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R. F. LAITNER

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FOUNTAIN BRUSH

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FIG. 1.

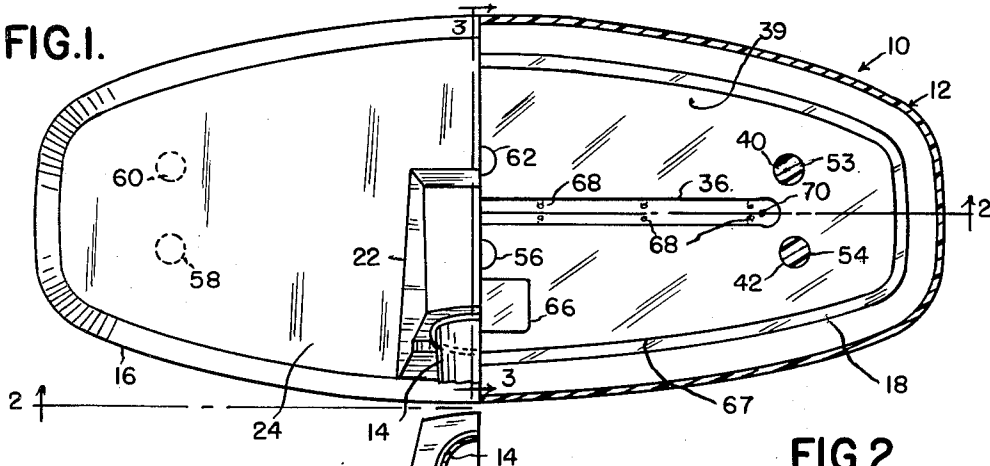


FIG. 2.

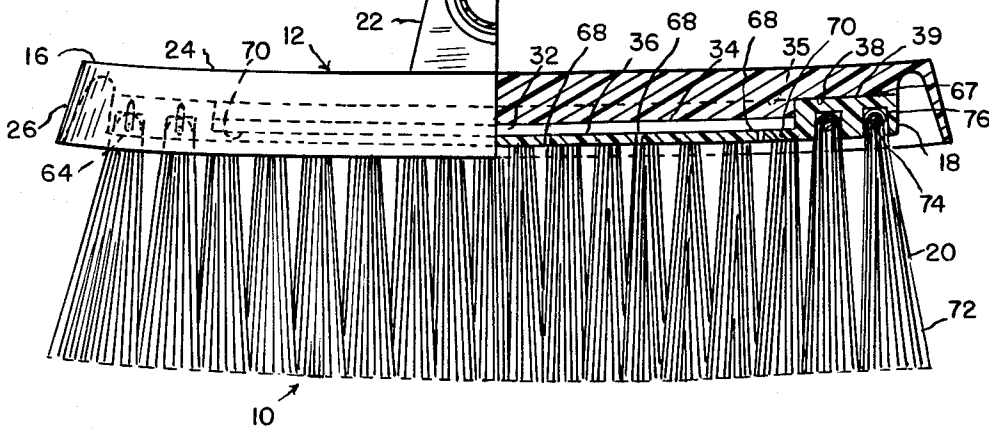


FIG. 4.

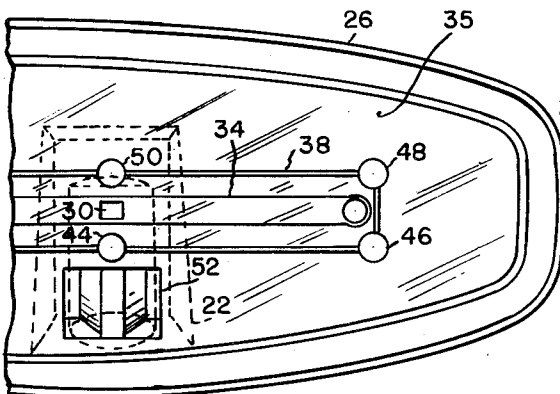
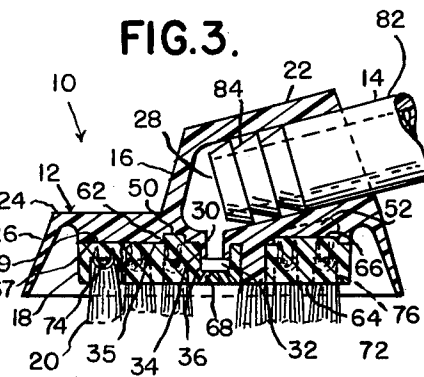


FIG. 3.



INVENTOR.

ROBERT F. LAITNER

BY *Whittemore*
Hulbert & Belknap
ATTORNEYS

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FOUNTAIN BRUSH

Robert F. Laitner, Grosse Pointe Park, Mich., assignor to Laitner Brush Company, Detroit, Mich., a corporation of Michigan

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8 Claims. (Cl. 15—516)

The present invention relates to a fountain brush and refers more particularly to a non-leaking, non-splashing, molded plastic fountain brush including means to aerate the water passing therethrough and means to direct the water so as to rinse the bristles of the brush during use thereof and having a cushion bumper around the periphery thereof.

In the past, fountain brushes of the type for use in conjunction with a hose for washing automobiles for example have had many defects which have restricted their use. Previous fountain brushes often leaked at connections between the parts of the brushes and between the brushes and their tubular handles causing objectionable wetting of persons using the brush or nearby objects. Also, many fountain brushes eject water in a stream which passes immediately through only the bristles in the immediate area of the water output orifice. Such ejection of the water causes undesirable splashing and since the water on being ejected never comes in contact with the major part of the brush the brush quickly becomes dirty. Dirt particles and other materials collecting on the unwashed bristles of such brushes may scratch or otherwise mar the finish of the product being washed. The fountain brushes of the past have also often been constructed with unyielding edges and projections which when bumped against the product being washed have caused nicks and scars in the product.

Therefore it is one of the objects of the present invention to provide a fountain brush having a completely molded head including means to prevent water from leaking therefrom.

Another object is to provide a fountain brush having means to distribute the flow of water therefrom so that substantially all of the bristles of the brush are rinsed clean continually during use of the brush.

Another object is to provide a fountain brush having means to prevent the brush from marring objects with which it comes in contact during use, including a circumferential cushion bumper.

More specifically it is an object of the present invention to provide a fountain brush having a head comprising completely molded parts secured together and including three distinct liquid barriers at the joining faces of the molded parts to protect against leaks between the separate parts of the assembled brush head.

More specifically it is an object of the present invention to provide a fountain brush having water discharge means comprising a water distribution passage positioned longitudinally of the brush head and minute discharge orifices leading from the water distribution passage to the bristles and so spaced and angled that substantially all of the bristles of the brush are rinsed clean during use of the brush.

Another object is to provide a fountain brush which is simple in construction, easy to manufacture and efficient in use.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawing illustrating a preferred embodiment of the invention, wherein:

FIGURE 1 is a plan view partly broken away of a fountain brush according to the invention.

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FIGURE 2 is a partially broken away elevational view of the fountain brush of FIGURE 1 taken along the line 2—2 in FIGURE 1.

FIGURE 3 is a cross section of the fountain brush of FIGURE 1 taken along line 3—3 of FIGURE 1.

FIGURE 4 is a partial bottom view of the top member of the fountain brush of FIGURE 1.

A fountain brush for use in washing automobiles and the like according to one embodiment of the invention is generally shown at 10 in the figures. The fountain brush 10 as shown includes a scrubbing head generally designated 12 and a coupling tube 14 inserted into head 12 and adapted for connection to a flexible fluid source such as a water hose. Head 12 comprises a cap 16 and a base 18 secured together and a plurality of bristles 20 fixedly attached to the base. The fountain brush 10 as shown is constructed to prevent leakage of fluid therefrom and to prevent damage to products washed therewith due to accumulations of foreign matter on the brush bristles or due to contact with the brush.

Cap 16 as shown is essentially a flat generally rectangular member including a laterally extending centrally located hollow boss 22 on the exterior surface 24 thereof and a downwardly extending peripheral flange 26. The hollow boss 22 is adapted to receive the end 28 of coupling tube 14 as later described. The interior of the hollow boss is connected by a passage 30 to a fluid reservoir 32 in the interior of the assembled brush head 12.

Flange 26 extending away from boss 22 as shown is flexible and of sufficient depth to extend over base 18 in the assembled brush head 12. Flexible flange 26 completely surrounds the edge of base 18 and is in spaced relation thereto providing a cushion bumper around the outer edge of the assembled brush head 12. When the fountain brush is in use the cushion bumper or flexible flange 26 serves to prevent damage such as nicks and scratches to the product being washed by presenting a resilient brush edge surface in the most likely area of contact between the product and brush.

Cap 16 is further provided with a raised rib 34 extending along the longitudinal axis thereof on interior surface 35, and with a raised bead 38 spaced from and substantially surrounding rib 34 also on the interior surface 35 of cap 16 as shown. Rib 34 acts in conjunction with channel 36 in base 18 to provide a fluid reservoir 32 within assembled head 12. The raised rib 34 extends into channel 36 and is formed as shown to provide a fluid seal around the upper edge of the channel 36. Passage 30 between the interior of the hollow boss 22 and the fluid reservoir 32 passes through rib 34 as shown. Raised bead 38 presses against the inner surface 39 of base 18 in the assembled brush head 12 to help prevent fluid which might possibly seep past rib 34 from reservoir 32 from leaking out of the brush head between cap 16 and base 18.

Five posts 40, 42, 44, 46 and 48 and two recesses 50 and 52 are also provided on surface 35 of cap 16 as shown. The posts 40, 42, 44, 46 and 48 and recess 50 are positioned around rib 34 on the centerline of bead 38 and mate with five complementary orifices 53, 54, 56, 58 and 60 and post 62 in base 18. The ends of posts 40, 42, 44, 46 and 48 are riveted in a heat sealing operation on the outer surface 64 of base 18 to secure the base 18 and cap 16 in assembly. Recess 52 is provided in cap 16 to prevent uneven shrinking of the cap 16 during molding due to the large mass of boss 22.

Base 18 is also essentially a flat rectangular member of substantially the same outline as cap 16 but slightly smaller than cap 16. As previously indicated base 18 includes channel 36 extending along its longitudinal axis, orifices 53, 54, 56, 58 and 60 extending therethrough from interior surface 39 to outer surface 64 in position to be

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in alignment with posts 40, 42, 44, 46 and 48 on cap 16 in the assembled brush head 12 and post 62 positioned and formed to fit within recess 50 in cap 16 on assembly of the cap and base.

Base 18 is also provided with a boss 66 on the interior surface thereof to fit within recess 52 in cap 16 in assembly of the brush head 12 to aid in alignment of the base and cap and impart more rigidity to the assembly. A raised bead 67 similar to raised bead 38 on cap 16 is included on the interior surface 39 of base 18 around the periphery thereof which presses against interior surface 35 of cap 16 to further limit the possibility of leaks between cap 16 and base 18.

Fluid discharge orifices 68 and 70 are included in the base 18 and extend from the bottom of channel 36 to the exterior surface 64 thereof. Orifices 68 as shown are equally spaced along the length of channel 36 in pairs, one orifice of each pair being on each side of the longitudinal axis of the channel. The individual pairs of orifices diverging from each other toward the exterior surface 64 of base 18. Orifices 70 as shown are located on the longitudinal axis of base 18 in close association with the end pairs of orifices 68 and also diverge from each other toward the exterior of base 18.

Orifices 68 and 70 are of restricted size so that water under normal house-tap pressure in fluid reservoir 32 will be ejected therethrough in a minute stream. The stream passing through the restricted orifices 68 and 70 will produce a fine mist in the area of discharge from the orifices. The action of the fine mist in conjunction with the particular location and direction of the orifices 68 and 70 and therefore the direction of the stream is such as to rinse substantially all of the bristles 20 of brush 10 during the use of the brush. Accumulations of foreign particles on the bristles 20 which would tend to scratch the surface of the automobile or other object being washed is thus prevented.

Bristles 20 each comprise a plurality of equal length elements 72 of flexible but not soft plastic or similar material folded at the center around a small staple 74 or other fastening device. The staple 74 or other fastening device is then secured in a prepared recess 76 in the exterior face 64 of base 18. As indicated a plurality of such bristles 20 are provided secured in a plurality of recesses 76 covering substantially the entire face 64 of base 18.

Coupling tube 14 as shown is a short rigid plastic tube, one end 28 of which is adapted to be inserted in hollow boss 22 and be securely retained therein, the other end 82 of which is adapted to be coupled to a longer hollow stiff handle or to a flexible fluid carrier such as a hose. End 28 is provided with grooves 84 in the form of barbs to allow relatively easy insertion thereof into boss 22 and to prevent removal thereof from boss 22 on direct outward force being applied thereto. Removal of tube 14 from boss 22 may be accomplished by simultaneously twisting and outward pulling of tube 14 with respect to boss 22.

In manufacture the base 16, cap 18 and coupling tube 14 may be molded to shape of plastic material such as polyethylene or other light material by well known molding processes. Similarly the bristles and staples may be manufactured by well known process of standard materials. The base 18 is then fitted over the cap 16 with the posts 40, 42, 44, 46 and 48 on the cap extending through orifices 53, 54, 56, 58 and 60 in the base 18. Recesses 50 and 52 in the cap are likewise mated with post 62 and boss 66 respectively. The base 18 is then pressed firmly against the cap 16 so that rib 34 is pressed into channel 36 and beads 38 and 67 are pressed against surfaces 39 and 35 respectively to provide three seals against leaks between the cap 16 and base 18. The ends of posts 53, 54, 56, 58 and 60 are then subjected to a heating and riveting operation to secure the cap and base together. Subsequently recesses 76 are formed in the exterior surface 78 of base 18 and bristles 20 are secured therein.

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Coupling tube 14 may then be secured in hollow boss 22 by inserting it therein with a twisting motion.

In use brush 10 is coupled to a source of fluid under pressure such as the normal home water supply by convenient means such as a flexible hose. Water then passes through coupling tube 14, through passage 30 in hollow boss 22 into reservoir 32 between the base 18 and cap 16. It is prevented from leaking therefrom by the inner action of rib 34 and channel 36 and beads 38 and 67. The water then passes out orifices 68 and 70 in base 18 forming a fine mist and small streams which rinse bristles 20 during use of the brush to prevent damage to the product being washed due to accumulations of foreign matter thereon. The product being washed is further protected during use of the brush by the flange or cushion bumper 26 provided around cap 16 and extending over base 18.

What I claim as my invention is:

1. A fountain brush comprising a head including a cap member and a base member having a longitudinal axis secured together, a plurality of bristles attached to said base member, and a coupling tube inserted in said cap member, one of said members including a centrally located substantially linear channel in its interior face extending along said longitudinal axis, the other member including a complementary raised rib, the channel and rib by themselves forming a substantially leak-proof fluid reservoir therebetween within the assembled brush head communicating with said coupling tube and into which fluid from said coupling tube may be directed prior to being discharged from the fountain brush, said head having discharge orifices from said reservoir, said channel and rib being positioned inwardly of the outer periphery of said base member, said bristles being positioned between said channel and rib and the outer periphery of said base member.

2. The construction as in claim 1 including a raised bead between said base and cap members surrounding and in laterally spaced relation to said rib, said bead being operable to provide a seal between the base and cap members in the assembled brush head thereby giving further protection against leaks between the cap and base members.

3. A fountain brush comprising a head including a cap and a base secured together, said base having a longitudinal and a transverse axis, a plurality of bristles attached to said base, a coupling tube inserted in said cap, said cap including an integral peripheral flexible flange extending downwardly therefrom in spaced relation to and surrounding said base to prevent damage to objects contacted by said fountain brush in use, said base including a plurality of pairs of discharge orifices located substantially centrally of said transverse axis of said base and uniformly spaced along the longitudinal axis thereof, one orifice of each pair being positioned on each side of said longitudinal axis and the axes of the orifices of each pair diverging outwardly with respect to said fountain brush, said base also including outwardly diverging orifices on said longitudinal axis immediately adjacent end pairs of said pairs of orifices, said base and cap including a centrally located complementary channel and rib by themselves forming a relatively leak proof fluid reservoir therebetween within the assembled brush head in communication with said discharge orifices, and means connecting said reservoir with said coupling tube.

4. A fountain brush comprising an elongated hollow tube and a head including a cap and a base secured together, said base and cap including a complementary channel and raised rib, said channel and raised rib forming a fluid reservoir therebetween having a longitudinal axis and spaced inwardly from the outer periphery of said base, bristles extending outwardly of said fountain brush secured to said base surrounding and in laterally outwardly spaced relation to said fluid reservoir, orifices diverging outwardly of said fountain brush extending through said base from said fluid reservoir adapted to direct fluid from said reservoir to said bristles, means for

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securing said hollow tube to said head, and a passage between the interior of said hollow tube and said fluid reservoir, said channel being narrow, elongated, and located substantially centrally of said base, said raised rib being on said cap in mating relation to said channel, said raised rib being of height less than the depth of said channel whereby a fluid reservoir is formed between the top surface of said raised rib and the bottom surface of said channel, said raised rib and channel being adapted to form surface to surface sealing along the sides thereof in assembly.

5. A fountain brush comprising a head including a cap and a base secured together, said base having a longitudinal and a transverse axis, a plurality of bristles attached to said base, a coupling tube inserted in said cap, said base including a plurality of pairs of discharge orifices located substantially centrally of said transverse axis of said base and spaced along the longitudinal axis thereof, the axis of the orifices of each pair diverging outwardly with respect to said fountain brush, said base also including outwardly diverging orifices on said longitudinal axis immediately adjacent end pairs of said pairs of orifices, said base and cap including a centrally located complementary channel and rib by themselves forming a relatively leak-proof reservoir therebetween within the assembled brush head in communication with said discharge orifices, and means connecting said reservoir with said coupling tube.

6. A fountain brush comprising a head including a cap and a base secured together, said base having a longitudinal and a transverse axis, a plurality of bristles attached to said base, a coupling tube inserted in said cap, said cap including an integral peripheral flexible flange extending downwardly therefrom in spaced relation to and surrounding said base to prevent damage to objects contacted by said fountain brush in use, said base including a plurality of pairs of discharge orifices located substantially centrally of said transverse axis of said base and spaced along the longitudinal axis thereof, the axis of the orifices of each pair diverging outwardly with respect to said fountain brush, said base and cap including a centrally

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located complementary channel and rib by themselves forming a relatively leak-proof reservoir therebetween within the assembled brush head in communication with said discharge orifice, and means connecting said reservoir with said coupling tube.

7. A fountain brush comprising a head including a cap and a base secured together, said base having a longitudinal and a transverse axis, a plurality of bristles attached to said base, a coupling tube inserted in said cap, said cap including an integral peripheral flexible flange extending downwardly therefrom in spaced relation to and surrounding said base to prevent damage to objects contacted by said fountain brush in use, said base including a plurality of pairs of discharge orifices located substantially centrally of said transverse axis of said base and spaced along the longitudinal axis thereof, the axes of the orifices of each pair diverging outwardly with respect to said fountain brush, said base also including outwardly diverging orifices on said longitudinal axis immediately adjacent end pairs of said pairs of orifices, said base and cap including a centrally located complementary channel and rib by themselves forming a relatively leak-proof fluid reservoir therebetween within the assembled brush head in communication with said discharge orifices, and means connecting said reservoir with said coupling tube.

8. The construction as in claim 1 wherein said discharge orifices are arranged in pairs spaced along said longitudinal axis, the axes of the discharge orifices of each pair diverging outwardly with respect to said fountain brush.

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