

[54] **DEVICE FOR IMPREGNATING AND DYEING WIDE TEXTILE WEBS**[75] Inventor: **Karl Peter Lopata**, Krefeld, Germany[73] Assignee: **Kleinewefers Industrie Companie GmbH**, Krefeld, Germany[22] Filed: **Nov. 20, 1972**[21] Appl. No.: **308,014**[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.**..... **68/184**, 68/19.1, 68/62, 68/175, 68/202, 118/50, 118/421[51] **Int. Cl.**... **B05c 1/10**, B05c 3/132, B05c 11/115[58] **Field of Search** 68/200, 202, 203, 175, 68/20, 43, 62, 97, 158, 5 E, 184, 19, 19.1, 181 R; 118/50, 50.1, 421; 162/297[56] **References Cited****UNITED STATES PATENTS**

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[57]

ABSTRACT

A device especially for impregnating and dyeing wide textile webs in a continuous manner, which includes a vacuum device, at least one roller and a liquor receiving container, which when being viewed in the direction of the movement of the textile web to be treated, is located behind said container, said vacuum device comprising a hood extending approximately over the length of said roller and being equipped with a rim-shaped structure along its edge into which is placed an elastic endless sealing strip adapted to be pressed against said roller, the lower section of the hood being immersible into the liquor container.

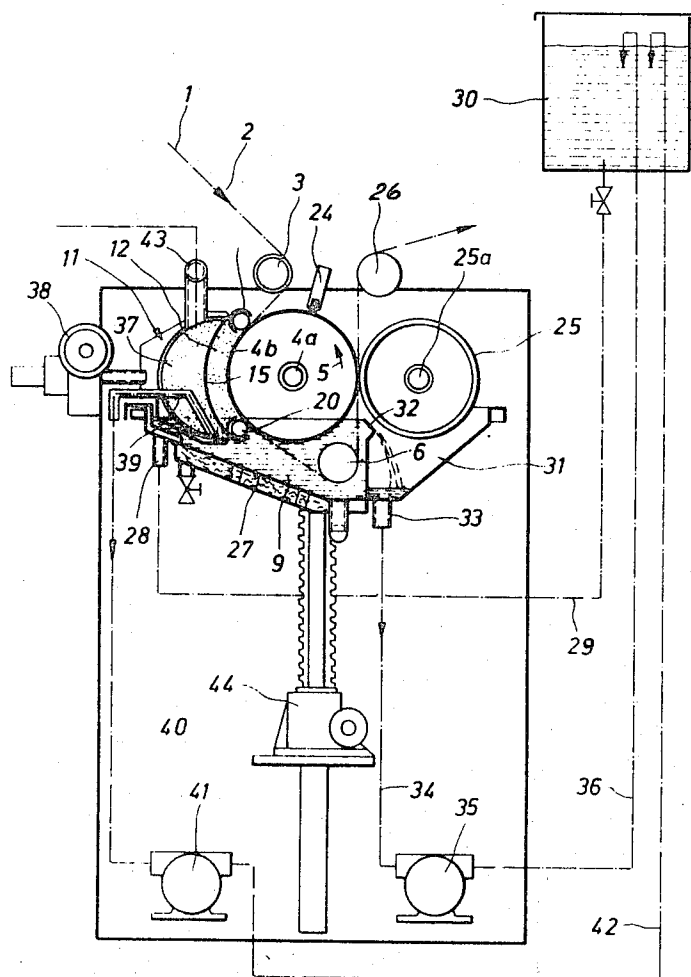
6 Claims, 3 Drawing Figures

Fig. 1

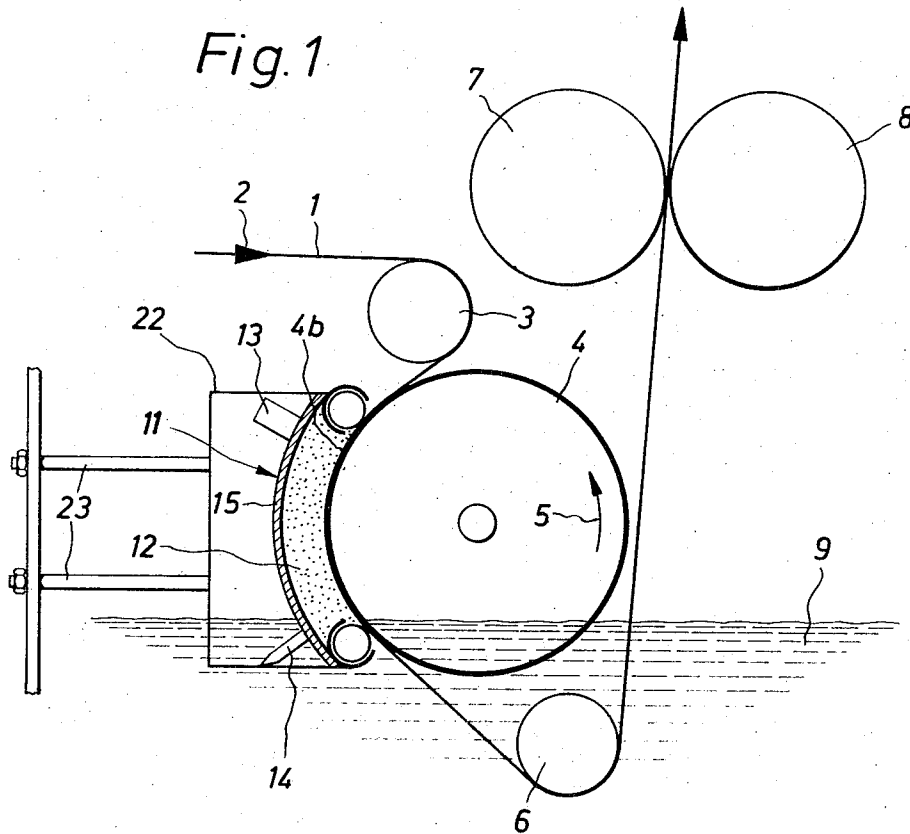


Fig. 2

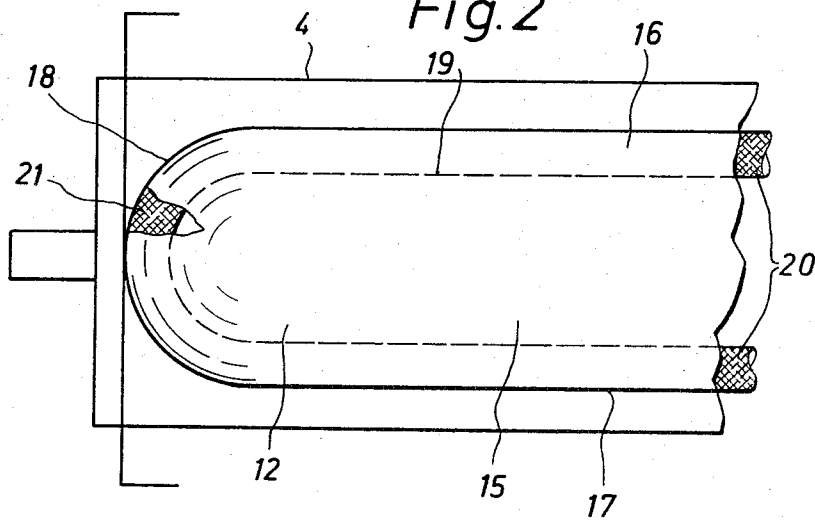
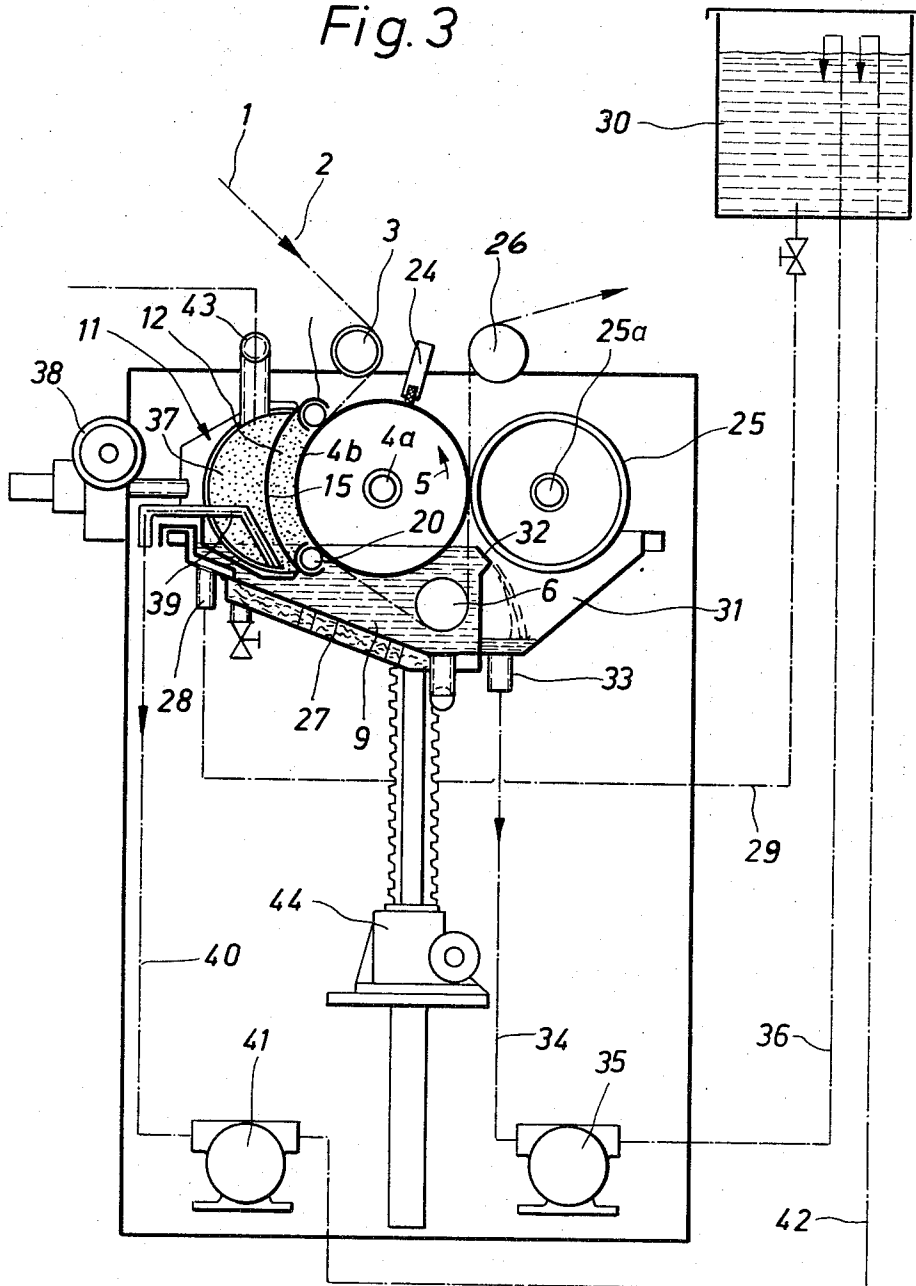


Fig. 3



DEVICE FOR IMPREGNATING AND DYEING WIDE TEXTILE WEBS

The present invention relates to a device for impregnating and dyeing wide textile webs in a continuous manner, which includes a vacuum device, at least one roller and a liquor container arranged behind the roller when looking in the direction of movement of the textile web.

For cold or warm impregnating textile webs, it is known to vent the web prior to immersing the same into the impregnating liquor and to effect such venting by exposing the web to a vacuum. The device used in this connection includes a vacuum device which when looking in the direction of movement of the material to be treated is located ahead of the liquor container.

It is an object of the present invention to provide a device which will make possible an optimum venting of the webs while permitting a continuous movement of the webs.

This object and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIG. 1 diagrammatically illustrates the device according to the invention with the vacuum hood on a roller and immersed into the liquor container.

FIG. 2 shows on a larger scale than FIG. 1 a plan view of the hood with a sealing strip applied to the squeeze roller.

FIG. 3 diagrammatically illustrates a side view of a padding machine with a device according to the invention.

The device according to the present invention for impregnating and dyeing wide textile webs in a continuous manner, which is equipped with a vacuum device, at least one roller and a liquor container, is characterized primarily in that the vacuum device comprises a hood which extends approximately over the length of one of the rollers and at its marginal area has a rim-like structure into which is inserted an elastic endless sealing strip which is pressed against the respective textile web section on the roller while the lower section of the hood is immersed into the liquor container.

Overpressure chambers and vacuum chambers cooperating with squeeze rollers are known per se. Over these known arrangements, the device according to the invention has the advantage of a high sealing possibility while the textile web is subjected to relatively low stresses.

Preferably, the hood comprises an arched plate with a length approximately corresponding to the length of the roller, and with transverse rims which are curved and with longitudinal rims which are parallel to the roller, the endless rim-like structure being mounted on the longitudinal and transverse rims.

According to a further feature of the invention, the liquor container is adjustable as to height so that the vacuum device is easily accessible.

According to a further development of the invention, the hood has associated therewith a vacuum chamber with which it is in communication and into which lead a vacuum connection and a suction line for withdrawing liquor. The vacuum device itself may be adjustable in a direction toward one roller and away from the same. In this way there is obtained the possibility of varying the pressure at which the elastic endless sealing

strip is pressed against the roller, the two curved transverse rims of the plate with their rim structure being adapted to the contour of the surface of the roller and describing a three-dimensional curve.

Referring now to the drawings in detail, the textile web 1 is in the direction of the arrow 2 conveyed to a full width roller 3 which may be driven and is located above a roller 4 which latter rotates in the direction of the arrow 5. The textile web 1 is passed over the respective lateral circumferential section 4b of roller 4 and over a guiding roller 6 from where it is withdrawn after having passed through the roller gap between two rollers 7 and 8. The roller 4 partly immerses into a liquor 9, for instance, an impregnating liquor.

The lower section of a vacuum device generally designated with the reference numeral 11 extends into the liquor 9 and comprises a hood 12 with a connection 13 which in its turn is connected to a vacuum pump. Furthermore, a second connection 14 leads into the hood 12. Through the second connection 14, liquor trickled into hood 12 is withdrawn. The hood 12 is formed by an arched plate 15 the longitudinal rims 16, 17 of which (FIG. 2,) are parallel to the roller 4, whereas the transverse rims, of which only the left transverse rim 18 is shown in FIG. 2, is curved. The hood plate 15 has its rims or marginal portions 16, 17, 18 provided with a rim-like structure 19 into which is placed an endless elastic sealing strip 20. This strip 20 will, in view of the shape of the rim-like structure 19, over its entire extension uniformly engage the circumference of the roller while the sections 21 of the sealing strip at the curved transverse rims 18 with the corresponding sections of the rim-like structure follow a three-dimensional curve. Hood 12 may be held on a frame 22 which by means of a rod system 23 is connected to a stationary part.

When employing the device according to the invention in connection with an impregnating machine according to FIG. 3, the textile web 1 is again passed in the direction of the arrow 2 over a full width roller 3 and a squeeze roller 4 which is engaged by a doctor blade 24 in order to strip adhering liquor off the roller 4. A second squeeze roller 25 cooperates with the roller 4 while the textile web 1 is first passed over the circumferential section 4b of roller 4 and over the guiding roller 6 and is subsequently withdrawn through the roller gap between the rollers 4 and 25 and over an additional guiding roller 26. The roller 4 is immersed in the impregnating liquor 9 in the liquor container 27. The container 27 has a connection 28 which through conduit 29 communicates with the liquor circulating container 30.

The container 27 has associated therewith a trough 31 for catching the impregnating liquor which flows over the overflow 32 and which, through the connection 33, the conduit 34, the pump 35 and the conduit 36, is conveyed to the container 30.

The lower section of the vacuum device 11 extends into the liquor container 27 the marginal section of which may be somewhat higher than shown in the drawings and extends beyond the shafts 4a, 25a of the two rollers 4, 25.

The hood 12 has associated therewith a vacuum chamber 27. The hood plate 15 is provided with corresponding perforations in such a way that the interior of the hood 12 and the interior of the vacuum chamber 37 communicate with each other.

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The vacuum device 11 is by means of a device 38 adjustable in the direction toward roller 4 and away therefrom so that the pressure at which the sealing strip 20 of hood 12 is pressed against roller 4 may be varied.

The liquor which has entered the hood 12 and the chamber 37 is withdrawn through conduit 39 which later through a conduit 40, a pump 41 and a further conduit 42 communicates with the container 30.

A vacuum conduit 43 which communicates with a blower B leads into the vacuum chamber 37.

The liquor container 27 and the associated trough 31 are adapted by means of a lifting device 44 to be lifted and lowered so that after the lowering of the liquor container 27 with the trough 31 and the withdrawal of the hood 12 with chamber 37 from roller 4, it will be possible, on the one hand, easily to clean the hood 12 and the chamber 37 and, on the other hand, easily to withdraw the rollers 4 and 25 while the trough 31 can likewise be easily cleaned.

As will be evident from the above, the construction according to the present invention provides, by means of the hood comprising an endless sealing strip, a vacuum device which on all sides elastically engages the roller.

It is, of course, to be understood that the present invention is, by no means, limited to the specific structure shown in the drawings but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. A device especially for impregnating and dyeing wide webs of textile material in a continuous manner, which includes container means adapted to receive im-

pregnating and dyeing liquid, roller means mounted to extend into said container means, vacuum means arranged adjacent said roller means and comprising hood means extending approximately over the length of said roller means and having its marginal area equipped with a rim-shaped structure, said vacuum means also comprising an endless sealing strip arranged in said rim-shaped structure and being positioned to press against web material passed between said roller means and said vacuum means, and means for feeding a web to be treated between said roller means and said vacuum means.

2. A device according to claim 1, in which said vacuum means partially enters said container means.

3. A device according to claim 1, which includes means for adjusting said container means as to height.

4. A device according to claim 1, in which said vacuum means includes a vacuum chamber and also includes a vacuum line connectable to a blower, and conduit means for withdrawing liquor.

5. A device according to claim 1, in which said hood means comprises an arched plate with parallel longitudinal edges and curved end edges, said hood means also including rim-shaped structures connected to said longitudinal edges and to said end edges for receiving sealing strip means.

6. A device according to claim 1, which includes means operatively connected to said vacuum means for selectively moving the same toward and away from said roller means.

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