Aug. 1, 1939. W. E. ROSEBUSH 2,167,727

MOISTENER

Filed April 24, 1937

Fig. 1.

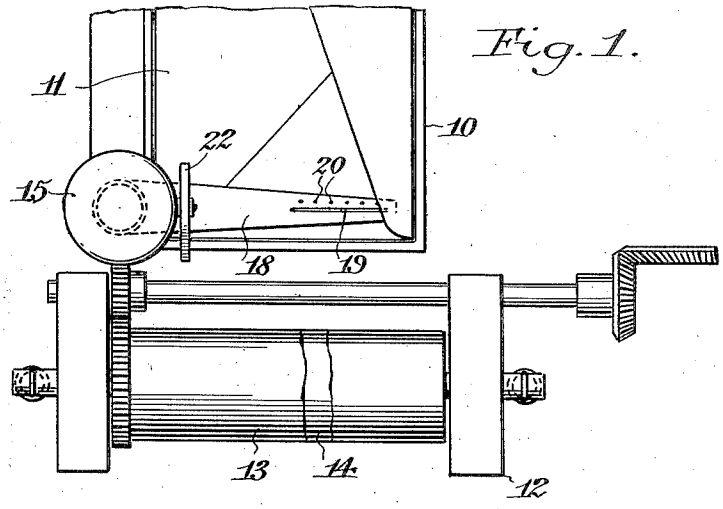


Fig. 3.

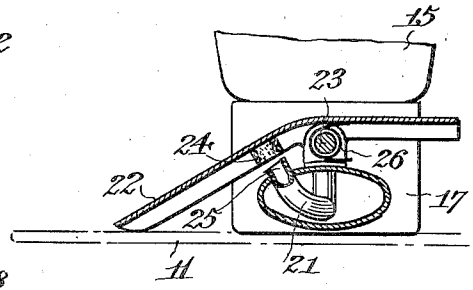


Fig. 2.

Fig. 4.

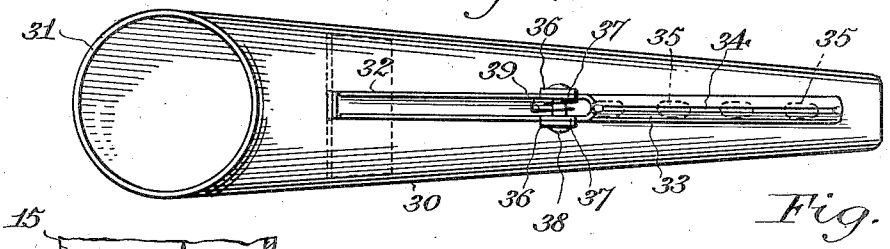


Fig. 6.

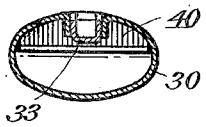
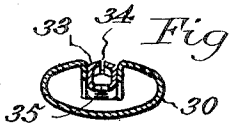


Fig. 5.

Fig. 7.



WITNESS

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Patented Aug. 1, 1939

2,167,727

UNITED STATES PATENT OFFICE

2,167,727

MOISTENER

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Application April 24, 1937, Serial No. 138,709

6 Claims. (Cl. 91—43)

This invention relates to devices for moistening suitable materials so as to be pasted, or sealed, or affixed as may be desired.

The invention relates more particularly to the types of moisteners or applicators disclosed in my pending applications Serial No. 79,494, filed May 13, 1936, and Serial No. 118,214, filed December 30, 1936.

The invention may be used advantageously for moistening the adhesive or gum on the closing flaps of envelopes preparatory to the sealing of the latter, or applying a liquid adhesive or gum to the flaps for the purpose stated, and for other analogous purposes.

The principal object of the present invention is the provision of a device of the indicated character which will insure a proper flow of the liquid substance or adhesive or gum for spreading a uniform film thereof where wanted.

A further object of the invention is the provision of a device of the indicated character of efficient and substantial design.

The nature of the invention and its distinguishing features and advantages will appear when the following specification is read in connection with the accompanying drawing, in which

Fig. 1 is a fragmentary top view of an envelope feed, moistener, and sealing means;

Fig. 2 is an enlarged vertical section of one form of the moistener shown in Fig. 1, a portion of the liquid font being broken away;

Fig. 3 is an enlarged transverse section taken on the line 3—3 of Fig. 2;

Fig. 4 is a top view of a modified form of moistener detached from the liquid font;

Fig. 5 is a vertical section of the moistener shown in Fig. 4 and showing a portion of the liquid font;

Fig. 6 is a section taken on the line 6—6 of Fig. 5 looking in the direction indicated by the arrows, and

Fig. 7 is a section on the line 7—7 of Fig. 5 looking in the direction indicated by the arrows.

In Fig. 1 of the drawing there is shown an embodiment of the invention, by way of example, which is designed and adapted to condition or moisten the film of adhesive substance or gum on the inside of the flaps of envelopes as they are fed one at a time in order that the envelopes may be sealed. In this figure there is shown a magazine 10 for containing a multiplicity of empty and unsealed envelopes 11 in stacked formation, the magazine 10 being open at the top so that the envelopes may be advanced one at a time for receiving the intended contents whereupon the envelopes are advanced toward the moistener which is disposed at the discharge end of the magazine 10. After the film of adhesive on the flap of each envelope is moistened, the envelope passes to a sealing means 12 including cooperative pressure rollers 13 and 14 which exert pressure on opposite sides of the envelope. The flap of the envelope in passing between the rollers 13 and 14 is forced down in contact with the body of the envelope and is thus secured in closed position to seal the envelope.

In accordance with the invention, the moistener includes a water font or bottle 15 having a rubber gasket 16 on its lower outlet end. The outlet end of the font is received in a socket 17 formed on one end of a water distributing tube or applicator 18 so that the tube or applicator will be in communication with the font 15 and project radially with respect thereto. The gasket 16 provides a liquid-tight joint of the outlet end of the font with the socket 17. The tube 18 is tapered and ovoidal in cross section and has a very narrow longitudinal slit 19 of capillary size therein and a series of fine discharge holes 20 also of capillary size on either side of the slit 19. The font 15 is in an inverted position so that the water therein will flow into the tube 18. An air inlet tube 21 has one end thereof disposed exteriorly of the tube 18 and extends within the tube 18 and upwardly into the outlet end of the font 15, as shown most clearly in Figs. 2 and 3. A control member 22 is pivotally mounted on the tube 18 as at 23. The member 22 is of channel construction and has arranged between the side flanges thereof a rubber stopper 24 disposed to move into and out of engagement with the inlet end 25 of the tube 21 in response to the movement of the member 22. The member 22 is under the influence of a spring 26 which has a normal tendency to move the member 22 in a closing position to hold the stopper 24 in engagement with the inlet end 25 to close the latter under normal conditions. Under normal conditions the water will partly fill the tube 18, the level of the water being coincident with the mouth provided by the gasket 16 and the outlet end of the font, thus forming a seal and maintaining the level of the water as indicated until some of it is withdrawn through the slit 19 and holes 20 in a moistening operation.

The moistening operation is as follows. The flap of each envelope is partly raised by suitable means and as the envelope is advanced the flap will pass in contact with the upper surface of the tube 18 and the adhesive substance on the flap

will take up or be smeared with water passing out of the slit 19 and the holes 20. The flap of the envelope may then be secured to the body of the envelope to effectually seal the latter. This, as stated, is accomplished by the rollers 13 and 14 or equivalent means as the envelope is advanced. As the envelope is being advanced with respect to the tube 18 the leading edge of the body of the envelope will encounter the lower end of the control member 22 and swing the same upwardly on its pivot 23, thereby removing the stopper 24 and permitting a quantity of air to enter the tube 21 through the inlet end 25. The air in the form of a bubble will pass upwardly through the water in the font 15, allowing outflow of water from the font 15 into the tube 18 to replenish the amount withdrawn in the moistening operation. Thus a proper flow of the water is insured at all times. It is to be understood that the moistener may be mounted in a fixed position in any suitable manner with respect to the magazine 10 and the sealing means 12. When the stopper 24 closes the inlet end 25, the font will be air locked.

In Figs. 4 to 6, inclusive, there is shown a modified form of moistener. It will be apparent there is shown a tube 30 having the general formation of the tube 18 hereinabove described. The tube 30 has a socket 31 to accommodate the lower outlet end of the water font or bottle. The tube 30 has a longitudinally extending, elongated opening 32 in the upper wall thereof. A liquid or water distributor or applicator element 33 is arranged for movement in the opening 32. The element 33 is of channel formation for one half of its length and the other half is substantially tubiform to provide a narrow slit 34, and directly below the slit the element 33 has a plurality of openings 35 therein. The tube 30 has lugs 36 formed integral therewith and the element 33 has lugs 37 integral therewith and a pivot 38 extends through the lugs 36 and 37 to thus mount the element 33 for pivotal movement. A spring 39 surrounds the pivot 38 and has one end thereof in engagement with the element 33 and its opposite end in engagement with one of the lugs 36. The spring 39 constantly acts to retain the element 33 in the position shown in full lines in Fig. 5. The end having the slit 34 will be partly raised above the upper wall of the tube 30 and the other end of the element 33 will be in engagement with a partition 40 formed integral with or secured in position transversely of the tube 30. The lower edge of the partition 40 is slightly above the normal water level for a purpose to appear.

The operation of the device shown in Figs. 4 to 7, inclusive, is as follows: As each envelope is advanced with its flap partly raised, the flap will pass in contact with the slit end of the element 33, thereby depressing said end and so causing a displacement of water, the displaced quantity passing upwardly through the openings 35 through the slit 34. The adhesive substance on the flap will take up or be smeared with the water passing out of the slit 34. The flap of the envelope may then be secured to the body thereof to seal the same as will be understood. As the element 33 is depressed, the water level is momentarily raised closing off air behind the partition 40 and letting it into the font. The introduction of air into the font will allow outflow of water from the font into the tube 30 to replenish the amount withdrawn in the moistening operation. At this time the inner end of the element 33 will be raised as indicated in dotted lines, thereby admitting air through the opening 32 into the tube in front of the partition 40. When the spring 39 restores element 33 to its normal position and the water level falls, air passes behind the partition 40, thereby restoring equilibrium. When the opening 32 is closed by the element 33 the font 15 will be air locked.

From the foregoing it will be obvious that the present invention contemplates the application of liquid for the purpose mentioned by suction action of the substance being moistened which is characteristic of the device shown in Figs. 1 to 3 inclusive, and that said invention also contemplates the application of liquid by the displacement method as described in connection with the form of device shown in Figs. 4 to 7 inclusive.

I claim:

1. A device for applying suitable liquid to suitable movable material, comprising a normally air locked liquid font having a liquid applicator tube in communication therewith and projecting therefrom, and means operable by pressure exerted by said material as it moves with respect to the tube to control the flow of liquid from the font to said tube by admitting a quantity of air to the font, said tube having a capillary opening to allow the flow of liquid from the tube to the material being moistened.

2. A device for moistening the adhesive on the flaps of envelopes, comprising a normally air locked liquid font having a liquid applicator tube in communication therewith and projecting therefrom, and means operable to admit air to said font to control the flow of liquid from the font to said applicator, said means including a movable control member which is acted on by said envelopes to operate said means, said tube having a capillary opening to allow the flow of liquid from the tube to the material being moistened.

3. In a device for applying suitable liquid to suitable material, a liquid tube, a liquid applicator arranged in an opening in said tube and mounted for movement with respect thereto, to displace some of the liquid from the tube through the applicator, the latter having capillary openings for that purpose, and means operated by said applicator to admit a quantity of air to said tube above the liquid therein to control the flow of liquid to the applicator.

4. A device for moistening the adhesive on the flaps of envelopes fed successively thereto, said device comprising a normally air locked liquid font having a liquid distributing tube projecting laterally therefrom which applies a film of the liquid to the flap adhesive as each envelope is fed in the presence of the tube, said tube having an opening of capillary size for the aforesaid purpose, and means operable by each envelope to admit a quantity of air to the font to insure flow of the liquid from the font to the tube.

5. A device for moistening the adhesive on the flaps of envelopes fed successively thereto, said device including a container having a quantity of liquid therein, and a liquid applicator depressible by the flap of each envelope as it is being fed laterally, to displace sufficient liquid from the container to the applicator for applying it to the adhesive on the flap, said applicator having an opening of capillary size for the aforesaid purpose.

6. A device for applying suitable liquid to suitable material, comprising a normally air locked liquid font having a liquid tube projecting from

the lower end thereof, said tube having an opening therein, and a perforated liquid distributor arranged in said opening and mounted for movement with respect to the tube under pressure of said material as the latter moves in contact with the distributor, to displace some of the liquid from the tube through the distributor, to moisten the material, said tube having an opening of capillary size for the purpose of moistening said material, said distributor having means to admit a quantity of air to the tube above the liquid therein upon the aforesaid movement of the distributor to control the flow of liquid from the font to said tube.

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