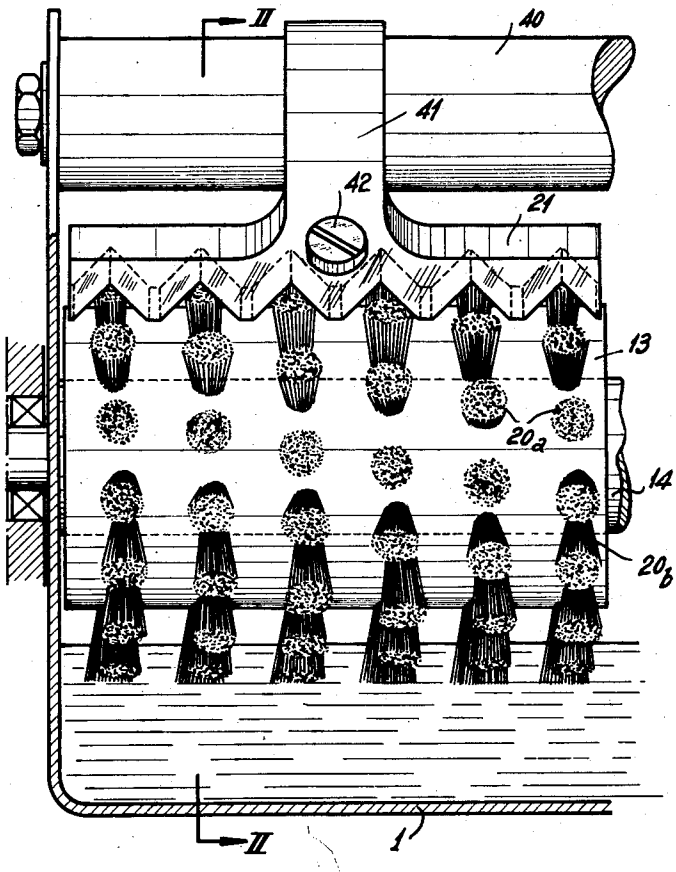
May 30, 1961 M. CH. CLARE 2,986,337

MOISTENING DEVICE FOR OFFSET PRINTING MACHINES AND THE LIKE

Filed Dec. 16, 1960 3 Sheets-Sheet 1

Fig. 1



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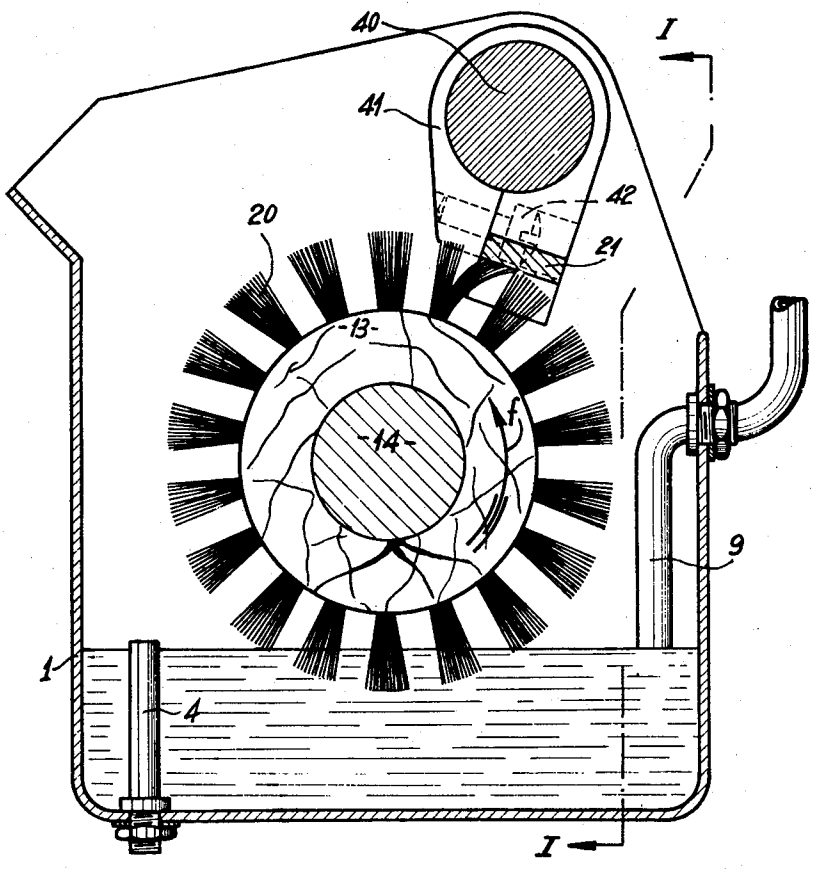
Watson, Cole, Grindle & Watson
ATTORNEYS

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Fig. 2



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Fig. 4

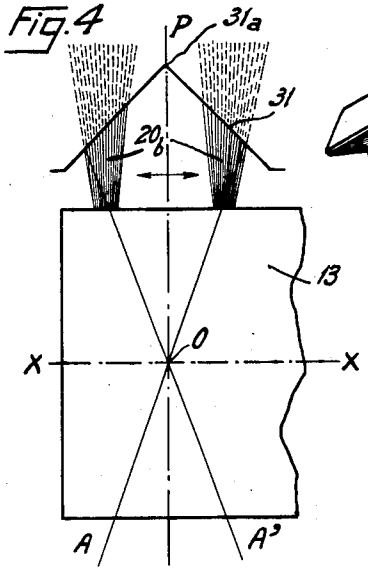


Fig. 3

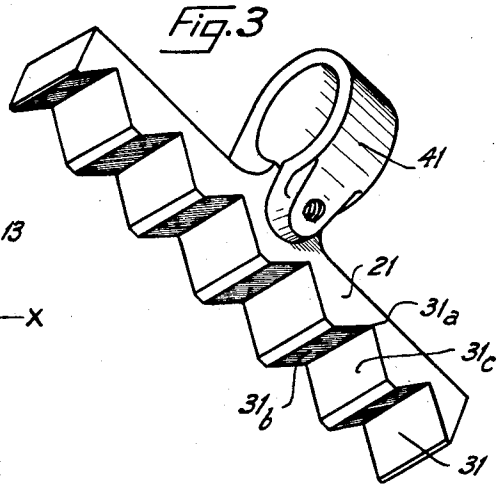


Fig. 5

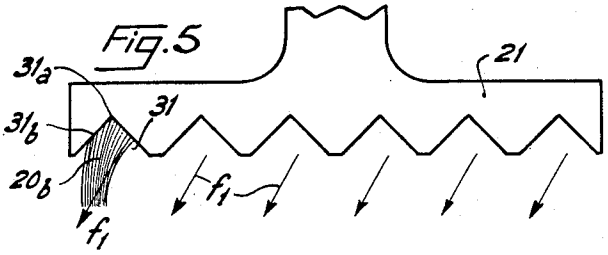


Fig. 6

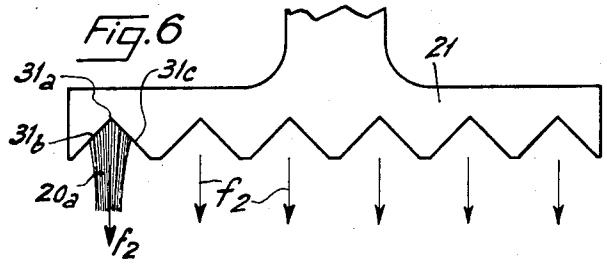
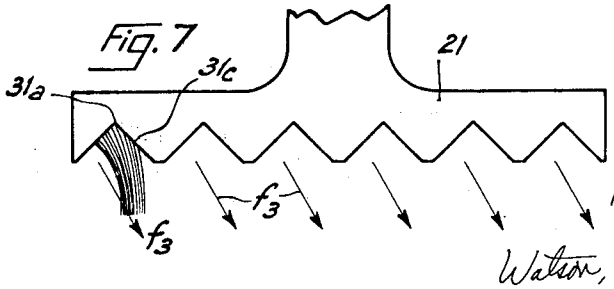


Fig. 7



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United States Patent Office 2,986,337 Patented May 30, 1961

2,986,337

MOISTENING DEVICE FOR OFFSET PRINTING MACHINES AND THE LIKE

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Filed Dec. 16, 1960, Ser. No. 76,208

Claims priority, application France Dec. 22, 1959

5 Claims. (Cl. 239—220)

My United States patent specification No. 2,954,933 relates to a moistening device for printing machines consisting essentially of a brush revolving above a liquid tank, in such manner that the bristles of the said brush are periodically immersed in the said liquid. Associated with the said brush is a deflector or baffle member interposed in the path of the ends of the brush bristles in such manner as to cause them to bend progressively, whereafter they suddenly stand proud with the result that the liquid retained by the bristles is projected in fine droplets on the surface to be moistened.

In order that a moistening device of this kind may operate correctly, it is necessary that the bristles should remain close together.

In fact, the said bristles retain the water which they pick up from the tank for spraying purposes above all due to the effect of the capillary ducts formed between them and if, in particular, the bristles of the brush flare out and become tangled, the capacity of the moistening device decreases to a considerable extent.

In order to prevent this flaring-out of the bristles and to ensure an optimum and constant capacity of the moistening device, I have proposed in my above mentioned United States specification No. 2,954,933 to distribute the bristles of the brush in annular arrays which may be continuous or discontinuous and which are spaced along the axis of the brush, and to provide on the deflecting member notches having converging walls and respectively disposed opposite each one of the annular arrays and directed perpendicularly with respect to the axis of the brush.

Thus, the various tufts of bristles are progressively constricted during their passage through the notches and this prevents the bristles from flaring out under the bending effect to which they are subjected.

The present invention relates to improvements in the moistening devices of the type described hereinabove and it makes it possible, whilst retaining the advantages of the arrangement just discussed, to obtain a balance in the projection which ensures very much more regular moistening.

The said improvement consists essentially in disposing in each annular array of bristles corresponding to each of the notches formed in the deflector member, tufts which are arranged in such manner that the said tufts are progressively offset on either side of the plane perpendicular to the axis of the brush extending through the centre of the notch. In particular, the line of insertion of the tufts may be located in planes which are preferably parallel or substantially parallel to each other and which are slightly inclined relatively to a plane perpendicular to the axis of the brush, each of the notches in the deflector member being naturally sufficiently large to ensure that the various tufts of bristles constituting the corresponding annular array are obliged to pass through it when the brush revolves.

In this manner, the various bristles constituting each annular array are bent more or less obliquely and stand

proud in the same way, depending on the position which they occupy relatively to the median plane of the annular array perpendicular to the axis of the brush and, consequently, the spray jet corresponding to each annular array of bristles undergoes a periodic variation in orientation in the sense of the length of the brush.

Thus, the surface to be moistened is sprayed by an oscillating spray jet and the moistening action is much more regular.

The invention is illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a part view of a moistening device according to the present invention, shown in section along I—I of Figure 2;

Figure 2 is a section along the line II—II of Figure 1;

Figure 3 is a perspective view of an element of a deflector member;

Figure 4 is a diagrammatic view showing the relative arrangement of an annular array of bristles and of a notch in a deflector member, and

Figures 5, 6 and 7 are partial diagrammatic views illustrating the operation of the moistening device.

In the embodiment illustrated in the drawings, the main members of the moistening device described in the above mentioned patent specification are shown again, i.e. an elongated tank **1** provided with an overflow **4** and fed with liquid, at constant level, through a tube **9**.

The brush **13**, mounted on a shaft **14** the speed of rotation of which may be varied, rotates in the direction of the arrow *f* (Figure 2).

The bristles **20** of the brush are distributed in equidistant annular arrays **20***a*, each annular array consisting of a series of tufts **20***b* regularly distributed around the periphery of the brush and angularly offset from one annular array to the other in such manner as to be disposed in accordance with parallel large-pitch helices (Figure 1).

The brush is advantageously constituted by segments which are appropriately secured end to end on the shaft **14**, a single one of the said segments being illustrated in Figure 1.

Instead of the planes of insertion of the various annular arrays of bristles **20***a* being orientated perpendicularly with respect to the axis of the brush, they are inclined relatively to a plane perpendicular to the said axis and, preferably, parallel or substantially parallel to each other (Figure 1).

The deflector member **21** is here constituted by segments of strips the length of which corresponds to that of the segments of the brush and which is secured on a shaft or a cross-member **40** by means of a split collar **41** secured by a screw **42**. In this way, it is possible to regulate individually and collectively the position of the various segments of strips relatively to the brush. Collective regulation is obtained by rotating the shaft **40** so as to cause the deflector member to project to a greater or lesser degree into the path of the bristles, whereas by offsetting to a greater or lesser degree the segments of the strips about the said shaft (individual regulation), it is possible to vary the quantity of liquid sprayed in accordance with the length of the brush.

Each segment of a strip **21** comprises as many notches **31** as there are annular arrays of bristles on the segment of the brush with which it is associated.

The section of these notches **31** is preferably that of an isosceles triangle the base of which is longer, measured in the direction of the axis of the brush, than the portion of space over which sweep the bristles of the corresponding annular array during a revolution of the brush.

Naturally, in operation, the strip is suffiiciently near to the brush for the bristles of the latter to be bent and

then subsequently allowed to stand proud, as described in the parent patent.

Figure 4 shows, extremely diagrammatically, the brush **13** having an axis X—X, and also the lines A and A′ corresponding to the outermost positions, perpendicular to the plane of the figure, of a median plane of insertion of an annular array of bristles, these positions being symmetrical relatively to the plane P perpendicular to the axis XX′ and extending through the centre O of the annular array.

The corresponding notch **31** of the strip **21** is disposed, relatively to the brush, in such manner that its apex **31***a* is contained in the plane P.

When the brush rotates, with the strip remaining stationary, the tufts of the bristles **20***b* contacting the strip are disposed between the outermost positions indicated by the lines A, A′ and are more or less spaced from the plane P depending on the position which they occupy in the annular array of bristles.

There thus results a periodic balancing of the jet of droplets projected by the bristles in accordance with the process which will be more easily understood with reference to Figures 5 to 7.

Referring to Figure 5, the tuft **20***b* disposed furthest towards the left of the annular array of bristles corresponding to the figure is on the point of passing through the notch **31** in the strip **21**.

Whilst passing through in this way, the bristles, or at least the greater part of the bristles of this tuft, bear on the left-hand face **31***b* of the notch and, consequently, the free ends of these bristles tend to be directed towards the inner apex **31***a*. The said bristles thus undergo a general deviation towards the right.

When the various bristles are freed by the notch, they therefore tend to stand proud obliquely from the right towards the left and the projected jet, leaving the notch, is also directed obliquely towards the left in the direction of the arrows f_1.

This inclination of the projection is all the more pronounced in proportion as the tuft of bristles is spaced further from the median plane P mentioned hereinabove, or in other words, starting from the position illustrated in Figure 5, during the following quarter of a revolution of the brush, the inclination of the projection jet diminishes until the tuft of bristles the axis of which is located in the plane P is deflected by the strip.

In this case, which is illustrated in Figure 6, half of the bristles bear on the face **31***b* of the notch and the other half bears on the face **31***c* to the right in the figure. The tuft of bristles is symmetrically deformed and is erected in the same way. Under these circumstances, the jet is orientated, on the average, in the plane perpendicular to the axis of the brush in accordance with the arrows f_2 of Figure 6.

As the brush continues its rotation, the tufts disposed to the right of the median plane P contact the notches.

As will be seen from Figure 7, relatively to that one of these ducts which is spaced furthest towards the right,

the bristles of the tuft bear for the greater part, and even in their entirety, on the right-hand face **31***c* and are deflected towards the left. They are thus re-erected, for the greater part, from the left towards the right and the projection jet is obliquely orientated towards the right, this being done the more intensively in proportion as the tuft is spaced further from the plane P. In the case of Figure 7, the average orientation of the jet is indicated by the arrows f_3.

It will therefore be clear that, due to the present improvement, whilst retaining the beneficial action of the notches in retaining the bristles parallel to each other in each tuft and without it being necessary to provide any member for mechanical control or any supplementary member, periodic balancing of the projection is achieved which, as will be easily understood, ensures improved moistening uniformity.

I claim:

1. A moistening device, especially for offset printing machines, comprising in combination a tank for liquid, a revolving brush with tufts of bristles disposed in annular arrays adapted to dip into liquid in said tank, and a bristle-deflecting member formed with notches each of which corresponds to one of said annular arrays, the tufts of bristles in each annular array being progressively offset with respect to a plane perpendicular to the axis of the brush and extending through the centre of the notch, and the notches of the deflecting member having a maximum width, at least equal to the width, measured along the axis of the brush, of the space over which each annular array of bristles sweeps during one revolution of the brush.

2. A moistening device as claimed in claim 1, wherein the peripheral annular arrays of brush bristles are disposed in planes inclined relatively to a plane perpendicular to the axis of the brush.

3. A moistening device as claimed in claim 1, wherein the peripheral annular arrays of brush bristles are disposed in planes which are parallel with each other and inclined relatively to a plane perpendicular to the axis of the brush.

4. A moistening device as claimed in claim 1, wherein the section of the notches in the deflecting member is that of an isosceles triangle, and said notches are disposed, relatively to the brush, with their inner apex in the plane perpendicular to the axis of the brush and extending through the centre of the corresponding annular array of bristles.

5. A moistening device as claimed in claim 1, wherein the deflecting member consists of segments mounted individually on a common shaft.

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