

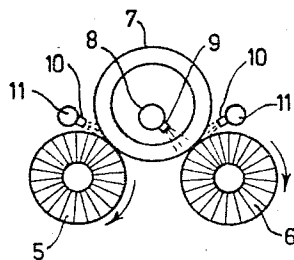
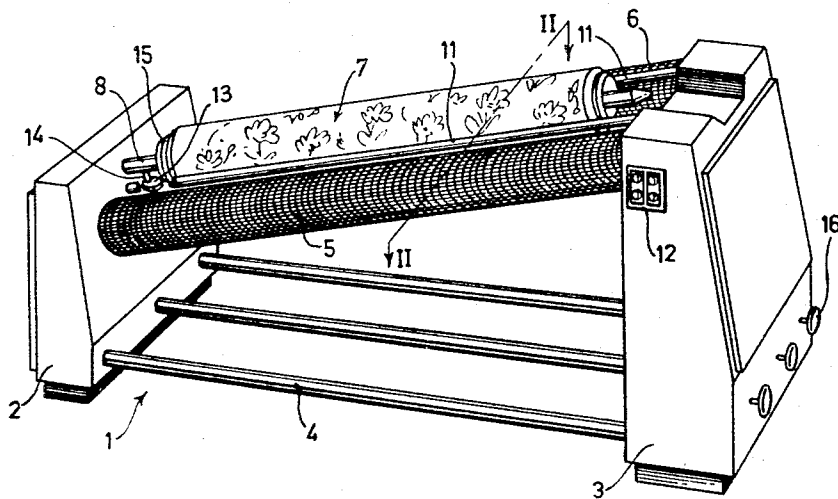
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DEVICE FOR INTERNALLY AND EXTERNALLY CLEANING A TUBULAR ARTICLE

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**DEVICE FOR INTERNALLY AND EXTERNALLY  
CLEANING A TUBULAR ARTICLE**

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3 Claims

**ABSTRACT OF THE DISCLOSURE**

A device for internally and externally cleaning a tubular article, comprising cylindrical parallel brushes for supporting said article, said brushes being driven in the same direction, but at a different rate, means being provided for reciprocating the article in axial direction, the device further comprising spraying members, located inside and outside the article for spraying a cleaning liquid against said article.

My invention relates to a device for internally and externally cleaning a tubular article, such as a cylindrical screen or stencil, comprising a central tube with lateral spraying members, the tube being mounted such that the article is capable of a sliding movement around the tube, and further comprising a number of spraying members arranged in spaced relationship from the central tube and adapted to spray the outer surface of the article.

Such a device and various embodiments thereof are known in which the article to be cleaned is supported at its ends, whereupon by means of liquid jets with or without brushes a cleansing is achieved. Such a device can only be applied when the impurities are not too adherent, unless the solidity of the article is such that the liquid jets and the brushes can exert a sufficient force.

It is an object of my invention to provide a device which allows for a thorough cleaning of rather vulnerable and limp articles, such as the above mentioned cylindrical stencils, without the forces exerted producing a deformation of the article. This object is obtained according to the invention in that at least two substantially cylindrical brushes are arranged parallel to the central tube in such a way that the article to be cleaned is supported by these brushes, while means are provided for driving the brushes at a different rate and for slightly reciprocating the article to be cleaned in axial direction.

Due to these features it becomes possible to support the article along its entire length so that the local pressure is very small and no deformation or damage can be produced. The direct contact between the outer surface of the article and the brushes ensures on the other hand an efficient cleaning. Especially in the case of cylindrical screens or stencils this is of importance when they are not cleaned immediately after having been used in a printing machine. In that case the dye mass dries to a certain extent in the extremely small holes of the stencil.

It is a further object of my invention to give the article an inclined position with respect to the horizontal so that the axial reciprocation of the article to be cleaned will be automatically obtained, without special actuating means. Due to its inclined position the article will always be in contact with a rotatable eccentric element which is driven by the rotation of the article. Owing to its eccentricity the element pushes the article to and fro in an axial direction on the support formed by the brushes which obviously enhances the cleaning effect and furthermore prevents the formation of brush marks or stripes along the circumference of the article.

The foregoing and other objects and advantages of my invention will appear in the description to follow. In the description reference is made to the accompanying drawing which forms a part hereof, and in which there is shown by way of illustration and not of limitation, a specific form in which the invention may be embodied.

In the drawing:

FIG. 1 is a perspective side elevation of the device; and FIG. 2 is a section through a part of the device taken along line II—II in FIG. 1.

As is visible in FIG. 1 the device consists of a frame 1 comprising two oppositely situated supporting boxes 2 and 3 which are interconnected by a plurality of rods 4. Mounted between the two boxes 2 and 3 are two slightly inclined parallel cylindrical brushes 5 and 6, the arrangement being such that the article 7 to be cleaned, in this case a cylindrical screen or stencil, can be supported by these brushes. Centrally located between the brushes 5 and 6 and above them but slightly spaced therefrom, a central tube 8 is secured to the box 2 and extends parallel to the brushes. This tube 8 is provided with lateral spraying members 9. The location of tube 8 is such that the article 7 to be cleaned can be placed around tube 8 and rested on brushes 5 and 6.

A number of spraying members 10 are arranged at some distance from the central tube 8. These spraying members are mounted on two tubes 11 which extend parallel to the central tube 8 between the boxes 2 and 3, the arrangement being such that the spraying members 10 can spray the outer surface of the article 7 and especially the contact area between the brushes 5, 6 on the one hand and the article 7 on the other hand.

Means are provided within the box 3 for driving the brushes 5 and 6. The drive is effected in the same direction but at a different rotational rate. At the side of the box 3 a control panel 12 is mounted with buttons for starting the drive for the brushes and for opening magnetic valves for the supply of water to the tubes 8 and 11.

Means for the axial reciprocation of the article 7 to be cleaned are disposed in the proximity of the box 2. These means consist of a ring or disc 13 which is rotatably and eccentrically supported around an axle 14 which is perpendicular to the center line of the article to be cleaned. This axle 14 is for instance secured to the central tube 8. The circumference of the ring 13 is in contact with the lowermost end 15 of the cylindrical stencil 7. In operation the article 7 will rotate and thereby drive the ring 13 so that the article is subjected to reciprocation in an axial direction. The eccentricity of the axle 14 can for instance be 15 mm. so that the length of the stroke is 30 mm.

As indicated in FIG. 2 the brushes 5 and 6 are driven in the same direction of rotation but at a different rate, for instance 75 and 100 revolutions per minute, in such a way that the article 7 is rotated while at least one of the two brushes is in frictional contact with the outer surface of the article.

Mounted on the box 3 are three hand wheels 16 by which the quantity of liquid issuing from the spraying members 9 and 10 can be adjusted.

My invention allows for a very effective cleaning of vulnerable and limp articles such as e.g., cylindrical screens or stencils without the local load on the article becoming too heavy.

It should be noted that the brushes 8 can be of slightly conical instead of cylindrical shape, provided the position of the brushes is such that the tubular article 7 is supported along at least two generatrices. It is obvious that the device may be provided with three brushes 8 if this is desirable for the purpose of cleaning or retaining the article 7.

While a preferred embodiment of the invention has

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been shown and described, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What I claim is:

1. A device for internally and externally cleaning a tubular article, comprising a central tube with lateral spraying members, the tube being mounted such that the article is capable of a sliding movement on the tube, and a number of spraying members arranged in spaced relationship from the central tube and adapted to spray the outer surface of the article, the improvement consisting in that at least two substantially cylindrical brushes are arranged parallel to the central tube such that the article to be cleaned can be supported by these brushes, and means for driving the brushes at a different rate and for slightly reciprocating the article to be cleaned in axial direction.

2. A device according to claim 1, wherein the central tube and the brushes assume an inclined position with respect to the horizontal, the means for the axial reciprocation of the article to be cleaned comprising a ring rotatably and eccentrically supported around and axle which is perpendicular to the center line of the article to be cleaned, the circumference of the ring being in contact with the lowermost end of the article.

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3. A device according to claim 2, wherein only two brushes are provided which are situated under the central tube on either side of a vertical plane through this tube, the brushes being driven in the same direction of rotation, the spraying members arranged outside the article to be cleaned being at least partially directed at the contact areas between the brushes and the article.

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