(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 775 370 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.04.2007 Bulletin 2007/16

(51) Int Cl.:
D06F 67/08 *(2006.01)* ***D06F 65/06*** *(2006.01)*

(21) Application number: **06121107.4**

(22) Date of filing: **22.09.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **11.10.2005 IT PD20050295**

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(54) Ironing bed for roller ironing machines

(57) An ironing chest for roller ironers particularly for clothing, bedsheets, towels and other similar articles made of fabric, provided with a concave ironing face (10a, 110a) which is substantially shaped complementarily with respect to a facing ironing roller (12), the opposite face (10b, 110b) being shaped so as to form a plurality of seats (23, 123) for accommodating the means for heating the chest. The chest (10, 110) is constituted by at least two parts (14, 15, 114, 115, 121) made of extruded metallic material, which are joined along facing longitudinal edges (18, 19, 118, 119) by way of interlocking connection means with play adapted to allow a relative articulation of a first part (14, 115) with respect to a second part (15, 114, 121) connected to it.

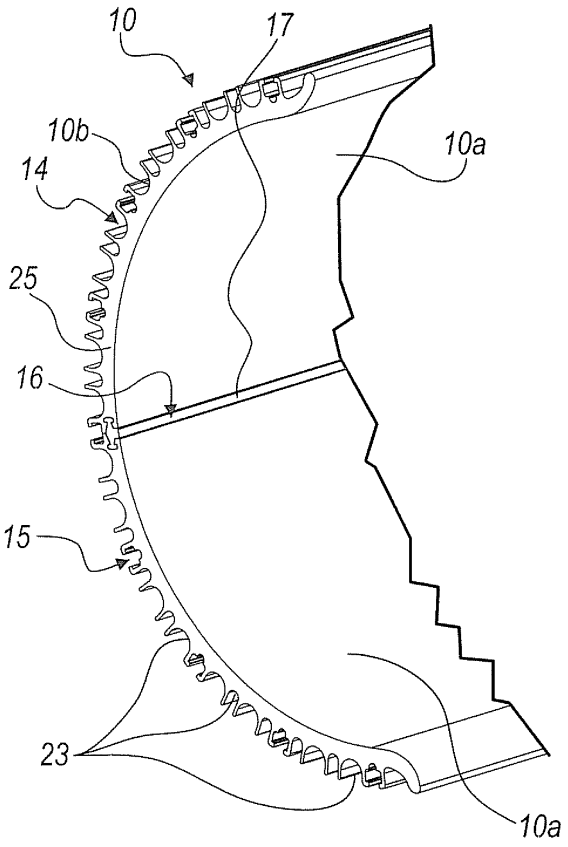

Fig. 3

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Description

[0001] The present invention relates to an ironing chest for roller ironers, particularly for clothes, bedsheets, towels and other similar fabric articles.

[0002] Industrial ironers of the type known as roller ironer are currently known and commercially widespread.

[0003] Such roller ironers are constituted generally by a supporting frame which comprises two shoulders, which are joined by cross-members and between which a motorized ironing roller is rotatably coupled; an ironing chest is pushed against said roller with means for controlling the ironing pressure, and the articles to be ironed are arranged between the roller and the chest.

[0004] The roller is constituted by a metallic cylinder surrounded by a shock-absorbing layer and by an outer covering which is in contact with the articles being ironed.

[0005] This shock-absorbing layer is generally provided by a band which wraps around the internal metallic cylinder and supports a plurality of elastic elements which are mutually adjacent and parallel and act in a direction which is substantially radial with respect to the rotation axis of the roller.

[0006] Ironing chests constituted by a contoured body made of extruded aluminum are currently highly appreciated because of their low cost for an equal production efficiency.

[0007] Such extruded aluminum body is provided with a concave face, which is shaped substantially complementarily with respect to the facing ironing roller, while the opposite face is contoured so as to form a plurality of seats for accommodating the means for heating said chest.

[0008] The quality of the ironing is determined by the capacity of the machine to maintain as uniform as possible the contact between the article being ironed, which is turned by the roller, and the complementarily shaped heated face of the chest.

[0009] The compression and high temperature imposed by the chest to the roller, however, over time lead to gradual compaction with permanent deformation of the covering and of the shock-absorbing layer of the roller, with a consequent reduction of the outside diameter of said roller.

[0010] Further, the transit between the roller and the chest of the items to be ironed, which sometimes are considerably thick, leads to deformation of the circular profile of the cross-section of the roller, which might be no longer perfectly cylindrical.

[0011] The reduction of the outside diameter of the roller leads to a considerable reduction of the surface of contact with the ironing face of the chest, with a consequent reduction of the hourly yield of the ironing machine together with a deterioration of the quality of the ironed articles.

[0012] The aim of the present invention is to provide an ironing chest for roller ironers which is capable of obviating the above-mentioned problems and drawbacks.

[0013] Within this aim, an object of the present invention is to provide an ironing chest for roller ironers which is capable of adapting to the deformations of the ironing roller, compensating for them and optimizing the ironing quality.

[0014] Another object of the present invention is to provide a chest obtained by extruding aluminum.

[0015] Another object of the present invention is to provide an ironing chest which is sturdy and suitable even for a particularly heavy workload.

[0016] Another object of the present invention is to provide a chest which can be associated with known types of roller.

[0017] Another object of the present invention is to provide an ironing chest for roller ironers which can be manufactured cheaply with known systems and technologies.

[0018] This aim and these and other objects, which will become better apparent hereinafter, are achieved by an ironing chest for roller ironers particularly for clothing, bedsheets, towels and other similar articles made of fabric, provided with a concave face which is substantially shaped complementarily with respect to a facing ironing roller, the opposite face being shaped so as to form a plurality of seats for accommodating the means for heating said chest, said chest being characterized in that it is constituted by at least two parts made of extruded metallic material, which are joined along facing longitudinal edges by way of interlocking connection means with play suitable to allow said at least two parts to have a mutual articulation.

[0019] Further characteristics and advantages of the invention will become better apparent from the following detailed description of five preferred but not exclusive embodiments thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a sectional side view of a chest inside an ironer;

Figure 2 is a schematic top view of a portion of the ironer of Figure 1;

Figure 3 is a perspective view of a chest according to the invention in a first embodiment thereof;

Figure 4 is a side view of a detail of said chest in its first embodiment;

Figure 5 is a side view of a chest according to the invention in a second embodiment;

Figure 6 is a view of a detail of a chest according to the invention in the second embodiment;

Figure 7 is a schematic side view of the interlocking connection means with play of a chest according to the invention in a third embodiment;

Figure 8 is a schematic side view of the interlocking connection means with play of a chest according to the invention in a fourth embodiment;

Figure 9 is a schematic side view of the interlocking connection means with play of a chest according to the invention in a fifth embodiment.

[0020] With reference to the figures, an ironing chest for roller ironers according to the invention is generally designated, in its first embodiment shown in Figures 1 to 4, by the reference numeral 10.

[0021] The chest 10 is supported by a supporting frame 11, which comprises two shoulders 11a joined by a series of cross-members.

[0022] A motorized ironing roller 12 is coupled rotatably between the two shoulders 11a, and the chest 10 is pushed against said roller by means for controlling the ironing pressure.

[0023] In the embodiment illustrated here by way of non-limiting example of the invention, said pressure control means are provided by fluid-operated actuators 13.

[0024] The fluid-operated actuators 13 are arranged in a parallel configuration, two upper ones and two lower ones, and are fixed at the rear to first cross-members 11b, which run from one shoulder 11a to the other, and move second cross-members 11c with the free ends of the stem.

[0025] The second cross-members 11c, which are not fixed to the shoulders 11a, join the free ends of two successive telescopic arms 30, which are also coupled at the rear to the first cross-members 11b, for supporting the chest 10.

[0026] The telescopic arms 30 are provided with arms 30a for supporting the chest 10, which are pivoted at the end to a corresponding coupling element which is rigidly coupled to the respective portion of the chest 10.

[0027] The chest 10 has a concave face 10a which is shaped substantially complementarily with respect to the facing ironing roller 12.

[0028] The opposite face 10b is shaped so as to form a plurality of seats 23 for accommodating the heating means of said chest, which are of a per se known type and are not described here.

[0029] The chest 10 is constituted, in this first embodiment of the invention, by two parts, 14 and 15 respectively.

[0030] The two parts 14 and 15 are mutually joined along two facing longitudinal edges, designated respectively by the reference numerals 18 and 19, with interlocking connection means with play, which allow a relative articulation of the first part 14 with respect to the second part 15 connected to it.

[0031] The play is designated by way of example by the reference numeral 27 in Figure 4.

[0032] In this exemplifying and non-limiting embodiment of the invention, the parts 14 and 15 are obtained from extruded aluminum portions by using the same extrusion die and are then arranged mirror-symmetrically with respect to the mutual joining region.

[0033] In the first embodiment of the chest 10 according to the invention, said interlocking connection means with play are constituted by a longitudinal connecting body 16, which is adapted to allow a relative articulation of the first part 14 with respect to the second part 15 that is connected to it, by interposition of the connecting body 16.

[0034] The connecting body 16 is therefore engaged with the contiguous parts, the first part 14 and the second part 15.

[0035] The connecting body 16 has a face 17 whose surface cooperates in the ironing operation by being arranged so that it is juxtaposed with respect to the concave faces 10a of the two parts 14 and 15, with which it is continuous.

[0036] The longitudinal connecting body 16 is a metallic profile obtained by extruding aluminum, and therefore the entire chest 10 is made of extruded aluminum.

[0037] The longitudinal connecting body 16 has a substantially T-shaped cross-section.

[0038] As shown clearly in Figure 4, each of the lateral portions 16b of the cross-section of the connecting body 16 is provided with mutually opposite protrusions 16c, which lie transversely to the surface of the concave face 10a.

[0039] The protrusions 16c and the lateral portions 16b are inserted by interlocking with play in corresponding complementarily shaped seats 20, which are open on facing edges 18 of the two contiguous first and second parts 14,15 of the chest 10.

[0040] The connection of the connecting body 16 to the two parts 14 and 15 occurs by inserting from one side 25 the connecting body 16 in the seats 20 and by making it slide within the seats until it has entered them completely.

[0041] The connecting body 16 is approximately as long as each of the two parts 14 and 15.

[0042] The edges 18 and 19 respectively of the first part 14 and the second part 15, which face each other, have, in the portion 18a and 19a that extends toward the concave face 10a, a profile whose cross-section diverges with respect to the sectional profile of the central portion 16a of the connecting body 16.

[0043] This allows, together with the play 27 within the seats 20, the relative articulation of the first part 14 and of the second part 15 with respect to the connecting body 16 and therefore the relative articulation of the first part 14 with respect to the second part 15.

[0044] A second embodiment of the chest according to the invention is shown in Figures 5 and 6.

[0045] In this second embodiment, designated by the reference numeral 110 and shown in exploded view in Figure 6, the chest 110 is constituted by three parts 114, 115 and 121, a first upper part 114, a second central part 115, and a third lower part 121, where the adjectives "upper", "central" and "lower" refer to an active configuration of the three assembled parts.

[0046] The second central part 115 is rigidly coupled to the first part 114 and to the third part 121 with interlocking means with play, which are formed by a first rib 116 for connection to the first part 114, and by a second rib 126 for connection to the third part 121.

[0047] A complementarily shaped slot, designated by the reference numeral 120 on the first part 114 and by

the reference numeral 130 on the third part 121, corresponds to each of the ribs 116 and 126.

[0048] The first rib 116 protrudes from the first edge 118 of the second part 115, while the second rib 126 protrudes, again from the second part 115, from the additional first edge 128 for engagement with the contiguous third part 121.

[0049] The respective complementarily shaped slots 120 and 130 are formed on the corresponding facing edges 119 and 129 of the first part 114 and the third part 121.

[0050] The interlocking connection means are constituted, therefore, by the couplings of the ribs 116 and 126 with the respective seats 120 and 130.

[0051] By way of example, the connecting means provided by the rib 116 and by the complementarily shaped seat 120 are described hereinafter.

[0052] The rib 116 protrudes longitudinally with respect to the second part 115 along the first edge 118 and forms a single body with it, being obtained simultaneously with the extrusion of the second part 115.

[0053] The rib 116 is adapted to be inserted in the slot 120 provided on the facing second edge 119 of the contiguous first part 114, so as to form an interlock with play.

[0054] The rib 116 has a profile which has a substantially T-shaped cross-section, the central portion 116a of which is substantially tangent to the circular arc-like profile of the cross-section of the chest 110.

[0055] Two mutually opposite protrusions 116b for interlocking engagement with play in the slot 120 protrude from the central portion 116a transversely to the concave face 112.

[0056] The facing and contiguous first edge 118 and second edge 119 have end portions, respectively 118a and 119a, of their cross-sectional profiles which diverge with respect to each other, so as to allow the relative rotation of the first part 114 of the chest with respect to the adjacent second part 115.

[0057] In this second embodiment of the invention, the second central part 115 has a sectional profile shaped like a circular arc whose extension is such that the part 115 can be provided, on the outer face 110b, with a plurality of seats 123 for accommodating the means for heating the chest 110, differently from what has been shown for the connecting body 16 of the first embodiment of the invention.

[0058] Moreover, the division of the chest 110 into three parts further increases the adaptability of the concave ironing face 110a to any deformations affecting the surface of the ironing roller.

[0059] The operation of the chest according to the invention is as follows.

[0060] By means of the fluid-operated actuators 13, the parts that compose the chest are pushed against the ironing roller 12.

[0061] When a deformation of the external surface of the roller 12 occurs, the connecting body 16 or the ribs 116 and 128 in the respective seats allow a relative movement between the parts that compose the chest, so that they tend to close on the roller, adapting to its shape and surrounding it as much as possible.

[0062] This adaptation entails a more uniform distribution of the pressure applied by the parts of the chest to the roller 12, consequently improving the quality of the ironing.

[0063] Figure 7 illustrates the connection means of a third embodiment of the chest according to the invention.

[0064] Such connection means are constituted by a longitudinal connecting body 216, which has a substantially T-shaped cross-section, in a manner similar to what has been shown for the longitudinal body 16 of the first embodiment.

[0065] The cross-section of the longitudinal body 216 has a central portion 216a and two lateral portions 216b, which in turn have mutually opposite protrusions 216 which protrude transversely to the surface of the concave face 210a.

[0066] In this third embodiment of the invention, the lateral portions 216b each end with an end which has a circular cross-section, and the mutually opposite protrusions 216c are formed by circular arc-like profiles formed by such circular cross-sections.

[0067] The protrusions 216c are inserted with play in corresponding complementarily shaped seats 220, which also have a circular cross-section and are open on the facing edges 218 and 219 of two contiguous parts 214 and 215 of the chest 210.

[0068] Figure 8 illustrates the connection means of a fourth embodiment of the chest according to the invention.

[0069] The interlocking connection means are constituted by a rib 316, in a manner similar to what has been shown for the second embodiment of the chest 110 according to the invention.

[0070] The rib 316 protrudes from a first lateral edge 318 of a second part 315 of the chest 310 and runs longitudinally along the first edge 118.

[0071] The rib 316 is inserted by interlocking with play in a complementarily shaped groove 320 provided on the facing second edge 319 of the contiguous first part 314.

[0072] The rib 316 has a cross-section whose profile has a central portion 316a, which is substantially quadrangular and is substantially tangent with respect to the circular arc-like profile of the cross-section of the chest 310, and an end portion 316b, which has a circular cross-section.

[0073] The end portion 316b is interlocked with play in the groove 320.

[0074] In a fifth embodiment of the chest according to the invention, shown in Figure 9 and designated therein by the reference numeral 410, the interlocking connection means are constituted by two ribs, a first rib 416a which protrudes from the first edge 418 of a first part 414 and a second rib 416b which protrudes from the second edge 419 of the second part 415.

[0075] Both ribs 416a and 416b have a substantially hook-shaped cross-sectional profile, the central space

of which, respectively 420a and 420b, acts as a seat for the insertion with play of the retracting end 424b and 424a of the other rib.

[0076] In practice it has been found that the invention thus described solves the problems noted in known types of ironing chest made of extruded metallic material.

[0077] In particular, the present invention provides an ironing chest for roller ironers which is capable of adapting to the deformations of the ironing roller, compensating for them and optimizing the quality of the ironing.

[0078] Moreover, the present invention provides a chest which can be obtained by extruding metallic material and in particular aluminum or an alloy thereof.

[0079] Further, the present invention provides an ironing chest which is strong and adapted even for particularly heavy workloads.

[0080] Moreover, the present invention provides a chest which can be associated with known types of roller.

[0081] Moreover, the present invention provides an ironing chest for roller ironers which can be manufactured cheaply with known systems and technologies.

[0082] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0083] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0084] The disclosures in Italian Patent Application No. PD2005A000295 from which this application claims priority are incorporated herein by reference.

[0085] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An ironing chest for roller ironers particularly for clothing, bedsheets, towels and other similar articles made of fabric, provided with a concave face (10a, 110a) which is substantially shaped complementarily with respect to a facing ironing roller (12), the opposite face (10b, 110b) being shaped so as to form a plurality of seats (23, 123) for accommodating the means for heating said chest, said chest being **characterized in that** it is constituted by at least two parts (14, 15, 114, 115, 121) made of extruded metallic material, which are joined along facing longitudinal edges (18, 19, 118, 119, 128, 129) by way of interlocking connection means with play adapted to allow said at least two parts (14, 15, 114, 115, 121) to have a mutual articulation.

2. The ironing chest according to claim 1, **characterized in that** said means for interlocking with play are constituted by a longitudinal connecting body (16), which is adapted to allow the articulation of a first part (14) with respect to a second part (15), which is connected thereto by interposing said connecting body (16), said body being indeed engaged with the contiguous first and second parts (14, 15).

3. The chest according to claim 1, **characterized in that** said connecting body (16) has a face (17) the surface of which, by being laterally adjacent to the concave faces (10a) of the two parts (14, 15), cooperates in the ironing operation.

4. The chest according to the preceding claims, **characterized in that** said longitudinal connecting body (16) is a metallic profile obtained by extrusion.

5. The chest according to claim 4, **characterized in that** said at least two parts (14, 15) and said longitudinal connecting body (16) are obtained by extruding aluminum or an alloy thereof.

6. The chest according to one or more of the preceding claims, **characterized in that** said longitudinal connecting body (16) has a substantially T-shaped cross-section, which is constituted by a central portion (16a) and two lateral portions (16b), which in turn have mutually opposite protrusions (16c) which protrude transversely with respect to the surface of the concave face (10a), said protrusions (16c) and the lateral portions (16b) being adapted to be inserted by interlocking with play into corresponding complementarily shaped seats (20) which are open on the facing edges (18, 19) of two contiguous parts (14, 15) of the chest (10), said edges (18, 19), in the portion (18a, 19a) that protrudes toward the concave face (10a), having a profile whose cross-section diverges with respect to the sectional profile of said central portion (16a) of the connecting body (16), so as to allow the relative articulation of one part (14) of the chest with respect to the connecting body (16) and the relative articulation of a first part (14) with respect to a second part (15).

7. The ironing chest according to claim 1, **characterized in that** said interlocking connection means are constituted by a rib (116, 126), which protrudes from a first lateral edge (118, 128) of a part (115) of the chest (110), said rib (116, 126) protruding longitudinally from said part (115) along said first edge (118, 128) and forming a single body with said part (115), said rib (116, 126) being adapted to be inserted by interlocking with play in a complementary shaped groove (120, 130) provided on the facing second

edge (119, 129) of another contiguous part (114, 121) of the chest (110).

8. The chest according to claim 7, **characterized in that** said rib (116, 126) has a substantially T-shaped sectional profile, the central portion (116a) of which protrudes in a direction which is substantially tangent to the circular arc-like profile of the cross-section of the chest (110), two mutually opposite protrusions (116b) protruding from said central portion (116a) transversely to the concave face (110a) for engagement by interlocking with play in said groove (120, 130), said facing and contiguous first edges (118, 128) and second edges (119, 129) having end portions (118a, 119a) of the cross-sectional profiles which diverge with respect to each other, so as to allow the articulation of a first part (114, 121) of the chest to the adjacent second part (115).

9. The chest according to claims 7 and 8, **characterized in that** it is constituted by three parts (114, 115, 121), a first upper part (114), a second central part (115), and a third lower part (121), said second part (115) being rigidly coupled to the first part (114) and the third part (121) by way of interlocking means with play, formed by a rib (116, 126) and a complementarily shaped groove (120, 130), said rib protruding from a first edge (118, 128) of one of two contiguous parts, the respective complementarily shaped groove (120, 130) being formed on the corresponding edge (119, 129) of the other part.

10. The chest according to one or more of the preceding claims, **characterized in that** said connecting means are formed by a longitudinal connecting body (216) which has a substantially T-shaped cross-section, said cross-section having a central portion (216a) and two lateral portions (216b), which in turn are provided with mutually opposite protrusions (216c) which protrude transversely to the surface of the concave face (210a), said lateral portions (216b) each ending with an end which has a circular cross-section, the mutually opposite protrusions (216c) of which are formed by circular arc-like profiles, said protrusions (216c) being adapted to enter with play corresponding complementarily shaped seats (220), which also have a circular cross-section and are open on the facing edges (218, 219) of two contiguous parts (214, 215) of the chest (210).

11. The chest according to one or more of the preceding claims, **characterized in that** the interlocking connection means are constituted by a rib (316), which protrudes from a first lateral edge (318) of a second part (315) of the chest (310) and protrudes longitudinally along said first edge (318), said rib (316) being adapted to be inserted by interlocking with play in a complementarily shaped groove (320) provided on the facing second edge (319) of a contiguous first part (314), said rib (316) having a cross-section whose profile is formed by a central portion (316a), which is substantially quadrangular and protrudes in a direction which is substantially tangent to the circular arc-like profile of the cross-section of the chest (310), and by an end portion (316b) which has a circular cross-section.

12. The chest according to one or more of the preceding claims, **characterized in that** the interlocking connection means are constituted by two ribs, a first rib (416a) which protrudes from a first edge (418) of a first part (414) and a second rib (416b) which protrudes from a second edge (419) of a second part (415), both of said ribs (416a, 416b) having a profile which has a substantially hook-shaped cross-section, the central space (420a, 420b) of which acts as a seat for the insertion with play of the retracting end (424b, 424a) of the other rib.

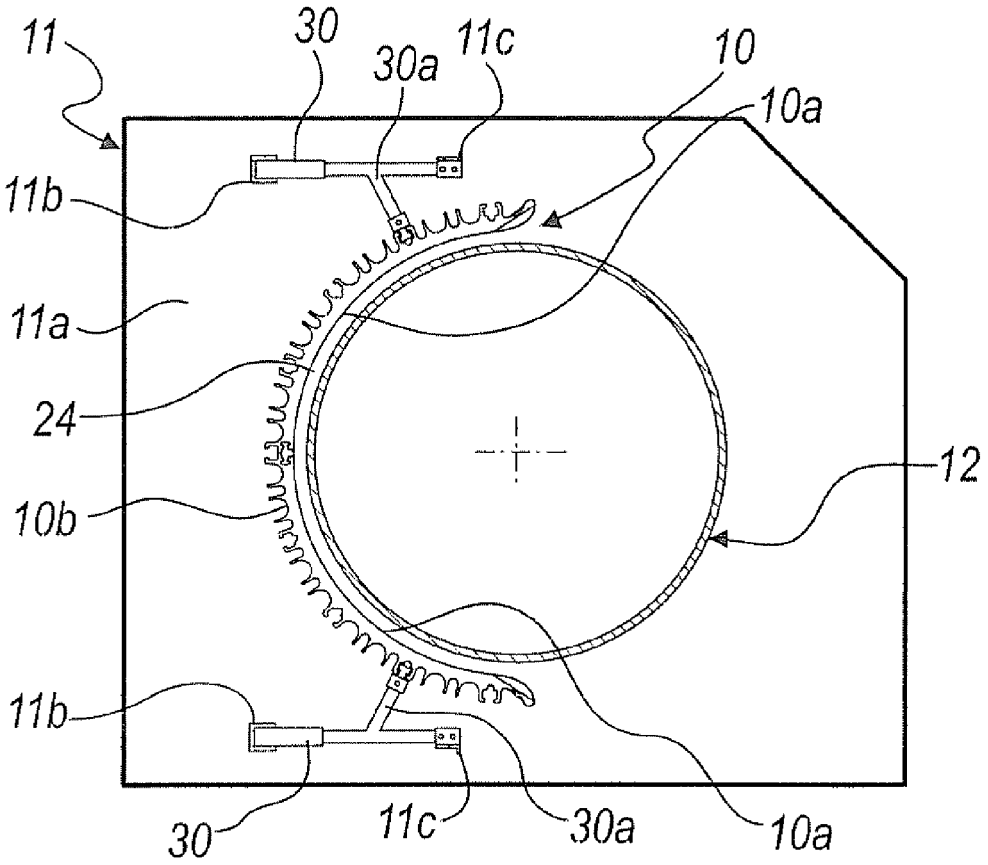
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Fig. 1

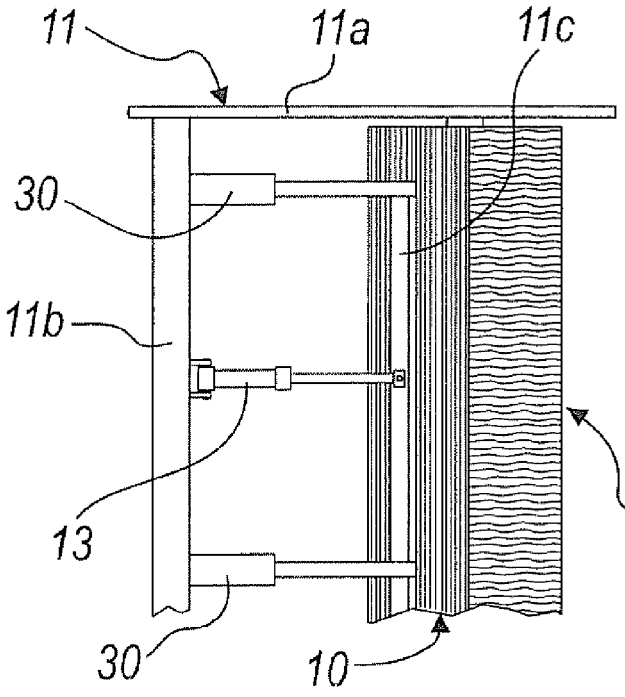
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Fig. 2

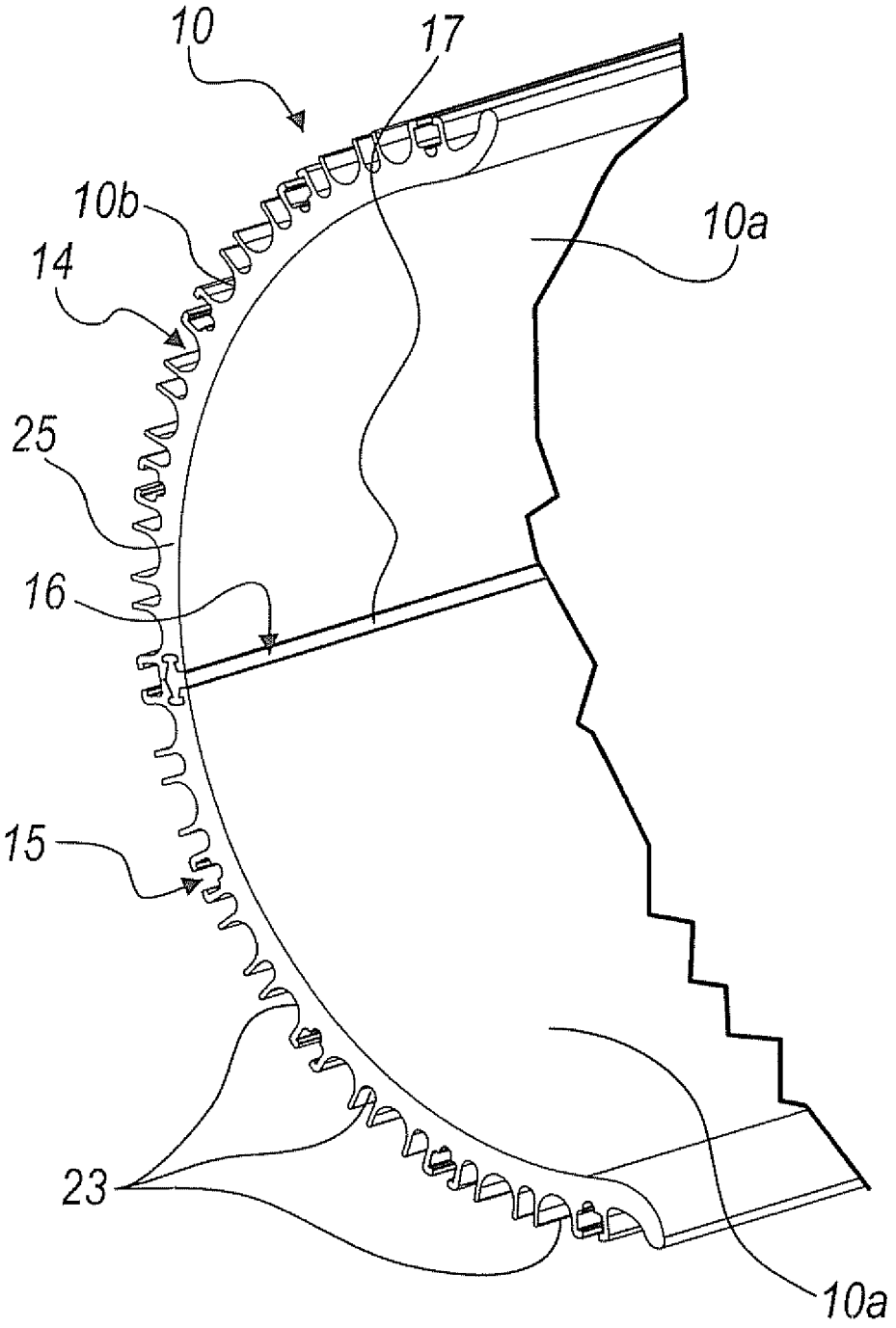
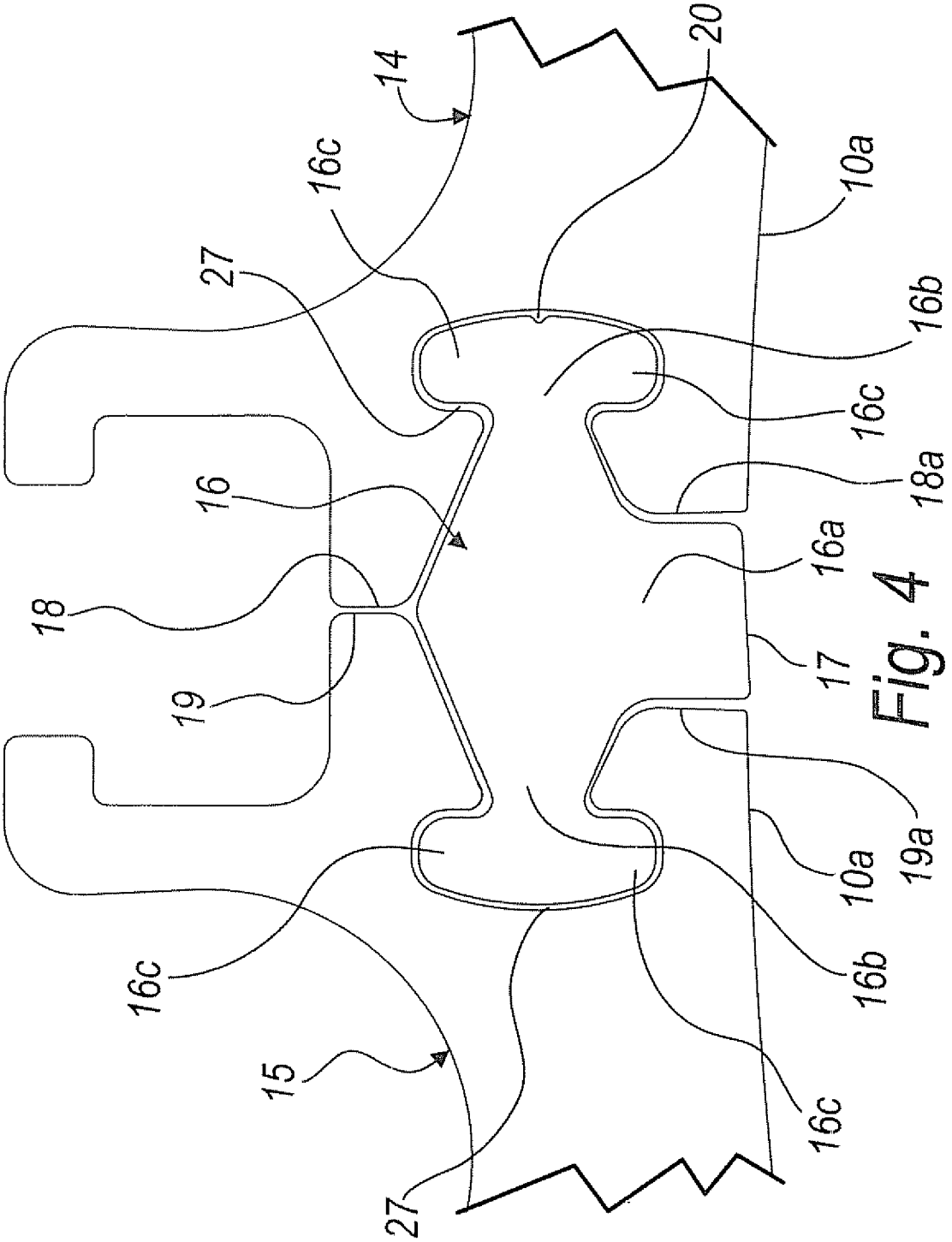


Fig. 3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27
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27

Fig. 4

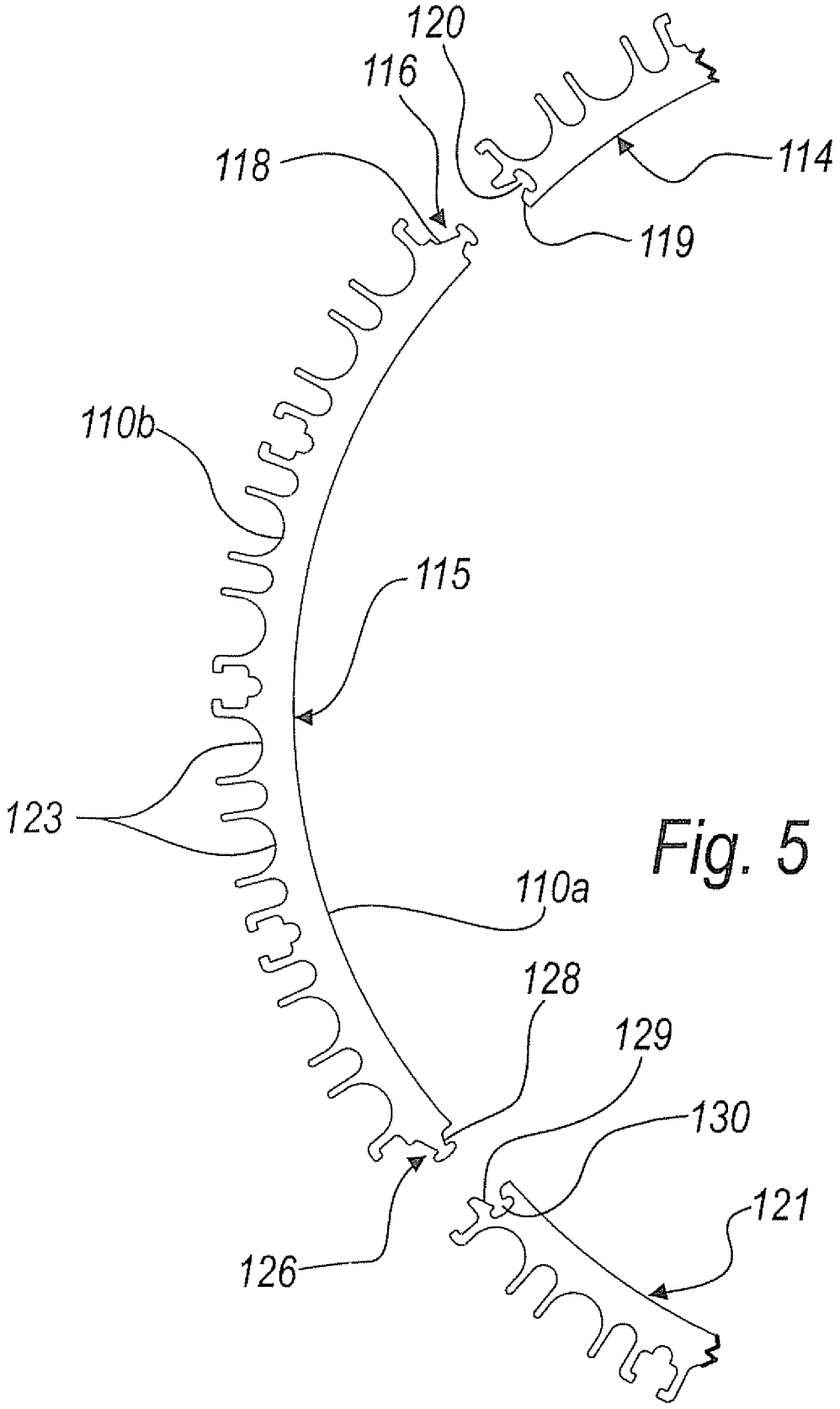

Fig. 5

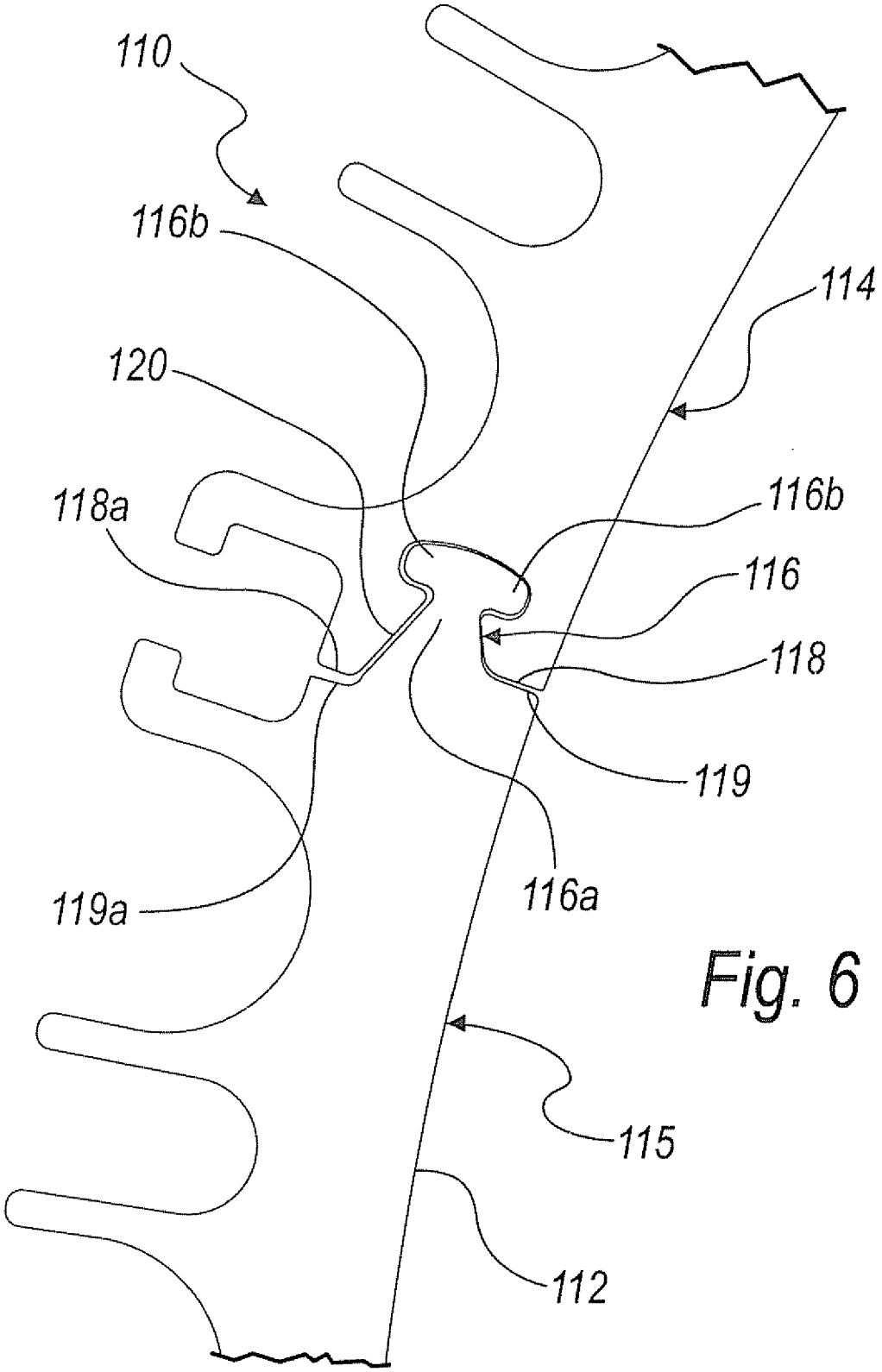

Fig. 6

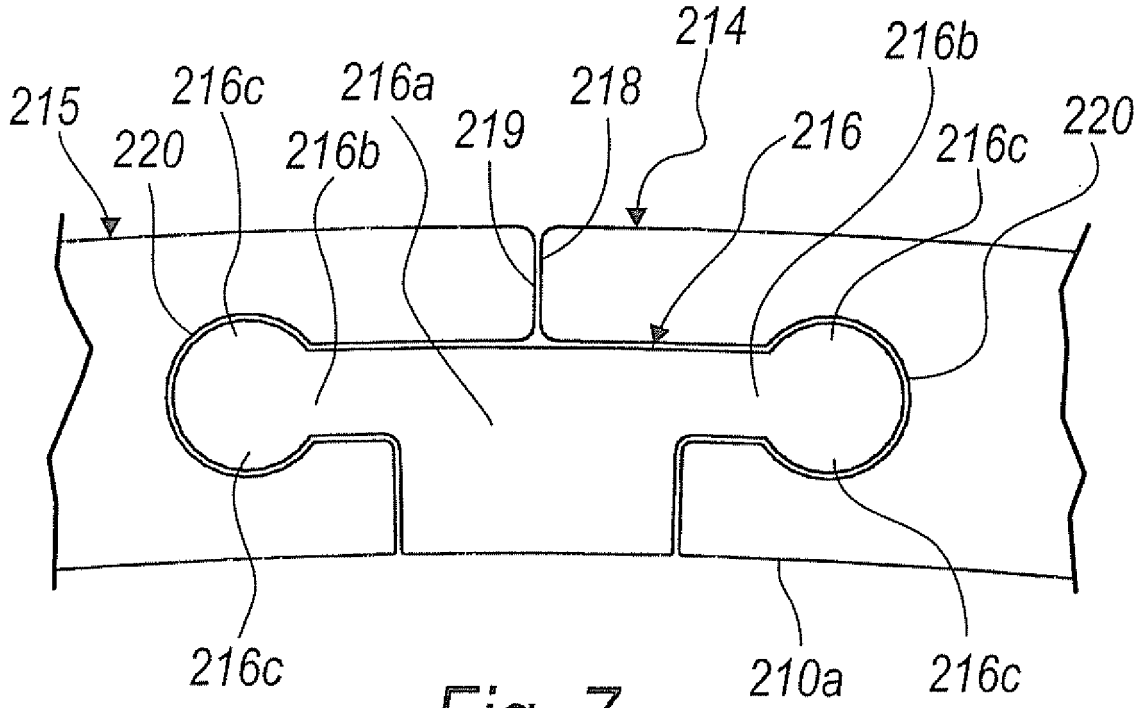
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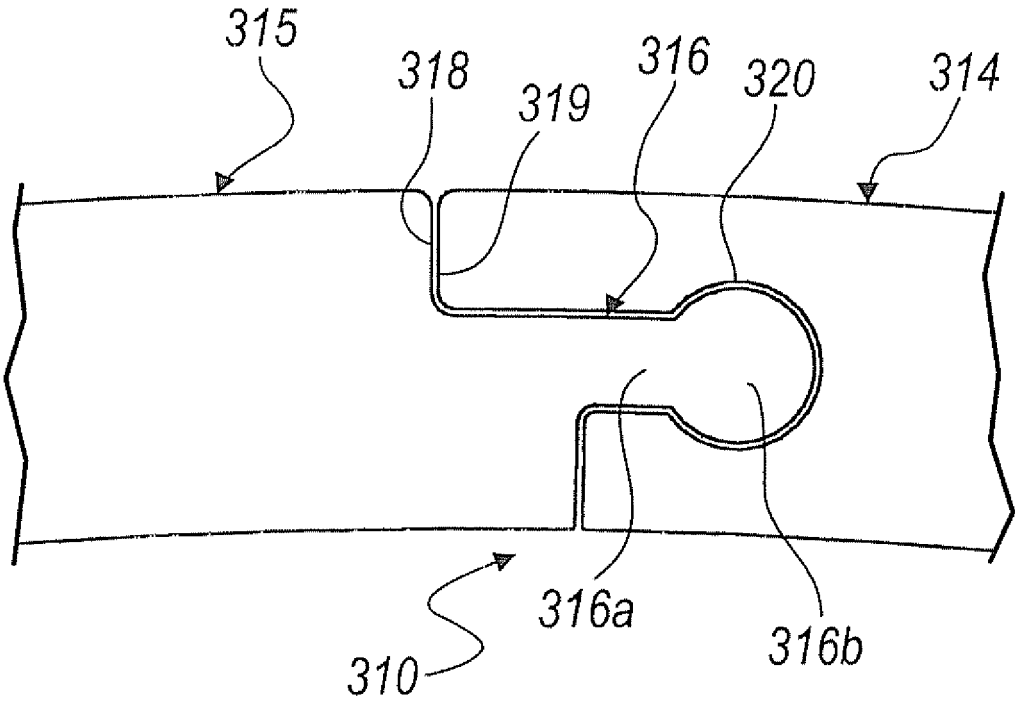
Fig. 7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316a
316b
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Fig. 8

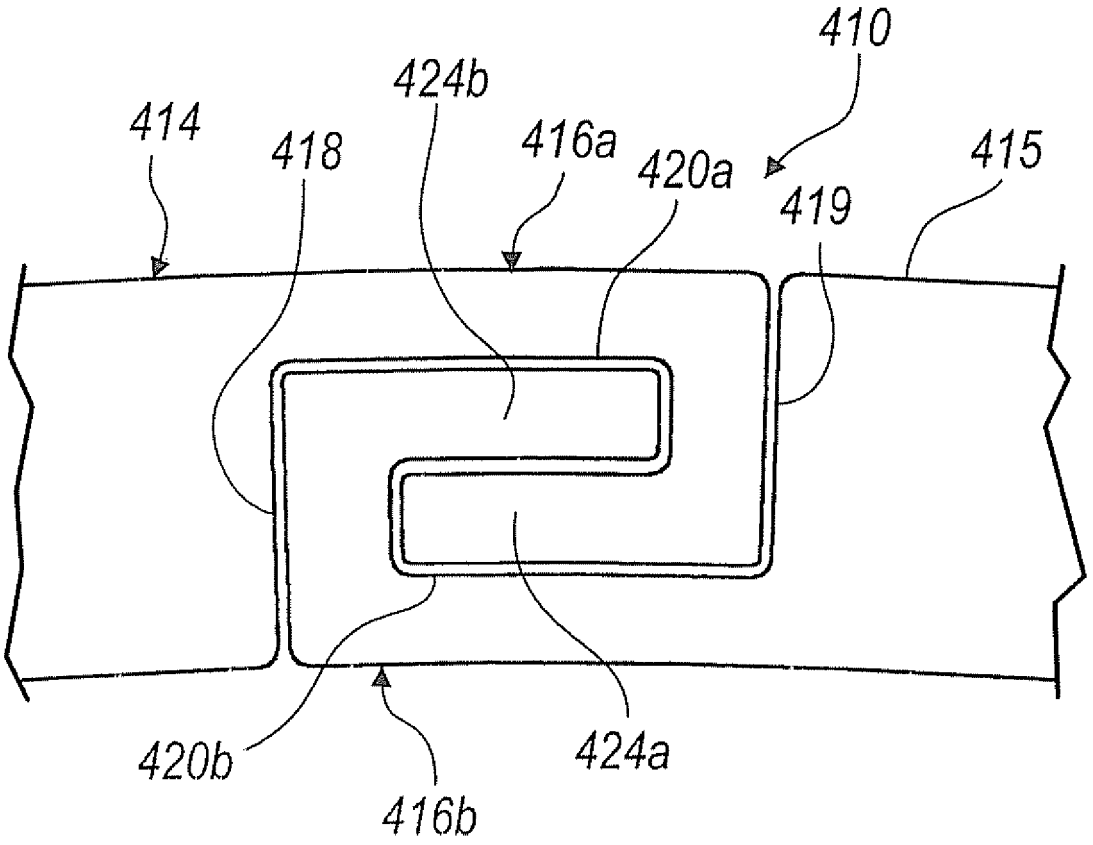

Fig. 9

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 12 1107

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 225 266 A1 (MIELE & CIE [DE]) 24 July 2002 (2002-07-24) * column 1, paragraph 8 - column 2, paragraph 12; claims 1,8; figures *	1,7-9, 11,12	INV. D06F67/08 D06F65/06
X	EP 0 404 754 A1 (LAPAUW WERKHUIZEN [BE]) 27 December 1990 (1990-12-27) * column 1, line 53 - line 57 * * column 4, line 10 - line 29; figure 1 *	1	
A	DE 90 04 179 U1 (HERBERT KANNEGIESSER GMBH + CO, 4973 VLOTHO, DE) 26 July 1990 (1990-07-26) * the whole document *	1-12	
A	DE 89 05 552 U1 (HERBERT KANNEGIESSER GMBH + CO, 4973 VLOTHO, DE) 22 June 1989 (1989-06-22) * the whole document *	1-12	
A	DE 10 02 279 B (E F TEXTILIEN UND APP BAU UND) 14 February 1957 (1957-02-14) * the whole document *	1-12	TECHNICAL FIELDS SEARCHED (IPC) D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 February 2007	Lodato, Alessandra

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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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14-02-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1225266 A1	24-07-2002	AT 290115 T	15-03-2005
		DE 10158935 A1	25-07-2002
EP 0404754 A1	27-12-1990	AT 111167 T	15-09-1994
		BE 1003894 A5	07-07-1992
		DE 69012229 D1	13-10-1994
DE 9004179 U1	26-07-1990	NONE	
DE 8905552 U1	22-06-1989	NONE	
DE 1002279 B	14-02-1957	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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Patent documents cited in the description

- IT PD20050295 A **[0084]**