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(54) **AN ARRESTING SYSTEM**

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## Description

**[0001]** The present invention relates to a system for arresting movement of a body received within housing, particularly, the present invention relates to a system for arresting movement of a heat exchanger core received in a housing.

**[0002]** Generally, length and width of a heat exchanger core is repeatable and a housing **2** as illustrated in **FIG. 1** or a simple bracket **5** as illustrated in **FIG. 2** is sufficient to arrest motion thereof in two directions, i.e. one parallel to the length and the other parallel to width of the heat exchanger core **4.** The same bracket **5** or the housing **2** also arrests rotational motion of the heat exchanger core **4** in three rotational axes thereof. The housing **2** includes a first portion **2a** and a second portion **2b** that are disposed around a heat exchanger core **4** and the two portions **2a, 2b** are held together. The bracket **5** also includes portions **5a** and **5b** that are disposed around the heat exchanger core **4** and joined at the ends **6a** and **6b** and the ends **6a** and **6b** are held together by fasteners to define an enclosure for receiving and securing holding the heat exchanger core **4** therein. Even in case some clearances are provided between the heat exchanger core **4** and the bracket **5** or the housing **2,** these clearances can be removed by using the fasteners such as screws **3.** Further, such an arrangement of fasteners or screws **3** also facilitates in enhancing grip of the bracket **5** or the housing **2** over the heat exchanger core **4** and also maintains the bracket **5** or the housing **2** in a gripping configuration thereof in which the bracket **5** or the housing **2** firmly grips the heat exchanger core **4** received therein. However, the simple bracket **5** or the housing **2** may fail to arrest the movement of the heat exchanger core **4** in a direction parallel to height of the heat exchanger core **4,** particularly in the direction represented by arrows **"Z"** in the **FIG. 1** and **FIG. 2.** Additionally, if such frames, particularly, the bracket **5** or the housing **2** with heat exchanger cores **4** received therein are put into additional housings, they may be subject to various displacements therein. More specifically, as the heat exchanger core **4** along with the frame are not securely held inside the additional housing, the heat exchanger core **4** can move within the additional housing resulting in part to part contact between the internal walls of the additional housing and the outside walls of either the frame or the heat exchanger core **4** that in turn may cause noise. Also, such continuous part to part contact may cause damage to the heat exchanger.

**[0003]** The heat exchanger core **4** is generally configured by stacking and joining a plurality of heat exchanger plates **4a, 4b, 4c... 4n** by brazing. To ensure good brazing connection between the heat exchanger plates **4a, 4b, 4c... 4n,** the height of the heat exchanger core **4** is not efficiently controlled. In some cases, compression forces applied and controlled by springs configured on brazing frames used during brazing. However, height of the heat exchanger core **4** is still not repeatable and may vary. Specifically, the heat exchanger cores **4** still exhibit height tolerances in the range of +/- 4 mm. Although, the tolerances can be reduced by process optimization, the process optimization is difficult to achieve.

**[0004]** Generally, flexible clips **8a, 8b, 8c, ....8n** are used for removing clearances that may occur to facilitate accommodating of different heights of the heat exchanger core **4** and arresting the movement of the heat exchanger core **4** in a direction parallel to height of the heat exchanger core **4,** particularly in the direction represented by arrows **"Z"** in the **FIGURE 1** and **FIGURE 2.** However, such system may be prone to failure. More specifically, capacity of the clips **8a, 8b, 8c, ... . 8n** to arrest movement of the heat exchanger core **4** in the "Z" direction is limited and such clips exhibit limited adaptability to even slight changes in heat exchanger core size, thereby failing to effectively arrest the movement of the heat exchanger core. Further, the performance of the clips is dependent on the material properties of material configuring the clips **4** that may deteriorate with frequent use, wear and tear and exposure to stringent environmental conditions such as high temperature and vibrations to which the clips **8a, 8b, 8c, ....8n** are often subjected to.

**[0005]** EP2450657A1 discloses a heat exchanger according to the preamble of claim 1.

**[0006]** Accordingly, there is a need for a system for arresting movement of a heat exchanger core with respect to the bracket or the housing, particularly, in a direction parallel to height of the heat exchanger core. Further, there is a need for a system for_arresting movement of a heat exchanger core with respect to the bracket **5** of the housing **2** that obviates the drawbacks associated with use of clips that are conventionally used for arresting the movement of the heat exchanger core with respect to the housing, wherein such clips exhibit limited adaptability to change in heat exchanger core size and thereby fail to effectively grip and arrest movement of the heat exchanger core **4.** Furthermore, there is a need for a system for arresting movement of a heat exchanger core **4** with respect to housing or the bracket that is not dependent on the material properties and performance thereof does not deteriorate with frequent use, wear and tear and exposure to stringent environmental conditions such as high temperature and vibrations.

**[0007]** An object of the present invention is to provide a system for arresting movement of a heat exchanger core received in a housing that tightly grips the heat exchanger core from all sides and effectively arrests any movement thereof.

**[0008]** An object of the present invention is to provide a system for arresting movement of a heat exchanger core with respect to housing, particularly, in a direction parallel to height of the heat exchanger core.

**[0009]** Yet another object of the present invention is to provide a system for arresting movement of a heat exchanger core whose performance does not deteriorate with frequent use, wear and tear and exposure to stringent environmental conditions such as high temperature

and vibrations.

**[0010]** In the present description, some elements or parameters may be indexed, such as a first element and a second element. In this case, unless stated otherwise, this indexation is only meant to differentiate and name elements which are similar but not identical. No idea of priority should be inferred from such indexation, as these terms may be switched without betraying the invention. Additionally, this indexation does not imply any order in mounting or use of the elements of the invention.

**[0011]** A system for arresting movement of a heat exchanger core is disclosed in accordance with an embodiment of the present invention. The system includes a main housing, an internal housing and a pressing arrangement. The internal housing is located in the main housing and receives the heat exchanger core. The internal housing includes a first portion and a second portion. The second portion is displaceable with respect to the first portion. The pressing arrangement is configured between the second portion and the main housing. The pressing arrangement presses the second portion against the heat exchanger core, when at least a predetermined portion of the internal housing is received in the main housing.

**[0012]** Specifically, the pressing arrangement includes first shaped elements configured on an outer wall of the second portion that interacts with an inner wall of the main housing to press the second portion against the heat exchanger core when at least a pre-determined portion of the internal housing is received in the main housing.

**[0013]** Alternatively, the pressing arrangement includes first shaped elements configured on an inner wall of the main housing that interacts with an outer wall of the second portion to press the second portion against the heat exchanger core when at least a pre-determined portion of the internal housing is received in the main housing.

**[0014]** Generally, the first shaped element is having a profile that is converging towards a base of the internal housing.

**[0015]** Typically, the second portion is thinner than the first portion.

**[0016]** Specifically, the internal housing includes a plurality of slots configured to facilitate inward movement of the second portion relative to the first portion, when at least a pre-determined portion of the internal housing is received in the main housing.

**[0017]** Generally, at least a part of the second portion extends above a periphery of the internal housing.

**[0018]** Preferably, the part of the second portion extending above the periphery of the internal housing is comparatively thinner than remaining of the second portion.

**[0019]** Generally, the pressing arrangement is configured on at least two opposite sides of the heat exchanger core.

**[0020]** In accordance with an embodiment of the present invention, the first shaped elements formed on outer wall of the second portion received in complimentary guide ways configured on the inner wall of main housing.

**[0021]** Alternatively, the first shaped elements formed on inner wall of the main housing received in complimentary guide ways configured on the outer wall of the second portion.

**[0022]** Typically, the main housing includes a top cover and a bottom portion.

**[0023]** Generally, the top cover is releasably attached to the bottom portion.

**[0024]** Specifically, the bottom portion is configured with slots that are complimentary to and receives corresponding clips configured on the top cover to assemble the top cover to the bottom portion.

**[0025]** Alternatively, the top cover is configured with slots that are complimentary to and receives corresponding clips configured on the bottom portion to assemble the top cover to the bottom portion.

**[0026]** Further, the system includes retaining arrangement that includes second shaped elements configured between the internal housing and the main housing that retains the internal housing within the main housing.

**[0027]** Typically, the second shaped element is configured on at least one of the top cover and the bottom portion.

**[0028]** Typically, the second shaped elements are extending from the top cover and interact with the thinner parts of the second portions to further press the second portions against the heat exchanger core received therein when at least a predetermined portion of the internal housing is received in the main housing.

**[0029]** Generally, the first shaped element engages with the complimentary second shaped element to retain at least the pre determined portion of the internal housing within the main housing.

**[0030]** In another embodiment, the second shaped element engages with complimentary latching element configured on the internal housing to retain the pre determined portion of the internal housing within the main housing.

**[0031]** Other characteristics, details and advantages of the invention can be inferred from the description of the invention hereunder. A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying figures, wherein:

**FIG. 1** illustrates an assembly of a heat exchanger core and a receiver drier received within a housing in accordance with the prior art, wherein portions of the housing are disposed around and grips the heat exchanger core to arrest motion thereof in two directions;

**FIG. 2** illustrates a simple bracket with clips configured thereon in accordance with another prior art system for arresting movement of a heat exchanger core in a direction parallel to height of the heat exchanger core;

**FIG. 3** illustrates a schematic representation depicting a main housing of a system for arresting relative movement between the main housing and a heat exchanger core in accordance with an embodiment of the present invention;

**FIG. 4** illustrates a schematic representation depicting the system of **FIG. 3,** wherein a second shaped element of a retaining arrangement extending from a top cover of the main housing interacts with a part of a second portion of an internal housing that is extending above the periphery of the internal housing;

**FIG. 5** illustrates a cut sectional view depicting the internal details of the system of **FIG. 4,** particularly, interaction between the second shaped element and the part of the second portion of the internal housing extending above the periphery of the internal housing and interaction between the second portion of the internal housing and the heat exchanger core received inside the internal housing;

**FIG. 6** illustrates the system of **FIG. 4** without the top cover for depicting the internal details of the system, particularly, the second portion gripping the heat exchanger core when pressed inward by first shaped elements;

**FIG. 7a** illustrates the internal housing of the system of **FIG. 4,** wherein the second portions are in a pressing configuration for defining a gripping configuration of the internal housing;

**FIG. 7b** illustrates the first shaped elements formed on inner wall of the main housing received in complimentary guide ways configured on outer wall of the second portion;

**FIG. 7c** illustrates first shaped elements formed on outer wall of the second portion received in complimentary guide ways configured on inner wall of main housing; and

**FIG. 8** illustrates arrangement of clips and slots on the top cover and a bottom portion in accordance with another embodiment for facilitating assembly between the top cover and the bottom portion;

**FIG. 9** illustrates engagement between second shaped element configured on inside wall of the bottom portion of the main housing and a latching element configured on outside wall of the interior housing.

**[0032]** It must be noted that the figures disclose the invention in a detailed enough way to be implemented, said figures helping to better define the invention if needs be. The invention should however not be limited to the embodiment disclosed in the description.

**[0033]** **FIG. 1** illustrates an assembly **1** of a heat exchanger core **4** and a receiver drier **4a** received within a housing **2** in accordance with the prior art, wherein the housing **2** arrests the movement of the heat exchanger core **4** only in two directions, i.e. one parallel to the length and the other parallel to width of the heat exchanger core **4** but such housing **2** fails to arrest motion of the heat exchanger core **4** in a direction parallel to the height of the heat exchanger core **4. FIG. 2** illustrates a simple bracket **5** in accordance with another prior art for arresting the movement of the heat exchanger core **4** in the two directions.

**[0034]** Particularly, the housing **2** includes two portions **2a** and **2b** that are disposed around the heat exchanger core **4** and the two portions **2a** and **2b** are held together to arrest motion of the heat exchanger core **4** in two linear directions, i.e. one parallel to the length referred to by arrow "X" and the other parallel to width of the heat exchanger core **4** referred to by arrow "Y". Referring to the **FIG. 2,** the bracket **5** includes portions **5a** and **5b** that are disposed around the heat exchanger core **4** and joined at the ends **6a** and **6b** and the ends are held together by fasteners to define an enclosure for receiving and securing holding the heat exchanger core **4** therein. The bracket **5** or the housing **2** is also capable of arresting rotational motion of the heat exchanger core **4** in three rotational axes. As the length and width of a heat exchanger core **4** is repeatable, the same bracket **5** or the housing **2** can be used with some clearances provided between the heat exchanger core **4** and the bracket **5** or the housing **2,** wherein these clearances can be removed by using fasteners such as screws **3.** However, the simple bracket **5** or the housing **2** fails to arrest the movement of the heat exchanger core **4** in a direction parallel to height of the heat exchanger core **4** referred to by arrow "Z", wherein the height of the heat exchanger core **4** is not repeatable and may vary.

**[0035]** **FIG. 2** illustrates the simple bracket **5** with clips **8a, 8b, 8c, ....8n** configured thereon for arresting movement of the heat exchanger core **4** in a direction parallel to height of the heat exchanger core **4.** More specifically, the clips **8a, 8b, 8c, ....8n** configured on the bracket **5** are of plastic material and try to arrest the movement of the heat exchanger core **4** received within an enclosure defined by portions **5a** and **5b** of the simple bracket **5** in a direction parallel to height of the heat exchanger core referred to by the arrow "Z". However, the clips **8a, 8b, 8c, ....8n** used for arresting the movement of the heat exchanger core **4** in the direction parallel to height of the heat exchanger core **4** fails to effectively arrest movement of the heat exchanger core **4** in all directions and

also fails to remove clearances that may occur to facilitate accommodating of different heights of the heat exchanger core **4.** Further, the clips **8a, 8b, 8c, ....8n** exhibit limited adaptability to change in heat exchanger core 4 sizes and thereby fail to effectively grip and arrest movement of the heat exchanger core **4.** Also, the clips **8a, 8b, 8c, ....8n** may deteriorate with frequent use, wear and tear and exposure to stringent environmental conditions such as high temperature and vibrations to which the clips **8a, 8b, 8c, ... . 8n** are often subjected to.

**[0036]** **FIG. 3** illustrates a schematic representation depicting a main housing **10** or simply referred to as housing **10** of a system **100** for arresting movement of a heat exchanger core **20** (not illustrated in **FIG. 3**) received in the main housing **10** in accordance with an embodiment of the present invention.

**[0037]** **FIG. 4, FIG. 5** and **FIG. 6** depicts the internal details of the system **100,** wherein the heat exchanger core **20** is received in an internal housing **30** and the internal housing **30** in turn is received in the housing **10.** The internal housing **30** includes a first portion **32** and a second portion **34.** The second portion **34** is displaceable with respect to the first portion **32.** Specifically, the second portion **34** is comparatively more flexible than the first portion **32.** The second portion **34** can be configured in such a manner so as to impart comparatively more flexibility to the second portion **34** than the first portion **32.** For example, the second portion **34** is thinner than the first portion **32.** Alternatively or additionally, the internal housing **30** includes a plurality of slots **40** configured to facilitate inward movement of the second portion **34** relative to the first portion **32,** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.** At least a part of the second portion **34** may extend above a periphery of the internal housing **30.** The part of the second portion **34** extending above the periphery of the internal housing **30** may be comparatively thinner than remaining of the second portion **34.**

**[0038]** Displacing the second portion **34** with respect to the first portion **32** enables the second portion **34** to achieve a pressing configuration and the internal housing **30** to achieve a gripping configuration, when at least a pre determined portion of the internal housing **30** is received in the housing **10.** However, the present invention is not limited to any particular arrangement or configuration of the internal housing **30** and the first portion **32** and the second portion **34** of the internal housing **30** as far as the second portion **34** is displaceable relative to the first portion **32** upon application of pressing forces thereon to define the pressing configuration of the second portion **34** and the gripping configuration of the internal housing **30.** The present invention is also not limited to the placement and the number of the second portions **34** configured on the internal housing **30.**

**[0039]** The system **100** further includes a pressing arrangement configured between the second portion **34** and the main housing **10.** The pressing arrangement is configured on at least two opposite sides of the heat exchanger core **20.** The pressing arrangement presses the second portion **34** against the heat exchanger core **20** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.** The pressing arrangement is in form of first shaped elements **36, 16** that depending upon whether configured on the second portion **34** or the main housing **10** interact with either one of the inside wall of the main housing **10** or an outside wall of the second portion **34** to cause pressing of the second portion **34** against the heat exchanger core **20** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.** Generally, the first shaped elements **36** are having a profile that is converging towards a base **30b** of the internal housing **30.** Such a configuration of the first shaped elements **36** assists inserting of the internal housing **30** inside the main housing but deters the removing of the internal housing **30** from the main housing **10.** Generally, the pressing arrangement includes first shaped elements **36** configured on an outer wall of the second portion **34** that interacts with an inner wall of the main housing **10** to press the second portion **34** against the heat exchanger core **20** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.** Alternatively, the pressing arrangement includes first shaped elements **16** configured on an inner wall of the main housing **10** that interacts with an outer wall of the second portion **34** to press the second portion **34** against the heat exchanger core **20** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.** However, the present invention is not limited to any particular configuration, number and placement of the first shaped elements **36,16** as far as the first shaped elements **36,16** facilitate pressing of the second portion **34** against the heat exchanger core **20** when at least a pre-determined portion of the internal housing **30** is received in the main housing **10.**

**[0040]** In one embodiment of the present invention as illustrated in **FIG. 7b,** the first shaped elements **16** formed on inner wall of the main housing **10** are received in complimentary guide ways **39** configured on the outer wall of the second portion **34.** Alternatively, as illustrated in **FIG. 7c,** the first shaped elements **36** formed on outer wall of the second portion **34** are received in complimentary guide ways **19** configured on the inner wall of the main housing **10.** Such a configuration facilitates guiding of the internal housing **30** inside the main housing **10** while simultaneously pressing the second portion **34** inward towards the heat exchanger core **20** to define the pressing configuration of the second portion **34** and the gripping configuration of the internal housing **30.** The guide ways **39** instead of being formed on the outside of the second portion **34** may be formed on the outside wall of the internal housing **30** as illustrated in **FIG. 7a,** such that the guide ways **39** receive therein complementary elements configured on the inside wall of the main housing **10** to facilitate only guiding of the internal housing **30** inside the main housing **10.** However, the present inven-

tion is not limited to any particular configuration, number and placement of the guide ways **39, 19** as far as the guide ways **39, 19** are complimentary to the first shaped elements **36, 16** and facilitates guiding of the internal housing **30** inside the main housing **10.**

**[0041]** In one embodiment of the present invention, the main housing **10** includes a top cover **10a** and a bottom portion **10b.** The top cover **10a** is releasably attached to the bottom portion **10b.** As illustrated in **FIG. 4** and **FIG.5,** the bottom portion **10b** is configured with engaging elements such as for example slots **17** that are complimentary to and receives therein corresponding engagement elements in the form of clips **50** configured on the top cover **10a** to assemble the top cover **10a** to the bottom portion **10b.** Alternatively, as illustrated in **FIG. 8,** the top cover **10a** is configured with slots **17a** that are complimentary to and receives therein the corresponding clips **50a** configured on the bottom portion **10b** to assemble the top cover **10a** to the bottom portion **10b.** However, the present invention is not limited to any particular configuration of engaging elements configured on the top cover **10a** and the bottom portion **10b** as long as the engagement elements configure releasable attachment of the top cover **10a** to the bottom portion **10b.**

**[0042]** The system **100** further includes a retaining arrangement configured between the internal housing **30** and the main housing **10.** The retaining arrangement retains the internal housing **30** within the main housing **10,** thereby causing the second portion **34** to be pressed inwards by the first shaped elements **16, 36** and maintaining the second portion **34** in the pressing configuration thereof and the internal housing **30** in the gripping configuration thereof. Particularly, the retaining arrangement includes second shaped elements **18** configured on at least one of the top cover **10a** and the bottom portion **10b.** The second shaped elements **18** extend from the top cover **10a** and interact with the thinner parts of the second portions **34** to further press the second portions **34** against the heat exchanger core **20** received therein when at least a pre-determined portion of the internal housing **30** is received in the main housing **10** and the top cover **10a** is mounted on the bottom portion **10b.** With such configuration, thinner parts of the second portions **34** that extend beyond the periphery of the internal housing **30,** more specifically, the parts of the second portions **34** that extend beyond the first portion **32** are further pressed against the heat exchanger core **20** to enable the internal housing **30** to further grip the heat exchanger core **20.** In the assembled configuration of the top cover **10a** on the bottom portion **10b,** the thinner parts of second portions **34** are pressed by the second shaped elements **18,** the thinner parts of the second portion **34** also exert reaction forces on the second shaped elements **18** to push the top cover **10a** upwards. Accordingly, the clearances that occur between the clips and the housing **10** to facilitate accommodation of different heights of the heat exchanger core **20** are eliminated, when the top cover **10a** is assembled to the bottom portion **10b** of the housing **10.** Further, the retaining arrangement allows to mitigate play between the cover and the bottom portion.

**[0043]** In one example, the first shaped elements **36, 16** engages with the complimentary second shaped elements **18** to retain at least the pre determined portion of the internal housing **30** within the main housing **10,** thereby causing pressing of the second portion inwards towards the heat exchanger core **20** and maintaining the second portion **34** in the pressing configuration thereof and the internal housing **30** in the gripping configuration thereof. In accordance with an embodiment of the present invention illustrated in **FIG. 9,** the second shaped element **18** engages with complimentary latching element **38** configured on outside wall of the internal housing **30** to retain at least the pre determined portion of the internal housing **30** within the main housing **10,** thereby causing the first shaped element **16** to press the second portion **34** inwards toward the and heat exchanger core **20** and maintaining the second portion **34** in the pressing configuration thereof and internal housing **30** in the gripping configuration thereof.

**[0044]** Several modifications and improvement might be applied by the person skilled in the art to the system for arresting movement of a heat exchanger core as defined above, as long as the system comprises a main housing, an internal housing and a pressing arrangement. The internal housing is located in the main housing and receives the heat exchanger core. The internal housing includes a first portion and a second portion. The second portion is displaceable with respect to the first portion. The pressing arrangement is configured between the second portion and the main housing. The pressing arrangement presses the second portion against the heat exchanger core, when at least a predetermined portion of the internal housing is received in the main housing.

**[0045]** In any case, the invention cannot and should not be limited to the embodiments specifically described in this document, as other embodiments might exist. The invention shall spread to any equivalent means and any technically operating combination of means.

## Claims

**1.** A system (100) for arresting movement of a heat exchanger core (20), comprising:

- a main housing (10),
- an internal housing (30), located in the main housing (10) and adapted to receive the heat exchanger core (20),

  the heat exchanger core (20) being received in the internal housing (30),
  the internal housing (30) comprising:

  - a first portion (32); and

◦ a second portion (34);

**characterized in that** the second portion (34) is adapted to be displaceable with respect to the first portion (32), wherein the system further comprises a pressing arrangement configured between the second portion (34) and the main housing (10), the pressing arrangement being adapted to press the second portion (34) against the heat exchanger core (20) when at least a pre-determined portion of the internal housing (30) is received in the main housing (10).

**2.** The system (100) according to the claim 1, wherein the pressing arrangement comprises first shaped elements (36) configured on an outer wall of the second portion (34) and adapted to interact with an inner wall of the main housing (10) to press the second portion (34) against the heat exchanger core (20) when at least a pre-determined portion of the internal housing (30) is received in the main housing (10).

**3.** The system (100) according to the claim 2, wherein the first shaped elements (36) are having a profile that is converging towards a base (30b) of the internal housing (30).

**4.** The system (100) according to any of the preceding claims, wherein the second portion (34) is thinner than the first portion (32).

**5.** The system (100) according to any of the preceding claims, wherein the internal housing (30) comprises a plurality of slots (40) configured to facilitate inward movement of the second portion (34) relative to the first portion (32), when at least a pre-determined portion of the internal housing (30) is received in the main housing (10).

**6.** The system (100) according to claim 1, wherein at least a part of the second portion (34) is adapted to extend above a periphery of the internal housing (30).

**7.** The system (100) according to claim 6, wherein the part of the second portion (34) extending above the periphery of the internal housing (30) is comparatively thinner than remaining of the second portion (34).

**8.** The system (100) according to any of the preceding claims, the pressing arrangement is configured on at least two opposite sides of the heat exchanger core (20).

**9.** The system (100) according to claim 2, wherein the first shaped elements (36) are adapted to be received in complimentary guide ways configured on the inner wall of the main housing (10).

**10.** The system (100) according to any of the preceding claims, wherein the main housing (10) comprises a top cover (10a) and a bottom portion (10b).

**11.** The system (100) according to claim 10**,** wherein the top cover (10a) is releasably attached to the bottom portion (10b).

**12.** The system (100) according to claim 11, wherein the bottom portion (10b) is configured with slots (17) that are complimentary to and adapted to receive corresponding clips (50) configured on the top cover (10a) to assemble the top cover (10a) to the bottom portion (10b).

**13.** The system (100) according to the claim 6 further comprising a retaining arrangement configured between the internal housing (30) and the main housing (10), the retaining arrangement being adapted to retain a predetermined portion of the internal housing (30) within the main housing (10) and as such facilitate gripping of the heat exchanger core (20) by the internal housing (30).

**14.** The system (100) according to the claim 13, wherein the retaining arrangement comprises second shaped elements (18), which are configured on at least one of the top cover (10a) and the bottom portion (10b).

**15.** The system (100) as claimed in the claim 13 or 14, wherein the second shaped elements (18) are adapted to extend from the top cover (10a) and are adapted to interact with the thinner parts of the second portions (34) to further press the second portions (34) against the heat exchanger core (20) received therein when the top cover (10a) is assembled onto the bottom portion (10b).

**16.** The system (100) as claimed in claim 13 or 14, wherein the first shaped element (36, 16) is adapted to engage with the complimentary second shaped element (18) to further press the second portions (34) against the heat exchanger core (20) received therein when the top cover (10a) is assembled onto the bottom portion (10b).

**17.** The system (100) as claimed in claim 13 or 14, wherein the second shaped element (18) is adapted to engage with complimentary latching element (38) configured on the internal housing (30) to retain at least the pre determined portion of the internal housing (30) within the main housing (10).

**Patentansprüche**

1. System (100) zum Arretieren von Bewegung eines Wärmetauscherkerns (20), umfassend:

   ein Hauptgehäuse (10),
   ein Innengehäuse (30), das sich im Hauptgehäuse (10) befindet und zur Aufnahme des Wärmetauscherkerns (20) eingerichtet ist,
   wobei der Wärmetauscherkern (20) im Innengehäuse (30) aufgenommen ist,
   wobei das Innengehäuse (30) umfasst:

      einen ersten Abschnitt (32); und
      einen zweiten Abschnitt (34);

   **dadurch gekennzeichnet, dass** der zweite Abschnitt (34) so eingerichtet ist, dass er in Bezug auf den ersten Abschnitt (32) versetzbar ist, wobei das System ferner eine Anpressanordnung umfasst, die zwischen dem zweiten Abschnitt (34) und dem Hauptgehäuse (10) ausgelegt ist, wobei die Anpressanordnung so eingerichtet ist, dass sie den zweiten Abschnitt (34) gegen den Wärmetauscherkern (20) presst, wenn mindestens ein vorbestimmter Abschnitt des Innengehäuses (30) im Hauptgehäuse (10) aufgenommen ist.

2. System (100) nach Anspruch 1, wobei die Anpressanordnung erste Formelemente (36) umfasst, die an einer Außenwand des zweiten Abschnitts (34) ausgelegt sind und dazu eingerichtet sind, mit einer Innenwand des Hauptgehäuses (10) zusammenzuwirken, zu dem Zweck, den zweiten Abschnitt (34) gegen den Wärmetauscherkern (20) zu pressen, wenn mindestens ein vorbestimmter Abschnitt des Innengehäuses (30) im Hauptgehäuse (10) aufgenommen ist.

3. System (100) nach Anspruch 2, wobei die ersten Formelemente (36) ein Profil aufweisen, das zu einer Basis (30b) des Innengehäuses (30) hin konvergiert.

4. System (100) nach einem der vorhergehenden Ansprüche, wobei der zweite Abschnitt (34) dünner ist als der erste Abschnitt (32).

5. System (100) nach einem der vorhergehenden Ansprüche, wobei das Innengehäuse (30) eine Vielzahl von Schlitzen (40) umfasst, die dafür ausgelegt sind, Einwärtsbewegung des zweiten Abschnitts (34) relativ zum ersten Abschnitt (32) zu ermöglichen, wenn mindestens ein vorbestimmter Abschnitt des Innengehäuses (30) im Hauptgehäuse (10) aufgenommen ist.

6. System (100) nach Anspruch 1, wobei zumindest ein Teil des zweiten Abschnitts (34) so eingerichtet ist, dass er sich über einen Umfang des Innengehäuses (30) erstreckt.

7. System (100) nach Anspruch 6, wobei der Teil des zweiten Abschnitts (34), der sich über den Umfang des Innengehäuses (30) erstreckt, vergleichsweise dünner ist als das Übrige des zweiten Abschnitts (34).

8. System (100) nach einem der vorhergehenden Ansprüche, wobei die Anpressanordnung auf mindestens zwei gegenüberliegenden Seiten des Wärmetauscherkerns (20) ausgelegt ist.

9. System (100) nach Anspruch 2, wobei die ersten Formelemente (36) dazu eingerichtet sind, in komplementären Führungsbahnen aufgenommen zu werden, die an der Innenwand des Hauptgehäuses (10) ausgelegt sind.

10. System (100) nach einem der vorhergehenden Ansprüche, wobei das Hauptgehäuse (10) eine obere Abdeckung (10a) und einen unteren Abschnitt (10b) umfasst.

11. System (100) nach Anspruch 10, wobei die obere Abdeckung (10a) lösbar am unteren Abschnitt (10b) befestigt ist.

12. System (100) nach Anspruch 11, wobei der untere Abschnitt (10b) mit Schlitzen (17) ausgelegt ist, die komplementär zu entsprechenden auf der oberen Abdeckung (10a) ausgelegten Klammern (50) sind und die dazu eingerichtet sind, die Klammern aufzunehmen, zu dem Zweck, die obere Abdeckung (10a) am unteren Abschnitt (10b) zu montieren.

13. System (100) nach Anspruch 6, ferner umfassend eine Halteanordnung, die zwischen dem Innengehäuse (30) und dem Hauptgehäuse (10) ausgelegt ist, wobei die Halteanordnung dazu eingerichtet ist, einen vorbestimmten Abschnitt des Innengehäuses (30) innerhalb des Hauptgehäuses (10) zu halten und als solches das Ergreifen des Wärmetauscherkerns (20) durch das Innengehäuse (30) zu ermöglichen.

14. System (100) nach Anspruch 13, wobei die Halteanordnung zweite Formelemente (18) umfasst, die an mindestens einem von der oberen Abdeckung (10a) und dem unteren Abschnitt (10b) ausgelegt sind.

15. System (100) nach Anspruch 13 oder 14, wobei die zweiten Formelemente (18) so eingerichtet sind, dass sie sich von der oberen Abdeckung (10a) aus erstrecken und dazu eingerichtet sind, mit den dünneren Teilen der zweiten Abschnitte (34) so zusam-

menzuwirken, dass die zweiten Abschnitte (34) weiter gegen den darin aufgenommenen Wärmetauscherkern (20) gepresst werden, wenn die obere Abdeckung (10a) auf den unteren Abschnitt (10b) montiert wird.

**16.** System (100) nach Anspruch 13 oder 14, wobei das erste Formelement (36, 16) dazu eingerichtet ist, mit dem komplementären zweiten Formelement (18) in Eingriff zu kommen, zu dem Zweck, die zweiten Abschnitte (34) weiter gegen den darin aufgenommenen Wärmetauscherkern (20) zu pressen, wenn die obere Abdeckung (10a) auf den unteren Abschnitt (10b) montiert wird.

**17.** System (100) nach Anspruch 13 oder 14, wobei das zweite Formelement (18) dazu eingerichtet ist, mit einem komplementären Rastelement (38) in Eingriff zu kommen, das am Innengehäuse (30) ausgelegt ist, zu dem Zweck, zumindest den vorbestimmten Abschnitt des Innengehäuses (30) innerhalb des Hauptgehäuses (10) zu halten.

**Revendications**

**1.** Système (100) pour arrêter le mouvement d'un faisceau d'échangeur de chaleur (20), comprenant :

• un boîtier principal (10),
• un boîtier interne (30), situé dans le boîtier principal (10) et adapté pour recevoir le faisceau d'échangeur de chaleur (20),

le faisceau d'échangeur de chaleur (20) étant reçu dans le boîtier interne (30),
le boîtier interne (30) comprenant :

◦ une première portion (32) ; et
◦ une seconde portion (34) ;

**caractérisé en ce que** la seconde portion (34) est adaptée pour être déplaçable par rapport à la première portion (32), dans lequel le système comprend en outre un agencement de pression configuré entre la seconde portion (34) et le boîtier principal (10), l'agencement de pression étant adapté pour presser la seconde portion (34) contre le faisceau d'échangeur de chaleur (20) lorsqu'au moins une portion prédéterminée du boîtier interne (30) est reçue dans le boîtier principal (10).

**2.** Système (100) selon la revendication 1, dans lequel l'agencement de pression comprend des premiers éléments mis en forme (36) configurés sur une paroi extérieure de la seconde portion (34) et adaptés pour interagir avec une paroi intérieure du boîtier principal (10) pour presser la seconde portion (34) contre le faisceau d'échangeur de chaleur (20) lorsqu'au moins une portion prédéterminée du boîtier interne (30) est reçue dans le boîtier principal (10).

**3.** Système (100) selon la revendication 2, dans lequel les premiers éléments mis en forme (36) ont un profil qui converge vers une base (30b) du boîtier interne (30).

**4.** Système (100) selon l'une quelconque des revendications précédentes, dans lequel la seconde portion (34) est plus mince que la première portion (32).

**5.** Système (100) selon l'une quelconque des revendications précédentes, dans lequel le boîtier interne (30) comprend une pluralité de fentes (40) configurées pour faciliter le mouvement, vers l'intérieur, de la seconde portion (34) relativement à la première portion (32), lorsqu'au moins une portion prédéterminée du boîtier interne (30) est reçue dans le boîtier principal (10).

**6.** Système (100) selon la revendication 1, dans lequel au moins une partie de la seconde portion (34) est adaptée pour s'étendre au-dessus d'une périphérie du boîtier interne (30).

**7.** Système (100) selon la revendication 6, dans lequel la partie de la seconde portion (34) s'étendant au-dessus de la périphérie du boîtier interne (30) est comparativement plus mince que le reste de la seconde portion (34).

**8.** Système (100) selon l'une quelconque des revendications précédentes, l'agencement de pression est configuré sur au moins deux côtés opposés du faisceau d'échangeur de chaleur (20).

**9.** Système (100) selon la revendication 2, dans lequel les premiers éléments mis en forme (36) sont adaptés pour être reçus dans des voies de guidage complémentaires configurées sur la paroi intérieure du boîtier principal (10).

**10.** Système (100) selon l'une quelconque des revendications précédentes, dans lequel le boîtier principal (10) comprend un couvercle supérieur (10a) et une portion inférieure (10b).

**11.** Système (100) selon la revendication 10, dans lequel le couvercle supérieur (10a) est fixé à la portion inférieure (10b).

**12.** Système (100) selon la revendication 11, dans lequel la portion inférieure (10b) est configurée avec des fentes (17) qui sont complémentaires à, et adaptées

pour recevoir, des attaches correspondantes (50) configurées sur le couvercle supérieur (10a) pour assembler le couvercle supérieur (10a) à la portion inférieure (10b).

**13.** Système (100) selon la revendication 6 comprenant en outre un agencement de retenue configuré entre le boîtier interne (30) et le boîtier principal (10), l'agencement de retenue étant adapté pour retenir une portion prédéterminée du boîtier interne (30) à l'intérieur du boîtier principal (10) et ainsi faciliter la prise du faisceau d'échangeur de chaleur (20) par le boîtier interne (30).

**14.** Système (100) selon la revendication 13, dans lequel l'agencement de retenue comprend des seconds éléments mis en forme (18), qui sont configurés sur au moins un du couvercle supérieur (10a) et de la portion inférieure (10b).

**15.** Système (100) selon la revendication 13 ou 14, dans lequel les seconds éléments mis en forme (18) sont adaptés pour s'étendre à partir du couvercle supérieur (10a) et sont adaptés pour interagir avec les parties plus minces des secondes portions (34) pour presser davantage les secondes portions (34) contre le faisceau d'échangeur de chaleur (20) reçu dans celui-ci lorsque le couvercle supérieur (10a) est assemblé sur la portion inférieure (10b).

**16.** Système (100) selon la revendication 13 ou 14, dans lequel le premier élément mis en forme (36, 16) est adapté pour entrer en prise avec le second élément mis en forme complémentaire (18) pour presser davantage les secondes portions (34) contre le faisceau d'échangeur de chaleur (20) reçu dans celui-ci lorsque le couvercle supérieur (10a) est assemblé sur la portion inférieure (10b).

**17.** Système (100) selon la revendication 13 ou 14, dans lequel le second élément mis en forme (18) est adapté pour entrer en prise avec un élément de verrouillage complémentaire (38) configuré sur le boîtier interne (30) pour retenir au moins la portion prédéterminée du boîtier interne (30) à l'intérieur du boîtier principal (10).

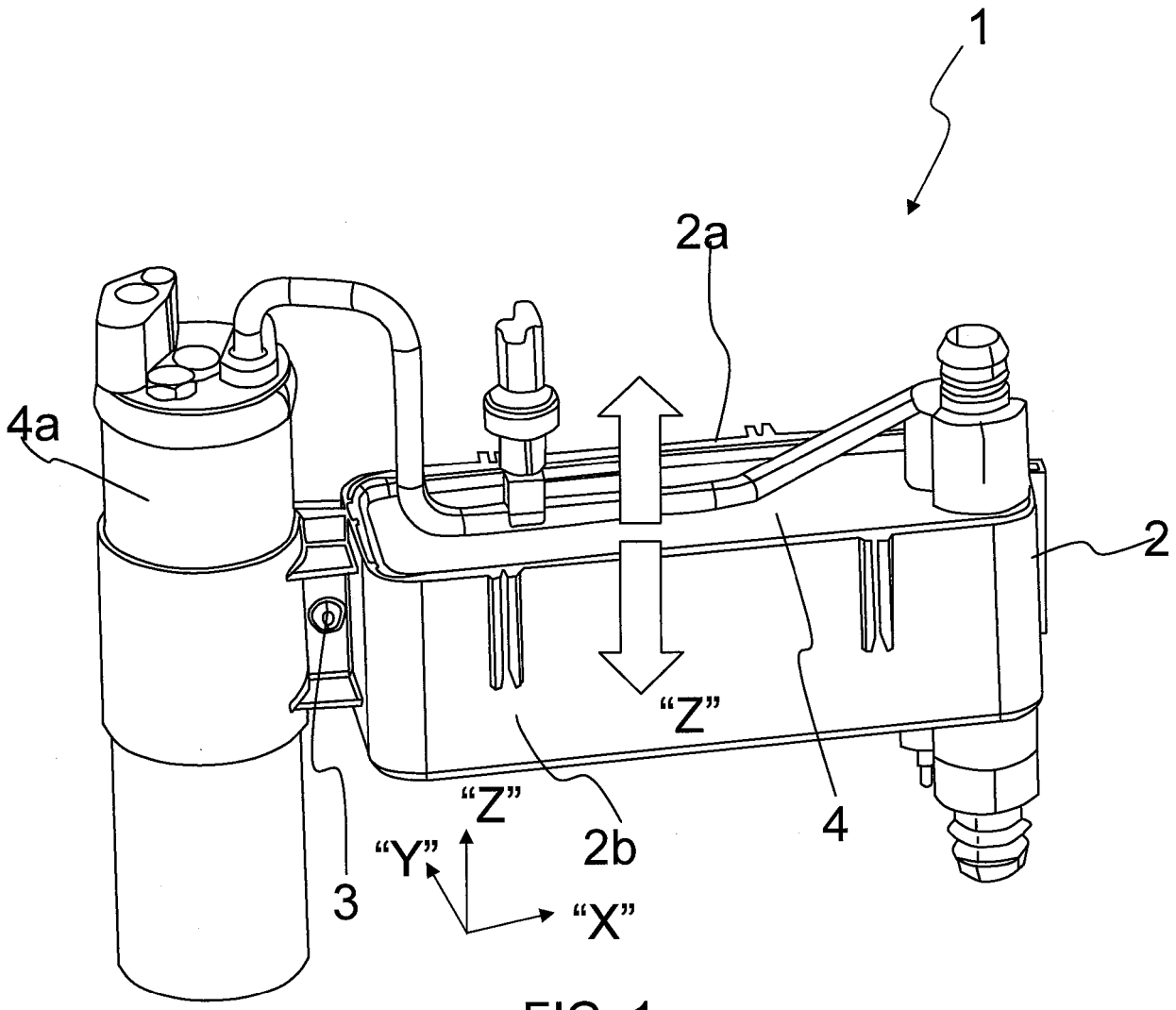


FIG. 1

(PRIOR ART)

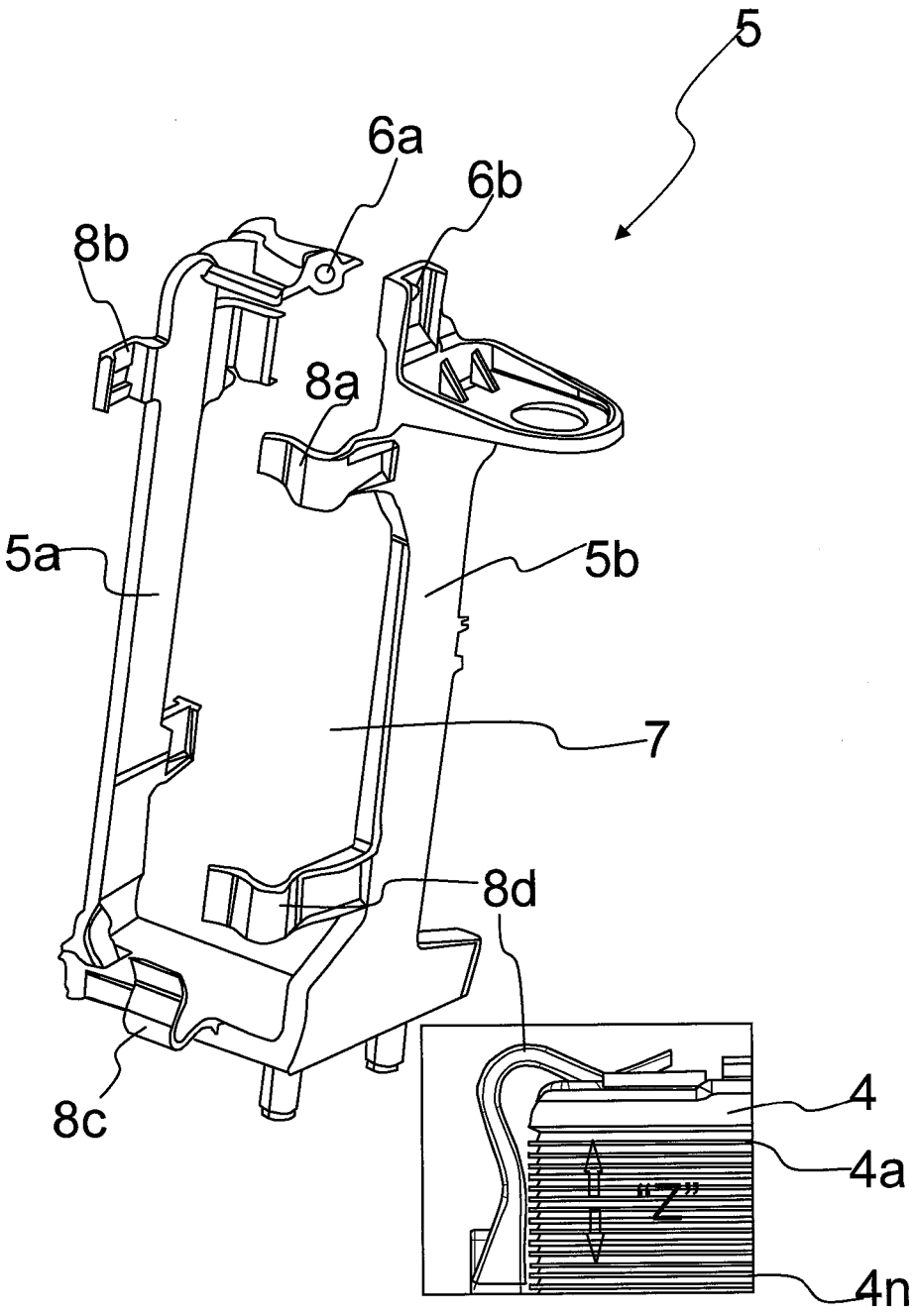


FIG. 2

(PRIOR ART)

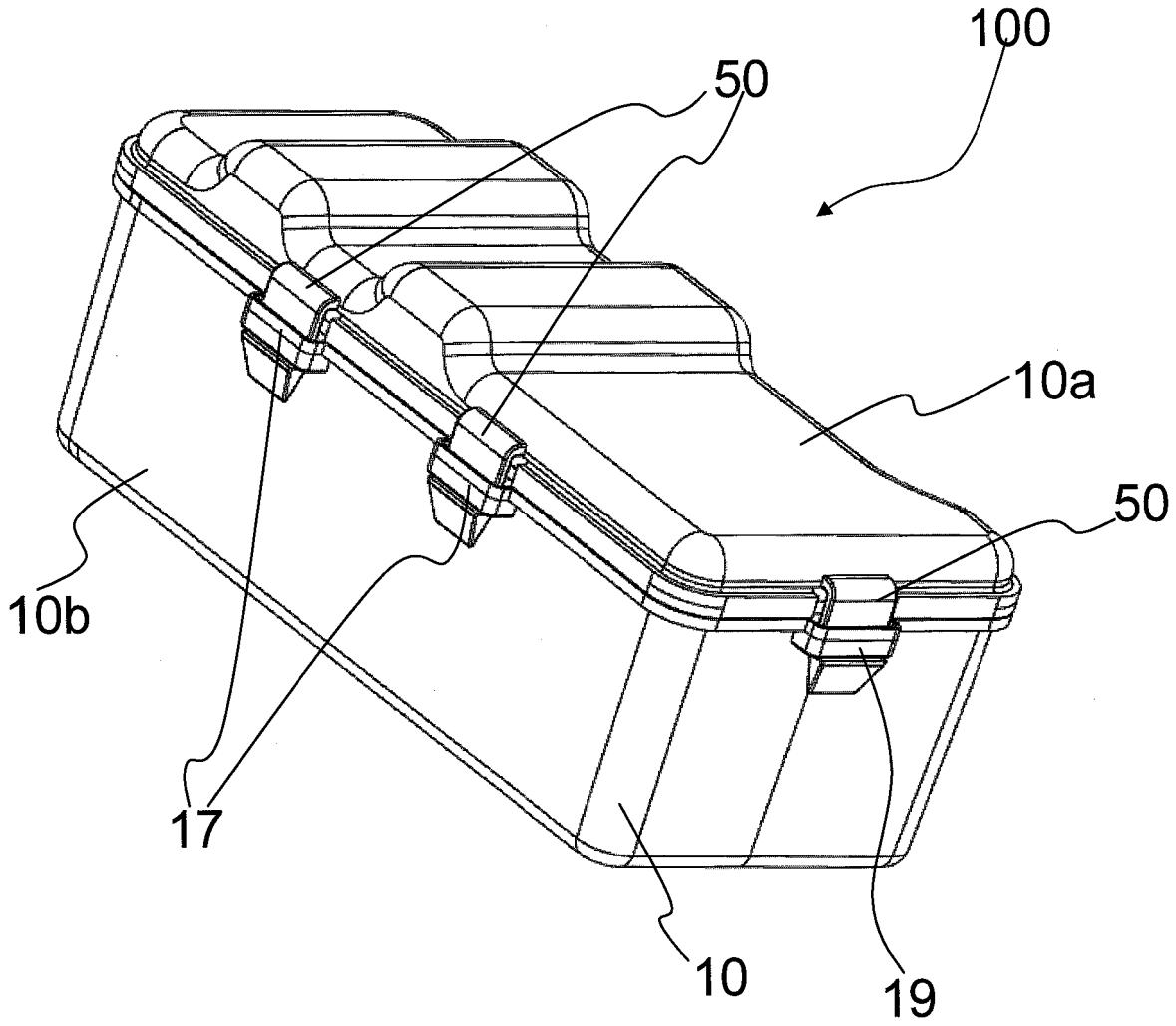


FIG. 3

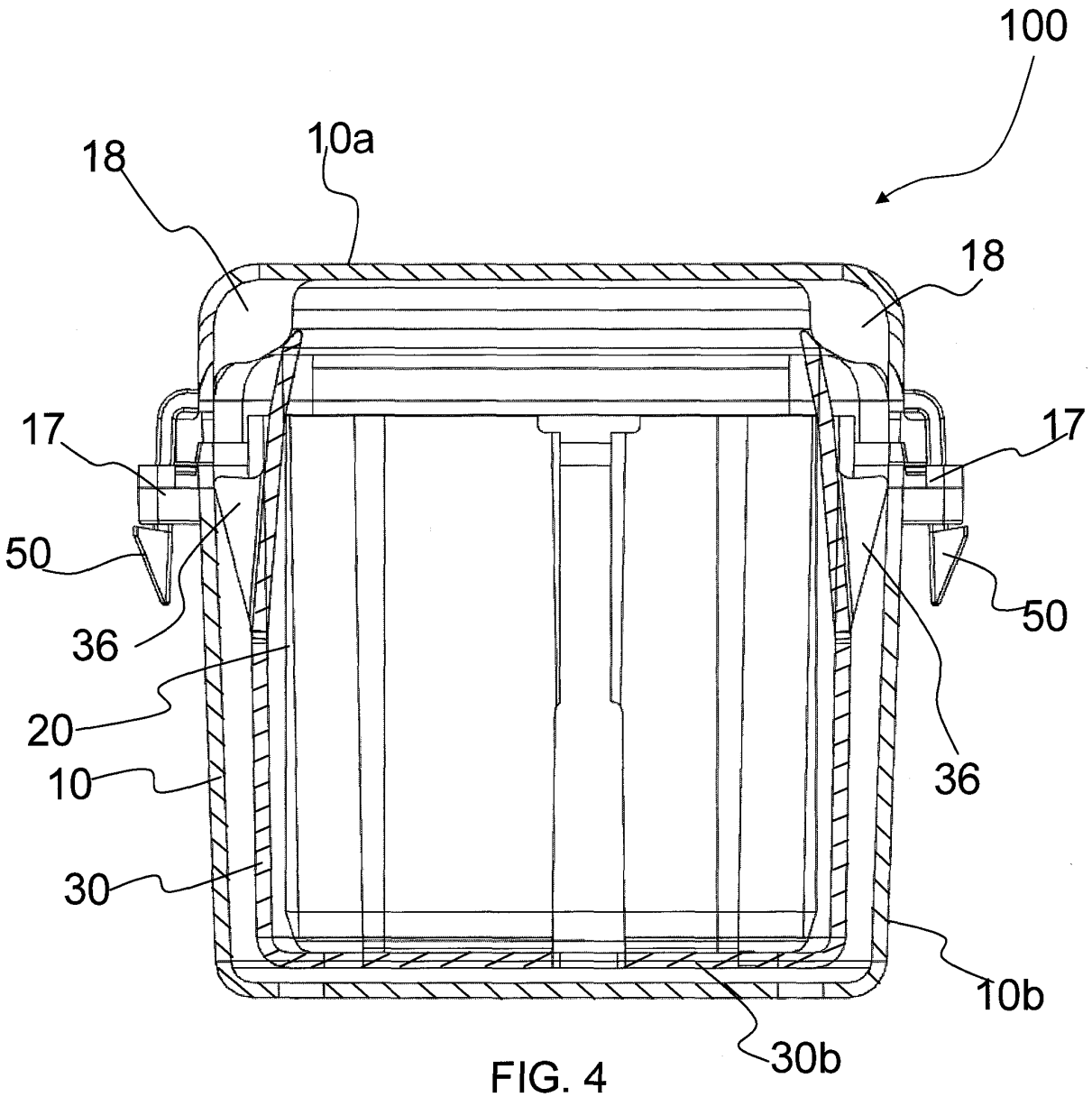


FIG. 4

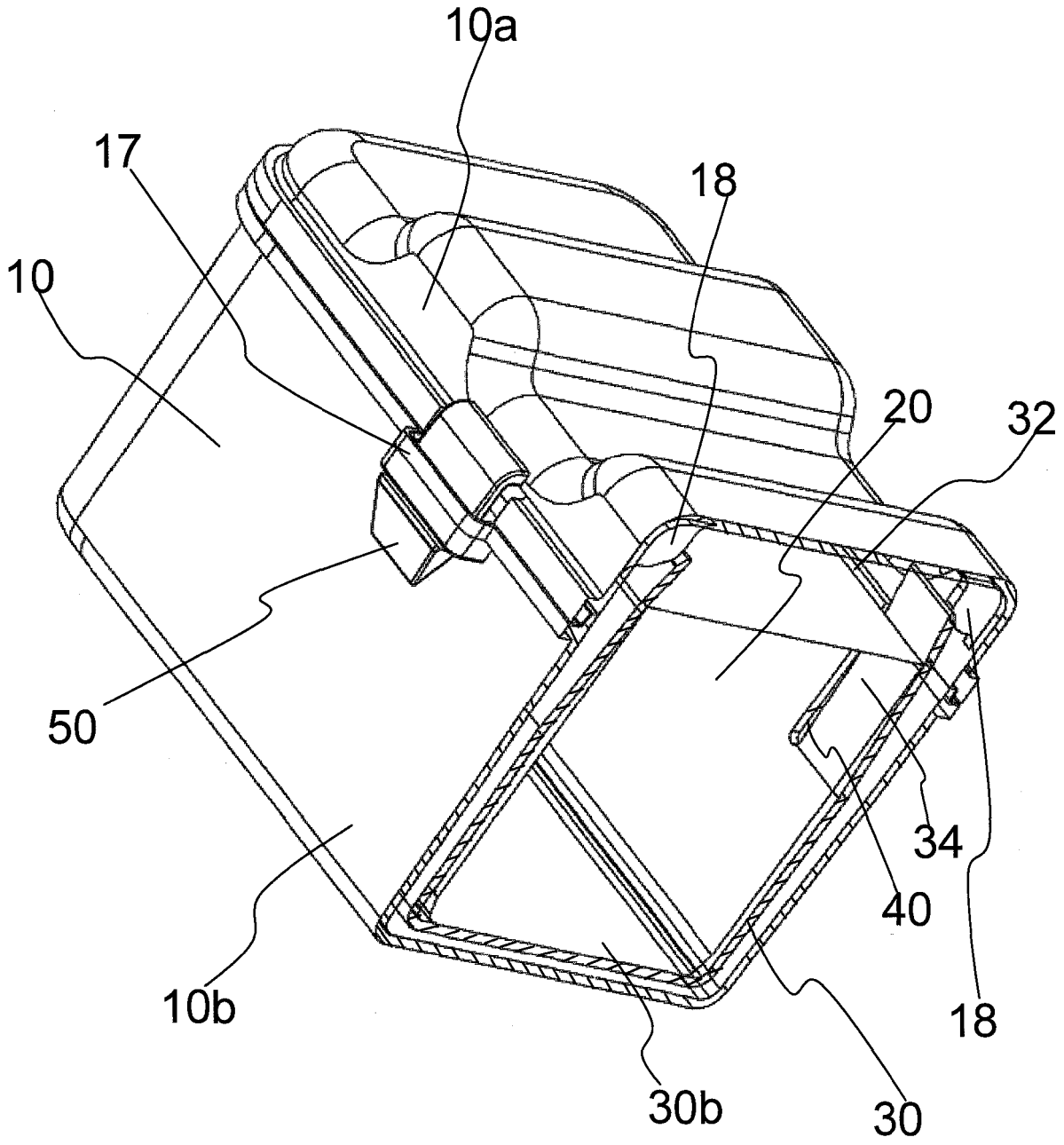


FIG. 5

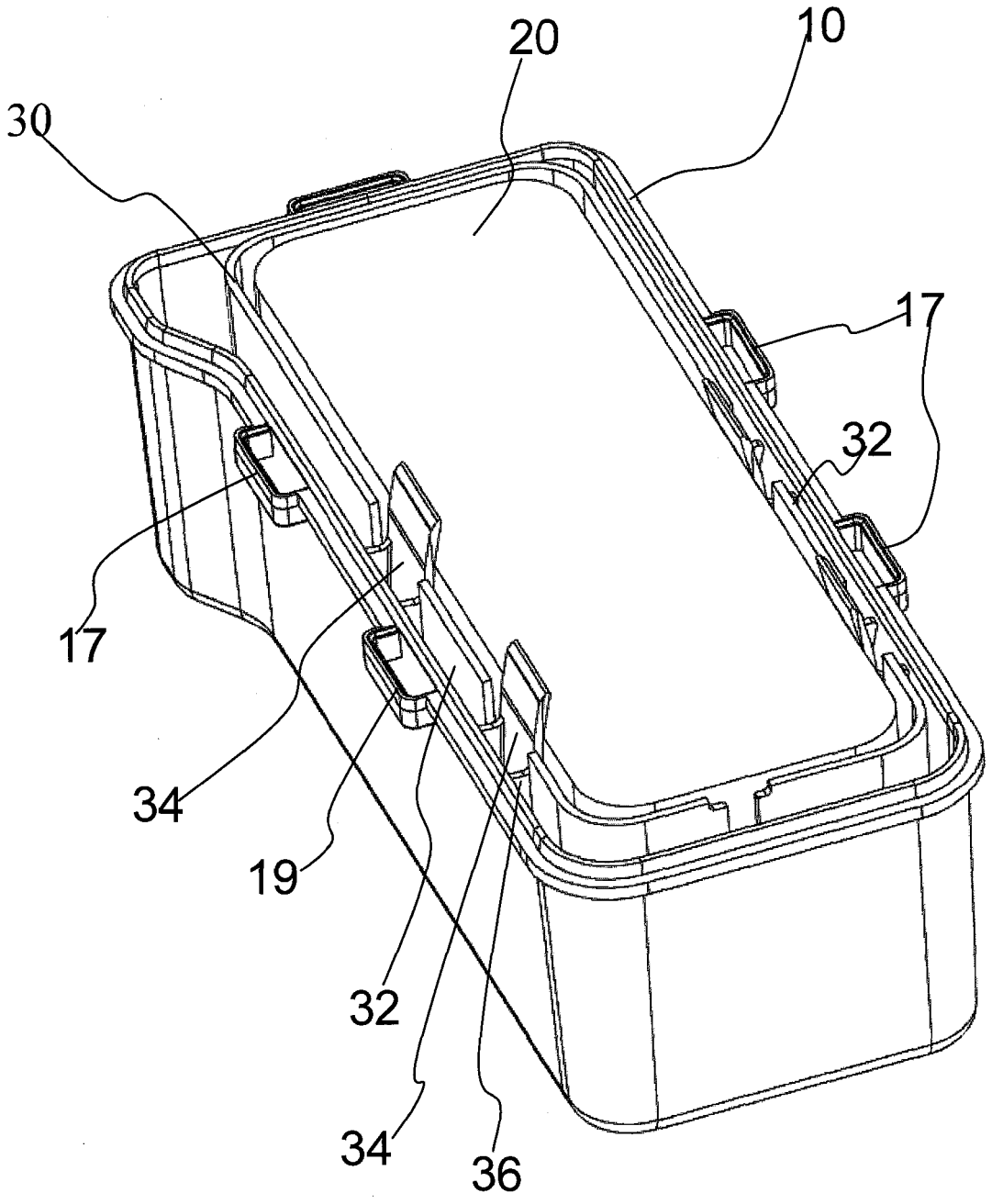


FIG. 6

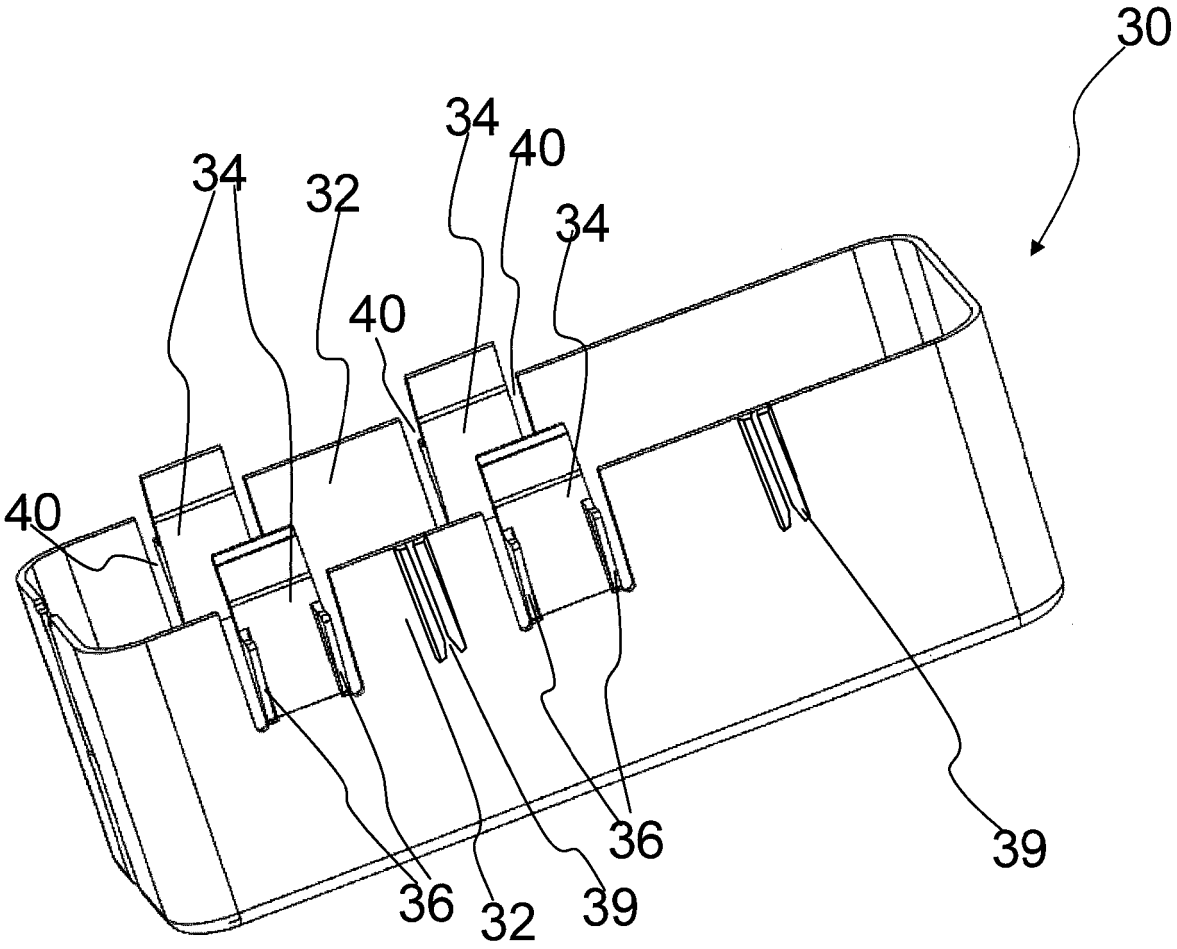


FIG. 7a

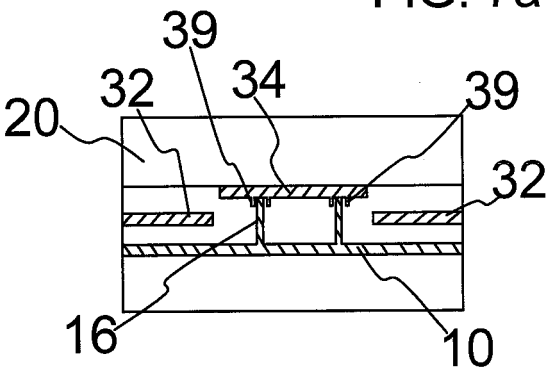


FIG. 7b

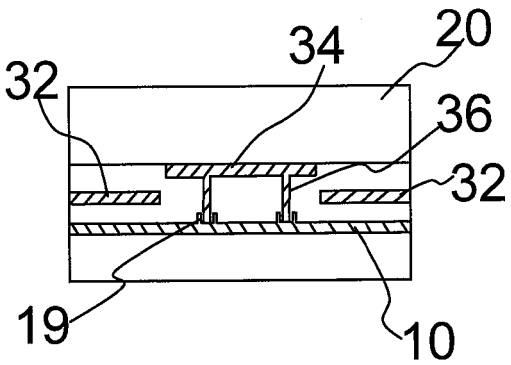


FIG. 7c

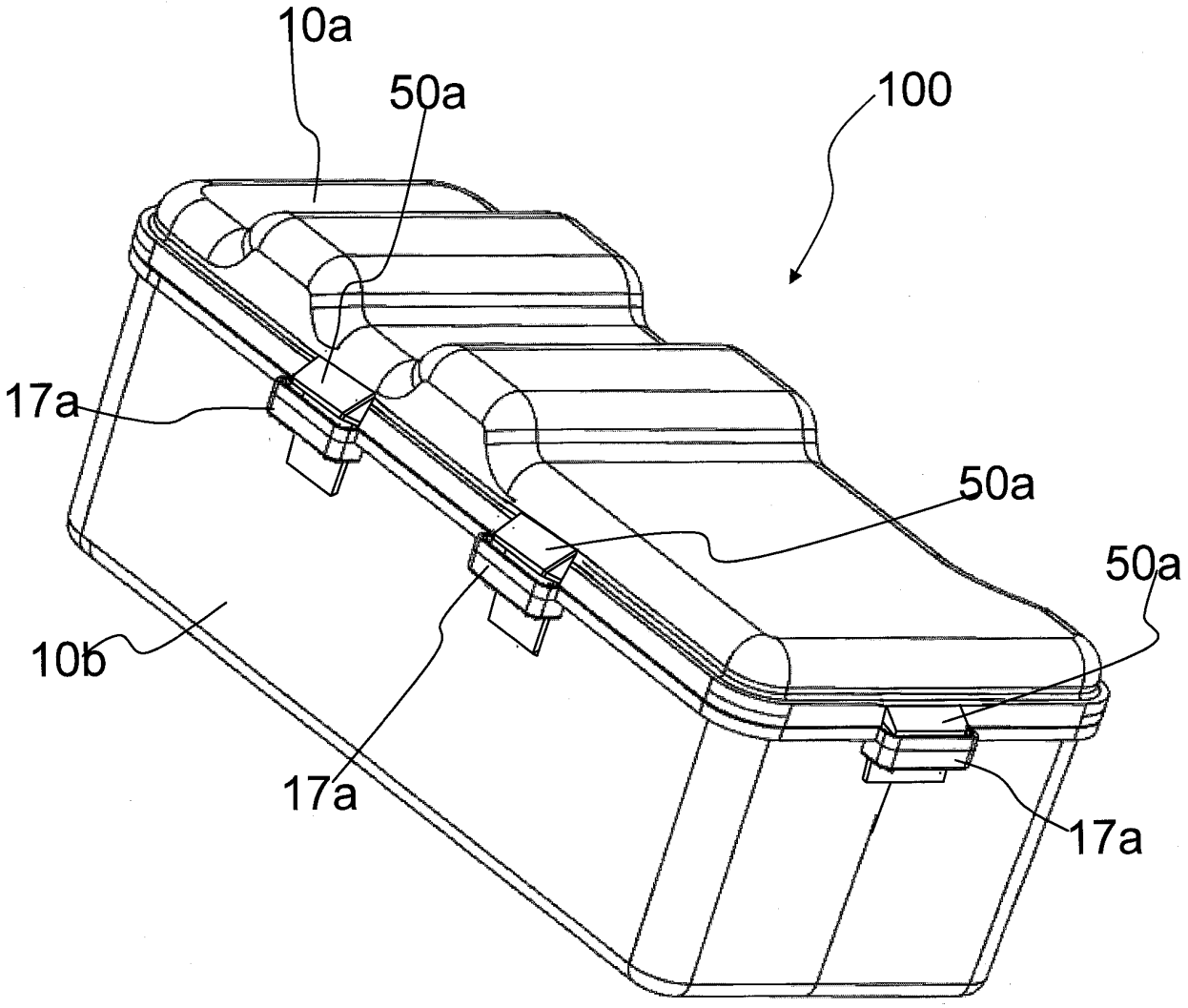


FIG. 8

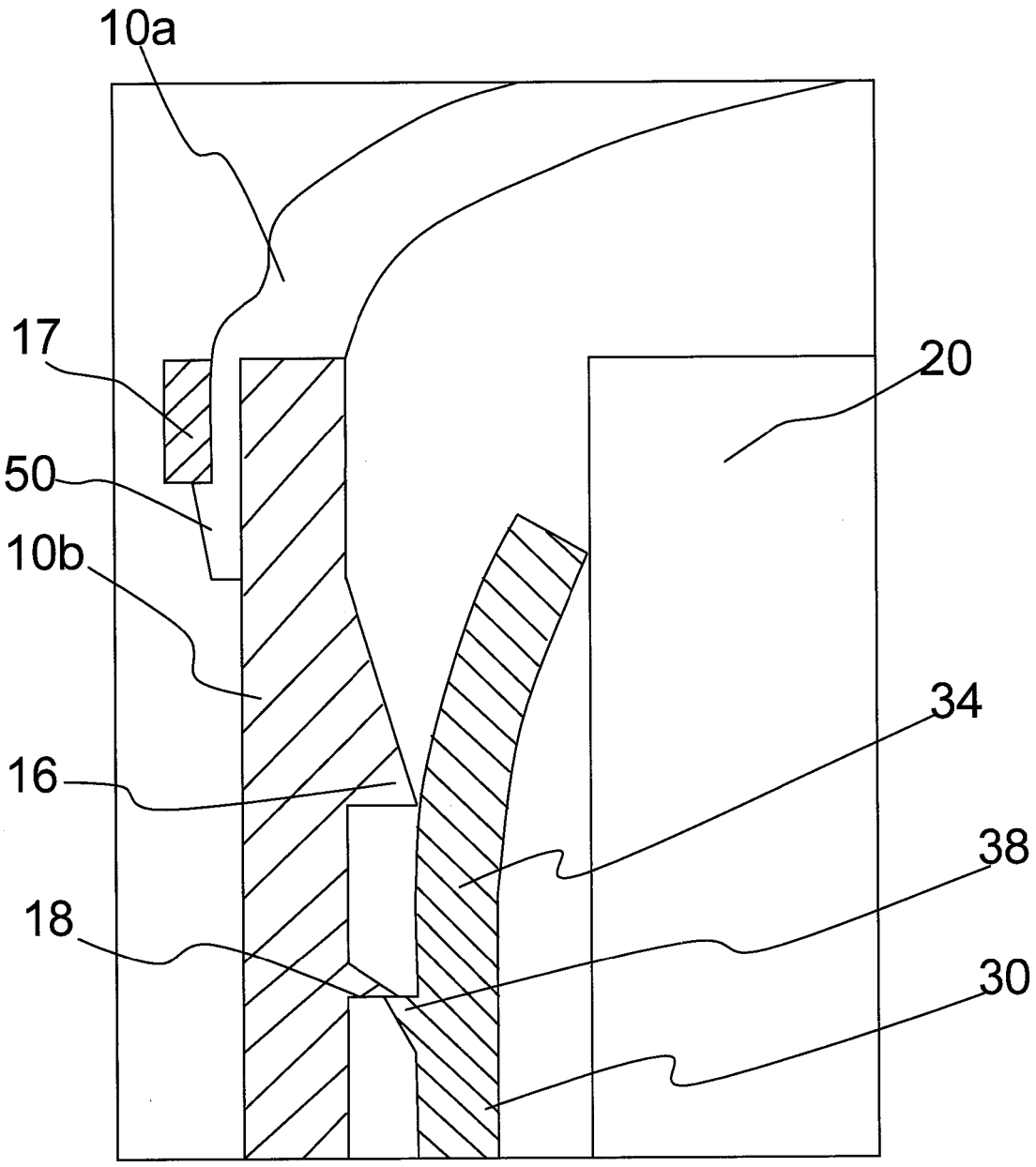


FIG. 9

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- EP 2450657 A1 **[0005]**