Sept. 20, 1932. G. R. TREMOLADA 1,878,027

FOUNTAIN BRUSH

Filed April 6, 1931

Fig. 2.

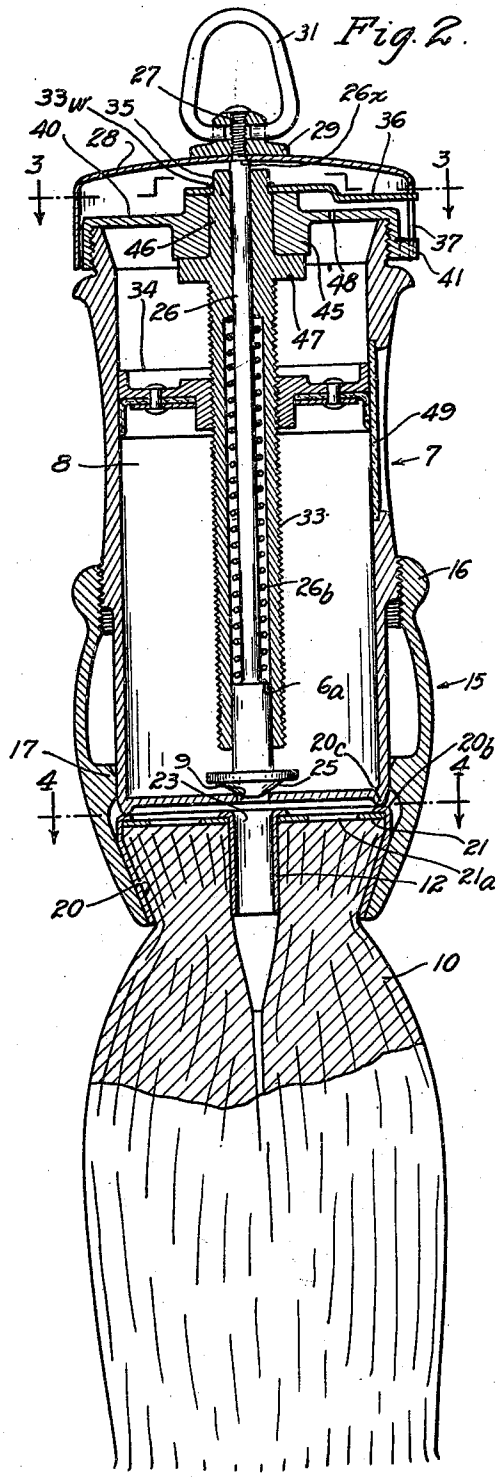


Fig. 1.

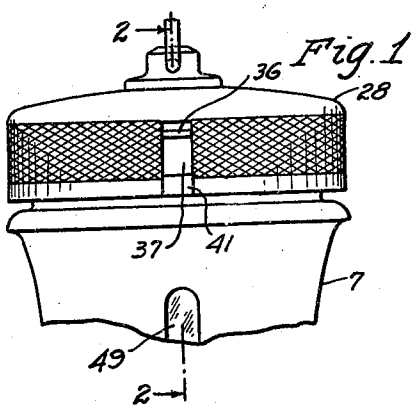


Fig. 3.

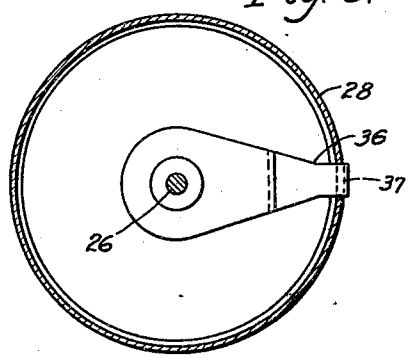
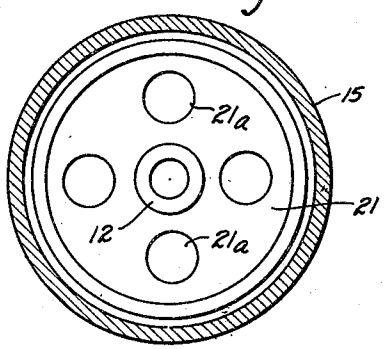


Fig. 4.



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UNITED STATES PATENT OFFICE

GUGLIELMO ROBERTO TREMOLADA, OF LOS ANGELES, CALIFORNIA

FOUNTAIN BRUSH

Application filed April 6, 1931. Serial No. 528,071.

This invention relates to a fountain brush which is more particularly intended for use as a shaving brush, but which is well adapted for a variety of other uses among which are constructing of paint brushes and the construction of various other devices used for applying a slowly fed liquid to a surface or to any point where such a supply of liquid is required.

One object of the invention is to provide improved means for co-ordinating the action of the fluid-feeding plunger and valve which admits the fluid or liquid from the feed chamber to the brush head. One of the purposes of this feature of the invention is to prevent untimely opening of the feed valve, thereby preventing waste of the fluid supplied to the brush head.

The invention also comprises improved screw threaded means for operating the liquid feeding plunger in an even dependable manner thereby safeguarding against the liquid being wasted by reason of irregular or too sudden movement of such plunger.

The invention further includes an improved cap for the end of the handle which is opposite to the brush head, said cap forming a portion of the means for opening and closing the feed valve and for operating the plunger whereby the liquid is fed to the brush head.

Other objects, advantages and features of invention may hereinafter appear.

Referring to the accompanying drawing which illustrates what is at present deemed to be a preferred embodiment of the invention,

Fig. 1 is an elevation of the upper part of the device.

Fig. 2 is a longitudinal mid-section on line 2—2 of Fig. 1.

Fig. 3 is a cross section on line 3—3 of Fig. 2.

Fig. 4 is a cross section on line 4—4 of Fig. 2.

Referring in detail to the drawing, this liquid feeding device comprises a handle portion 7 containing a liquid feeding chamber 8 and provided with a feed opening 9 which is adapted to supply the liquid to the brush head 10 which is secured to one end of said handle. A short conduit 12 is provided at the end of the handle 7 to which the brush head 10 is secured, said tube being located centrally of the brush head and being adapted to convey the fluid fed through the opening 9 to the brush head in such a manner that said liquid will be evenly diffused throughout the bristles of the brush head.

Means are provided for detachably securing the brush head 10 to the handle 7 in order that, if desired, said brush head 10 may be removed and any other desired liquid distributor may be put in its place. By this construction, it is possible to replace the brush head 10 with a paint brush, a brush for stenciling, or even to put the delivery spout of an oil can or grease gun in place of the brush element 10. For this purpose a tapered sleeve 15 having at its upper end a screw threaded portion 16 is screwed on to the handle 7 as shown in Fig. 2, said sleeve having an internally projecting annular rib 17 which fits about the end portion of the handle 7 adjacent to the brush head 10. The lower end of the sleeve 15 is contracted as shown in order to provide holding means for the brush head.

The inner end of the brush head 10 is enclosed within a bristle holder 20 which, as viewed in Fig. 2, consists of an inverted shallow cup having a contracted open end, the bottom of said cup being provided with apertures 21*a* to permit the adhesive substance to be applied to the bristles, after the cup has been crimped down upon the end portion of the brush head in a well known manner. Said brush holder 20 does not exceed in external diameter the internal diameter of the rib 17 of the sleeve 15. Therefore the brush head together with its holder 20 may be fed into the large end of the sleeve 15 and then moved down to the position shown in Fig. 2. The brush holder 20 is not only provided with the apertures 21*a* but is also provided with a central aperture 23 to admit the liquid feeding tube 12, which extends through the bottom 21 of the cup.

The valve head 25 which controls the valve opening 9, is provided with an operating rod 26 located axially of the chamber 8, the outer

end of said rod having a reduced portion 27 which projects through the center of a cap 28 provided for the end of the handle opposite to the brush head 10. Said cap 28 is provided with a central extension 29 through which the stem portion 27 extends, a link or ring 31 preferably being secured to said extension.

The inner portion of the valve stem 26 is provided with an annular shoulder 6*a* and the reduced portion of the valve stem above this shoulder is surrounded by a spring 26*b*. Said spring and valve stem fit within an externally screw threaded sleeve 33, the rotation of which actuates the fluid feed plunger 34 with which said sleeve 33 is operatively related. In the drawing the upper end of the sleeve 33 is shown as circular, a weld 33*w* being used to prevent relative rotation between said sleeve and arm. The diameter of the valve head 25 is greater than that of the threaded portion of the sleeve 33, therefore said valve head forms a stop to limit the downward movement of the feed plunger 34 which is advanced and retracted by the rotation of said sleeve.

Into one side of cap 28 is cut a recess or slot 37 through which the outer end portion of the arm 36 projects. Beneath the cap 28 the adjacent end of the handle portion of the device is provided with a head 40 which screws on to said handle portion. This head 40 is provided with a lug 41 which normally projects through the lower portion of the slot 37 and thereby prevents rotation of the cap 28. When, however, the valve stem 26 and cap 28 are moved outwardly against the opposition of the spring 26*b*, said slot may be withdrawn from said lug thus permitting the cap 28 to be rotated in order to advance or retract the plunger 34.

Referring to certain details of construction, the side portion of the cup 20 is formed in a separate piece from the bottom 21 thereof, an inwardly directed peripheral flange or lip 20*b* being provided which is crimped over upon the cup bottom 21 after the bristles have been put in place.

Maintenance of the rotary screw threaded sleeve 33 in proper position is secured by providing the central portion of the cap 40 with a bearing 45, said sleeve 33 being provided with a bearing head 46 which has a working fit within said bearing and with a bearing flange 47 which underlies said bearing. The head 40 is also provided with an air vent 48 in order that air pressure above the plunger 34 may not interfere with the operation of said plunger as it is moved by means of rotating the screw threaded sleeve 33 with which it has a screw threaded engagement.

In order that traction upon the ring may be depended upon also to retract the cap 28, the upper portion of the valve stem 26 is provided with a shoulder 26*x* which underlies said cap.

In order to provide means for inspecting the contents of the liquid receptacle 8, a glass window 49 may be provided as shown. 20*c* designates an annular bead which abuts against the adjacent face of the cup 20 to hold it in place within the tapered lower end of the sleeve 15.

It will be understood that the invention is not limited to the particular structure shown in the drawing, but that various changes within the scope of the appended claims may be made in the construction without departing from the spirit of the invention. For example the part 40 may be regarded as the true cap or cover of the device and the part 28 as primarily an operating means for opening the valve and then advancing the liquid feeding plunger. All the parts enclosed within the chamber 8, including the plunger 34, the cap 40, arm 36, cover or operating member 28 and the parts outside of said cover 28, taken together form a unit which may be inserted within and removed from the liquid containing chamber as desired. The brush head together with its holder 20 forms another unit, while the tapered sleeve 15 which holds the brush head in place forms a third unit, these three units may each be varied considerably in detail without departing from the spirit of the claimed invention.

Operation: Normally the compression spring 26*b*, by exerting pressure against the shoulder 6*a* of the valve rod 26, holds the valve 25 in the closed position, at the same time keeping the cap 28 down in the locked position shown in Figs. 1 and 2. When the user of the brush wishes to supply additional liquid to the bristles, he will insert his finger through the ring 31 and thereby apply sufficient traction upon the valve rod 26 to withdraw the valve 25 from its seat, and will at the same time also retract the cap 28 sufficiently to release it from the lug 41 of the head 40. While continuing to maintain such tractive force he will rotate the cap 28 in a direction to cause the threads of the sleeve 43 to move the plunger 34 toward the outlet end of the chamber 8, thereby causing the liquid to flow through the open port 9 into the bristles of the brush. When he deems sufficient liquid to have been supplied to the bristles of the brush he will bring the slot 27 of the cap into register with the lug 41 and will then relax traction upon the ring 31 thus allowing the cap to be returned to its locked position and at the same time allowing the valve head 25 to close the port 9.

I claim:

1. In a fountain brush, a brush head, a fluid-feeding chamber provided with an outlet to feed fluid to said brush head, a valve to control said outlet, a fluid-feeding plunger having a working fit within said chamber,

screw threaded means to advance and retract said plunger, a rotatable and outwardly and inwardly movable cap operatively connected with said screw threaded means to rotate therewith and thereby operate said plunger, a rod connecting said cap with said valve to operate said valve by the outward and inward movements of said cap, a closure head for said chamber, said head being provided with a bearing through which said screw threaded means extends, said head being provided with a peripheral locking lug and said cap having a slot which normally engages said lug to prevent rotation of said cap with relation to said head, a spring yieldingly holding said cap and valve in the normal position, said cap and valve being movable against the opposition of said spring to disengage said cap from said locking lug thereby rendering said cap rotatable together with the screw threaded means whereby said plunger is operated, and a radial arm connecting said cap with said screw threaded means to cause said cap and screw threaded means to rotate together.

2. In a fountain brush, a brush head, a fluid feeding chamber provided with an outlet to feed fluid to said brush head, a fluid feeding plunger having a working fit within said chamber, an externally screw threaded hollow elongated member, said plunger having through it a screw threaded opening which is in engagement with the threads of said member, means to rotate manually said externally screw threaded member to advance and retract said plunger, a valve to control the outlet from said chamber, said valve having a shank portion which has a working fit within said member, a valve stem forming a continuation of said shank portion, said valve stem being of less diameter than the internal diameter of said member and being longitudinally movable within said member to provide for the manual opening and closing of said valve, and a spring coiled around said valve stem to close said valve, the means to rotate said member to advance and retract said plunger being initially movable to open said valve against the opposition of said spring.

3. In a fountain brush, a brush head, a fluid-feeding chamber provided with an outlet to feed fluid to said brush head, a valve to control said outlet, a fluid-feeding plunger having a working fit within said chamber, screw threaded means to advance and retract said plunger, a rotatable and outwardly and inwardly movable part operatively connected with said screw threaded means to rotate therewith and thereby operate said plunger, a rod connecting said rotatable part with said valve to operate said valve by the outward and inward movements of said part, a closure head for said chamber, said head being provided with a bearing through which said screw threaded means extends, said head being provided with a peripheral locking element and said rotatable part having a locking portion which normally engages said locking element to prevent rotation of said part with relation to said head, a spring yieldingly holding said part and valve in the normal position, said part and valve being movable against the opposition of said spring to withdraw the locking portion of said part from the first recited locking element and thereby render said part rotatable together with the screw threaded means whereby said plunger is operated, and a radial arm connecting said part with said screw threaded means to cause said part and screw threaded means to rotate together.

4. In combination, a bristle holder which consists of a short sleeve or cup shaped member of a frusto-conical character the contracted portion of which grips the body of bristles, said member having an inwardly directed lip at its other end, a sleeve having a tapered end portion to receive and fit around said bristle holder, said sleeve having in longitudinally spaced relation to its tapered portion an internally screw threaded portion, and a tubular container having an externally screw threaded portion to cooperate with the screw threads of said sleeve whereby said inwardly directed lip of said bristle holder may be clamped against the end portion of said container, said container having an outlet adapted to deliver liquid to said bristles.

5. In a fountain brush, a brush head, a fluid feeding chamber provided with an outlet to feed fluid to said brush head, a fluid feeding plunger having a working fit within said chamber, an externally screw threaded hollow elongated member, said plunger having through it a screw threaded opening which is in engagement with the threads of said member, and means to rotate manually said externally screw threaded member to advance and retract said plunger, a valve to control the outlet from said chamber, said valve having a stem and shank portion which has a working fit within said hollow screw threaded member, the valve head being of greater diameter than said screw threaded member in order that the peripheral portion of said valve head may be engaged by said plunger when said plunger has been advanced to the limit of its travel in order to at such time maintain said valve in the closed position.

In testimony whereof I hereunto affix my signature.

GUGLIELMO ROBERTO TREMOLADA.