J. J. HARDIN.

FOUNTAIN BRUSH.

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1,253,032. Patented Jan. 8, 1918.

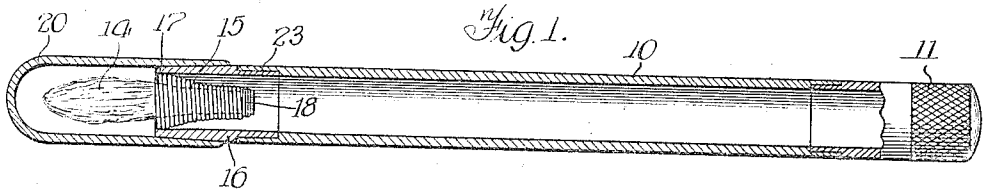


Fig. 1.

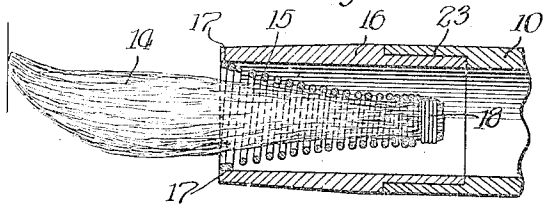


Fig. 2.

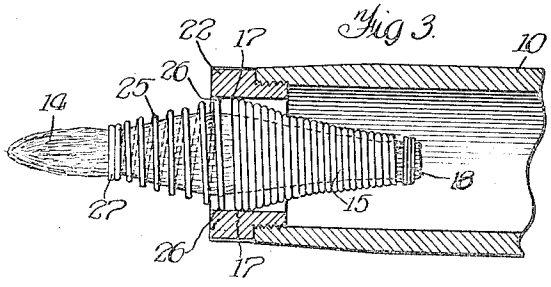


Fig. 3.

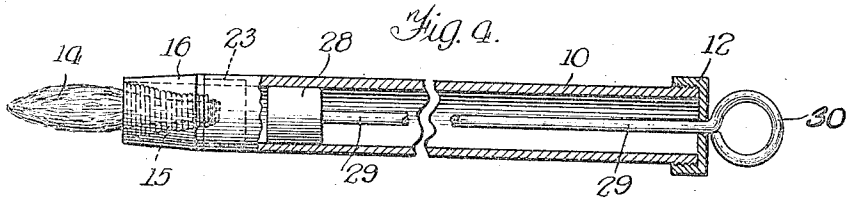


Fig. 4.

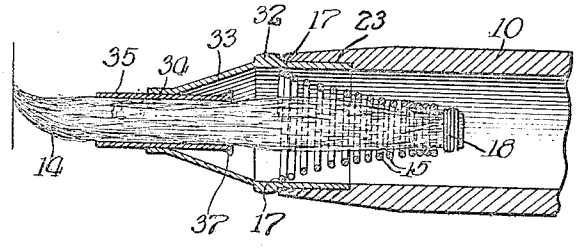


Fig. 5.

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FOUNTAIN-BRUSH.

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To all whom it may concern:

Be it known that I, JACQUES J. HARDIN, a citizen of the United States, and a resident of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fountain-Brushes, of which the following is a specification.

My invention relates to fountain brushes. Its principal object is to provide a simple, cheap, durable and effective form of device by which a liquid may be continuously supplied as desired upon the brush proper from a self-contained reservoir. A specific object is to improve, simplify and render more effective the brush holding means in fountain brushes, and to improve the flow of liquid upon the brush. A further object is to provide means for easily charging the receptacle. Further objects and advantages will appear hereinafter.

In the accompanying drawings, which form a part of this specification, I have illustrated a preferred form and several modified forms of one type of brush device embodying these improvements. In these drawings Figure 1 is a medial vertical section lengthwise of the complete device in a simple form; Fig. 2 is an enlarged view of the end portion of Fig. 1 showing the spring valve thereof somewhat extended; Fig. 3 is an enlarged view showing a modified form of connection between the brush proper and the liquid receptacle, and also showing additional brush holding means; Fig. 4 is a broken longitudinal view, largely in section, showing piston means for refilling the receptacle; and Fig. 5 is an enlarged sectional view of the end portion of the preferred construction and arrangement of parts in the specific type of brush device shown.

In all of the figures the receptacle 10 may be of metal, glass, fiber, composition, or of any other suitable material. As in the form illustrated, the device is intended as a marking brush or one for applying any suitable liquid, such as paint, oil, medicaments, etc., in the manner of an ordinary paint brush; the hollow cylindrical body portion or receptacle 10 is relatively long and narrow so as to be readily graspable by the hand. A readily removable cap 11, for cleaning and refilling purposes, is held frictionally in one end, as in Fig. 1, or, where a piston is employed, preferably a screw threaded cap 12, as in Fig. 4, convenient for assembling or cleaning the device, is employed. The brush proper 14, in the form illustrated, is of bristles or the like, and is preferably substantially circular in cross section where the body or tube 10 is of that form. The brush proper is held by a spring 15, preferably a coiled spring and preferably helical in form, the spring surrounding a portion of the brush proper which extends into the receptacle 10. The spring 15 is secured preferably to a removable end piece 16 near or at the outer edge thereof, as at 17, as by soldering the spring preferably all the way around the circumference or periphery of the outermost turn or turns thereof, as at the annular line 17, thus making a tight joint between the end piece 16 and the spring. The smaller or innermost end of the spring 15 is secured upon the brush proper 14, preferably by simply winding the same tightly thereon for several turns of the spring, such winding being sufficient to hold the brush in the desired position. Ordinarily, the brush proper 14 should first be wound with cord or wire, as 18, so that it may be more easily handled when applying the spring 15 thereto, as well as to insure the desired security of the bristles. A cap 20 frictionally held on the end piece 16 maintains the brush proper from drying out objectionably as well as providing the feature of cleanliness to the brush proper and to other objects when the entire device is laid away.

In Fig. 3 I have shown the spring 15 as secured upon the annular brush holding device or end piece 22, which is shown as screw threaded into the container or receptacle 10 for ready removability, while in the other figures the end piece 16 is simply frictionally held by a tight fit at the joint 23.

It will be noted that the turns of the spring 15 are normally tightly one upon the other; that there is a tight joint between the spring 15 and the surrounding container at the annular line 17, and also a tight joint between several turns of the spring and the brush proper at the innermost end thereof. According to this construction the spring 15 acts not only as a holder for the brush proper 14, but also as a valve operatively intermediate the brush proper 14 and the

interior of the receptacle 10, the spring 15 being a wall through which the liquid may not flow when in the normal relative position illustrated in Figs. 1, 3 and 4. When, however, pressure is applied to the end of the brush proper 14, as when it is desired to do painting or to apply to a surface the contents of the container 10, the brush proper 14 is forced inward, that is, farther into the body of the receptacle 10, the turns of the spring 15 thereby becoming separated, as shown in Figs. 2 and 5, whereby the liquid may flow between these turns and upon the brush proper. It will be noted that the brush proper is loosely positioned in the container 10, or its end portion 16 or 22, being spaced from the walls thereof at the open end, as at 17; and it will also be observed that the brush is spaced from or is in loose relation to the turns of the spring 15 except at the innermost end thereof. The liquid in the container 10 may therefore readily flow outward upon the exposed portion of the brush proper 14 and be available for application. In using the device it will naturally be in a more or less upright position and the liquid will flow by gravitation outward upon the brush as required, the pressure of the brush upon the surface being painted or otherwise treated opening the valve and permitting the flow to take place. As soon as the pressure of application is removed the spring 15 returns to its closed or normal position, stopping the flow.

In Fig. 3 I have illustrated an auxiliary helical spring 25 secured as at 26 to the end piece 22 and tapering forward to the turns at 27, which turns bind more tightly the brush proper 14 and maintain the bristles or brush elements thereof against objectionable spreading when it is desired to have the end of the brush relatively small, as for marking letters upon boxes or for similar uses. The auxiliary spring 27 has the additional function of rendering the brush 14 more stiff so that the application of pressure at the end thereof will more readily communicate to the spring 15 the desired valve-opening pressure; and it has the further function of providing a feeding device or holder for the liquid flowing out upon the periphery of the brush 14 at that portion encompassed by the spring 25. In practice the liquid is maintained by the spring 25 in a readily available quantity just above the operating end portion of the brush proper 14, and when the device is in operation the inward movement of the brush 14 causes the turns of the spring 25 to come closer together squeezing out some of the liquid contained thereamong and which then flows upon the exposed portion of the brush proper. At the same time additional liquid flows out of the container 10 upon the spring 25, and when the operating pressure is removed (which pressure is intermittent as stroke upon stroke is made) the spring 25 expands longitudinally and the new supply of liquid is held about its turns without running freely upon the brush 14. The turns of the spring 25 are preferably somewhat closer together near the smaller end thereof forming a sort of pocket for the liquid.

In Fig. 4 a piston 28 on the rod 29 having a finger piece, such as the eye 30, enables the operator to recharge the device by merely inserting the brush end thereof into a can containing the liquid and drawing the piston 28 toward the cap 12, the spring 15 giving way under the suction pressure and permitting the liquid to flow between its turns.

In Fig. 5 the end piece 32 frictionally interfits readily removably in the end of the body portion 10 and is provided with the forwardly tapering wall 33 terminating in a cylindrical portion 34 adapted to accommodate slidingly the sleeve or tube 35 having its inner end enlarged as at 37 to prevent retraction of the tube. As the brush 14 wears away, or to provide a larger or smaller exposed portion of the brush proper according to the work in hand, the tube 35 may be moved as desired. It maintains the bristles from spreading, stiffens the brush proper in its longitudinal direction, and also serves to control the liquid flow upon the operative end of the brush. The brush 14 is loosely movable inward and outward in the tube 35, but as the bristles are held fairly closely together, the liquid among the bristles is held by capillary attraction so that it does not ooze out upon the exposed end of the brush proper except as drawn there by use.

While I have illustrated a preferred embodiment of these improvements, and have shown certain modifications of the device as a whole, the invention is not limited to what is specifically illustrated and described, and reference should be had to the appended claims to determine what I contemplate as being included in the improvements herein set forth.

I claim:

1. In a device of the character described, the combination of a tubular receptacle for a liquid, a brush having one end thereof extending loosely into said receptacle, a coiled spring having a plurality of turns surrounding the brush within the receptacle, the turns of the spring being normally tightly against each other, said spring being secured to the brush and also in relatively fixed relation with the receptacle whereby the spring constitutes a tight wall between the hollow interior of the receptacle and the portion of the brush surrounded by it, the arrangement being such that when

the brush is moved farther into the receptacle the turns of the spring become separated and a liquid in the receptacle will flow between the turns of the spring upon the brush.

2. In a device of the character described, the combination of a tube open at one end, a brush extending loosely into the tube, and a coiled spring having the turns thereof lying closely one upon the other and surrounding portions of the brush within the tube, said coiled spring being secured upon the brush within the tube and being also secured in relatively fixed relation to the walls of the tube whereby the spring constitutes normally a wall intermediate the hollow interior of the tube and the peripheral portion of the brush, the arrangement being such that pressure upon the outer portion of the brush, as in use, will cause the turns of the spring to separate from each other while the pressure lasts.

3. In a device of the character described the combination of a tubular receptacle open at one end and adapted to contain a liquid, a brush having an end thereof extending loosely into the receptacle at the open end thereof, a coiled helical spring having its turns normally against each other and positioned in the open end portion of the receptacle and surrounding a portion of the brush, the larger end of said spring being in tight relation to the receptacle walls near the open end thereof, the smaller end of said spring being in tight relation with the brush farther within the receptacle, the arrangement being such that by pressing upon the brush, as in use, the turns of the spring become separated, while the pressure lasts, whereby the liquid in the receptacle may flow upon the brush.

4. In a device of the character described, the combination of a tube open at one end, a brush loosely extending into the tube, and a coiled spring having the turns thereof lying closely one upon the other and surrounding portions of the brush within the tube, said coiled spring being in relatively fixed relation to the tube at one portion of the spring, and being in such relation to said brush at a portion of the spring spaced from said relatively fixed portion that pressure upon the brush is communicated to the spring, the spring normally constituting a wall intermediate the hollow interior of the tube and the peripheral portion of the brush surrounded by the spring, the arrangement being such that pressure upon the outer portion of the brush, as in use, will cause the turns of the spring to separate from each other while the pressure lasts.

5. In a device of the character described, the combination of a tubular receptacle having an opening in an end thereof and adapted to contain a liquid, an end piece adapted to engage said receptacle about said opening whereby said end piece is readily attachable to and removable from said receptacle, said end piece having an opening whereby a brush may project into said end piece, a brush so projected into the device, a coiled spring surrounding a portion of the brush and in substantially tight relation to said end piece at a portion of the spring, the turns of said spring normally constituting a wall between the hollow interior of the receptacle and the brush surrounded by the spring, said brush being in such relation to said spring that when pressure is applied upon the exposed portion of the brush, as in use, the turns of the spring separate from each other whereby a liquid in the receptacle may flow upon the brush.

6. In a device of the character described, the combination of a receptacle for a liquid, a brush carried thereby and projecting therefrom, and valve means comprising a coiled spring intermediate the hollow interior of the receptacle and the brush, the turns of the spring being normally close together to constitute a wall through which the fluid may not pass when the brush is not in use.

7. In combination, a brush, an annular spring support loosely surrounding said brush, a coiled spring surrounding a portion of the brush, the turns of said spring constituting a valve and being secured to said support and also to the brush, and means on said support for securing same upon a receptacle for a liquid.

8. In combination, a brush, an annular support loosely surrounding said brush, a coiled spring surrounding a portion of the brush, said spring being secured to said support and also to the brush, the turns of said spring lying closely one upon another and together with said support constituting a tight wall surrounding a portion of the brush, and means on said support for securing same upon a receptacle for a liquid.

JACQUES J. HARDIN.

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