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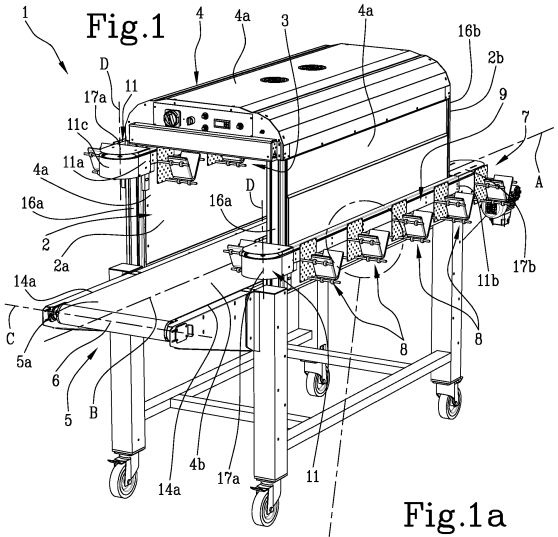
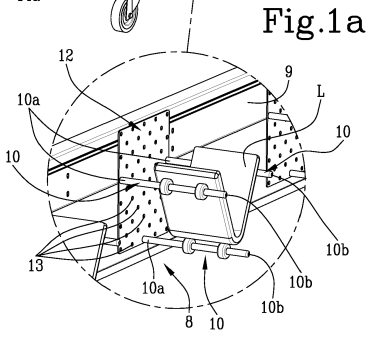
(54) DRYING OVEN FOR LEATHER ARTICLES OR THE LIKE

(57) Drying oven for leather articles or the like, comprises a drying chamber (2) equipped with heating means (3) and having an inlet mouth (2a) and an outlet mouth (2b) and a conveyor (5) that goes through said drying chamber (2) and defines a mobile supporting surface (B) for articles (L) along a movement direction between the inlet mouth (2a) and the outlet mouth (2b). The oven further comprises an auxiliary transport unit (7) equipped with at least a support member (8), and movement means (9) associated to said support member (8) to move it along the movement direction, with a direction according or opposite to the conveyor (5), at a height above the supporting surface (B).





EP 3 211 101 A1

Description

[0001] The object of the present invention is a drying oven for leather articles or the like.

[0002] The present invention applies then to the production of leather articles, leather or artificial leather used to manufacture products such as wallets, bags, belts or uppers and applications for clothing and the like, and in particular to the drying of such articles or other type of small-medium size manufactured articles previously subjected to a colouring and gluing operation.

[0003] In the prior art, the articles, once cut and/or assembled into pieces of suitable shape, are subjected to a colouring or gluing process inside appropriate stations, and subsequently are introduced inside ovens in which they remain, usually in motion, for a predetermined period of time. The treatment devices of the known type comprise then a drying oven, operatively downstream of the gluing or colouring stations, which generates a constant flow of heated air.

[0004] In a first known embodiment, the coloured/glued applications are advanced along their main direction within a plurality of ovens arranged in cascade, so as the advancement speed, and therefore the productivity of the plant, can be matched to the time necessary for obtaining a highly qualitative product.

[0005] Disadvantageously, such solutions are typically unsuitable to treat those articles whose quality might be decreased if left lying on the supporting surface, for instance those articles characterized by coating/bonding along their edges or on the support surface.

[0006] Given the necessary ventilation to allow the proper drying of articles, as well as the application versatility required of ovens, the drying chambers of the prior art often include both an oversized lateral and vertical development if compared to the actual size of most of the articles to be treated.

[0007] Given these conditions, the oven volume is often underexploited, resulting in thermal and energy dispersion for the manufacturer.

[0008] The object of the present invention is therefore to provide a drying oven for leather articles, that is able to overcome the drawbacks of the above mentioned prior art.

[0009] In particular, the object of the present invention is to provide a versatile drying oven having an optimized performance, both in terms of productivity and energy consumption.

[0010] Moreover, the object of the present invention is to provide a high ergonomic and easy to use drying oven.

[0011] Said objects are achieved by a drying oven for leather articles having the features of one or more of the subsequent claims, comprising in particular a drying chamber equipped with heating means and with an inlet and an outlet mouths and a conveyor that goes through said drying chamber and is a movable supporting surface for leather articles along a movement direction between the inlet mouth and the outlet mouth.

[0012] According to the invention, the oven comprises an auxiliary transport unit provided with at least a support member and movement means associated to said support member to move it along said movement direction, with a direction according or opposite to said conveyor, at a height above said support surface.

[0013] Advantageously, in this way, it is possible to use the auxiliary transport unit to dry leather articles that are suspended above the supporting surface and that are then moved, so as to maximize the spatial occupation of the chamber without hindering the normal drying process of those articles placed on the "main" conveyor.

[0014] Preferably, note that the auxiliary transport unit comprises recirculating movement means to which a number of support devices are associated and arranged one after the other.

[0015] Preferably, both the conveyor and the auxiliary transport unit comprise recirculating movement means between the inlet mouth and the outlet mouth of the drying chamber.

[0016] More preferably, such movement means can rotate around the inversion axes that are mutually transverse, preferably orthogonal.

[0017] Note that the conveyor runs, transversely to said direction of movement, between two longitudinal edges and the auxiliary transport unit is positioned at the turn of one of said longitudinal edges, above it, so as to maximize space occupation without limiting the vertical development of the articles to be dried (for example, bags or the like).

[0018] However, in the preferred embodiment, the auxiliary transport unit moves towards and away from the supporting surface, in order to ensure the maximum flexibility and versatility of use in the oven, allowing it to be used with articles of various forms and sizes.

[0019] In this respect, note that preferably each support member comprise a carriage constrained to the movement means and at least a bar removably connected to said carriage that extends transversally to said direction of movement between one end constrained to the carriage and a free end. More preferably, the carriage comprises a plurality of fastening locations for said bar, or for many different bars, in order to obtain a plurality of operating configurations of the support member.

[0020] These and other features and relating advantages will become more apparent from the following exemplary, therefore non-limiting, description of a preferred, therefore not exclusive, embodiment of a drying oven for leather articles as shown in the following drawing tables, in which:

- Figure 1 shows a perspective view of a drying oven for leather articles according to the present invention;
- Figure 1 a shows a detail of Figure 1
- Figure 2 shows a side view of the oven of Figure 1;
- Figure 3 shows a front view of the oven of Figure 1.

[0021] With reference to the accompanying figures, the

numeral 1 generally refers to a drying oven for leather articles according to the present invention.

[0022] As said, such leather articles "L" are preferably wallets, bags and the like, however they may be also belts (i.e. the strips intended to define its belt) or discrete elements such as patches or leather inserts.

[0023] Note that in the present description explicit reference will be made to "leather" items, which means all those articles made of leather, artificial leather or other suitable material used to make products such as wallets, purses, belts or even uppers, clothes applications or the like that require a drying step.

[0024] The oven 1 comprises a drying chamber 2 equipped with heating means 3 and provided with an inlet mouth 2a and an outlet mouth 2b.

[0025] Therefore, the drying chamber 2 extends along a main direction "A" between the two mouths 2a, 2b, through which the articles "L" enter and exit from the chamber.

[0026] Preferably, the drying chamber 2 is a box-shaped body 4 equipped with a plurality of side walls or top walls 4a and a bottom wall 4b.

[0027] The heating means 3, preferably of the electric type, are associated to the side walls or the top wall 4a.

[0028] To handle the articles passing through the drying chamber 2, the oven 1 comprises a conveyor 5 that extends and passes through the drying chamber 2 that defines a supporting surface "B" for the leather articles "L". The supporting surface "B" is thus movable along a movement direction, which preferably corresponds to or is aligned with the main direction "A", between the inlet mouth 2a and the outlet mouth 2b of chamber 2.

[0029] Such supporting surface "B" is therefore a real movement plane for articles "L".

[0030] The conveyor 5 extends between a first end portion 5a and a second end portion 5b, both preferably external to the drying chamber 2.

[0031] More particularly, the first end portion 5a of the conveyor opens towards the inlet mouth 2a of the drying chamber 2, whereas the second end portion 5b of the conveyor opens towards the outlet mouth 2b.

[0032] Therefore, both end portions 5a, 5b of the conveyor 5 define overhangs with respect to the drying chamber 2.

[0033] In the preferred embodiments, the conveyor 5 is defined by a moving belt 6, preferably shaped as a mesh or net in order to ease the transpiration of articles "L".

[0034] In particular, at the two end portions 5a, 5b of the conveyor 5 at least two pulleys or rotatable rollers are envisaged, which rotate around their corresponding horizontal axes of rotation "C", parallel to each other, which allows the recirculation of the moving belt 6.

[0035] Therefore, the moving belt 6 has an active section extending between the two pulleys or rollers in which the active surface of the moving belt 6 is facing upward, and a return portion, which also extends between the two pulleys or rollers with an opposite direction of movement, in which the active surface of the moving belt 6 faces downwards.

[0036] According to one aspect of the present invention, the oven comprises an auxiliary transport unit 7.

[0037] Such unit 7 is provided with at least a support member 8 and movement means 9 associated to said support member 8 to move it along said movement direction, with a direction according or opposite to said conveyor 5, at a height above said supporting surface "B". Advantageously, in such a way, it is possible to transport and dry products also in "suspended" mode, thus maximizing the operation of the oven 1. Preferably, unit 7 comprises a plurality of support members 8 arranged in succession and movable along the direction of movement (parallel to the supporting surface "B").

[0038] More precisely, the auxiliary transport unit 7 comprises recirculating movement means 9a to which said plurality of support members 8 is connected.

[0039] In this text, recirculating movement means 9a define a "cyclic" movement group having an operating portion and a return portion.

[0040] So, both the conveyor 5 and the auxiliary transport unit 7 comprise recirculating movement means 6, 11 between the inlet mouth 2a and the outlet mouth 2b of the drying chamber 2.

[0041] The movement means are preferably the moving belt 6 and the belt or chain 11. For instance, in the illustrated embodiment, the movement means 9 comprise a belt or a chain 11, which extend along the movement direction, and equipped with an operating portion 11 a and a return portion 11 b substantially parallel between each other.

[0042] The belt 11 or chain also comprises two reversal points 11c that define its ends and equipped with pulleys (or the like) in which the belt passes from the operative portion 11 a to the return portion 11 b.

[0043] Preferably, said two end portions 11c are rotatable each around an inversion axis "D" that is substantially vertical.

[0044] In other words, such movement means 6, 11 can rotate around inversion axes C, D that are mutually transverse, preferably orthogonal.

[0045] Preferably, each support member 8 comprises a carriage 12 and at least a bar 10 that is removably connected to it.

[0046] Carriage 12 is constrained to the movement means 9 and it moves along the movement direction.

[0047] Bar 10 is instead at least partly in a horizontal position to support at least one suspended leather article "L".

[0048] Preferably, bar 10 develops transversely to the movement direction between one end 10a constrained to the movement means 9, i.e. to the carriage 12, and one free end 10b.

[0049] In the illustrated embodiment bar 10 is substantially parallel to and spaced from the supporting surface "B".

[0050] Preferably, carriage 12 comprises a plurality of

fastening seats 13 for said bar 10 (or for many different bars 10) in order to obtain a plurality of operating configurations of the support member 8.

[0051] In this respect, note that carriage 12 preferably comprises at least one perforated plate, in which holes define said seats 13.

[0052] Preferably, the constrained end 10a of the bar 10 is locked into the seat 13.

[0053] In the preferred embodiment, the fastening seats 13 are many more if compared to bars 10 in order to obtain a plurality of operating configurations of the support member 8.

[0054] Advantageously, in this way, the auxiliary transport unit 7 can be adapted to different types of products, thus the versatility of the oven 1 can be maximized.

[0055] Note that the conveyor 5, transversely to said direction of movement, extends between two longitudinal edges 14a positioned each one close to the corresponding side wall 4a of chamber 2.

[0056] The auxiliary transport unit 7 (and therefore the movement means 9) is connected to one of said side walls 4a.

[0057] More precisely, the auxiliary transport unit 7 is located across one of the longitudinal edges 14a of the conveyor 5, above it.

[0058] In particular, the operative portion 11 a of belt 11 is positioned above the conveyor 5, across the longitudinal edge 14a, whereas the return portion 11 b is externally arranged respect to said conveyor 5, laterally to it. Preferably, the return portion 11 b is placed externally to said drying chamber 2.

[0059] Therefore, the auxiliary transport unit 7 develops around a side wall 4a of the drying chamber 2, resulting partly on the inside (operating portion 11 a) and partly on the outside (return portion 11 b) of the chamber.

[0060] In the preferred embodiment, oven 1 comprises two auxiliary transport units 7 positioned to the sides of the drying chamber 2.

[0061] Two units 7 are parallel to each other and each placed across one of said longitudinal edges 14a of conveyor 5, above it.

[0062] In this respect, note that preferably each auxiliary transport unit 7 is movable towards and away from the supporting surface "B", and has a plurality of operating positions at different heights with respect to said supporting surface "B".

[0063] Advantageously, in such a way, the height (in respect to the ground) of the auxiliary transport unit 7 may be adapted according to the height of the individual operator assigned, who arranges and collects the leather articles, thus increasing the ergonomics of this solution.

[0064] Preferably, the two auxiliary transport units 7 move independently of each other towards and away from the supporting surface "B".

[0065] Therefore, each unit 7 is equipped with lifting means 15 configured to move it, i.e. in order to move the movement means 8, towards and away from the supporting surface "B".

[0066] In particular, each one of the auxiliary transport unit 7 includes:

- at least a first 16a and a second uprights 16b respectively arranged near said inlet mouth 2a and said outlet mouth 2b of the drying chamber 2;
- at least a first 17a and a second sliders 17b respectively slidably associated to the first 16a and the second uprights 16b and aligned with each other at a same height, wherein the movement means 9 of the support members 8 are constrained to said sliders 17a, 17b. Advantageously, the sliders are associated to hydraulic, pneumatic or electrical actuation means that define said lifting means 15.

[0067] Alternatively, the vertical movement of the sliders may be manual.

[0068] In order to steer both the conveyor 5 and the auxiliary transport units 7, the oven 1 is connected to or comprises a programmable control unit to move such groups both intermittently and continuously.

[0069] Advantageously, conveyor 5 and auxiliary transport units 7 can be independently steered, by adapting the drying time spent in the drying chamber 2 to the goods transported by each unit.

[0070] The invention achieves the intended objects and achieves important advantages.

[0071] As a matter of fact, the auxiliary transport unit configured to transport the suspended articles above the level of the supporting surface allows to considerably increase the productivity and versatility of the oven by maximizing space occupation.

[0072] Furthermore, the possibility to change the configuration of the support members according to the type of article to be treated allows to substantially expand the applicable scope of the oven, making it suitable to treat many types of articles.

[0073] The presence of two auxiliary units positioned on the sides of the conveyor, and independently movable of each other, which may be also positioned at different heights, allows the full exploitation of the volume of the drying chamber, with considerable advantages for the manufacturer in terms of productivity and thermal dissipation.

[0074] In this respect, what must be pointed out is that the possibility of adapting the unit height to the operator's height would allow to have not only a highly performing oven, but also a very ergonomic one.

Claims

1. Drying oven for leather articles or the like, comprising:

- a drying chamber (2) equipped with heating means (3) and provided with an inlet mouth (2a) and an outlet mouth (2b);

- a conveyor (5) extending through said drying chamber (2) and defining a supporting surface (B) for the articles (L) movable along a movement direction between the inlet mouth (2a) and the outlet mouth (2b); **characterized in that** it comprises an auxiliary transport unit (7) provided with at least a support member (8), and movement means (9) associated to said support member (8) to move it along said movement direction, with a direction according or opposite to said conveyor (5), at a height above said supporting surface (B).

2. Drying oven according to claim 1, **characterized in that** said support member (8) comprises at least one bar (10) which is at least partly horizontal for supporting at least one article (L).

3. Drying oven according to claim 1 or 2, **characterized in that** said support member (8) comprises at least one bar (10) extending transversely to said movement direction between one end (10a) constrained to the movement means (9) and a free end (10b).

4. Drying oven according to any one of the preceding claims, **characterized in that** said auxiliary transport unit (7) is movable towards and away from the supporting surface (B), and has a plurality of operating positions at different heights with respect to said supporting surface (B).

5. Drying oven according to any one of the preceding claims, **characterized in that** said auxiliary transport unit (7) comprises:

- at least a first (16a) and a second upright (16b) respectively arranged near said inlet mouth (2a) and said outlet mouth (2b) of the drying chamber (2);
- at least a first (17a) and a second slider (17b) respectively slidably associated to the first (16a) and the second upright (16b) and aligned with each other at a same height,

wherein said movement means (9) of the support members (8) are constrained to said sliders (17a, 17b).

6. Drying oven according to claim 4 or 5, **characterized in that** it comprises two auxiliary transport units (7) movable independently from each other towards and away from the supporting surface (B).

7. Drying oven according to any one of the preceding claims, **characterized in that** said conveyor (5) and said auxiliary transport unit (7) include movable recirculating movement means (6, 11) between the inlet mouth (2a) and the outlet mouth (2b) of the drying chamber (2).

8. Drying oven according to claim 7, **characterized in that** said movement means (6, 11) can rotate around the inversion axes that are mutually transverse, preferably orthogonal.

9. Drying oven according to any one of the preceding claims, **characterized in that** said conveyor (5) comprises at least two pulleys or rollers positioned in correspondence of the end portions (5a, 5b) and rotatable around the respective horizontal inversion axes (C), parallel to each other.

10. Drying oven according to any one of the preceding claims, **characterized in that** said auxiliary transport unit (7) includes recirculating movement means, which are associated with a plurality of support members (8) arranged in succession.

11. Drying oven according to claim 10, **characterized in that** said movement means comprise a belt or a chain (11) extending along the movement direction, and provided with an operating portion (11 a) and a return portion (11 b) substantially parallel between each other.

12. Drying oven according to claim 9 and 11, **characterized in that** said belt or chain (11) extends between two reversal points (11c) defining its ends and equipped with pulleys, each rotatable around a substantially vertical reversal axis (D), where the belt or chain (11) moves from the operating portion (11 a) to the return portion (11 b).

13. Drying oven according to according to any one of the preceding claims from 10 to 12, **characterized in that** each support member (8) comprises a carriage (12), constrained to the movement means (9) for moving along the movement direction, and at least one bar (10) removably connected to said carriage (12) and extending transversely to said movement direction between one end (10a) constrained to the carriage (12) and a free end (10b).

14. Drying oven according to any one of the preceding claims, **characterized in that** said conveyor (5) extends, transversely to said movement direction, between two longitudinal edges (14a); said auxiliary transport unit (7) being arranged astride and above one of said longitudinal edges (14a).

15. Drying oven according to claim 15, **characterized in that** said movement means comprise a belt or a chain (11) extending along the movement direction, and provided with an operating portion (11a) and a return portion (11 b) substantially parallel between each other, in which

said operating portion (11a) is arranged above said conveyor (5),
astride said longitudinal edge,
said return portion (11 b) is arranged externally to said conveyor (5), laterally to it, preferably outside said drying chamber (2).

Fig.1

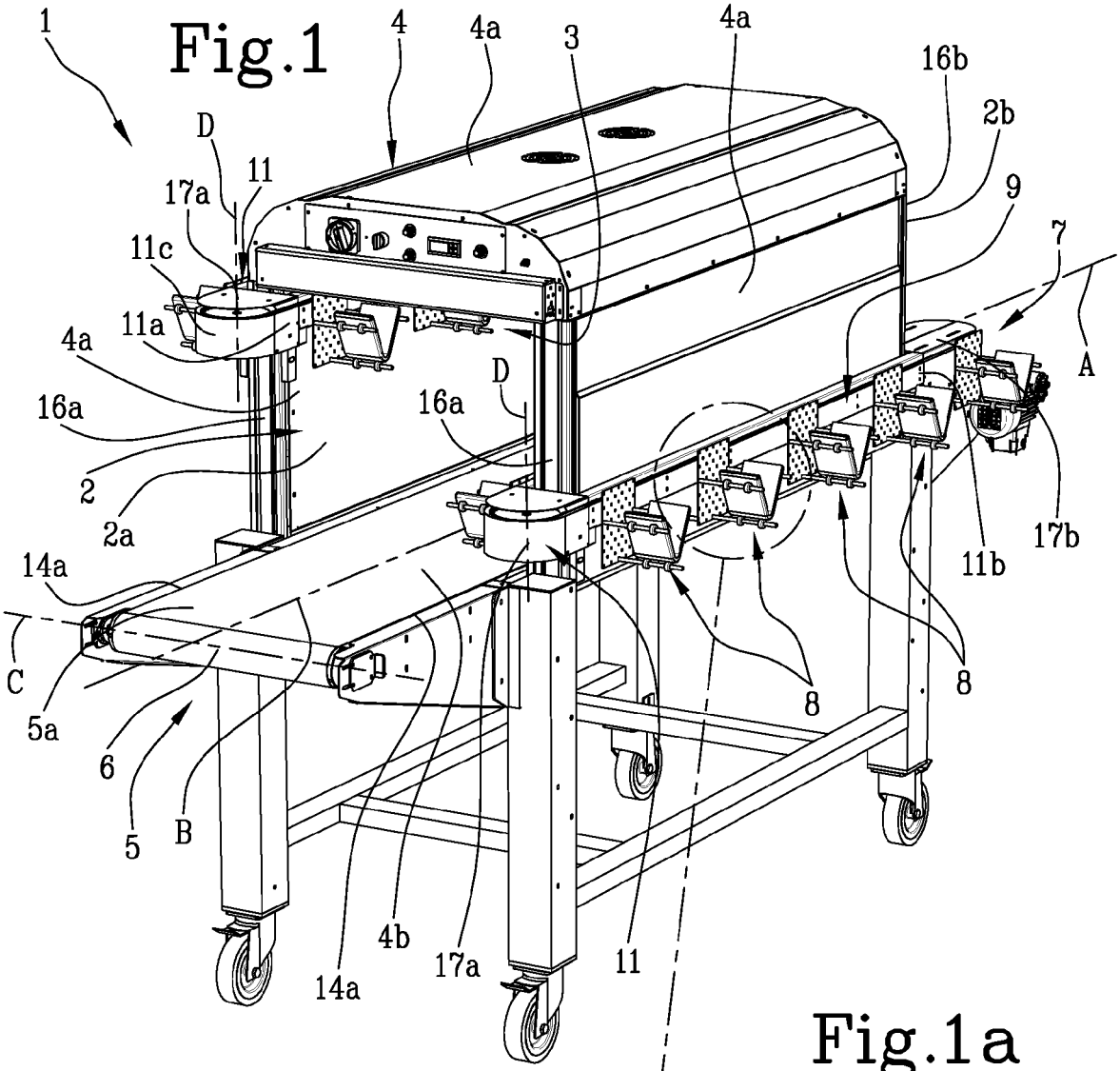

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Fig.1a

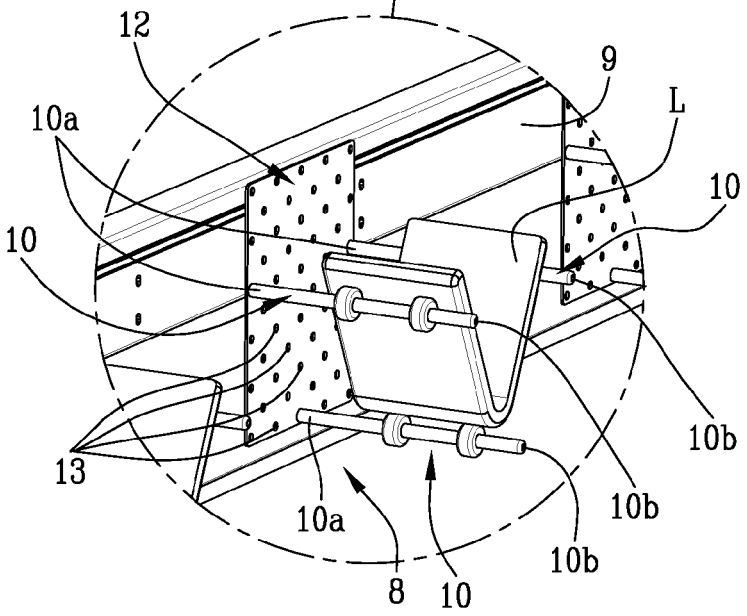
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Fig.2

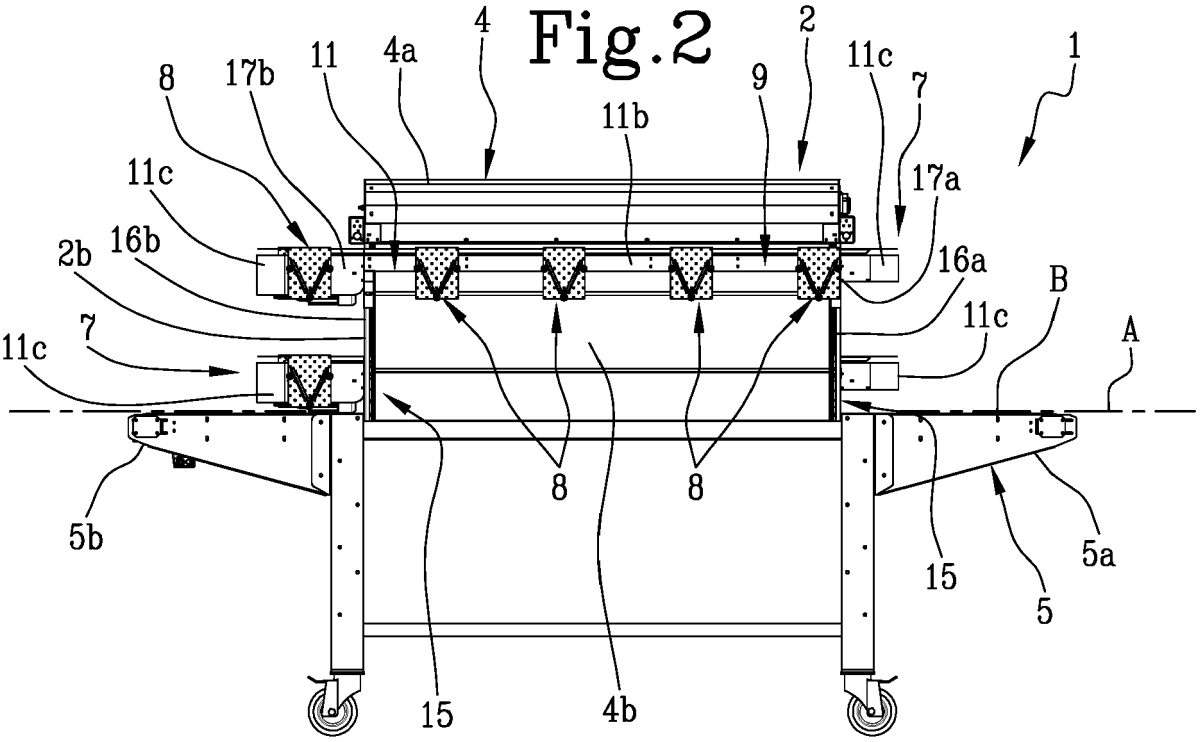
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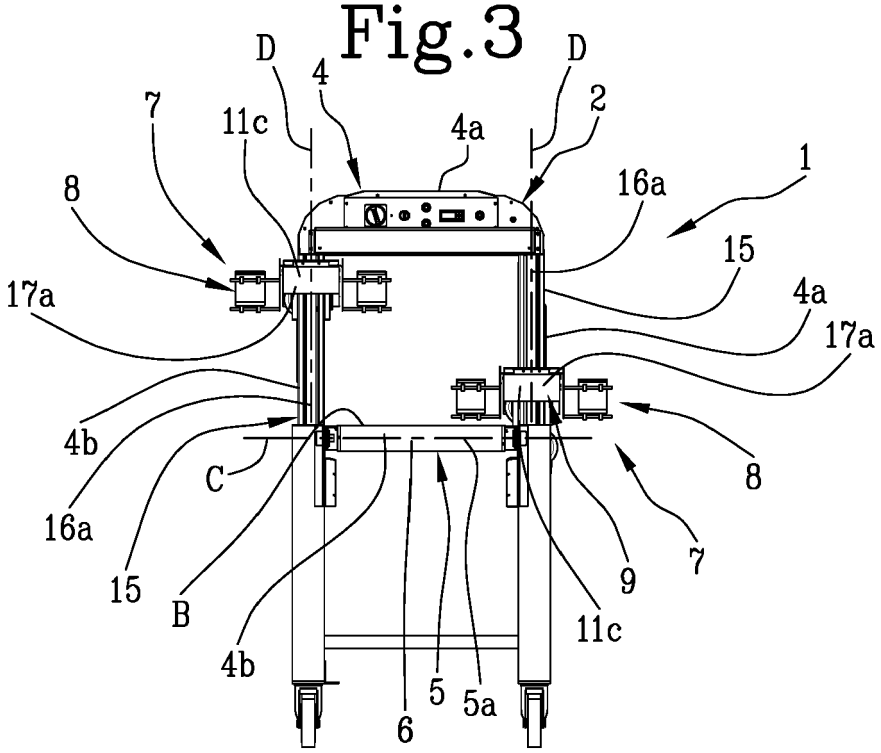
Fig.3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EUROPEAN SEARCH REPORT

Application Number
EP 17 15 7184

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* page 4, line 53 - page 8, line 80; figure 1 *	2-5,7-15	C14B17/06
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A	WO 99/57327 A1 (GALLI S P A [IT]) 11 November 1999 (1999-11-11) * claim 18; figure 1 *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

C14B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 June 2017	Bichi, Marco

CATEGORY OF CITED DOCUMENTS

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08-06-2017

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