Feb. 13, 1951 R. R. LEMMON 2,541,591

LIQUID APPLICATOR FOP PAPER SHEETS

Filed Nov. 8, 1949

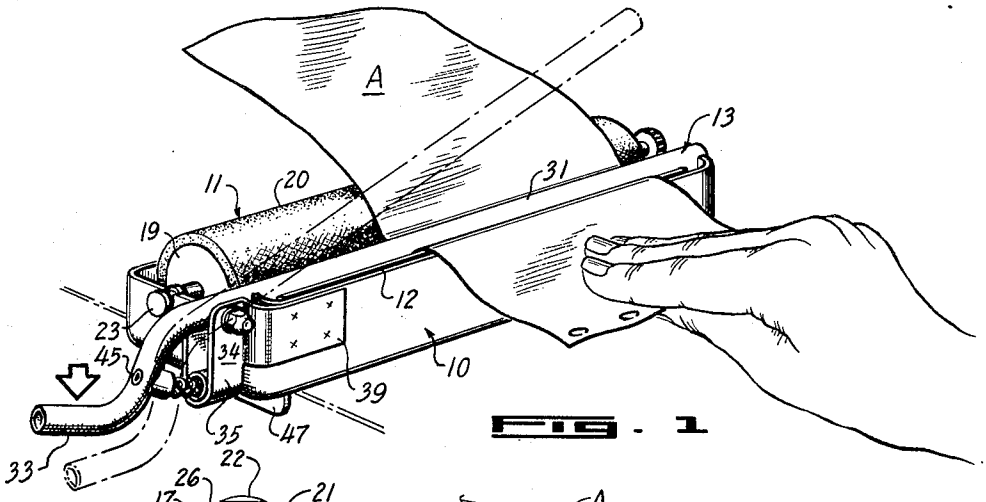


FIG. 1

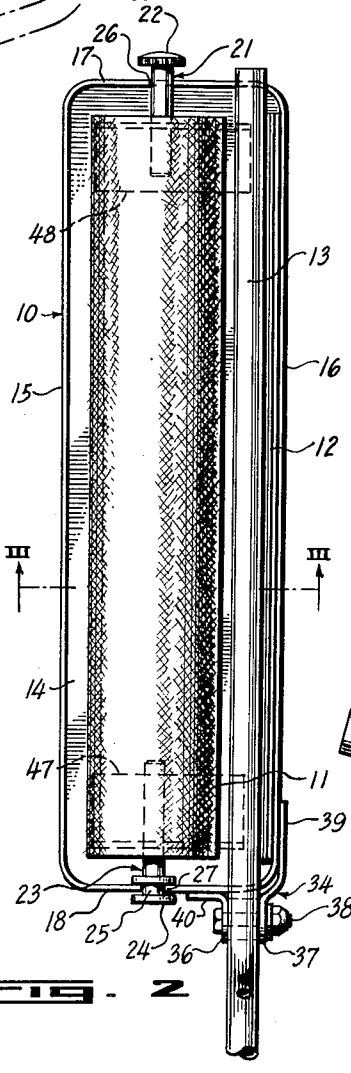


FIG. 2

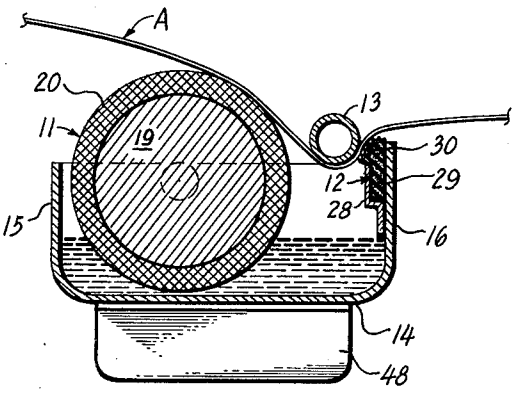


FIG. 3

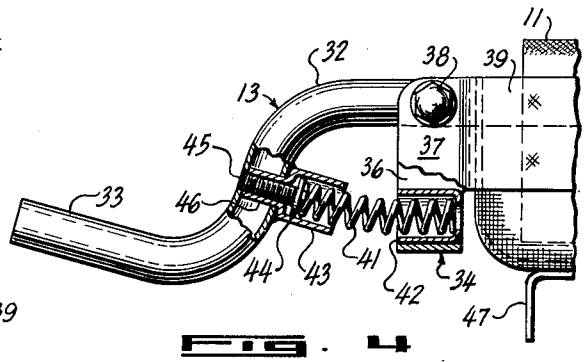


FIG. 4

INVENTOR.

Robert R. Lemmon

BY

Glenn Dorf Gelcoch

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LIQUID APPLICATOR FOR PAPER SHEETS

Robert R. Lemmon, San Diego, Calif., assignor to Consolidated Vultee Aircraft Corporation, San Diego, Calif., a corporation of Delaware

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5 Claims. (Cl. 91—33)

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The present invention relates generally to liquid applicators and is particularly directed to an improved device for uniformly wetting or moistening sheet stock, especially coated paper sheets serving as plates for use in off-set or lithographic reproducing equipment.

The device of the present invention is capable of use as a simple and inexpensive means of uniformly applying a liquid to one side of any flexible sheet, but it is of particular advantage in applying etching and preserving solutions to chemically treated paper sheets used as the reproducing medium in connection with lithographic processes. There are available today several types of reproducing equipment of this variety wherein chemically treated paper of the desired size is provided as a master on which information is recorded by pen, pencil, or typewriter. Before using the paper master to transfer the recorded data to the off-set roll of the reproducing machine, it is necessary to moisten the coated side of the paper with an etching solution. The moistened master is then run through the reproducing equipment transferring the written material to the off-set roll from which it is used to produce copies.

After the desired number of copies are obtained, it is necessary to remove the paper master and again moisten the coated face with a preserving solution in order to maintain it for further use or to alter or add other data to it.

Reproducing equipment of this type is particularly useful in connection with operations where it is desired to make a relatively high number of copies such as in material or production control systems. In such instances, a large number of the paper plates or masters are ordinarily handled and the facilitation of each manual operation by even a small amount may account for considerable time savings. Heretofore, it has been necessary or conventional to moisten the paper plates either with etching or preservative solution by means of a sponge and an open receptacle. This is not only a cumbersome and disorderly operation, but it is difficult for the operator to determine whether the entire surface of the paper master has been uniformly covered with the liquid, and very often a portion of the plate is left dry causing the reproduction or preservation to be imperfect and often necessitating that a new master be prepared.

The device of the present invention comprises an applicator roller supported on a liquid receptacle, a wiper strip over which the sheet is passed after contacting the applicator roller, and a

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pressure bar adapted to press the sheet into contact against the wiper strip. The pressure bar is provided with means for manually raising it from contact with the wiper strip to facilitate insertion of the dry sheet into the machine.

The device of the present invention while simple and inexpensive in character, positively provides a uniform coating of liquid to the underside of the paper master and by eliminating the conventional manual sponging operation affects a time saving result and provides a clean and convenient means of accomplishing the operation.

The principal object of the invention is to provide a simple and efficient means of uniformly wetting or moistening one surface of a sheet material.

A further object of the invention is to provide a means of uniformly applying a liquid to one side of a sheet whereby the hands and clothes of the operator are maintained free from contact with the liquid, and whereby the latter is conveniently stored in such a manner that its spillage or contact with the surrounding surfaces is prevented.

Still another object of the invention is to provide a simple and inexpensive device of the class described comprising essentially a liquid container having an open upper surface, an applicator roll supported on the upper surface of the container and adapted to have its lower contour in contact with the liquid, a wiper strip mounted on the top of the container parallel to and spaced from the roller, and a pressure rod resiliently supported on one end of the wiper strip whereby a sheet may be fed over the wetted roll and quickly disposed between the wiper strip and the pressure member to facilitate the operation of passing the sheet through the mechanism to uniformly moisten its lower surface.

Other objects and advantages of the present invention will be apparent from the following specifications and by reference to the drawings which form a part hereof. Corresponding parts throughout the several views are indicated by like numerals of reference.

In the drawings,

Fig. 1 is a perspective of a device embodying the present invention indicating its operation and the method of facilitating the feeding of sheets through it,

Fig. 2 is a plan view of the device,

Fig. 3 is a vertical section on lines III—III of Fig. 2, and

Fig. 4 is an enlarged detail of the means for

quickly disengaging the pressure bar from the wiper means to permit rapid insertion of the sheet material in the device.

The liquid applicator shown in the drawing constitutes a preferred embodiment of the invention and comprises essentially a generally rectangular open liquid receptacle or trough 10, an applicator roll 11 supported across the upper edge of the trough 10 and being adapted to contact liquid held in the trough 10, a wiper strip 12 supported along one edge of the trough 10 parallel to the roll 11, and a pressure bar 13 pivotally and resiliently supported on one end of the trough 10 in such a manner that in its operative position it contacts the wiper strip 12.

The device is intended for use with a flexible sheet A which is passed over the applicator roll 11 to moisten its lower surface, and between the wiper strip 12 and the pressure bar 13. The latter elements uniformly distribute the liquid over the surface of the sheet A, and remove any surplus therefrom. The action of the pressure bar 13 against the dry side of the sheet A tends to curl the latter with its moistened side outermost, which conforms it generally to the curvature of the off-set roll of the lithographic equipment and facilitates its attachment thereto.

The open-faced trough 10 is preferably a stamping or drawing defined by a bottom portion 14, a pair of opposed transverse side portions 15 and 16 and a pair of ends 17 and 18. The trough 10 may be formed of aluminum, plastic, or other material having non-corrosive properties or may be enameled or otherwise prepared to resist the corrosive effect of the contained liquid.

The applicator roll 11 is of suitable length to fit between the ends 17 and 18 and is formed of a cylindrical core 19 around which is secured an absorbent cover 20 which may be of cotton or flannel cloth or the like. One end of the roll 11 is provided with a pintle 21 having a knurled knob 22, and to the other end is secured a pintle 23 having an enlarged outer head portion 24 in which is machined an annular groove 25. An open notch 26 in the end 17 and a similar notch 27 in the end 18 serve as bearings for the pintles 21 and 23 respectively when the applicator roll 11 is supported upon the liquid trough 10. The diameter of the applicator roll 11 is such that the outer surface of the absorbent cover 20 is spaced slightly above the bottom portion 14 and somewhat away from the transverse side portion 15 when in position. The applicator roll 11 is positioned in the trough 10 with the annular groove 25 of the pintle 23 disposed within the notch 27 in the end 18, thus preventing any considerable end play of the applicator roll 11 during rotation.

The wiper strip 12 is secured along the upper edge of the side portion 16 parallel to the applicator roll 11 and consists of a flanged supporting bracket 28 adapted to be spot welded or otherwise secured to the side portion 16 and to form a transverse channel in which is disposed a wiper 29 which may be formed of sponge rubber or felt and have an enlarged upper edge 30 serving as an absorbent face for contacting the lower side of the sheet A to moisten the entering edge and distribute the liquid uniformly.

The pressure bar 13 is adapted to press against the upper edge 30 of the wiper 29 when in its operative position in order to exert a uniform transverse pressure against the sheet A when it is inserted and drawn between the two elements.

The pressure bar 13 preferably consists of a tubular member having a straight portion 31 of approximately the length of the trough 10 and having the other end 32 extending beyond the trough end 18 and being bent downwardly and outwardly to form an extended handle portion 33 for manually raising the pressure bar 13.

The pressure bar 13 is adapted to be pivotally supported from the end 18 of the trough 10 by means of a bracket 34. The bracket 34 consists of a U-shaped depending portion 35 having opposed flanges 36 and 37 between which the end 32 of the pressure bar 13 is pivotally supported by means of a transverse bolt 38 passing through aligned holes in the flanges 36 and 37 and the corresponding portion of the end 32. The bracket 34 is mounted upon and secured to the trough 10 as by welding or riveting and by means of a laterally extending flanged portion 39 adapted to fit against the outer face of the side 16 of the trough 10, and a flange 40 adapted to mate against the end 18 thereof. It will thus be seen that the pressure bar 13 may be pivoted to engage the wiper strip 12 and to be raised to separate it therefrom into the position shown in broken lines in Fig. 1.

The pressure bar 13 is adapted to be resiliently held against the wiper blade 12 by means of a compression spring 41 disposed between a cup-shaped member 42 secured between the flanges 36 and 37 of the bracket 34, and a tubular cup 43 welded or otherwise secured to the downwardly bent portion of the end 32 of the pressure bar 13.

A means of adjusting the pressure of the spring 41 is provided comprising a disc 44 fitted within the cup 43 and a set screw 45 accommodated in a threaded extension 46 of the cup 43 so that its lower end bears against the disc 44. It will be obvious that the pressure exerted by the spring 41 between the pressure bar 13 and the cup 42 may be adjusted by rotating the set screw 45 against the disc 44.

A pair of opposed flanged brackets 47 and 48 are secured as by welding to the bottom 14 serving as legs to support the device on the working surface, or else to position it on a tray or other convenient supporting surface.

The liquid applicator of the invention is intended to be operated by first filling the trough 10 to approximately half its height with a solution of the desired liquid. The applicator roll 11 is then manually rotated by means of the knurled knob 22 to thoroughly saturate the absorbent cover 20 with the liquid. Sheets A may then be rapidly inserted in the machine by depressing the extended handle portion 33 of the pressure bar 13 to lift it from the wiper strip 12. The pressure bar 13 is then released and the sheet A is drawn over the applicator roll 11 and between the pressure bar 13 and wiper strip 12 as indicated in Fig. 1. The applicator roll 11 evenly wets or moistens the underside of the sheet A and the action between the pressure bar 13 and the wiper blade 12 serves to remove the surplus liquid and to uniformly distribute it over the entire exposed undersurface of the sheet A.

As thus described the present invention is characterized as a simple and inexpensive means of uniformly moistening or wetting one side of a flexible sheet comprising a liquid receptacle, an applicator roll supported thereby and adapted to have its lower surface contact and absorb liquid disposed within the receptacle, a wiper strip secured along an opposed edge of the receptacle parallel to the applicator roll, and a pressure bar resiliently supported to engage the upper side of the sheet when fed over the wiper strip 12 and

being adapted to be manually raised or lifted from engagement with the wiper strip to facilitate insertion of sheets into the machine.

While the foregoing description has been directed to the detailed construction of the form of device illustrated in the drawings, it will be obvious to those skilled in the art that certain modifications may be employed without departing from the spirit of the invention and the scope of the following claims.

Having described my invention I claim as new and desire to secure by Letters Patent:

1. A liquid applicator for moistening sheets comprising a rectangular liquid receptacle, an applicator roll supported between the ends of said receptacle adapted to contact liquid therein and to engage one side of said sheet, a wiper strip supported on said receptacle adjacent to said roll adapted to contact the moistened face of said sheet, and a pressure bar pivotally mounted on one end of said receptacle to have an operative position contacting said wiper strip and an inoperative position spaced from said wiper strip, resilient means urging said pressure bar into its operative position, adjusting means for varying the force of said resilient means, and handle means to move said pressure bar into its inoperative position.

2. In a device of the class described, a trough adapted to contain a liquid, an applicator roll supported on said trough to engage said liquid whereby a sheet may be moistened by contacting said roll, a wiper strip supported adjacent said roll adapted to contact said moistened sheet, an elongated pressure bar pivotally supported adjacent one end of said wiper strip normally adapted to press said sheet against said wiper strip, resilient means urging said pressure bar against said wiper strip, adjusting means for varying the pressure of said resilient means, and a handle associated with said pressure bar for moving the unsupported end of said pressure bar away from said wiper strip.

3. A liquid applicator for moistening sheets comprising a trough adapted to contain a liquid, an applicator roll supported between the ends of said trough adapted to contact the liquid therein and to engage one side of said sheet, a wiper strip supported on said trough adjacent to said roll adapted to contact the moistened face of said sheet, and an elongated pressure bar pivotally mounted intermediate its ends on one side of said trough, one end of said pressure bar having an operative position contacting said wiper strip and an inoperative position spaced from said wiper strip and the other end thereof comprising an extended handle for moving said pressure bar.

4. A liquid applicator for moistening sheets comprising a trough adapted to contain a liquid, an applicator roll supported between the ends of said trough adapted to contact liquid therein and to engage one side of said sheet, a wiper strip supported on said trough adjacent to said roll adapted to contact the moistened face of said sheet, and an elongated pressure bar pivotally mounted intermediate its ends on one side of said trough, one end of said pressure bar having an operative position contacting said wiper strip and an inoperative position spaced from said wiper strip and the other end thereof comprising an extended handle for moving said pressure bar, and pressure means urging said pressure bar into its operative position.

5. A liquid applicator for moistening sheets comprising a trough adapted to contain a liquid, an applicator roll supported between the ends of said trough adapted to contact the liquid therein and to engage one side of said sheet, a wiper strip supported on said trough adjacent to said roll adapted to contact the moistened face of said sheet, and an elongated pressure bar pivotally mounted intermediate its ends on one side of said trough, one end of said pressure bar having an operative position contacting said wiper strip and an inoperative position spaced from said wiper strip and the other end thereof comprising an extended handle for moving said pressure bar, and resilient means urging said pressure bar into its operative position.

ROBERT R. LEMMON.

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