July 25, 1939. W. H. WHEELER, JR 2,167,257

MOISTENING DEVICE

Filed April 10, 1937 2 Sheets-Sheet 1

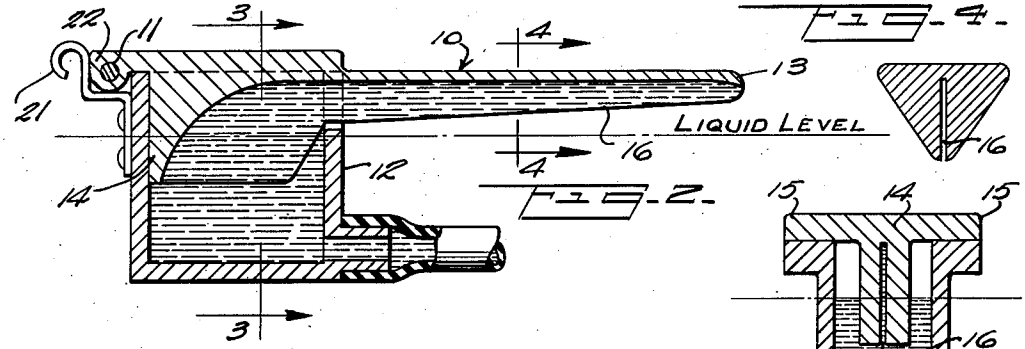


FIG. 2.

FIG. 3.

FIG. 4.

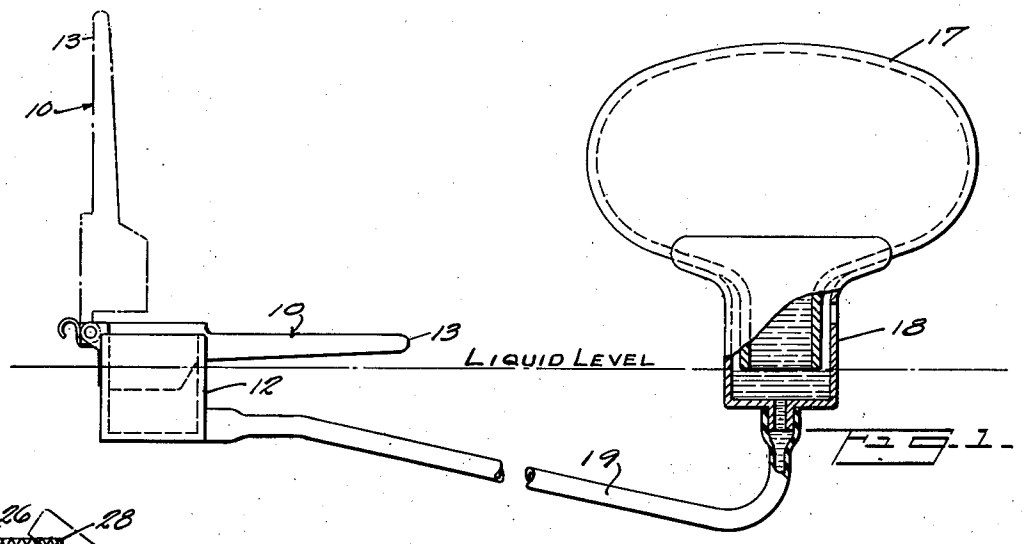


FIG. 1.

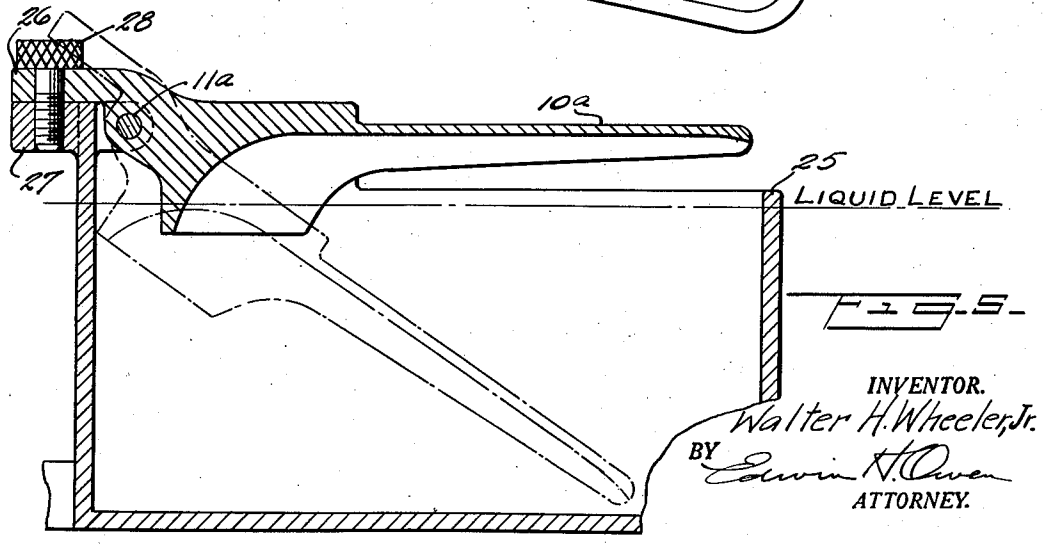


FIG. 5.

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MOISTENING DEVICE

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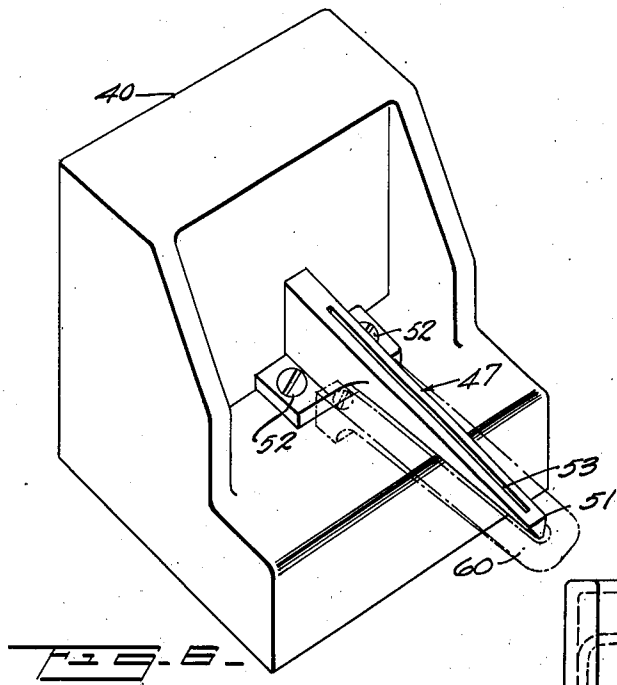


FIG. 6.

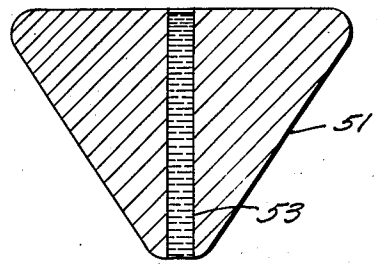


FIG. 5.

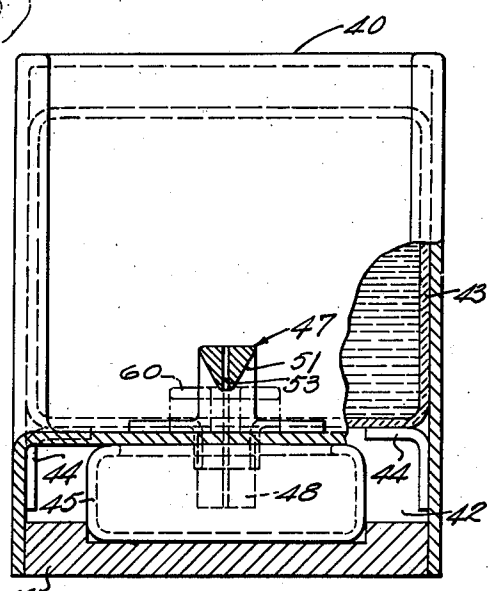


FIG. 8.

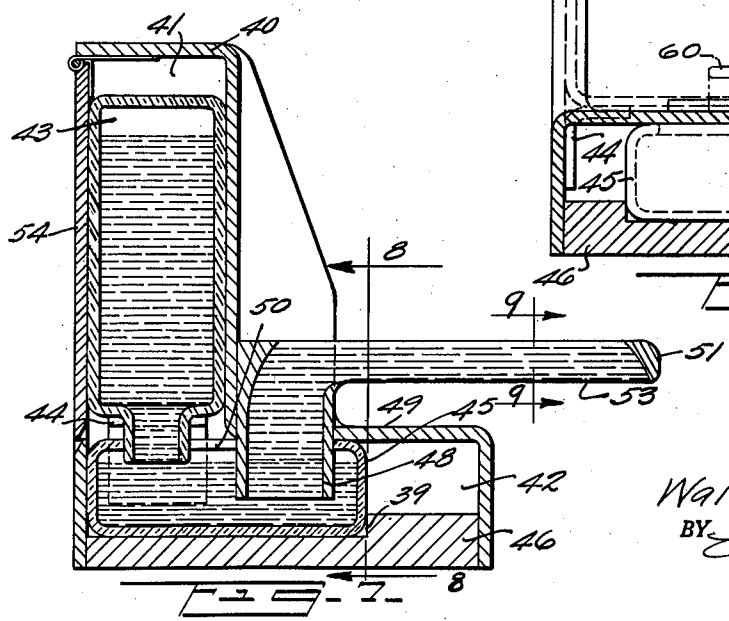


FIG. 7.

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UNITED STATES PATENT OFFICE

2,167,257

MOISTENING DEVICE

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Application April 10, 1937, Serial No. 136,054

5 Claims. (Cl. 91—43)

This invention relates to a device for moistening gummed surfaces and more particularly to a type of moistening device employing a restricted slot from which moisture may be drawn when articles, such as the gummed surfaces of envelope flaps are drawn thereacross.

In devices of this nature the practice has been to utilize a restricted slotted portion of a moistening arm or blade to provide resistance to the normal flow of liquid therethrough, the liquid supply being maintained above the level of the moistening slot.

In the present invention a liquid supply is maintained at a level below the surface of the moistening slot of a moistening blade and a restricted slot within the blade acts in the capacity of a capillary slot, in that the liquid is actually attracted to the moistening surface of the blade by capillary attraction.

It is the principal object of this invention therefore, to provide in a moistening device, means whereby liquid may be brought to the moistening surface of a moistening slot, from a liquid supply having a liquid level below the moistening slot, by capillary attraction.

It is a further object to provide means for the initial priming or the wetting of the walls of the capillary slot to thereby cause immediate capillary attraction of the attracting member.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described.

In the drawings:

Fig. 1 is a diagrammatic view on a reduced scale, showing a moistening element and a liquid feed means with part in elevation and part in section;

Fig. 2 is a longitudinal sectional view through the moistening element shown in Fig. 1;

Fig. 3 is a cross-sectional view taken along the lines 3—3 of Fig. 2;

Fig. 4 is an enlarged cross sectional view through the moistening blade taken on the lines 4—4 of Fig. 2;

Fig. 5 is a longitudinal sectional view of a moistening element and liquid container including means for submerging the moistening element within the liquid supply for the initial priming thereof;

Fig. 6 is a perspective view of a complete moistening unit which includes a liquid supply bottle and reservoir confined within a casing and a moistening finger projecting outward from said casing;

Fig. 7 is a vertical sectional view through the unit shown in Fig. 7;

Fig. 8 is a vertical sectional view taken along the lines 8—8 of Fig. 7 with part broken away; and

Fig. 9 is an enlarged cross-sectional view taken along the lines 9—9 of Fig. 7.

Referring to Fig. 2, the moistening element comprises a blade 10 which may be pivotally supported as indicated at 11 on a container or liquid reservoir 12. The blade comprises one outwardly disposed finger portion 13 and a body portion 14 which extends downwardly into the container 12. The upper surface of the body portion may be provided with two wings 15—15 which rest upon the flanged side walls of the container 12 as shown in Fig. 3 when the blade is in its normal moistening position.

A capillary slot 16 is cut longitudinally through the blade starting from the base of the body portion 14 and continuing through the finger 13, as best shown in Fig. 2, said slot being of a restricted width, as for example about twelve thousandths (.012) of an inch. The lowermost portion of the slot 16, which extends within the container, will comprise the liquid intake portion while the lowermost portion of the slot in the finger 13 will comprise the discharge portion.

Liquid is supplied to the container 12 from a main source of supply, such as for example from a tank or bottle 17, which is arranged so that the neck thereof is suspended within a cup 18 in the manner shown in Fig. 1, to provide a normal water level at the position indicated by the dot and dash line. When the liquid supply is to be placed at a position remote from the container 12, a suitable hose or pipe connection 19 may be used to connect the cup 18 with the container 12. The level maintained at the neck of the bottle 17, will also be maintained within the container 12.

When the blade is in the position shown in Fig. 1 and the liquid level is maintained in the position indicated by the dot and dash line, the lower end of the body portion 14 is submerged within the liquid. As a result of the capillary slot, the said liquid will be attracted to that portion of the slot 16 which normally lies above the liquid level. The liquid first rises vertically within the slot portion directly above the container then will be attracted sidewardly. By running a strip of paper through the slot until it meets the liquid above the container, the liquid

may be quickly drawn into the finger portion of the blade.

When the slot is completely filled with liquid there will be a film of liquid at the lower or discharge surface of the slot, and upon drawing the gummed surface of tape material for example or the flap of an envelope across the said slot, sufficient liquid will be drawn off to adequately moisten the gummed surface and render same adhesive for the purpose of sealing.

It may be desirable to clean the moistening surface of the capillary slot occasionally if foreign particles and gum should coagulate and adhere to the moistening end of the blade or finger 13 around or across the moistening slot 16. To permit access to the blade for the purpose of cleaning the slot, the said blade may be rocked about its fulcrum 11 to the upright position indicated by the dot and dash lines of Fig. 1. While in this position the slot may be cleaned by means of a thin metal blade or the like.

Means is also provided whereby the blade 10 may be retained in either an upright or a normal moistening position. Said means comprises a flat spring member 21, which has one end secured to the outer wall of the container 12, and is formed to provide a right angled channel for the reception of a squared end 22 at the pivotal end of the blade.

When the moistening device is to be set up for use, or when the liquid has evaporated and the moistening slot is dry, the capillary attraction of the slot in the moistening blade will respond more quickly if the walls of the slot are first moistened. By inserting and drawing a thin wet blade or wick through the slot when the blade is in the raised position as shown in Fig. 2, the walls of the slot may be easily moistened.

Another method of providing for the pre-moistening or priming of the capillary slot, is disclosed in Fig. 5. Here, the structure comprises a container 25 which extends beyond the end of the blade 10*a*, the blade being pivotally mounted on one wall of the container as indicated at 11*a*. A lug 26, extending beyond the rearward end of the blade, is adapted to be clamped to a flanged portion 27 of the container wall by means of a screw 28 when the blade is in a normal moistening position. When however, it is desired to prime or moisten the walls of the capillary slot, the screw 28 is removed and the blade is permitted to drop downwardly into the tank to the dot and dash line position of Fig. 5. The said blade need only remain in this submerged position momentarily, then it is withdrawn to its normal moistening position in a fully primed condition, and after the screw 28 is replaced, the device is ready for a moistening operation.

In Fig. 6, a moistening device is disclosed which contains in one compact unit, a liquid supply, liquid reservoir or container, and a moistening blade, especially constructed for use as a small desk model or the like.

Referring to Fig. 7, the device comprises a casing 40 which is provided with a rear compartment 41 and a lower compartment 42. A liquid supply bottle 43 is suspended, neck down in the rear compartment on suitable supporting lugs 44 and is adapted to empty its liquid content into a container or reservoir 45 positioned therebeneath. A solid metal base 46 is suitably secured within the lower compartment 42 to provide substantial weight for the proper balance of the device and is also adapted to provide a pocket 39 for the support for the container 45.

The liquid supply bottle 43, upon being filled, will be placed in the compartment 41 through a suitable door 54 neck down, and the liquid will flow into the container 45 until the level reaches the opening in the neck of the bottle, which level will be constantly maintained so long as there is liquid within the supply bottle.

A moistening blade 47, has a downwardly extending intake portion 48 projecting through an opening 50 in the platform 49 of the casing 40, also into the liquid within the container 45, and has a moistening finger portion 51 projecting forwardly of said container. Said blade is also preferably rigidly fixed to the platform as for example, by means of screws 52, and has a longitudinal capillary slot 53 cut therein which preferably extends through both the upper and the lower surfaces of the blade.

By cutting the slot through both the upper and lower surfaces of the blade, there is provided access to the slot from above for both the cleaning of the slot when foreign material enters same and for the initial priming of the blade. For example, by taking a thin shim or the like and passing same through the slot it can be drawn from one end to the other to clean the slot. Also by first extending said shim down through the intake portion of the blade and into the liquid in the container 45, then working the shim up and down and across the slot to wet the walls of the slot, the liquid will be attracted by the wet walls and will quickly fill the entire slot.

In Figs. 6 and 8, there is indicated in dot and dash lines a guide member 60, which may be included if desired, to guide the flap of an envelope across the moistening slot and to thereby firmly support the gummed surface of the flap against the moistening slot. Similar guides may also be included with the structures shown in Figs. 2 and 5.

From the foregoing, it will be seen that a novel means for supplying liquid to a moistening blade has been provided which utilizes the principle of capillary attraction, and that by means of the method disclosed, a constant and even supply of moisture is produced. Through the principle of capillary attraction, the liquid is attracted upward from a level below the moistening surface of the moistening blade, then fills the slot area over the moistening surface. Since the slot is of such restricted dimension it will support the liquid therein, and while the said liquid will reach the moistening surface by gravity it will not pass beyond said surface. The surface tension of the liquid at the lower end of the slot together with the adhesion of the water to the walls of the slot, will normally maintain a film of liquid at the moistening surface.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit thereof and it is therefore desired that the present embodiment be considered as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

What is claimed is:

1. A moistening device comprising a liquid reservoir, a liquid supply means including a bottle positioned over said reservoir neck down to provide a constant level liquid supply to said reservoir, a casing to enclose said reservoir and bottle, and a moistening blade having a capillary slot therein including a moistening finger projecting outwardly from the casing and a body

portion projecting through said casing and submerged within the liquid in said reservoir.

2. A moistening device comprising a liquid reservoir, a liquid supply means positioned over said reservoir and adapted to provide a constant level liquid supply to said reservoir, a casing to enclose said reservoir and liquid supply means, and a moistening blade having a longitudinal capillary slot therethrough and secured to and projecting outside of said casing with a portion of said blade projecting through said casing and submerged within the liquid in said reservoir.

3. In a moistening device, a reservoir, a moistening blade extending sidewardly from said reservoir and having a restricted capillary slot therein including an intake and a discharge portion along the lower surface thereof, a source of liquid supply within said reservoir having a liquid level positioned below the discharge opening, the intake portion of said blade being submerged within the liquid supply to permit the liquid to enter said intake portion of the slot, said slot being further arranged so that liquid will be attracted upward and sideward across the sidewardly extending portion of the blade, to provide a continuous supply of moisture at the discharge opening along the lower surface of the blade for the moistening of articles which are wiped thereacross.

4. In a moistening device, a liquid reservoir having a liquid supply therein, a moistening member including a blade having a moistening surface extending sidewardly from said reservoir, said moistening member and blade having a slot of capillary size extending inward from the lower surface thereof with the lowermost portion of the moistening member positioned within the liquid supply in said reservoir, whereby liquid will be drawn upward through said restricted slot and directed sidewardly by capillary attraction to provide a continuous film at the moistening surface of the sidewardly extended portion of the blade.

5. The combination with a liquid reservoir and liquid supply including means to maintain a constant liquid level in said reservoir; of a moistener blade projecting sidewardly from said reservoir, said blade having a capillary slot therein including an intake portion which is in contact with the liquid supply and a discharge portion continuing from said intake portion and extending sidewardly along the blade, whereby the liquid is directed from the reservoir to the moistening surface of said sidewardly disposed discharge slot.

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