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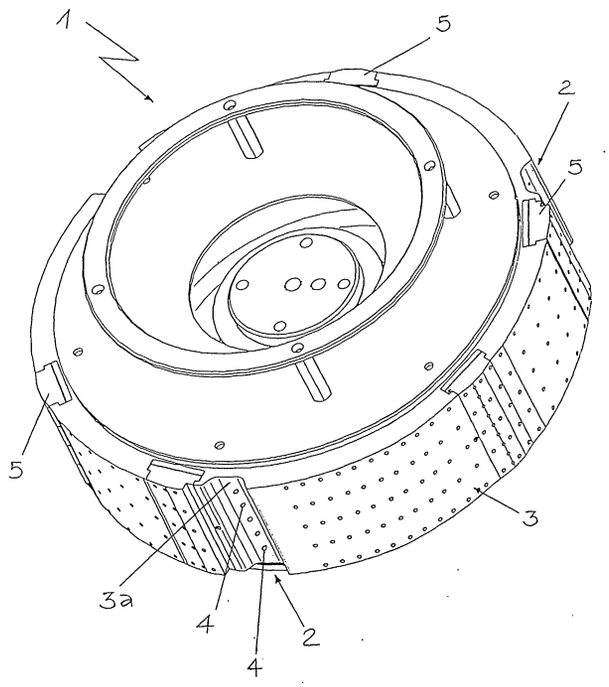
(54) Vacuum drum with glue collector

(57) Roller (1) for transferring labels of the aspirating type, in labelling machines, provided with at least a notch (2) obtained on a lateral surface (3), said notch (2) being so shaped as to collect residues of glue or adhesive substances. Said transfer roller (1) is provided with a plurality of openings (4) obtained on portions (3a) of the lateral surface (3) positioned inside said notch (2), to place the latter in communication with at least one aspiration conduit operatively connected to said roller (1). The roller (1) further comprises means for aspirating the glue residues, operatively connected to said aspiration conduit.

Method for collecting glue or adhesive substances in roller (1) for transferring labels of the aspirating type, in labelling machines, providing for the aspiration of the glue or adhesive substances inside a notch (2).

FIG. 1



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Description

[0001] The present invention relates to a roller for transferring labels of the aspirating kind, provided with at least a notch obtained on a lateral surface of the roller and shaped in such a way as to collect glue residues, in particular for labelling machines in which the labels are obtained from a reeled film.

[0002] The present invention further relates to a method for collecting glue or adhesive substances in a roller for transferring labels of the aspirating type, in particular for labelling machines.

[0003] As is well known, rollers for transferring labels are employed in labelling machines provided with a device for unwinding the reel, necessary to route a film of labels towards a cutting device, which forms the label to be glued on a container. The label thus formed is always rectangular or square shaped and has two vertical and parallel edges.

[0004] The transfer roller, rotating at a pre-set velocity about an axis, picks up the label and transfers it in correspondence with gluing means and subsequently on the container to be labelled. In particular, the gluing means lay a first strip of glue along a rear face of one of the vertical edges of the label and subsequently lay a second strip of glue on the other vertical edge, which is to be superposed and glued on to the first edge. Some labelling machines provide for the possibility that the gluing means lay the glue in spots, instead of along one or more strips.

[0005] The containers to be labelled are brought in contact with the roller for transferring the label by means of a linear or rotary conveyor commonly known as carrousel.

[0006] In accordance with a first technique in the prior art, the transfer roller is provided with a group of pincers so shaped as to keep the label adhering to the lateral surface of the roller itself.

[0007] A second technique in the prior art provides for obtaining, inside a roller without pincers, a plurality of cavities communicating with the lateral surface of the roller, typically by means of a series of through holes.

[0008] Subsequently, through said cavities, an aspiration of variable and controlled intensity is effected in such a way that the labels remain adhering to the lateral surface of the roller during their transfer from the cutting device to the container.

[0009] Such transfer rollers are also provided with a plurality of notches obtained on the lateral surface to collect glue residues which otherwise would be deposited on the holes needed to effect the aspirating action, thereby compromising the operation of the machine. Such residues are caused by the contact between the label and the gluing means.

[0010] The transfer rollers summarily described above have some drawbacks.

[0011] First of all, transfer rollers provided with a group of pincers are complex to build, because they require a system of appropriately dimensioned cams to open and close the pincers during the rotation of the roller.

[0012] Secondly, a labelling machine equipped with such a roller is not suitable for high productivity bottling plants, because of the reduced velocities of rotation of the roller.

[0013] As regards a transfer roller of the aspirating type, the main drawback is represented by the fact that the glue residues that are deposited in the notches must be frequently removed to prevent them from fouling the surface of the roller tasked with collecting the labels. To clean the roller, it is necessary to stop the labelling machine or the surfaces tasked with correctly positioning the label and consequently interrupt production.

[0014] The aim of the present invention is to eliminate the aforesaid drawbacks, making available a roller for transferring labels of the aspirating type and a method for collecting adhesive substances, which are able to expand the time interval between two successive cleaning operations.

[0015] Another aim of the present invention is to propose a roller for transferring labels of the aspirating type and a method for collecting adhesive substances that are able to reduce the speed whereby any glue deposits are formed.

[0016] A further aim of the present invention is to make available a roller for transferring label of the aspirating type that is easy to construct and can be used on the labelling machines currently on the market.

[0017] Said aims are fully achieved by the roller for transferring labels and by the method of the present invention, which are characterised by the contents of the claims set out below.

[0018] These and other aims shall become more readily apparent from the following description of a preferred embodiment illustrated, purely by way of non limiting example, in the accompanying drawing table, in which the sole figure shows a global axonometric view of a roller for transferring labels of the aspirating type according to the present invention.

[0019] With reference to the figure, the roller for transferring labels is globally indicated with the number 1.

[0020] The roller 1 is provided with a plurality of notches 2 obtained on a lateral surface 3 of the roller itself and shaped in such a way as to collect any glue residues caused by the contact between the label and the gluing means.

[0021] The roller 1 is originally provided with a plurality of openings 4 obtained on portions 3a of the lateral surface 3 positioned internally to each notch 2, in order to place the latter in communication with at least an aspiration conduit operatively connected to the roller itself. In the illustrated example, said openings 4 are preferably a plurality of through holes.

[0022] In an alternative embodiment, the possibility is provided of obtaining said openings 4 by means of a plurality of slots, appropriately dimensioned to aspirate the

glue residues.

[0023] The notches 2 are positioned along the lateral surface 3 at a pre-set mutual distance along the lateral surface and they are preferably longitudinal grooves open at the ends and with length substantially coinciding with the height of the roller 1.

[0024] According to an embodiment variation not shown herein, the possibility is provided of obtaining said notches 2 by means of longitudinal grooves with length substantially coinciding with the height of the roller and closed at the ends by plate-like elements, in order to enhance the effectiveness of the aerodynamic field generated by the aspiration of the glue residues.

[0025] In the preferred embodiment, the conduit for aspirating the glue residues is operatively connected to aspirating means (not shown in the figure) which also generate the aspirating action required to maintain the labels adhering to the lateral surface 3 of the roller 1.

[0026] It is important to stress that, regardless of the number of means tasked with the aspirating action, the conduit for aspirating the glue residues is preferably distinct from a conduit necessary to perform the aspirating action on the labels.

[0027] The roller 1 further comprises means for adjusting the aspiration of the glue and/or of the labels. In particular, said adjustment means (not shown in the figure) comprise a plurality of valves obtained by means of a holed plate interposed between the roller and the aspiration conduits and provided with a series of through cavities positioned according to an appropriate pattern to define a so-called valve plate.

[0028] In proximity to each notch 2 is present a corresponding shoe 5, inserted in sliding fashion in an appropriate seat located on the lateral surface 3 of the roller 1. On the shoe 5 is set down one of the two edges of each label, whereon the glue is laid by means of rubbing against the gluing means. Said rubbing is made possible by the fact that each shoe 5 projects relative to the lateral surface 3 of the transfer roller 1.

[0029] The operation of the invention is as follows.

[0030] During the rotation of the roller 1, the glue laid on the labels interacts aerodynamically with the air surrounding the roller, forming drops of variable diameter that are deposited inside the notches 2. Through the openings 4, the aspirating means are able to such said glue drops back in, reducing the speed of formation of such deposits as would require maintenance operations.

[0031] The method for collecting glue or adhesive substances, of the present invention, comprises the stage of aspiration of the glue or adhesive substances that are deposited inside at least a notch obtained on a lateral surface of a roller and so shaped as to collect any residues of glue or other adhesive substances that are formed during the operation of the roller.

[0032] The invention achieves important advantages.

[0033] First of all, a roller according to the present invention allows to expand the time interval between two subsequent maintenance operations. The presence of the openings together with the aspirating means considerably reduces the speed of formation of such glue deposits as would require to stop the machine.

[0034] Another advantage is represented by the fact that such a transfer roller is easy to manufacture and can be used on the labelling machines currently available on the market, without requiring particular modifications to the machines themselves.

[0035] Advantageously, a method of collection according to the invention can also be employed on existing rollers, since no substantial modifications to the roller are necessary, but only the execution of a plurality of openings inside the notches and the aspirating action by means of dedicated conduits connected thereto are required.

Claims

1. Roller (1) for transferring labels of the aspirating type, in labelling machines, provided with at least a notch (2) obtained on a lateral surface (3), said notch (2) being shaped in such a way as to collect residues of glue or adhesive substances, **characterised in that** it is provided with a plurality of openings (4) obtained on portions (3a) of the lateral surface (3) positioned internally to said notch (2), to place the latter in communication with at least an aspiration conduit operatively connected to said roller (1).

2. Transfer roller as claimed in claim 1, **characterised in that** it comprises means for aspirating the glue residues, said means being operatively connected to said aspiration conduit.

3. Transfer roller as claimed in claim 2, **characterised in that** said means for aspirating the glue residues also generate the aspirating action necessary to maintain the labels adhering to the lateral surface (3) of the roller (1).

4. Transfer roller as claimed in claim 1, **characterised in that** the conduit for aspirating the glue residues is distinct from a conduit necessary for aspirating the labels.

5. Transfer roller as claimed in claim 1, **characterised in that** it comprises means for adjusting the aspirating action on the glue and/or on the labels.

6. Transfer roller as claimed in claim 1, **characterised in that** it comprises a plurality of said notches (2) obtained at a pre-set mutual distance along the lateral surface (3) of the roller.

7. Transfer roller as claimed in claim 1, **characterised**

in that said notch (2) is a longitudinal groove with length substantially coinciding with a height of the roller (1) and open at the ends.

8. Transfer roller as claimed in claim 1, **characterised in that** said notch (2) is a longitudinal groove with length substantially coinciding with a height of the roller (1) and closed at the ends.

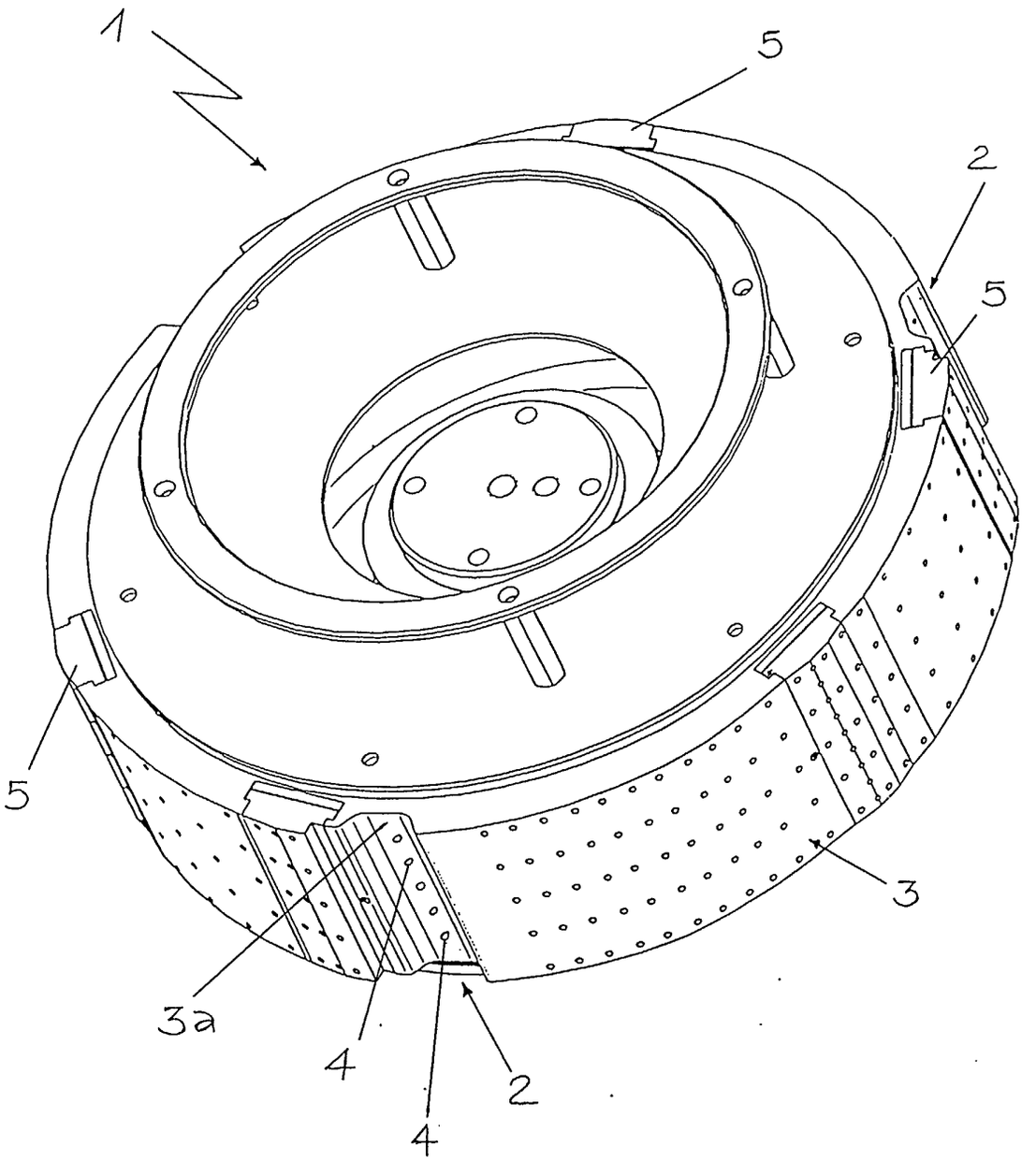
9. Transfer roller as claimed in claim 8, **characterised in that** it comprises plate-like elements to close said longitudinal groove at its ends.

10. Transfer roller as claimed in claim 1, **characterised in that** said openings (4) comprise a plurality of through holes.

11. Labelling machine, **characterised in that** it comprises at least a roller (1) for transferring labels as claimed in any of the previous claims.

12. Method for collecting glue or adhesive substances in a roller (1) for transferring labels of the aspirating type, in labelling machines, provided with at least a notch (2) obtained on a lateral surface (3) of the roller (1) and shaped in such a way as to collect residues of glue or adhesive substances, **characterised in that** it provides for the aspiration of the glue or adhesive substances inside the notch (2).

FIG. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 02 00 9111

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	26 September 2002	Müller, C

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 00 9111

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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