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MOISTENING DEVICE FOR OFFSET PRINTING MACHINES AND THE LIKE

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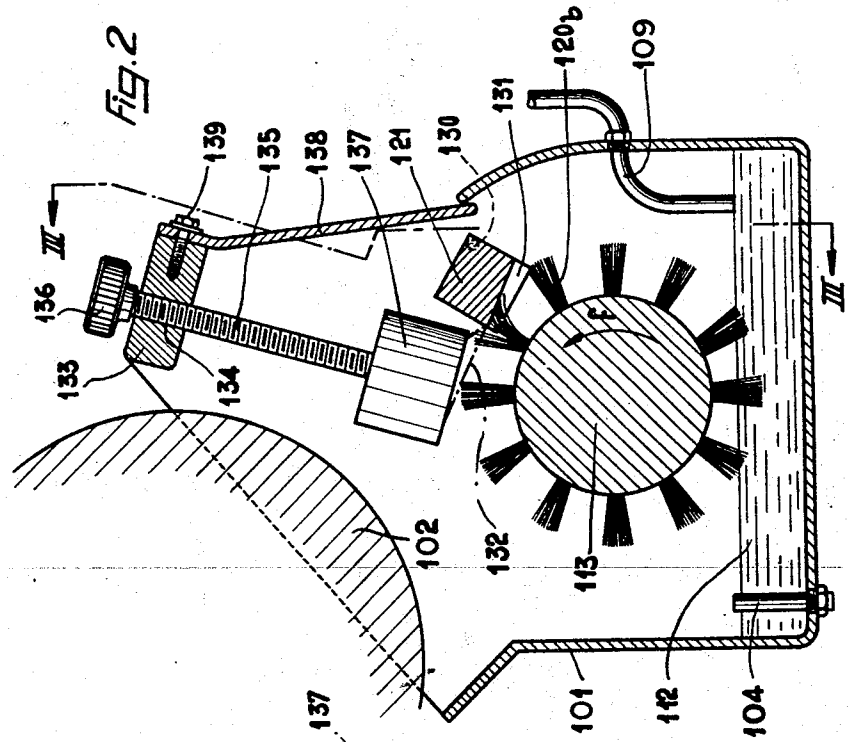

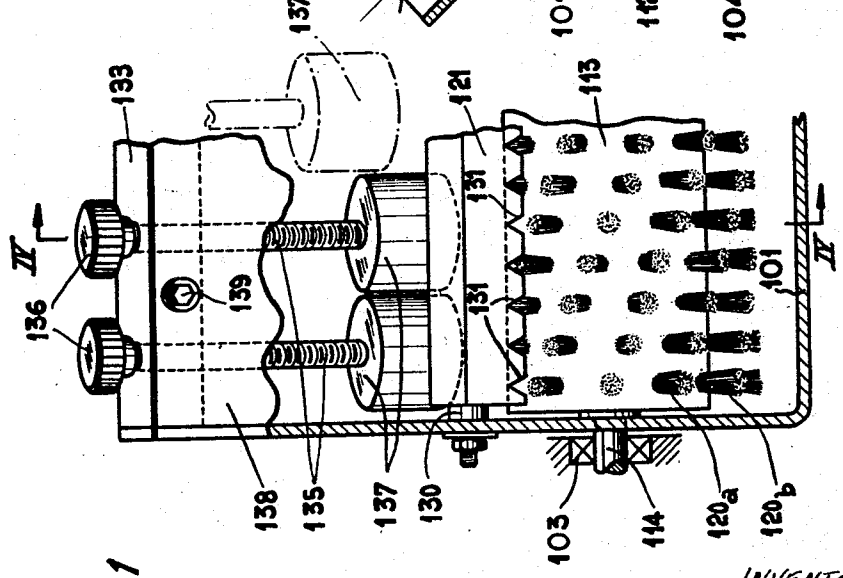

Fig. 1

INVENTOR
Maurice Ch. Clare
By
Watson, Cole, Grindle & Watson
ATTORNEYS

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MOISTENING DEVICE FOR OFFSET PRINTING MACHINES AND THE LIKE

Maurice Ch. Clare, 1 Rue Hubert Grison, Thiverny, Oise, France

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5 Claims. (Cl. 239—220)

It is known that in offset printing machines the printing action depends on ink transfer from a plate carried by a roller and including both printing surfaces, adapted to have ink retained thereon but to repel water, and non-printing surfaces, which repel the ink but have a hydrophilic, i.e. water-absorbent, character, to a print-receiving surface. In operation, a certain amount of water has to be supplied to the plate.

The most widely used moistening device for this purpose includes a felt-lined roller adapted to oscillate between on the one side, a revolving roller having a bottom portion dipping into a moistening tank and, on the other side, a set of rollers associated with the plate. This set of rollers generally includes two felt-lined rollers in tangential relation to the plate and so-called "moistening table" roller contacting both said last-mentioned rollers and arranged to contact the oscillating roller at periodic intervals.

This conventional moistening device has a number of drawbacks, and in particular, it is complicated and does not permit of conveniently adjusting the degree of moistening action along the length of the path. It is known, in this connection, that less water should be supplied to the non-printing portions than to the printing portions of the plate.

The object of this present invention is to provide a moistening or wetting device, especially though not exclusively for printing machines of the kind specified above, which device essentially comprises a revolving brush the bristles of which are adapted to be charged with water, as by immersion or dipping into an appropriate tank, and a member arranged to cause a gradual bending of the bristles of the brush followed by a sudden straightening thereof so as to discharge a spray of fine droplets of the impregnating liquid.

This spray may be discharged either directly against the plate or against a wetting roller or against a wetting table. As a further alternative, the spray might even be discharged against an intermediate roller, preferably felt-lined, contacting the wetting table.

The degree of moistening as thus produced can very conveniently be adjusted in any of various ways, for instance by varying the speed of rotation of the brush, or by varying the degree of bending to which the bristles are subjected or again by controlling the amount of space presented for discharge of the spray jet. In connection with this latter method, such space may be modified in a non-uniform manner along the length of the plate so as accurately to correlate the amounts of water spray discharged with the surface areas of the printing and non-printing surfaces.

The ensuing description made with reference to the accompanying drawings, given by way of example but not of limitation, will provide a clear understanding of the manner in which the invention can be carried into practice (it being understood that the features standing out from the drawing and the text form a part of the invention.

Fig. 1 is a partial view, in elevation and in section

on line III—III of Fig. 2, of a modification of the moistening device;

Fig. 2 is a section on line IV—IV of Fig. 1.

In the illustrated embodiment of the invention, there is provided a tank **101** of elongated form mounted parallel to the cylinder **102** to be moistened on the frame **103** of the machine. The tank is filled with an overflow pipe **104** and with an inlet fitting **109** for maintaining a constant level of liquid therein as supplied from an overhead reservoir not shown.

The brush **113** secured on the shaft **114** is adapted to be rotated in the direction shown by arrow *f* in Fig. 2. The bristles **120** of the brush **113** are distributed in annular arrays **120***a*. In this example each annular array includes a number of tufts **120***b* uniformly spaced around the periphery of the brush. The annular arrays of tufts are axially equispaced and are angularly offset as from each array to the next so that the tufts are positioned along a number of parallel, long-pitch, helices.

The deflector member **121** extending parallel to the axis of the brush comprises a bar with flat sides, e.g. square in cross section, mounted in the sides of the tank **101** by way of eccentric trunnions **130** so that the bar can be moved to a variable extent into the path of travel of the tufts **120***b* when the brush is revolving and to retract it away from said path of travel in an idle condition. The member **121**, in that portion of it which is arranged to be brought into the path of the tufts **120***b*, is formed with notches **131** registering with each of the annular tuft arrays **120***a*, the sides of each notch converging in the direction of movement of the bristles.

In the exemplary embodiment being described, the notches **131** are triangular in cross section, but they might assume other forms, e.g. semi-circular. The notches **131** are formed obliquely in the flat side of the member **121** so that the cross section of the notch will gradually decrease as the tufts **120***b* advance.

The embodiment just described operates as follows. As the brush is rotated in the direction shown by arrow *f*, the tufts of bristles dip into the body **112** of water or other liquid contained in the tank and pick up liquid therefrom. If the deflector member **121** is in the position shown in Fig. 2, the tufts become gradually bent down in the notches **131** and, as the bristles are suddenly released and stand proud in moving out of the notches, they discharge the water droplets with which they were charged in a fanlike spray **132** (Fig. 2) against the surface to be moistened.

Due to the gradually decreasing width of the notches the ends of the tufts are constricted every time the tufts move through a notch, thereby averting an undesirable flaring-out of the tufts with repeated use, a condition that would eventually impair the water-absorbing capacity of the brush.

As in the first embodiment described, the degree of wetting can be adjusted all along the brush **113** by the provision of movable obstacles disposed in front of the deflector member **121**. For this purpose, a bar **133** is mounted between the end flanges of the tank **101** parallel to the brush and above it. The bar **133** is formed with threaded holes **134** in which threaded rods **135** are engaged having knurled knobs **136** on their upper ends and cylindrical members or heads **137** on their lower ends. In the present example, such cylindrical heads or plugs substantially correspond in diameter with the combined width of three consecutive tufts. The heads **137** are provided all along the length of the brush and are closely-spaced, all but tangent to one another. By operating the knobs **136** selected portions of the fan-like spray jet can be masked off.

The bar **133** further advantageously serves to secure a flap **138**, made e.g. of transparent plastic material,

whereby the upper part of the tank can be sealed. The flap **138** is secured to the bar **103** by way of screws **139**.

It will be understood that various modifications may be made in the forms of embodiment illustrated and described, as by replacing certain components thereof by functionally equivalent ones, without exceeding the scope of the present invention.

What I claim is:

1. A moistening device, especially for offset printing machines, comprising in combination, an elongated tank containing a body of liquid, a brush comprising a cylindrical body having resilient bristles arranged in a plurality of annular arrays distributed along the length of said body, means for supporting said brush with its axis horizontal above said tank at such a distance of said body of liquid that said brush dips in said liquid, means for rotating said brush about said axis, an elongated bristle deflecting member extending parallel to said axis and a portion of which is adapted to be interposed in the circumferential path of travel of said bristles, said portion of said deflecting member being provided with a plurality of notches each registering with one of the said annular arrays, the width dimensions of said notches decreasing in the direction of relative displacement of the bristles, whereby the bristles of each array are subjected to a lateral constricting action during their movement past the deflecting member.

2. A moistening device as claimed in claim 1, wherein the said notches are formed in a flat face of said deflecting member, the depth of said notches decreasing in the sense of relative displacement of said bristles.

3. A moistening device as claimed in claim 1, wherein said arrays are constituted by tufts regularly arranged about the axis of said brush, the diameter of the end of said tufts being less than the maximal width of said notches.

4. A moistening device as claimed in claim 1 further comprising a support parallel to the axis of said brush and a plurality of obstacles movably supported by said support, said obstacles being adapted to be selectively brought behind said deflecting member with respect of the direction of rotation of said brush whereby the effective volume of liquid delivered by said brush may be varied along the length of said brush.

5. A moistening device as claimed in claim 4 wherein said obstacles are provided by cylindrical heads mounted on said supporting member by means of adjustable screw rods.

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