

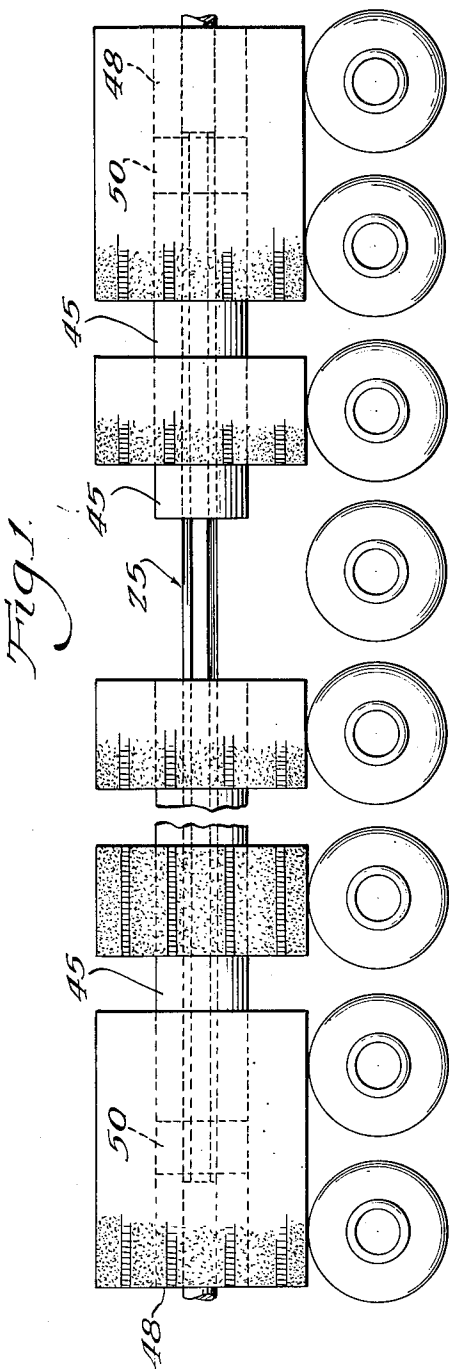
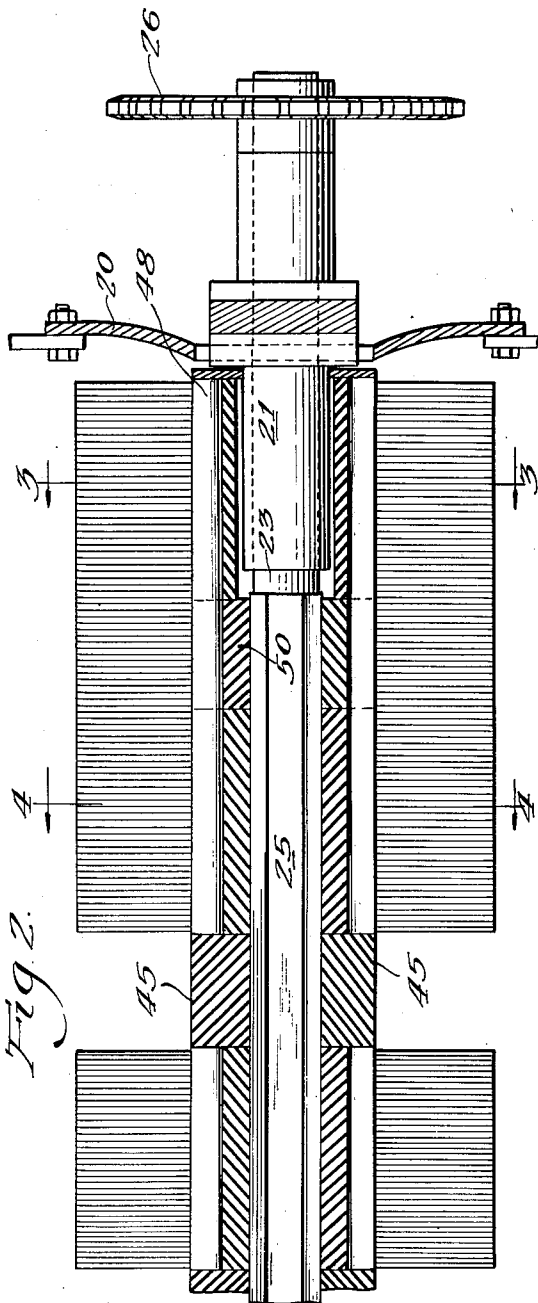
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G. T. MEYER ET AL
ROTARY BRUSH

2,575,635

Filed April 4, 1945

3 Sheets-Sheet 1



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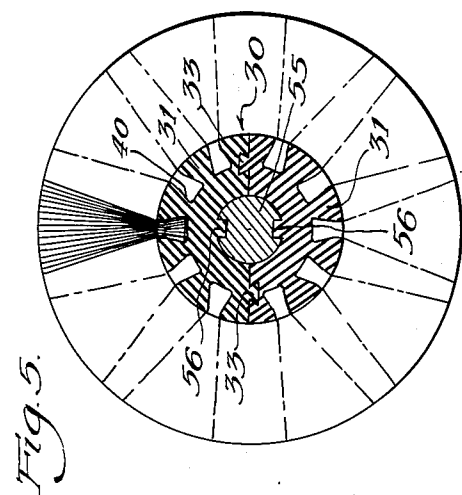
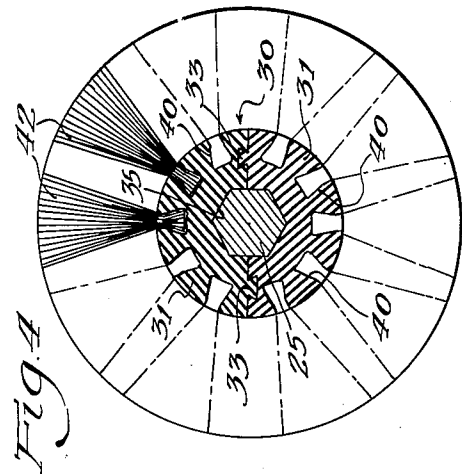
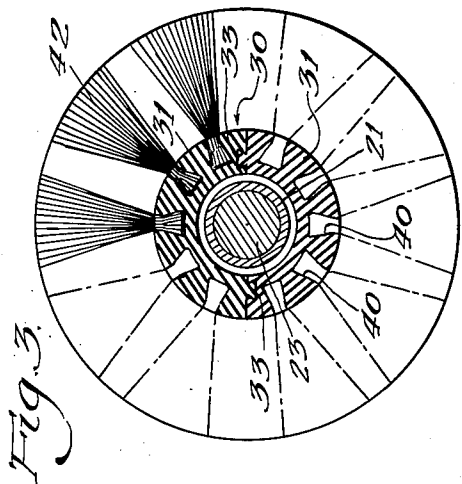
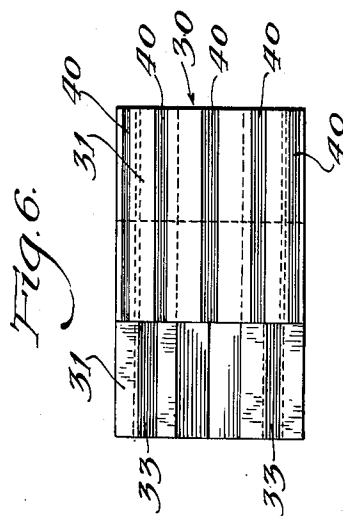
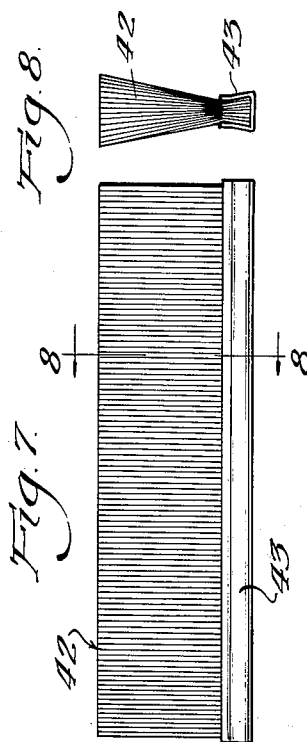
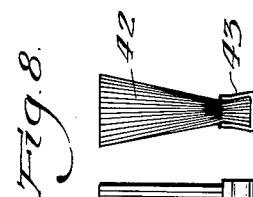
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ROTARY BRUSH

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3 Sheets-Sheet 2



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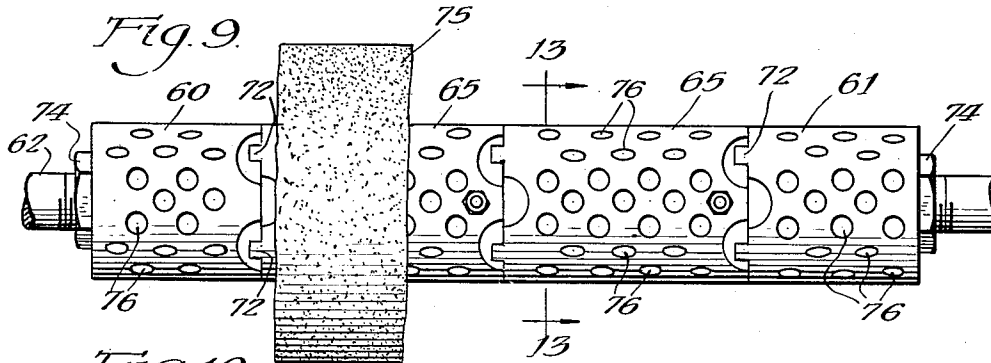
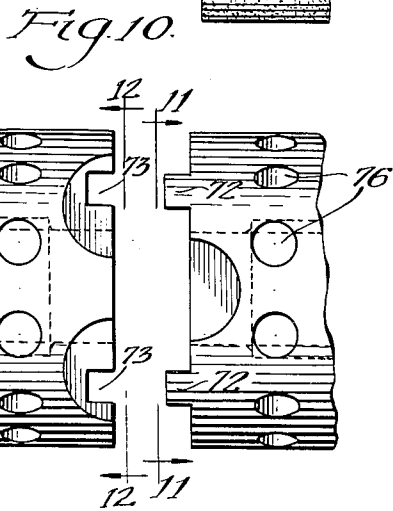
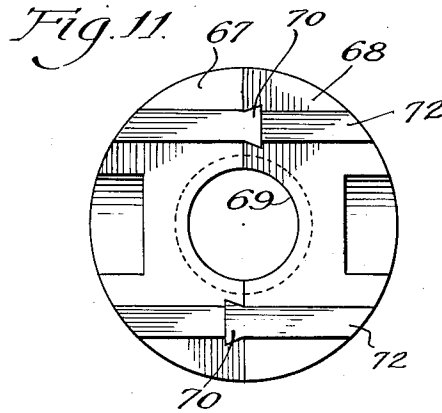
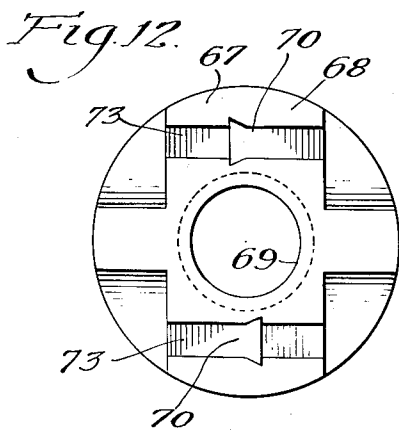
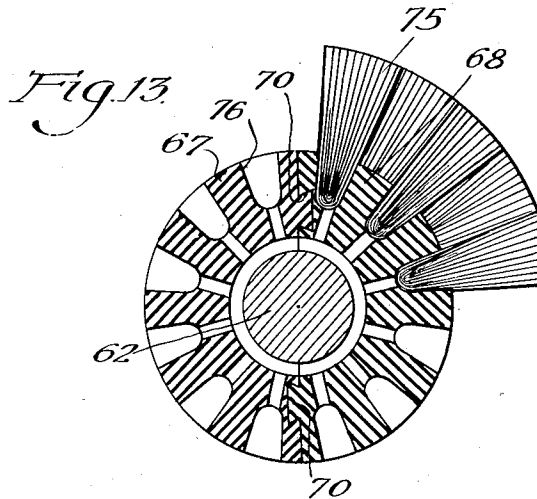
G. T. MEYER ET AL

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ROTARY BRUSH

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,575,635

ROTARY BRUSH

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6 Claims. (Cl. 15—181)

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This invention relates to brushes and more particularly to a rotary brush for use on bottle washing machines or the like.

Heretofore the brushes for bottle washing machines have been made cylindrical with an axial hole therethrough to receive the shaft. In order to replace a brush it was necessary to remove the shaft on which the brush was mounted and to place a new brush on the shaft and reassemble the machine. This operation took considerable time and necessitated a complete stoppage of the machine. It furthermore required the replacement of an entire brush of considerable length regardless of what portion was worn out or damaged.

One object of the present invention is to provide a rotary brush for bottle washing machines which can be replaced without removing the shaft on which the brush is mounted.

Another object is to provide a rotary bottle brush which may be built up to any width to accommodate different widths of machines.

Another object is to provide a rotary brush for bottle washing machines or the like which will permit replacement of a worn section of brush.

Still another object is to simplify the construction of rotary bottle brushes.

A further object of the invention is to provide a segmental rotary bottle brush which will rotate with the shaft on which it is mounted.

Other objects will become apparent upon considering the following specification which, when taken in connection with the accompanying drawings, illustrate preferred forms of the invention.

In its broad aspect the invention comprises a cylindrical brush formed of a plurality of segmental sections, means to secure the sections together on a shaft to form the cylindrical brush, and means to effect rotation of the brush with the shaft.

In the drawings:

Fig. 1 is an elevational view of a complete cylindrical bottle brush embodying the present invention assembled on a drive shaft;

Fig. 2 is an enlarged elevational view in cross-section of the end section of the brush shown in Fig. 1;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a cross-section similar to Fig. 4 showing a modification of the invention;

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Fig. 6 is a view showing the two segments of the brush stock with the dovetail joints being engaged;

Fig. 7 is an elevational view of a brush element used in the rotary bottle brush shown in Fig. 1;

Fig. 8 is a cross-sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a plan view of an alternate brush construction;

Fig. 10 is an enlarged view of two of the sections shown in Fig. 9, showing the method of connecting the sections;

Fig. 11 is an end view of the male end of a section shown in Fig. 9, and is a view on the line 11—11 of Fig. 10 looking in the direction of the arrows;

Fig. 12 is a view similar to Fig. 11, but showing the female end of a section, and is a view on the line 12—12 of Fig. 10 looking in the direction of the arrows; and

Fig. 13 is a cross-section on the line 13—13 of Fig. 10.

Referring to the drawings, and particularly to Figs. 1 to 4 inclusive, the fragment of the bottle washing machine shown has a frame with an opening covered by a plate 20. The plate 20 has a bearing 21 mounted therein which receives the cylindrical end 23 of a polygonal shaft 25.

The shaft 25 is driven by a gear 26 mounted on the outer end of the cylindrical portion 23 thereof.

The opposite end of the shaft 25 likewise has a cylindrical portion mounted in a bearing similar to the bearing 21 shown.

The brush is formed on a cylindrical stock 30 which is split into a plurality, normally two, of segments 31—31 which are connected together by dovetail joints 33—33. The stock 30 has a polygonal aperture 35 therethrough which corresponds with the polygonal shaft 25, the shaft forming the driving means for the brush.

The brush sections are formed with a plurality of dovetail slots 40 running axially of the segments, the slots receiving brush sections 42, mounted in metallic strips 43.

The length of the brush sections is determined by the diameter of the bottle or other article to be cleaned, the section being long enough to accomplish the brushing.

Spacer sections 45 are formed of segments joined by dovetail joints similar to the dovetail joints 33 and are formed cylindrical, without the brush receiving slots which are formed in the brush sections and have an outside diameter substantially equal to the brush stock. The spacers

45 are formed of convenient length to effect correct spacing for the brush sections, and serve the dual purpose of spacing and retaining the brush elements 42 secured in the brush sections 30.

The end sections 48 are made with cylindrical apertures of sufficient diameter to permit the sections to slide over the bearings and allow the sections 30 and spacers 45 to be spaced apart to permit a brush section to be disassembled and replaced.

In order to permit the end section 48 to rotate with the remainder of the brush sections 30 the spacer 50 adjacent the section 48 is provided with dovetail slots mating with the slots 40 while the end brush sections extend across the two end sections and the intermediate spacer 50.

Fig. 5 shows a modification of the invention in which a cylindrical shaft 55 is provided with a pair of spline grooves which are engaged by a key 56 formed on the interior of a circular aperture in the brush section to transmit rotation from the shaft to the brush section.

Referring now to Figs. 9 to 13 inclusive, which show a further modification, the brush is shown as comprising a pair of end sections 60 and 61 secured against rotation on a cylindrical shaft 62 by a transverse bolt or other suitable means, and a plurality of intermediate sections 65.

Each of the sections 60, 61 and 65 is composed of a plurality of segments (preferably two) 67 and 68, as best seen in Figs. 11, 12 and 13, having an axial aperture 69 therethrough to receive the shaft 62. Each segment is provided with mating portions of a pair of dovetail joints 70 which engage each other to secure the segments together into a cylindrical brush.

The ends of the intermediate sections 65 are provided at one end thereof with a plurality of tongues 72 which engage a plurality of grooves 73 in adjacent sections 65, as best seen in Fig. 10.

One end section 60 is provided with a plurality of grooves on the inside end thereof which engage the tongues 72 of the adjacent section 65 while the other end section 61 is provided with a plurality of tongues 72 which engage the corresponding grooves in the adjacent section 65. The tongue and groove joints thus formed transmit rotation from the end sections 60 and 61 to the intermediate sections 65 and from one intermediate section 65 to the adjacent section 65. Nuts 74-74 may be used on the shaft to hold the sections assembled and insure the tongues and grooves remaining engaged.

Bristles 75 either may be sewed into apertures 76 in the segments, or, if the segments are made of plastics such as Bakelite, the bristles may be molded in place.

Operation

In operation the end section 48-50 is assembled on the shaft 25 and the brush elements 42 inserted therein. Alternate brush sections 30, with the brush elements in place in the dovetail slots 40, and spacers 45 are then assembled on the shaft opposite the articles such as bottles 80 which are to be brushed.

In the event a bottle breaks and cuts a brush element 42 the cover 20 is removed from the frame, permitting the bearing 21 to be withdrawn. When the bearing is withdrawn, the sections 30 can be separated and the damaged section replaced.

It will be realized that the hereinbefore described forms of the invention are to be taken

merely as preferred embodiments thereof and that various changes in size, shape and arrangement of parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

That which is claimed as new and desired to be secured by Letters Patent is:

1. A rotary bottle brush of the character described comprising, a rotary shaft, a plurality of cylindrical brush sections mounted on said shaft, bristles mounted about the periphery of said sections, each section comprising a plurality of segments, means extending parallel to said shaft formed on one of said segments engageable with another segment to hold the segments in assembled position on said shaft, and means to transmit rotation from said shaft to said sections.

2. A rotary bottle brush of the character described comprising, a rotary shaft, said shaft having a polygonal portion, a plurality of brush sections mounted on the polygonal portion of said shaft, bristles carried by and extending radially outward from said sections, each of said brush sections comprising a pair of segmental parts, which when assembled have a polygonal hole therethrough corresponding to said polygonal shaft, and a pair of dovetail joints on said segmental parts extending parallel to the axis of said shaft engageable with each other to retain said segments assembled on said shaft.

3. A rotary brush of the character described comprising a shaft, a plurality of brush sections mounted on said shaft to turn therewith, a plurality of dovetail slots in the periphery of said brush sections extending parallel to the shaft, a brush back engageable in each of said slots, and a spacer between the brush sections adapted to hold the brush sections in spaced relationship and retain the brush backs in the slots.

4. A rotary bottle brush of the character described comprising a shaft, a plurality of brush sections mounted on said shaft, an intermediate brush section, bristles carried by said brush sections, said intermediate brush section comprising two semi-cylindrical segments adapted to be mounted on the shaft between the other said sections without removing the said other sections from the shaft, and dovetail joints formed on the mating surfaces of the segments, said joints engaging with each other to secure the section on the shaft.

5. A rotary bottle brush of the character described comprising a shaft, a plurality of brush sections mounted on said shaft, an intermediate brush section, bristles carried by said brush sections, said intermediate brush section comprising two semi-cylindrical segments adapted to be mounted on the shaft between the other said sections without removing the said other sections from the shaft, dovetail joints formed on the mating surfaces of the segments, said joints engaging with each other to secure the section on the shaft, and means to transmit rotation from the shaft to each of said sections.

6. A rotary bottle brush of the character described comprising a polygonal shaft, a plurality of brush sections having polygonal apertures axially therethrough mounted on said shaft, an intermediate brush section comprising two semi-cylindrical segments having when assembled, a polygonal opening axially therethrough adapted to fit over said shaft, said last named section being insertable on and removable from the shaft without removing other sections from the

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shaft, and dovetail joints formed on the two mating surfaces of the segments, said joints being slidably engageable to secure the section on the shaft.

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OTTO DREHER.

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