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(54) **System for transferring a web of fibres from a carding machine**

(57) The system enables the transfer of a web of fibres (V) from a removal cylinder (6) of the web at the output of a carding machine (1), comprising a belt conveyor (11) disposed downstream of the removal cylinder (6). The system comprises a suction device (15) including a perforated cylinder (16) disposed to rotate about a substantially horizontal axis, and in which a stationary structure (17) forms with respect thereto a fixed lower suction

sector (21) connected to a vacuum source. The perforated cylinder (16) is disposed above and almost tangentially to the removal cylinder (6) and to the adjacent end of the belt conveyor (11), and is actuated, in operation, to rotate in the direction opposite to the direction of rotation of this removal cylinder (6) and the belt conveyor (11).

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## Description

**[0001]** The present invention relates to a system for transferring a web of fibres from a carding machine.

**[0002]** The invention relates more particularly to a system adapted to transfer a web of fibres from a cylinder for removing or discharging the web at the outlet of a carding machine, and comprising a belt conveyor disposed downstream of and adjacent to this removal cylinder.

**[0003]** The object of the present invention is to provide a system which makes it possible to carry out the transfer of a web of fibres correctly, without any defects, even with small differences of peripheral speed between the removal cylinder and the subsequent conveyor belt, i.e. in conditions of slight stretching.

**[0004]** This object is achieved in accordance with the invention by means of a system of the type described above, characterised in that it comprises a suction device including a perforated cylinder disposed to rotate about a substantially horizontal axis, and in which a stationary structure forms therewith a fixed lower suction sector connected to a vacuum source, the perforated cylinder being disposed above and almost tangentially to the removal cylinder and to the adjacent end of the belt conveyor, and, in operation, being actuated to rotate in the direction opposite to the direction of rotation of this removal cylinder and the belt conveyor.

**[0005]** Further characteristic features and advantages of the invention are set out in the following detailed description, given purely by way of non-limiting example, made with reference to the accompanying drawing, in which a system for transferring a web of fibres of the invention is shown diagrammatically in lateral elevation and partly in section.

**[0006]** A carding machine is shown overall by 1 in the drawing, and comprises in a known manner a combing cylinder 2 and an adjacent separating cylinder 3. These cylinders are mounted to rotate about respective substantially horizontal axes in respective opposite directions as shown by the arrows 4 and 5.

**[0007]** A web of fibres is shown by V and passes, at the outlet of the carding machine 1, between the combing cylinder 2 and the separating cylinder 3, moving in general to the left with respect to the drawing.

**[0008]** A removal or discharge cylinder for the web, shown by 6, is disposed immediately downstream of the separating cylinder 3.

**[0009]** In a known manner, the removal cylinder 6 is for instance, a cylinder clothed with metal sawtooth wire and, in operation, is actuated to rotate in the same direction of rotation as the separating cylinder 3.

**[0010]** An apparatus for transferring the web of fibres, shown overall by 10, is disposed downstream of the removal cylinder 6.

**[0011]** This apparatus comprises a belt conveyor 11, including a belt 12 which, adjacent to the removal roller 6, revolves about a return roller 13 borne by a support

bench 14.

**[0012]** The apparatus 10 for transferring the web of fibres V further comprises a suction device shown overall by 15. This device comprises a perforated cylinder 16 disposed to rotate about a substantially horizontal axis and made for instance from a network of very fine mesh.

**[0013]** A stationary structure 17 comprising a tube 18 coaxial with the cylinder 16 is disposed in the cylinder 16. This cylinder 18 has an airtight wall and comprises a series of openings or slots 19 at the bottom. Two fixed, substantially radial, dividing walls 20 extend from the tube 18 at the peripherally spaced edges of the opening 19.

**[0014]** The portion of the stationary structure 17 comprised between the dividing walls 20 forms a fixed lower suction sector, shown by 21, communicating with the region inside the tube 18 which is connected, in a manner which is not shown, to a vacuum source of known type.

**[0015]** The perforated cylinder 16 is disposed above and almost tangentially to the removal cylinder 6 and to the end roller or cylinder 13 of the belt conveyor 11, and is actuated, in operation, to rotate in the direction of the arrow 22, i.e. in the opposite direction to the direction of rotation of the removal cylinder 6 and the belt conveyor 12.

**[0016]** In operation, a recall or suction action is exerted via the portion of the perforated cylinder 16 which from time to time faces the suction sector 21 and is adapted to retain, under a vacuum, the web of fibres V so that it is in contact with a section of the outer lateral surface of this cylinder 16.

**[0017]** In this way, the transfer of the web of fibres V between the removal cylinder 6 and the conveyor belt 12 takes place correctly, without defects, even when there are slight differences of peripheral speed, and therefore slight stretching, between the removal cylinder 6 and the belt conveyor 12.

**[0018]** Slight stretching, i.e. a minimal difference of peripheral speed between the upstream cylindrical member 6 and the downstream conveyor which receives the web V, makes it possible optimally to retain the mechanical properties of tensile strength of the web of fibres V in both the longitudinal and transverse directions.

**[0019]** In the embodiment shown, the perforated cylinder 16 is actuated, in operation, by means of a rotary electric motor 23 secured to the bench 14 of the belt conveyor 11 and an associated belt or chain transmission.

**[0020]** The stationary structure 17 and the rotary perforated cylinder 16 are in turn borne by a structure 24 which is also secured to the bench 14.

**[0021]** The embodiments and their details may obviously be widely varied with respect to those described and illustrated purely by way of non-limiting example without prejudice to the principle of the invention, as the invention encompasses all variants that provide equivalent utility using the same inventive step.

**Claims**

1. A system for transferring a web of fibres (V) from a removal cylinder (6) for the web at the output of a carding machine (1), comprising a belt conveyor (11) disposed downstream of and adjacent to the removal cylinder (6), the system being **characterised in that** it comprises a suction device (15) including a perforated cylinder (16) disposed to rotate about a substantially horizontal axis, and in which a stationary structure (17) forms with respect thereto a fixed lower suction sector (21) connected to a vacuum source, the perforated cylinder (16) being disposed above and almost tangentially to the removal cylinder (6) and to the adjacent end of the belt conveyor (11), and being actuated, in operation, to rotate in the direction opposite to the direction of rotation of the removal cylinder (6) and the belt conveyor (11).
2. A system for transferring a web of fibres (V) as claimed in claim 1, in which the suction device (15) is secured to and supported by a bearing structure (14) of this belt conveyor (11).
3. A system for transferring a web of fibres (V) as claimed in claim 2, in which the suction device (15) is associated with an actuation motor (23) secured to the bearing structure (14) and coupled to the perforated cylinder (16).

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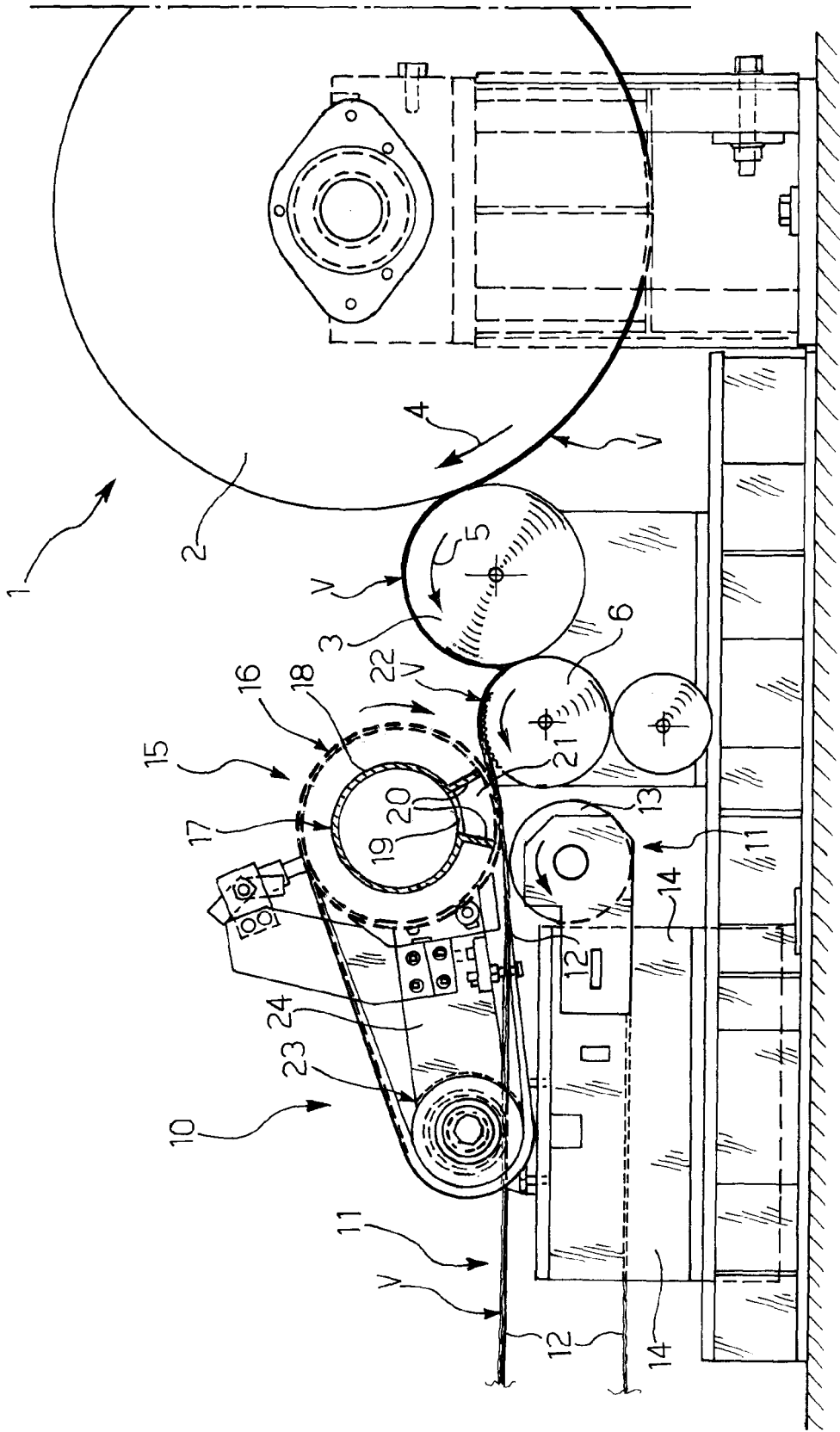
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Place of search		Date of completion of the search	Examiner
The Hague		9 February 2006	D'Souza, J
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone                      Y : particularly relevant if combined with another document of the same category                      A : technological background                      O : non-written disclosure                      P : intermediate document</p> <p>T : theory or principle underlying the invention                      E : earlier patent document, but published on, or after the filing date                      D : document cited in the application                      L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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