

Oct. 9, 1951

E. A. JOHNSON
COATING ROLLER DEVICE

2,570,243

Filed July 5, 1947

2 Sheets-Sheet 1

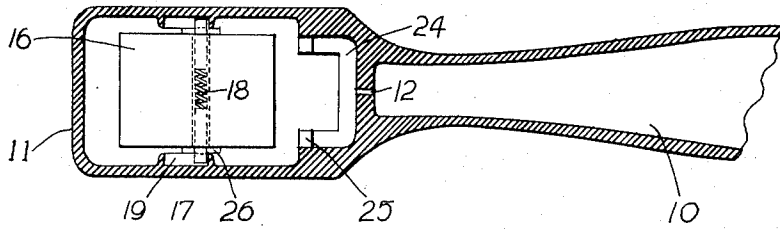


FIG. 2

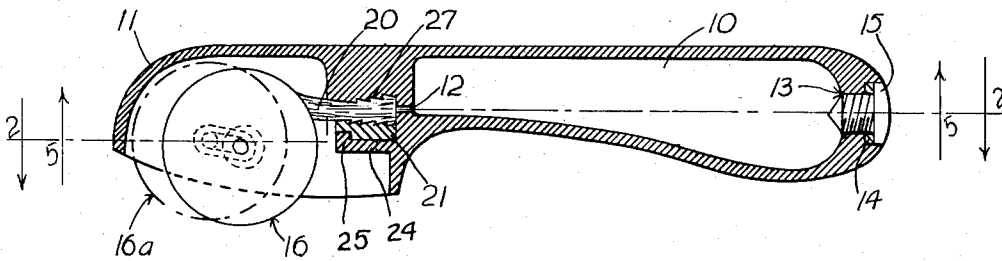


FIG. 1

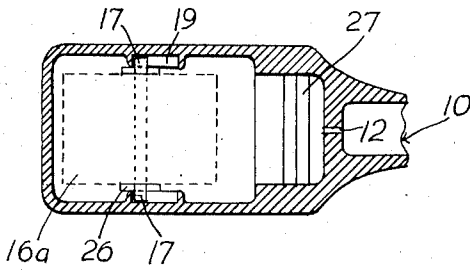


FIG. 5

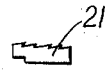


FIG. 3

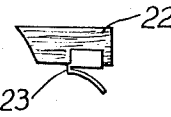


FIG. 4

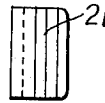


FIG. 3a

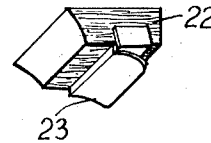


FIG. 4a

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2 Sheets-Sheet 2

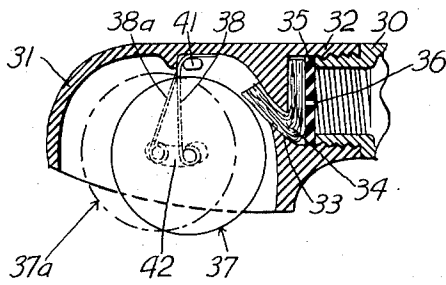


FIG. 9

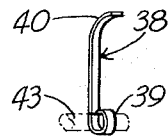


FIG. 10

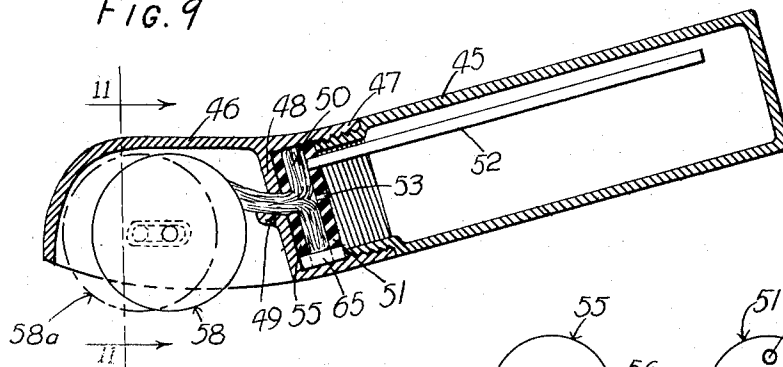


FIG. 6

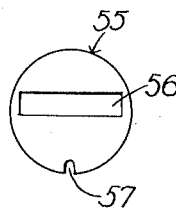


FIG. 7

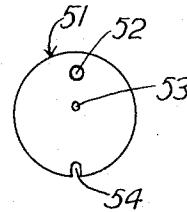


FIG. 8

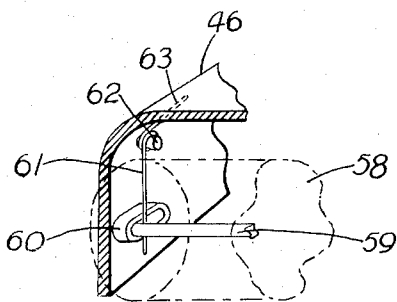


FIG. 11

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2,570,243

COATING ROLLER DEVICE

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9 Claims. (Cl. 91—62.5)

1

This invention pertains to apparatus for coating surfaces with a liquid film and a principal object is to provide a novel and improved combination moistening and pressuring device adapted to deposit a uniform and balanced film of a fluid upon a base surface. Another object of the invention is to provide a moistening device adapted to dispense a readily volatile solvent which device is simple in construction and positive in operation. A further object of the invention is to provide a method and means for intermittently and controllably applying a uniform and balanced film of a fluid on a base surface. An additional object is to provide a method and means for intermittently and automatically applying a fluid to a pressuring and dispensing roller upon each manipulation of the device. A more detailed object is to provide a novel and improved combination moistening and pressuring device adapted to deposit a uniform and a balanced film of a solvent upon a base surface.

The above and other objects of my invention will become apparent from the following description taken with the accompanying drawings in which:

Figure 1 is a side view partly in section, of one embodiment of the assembled device;

Figure 2 is a fragmentary section of the device viewed along the line 2—2 in Figure 1;

Figures 3 and 3a are end and top views of the wick holder 21 in Figure 1;

Figures 4 and 4a are side and perspective views of a unitary wick and holder;

Figure 5 is a fragmentary section of the device in Figures 1 and 2 viewed along the lines 5—5 in Figure 1.

Figure 6 is a sectional side view of another modification of a device according to my invention having a removable reservoir;

Figures 7 and 8 illustrate details of elements in the embodiment of Figure 6; and

Figures 9 and 11 show further modifications wherein a flexible means is provided for positive movement of the roller, Figure 10 illustrating one such means.

Broadly, my device comprises a fluid reservoir, a wick, a roller, and means for movably mounting the roller so that it can be selectively moistened by fluid from the wick. The reservoir may be unitary with the roller mounting or detachable therefrom. In any event, the arrangement of elements enables the roller to be held in contact with the wick when moved in one direction, and a spring or slot means may be provided to shift the roller away from the wick on lifting the device or reversing its direction of motion.

When operating the device it is held nearly parallel to the work piece or clear surface, the arrangement of elements enabling the operator to pass a selectively moistened roller thereover.

2

One embodiment of my invention is illustrated in Figures 1 to 5, inclusive, wherein the device includes a reservoir 10, and a longitudinal extension 11 thereto which is adapted to support the roller 16 within slots or guides 19. The reservoir 10 may be provided with an inlet 13 which is sealed by means of a washer 14 and screw plug 15. A discharge port 12 permits the flow of fluid from reservoir 10. This port 12 should be of small area, the fluid being discharged at a rate sufficient to supply the roller 16 with a film of liquid via capillary element 20.

In Figure 1 a wick 20 is held in position by means of serrated wedge 21 which cooperates with the serrated surface 27 in the roof of the wick chamber to hold the wick 20 in position. The wedge 21 fits snugly within zone 24 and the stops 25 together with the resilience of the wick 20 serve to retain the wedge 21 and wick 20 in position. The roller 16 is illustrated as being mounted on a shaft means 17, the ends of which ride in the slots 19. The slots 19 are illustrated as being in a boss integral with the side wall of the extension or roller mounting 11. It is also contemplated that the guides 19 may be countersunk in the wall or even perforate the wall.

If desired, the shaft 17 may be split as shown in Figure 2 with a compressible spring 18 being adapted to urge the ends of the shaft into slots 16. Washers 26 about shaft 17 may be provided to space the ends of the roller with respect to the slots 19 carried in the walls of the hooded support 11. Alternatively, one pin or shaft 17 can be fixed to the roller 16 and the second pin depressible within the spring-leaded roller. Likewise either or both pins may be provided with a shoulder means to abut the support 11 when the guides 19 perforate the wall.

In Figures 4 and 4a there is illustrated a unitary capillary element including a wick and wick holder. The wick 22 is securely held by the holder 23 having a lower resilient portion which serves to exert a thrust on 24 and 25 in Figures 1 and 2 and to hold the wick against the serrated roof 27 adjacent the fluid outlet or discharge port 12.

In moving the device forward the roller 16 rotates about the pins 17 which engage the slots 19. This movement shifts the axis of rotation of the roller 16 about the shaft 17 toward the rear end of the slots 19, thereby bringing the surface of roller 16 into contact with the wick 20. Liquid flows from reservoir 10 through the port 12 into the wick 20 and the surface of the roller is moistened thereby. This limited and controlled amount of moisture is then transferred as a very thin but uniform film upon the surface over which the roller passes.

When the direction of the device over the surface or work piece is reversed, the axis of rota-

3

tion of the roller 16 is shifted to the forward end of the guide slot 19 with the result that the roller assumes position 16a out of contact with the wick 20 as illustrated in Figures 1 and 5. If desired, a spring means, for example, such as that described in connection with Figures 9 and 11, may be provided so that when the device is lifted from the work piece the roller 16 is retracted by the spring, position 16a being determined by the lengths of the slots 19. In any event, the roller in its position 16a cannot be moistened by the fluid from the wick 20 and can be rotated over the work piece without mutilating or adversely affecting it. It is also contemplated that the slots 19 may extend into or through the side wall of the hooded support member 11 for example, as illustrated in Figure 9.

Figures 6, 7, and 8 illustrate another embodiment of my invention wherein the reservoir 10 and the roller support 11 are readily separable. The device illustrated in Figures 1 to 5 can similarly be modified; that is, the reservoir can be removably attached to the hooded support member 11 in which event the plug assembly 14 and 15 ordinarily will be unnecessary.

Referring to Figure 6, the reservoir 45 may comprise the container in which the fluid to be dispensed, is marketed. Threads 47 on the reservoir 45 can, for example, be adapted for a conventional closure and for engaging the hooded support member 46. More specifically the threads on the throat of the reservoir 45 are adapted to engage corresponding threads 47 on the support 46.

The demountable hooded support 46 includes wall 48 having slot 49 through which wick 50 passes. The wick 50 extends through the slot 49 a controlled or adjustable distance sufficient to contact the roller 58. Roller 58 can be mounted as described in connection with Figures 1, 2 and 5 above, or as to be described in connection with Figures 9 or 11. Disposed between the wall 48 and the wick 50 is a slotted shim 55. This shim is shown in detail in Figure 7 having the slot 56 for the wick 50 and a guide notch 57 adapted to pass over the ridge 65 which serves to orient the elements 55 and 51. 51 illustrated in detail in Figure 8 is a wick retaining disc which is held in compression by the reservoir 45 when it is in the position shown in Figure 6.

In Figure 8 the wick retaining disc includes a guide notch 54, a pin-hole opening 53 which permits the normal flow of fluid from the reservoir 45 into the wick 50 and optionally the tube 52 which is of substantially larger diameter than the flow control opening 53 and serves successively two functions. When the apparatus is initially used the wick 50 is likely to be dry. By upending the device so as to hold the reservoir substantially vertically the liquid within the primer tube 52 flows rapidly into the wick and saturates it promptly. Then when the device is held substantially as in Figure 6 the level of liquid in the reservoir is below the open end of the primer tube 52 and the tube then functions as a vent. Otherwise the operation of the device is similar to that described in Figures 1 to 5, the roller 58 assuming a rearward position with reference to the slot 19 when the device is moved from right to left and is in contact with the wick 50. On the other hand when the direction of the movement of the device is reversed the roller assumes the position 58a in the other end of the guide slot 19.

Figures 9 and 10 illustrate a further embodi-

4

ment of the assembly including the hooded support 31 having thread means 32 for engaging a reservoir 30. This reservoir 30 may be streamlined as illustrated in Figure 1 or simply an elongated container such as described in connection with Figure 6. The wick 34 may comprise a rectangular piece of felt, capillary sponge rubber, or the like which passes through slot 33 and is retained by the distribution disc 35 having an opening 36. When the reservoir 30 is attached to the hooded support member 31, the wick is compressed under the disc 35. A sufficient portion of the wick 34 is exposed to the roller 37 so that it will uniformly moisten the surface of the roller when it is brought into contact with it.

The mounting for the roller 37 is different than in any of the other embodiments. A shaft 43 is provided for the roller 37 and this shaft is guided by the grooved slot 42. A leaf spring 38 having loop 39 which encircles or engages the shaft 43 and has an anchor means 40 adapted to be removably or fixedly held by anchor 41 disposed at the side wall of 31. The normal position of the roller 37 is that designated as 37a with the leaf spring 38a holding the shaft 43 at the forward end of the slot 42. In this position the roller 37 is out of contact with the wick means 34.

When the device is moved forward with the roller in contact with a stationary base, the shaft 43 moves rearwardly in the slot 42 and places the spring 38 in tension. In this latter position the roller is resiliently held in contact with the wick and a film of liquid is applied to the roller which in turn transfers the film to the base. When the device is lifted from the work piece, the roller 37 is retracted by the spring 38. The distance that the roller 37 is held from the wick 34 is limited by the slot 42. The slot may extend through the wall. Alternatively stops may be provided to restrict the sweep of the spring support 38 for the roller.

Figure 11 is another modification of a spring means for shifting the axis of rotation of the roller 58. In this modification the roller 58 is supported in a guide illustrated as comprising a race within a boss 60. It is contemplated, however, that the spring support 61, 63 may engage shaft 59 and operate as described in connection with Figures 9 and 10. In any event the spring member mounted on anchor 62 resiliently holds the roller 58 (16, 37, or 38) within the hooded support such as 46 in Figure 11 and shifts the axis of rotation with slots or grooves or between stops.

This application is a continuation-in-part of my co-pending application Serial No. 697,237, filed September 16, 1946, and entitled "Dispensing Roller Device."

From the above description, it is apparent, that I have attained the objects of my invention and have for example, provided a moistening device wherein a uniform and positively controlled amount of solvent is applied to a clear surface in a simple and efficient manner. Furthermore, an improved portable moistening device of extremely simple operation and convenient proportions has been provided. It should be understood, however, that modifications may be made in the illustrated and described embodiments by those skilled in the art without departing from the spirit of my invention as defined by the appended claims.

What I claim is:

1. An apparatus comprising a substantially

cylindrical fluid reservoir adapted to be grasped by the hand for manipulating the apparatus, a discharge port in one end of said reservoir, a dispensing roller, a removable support for said roller threaded to said reservoir about said port and having a fluid passage communicating with said port, guide slots in said support, said slots being spaced a distance from the lower edge of said support means and terminating at a distance which is less than the radius of said roller, a shaft for said roller rotatably mounted in said slots, a wick means in said fluid passage, a flow control disc interposed between said port and said wick means, a discharge orifice in said disc, a second enlarged orifice in said disc, and a conduit extending inwardly from said second orifice to a point remote from said discharge port.

2. An applicator for depositing volatile solvents on a surface which comprises a sealed solvent reservoir of generally cylindrical shape, a port at one end of said reservoir, a wick means wholly exterior of said reservoir and communicating with said reservoir, a flow restricting orifice between said wick means and said reservoir, a solvent film dispensing roller, shield means carried by said end of said reservoir for enclosing said wick, shaft means for rotatably supporting said roller within said shield means adjacent said wick, and oppositely disposed slot means in said shield for guiding the axis of rotation of said roller on said shaft means with respect to said wick means to a point which is spaced a distance less than the radius of said roller whereby the feeding of solvent from said wick means onto said roller is controlled in manipulating the applicator to and fro.

3. A device adapted to apply controlled amounts of volatile solvents in thin films on extended surfaces including an elongated fluid reservoir adapted to be grasped by the hand for manipulating the device to and fro over such surfaces, a wick means exterior of said reservoir, a port of restricted flow area between said reservoir and said wick means, a longitudinal extension of said reservoir comprising a box-like member and substantially enclosing said wick means, a roller mounted within said extension and adapted to be rolled over extended surfaces, shaft means for said roller, substantially longitudinal slot means within said extension for rotatably supporting said shaft means, said slot means permitting a total longitudinal displacement of less than the length of the radius of the roller and terminating a distance from the wick means which is less than the radius of the roller, whereby the to and fro manipulation of the device over the extended surface shifts said roller longitudinally within the extension to control the feeding of the volatile solvent from said wick means directly onto said roller.

4. In an apparatus for dispensing a fluid film from a reservoir, the improvement which includes a dispenser for attachment to the throat of a container of such size and shape as to be readily encircled by the hand for manipulating the dispenser, said dispenser comprising a support member having means for fluid-tight engagement with the open throat of said container, a fluid passage extending from said throat to the interior of said support member, a flow control disc having a discharge port and extending across said fluid passage, a roller carried by trunnions

operating within said support member in oppositely disposed longitudinal guide means, said guide means being spaced from the lower edge of said support means a distance less than the radius of said roller, a wick within said fluid passage having one portion exposed to the fluid discharged through said port from said container and another portion exposed to the said roller within said support member whereby the roller can be operatively manipulated to and fro to bring the roller into and out of contact with the wick.

5. An apparatus comprising in combination a separable fluid reservoir, a discharge port at one end of said reservoir, a rigid extension removably fixed to said reservoir about said port, a fluid passage through said extension communicating with said port, a flow control disc having a discharge orifice interposed between said fluid passage and said port, a laterally movable roller supported on trunnions by said rigid extension, grooves within said rigid extension for slidably retaining said trunnions, a wick means in said fluid passage and having a portion thereof exposed to the said roller when at one end of said grooves, and a spring means having at least one end fixed to said extension and exerting a lateral thrust upon said trunnions.

6. An apparatus comprising in combination an elongated fluid reservoir adapted to be grasped with the hand for manipulating the apparatus, a port in said reservoir, a dispensing roller movably disposed adjacent said port, a capillary means in fluid communication with said port and exposed to said roller, a flow control disc between said capillary means and said port, a restricted opening in said flow control disc, a support for said roller threaded to said reservoir about said port, and means within said support for movably and rotatably supporting trunnions on opposite ends of said roller therein whereby the to and fro manipulation of the apparatus with the roller in contact with a relatively fixed surface moves the roller into and out of contact with said capillary means.

7. The device of claim 2 wherein said wick means includes a wedge means for retaining the wick in the desired position.

8. The device of claim 2 wherein said wick means includes a holder having a resilient portion which exerts a thrust to hold the wick adjacent the port.

9. The device of claim 2 wherein the said shield means is removably attached to the reservoir.

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