April 1, 1941. W. C. MARSH ET AL 2,236,625

VALVE FOR STENCIL BRUSHES

Filed Dec. 21, 1938

Fig. 1.

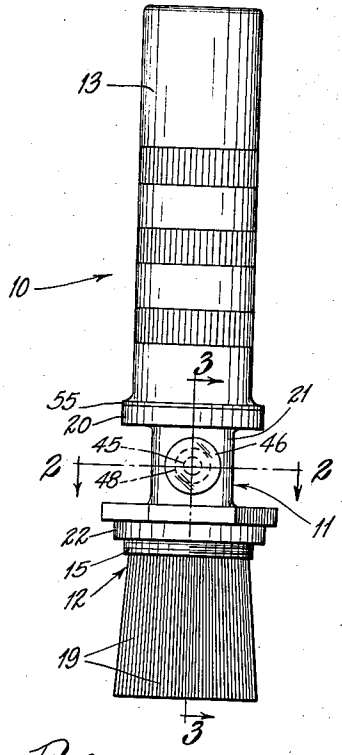


Fig. 3.

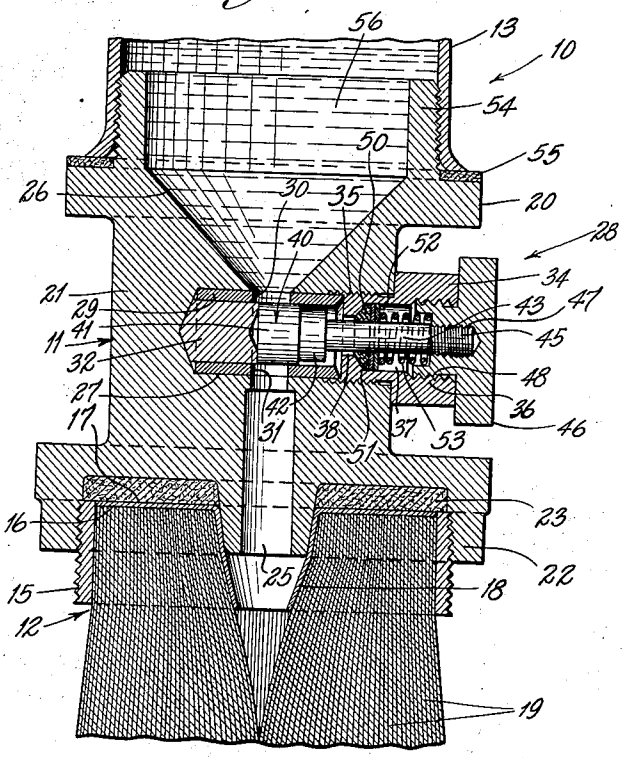


Fig. 2.

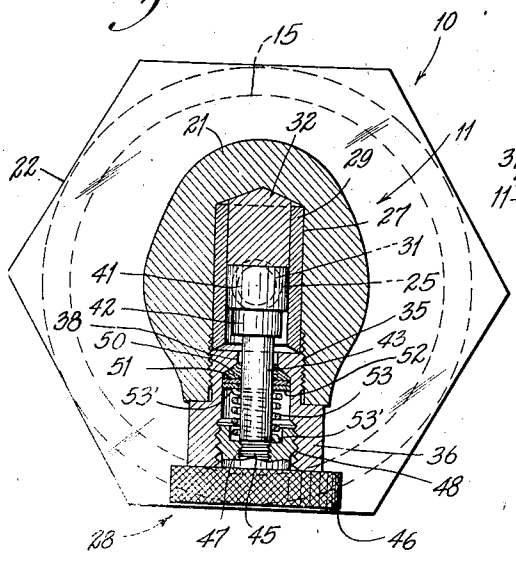
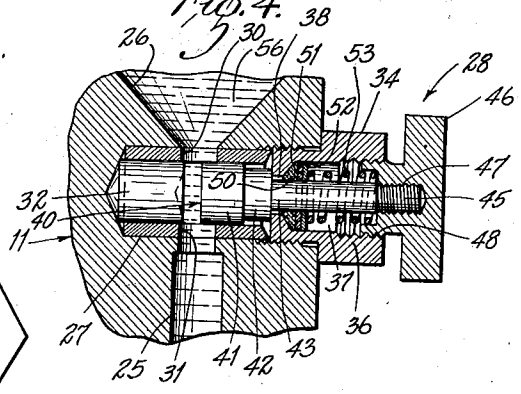


Fig. 4.



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VALVE FOR STENCIL BRUSHES

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4 Claims. (Cl. 251—50)

The present invention relates generally to fluid dispensing devices, and more particularly to fountain brushes finding special application in stencilling, each of which includes an adjustable valve having means for maintaining the same in pre-selected disposition.

An object of the present invention is to provide a fluid dispensing device which includes novel adjustable means for regulating the flow of fluid therefrom.

Another object is to provide a fountain brush which includes an adjustable valve having means for maintaining the same in preselected position.

Another object is to provide a fountain brush which includes an adjustable valve adapted to positively regulate the flow of liquid from a container to the applying portion of the brush.

Another object is to provide a novel fountain brush valve assemblage.

Another object is to provide a fountain brush which can be readily constructed, which is easily manipulated, and which is adapted to fulfill all of the objects and advantages sought therefor.

Other objects and advantages will be apparent from the following description, taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a side view of a fountain brush constructed in accordance with the teachings of the present invention;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1, showing the valve in closed position; and

Fig. 4 is a fragmental section of the valve taken on the line 3—3 of Fig. 1, showing the valve in fully open position.

Referring to the drawing more particularly by reference numerals, 10 indicates generally a fountain brush constructed in accordance with the concepts of the present invention. The brush 10 includes a centrally disposed body section 11, which may be a casting, a bristle assemblage 12, and a cap 13.

The bristle assemblage 12 includes an externally threaded ring 15, and a member 16 comprising a flat annular portion 17 and a conical shaped portion 18. Bristles 19 are tightly wedged between the conical shaped portion 18 and the interior of the ring 15 (Fig. 3).

The body section 11 is preferably of the configuration shown in the drawing, including an upper annular flange 20, a center portion 21 of oval exterior cross-section, and a lower internally threaded cup portion 22. The bristle assemblage 12 threadedly engages the cup portion 22, being sealed in engagement therewith by a suitable gasket 23.

The central portion 21 of the body section 11 has a vertical passage 25 which opens at the top into a conical sump 26. A transverse passage 27 crosses the vertical passage 25 adjacent the upper portion of the latter.

A valve assemblage 28 is located in the passage 27, which includes a sleeve 29 occupying the major length of the passage 27 and including opposed apertures 30 and 31 disposed to form a continuation of the passage 25. A stop member 32 closes the inner end of the sleeve 29. A casing 34 having a reduced externally threaded portion 35 and an enlarged internally threaded portion 36 threadedly engages the outer portion of the passage 27. The casing 34 includes a well 37 which is reduced adjacent one end to form an annular opening 38. A plunger 40 has an enlarged plunger head 41 and a shoulder 42 located within the sleeve 29, and a reduced extension 43 extending through the opening 38 and into the well 37 of the casing 34. The reduced extension 43 is threaded at 45 and receives a turn button 46, which engages the aforesaid threaded end of the extension 43 by internal threads 47 and which engages the internal threads of the casing 34 by external threads 48. Packing 50 surrounds the extension 43 within the well 37 adjacent the opening 38. One washer 51 of a pair of contiguous washers 51 and 52 presses against the packing 50, being forced thereagainst by a strong helical spring 53, the other end of said spring 53 abutting the turn button 46 (Fig. 3). The spring 53 has relatively sharp ends 53' which, in effect, key the spring 53 to the button 46 and to the washer 52.

The cap 13 is preferably of the elongated cylindrical configuration shown clearly in Fig. 1. It includes internal threads adjacent the open end which engage external threads on an annular extension 54 of the central body section 11. A gasket 55 seals the cap 13 with respect to the annular flange 20. In Fig. 3, fluid 56 is indicated as within the sump 26 and the cap 13.

Suitable materials are, of course, employed for the several elements of the fountain brush 10. Brass has been found highly suitable for the construction of the component elements of the valve assemblage 28. Aluminum functions well for the central body section 11. It is, of course, apparent that the particular shape of the central body section 11 may be varied within the scope of the invention, as may other elements of the brush 10.

The operation of the fountain brush 10 is quite simple. The cap 13 is removed from the central body section 11, inverted, and filled with ink, or other suitable fluid. The assembled bristle assemblage 12 and central body portion 11, the valve assemblage 28 being in the closed position of Fig. 3, are inverted and securely threaded into assembled relation with the cap 13. The fountain brush 10 is then ready for use.

With the brush 10 in the position of Fig. 1, the turn button 46 is rotated counterclockwise to move the plunger 40 to the right (Fig. 3) to open the passage between the sump 26 and the bristles 19. In Fig. 4, the valve assemblage 28 is shown in fully opened position, permitting a maximum flow of ink 56 into the passage 25. The opening between the plunger head 41 and the stop 32, of course, determines the flow of ink 56 into the passage 25.

The helical spring 53 and the washers 51 and 52 disposed within the well 37 of the casing 34 function to maintain the valve assemblage 28 in the selected relationship. The spring 53 through its sharp ends effectively keys the washer 52 and the button 46 so that all three elements move as a unit. The washer 51 remains stationary. Therefore, friction between the washers 51 and 52 multiplied by the force of the spring 53 maintains the valve assemblage 28 in selected disposition. It is important that the valve assemblage 28 be maintained in its selected position in order to insure the continued selected flow of ink to the bristles 19.

It is to be noted that the shoulder 42 of the plunger 40 abuts the inner end of the casing 34 to limit the movement of the plunger 40 to the right. When the shoulder 42 is in abutting relation with the inner end of the casing 34, the turn button 46 cannot be rotated further in a counterclockwise direction relative to the casing 34, inasmuch as the turn button 46 threadedly engages both the casing 34 and the free end of the extension 43 of the plunger 40. This relationship of parts can be readily grasped from an inspection of Fig. 4. This relationship of elements prevents the accidental removal of the turn button 46.

It is apparent that there has been provided a fountain brush which fulfills all of the objects and advantages sought therefor. It is to be understood that the foregoing description and accompanying drawing have been given by way of illustration and example, and not for the purposes of limitation, the invention being limited only by the claims which follow.

What is claimed is:

1. In a device of the kind described, an adjustable valve unit disposed to vary the cross-section of the fluid passage of a fountain brush, said valve unit including a plunger threadedly mounted in an intermediate section of the brush for minute determination of the flow section of the passage, and a spring and washer means maintaining said plunger in selected position, said spring, washer and plunger being connected for simultaneous movement.

2. In a device of the kind described, an adjustable valve unit disposed to vary the cross-section of the fluid passage of a fountain brush, said valve unit including a sleeve disposed across said passage and mounted in an intermediate section of the brush, a stationary member in one end of said sleeve, opposed openings in said sleeve effecting a passage continuation, a movable plunger in said sleeve including a head adapted to close said effected passage and including an extension, a casing secured to the defining wall of the passage, said extension extending through said casing and receiving an adjustment button, said button being threadedly engaged with said casing, and a sharp-ended spring disposed in said casing abutting an integral internal shoulder of the button at one end and one of two contiguous washers at the other end to cooperate therewith to maintain said plunger in selected position.

3. In a device of the kind described, an adjustable valve unit including a plunger adapted to be moved to vary the cross-section of a fluid passage, an operating member connected thereto, and means to maintain said plunger in selected position including a spring having positive engagement with the operating member and with an element movably mounted in respect to said plunger and frictionally engaging a contiguous surface, said spring, operating member and element rotating as a unit when said operating member is rotated to adjust the valve unit.

4. In a device of the kind described, a valve support, an adjustable valve unit supported thereby and disposed to vary the cross-section of a fluid passage comprising a plunger including a portion adapted to be moved to positions to vary the fluid passage, an operating button secured to said plunger, a casing secured to the valve support, said casing threadedly receiving said operating button, a pair of washers about said plunger within the casing remote from the button, and a helical spring about said plunger within the casing, said spring being sharpened at each end, one end biting into an internal abutment of the button and the other end biting into one of the washers whereby said button, spring and washer move as a unit, the friction between the two washers and between the washer remote from the spring and its contiguous surface positively maintaining said plunger in selected position.

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