scouring action. Any sort of scouring or cleaning material may be initially supplied to the pipe or the fluid supplied under pressure for the brush driving and cleaning action may have natural cleansing properties or be admixed with cleansing agents of any desired kind. The operation of the brush within the pipe, into which it may be moved backwardly or forwardly for the cleansing action, ensures the thorough cleansing of the pipe within a minimum period of time.

While the structure shown for purposes of exemplification may constitute a preferred embodiment, it will, of course, be understood that changes in the form, construction and arrangement of the parts, within the scope of the appended claims, may be made, without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what I claim is:

1. In a fluid operated rotary brush, a rotatable hollow shaft, a brush carried by the hollow shaft and comprising outwardly and inwardly movable members pivotally connected at their inner ends to said shaft and slidably connected at their outer ends to each other, said members being movable outwardly under centrifugal force generated by the shaft in its rotations, and resilient means connected to the outer ends of the brush members for normally holding them in contracted condition, the hollow shaft having ports therein.

2. A fountain brush comprising a hollow shaft, and brushing members extending along said shaft and pivoted coaxially with each other to said shaft and carrying brushing means, said shaft being perforated approximately throughout the length of said brushing members to supply liquid to said brushing means.

3. A fountain brush comprising a hollow shaft, brushing members carrying brushing means and extending along said shaft and pivoted coaxially with each other to said shaft, and means for limiting the outward swinging motion of said members about said pivot, said shaft being perforated approximately throughout the length of said brushing members to supply liquid to said brushing means.

4. A fountain brush comprising a hollow shaft, brushing members carrying brushing means and extending along said shaft and pivoted coaxially with each other to said shaft at the inner ends of said members, and lost-motion means at the outer ends of said members for limiting the outward swinging motion of said members about said pivot, said shaft being perforated approximately throughout the length of said brushing members to supply liquid to said brushing means.

5. A fountain brush comprising a hollow shaft, brushing members carrying brushing means and extending along said shaft and pivoted coaxially with each other to said shaft at the inner ends of said members and at a point spaced inwardly from the outer end of said shaft, and brushing means carried by said members and arranged approximately in conical shape to assume an approximately cylindrical shape upon expansion of said members, said shaft being perforated approximately throughout the length of said brushing members to supply liquid to said brushing means.

6. A fountain brush comprising a hollow shaft, brushing members of approximately cylindrical shape extending along and enclosing said shaft, means pivotally connecting the inner ends of said members with the shaft, means connecting the outer ends of the members for limiting the expanding action thereof about the pivot means, and resilient means connected with the outer ends of said members tending to draw said members inwardly.

7. A fountain brush comprising a hollow shaft, brushing members of approximately cylindrical shape extending along and enclosing said shaft, means pivotally connecting the inner ends of said members with the shaft, means connecting the outer ends of the members for limiting the expanding action thereof about the pivot means, resilient means connecting the outer ends of said members with the shaft, said shaft having means for supplying liquid into said members, and said members having perforations therein for outward passage of the liquid therethrough.

8. A fountain brush comprising a tubular perforated support, cylindrical brushing members telescoped over the perforated portion of said support and pivoted thereto and individually swingable outwardly relative thereto, said members having rubbing means distributed over the surfaces thereof, said members having radial liquid perforations therein between said rubbing means and distributed over the surfaces of said members, and means for supplying liquid into said support.

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