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(54) SUITCASE WITH COLLAPSIBLE STRUCTURE

KOFFER MIT ZUSAMMENKLAPPBARER STRUKTUR

VALISE AVEC STRUCTURE REPLIABLE

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Description

Technical field

[0001] The invention relates to a suitcase, for example a travel suitcase, of variable volume, that during the use can change from an expanded configuration for maximum volume to contain and transport objects, clothes etc. to a collapsed configuration of minimum volume when the suitcase has to be stored.

[0002] More in detail the suitcase of invention is a rigid or semi-rigid type suitcase with a collapsible structure in which, one, or more of the side-walls are foldable so you can switch from one configuration to another.

Background art

[0003] Currently collapsible suitcases are already known.

[0004] An example is represented by the international patent application WO2013056392.

[0005] In this document a suitcase is described consisting of two shells, one front and one rear, joined together by two parallel zips to a lateral side composed of foldable side-walls, in which the presence of the double zip has the purpose to pair side-walls in different measures.

[0006] In the first example (fig.5), by fully opening both zips, one lateral side can be detached and folded by retracting some of the side-walls, in this specific example two opposite sidewalls are folded inwards.

[0007] Therefore, the lateral side reduces its volume and can be placed between the two shells that may in turn be connected again by means of one of the zip, reducing the overall dimensions of the suitcase to the maximum level represented by thickness or height of the lateral side.

[0008] However, this well known suitcase has some drawbacks.

[0009] The first drawback is due to the fact that to pass from one configuration to another it is always necessary to completely disconnect at least one shell in order to subsequently reattach the shells together.

[0010] Further drawback consist in the fact that in the expanded configuration, both front and rear shells are connected by a portion of zip that is subject to efforts and tensions that could potentially damage it, either when both shells are to be opened and closed to fill the suitcase or during the process of lifting and transportation of the suitcase.

[0011] A further drawback is due to the fact that in the reduced configuration, the detachable lateral side must be stored separately.

[0012] A further drawback is due to the fact that the corners of lateral side are substantially rigid and do not allow a complete bellow folding of the lateral side.

[0013] A further drawback of this example of realization is that due to the joints of the lateral sidewalls, is not

possible to put a lateral handle in a barycentric position, with subsequent difficulties in handling and transportation of the suitcase.

[0014] In a further example given in the document WO2013056392 (fig.1), the side is not completely detachable, but is fixed with one edge to one of the shells and is equipped with a half-zip along the free edge. In this case, the lateral side is made of a continuous sidewall linked by corner portions collapsible with bellow movement, such that to vary the suitcase configuration it is always necessary to detach a shell, but you can open a single zip, fold the side corners with bellow movement, and fold the side-walls inward before to connect once again the two shells.

Object of the invention

[0015] The present invention intends to overcome the drawbacks of any already known solutions proposing a suitcase with a collapsible rigid structure, without the need for divisible parts, at the same time having a robust configuration when expanded and easily changed from the expanded configuration to the collapsed one and vice versa.

Summary of the invention

[0016] These purposes have been achieved realizing a suitcase according to at least one of the attached claims.

[0017] The first advantage consists of the fact that to pass from the expanded to the collapsed configuration it is not necessary to detach the lateral side of the suitcase, but it is possible to maintain the physical continuity of lateral side with the shells, and to overlap the shells in the collapsed configuration even if made by rigid or semi-rigid material.

[0018] A further advantage consists in the simplicity and speed of the actions that the user must perform to convert the suitcase from the expanded configuration to the collapsed and vice versa.

[0019] A further advantage lies in the robustness of the suitcase in its expanded configuration when used as a container and when carried.

[0020] A further advantage consists in the possibility of applying barycentric carrying handles.

[0021] A further advantage consists of providing a double zip, where each zip performs distinct functions for construction of the structure in expanded configuration and in traditional opening and closing of the suitcase.

[0022] A further advantage is due to the fact that the zip providing the structural assembly is not accessible from the outside in the ordinary use of the suitcase thus increasing security against possible tampering.

[0023] A further advantage is due to the fact that the zips are not subject to structural stress during lifting and / or opening and closing of the suitcase.

Design list

[0024] These and others advantages will be best understood by someone skilled in this specific field, from the following descriptions and attached drawings, given as nonlimiting examples, in which:

- Fig. 1 shows a front elevation of the suitcase according to the invention;
- Fig. 2 shows a rear view of the suitcase of fig. 1;
- Fig. 3 shows a first side view of the suitcase of fig. 1;
- Fig. 4 shows a second side view of the suitcase of fig. 1;
- Fig. 5 shows a top view of the suitcase of fig. 1;
- Fig. 6 shows a bottom view of the suitcase of fig. 1;
- Fig. 7 shows an isometric view of the suitcase of fig. 1;
- Fig. 8-14 shows successive views of the suitcase of fig. 1 in transition from expanded to collapsed configuration;
- Fig. 15 shows a detailed isometric view of fig. 1 of the suitcase in an intermediate stage of collapse;
- Fig. 16 shows a detail cross section in elevation of the suitcase.
- Fig. 17a and 17b show a schematic detail of the articulated corners portions of the lateral sides of the suitcase.
- Fig. 18a and 18b show an embodiment of the suitcase with only two wheels, in the expanded and collapsed configuration respectively.
- Fig. 19a, 19b shows a schematic view of the inside of the suitcase when collapsed.
- Fig. 20 shows the suitcase in the expanded open configuration from above.

Detailed description

[0025] Described with reference to the attached drawings is a collapsible suitcase structure according to the invention.

[0026] The suitcase comprises of a front shell 1 provided with an edge 2, and a rear shell 3 provided with an edge 4, whereby the edges 2 and 4 are substantially overlapping each other in the collapsed configuration (fig. 14).

[0027] Preferably, but not in a limiting sense, both shells 1, 3 are of concave shape and are made of a relatively rigid or semi-rigid material, for example polypropylene, polycarbonate, EVA or similar materials used in the industry, possibly coated with textile materials.

[0028] The suitcase also comprises of a perimeter side 5 which constitutes a frame for spacing the front and rear shells, generally quadrangular shape with plurality of sidewalls 12, 13, 14, 15, defined between a first edge 6 which extends in correspondence of the edge 2 of the front shell 1, and a second edge 7, which extends in correspondence of the edge 4 of the rear shell 3.

[0029] At least one of the side-walls 12, 13, 14, 15 of perimeter side 5 is provided with at least one intermediate folding line 11 orthogonal to the edges 6, 7 of side 5, and

furthermore, are connected by folding articulated angular joint portions 30, 31, 32, 33. Preferably, the intermediate fold line 11 is provided on the side-wall 13 the lower bottom of the side 5 and it is arranged to allow a folding towards the inside of the suitcase.

[0030] According to the invention, there is provided a first reversible linear joining element 9 arranged to connect at least to a portion of the first edge 6 of side 5 to, at least, a portion of the edge 2 of front shell 1, and a second reversible linear joining element 10 arranged to connect, to at least, a portion of the second edge 7 of side 5 to at least a portion of the edge 4 of the rear shell 3.

[0031] Preferably, the linear joining elements 9, 10 are linear junctions as Zipper or "zip" type.

[0032] As it is best seen in Fig. 4, in the illustrated shape of realization, the suitcase side 5 may include a side-wall 12, split into sectors articulated 41, 42, 65, defined by a first side 18 articulated along a stretch of articulation 16 with respect to the corresponding side 19 of the edge 2 of the front shell 1 and a second side 20 articulated along a stretch of articulation 17 with respect to side 21 of the edge 4 of the rear shell 3. According to the invention, the side-wall 12 also has a line of intermediate articulation line 23 parallel to the first and second sides 18, 20.

[0033] Thanks to this solution, when the suitcase is transformed to the collapsed configuration, the side-wall 12, being articulated along the intermediate articulation line 23, folds parallel to the edges of the articulation with the shells 1, 3 and allows the two shells 1, 3 to overlap with precision along the respective edges while maintaining the physical continuity with side 5 by means of the articulation lines 16, 17 so that they can be stable therefore not detachable.

[0034] Preferably the first linear joining element 9 is extended to at least a portion 24 of the first edge 18 of the side-wall 12 as to allow the opening and closing of shell 1 relative to side-wall 12, and the second linear joining element 10 is extended between the first and second ends 28, 29 of the articulation line 23 and includes preferably two portions 25, 27 which in turn extend from the ends of the stretch of articulation 17 to the ends of the intermediate line 23.

[0035] The side-wall 12 also comprises of a second intermediate articulation line 26 orthogonal to the stretches of articulation 16, 17 and extended from one end 39 of the stretch of articulation 16 to one end 29 of the first intermediate articulation line 23. Still with reference to Fig. 4, with the configuration as described, the side-wall 12 of the suitcase is articulated:

- at 16 and 17 with respect to the shells 1, 3;
- at 30 and 33 with respect of the upper side-wall 14 and lower side-wall 13 of side 5,
- With the intermediate line 23 parallel to the articulation lines 16, 17,
- With the intermediate line 26 comprised and orthogonal between the lateral articulation line 16 and the intermediate line 23;

whilst it is attachable reversibly to the shells 1, 3 by means of joining elements 9, 10, the latter by partly crossing the width of side-wall 12 by means of the joining stretches 25, 27 until it meets the intermediate articulation line 23 to each ends 28, 29.

[0036] Figures 8-14 show the succession of the phases from the suitcase in open expanded configuration to the collapsed configuration of minimum volume.

[0037] In Fig. 8, 9 the two joining elements 9, 10 are completely closed and the shell 1 is articulated to side-wall 12 by means of the stretch of articulation 16. By opening and closing joining element 9, the suitcase can be opened (Fig.9) or closed (Fig.8) to access the full internal capacity.

[0038] In greater detail, the above mentioned linear joining elements 9, 10 each comprise two half junction parts 34, 35; 36, 37, of which

- The half part 34 is fixed inside edge 2 of shell 1,
- The half part 35 is fixed to the outside of the edge 18 of the side 5
- The half part 36 is fixed to the outside of the edge 20 of the side 5
- The half part 37 is fixed inside the edge 4 of the shell 3.

[0039] Preferably, according to the invention, the first joining element 9 is accessible from the outside of the suitcase, while the second joining element 10 is accessible and visible from the inside of the suitcase once the first junction 9 is opened.

[0040] In the figures, the visible parts of joining elements 9, 10 are represented in a thick continuous line, the non-visible parts in dotted line.

[0041] In fig.10, joining elements 9, 10 are both completely open, the side-wall 12 is cut by the opened joining stretches 25 and 27, and side 5 is attached to the shells 1, 3 only by the stretches of articulation 16, 17 of the side-wall 12. Side 5 can therefore begin to fold on the angular joints 30, 31, 32, 33, on the line of intermediate articulation line 26 of the side-wall 12 and the intermediate articulation line 11 of the bottom side-wall 13. In more detail, the angular articulation 31 next to the intermediate articulation line 26 and the intermediate articulation line 11 of the side-wall 13 are fixed towards the interior of the suitcase so that sections 41, 42 of the sidewall 12 articulated along the intermediate line 26 are overlapped, the opposite side-wall 15 approaches side-wall 12, and side 5 may collapse against sidewall 12 with a bellows movement.

[0042] It is noted that the angular joints 30-33 are preferably constructed by articulation bands namely provided of more articulation lines, for the purpose of being able, where necessary, for example in folding corner 31, to bend the angle of the side both outward or inward.

[0043] In fig.11, side 5 is collapsed against side-wall 12 that can bend along the intermediate line 23 and allowing the collapsed side 5 to align parallel to shells 1, 3

(Fig.12-Fig.13) inside the suitcase.

[0044] Fig. 15 shows, in greater detail, the method of folding side-wall 12 which is articulated into line 23 and it is free to slide shut due to cuts of the traits of open joining stretches 25, 27.

[0045] Advantageously, it is noted that, the intermediate articulation line 23 of side-wall 12, located at the half width of side-wall 12, in combination with cuts 25, 27, allows the two shells 1, 3 to overlap with precision in the closing collapsed configuration and to match the respective edges 2, 4.

[0046] Fig. 14 shows the closed configuration suitcase, with the collapsed side 5 inwards.

[0047] In a preferred example of embodiment, the linear joining elements 9, 10, are constituted by a zipper or "zip" type.

[0048] Fig.16 shows detail of a preferred shape of the suitcase, in which side 5 comprises of an upper side-wall 14 extended without joints between the two angular portions 30, 31 and is provided with external lateral abutment surfaces 51, 52, overlapping to the inner surfaces of abutment corresponding to sides 53, 54 of the front and rear shells 1,3.

[0049] In this form, the upper side-wall 14 is therefore capable of bearing the suitcase weight and is provided for the purpose of a handle 55 accessible from the outside for the purpose of carrying.

[0050] A similar consideration applies to side-wall 15 of side 5, opposite to the collapsing side-wall 12, which may itself be provided with a carrying handle 56.

[0051] It is specified that the highlighted section in Figure 16 extends around the entire perimeter of side 5 in correspondence of edges 2, 4 of the front and rear shells 1, 3. In various practical applications, it will be then possible to provide a further implementation of luggage on wheels, for example four wheels 60 fixed to the body of the shells 1 and 3, and comprising of a removable handle 61 from the rear shell 3, like a "Trolley" which is already known and therefore not further described.

[0052] In figures 18a, 18b it is shown a possible "trolley" configuration, respectively, in the expanded configuration and in the reduced configuration, in which only two wheels 60 are provided, fixed underneath to the rear body shell 3. In this case it will be possible to advantageously reduce the overall depth of the front shell 1 which may have a substantially flat form with additional benefit in reducing the total volume of the collapsed suitcase

Figures 17a, 17b show in greater detail the sections of two possible realization forms of angular joint portion 30-33, which can be formed by a succession of slats or cylinders 64 connected for example by a coating of fabric (or co-molded in plastic material) and flexible in both bending directions (fig.17a), or by slats 62 put next to each other and connected by lines of reduced thickness 63 with articulation function (fig.17b).

[0053] Figures 19a and 19b show the inner section of the suitcase, with the highlighted fold pattern of side 5 between the two shells 1 and 3, in the collapsed config-

uration, with the angular joints in the form shown in Figures 17a and 17b respectively.

[0054] The invention achieves important advantages.

[0055] The structure described above makes it possible to realize a suitcase that in its expanded configuration has an increased volume, but in its collapsed configuration has a much reduced volume, at the same time being easy and quickly transformed between states with no removable pieces to store separately.

[0056] Furthermore, the invention allows handles to be mounted in a barycentric position, on the upper and lateral sidewalls (for example in the view of Fig. 1), thereby facilitating carrying.

[0057] A further advantageous feature, consist to the fact that, thanks to the overlap between shell and the side, the zips are not directly stressed, as they only serve to connect the rigid sections and therefore it avoids any misalignment of the rigid parts with a consequent deformation of the whole suitcase during lifting or when the suitcase is lifted by the handle.

[0058] A further advantageous feature is that the articulated corners are composed of a series of rigid elements and articulated between themselves like a chain, in such a way, that when they are inserted in a rigid channel, (connection between shell1, shell 2), they become segments of union for both parts and become more resistant to deformation.

[0059] A further advantageous feature consist in the fact that the inner linear joining element 10 is not accessible from the outside when the suitcase is used in its expanded configuration, and therefore will reduce the chance of tampering.

[0060] The invention has been described with reference to a preferred form of embodiment, however it is understood that equivalent modifications may be made as long as they do not depart from the scope of invention as defined in appended claims.

Claims

1. A suitcase with collapsible structure, capable of assuming an expanded configuration of normal use (C1) and a collapsed configuration (C2), comprising:

a front shell (1) provided with a perimetral edge (2);

a rear shell (3) provided with a perimetral edge (4) that can be associated to the edge (2) of the front shell (1);

a perimetral side (5) for distancing said front and rear shells, comprising a plurality of distancing walls (12, 13, 14, 15) defined between a first edge (6) that in the configuration of use extends at the edge (2) of the front shell (1) and a second edge (7) that extends at the edge (4) of the rear shell (3), said walls being connected by foldable articulated angular portions (30, 31, 32, 33);

a first reversible linear joining element (9) for connecting at least one stretch of the first edge (6) of the side (5) to at least one stretch of the edge (2) of the front shell (1); and

a second reversible linear joining element (10) for connecting at least one stretch of the second edge (7) of the side (5) to at least one stretch of the edge (4) of the rear shell (3);

wherein at least one wall (12, 13, 14, 15) of the side (5) is provided with at least one intermediate folding line (11) orthogonal to the edges (6, 7) of the side (5),

wherein said side (5) comprises a wall (12) defined by a first side (18) that can be articulated along a stretch (16) of articulation with respect to a side (19) of the edge (2) of the front shell (1) and a second side (20) that can be articulated along a stretch (17) of articulation with respect to a side (21) of the edge (4) of the rear shell (3); and

said wall (12) comprises a first intermediate articulation line (23) comprised between and parallel to said articulation stretches (16, 17) of the wall (12).

2. The suitcase according to Claim 1, **characterized in that:**

said first linear joining element (9) extends for at least one openable joining stretch (24) of the first edge (18) of the wall (12), which runs from one end to the other (38, 39) of the articulation stretch (16) to enable reversible opening and closing of the shell (1) with respect to the side (5) of the suitcase;

said second linear joining element (10) extends for at least one openable joining stretch (40) that runs from one end (28) to the other end (29) of said first intermediate articulation line (23); and said wall (12) comprises a second intermediate articulation line (26) orthogonal to said articulation stretches (16, 17) of the wall (12), which extends from the side (18) to one end (29) of the first intermediate articulation line (23).

3. The suitcase according to Claim 2, wherein the second intermediate articulation line (26) orthogonal to said articulation stretches (16, 17) of the wall (12) extends from one end (39) of the articulation stretch (16) to one end (29) of the first intermediate articulation line (23).

4. The suitcase according to any one of the preceding claims, wherein said first linear joining element (9) is accessible for being operated from outside the suitcase, and said second linear joining element (10) is accessible for being operated only inside the suitcase.

5. The suitcase according to any one of the preceding claims, wherein said joining stretch (40) of the second linear joining 3 element (10) extends for at least one joining stretch (25, 27) that runs from the second edge (20) of the wall (12) to one end (28, 29) of said first intermediate articulation line (23). 5
6. The suitcase according to Claim 5, comprising two joining stretches (25, 27) that run from the ends of the articulation stretch (17) to the respective ends (28, 29) of the first intermediate articulation line (23). 10
7. The suitcase according to any one of the preceding claims, wherein said at least one intermediate folding line (11) is provided in a bottom wall (13) of the side (5). 15
8. The suitcase according to any one of the preceding claims, wherein said side comprises a top wall (14) extending without articulations between two angular portions (30, 31) and provided with external lateral contrast surfaces (32, 33) that can be superimposed on internal contrast surfaces of corresponding sides (34, 35) of the front and rear shells (1, 3), said top wall (14) being provided with a handle (55) accessible from outside for carrying the suitcase. 20 25
9. The suitcase according to any one of the preceding claims, wherein at least one of said linear joining elements (9, 10) is constituted by a zip fastener. 30
10. The suitcase according to any one of the preceding claims, wherein at least one of said shells (1, 3) is a shell having a concave shape made of a rigid or semi-rigid material, for example polypropylene, polycarbonate, EVA. 35

Patentansprüche

1. Koffer mit zusammenlegbarer Struktur, der eine ausgeweitete Konfiguration für den normalen Gebrauch (C1) und eine zusammenlegbare Konfiguration (C2) annehmen kann, beinhaltend:

eine vordere Schale (1), die mit einer Randkante längs des Umfangs (2) versehen ist;
 eine hintere Schale (3), die mit einer Randkante (4) versehen ist, die der Kante (2) der Vorderseite (1) zugeordnet werden kann;
 eine Seitenwand entlang des Umfangs (5) zur Distanzierung der vorderen und hinteren Schale um eine Trennung zwischen vorderer und hinterer Schale zu erreichen, bestehend aus einer Vielzahl von Trennwänden (12, 13, 14, 15), bestimmt durch eine erste Randkante die sich in der Benutzung Konfiguration entlang der Randkante (2) der vorderen Schale (1) und einer

zweiten Randkante (7), die sich längs der Kante (4) der hinteren Schale (3) erstreckt, als Wände benannt, die untereinander mit faltbaren gelenkigen Winkelabschnitte (30, 31, 32, 33) verbunden sind.

ein erstes reversibles lineares Verbindungselement (9) um mindestens einen Teil der ersten Kante (6) der Seite (5) mit wenigstens einem Abschnitt der Kante (2) der vorderen Schale (1) zu verbinden; und

ein zweites reversibles lineares Verbindungselement (10) zum Verbinden mindestens eines Teils der zweiten Kante (7) der Seite (5) mit wenigstens einem Abschnitt der Kante (4) der hinteren Schale (3);

wobei mindestens eine Wand (12, 13, 14, 15) der Seite (5) mit mindestens einer Zwischenfaltlinie (11) orthogonal zu den Randkanten (6, 7) der Seite (5) versehen ist,

wobei der Koffer **dadurch gekennzeichnet ist, dass:**

das erwähnte Seitenteil (5) beinhaltet eine Wand (12) definiert durch eine erste Seite (18), flexibel entlang eines Teils (16) des Gelenkstücks bezüglich einer Seite (19) der Kante (2) der vorderen Schale (1) und eine zweite Seite (20), flexibel entlang einem Gelenkteil (17) bezüglich einer Seite (21) der Kante (4) der hinteren Schale (3)

die erwähnte Seitenwand (12) weist eine erste Zwischenfaltlinie auf (23) zwischen und parallel zu den Gelenkstrecken (16, 17) der Seitenwand (12).

2. Koffer nach Patentanspruch 1, **dadurch gekennzeichnet, dass:**

das erste lineare Verbindungselement (9) erstreckt sich über mindestens ein zu öffnendes Verbindungsstück (24) der ersten Randkante (18) der Seitenwand (12), die von einem Ende zum anderen Ende (38, 39) der Gelenkstrecke (16) verläuft, um ein reversibles Öffnen und Schließen der Schale (1) in Bezug auf die Seite (5) des Koffers zu ermöglichen;

das erwähnte zweite lineare Verbindungselement (10) erstreckt sich über mindestens einen Teil der zu öffnenden Verbindungsstrecke (40), die von einem Ende (28) zum anderen Ende (29) der erwähnten ersten Zwischenfaltlinie (23) verläuft;

die erwähnte Wand (12) weist eine zweite Zwischenfaltlinie (26) auf, die senkrecht zu den Gelenkstrecken (16, 17) der Seitenwand (12) verläuft und sich von der Seite (18) zu einem Ende (29) der ersten Zwischenfaltlinie (23) erstreckt.

3. Koffer nach Patentanspruch 2, bei dem das zweite Zwischengelenk (26) orthogonal zu den Gelenkstrecken (16, 17) der Seitenwand (12) sich von einem Ende (39) der Gelenkstrecke (16) zu einem Ende (29) der ersten Zwischenfaltlinie (23) erstreckt. 5
4. Koffer nach einem der vorhergehenden Patentansprüche, bei dem das genannte erste lineare Verbindungselement (9), außerhalb des Koffers zugänglich ist um betätigt zu werden, und das zweite lineare Verbindungselement (10) nur vom Inneren des Koffers zugänglich ist um betätigt zu werden. 10
5. Koffer nach einem der vorhergehenden Patentansprüche, bei dem die Verbindungsstrecke (40) des linearen Verbindungselements (10) sich über wenigstens einem Abschnitt der Verbindungsstrecke (25, 27) erstreckt, die von der zweiten Kante (20) der Seitenwand (12) zu einem Ende (28, 29) der ersten Zwischenfaltlinie (23) verläuft. 15 20
6. Koffer nach Patentanspruch 5, beinhaltet zwei Verbindungsstrecken (25, 27), die von den Enden der Gelenkstrecke (17) zu den jeweiligen Enden (28, 29) der ersten Zwischenfaltlinie (23) verlaufen. 25
7. Koffer nach einem der vorhergehenden Patentansprüche, bei dem mindestens die eine Zwischenfaltlinie (11) mit einer Bodenwand (13) der Seite (5) versehen ist. 30
8. Koffer nach einem der vorhergehenden Patentansprüche, bei dem die Seite eine obere Wand (14) aufweist, die sich ohne Gelenke zwischen zwei Winkелеlementen (30, 31) erstreckt und seitlich mit äußeren Anschlagflächen (32, 33) versehen ist, überlappend mit inneren Anschlagflächen der entsprechenden Seiten (34, 35) der vorderen und hinteren Schale (1, 3) wobei die obere Wand (14) mit einem von außen zugänglichen Griff (36) zum Tragen des Koffers versehen ist. 35 40
9. Koffer nach einem der vorhergehenden Patentansprüche, wobei mindestens eines der linearen Verbindungselemente (9, 10) aus einem Reißverschluss besteht. 45
10. Koffer nach einem der vorhergehenden Patentansprüche, wobei mindestens eine der Schalen (1, 3) eine Schale mit konkaver Form ist, hergestellt aus starren oder halbstarren Material, beispielsweise Polypropylen, Polycarbonat, EVA. 50

Revendications 55

1. Valise à structure repliable, capable de prendre une configuration déployée d'utilisation normale (C1) et

une configuration repliée (C2), comprenant :

une coque avant (1) pourvue d'un bord périmétrique (2) ;
 une coque arrière (3) pourvue d'un bord périmétrique (4) qui peut être associé au bord (2) de la coque avant (1) ;
 un côté périmétrique (5) pour écarter lesdites coques avant et arrière, comprenant une pluralité de parois d'écartement (12, 13, 14, 15) formées entre un premier bord (6) qui, dans la configuration d'utilisation, s'étend au niveau d'un bord (2) de la coque avant (1) et un second bord (7) qui s'étend au niveau du bord (4) de la coque arrière (3), lesdites parois étant reliées par des parties angulaires articulées pliables (30, 31, 32, 33) ;
 un premier élément de jonction linéaire réversible (9) pour relier au moins une partie du premier bord (6) du côté (5) à au moins une section du bord (2) de la coque avant (1) ; et
 un deuxième élément de jonction linéaire réversible (10) pour relier au moins une section du deuxième bord (7) du côté (5) à au moins une section du bord (4) de la coque arrière (3) ;
 dans laquelle au moins une paroi (12, 13, 14, 15) du côté (5) est pourvue d'au moins une ligne de pliage intermédiaire (11) orthogonale aux bords (6, 7) du côté (5), dans laquelle ledit côté (5) comprend une paroi (12) définie par un premier côté (18) qui peut être articulé le long d'une section (16) d'articulation par rapport à un côté (19) du bord (2) de la coque avant (1) et par un second côté (20) qui peut être articulé le long d'une section (17) d'articulation par rapport à un côté (21) du bord (4) de la coque arrière (3) ; et
 ladite paroi (12) comprend une première ligne d'articulation intermédiaire (23) comprise entre lesdites et parallèlement auxdites sections d'articulation (16, 17) de la paroi (12).

2. Valise selon la Revendication 1, **caractérisée en ce que :**

ledit premier élément de jonction linéaire (9) s'étend sur au moins un tronçon de jonction ouvrable (24) du premier bord (18) de la paroi (12), qui s'étend d'une extrémité à l'autre (38, 39) de la section d'articulation (16) pour permettre l'ouverture et la fermeture réversibles de la coque (1) par rapport au côté (5) de la valise ;
 ledit deuxième élément de jonction linéaire (10) s'étend sur au moins une section de jonction ouvrable (40) qui s'étend d'une extrémité (28) à l'autre extrémité (29) de ladite première ligne d'articulation intermédiaire (23) ; et
 ladite paroi (12) comprend une deuxième ligne

d'articulation intermédiaire (26) orthogonale auxdites sections d'articulation (16, 17) de la paroi (12), qui s'étend du côté (18) à une extrémité (29) de la première ligne d'articulation intermédiaire (23).

5

cave faite d'un matériau rigide ou semi-rigide, par exemple polypropylène, polycarbonate, EVA.

3. Valise selon la Revendication 2, dans laquelle la deuxième ligne d'articulation intermédiaire (26) orthogonale auxdites sections d'articulation (16, 17) de la paroi (12) s'étend d'une extrémité (39) de la section d'articulation (16) à une extrémité (29) de la première ligne d'articulation intermédiaire (23). 10
4. Valise selon l'une quelconque des revendications précédentes, dans laquelle ledit premier élément de jonction linéaire (9) est accessible pour être actionné de l'extérieur de la valise, et ledit deuxième élément de jonction linéaire (10) est accessible pour être actionné uniquement à l'intérieur de la valise. 15
20
5. Valise selon l'une quelconque des revendications précédentes, dans laquelle ladite section de jonction (40) du deuxième élément de jonction linéaire 3 (10) s'étend sur au moins une section de jonction (25, 27) qui s'étend du deuxième bord (20) de la paroi (12) à une extrémité (28, 29) de ladite première ligne d'articulation intermédiaire (23). 25
6. Valise selon la Revendication 5, comprenant deux sections de jonction (25, 27) qui vont des extrémités de la section d'articulation (17) aux extrémités respectives (28, 29) de la première ligne d'articulation intermédiaire (23). 30
7. Valise selon l'une quelconque des revendications précédentes, dans laquelle ladite au moins une ligne de pliage intermédiaire (11) est prévue dans une paroi inférieure (13) du côté (5). 35
8. Valise selon l'une quelconque des revendications précédentes, dans laquelle ledit côté comprend une paroi supérieure (14) s'étendant sans articulations entre deux parties angulaires (30, 31) et pourvue de surfaces de contraste latérales externes (32, 33) qui peuvent être superposées aux surfaces de contraste internes des côtés correspondants (34, 35) des coques avant et arrière (1, 3), ladite paroi supérieure (14) étant pourvue d'une poignée (55) accessible de l'extérieur pour porter la valise. 40
45
50
9. Valise selon l'une quelconque des revendications précédentes, dans laquelle au moins l'un desdits éléments de jonction linéaires (9, 10) est constitué par une fermeture éclair. 55
10. Valise selon l'une quelconque des revendications précédentes, dans laquelle au moins l'une desdites coques (1, 3) est une coque ayant une forme con-

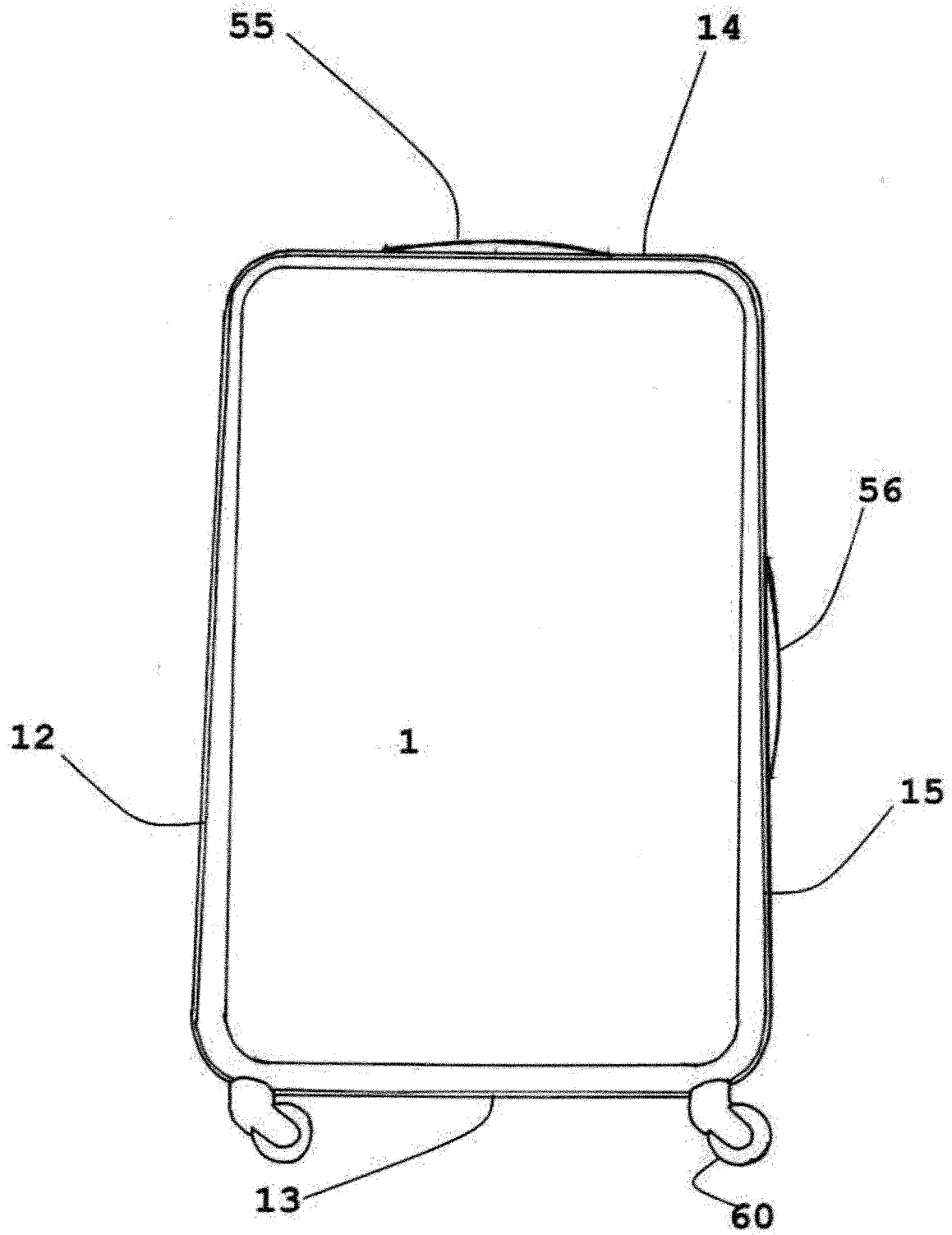
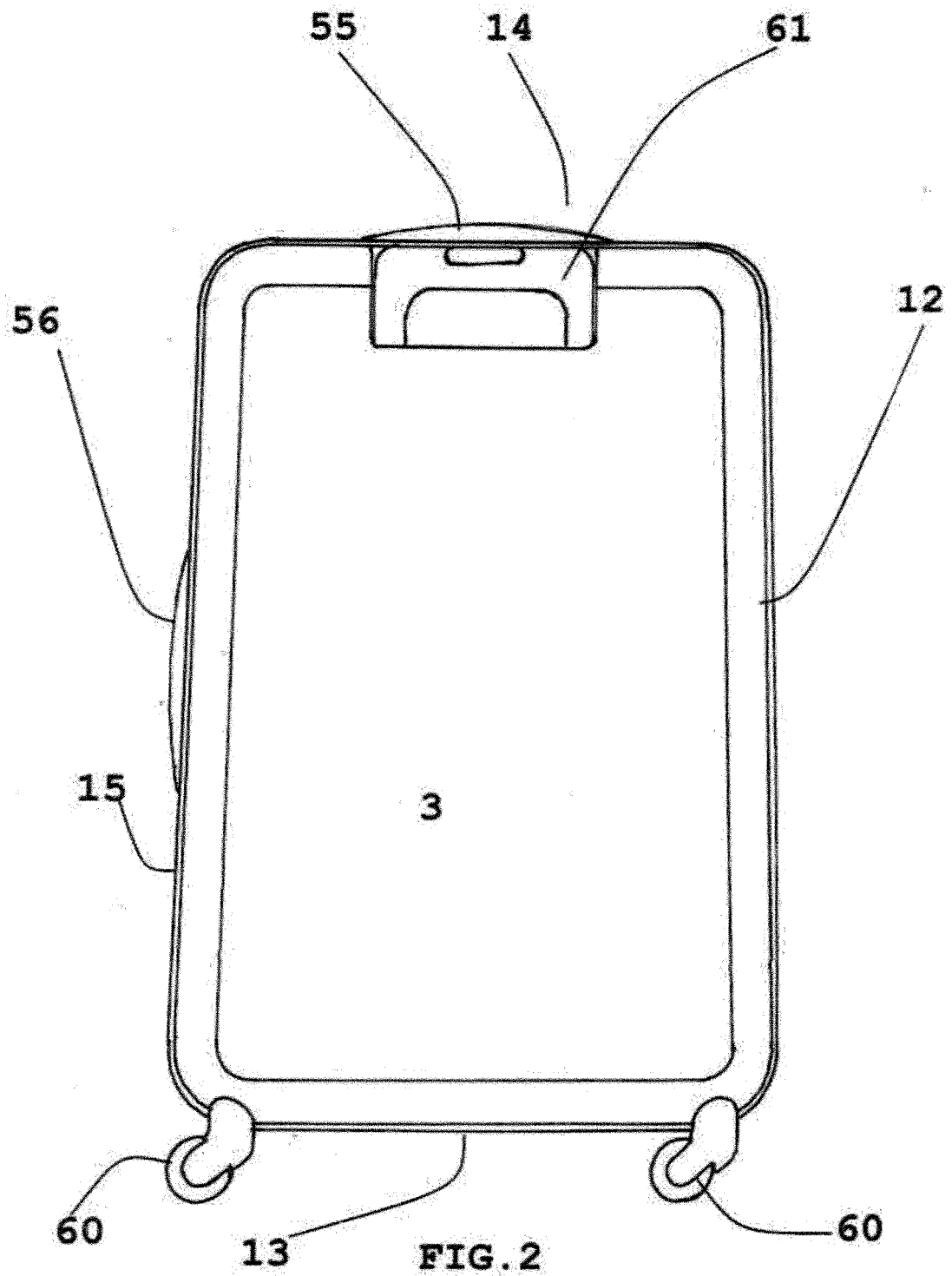


FIG. 1



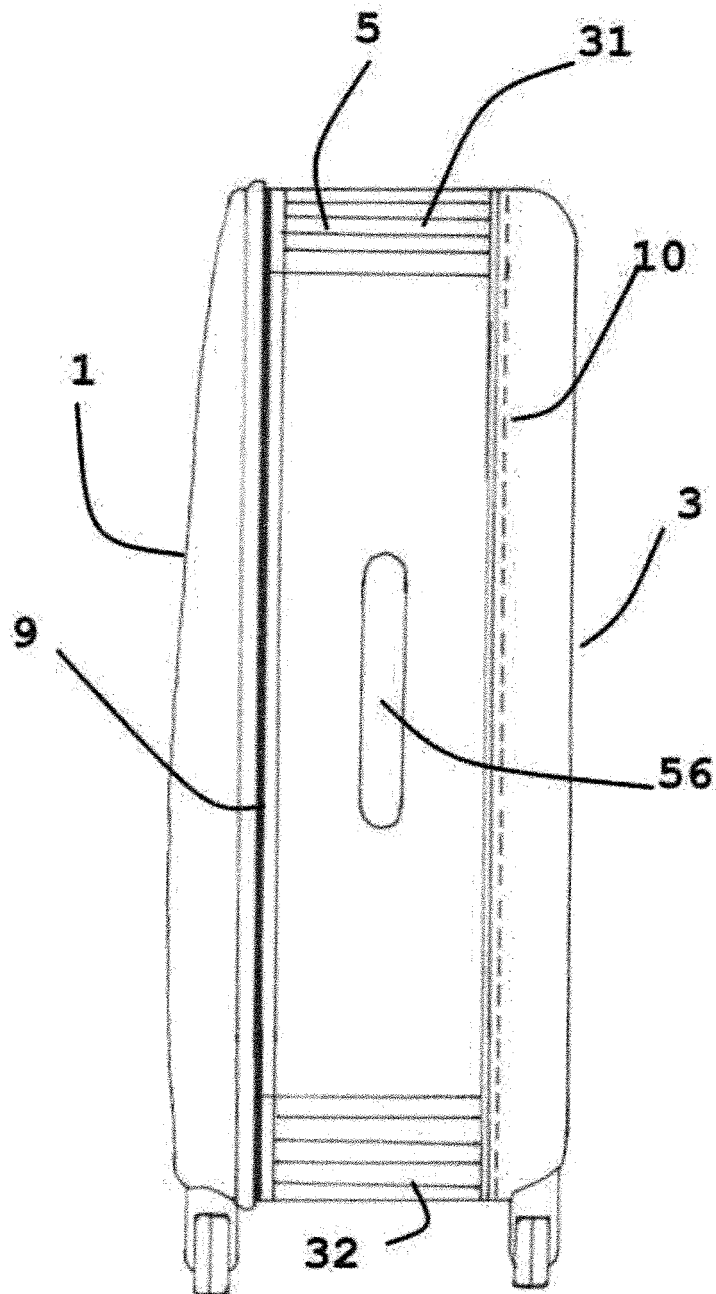


FIG. 3

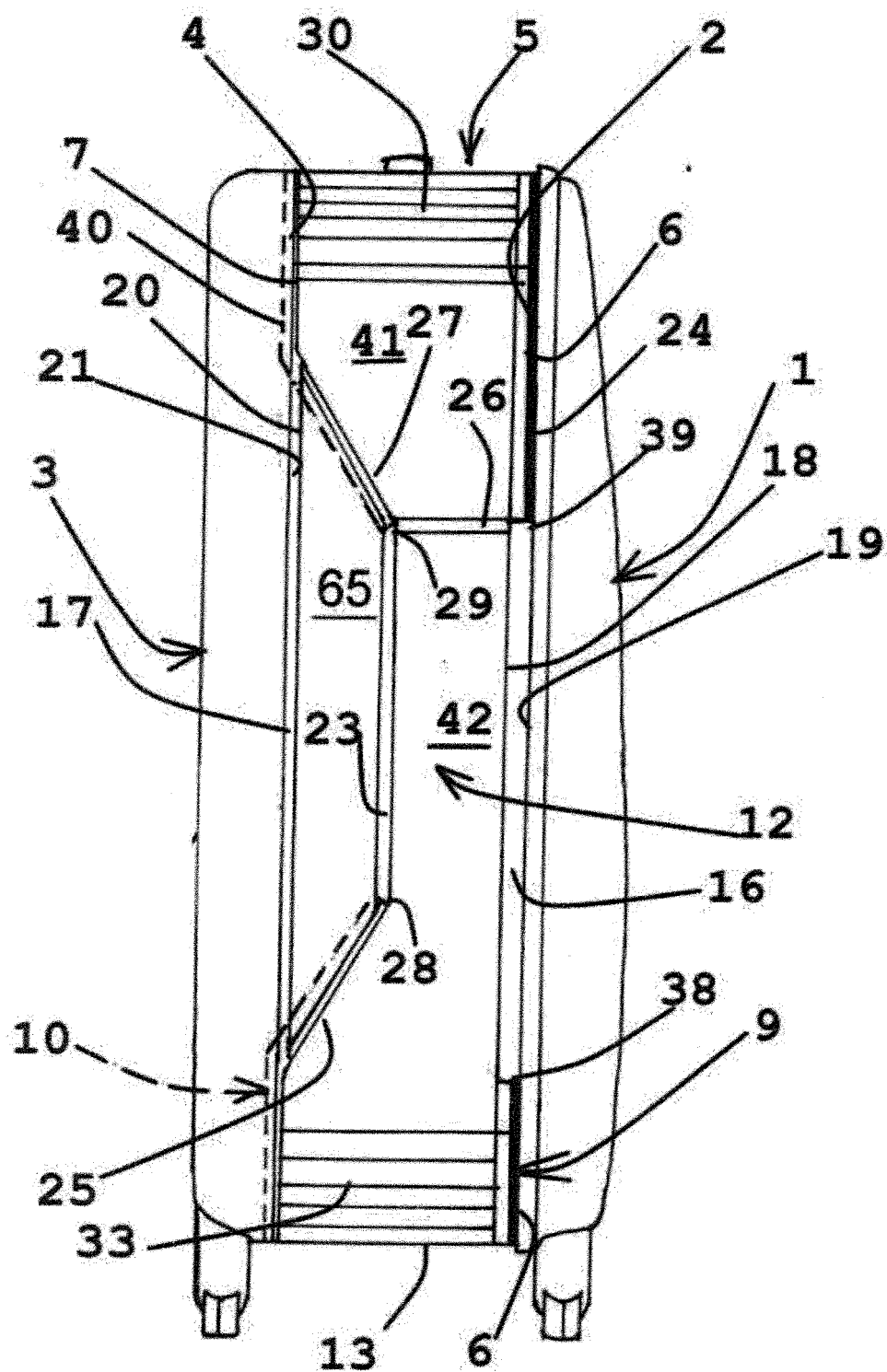
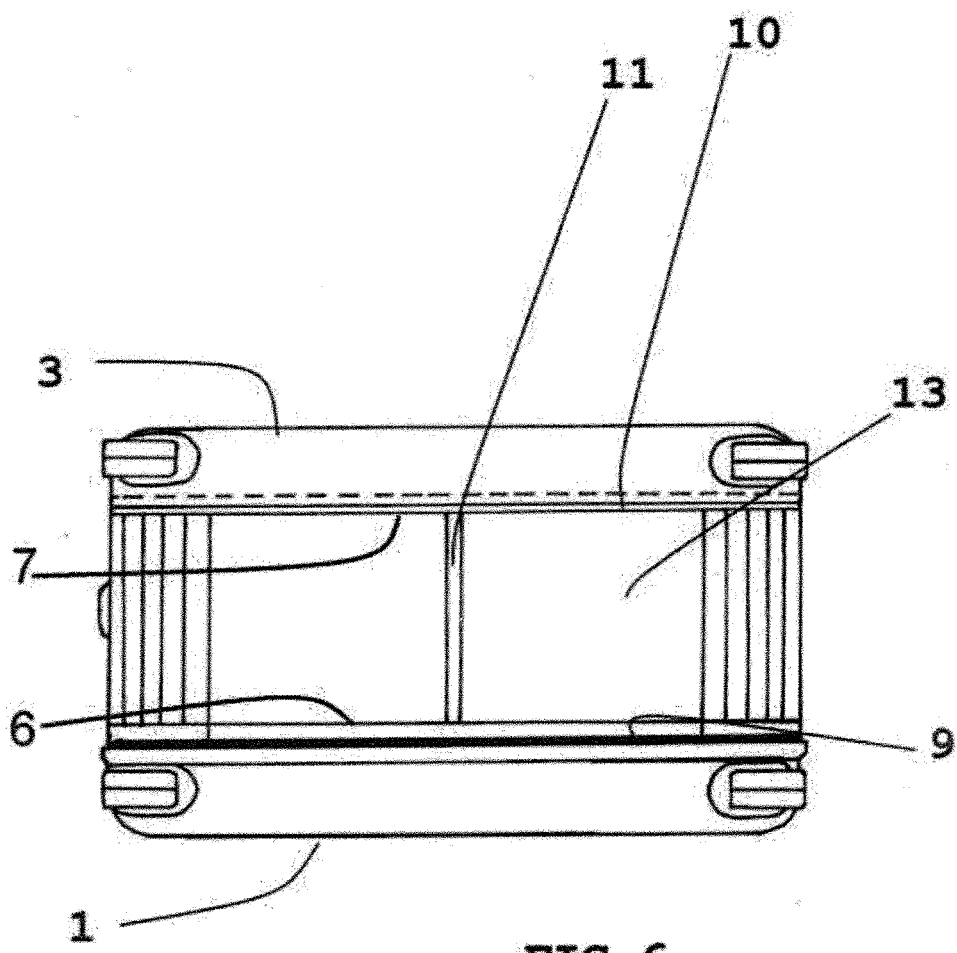
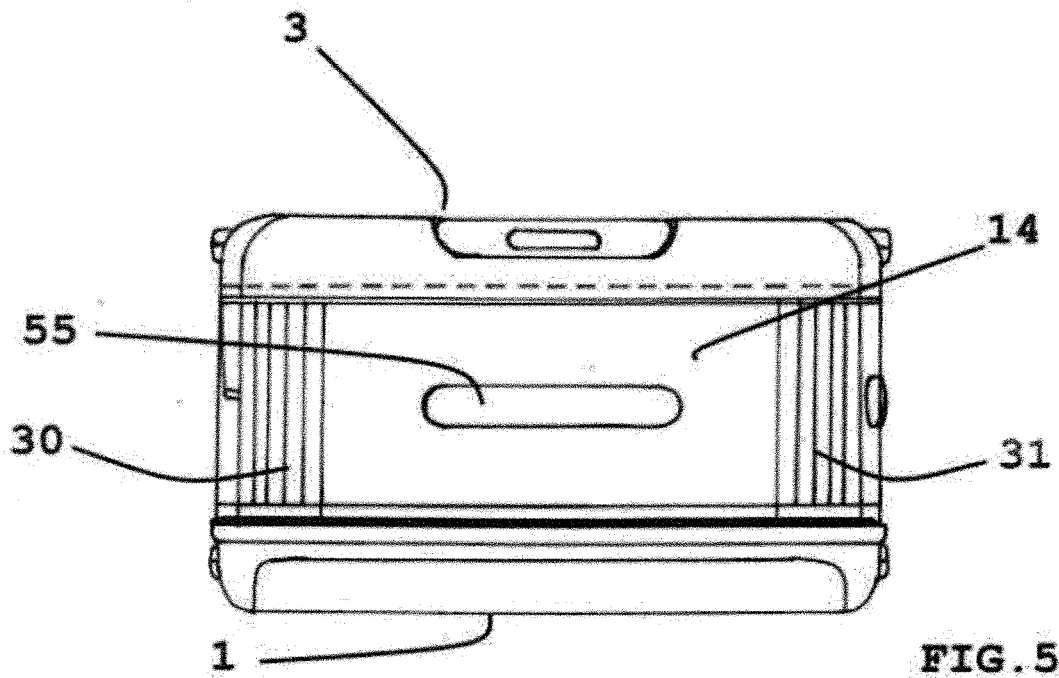
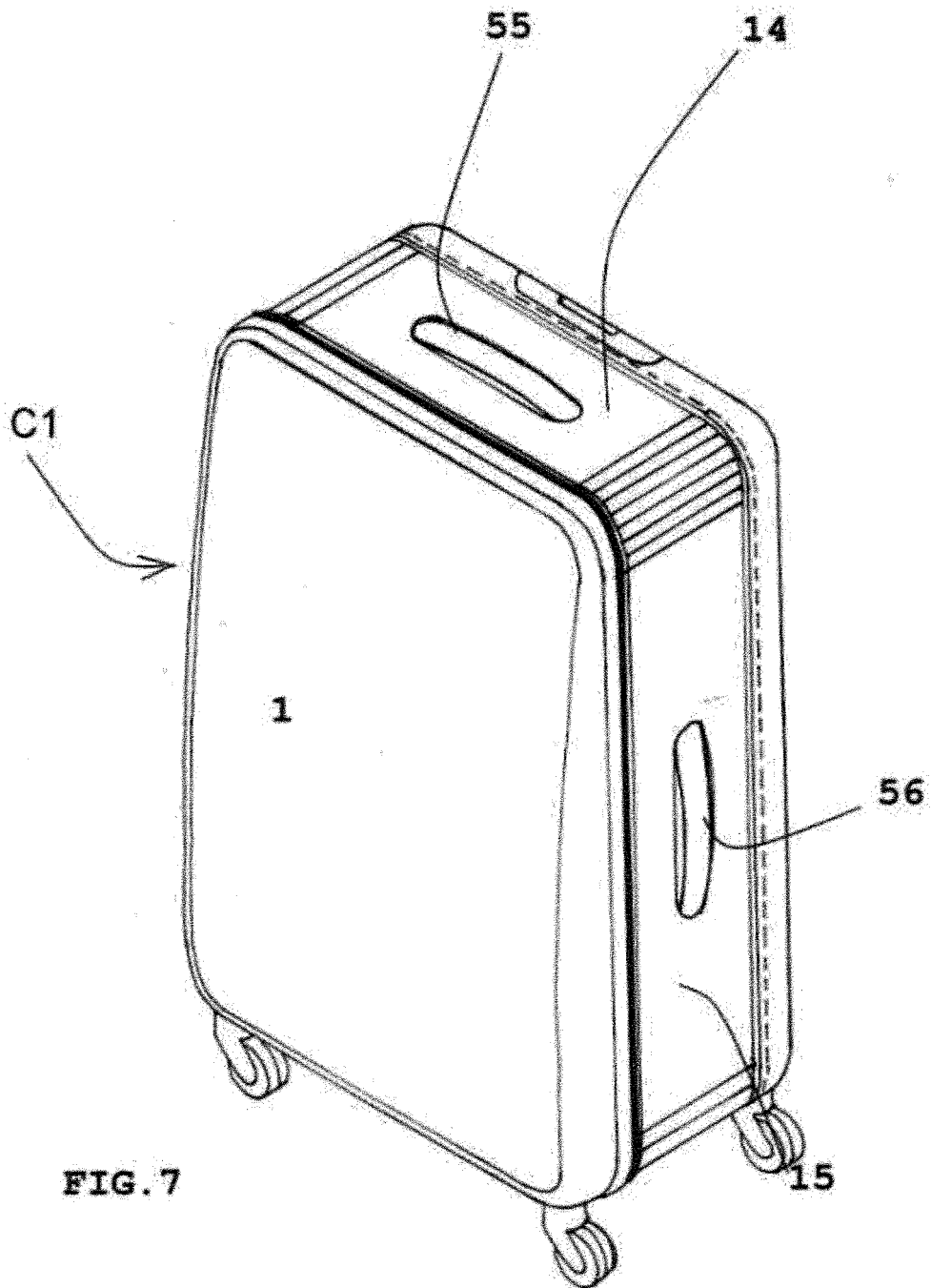


FIG. 4





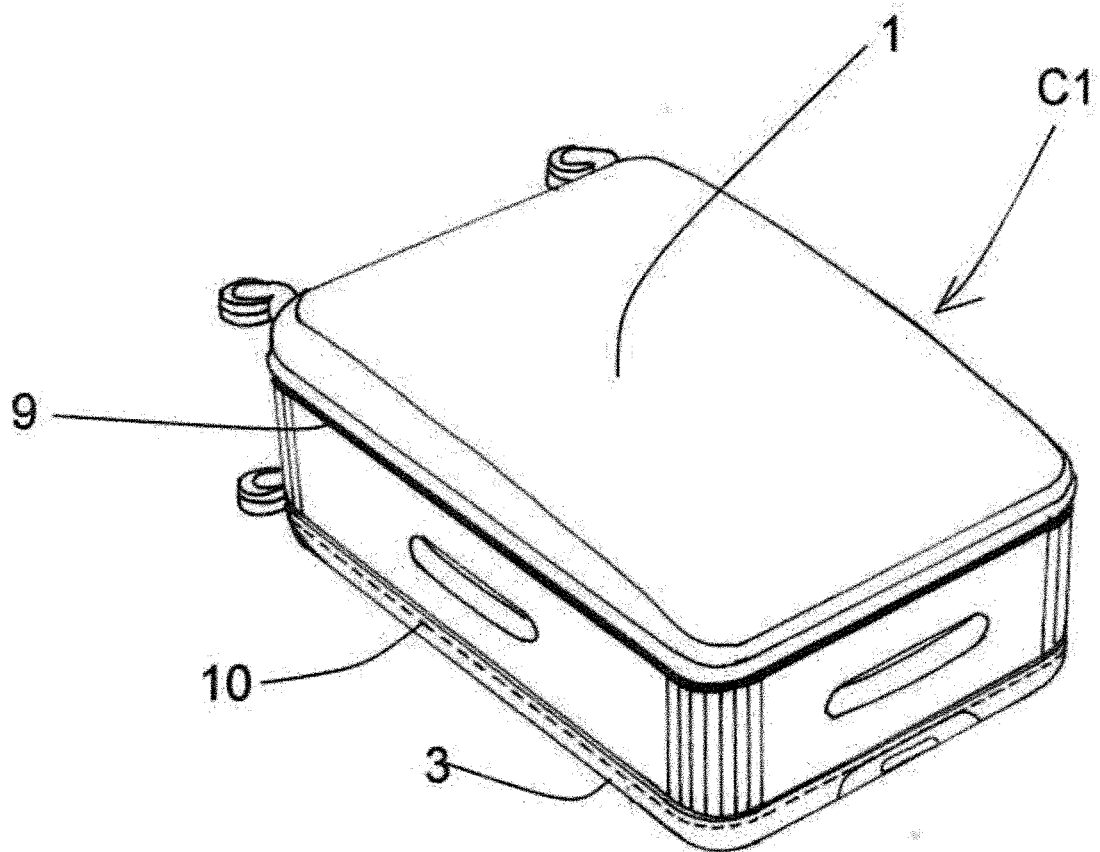
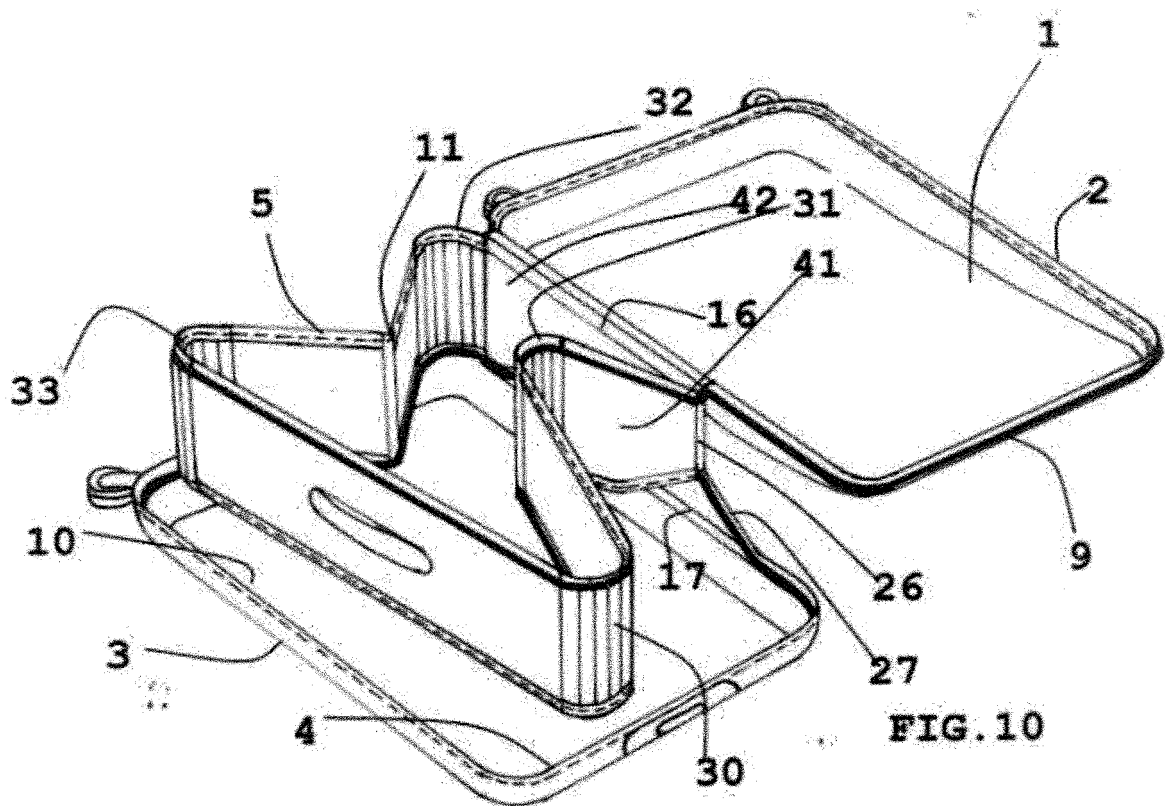
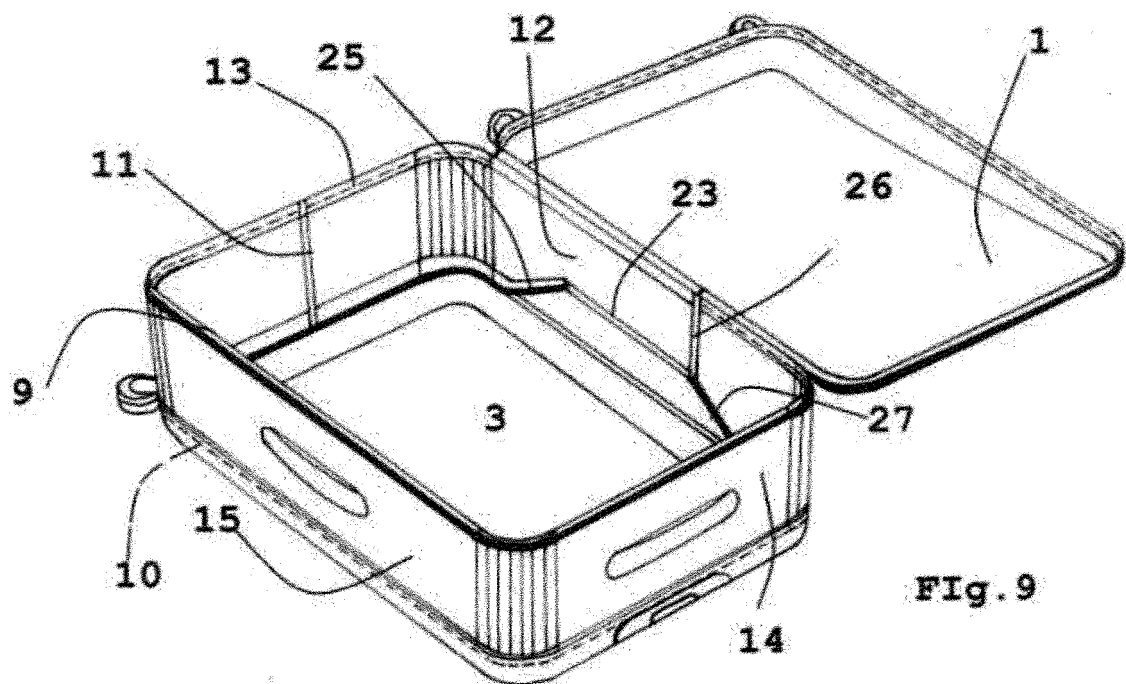


FIG.8



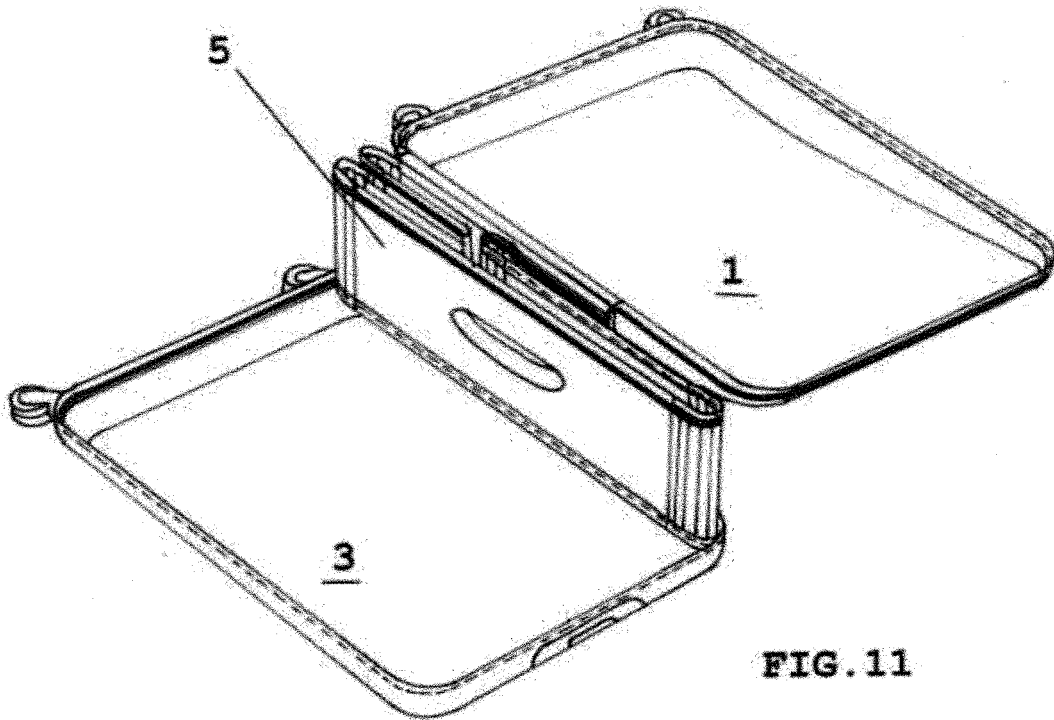


FIG. 11

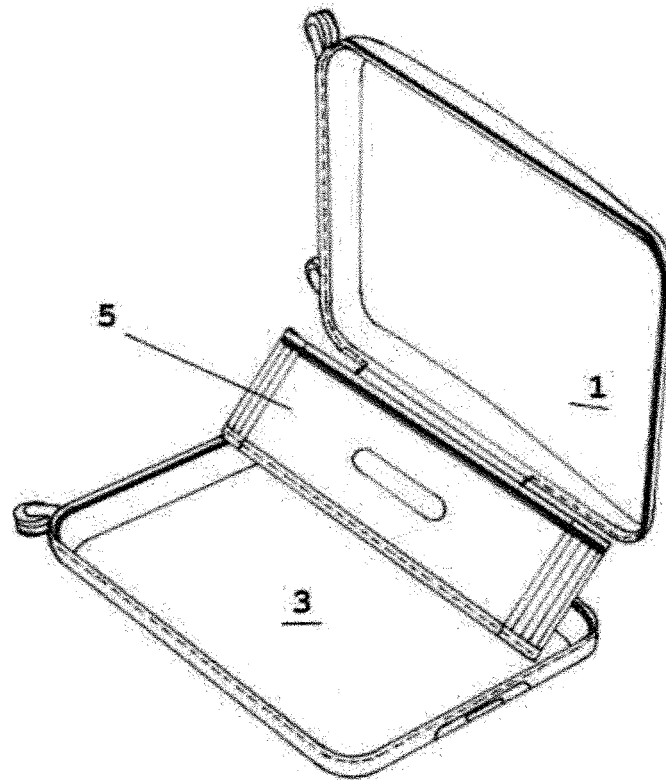


FIG. 12

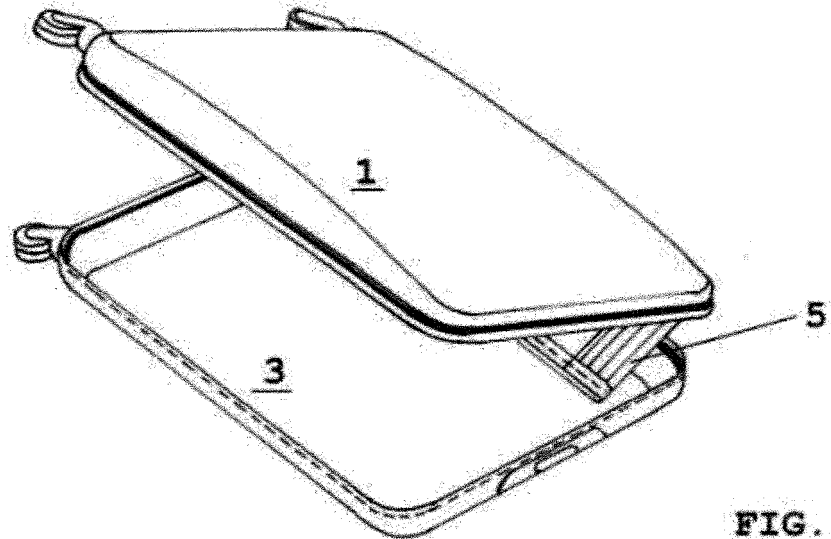


FIG. 13

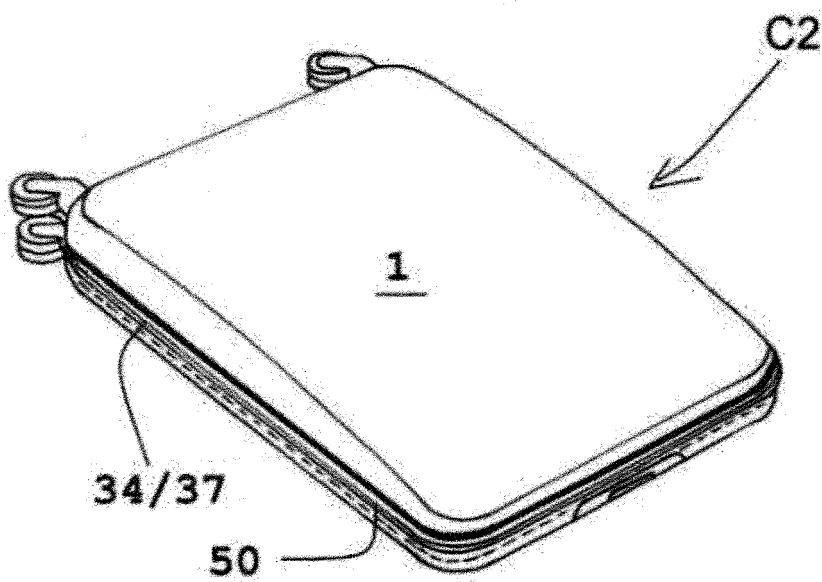
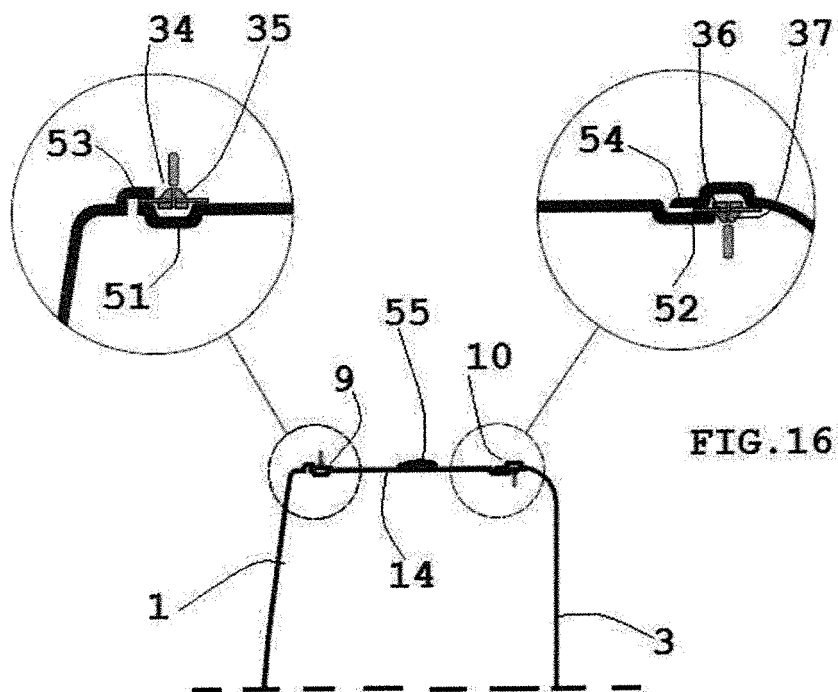
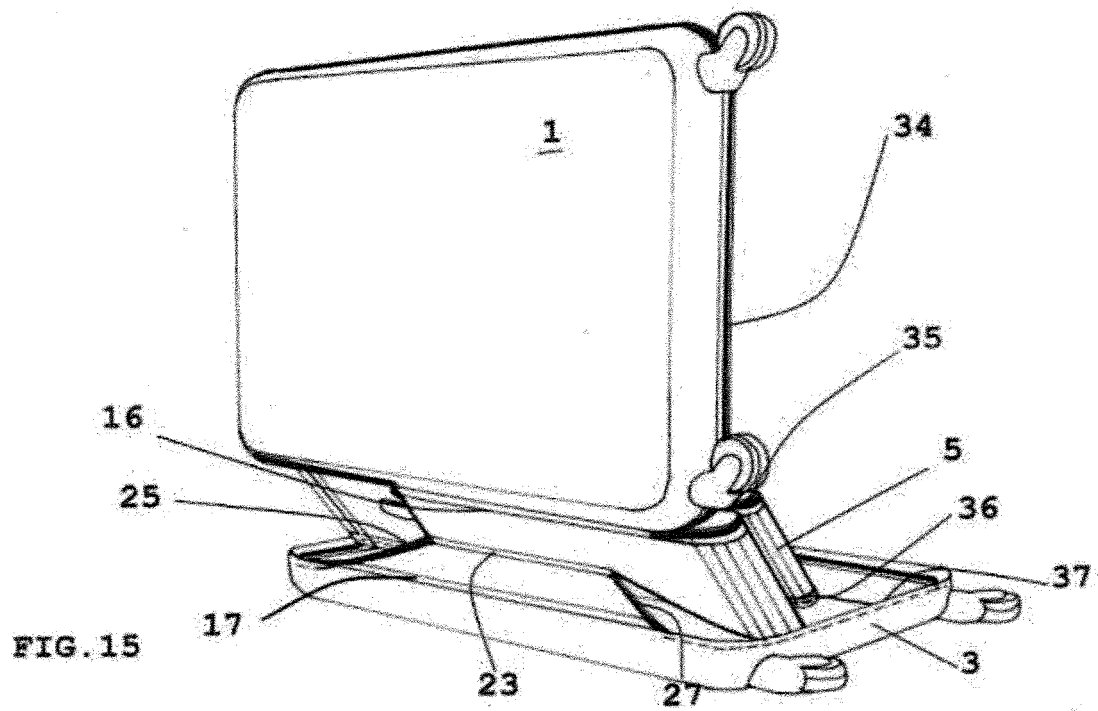
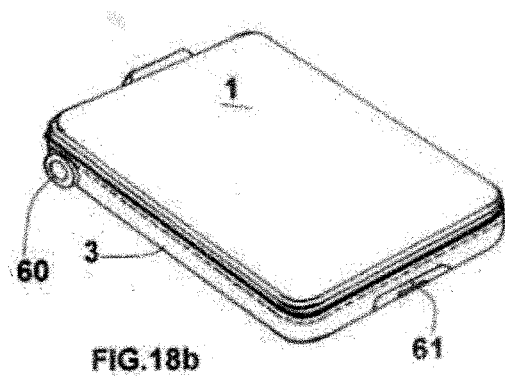
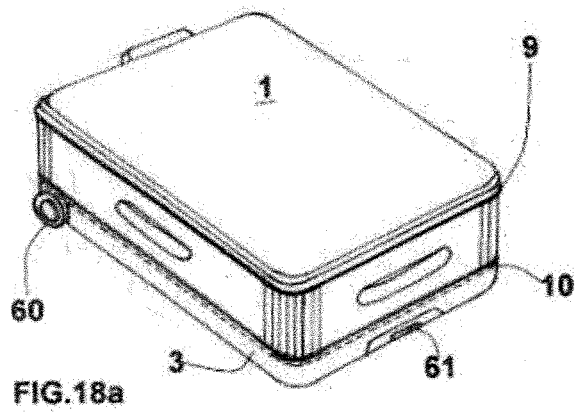
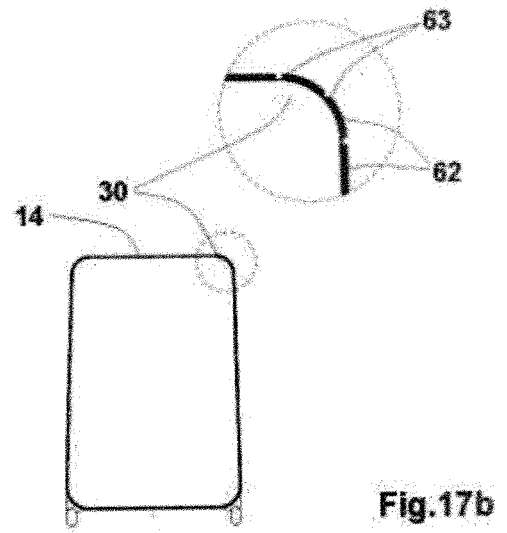
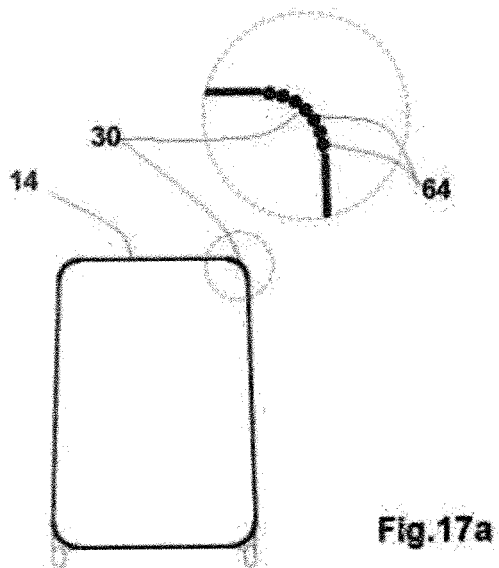


FIG. 14





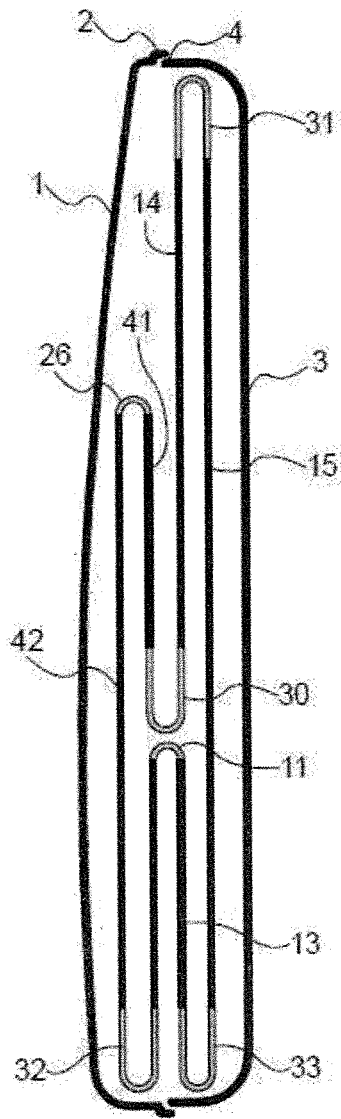


FIG. 19a

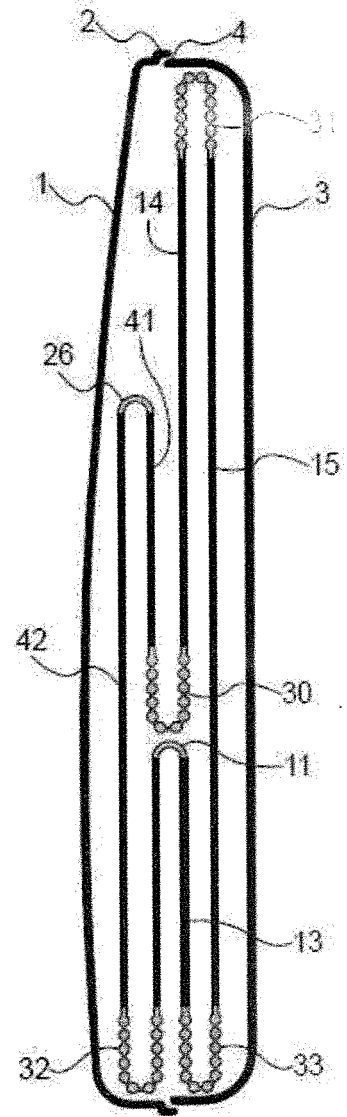


FIG. 19b

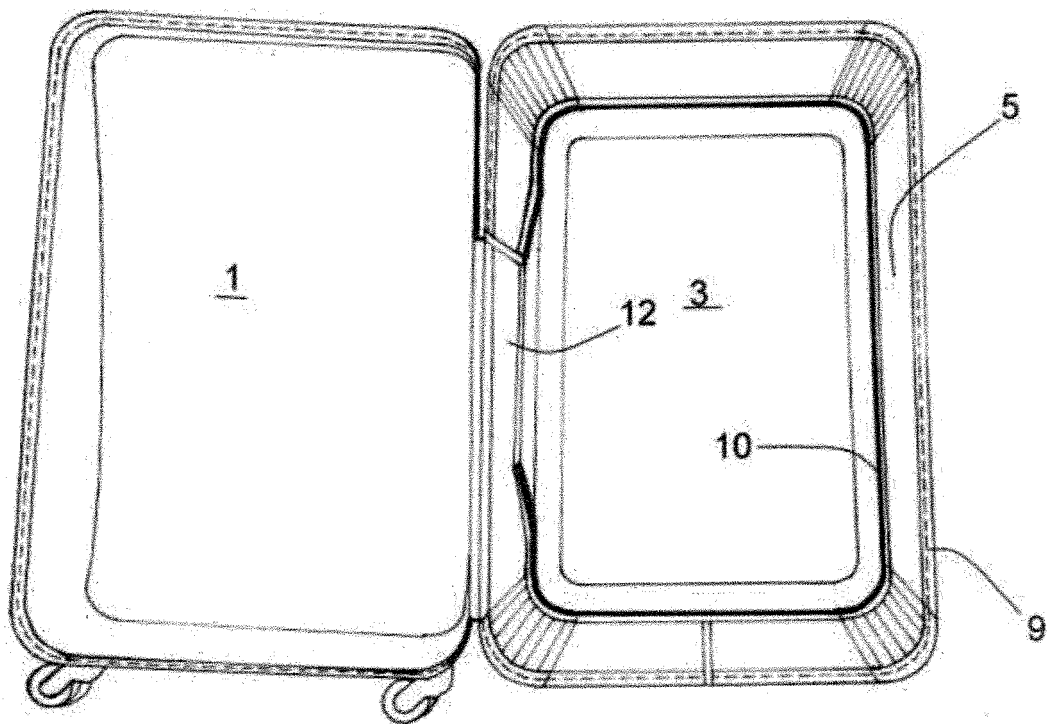


FIG. 20

REFERENCES CITED IN THE DESCRIPTION

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- WO 2013056392 A [0004] [0014]