United States Patent [19]

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[11] **3,862,616**

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[54] **DISPENSING UNIT FOR MOISTENING MATERIAL**

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[21] Appl. No.: **150,851**

Related U.S. Application Data

[63] Continuation of Ser. No. 787,149, Dec. 26, 1968, abandoned.

[52] **U.S. Cl.** **118/6,** 118/315, 118/325

[51] **Int. Cl.** **B05c 5/00**

[58] **Field of Search** 118/7, 8, 9, 325, 43, 235, 118/315, 411, 42, 6

[56] **References Cited**

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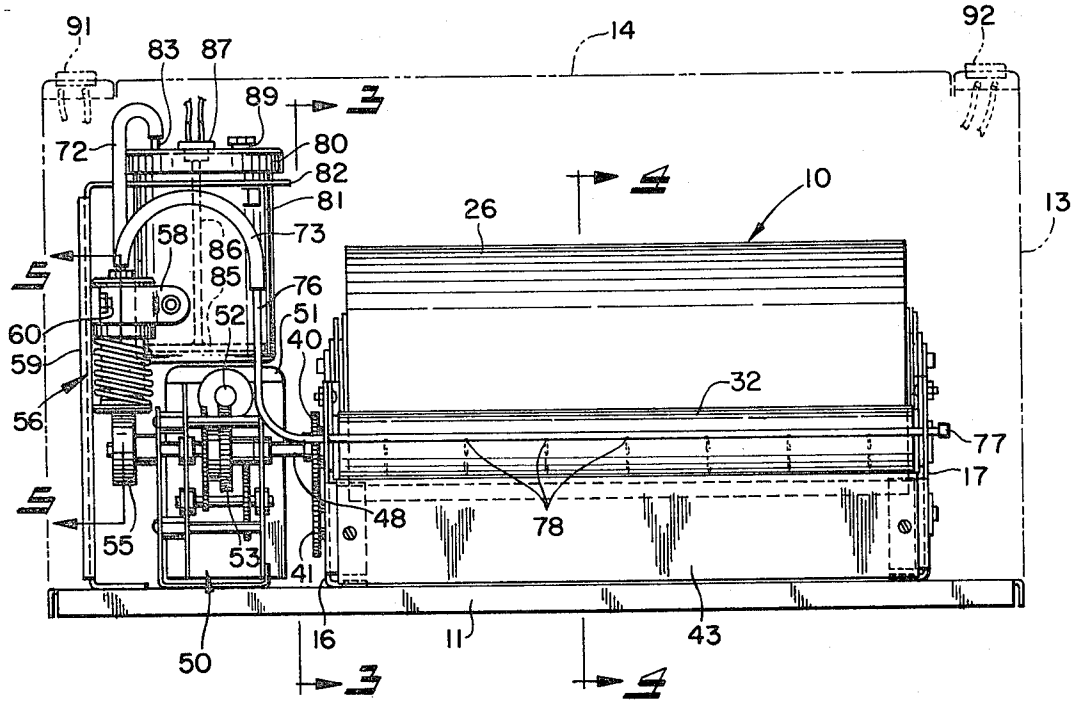
Primary Examiner—John P. McIntosh

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[57] **ABSTRACT**

A dispenser and method for dispensing cleaning materials which includes a roll of web material, a drive unit for automatically paying a predetermined amount of such material from the dispenser, such dispenser including a liquid applicator operative to apply a predetermined amount of liquid evenly distributed to the web paying from the dispenser.

6 Claims, 8 Drawing Figures



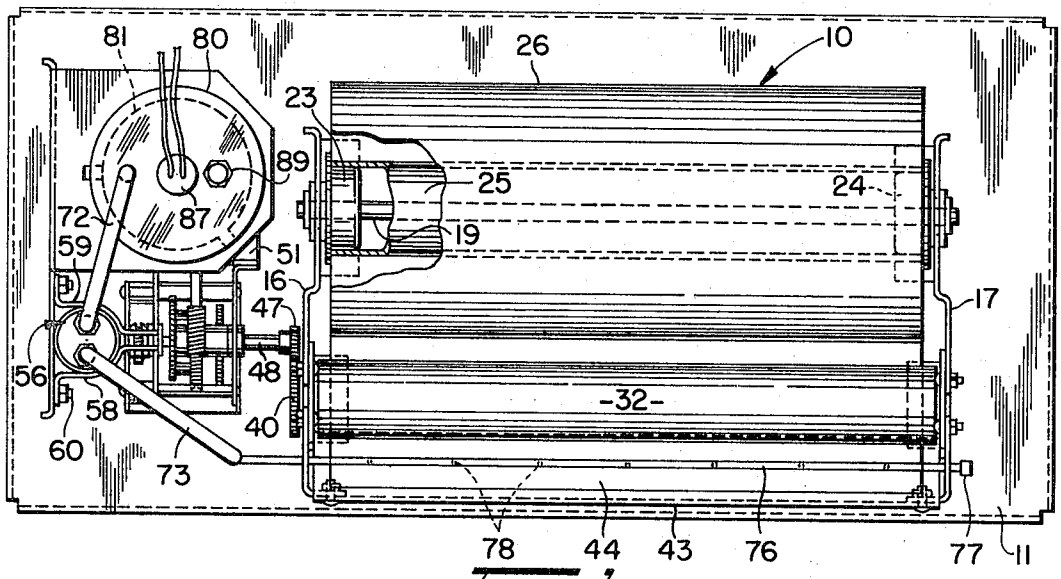


Fig. 1

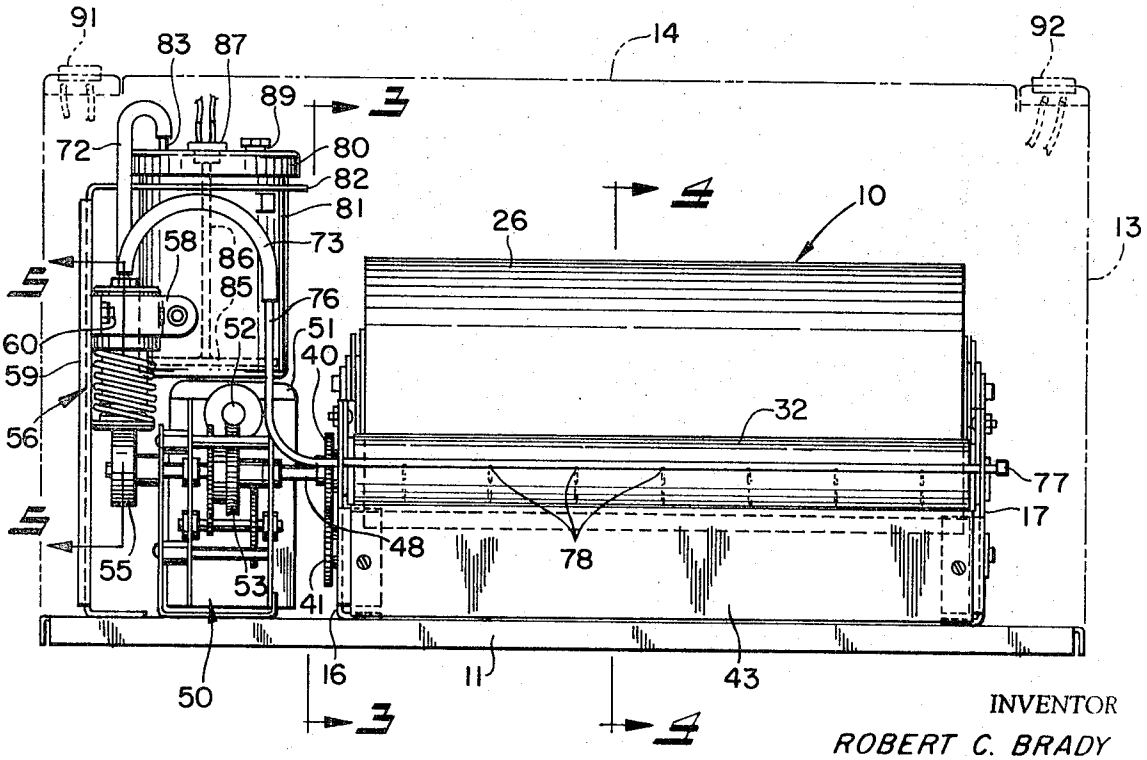


Fig. 2

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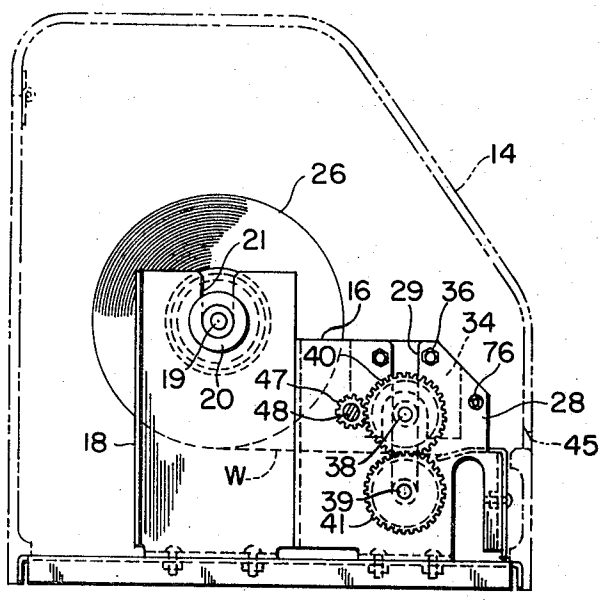


Fig. 3

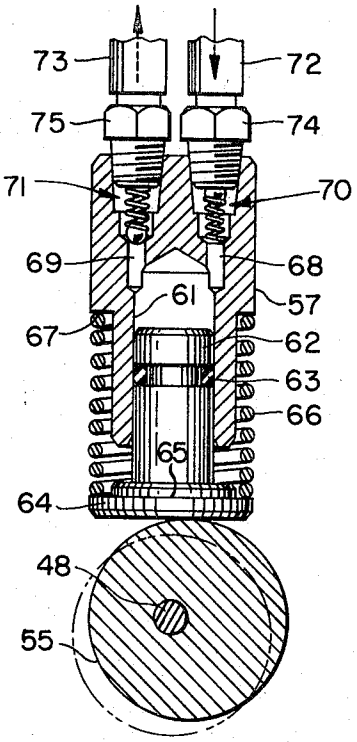


Fig. 5

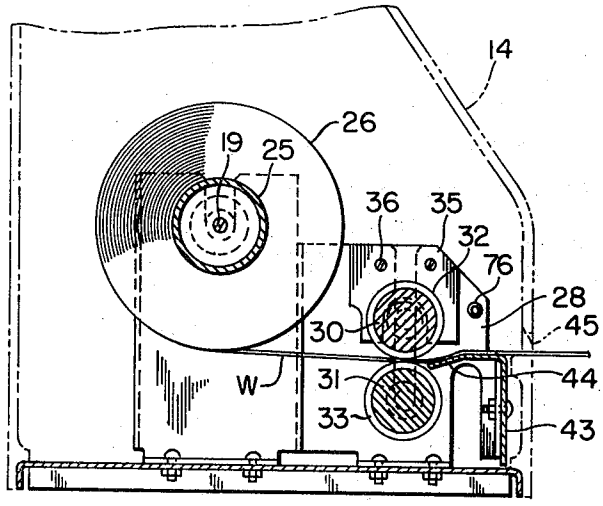


Fig. 4

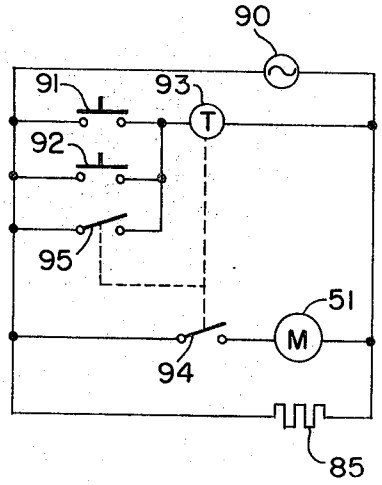


Fig. 6

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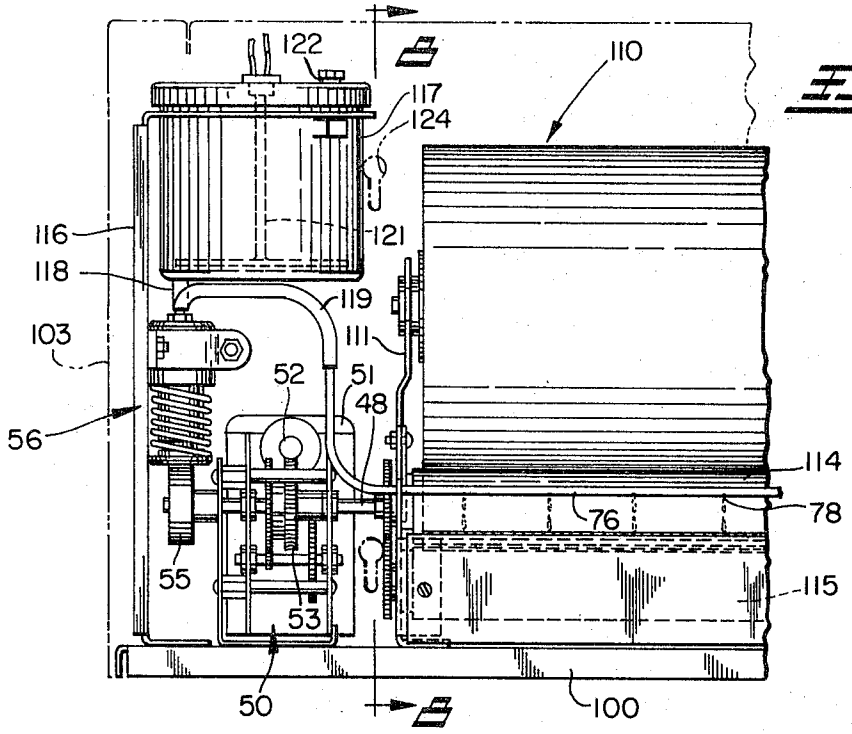


Fig. 7

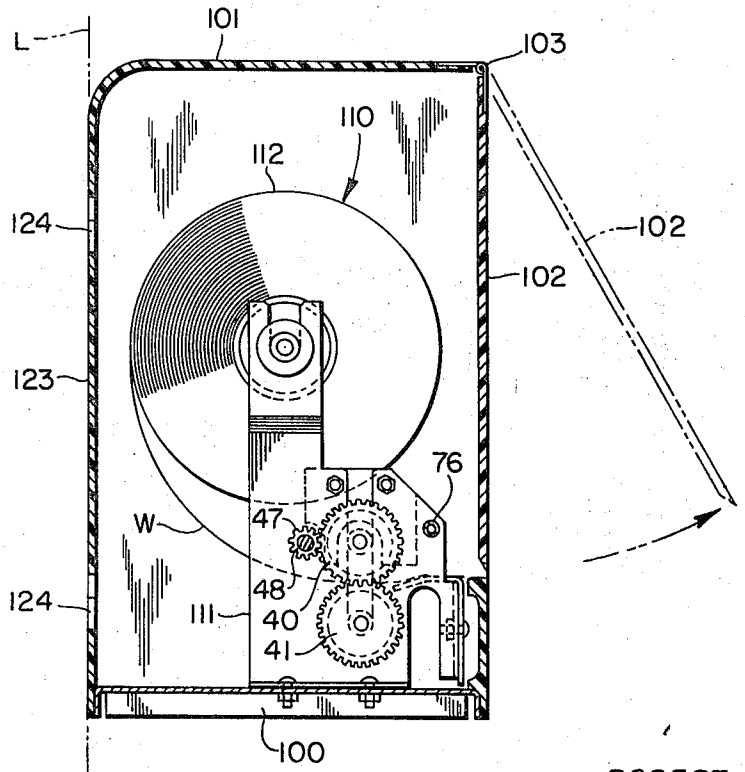


Fig. 8

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DISPENSING UNIT FOR MOISTENING MATERIAL

This application is a continuation of Ser. No. 787,149, filed Dec. 26, 1968, now abandoned.

This invention relates generally, as indicated, to a cleaning material dispensing unit and more particularly to a dispenser for web cleaning materials such as paper, cloth or synthetic fiber towels, toilet paper, napkins and like web material.

Efforts have been made to provide a dispenser which would moisten paper or toweling such as shown, for example, in Winzer U.S. Pat. No. 2,443,971 dated June 22, 1948. One of the major difficulties in prior such web dispensers is the problem of controlling the amount and distribution of the liquid to the web material. Where the material is dipped through a reservoir, too much liquid is usually applied making the material obtained therefrom oftentimes unusable. Not only does the proper amount of liquid per area of web material require to be applied, but the liquid should be applied in a proper predetermined fashion or distribution over the area of the web material so that the latter does not lose its strength and will not disintegrate during use. Use of web material with too much liquid therein will require a subsequent drying operation.

Medicants or cleaning agents are often applied to web materials which require moisture for activation. If a web material containing such is passed through a reservoir of water, for example, most of the material in the web may be washed out or dissolved and the wet web may then lose its effectiveness. Again only with a predetermined amount of liquid in a predetermined distribution can such pre-impregnated webs be utilized to their best efficiency.

A principal object of the present invention is therefore the provision of a dispenser for web type cleaning materials which will apply a liquid thereto in a predetermined amount with a predetermined distribution.

A further object is the provision of a cleaning material dispensing unit which includes drive means for automatically paying a measured amount of such material from the unit and a positive displacement pump driven by the drive means in synchronism therewith to apply a measured amount of liquid to the material as it is dispensed.

Yet another object is the provision of such unit wherein the liquid is uniformly distributed over the area of the material.

A still further object is the provision of a cleaning material dispensing unit which can be mounted in a convenient manner on a table or wall quickly and conveniently to dispense a predetermined amount of web cleaning material having liquid evenly applied thereto in a measured quantity.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

In said annexed drawings:

FIG. 1 is a top plan view of a table top or stand unit in accordance with the present invention, partially broken away and in section, with the appearance cover removed;

FIG. 2 is a front elevation of the unit seen in FIG. 1;

FIG. 3 is a vertical section of the unit taken substantially on the line 3—3 of FIG. 2;

FIG. 4 is a fragmentary vertical section of such unit taken substantially on the line 4—4 of FIG. 2;

FIG. 5 is an enlarged vertical section of the pump of the unit taken substantially on the line 5—5 of FIG. 2;

FIG. 6 is a schematic electrical control diagram of the unit;

FIG. 7 is a view similar to FIG. 2 of a further embodiment of the present invention; and

FIG. 8 is a fragmentary vertical section taken substantially on the line 8—8 of FIG. 7.

Referring now more particularly to such drawings and to the embodiment of FIGS. 1 through 5, it will be seen that the dispensing unit shown generally at 10 may include a base 11 and be enclosed by an appearance housing shown in phantom lines at 13, the latter including a central hinged access door 14.

Extending upwardly from the base 11 are stanchions 16 and 17, each of which may be made in two joined units with the higher back portion 18 of each supporting the opposite ends of the shaft 19 by means of roll shaft bearings 20 supported in the lower ends of slots 21 extending from the top of the stanchion.

Situated on the shaft 19 just inwardly of the stanchions 16 and 17 are hubs 23 and 24 which may be held on the roll shaft by retaining rings, for example. The hubs 23 and 24 fit within the ends of cylindrical core 25 of a roll of web material 26 such as paper, cloth, or synthetic fiber toweling, toilet paper or other web type cleaning material.

The front portion of each stanchion includes a lower portion 28. Each such lower portion includes a relatively deeper vertical upwardly opening slot 29 in which are journalled two feed rollers 30 and 31. Such feed rollers may have solid cores with laterally projecting pins on which are mounted bearings supporting such rollers in the slots for rotation. Each roller is provided with a cover as indicated at 32 and 33, respectively, which may be of a rubber, sponge or resilient material. It has been found that an ordinary paint roller cover may be used on the feed rolls quite satisfactory. The paint roller with its nap type cover may be simply slid over the rollers 30 and 31 with a friction fit.

The top roller 30 is held in place by bearing retainers 34 and 35 which may be secured to the stanchion by suitable fasteners indicated at 36.

As seen more clearly in FIG. 3, the pins 38 and 39 on the rolls 30 and 31, respectively, projecting beyond the stanchion lower portion 28 are provided with gears 40 and 41, respectively, in mesh with each other.

Extending between the stanchions at the front of the unit is a plate 43 which includes a top shelf 44 supporting the web W as it is payed from the unit between the drive rolls 30 and 31. The lower edge indicated at 45 of the hinged central cover 14 provides an opening through which the web passes and also is sharpened and serrated to sever the web if necessary. However, the web may have spaced transverse perforations to facilitate the tearing of a predetermined length from the unit. As will hereinafter be more clearly described, the drive may be timed to dispense such predetermined length on each cycle of operation.

The drive gears 40 and 41 are driven from pinion 47 mounted on the end of drive shaft 48. Such drive shaft extends on opposite sides of and is supported by transmission 50. The transmission is in turn driven by drive motor 51, the output shaft of which includes worm 52 driving worm gear 53.

The end of the shaft 48 opposite the pinion 47 has secured thereto a cam 55 which operates positive displacement pump 56. The pump includes a generally cylindrical housing 57 which is secured by clamp 58 to upstanding bracket 59 by the fasteners indicated at 60.

The pump housing is provided with a cylindrical chamber 61 in which is fitted pump piston 62, a sliding seal being provided as indicated at 63. The piston is provided with a flat head 64 having an upwardly facing shoulder 65 thereon seating compression spring 66, the opposite end of which is seated against shoulder 67 on the housing 57.

The pump is provided with inlet and discharge passages 68 and 69, respectively, in which are situated chedk valves 70 and 71, respectively. The check valves ensure that the liquid can flow only in the direction of the arrows superimposed on hoses 72 and 73 which are connected to the valve fittings 74 and 75 threaded into the tapped ports in the housing 57. The head 64 rides against the periphery of the cam 55 and is held thereagainst by the pressure of spring 66. As the cam rotates, the piston reciprocates within the chamber positively displacing the liquid therein. On the down stroke of the piston, the liquid flows in through hose 72 and on the upstroke, out through hose 73. The displacement of the pump can be controlled by substituting different cams having different throws for the cam 55, or alternatively the pump housing 57 may be moved up and down to control the amount of liquid required.

As seen more clearly in FIGS. 1 and 2, the hose 73 is connected to copper or like metal tubing 76 which extends through stanchion 16 and across the shelf 44 and into the stanchion 17. The end of the tubing is closed with cap 77. Such tubing 76 is provided with a series of equally spaced apertures on the underside thereof as indicated at 78 through which the liquid flows onto the web W supported on the shelf 44.

The hose 72 leads to the top 80 of liquid container 81 supported on shelf 82 extending from the bracket 59. The hose is connected to a tube 83 projecting from the cap which extends to the bottom of the container 81 so that liquid will be drawn from the container bottom through the hose 72 to the pump 56. A heating element 85 near the bottom of the container is secured through vertical element 86 at 87 to the container lid. The heating element may be on continually to heat the liquid to a desired warm temperature. A fill opening 89 is provided in the lid for replenishing the container 81 when desired without requiring the lid to be removed.

Referring now more particularly to FIG. 6, it will be seen that a simplified control circuit may be provided to obtain the desired operation. Current may be supplied from a suitable alternating current source indicated at 90 although it will be appreciated that a direct current motor may be provided so that the unit may be battery operated. Start buttons 91 and 92, when closed, energize a timer 93 which immediately closes contacts 94 and 95. The contacts 95 create a holding circuit around the start buttons 91 and 92 so that the latter may be released without affecting the energization of the timer T. The closing of the contacts 94 energizes the motor 51 to drive the rolls 30 and 31 in counterclockwise and clockwise directions, respectively, as seen in FIG. 4 to pay the web from the unit. As this is happening, the shaft 48 is rotating causing the pump piston 62 to reciprocate pumping a predetermined amount of liquid from the container 81 to the dispensing tube 76 with the liquid dropping through the orifices 78 in a uniform predetermined pattern on the web W as it passes from the unit on the shelf 44.

After a predetermined time interval, the timer 93 times out opening the contacts 94 and 95, the former immediately deenergizing the motor 51. If the web is perforated, the time interval of energization of the motor 51 will be timed to place a perforation adjacent the opening in the cover 14 so that the user may simply tear a predetermined amount of the web from the unit. The rolls 30 and 31 will firmly grip the web to prevent the same from tearing between the nip of such drive rolls and the roll 26.

As seen in FIG. 6, the heater 85 is on continuously but it will be appreciated that it may be controlled from an independent thermostatic control device.

Referring to FIG. 2, it will be seen that the location of the start buttons 91 and 92 may be on top of the unit adjacent the center hinged door so that the user, with dirty hands, may energize the unit with an elbow, for example.

In the embodiment of FIGS. 7 and 8, the base 100 is somewhat more narrow while the housing 101 extending upwardly therefrom is somewhat higher. Such housing includes a front hinged door 102 with the hinge 103 being at the upper corner of the housing. In this manner, the dispensing unit may be placed in a wall recess or the like so that the hinged cover or front of the unit is substantially flush with the wall.

The dispensing unit 110 is substantially the same as the unit 10 of the FIG. 1 embodiment. Such unit includes roll stanchions indicated at 111 supporting web roll 112 with the web W being fed through the nip of feed rolls 114 and 115, the construction and drive for which may be the same as the unit 10. The gears 40 and 41 on the projecting pins of the feed rolls 114 and 115 are driven from the pinion 47 on the shaft 48 of the transmission 50 which is in turn driven by the motor 51 through the worm 52 and worm wheel 53. The cam 55 operates pump 56 which is the same construction as shown in FIG. 5. The pump is secured to bracket 116 which supports container 117 for the liquid supply. Supply line 118 is provided from the bottom of the container 117 to the pump 56 and line 119 extends from the discharge of the pump to tubing member 76 provided with the equally spaced apertures or nozzles 78 which evenly distribute the liquid onto the web material.

The container 117 is provided with heating element 121 which may be similar to the heating element 85. The container is also provided with a capped fill opening as indicated at 122.

The unit of FIGS. 7 and 8 is thus designed to be placed into a wall receptacle. The back wall 123 of the housing 101 may be provided with keyhole apertures as seen at 124 so that the unit may be hung on a wall indicated schematically at L in FIG. 8. The unit may also, of course, be inserted into a cabinet such as a medicine cabinet.

It will, of course, be appreciated that a wide range of sizes in width and diameter of the roll of web material

may be used varying, for example, from toilet paper size up to a web **18** to **24** inches wide. The material dispensed can be paper toweling, for example, or other types of toweling using synthetic fibers. The web may be impregnated with various types of solutions to fit various needs. As the web is dispensed, the droplets of liquid may activate the impregnated solution to make it work and do its designed cleaning job. The hot or warm water added to the web in the measured quantity and evenly distributed provides a cleaning material which should not normally require a further drying step.

The toweling, for example, may be impregnated with various types and degrees of cleaning agents. It may, for example, be heavily impregnated with a pumice or like cleaning agent for the removal of grease, useful in garages, gas stations, factories, and the like. A light soapy impregnation may be employed for home use, children, babies, etc. A medium soapy grade may be used in commercial offices or restaurants while a heavy soapy grade would be used in industrial shops. A medicated impregnation may, of course, be used in hospitals by nurses, doctors, dentists, and the like. In some cases, the impregnated toweling may be activated with a solution other than water. The toweling may be manufactured in a variety of colors and scented with various aromas.

The power source for the dispenser may be a **110** or **12** volt power source, the latter for use in vehicles, travel trailers, buses, airplanes, or may include battery power for campers or outdoor use.

In lieu of the reciprocating pump illustrated, it will be appreciated that a vane or other type pump may be employed in conjunction with a flow control.

It can now be seen that there is provided a cleaning dispenser wherein the predetermined quantity of web material is dispensed from the unit and has simultaneously applied thereto a measured amount of liquid which is evenly distributed over the web material.

Other modes of applying the principles of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I, therefore, particularly point out and distinctly claim as my invention:

1. A cleaning material web dispensing unit comprising a supply of cleaning material web, drive means including a pair of powered drive rollers through which such web passes operative to dispense such web from such unit in a predetermined direction, liquid applicator means located adjacent said web and spaced in said predetermined direction from said drive rollers and including a plurality of transversely spaced dispensing apertures operative to apply a measured amount of liquid to such web in a uniform predetermined pattern of droplets as it is dispensed, and liquid supply means for supplying liquid to said applicator means and including a pump which is driven by said drive means in successive discharge and intake strokes as said web is dispensed from said unit and moves past said applicator means; whereby liquid is intermittently supplied to said applicator means by said pump and liquid is intermittently applied to said web by said applicator means after said web passes through said drive rollers and said liquid is applied to said web in a substantially uniformly distributed predetermined pattern at transversely and longitudinally spaced locations.

2. A unit as set forth in claim **1** wherein said liquid supply means includes a liquid reservoir and said pump has a cylinder, piston, and check valves, said check valves being operative to obtain unidirectional flow through said pump from said reservoir to said applicator means.

3. A unit as set forth in claim **1** wherein said pump includes a reciprocating piston driven by cam means operatively associated with said drive means, said piston being spring biased against said cam means to maintain operative contact between the same.

4. A unit as set forth in claim **1** including timer means operative to control the duration of energization of said drive means thus to dispense a measured amount of such material web from said unit when said drive means is energized through said timer means.

5. A unit as set forth in claim **1** including means operative to heat such liquid.

6. A unit as set forth in claim **1** wherein such material web includes an impregnated agent adapted to react with such liquid to obtain a cleansing action.

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