The present invention relates generally to the stencil art, and more particularly to a fountain roller applicator for stenciling.

Heretofore, there have been provided various devices for stencil marking, including simple brushes adapted to be dipped into a solution of ink as required, and more recent fountain-type brushes in which the ink is contained in the handle reservoir and fed to the center of a brush tip through an intermittent or metering valve in the feed passage. There are also roller applicators, but none has been provided prior to the present invention of the fountain type, nor has one been provided which combines simplicity of construction and use, effectiveness, and the other constructive features of the instant device.

In brief, the present novel fountain roller applicator includes a reservoir handle from which feeds an ink delivery tube. An adjustable metering valve is provided for feeding a predetermined amount of ink into the delivery tube. The other end of the delivery tube supports an applicator or inkling roller assembly, including a feed tube, an ink receiver wiper element associated therewith, a perforated cylinder through which the ink is fed as spread by the wiper, and a roller of suitable material, such as open-celled synthetic or rubber sponge.

Therefore, an object of the present invention is to provide a novel fountain roller applicator for stenciling.

Another object is to provide a novel fountain roller applicator for stenciling, incorporating novel means for evenly spreading the stencil ink interiorly of an ink transferring roller for subsequent application to a surface in stenciling.

Another object is to provide a novel fountain roller applicator for stenciling incorporating a roller unit which is replaceable in its entirety for purposes of providing a new unit, and the like.

Another object is to provide a novel fountain roller applicator for stenciling incorporating a metering valve between the applicator assembly and the reservoir which can be left open while the assembly is not in use, a rest being provided to support the applicator roll out of contact with the surface on which the assembly is disposed while not in use.

Other objects are to provide a novel fountain roller applicator for stenciling which is adapted for both rapid and slow application of ink, which includes means for supplying additional air within the reservoir when required, which may be efficiently used by an operator with minimum instruction, which can be readily disassembled for cleaning as required, and which otherwise fulfills the objects and advantages sought therefor.

The foregoing and other objects and advantages are apparent from the following description taken with the accompanying drawing, in which:

Figure 1 is a plan view of a fountain roller applicator for stenciling incorporating the teachings of the present invention;

Figure 2 is a side elevational view thereof looking upwardly on the sheet of drawing, considering Figure 1;

Figure 3 is a transverse cross-sectional view taken substantially on the line 3–3 of Figure 2, parts being shown in elevation;

Figure 4 is a longitudinal, horizontal cross-sectional view on an enlarged scale, taken on substantially the line 4–4 of Figure 2, parts being shown in plan;

Figure 5 is an enlarged longitudinal, vertical cross-sectional view taken on substantially the line 5–5 of Figure 1;

Figure 6 is a further enlarged fragmentary horizontal cross-sectional view through the feed tube nut and associated applicator roller assembly parts;

Figure 7 is a further enlarged vertical, longitudinal cross-sectional view through the metering valve;

Figure 8 is an oblique view of the wiper prior to folding about the feed tube;

Figure 9 is an oblique view of the wiper channel;

Figure 10 is an enlarged plan view of one form of perforation in the cylinder which supports the ink transferring roller; and

Figure 11 is an enlarged cross-sectional view through two of the cylinder perforations and a portion of the supported ink transferring roller.

Referring to the drawing more particularly by reference numerals, 20 indicates generally a fountain roller applicator for stencilling constructed to include the principles of the present invention. Broadly, the applicator 20 includes a reservoir 22, a roller assembly 24, and a connecting ink delivery tube 26.

The reservoir 22 includes a valve block 28 generally cylindrical in form, and of the configuration shown in the drawing, which includes a first threaded radially disposed well 29, a second threaded radially disposed well 30, an externally threaded cup portion 31, the threads of which terminate at an annular shoulder 32, a third radially disposed well 33, and passages 34, 35 and 36 interconnecting the wells 29 and 30 and the cup 31. A cylindrical reservoir member 39, which serves both as a handle for the applicator 20 and to contain a supply of stencil ink, threadedly engages the external threads of the cup 31 and is sealed by a suitable washer 40 disposed against the shoulder 32. The free end of the reservoir member 39 is externally threaded and threadedly receives a cap 41 which is normally drawn tight against a suitable cap washer 43.

Threadedly mounted in the well 30 of the valve block 28 is a metering valve unit 45 which, per se, forms no part of the present invention. The valve unit 45 includes a valve casing 46 of the configuration clearly shown in Figures 5 and 7, which is securely mounted in the threaded well 30 and which threadedly receives a valve stem 47 having a knurled actuating knob 48 at the outer end and a reduced portion 49 at the inner end to which is secured a plunger 52 disposed in the passage 34, movable upon manipulation of the knob 48 to fully close the passages 35 and 36 in the innermost position of the valve stem 47, as is clear from Figure 7. A suitable compression spring 50 maintains the valve stem 47 in selected position of movement and a sealing washer 51 prevents leakage.

The delivery tube 26 is externally threaded at both ends, the longer reach thereof being threadedly engaged in the threaded well 29 and being maintained against movement by a suitable setscrew 54 (Fig. 4). The shorter reach of the delivery tube 26 threadedly receives a feed tube seat 56 of funnel configuration, which is threadedly both internally and externally, as is shown in Figure 6. A feed tube nut 57 threadedly engages the external threads of the feed tube seat 56 and clamps therebetween the flared end 58 of a feed tube 59 forming a part of the roller assembly 24.

The roller assembly 24 includes the aforementioned
feed tube 59 on which are mounted opposed cup-shaped end plates 63 supporting a perforated cylinder 64 on which is mounted an ink transferring roller 65 which may be of flexible, open-cell urethane foam of soft density, or of soft synthetic oil-resistant foam rubber with interconnecting cells and smooth, but porous, exterior surface skin, or other suitable material. Preferably, the cylinder 64 has perforations 66 of the punched-out form clearly shown in Figures 10 and 11, the rough areas being directed outwardly, so that such perforations 66 will receive and maintain in place a sleeve roller 65 molded on the cylinder 64 or slipped thereover. Of course, the perforations 66 can take any form for perforations 66 can be smooth and suitable adhesive employed to maintain the roller 65 in position on the cylinder 64.

Within the perforated cylinder 64 is a wiper 68 of thick polyurethane foam sheet stock which is wrapped around the feed tube 59 and maintained in position by a wiper channel member 69 which is secured to the feed tube 59 by suitable screws 70. One screw 70 extends through a slot 71 in the extension of the tube seat 56 so that the wiper 68 is maintained stationary, whereas the cylinder 64 and roller 65 are free to rotate as a unit through the medium of the end plates 63. The feed tube 59 has three openings 72, 73 and 74, which are progressively larger the further away from the feed tube seat 56. The openings 72, 73 and 74 are disposed in relation to the wiper 68 to discharge between the two reaches of the latter, as is clear from Figure 5. The free end of the feed tube 59 is closed by a push pin or plug 76 which tightly frictionally engages the interior of the feed tube 59. Suitable washers 77 and 78 are disposed about and at the ends of the feed tube 59 adjacent the exterior faces of the end plates 63.

A rest tube 80 is mounted in the wall 33 in the valve block 28 and is maintained against movement from the selected position by a suitable setscrew 81. It will be noted from Figures 1 and 3 that the rest tube curves beneath the valve block 28 and supports the roller 65 above the adjacent surface when the applicator 20 is not in use. The rest is out of the way when the applicator 20 is elevated at the normal working angle.

In use, with the valve unit 45 closed, selected ink is poured into the reservoir 22 in the quantity desired. The cap 42 is replaced and closed. Through the medium of the actuating knob 48, the metering valve unit 45 is moved to the desired position to permit flow of ink from the reservoir 22 through the cap 42 and into the feed tube 59. The ink within the feed tube 59 flows through the openings 72, 73 and 74 and onto the sides of the wiper 68 whence it passes to the inner walls of the perforated cylinder 64 and then into the ink transferring roller 65. The openings 72, 73 and 74 increase in size, respectively, in order to more evenly distribute the ink to the wiper 68. The wiper 68 functions to spread the ink around the interior of the perforated cylinder 64 so that the ink transferring roller 65 will perform its stenciling operation evenly and efficiently. The manner in which the ink is fed as aforesaid through the medium of the wiper with its spreading action obviates the slushing about of ink within the perforated cylinder 64, which is undesirable. If a pool of ink were within the perforated cylinder 64, it would be necessary to drain the same as the job is completed, even when the applicator 20 is not to be used for a short period of time, for the ink would pass into the ink transferring roller 65 and concentrate in a small arc thereof, while the roller is upon the rest tube 80.

With the present novel applicator 20, it is unnecessary to close the metering valve unit 45 when it is not in use, for with the applicator 20 disposed on the rest tube 80, the flow of ink will cease, since the feed tube 59 will be tilted upwardly above the normal level of the ink within the reservoir 22.

It is clear from the foregoing description that the roller assembly 24 may be readily disconnected as a unit from the delivery tube 26 for purposes of dismantling or replacement. It is also clear that the several components of the present applicator 20 may be dismantled for cleaning, or other purposes.

Under normal use of the applicator 20, sufficient air is supplied at the time of filling and by passage through the perforations 66 into the perforated cylinder 64 as the applicator 20 is moved back and forth. However, the filler cap 41 may be loosed to provide additional air should it be necessary or desired for rapid feed of ink to the ink transferring roller 65 or for purposes of cleaning or replacement roller assembly 24 or for any other reason.

It is manifest that there has been provided an applicator for stenciling which fulfills the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given by way of illustration and example. It is also to be understood that changes in form of the elements, rearrangement of parts, and substitution of equivalent elements, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. A roller assembly for a fountain roller applicator for stenciling, comprising, in combination, a feed tube having longitudinally spaced feed openings, a perforated cylinder surrounded said feed tube for movement relative thereto, an ink transferring roller mounted on said perforated cylinder, and an ink wiper mounted on said feed tube engaging the inner surface of said perforated cylinder, said wiper comprising a sheet of flexible material folded about and extending parallel along said feed tube and defining an area leading outwardly from said feed openings to said perforated cylinder, said wiper being stationary in relation to said perforated cylinder and having the outwardly leading area directed downwardly when said roller assembly is in use position.

2. In combination, a fountain roller applicator for stenciling, comprising an ink reservoir, a roller assembly, an ink delivery tube connecting said reservoir and said roller assembly, said roller assembly including a feed tube having longitudinally spaced feed openings, a perforated cylinder surrounding said feed tube for movement relative thereto, an ink transferring roller mounted on said perforated cylinder, and an ink wiper mounted on said feed tube engaging the inner surface of said perforated cylinder, said wiper extending parallel with said feed tube and being of channel cross section to deflect ink towards said perforated cylinder and having the channel opening directed generally downwardly when the applicator is in use.

3. In combination, a fountain roller applicator for stenciling, comprising an ink reservoir, a roller assembly including a rotatable perforated cylinder, an ink delivery tube connecting said reservoir and said roller assembly, and a wiper comprising a sheet of flexible material folded about and extending parallel along said feed tube and defining an area leading outwardly from said feed openings to said perforated cylinder, said wiper being stationary in relation to said perforated cylinder and having the outwardly leading area directed downwardly when said roller assembly is in use position.

4. In combination, a fountain roller applicator for stenciling, comprising an ink reservoir, a roller assembly including a perforated cylinder and a feed tube having longitudinally spaced feed openings, an ink delivery tube connecting said reservoir and said feed tube, and a wiper comprising a sheet of flexible material folded about and extending parallel along said feed tube and defining an area leading outwardly from said feed openings to said reservoir, said wiper being stationary in relation to said feed tube and having the outwardly leading area directed downwardly when said roller assembly is in use position.
towards said perforated cylinder, said ink wiper being stationary in relation to said perforated cylinder and having the channel opening directed generally downwardly when the applicator is in use, said roller assembly being mounted upon and removable from one end of said delivery tube as a unit.

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