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LIQUID APPLICATOR

2,419,959

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2 Sheets-Sheet 1

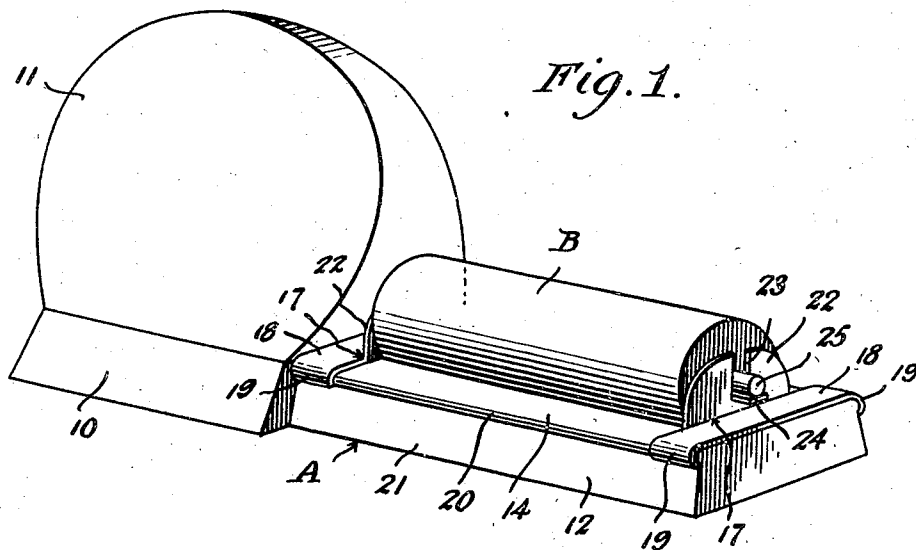
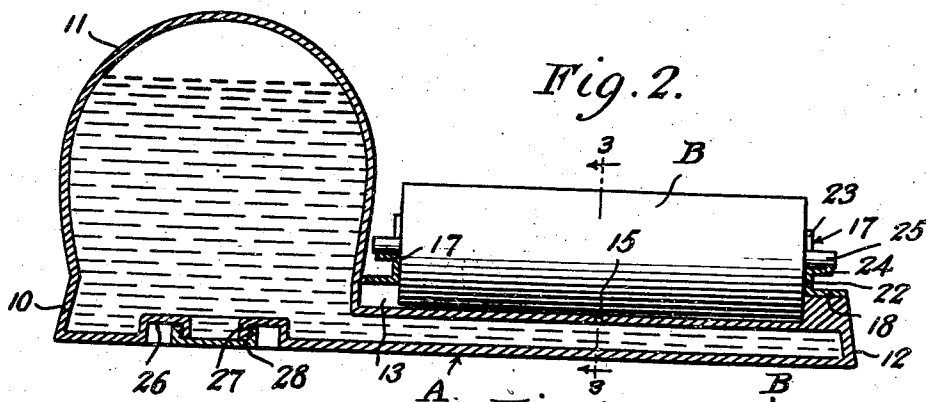


*Fig. 3.*

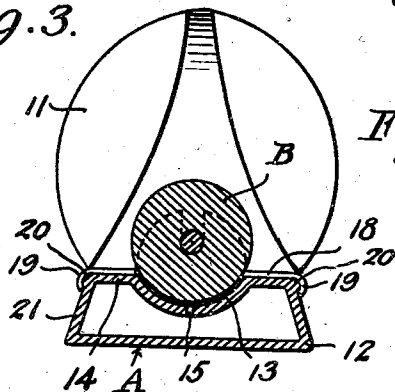


*Fig. 4.*

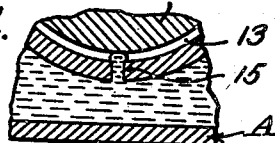
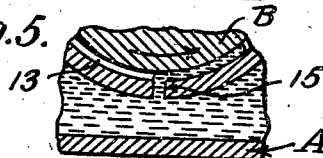


*Fig. 5.*



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2 Sheets-Sheet 2

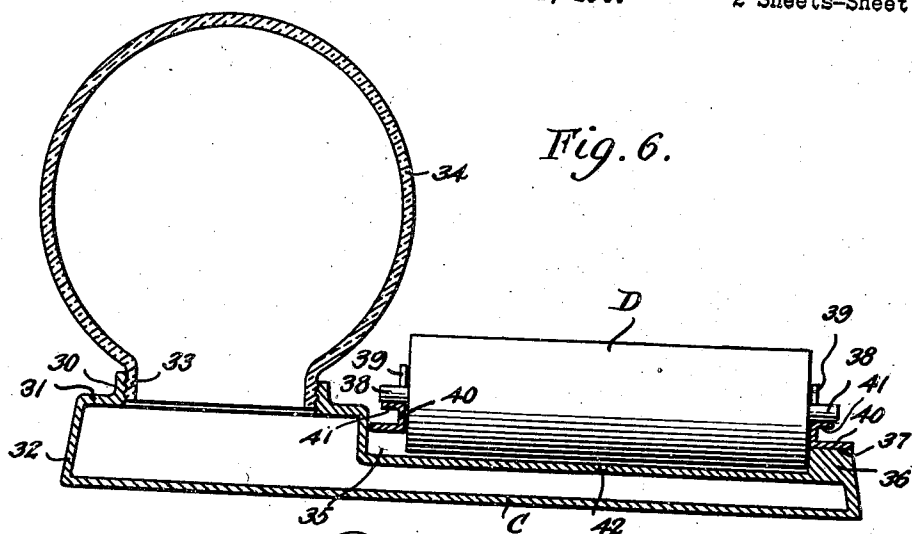


Fig. 6.

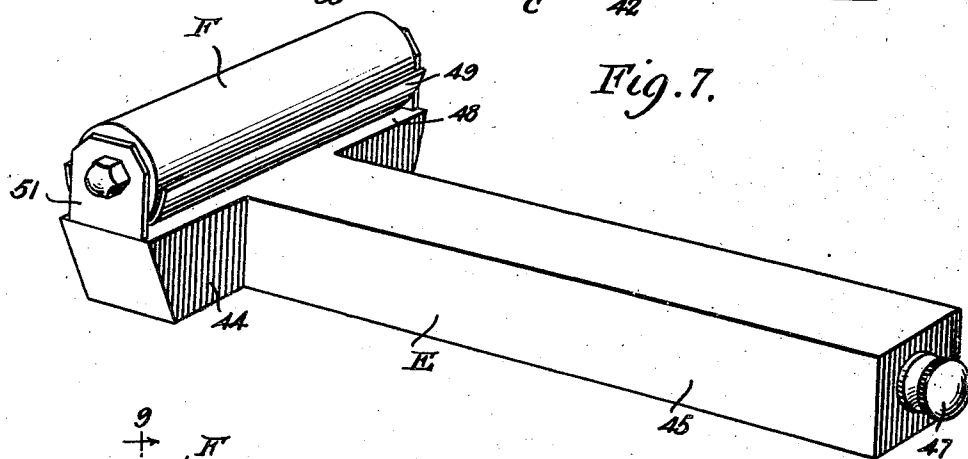


Fig. 7.

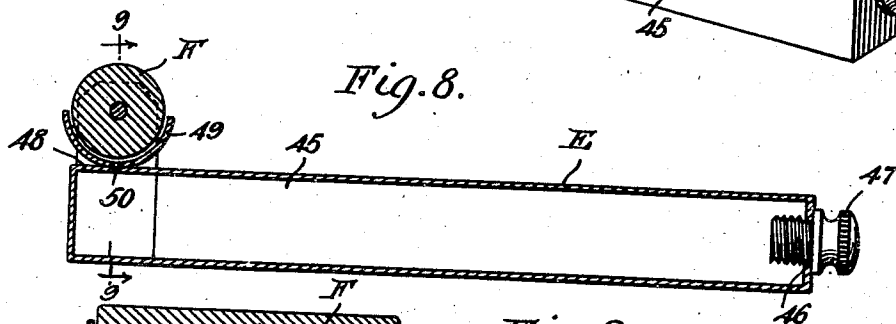


Fig. 8.

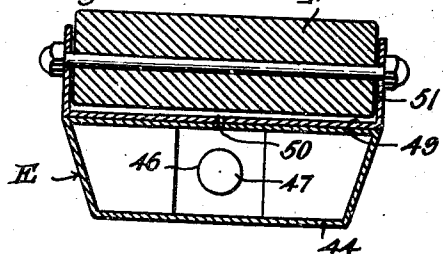


Fig. 9.

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## UNITED STATES PATENT OFFICE

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## LIQUID APPLICATOR

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5 Claims. (Cl. 91—48)

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This invention relates to liquid applicators of the rotary moistening element type and the same has particular reference to an improved construction of said type of applicator which functions to provide a continuous feeding of the liquid so as to form an uninterrupted film thereof extending over the entire peripheral surface of the rotary moistening element when the same is rotated in use and which applicator retains the liquid against accidental or unintentional flowing or leakage from the reservoir while preventing loss of the liquid by evaporation.

The invention primarily comprehends an applicator which is adapted by rotation of the moistening element to distribute a thin film of the liquid over the peripheral surface thereof whenever required and notwithstanding the fact that the applicator may have been unused for a protracted period or that the moistening element may be dry.

The invention further provides an applicator of said character in which the moistening element is mounted for rotation with the lower portion thereof disposed in an arcuate trough or recess having an orifice opening into the liquid reservoir which orifice is of a relatively small size that a globule of the liquid will form at the mouth of the orifice and protrude therefrom into contact with the periphery of the moistening element, the spacing of the moistening element from the surface of the trough or recess being such as to draw the liquid from the reservoir and effect a rapid spreading thereof over the periphery of the moistening element when the same is rotated.

The invention further contemplates an applicator adapted to be engaged by gummed surfaces for rotating the moistening element to thereby impart a thin film of the liquid to said gummed surfaces or which may be rotated by the fingers for dampening the same so as to facilitate the handling or counting of paper currency, while the same is also useful for applying a film of moisture to fabric, leather or other material during fabrication, shaping or ironing thereof.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which are illustrated the preferred forms of the invention.

In the drawings:

Fig. 1 is a perspective view of a liquid applicator constructed in accordance with the invention.

Fig. 2 is a longitudinal sectional view taken on a vertical plane.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary sectional view

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taken through the orifice showing the globule of the liquid which forms in protruding relation at the mouth of the orifice and in contact with the moistening element.

Fig. 5 is a similar view illustrating the liquid being drawn from the orifice by the rotation of the moistening element.

Fig. 6 is a longitudinal sectional view taken on a vertical plane illustrating a modified form of the invention.

Fig. 7 is a perspective view of still another modification of the invention.

Fig. 8 is a sectional view of the applicator shown in Fig. 7 taken on a vertical plane.

Fig. 9 is a transverse sectional view taken on the line 9—9 of Fig. 8.

Referring to the drawings by characters of reference, the applicator may be constructed of any desired material and in any preferred form so as to provide as illustrated in the form shown in Figs. 1 to 5 thereof, a hollow base or receptacle A of general rectangular formation which includes a rear portion 10 provided with a hollow dome shaped top or upper portion 11 formed integrally therewith and constituting a reservoir adapted to contain a supply of liquid. The base or receptacle A also includes a forward portion 12 which is slightly narrower than the rear portion 10 and which is formed with a trough or recess of arcuate shape in cross-sectional configuration extending longitudinally of said forward portion 12 of the base or receptacle and opening through the upper wall 14 thereof from adjacent the forward end of the base or receptacle to the forward wall of the dome shaped top or upper wall portion 11. The trough or recess 13 is provided with an orifice 15 substantially at the center thereof which communicates with the hollow interior of the forward portion 12 of the base or receptacle and defines an outlet through which the liquid feeds from the reservoir. The orifice 15 is of relatively small size so that the liquid cannot be accidentally or unintentionally discharged therefrom nor will the liquid flow therefrom unaided due to skin friction of the liquid at the orifice and the inability of air to enter the reservoir through the orifice.

In order to provide means for drawing the liquid from the reservoir as desired and for presenting a film thereof for application to the article or material to be moistened, the applicator also includes a moistening element or roller B which is journaled at its ends in bearing members 17 supported upon the upper wall 14 of the forward portion 12 of the base or receptacle A to

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thereby position the roller with the lower arcuate portion thereof arranged in the trough or recess in spaced relation to the arcuate surface thereof and with the upper portion of the roller projecting above the upper wall 14 of said base or receptacle. The roller B is constructed of hard material and has a smooth peripheral surface and the same revolves freely in the trough or recess 13 with the periphery of the lower arcuate portion thereof substantially concentric with and equally spaced from the surface of the trough or recess.

The bearing members 17 are slidable longitudinally of the upper wall 14 of the forward portion 12 of the base or receptacle so that the same may be disposed at the opposite ends of the trough or recess 13 for supporting the roller therebetween and as illustrated the bearing members each include a flat cross strip 18 provided at its opposite ends with downwardly directed hooked terminals 19 which grippingly and slidably engage over longitudinally extending beads 20 formed along the upper edges of the side walls 21 of the forward portion 12 of the base or receptacle. The strips 18 are each provided along its inner longitudinal edge with an upstanding ear 22 having a medial notch 23 opening through the upper edge thereof and at the base of the notches 23 the same are each provided with an outwardly projecting lip 24 which is adjustable in any desired angular relation with the ear 22 for supporting the ends of the roller shaft 25 in said notches 23 with the periphery of the roller spaced the required distance from the surface of the trough or recess 13.

The bottom wall of the rear portion 10 of the base or receptacle A is formed with a recessed portion 26 having a downwardly directed externally threaded tubular neck 27 defining a filling opening and which opening is closed by a removable screw cap 28. The base or receptacle is preferably fashioned or molded of glass or a material which permits of visual inspection therethrough to determine the quantity of liquid in the reservoir at all times and the necessity of refilling the same.

When the reservoir is filled with the liquid above the level of the bottom of the trough or recess 13, the weight of the liquid causes the orifice to be filled therewith and a globule thereof to form at the mouth of the orifice in contact with the periphery of the roller directly above the orifice as illustrated in Fig. 4 of the drawings. The globule of liquid clings to the surface of the roller by capillary attraction so that rotation thereof effects a drawing of the liquid away from the orifice as illustrated in Fig. 5 and a spreading of the liquid over the surface of the roller. When the roller is covered with a film of the liquid, the space between the roller and the trough or recess 13 is substantially filled therewith whereupon the capillary attraction of the roller ceases and the feeding of the liquid is discontinued. Removal of the film of liquid from any portion of the roller as for instance by the moistening of an article or material thereover, results in a renewal of the drawing of the liquid from the orifice as required for use.

In the form of the invention illustrated in Fig. 6 of the drawings, the applicator functions in a manner similar to that of the previous form of the invention and the same is similarly constructed except that in this form of the invention the hollow base or receptacle C is provided with an upstanding tubular neck 30 formed in

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the upper wall 31 of the rear portion 32 thereof which neck opens into the hollow interior of the base or receptacle and is interiorly threaded for receiving therein the exteriorly threaded tubular mouth 33 of a hollow spherical shaped container 34 the latter constituting a reservoir for receiving a supply of the liquid through the mouth 33 thereof.

The applicator in this form of the invention is similarly formed with a trough or recess 35 of arcuate shape in cross-section which extends longitudinally of the forward portion 36 of the base or receptacle C and opens through the upper wall 37 thereof. A moistening element or roller D similar to the roller B in the previous form of the invention has its shaft 38 journaled for rotation in notches 39 formed in bearing members 40 similar in construction to the bearing members 17 and similarly supported upon the upper wall of the forward portion 36 of the base or receptacle. The bearing members 40 are also provided with outwardly extending lips 41 which may be adjusted at any desired angle for supporting the roller with the lower arcuate portion thereof spaced the required distance from the surface of the trough or recess. The trough or recess 35 is similarly provided with an orifice 42 which communicates with the hollow interior of the base or receptacle and through which orifice the liquid is drawn by rotation of the roller to provide a film thereof over the surface of the roller.

The applicator shown in Figs. 7 to 9 inclusive of the drawings illustrates a modification of the invention which is primarily adapted for manually rolling the moistening element thereof over the article or material for dampening the same. The applicator as illustrated includes a receptacle E consisting of a transversely extending forward portion 43 and a longitudinally extending leg 45 connected with the forward portion medially thereof which together constitute a liquid reservoir, the leg 45 being of sufficient length to define a handle for holding the applicator during manipulation thereof when in use. The said leg is provided at its free end with a filling opening 46 which is closed by a screw plug 47 or the same may have a hose connected thereto (not shown) which is directly coupled to a source of supply for maintaining the receptacle filled with the liquid during use.

The forward portion 44 of the receptacle has secured to the wall 48 thereof which is the lower wall when in use, an inverted trough 49 extending longitudinally of said lower wall and having its recessed face of arcuate shape in cross-section. The trough 49 and lower wall 48 of the receptacle have an orifice 50 extending therethrough and communicating with the interior of the receptacle which defines an opening through which the liquid is fed from the reservoir. As in the previous forms of the invention, the orifice 50 is of relatively small size so that the liquid in the receptacle cannot be accidentally or unintentionally discharged therefrom. A globule of the liquid is adapted to form in protruding relation at the mouth of the orifice and engages with a moistening element or roller F to which it adheres by capillary attraction. The roller F is disposed in spaced relation to the face of the trough 49 and the same is journaled for rotation between ears 51 depending from opposite ends of the forward portion 44 of the receptacle. As in the previous forms of the invention rotation of the roller F effects a drawing of the liquid there-

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with and away from the orifice 50 so as to thereby draw the liquid from the receptacle through the orifice and which due to the narrowness of the space between the roller and the trough spreads over the surface of the roller to form a film thereof.

What is claimed is:

1. In an applicator, a hollow receptacle defining a reservoir for containing a supply of liquid, a trough of arcuate shape in cross-section having an opening extending therethrough substantially at the center thereof and communicating with the interior of the receptacle, said opening being of a size that a globule of the liquid is adapted to form in protruding relation at the mouth thereof when the receptacle is filled with the liquid above the level of the opening, a roller, and means mounting said roller for rotation on said receptacle with an arcuate portion thereof arranged in said trough in overlying relation with said opening and in spaced relation to the arcuate face of said trough, said spacing being such that the roller is adapted to engage the globule of liquid protruding from said opening and to effect by rotation thereof a drawing of the liquid from the reservoir through said opening and the formation of a film of the liquid over the surface of the roller.

2. In an applicator, a hollow receptacle defining a reservoir for receiving a supply of liquid and having an upper wall formed with a recess of arcuate shape in cross-section, said recess having an opening substantially at the center thereof communicating with the interior of the receptacle and of a size that a globule of liquid is adapted to form in protruding relation therefrom when the receptacle is filled with the liquid above the level of the bottom of the recess, a roller, and means mounting said roller for rotation with the lower arcuate portion thereof arranged in said recess in spaced relation to the surface thereof, said spacing being such that the roller is adapted to engage the globule of liquid protruding from the opening and to effect by rotation thereof a drawing of the liquid from the reservoir through said opening and the formation of a film of the liquid over the surface of the roller.

3. In a liquid applicator, a hollow receptacle defining a reservoir for containing a supply of liquid, a trough having a recessed outer face carried by one of the walls of said receptacle and having an orifice extending therethrough and communicating with the interior of the receptacle, said orifice being of a size to prevent gravitational feeding of the liquid therefrom but functioning to permit of the formation of a globule of the liquid at the mouth thereof when the level of the liquid within the reservoir is above the level of the orifice, a roller, and means carried by said receptacle mounting said roller for rotation with its periphery so spaced from the recessed face of the trough as to contact with the globule of liquid adapted to form at the mouth of the orifice so that said globule adheres thereto and is drawn away from the orifice with the rotation of the roller to thereby effect a drawing of the liquid from said receptacle through said orifice and a spreading thereof over the surface of the roller.

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4. In a liquid applicator, a hollow receptacle having an enlarged portion at the rear thereof providing a reservoir for containing a supply of liquid and having an upper wall located forwardly of said enlarged portion and disposed below the same, said upper wall being formed with a trough therein having a recessed outer face and an orifice extending therethrough and communicating with the interior of the receptacle, said orifice being of a size that a globule of the liquid is adapted to form at the mouth in protruding relation therefrom when the receptacle is filled with the liquid above the level of the orifice, a roller, and bearing members detachably mounted upon said upper wall and supporting said roller for rotation on said receptacle with an arcuate portion of the roller arranged in said trough in spaced relation to the recessed face thereof, said spacing being such that the roller is adapted to engage the globule of liquid protruding from said orifice so that the globule adheres thereto and is drawn away from the orifice upon rotation of the roller to thereby effect a drawing of the liquid from the receptacle through said orifice and a wetting of the surface of the roller with the liquid.

5. In a liquid applicator, a hollow receptacle including a transversely extending forward portion and a longitudinally extending rearward portion connected with the forward portion medially thereof and together defining a reservoir for containing a supply of liquid, said rearward portion being of a length to provide a handle for manipulating the applicator, a trough having a recessed outer face carried by the lower wall of said forward portion of the receptacle and having an orifice extending therethrough and communicating with the interior of the receptacle, said orifice being of a size that a globule of the liquid is adapted to form in protruding relation at the mouth of the orifice when the receptacle is filled with the liquid above the level of the orifice, a roller, and bearing ears secured to the opposite ends of said forward portion of the receptacle and supporting said roller for rotation on said receptacle with an arcuate portion of the roller arranged in said trough in spaced relation to the recessed face thereof, said spacing being such that the roller is adapted to engage the globule of liquid protruding from the orifice so that the globule adheres thereto and is drawn away from the orifice upon rotation of the roller to thereby effect a drawing of the liquid from the receptacle through said orifice and a wetting of the surface of the roller with the liquid.

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