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(54) **CONVEYOR DRIVE FABRIC DYEING MACHINE EQUIPPED WITH SEAM DETECTOR**

FÖRDERBANDBETRIEBENE STOFFFÄRBEMASCHINE MIT NAHTDETEKTOR

MACHINE DE TEINTURE DE TISSUS À ENTRAÎNEMENT PAR CONVOYEUR ÉQUIPÉE D'UN
DÉTECTEUR DE COUTURE

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(73) Proprietor: **Chang, Chi-Lung**
Taoyuan City (TW)

(72) Inventor: **Chang, Chi-Lung**
Taoyuan City (TW)

(74) Representative: **Horak, Michael**
horak. Rechtsanwälte Partnerschaft
Georgstrasse 48
30159 Hannover (DE)

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Description

(a) Technical Field of the Invention

[0001] The present invention generally relates to a conveyor drive fabric dyeing machine equipped with a seam detector, which is a conveyor drive fabric dyeing machine that is capable of monitoring and recording synchronized operations of a conveyor and a fabric roller and a circulation speed of fabric and for detecting if the fabric roller and the conveyor are in synchronization with the circulation speed of the fabric and for conducting a control operation for instantaneous correction.

(b) Description of the Prior Art

[0002] A conventional seam detector is used to detect, record, and display and output signals indicating circulation time of fabric and the number of cycles of fabric circulation and to automatically shut down after automatically identifying a fabric seam in order to save the time necessary for searching for the fabric seam.

[0003] Prior art documents are known, such as DE 20 2014 104073 U1, DE 20 2014 105582 U1, and GB 2 208 299 A. DE 20 2014 104073 U1 provides an idea of using a fabric seam detector to determine the number of cycles of circulation of a fabric in a dyeing machine and controlling and maintaining the speed of the fabric circulated in the dyeing machine to be consistent. DE 20 2014 105582 U1 suggests providing a blower to generate a high-pressure jet for help moving and dyeing a fabric. GB 2 208 299 A teaches adjusting the circulation speed of fabric relative to the speed imposed by the drawing means. None of these prior art documents teaches to make the speeds of the movement of a fabric, a fabric roller, and a conveyor synchronized with each other based on a parameter of circulation time of the fabric circulated in a dyeing machine.

SUMMARY OF THE INVENTION

[0004] An object of the present invention is to improve and maintain synchronization of the operational speeds of fabric, a conveyor, and a fabric roller. In a fabric treatment process, it is often that variation of actual time of circulation of fabric occurs due to incorrect input of fabric data, such as length, fabric weight, or fabric areal weight, as well as physical or chemical variation occurring in a dyeing bath of a machine body due to factors such as temperature change and additions of dye liquid and chemical agents. This would lead to errors in synchronization control of fabric and thus causing unsmooth operations, such as jamming and entangling of fabric.

[0005] To overcome such problems, the present invention uses actual circulation time of fabric that is detected by a fabric seam detector to conduct instantaneous adjustment and correction of speeds of a conveyor and a fabric roller in order to maintain synchronized operations

of the fabric, the conveyor, and the fabric roller.

[0006] The technical solution of the present invention is to arrange a fabric seam detector at a suitable location in a conveyor drive fabric dyeing machine in order to use fabric circulation time detected by the fabric seam detector to allow a computer or a programmable logic controller (PLC) to conduct control or correction of the speeds of the conveyor and the fabric roller in order to achieve precise control of speed-synchronized operations of the fabric and the conveyor and the fabric roller.

[0007] The present invention provides a conveyor drive fabric dyeing machine equipped with a seam detector, which comprises a conveyor arranged in a machine body of a fabric dyeing machine for conveying fabric from a rear end of the machine body to a front end, wherein the fabric is further driven by a fabric roller into a nozzle and a dyeing tube and dye liquid that is pressurized by a pump and subjected to temperature control by a heat exchanger to be then jetted from the nozzle also helps drive the fabric. A seam detector is arranged at a suitable location in the fabric dyeing machine. The seam detector detects, records, displays, and outputs signals indicating a fabric seam and circulation time of the fabric. Based on the circulation time of the fabric, a computer or a programmable controller instantaneously controls or corrects speeds of the conveyor and the fabric roller so as to achieve precise control of speed-synchronized operation of the fabric and the conveyor and the fabric roller.

[0008] The foregoing objectives and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become apparent to those skilled in the art, the following detailed description of the invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

[0009] Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG 1 is a schematic view showing a conveyor drive fabric dyeing machine equipped with a seam detector according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0011] The following descriptions are exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient

illustration for implementing exemplary embodiments of the invention. Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope of the invention as set forth in the appended claims.

[0012] As shown in FIG 1, the present invention provides a fabric dyeing machine equipped with a seam detector, which comprises a machine body 1 in which a conveyor 2 is arranged for conveying fabric 3 from a rear end of the machine body 1 to a front end. The fabric 3 is then driven by a fabric roller 4 to move into a nozzle 5 and a fabric guide tube 11. Dye liquid 6 is pressurized by a pump 7 and is subjected to temperature control by a heat exchanger 8 to be then jetted from the nozzle 5 to induce a dyeing effect on the fabric and also to drive the fabric 3 to enter said fabric guide tube 11 to subsequently fall down to the conveyor 2 for being further conveyed to the front end of the machine body. As such, a cycle of circulation motion that is conducted in the form of a loop is completed. A seam detector 10 is arranged to detect and output circulation time of the fabric 3, with which a computer or a programmable logic controller (PLC) of a control box 9 carry out an operation of control or correction of the speeds of the conveyor 2 and the fabric roller 4 so as to achieve precise control of speed-synchronized operations of the fabric 3 and the conveyor 2 and the fabric roller 4.

[0013] It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

[0014] While certain novel features of this invention have been shown and described and are pointed out in the annexed claim, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Claims

1. A conveyor drive fabric dyeing machine equipped with a seam detector (10) which comprises a conveyor (2) arranged in a machine body (1) of a fabric dyeing machine for conveying fabric (3) from a rear end of the machine body (1) to a front end of the machine body (1), wherein the fabric (3) is further driven by a fabric roller (4) into a nozzle (5) and a fabric guide tube (11) and dye liquid (6) that is pressurized by a pump (7) and subjected to temperature control by a heat exchanger (8) to be then jetted from the nozzle (5) to induce a dyeing effect on the fabric (3) and also to drive said fabric (3) to enter said fabric guide tube (11) to subsequently fall down to said conveyor (2) for being further conveyed to the front

end of the machine body (1), said seam detector (10) being arranged at a suitable location in the fabric dyeing machine, wherein the seam detector (10) detects, records, displays, and outputs signals indicating a fabric seam and circulation time of the fabric (3), **characterized in that** based on the circulation time of the fabric (3), a computer or a programmable controller instantaneously controls or corrects the speeds of the conveyor (2) and the fabric roller (4) so as to achieve precise control of speed-synchronized operation of the fabric (3) and the conveyor (2) and the fabric roller (4).

15 Patentansprüche

1. Förderbandbetrie bene Stofffärbemaschine mit einem Nahtdetektor (10), die ein Förderband (2) umfasst, das in einem Maschinenkörper (1) einer Stofffärbemaschine zum Befördern von Stoff (3) von einem rückwärtigen Ende des Maschinenkörpers (1) zu einem Vorderende des Maschinenkörpers (1), angeordnet ist, wobei der Stoff (3) des Weiteren von einer Stoffrolle (4) in eine Düse (5) getrieben wird und ein Stoffführungsrohr (11) und Färbflüssigkeit (6), die von einer Pumpe (7) unter Druck gesetzt wird und einer Temperaturkontrolle durch einen Wärmetauscher (8) ausgesetzt wird, um dann von der Düse (5) ausgestoßen zu werden, um eine Färbwirkung auf den Stoff (3) zu veranlassen und auch um besagten Stoff (3) in besagtes Stoffführungsrohr (11) zu treiben, damit er anschließend herunter auf das Förderband (2) fällt, um weiter zu dem Vorderende des Maschinenkörpers (1) befördert zu werden, besagter Nahtdetektor (10) ist in einer geeigneten Position in der Stofffärbemaschine angeordnet, wobei der Nahtdetektor (10) Signale detektiert, aufzeichnet, anzeigt und ausgibt, die eine Stoffnaht und Umlaufzeit des Stoffes (3) angeben, **gekennzeichnet dadurch, dass**, basierend auf der Umlaufzeit des Stoffes (3), ein Computer oder eine programmierbare Kontrollvorrichtung sogleich die Geschwindigkeiten des Förderbandes (2) und der Stoffrolle (4) kontrolliert oder korrigiert, um eine genaue Kontrolle der Geschwindigkeits-synchronisierten Operation des Stoffes (3) und des Förderbandes (2) und der Stoffrolle (4) zu erreichen.

50 Revendications

1. Une machine de teinture de tissus à entraînement par convoyeur équipée d'un détecteur de couture (10), qui comprend un convoyeur (2) disposé dans un corps de machine (1) d'une machine de teinture de tissus pour transporter des tissus (3) d'une extrémité arrière du corps de machine (1) à une extrémité

avant du corps de machine (1), où le tissu (3) est ultérieurement entraîné par un rouleau de tissu (4) vers l'intérieur d'une buse (5) et un tuyau de guide de tissu (11) et du liquide de teinture (6) qui est pressurisé par une pompe (7) et soumis à un contrôle de la température par un échangeur de chaleur (8) est ensuite projeté depuis la buse (5) afin d'induire un effet de teinture sur le tissu (3) et également afin d'entraîner ledit tissu (3) à pénétrer dans ledit tuyau de guide de tissu (11) pour tomber ensuite sur ledit convoyeur (2) pour être en outre transporté à l'extrémité avant du corps de machine (1), ledit détecteur de couture (10) étant disposé à un emplacement approprié dans la machine de teinture de tissus, où le détecteur de couture (10) détecte, enregistre, affiche, et émet des signaux indiquant une couture de tissu et le temps de circulation du tissu (3), **caractérisée en ce que**, en fonction du temps de circulation du tissu (3), un ordinateur ou un contrôleur programmable contrôle ou corrige instantanément les vitesses du convoyeur (2) et du rouleau de tissu (4) de manière à obtenir un contrôle précis du fonctionnement synchronisé en vitesse du tissu (3) et le convoyeur (2) et le rouleau de tissu (4).

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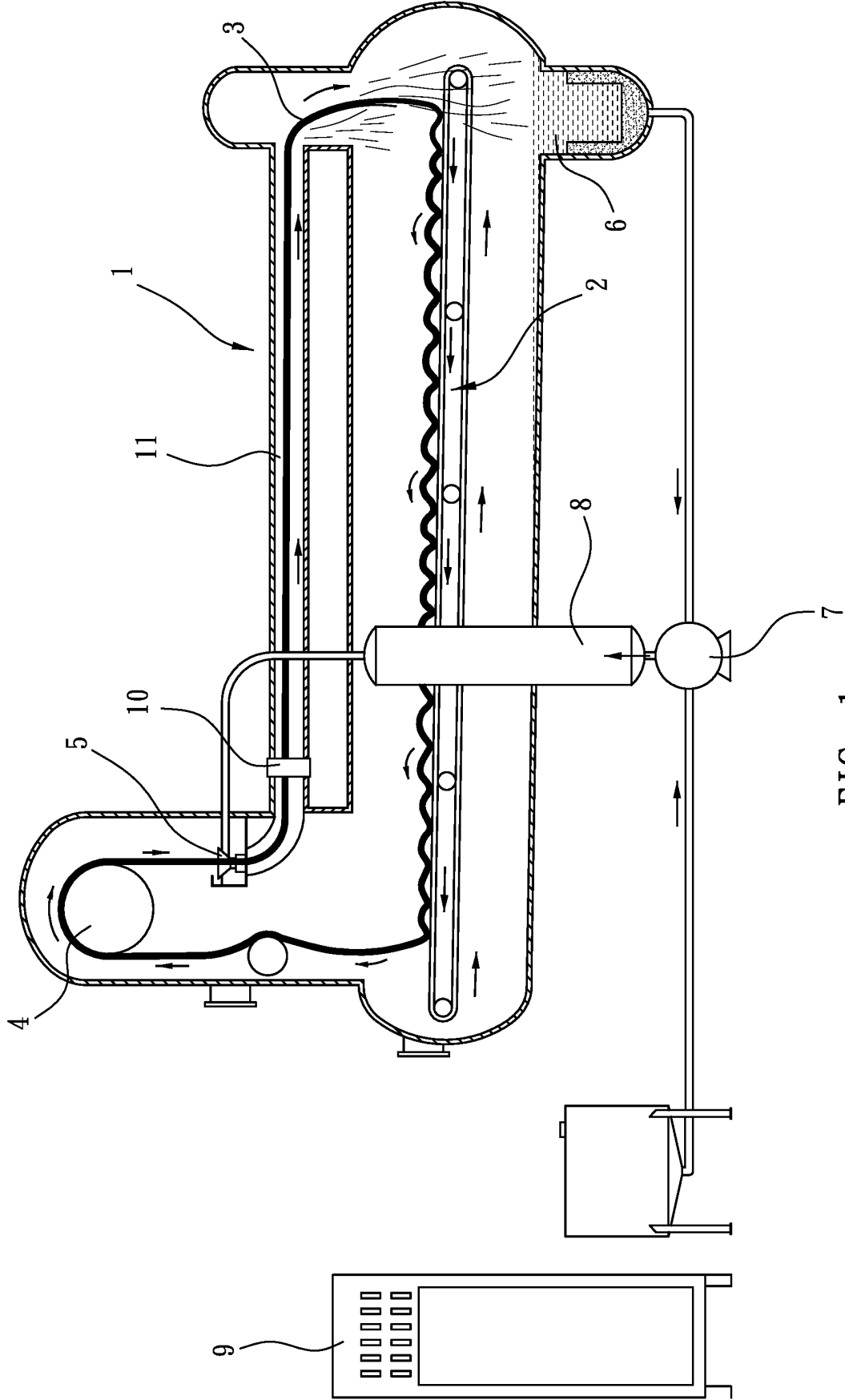


FIG. 1

REFERENCES CITED IN THE DESCRIPTION

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