(19) Europäisches Patentamt
European Patent Office
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(11) **EP 4 257 515 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.10.2023 Bulletin 2023/41

(21) Application number: **23166693.4**

(22) Date of filing: **05.04.2023**

(51) International Patent Classification (IPC):
B65F 1/00 *(2006.01)* ***B65F 1/06*** *(2006.01)*
B65F 1/14 *(2006.01)* ***B65F 1/16*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65F 1/0053; B65F 1/06; B65F 1/1415; B65F 1/1607; B65F 2220/124

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **06.04.2022 IT 202200006875**

(71) Applicant: **Tontarelli, Sergio**
60022 Castelfidardo (AN) (IT)

(72) Inventor: **Tontarelli, Sergio**
60022 Castelfidardo (AN) (IT)

(74) Representative: **Baldi, Claudio**
Ing. Claudio Baldi S.r.l.
Viale Cavallotti, 13
60035 Jesi (Ancona) (IT)

(54) **STACKABLE WASTE BIN COMPRISING ANTI-TILT MEANS**

(57) Stackable waste bin (P) comprising a container (1), a lid (2) to close an opening (A) that provides access to the container (1); the lid (2) comprises an area (21) suitable for acting as supporting surface for a container (1) of a waste bin disposed in upper position; said waste bin (P) also comprising anti-tilt means (4) disposed on the lid (2) and second anti-tilt means (5) disposed on the container (1) suitably configured to cooperate in order to prevent the waste bin in upper position from tilting.

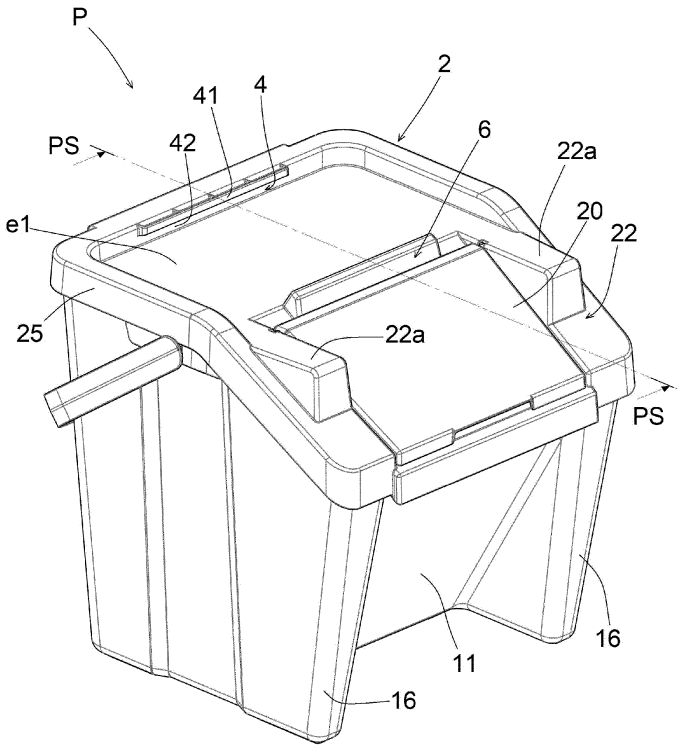

FIG. 1

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Description

[0001] The present patent application for industrial invention relates to a stackable waste bin comprising anti-tilt means.

[0002] The field of reference is that of household containers suitable for holding loose items and particularly garbage.

[0003] Ecological and environmental protection problems have given rise to the well-known separate collection, which provides for separating the waste into different categories.

[0004] The separate collection reduces the consumption of raw materials and energy (for instance by reusing the recycled paper or plastic), as well as the production of waste and the impact on the environment.

[0005] In order to carry out said separate collection, a user will therefore need to keep a number of waste bins in his/her house that is equal to the number of waste categories.

[0006] Evidently, the greater the number of waste categories, the greater the number of waste bins in the house, and therefore the greater the space used by said waste bins will be, thus causing some inconvenience in view of the limited space of apartments or small homes.

[0007] In order to solve such a problem, waste bins of stackable type have been devised, which are suitable for being stacked on top of each other in such a way that the access to the waste bins in lower position is not hindered by the waste bins in upper position.

[0008] Although such types of waste bins actually allow for reducing the space occupied by such waste bins, such waste bins are quite unstable when they are stacked on top of each other. In fact, in such a condition, while introducing the waste into an upper waste bin, the user may unintentionally push the upper waste bin downwards, making it tip over and fall with the consequent spillage of all the objects or waste contained in it.

[0009] A careful observation of the problems afflicting the stackable waste bins of the prior art resulted in the present invention, which discloses a new waste bin that can be firmly stacked on top of an identical lower waste bin.

[0010] Otherwise said, it is the purpose of the present invention to solve the drawbacks of the prior art by devising a stackable waste bin that is configured in such a way to be firmly disposed on top of an identical lower waste bin to create a stack of waste bins whose stability is markedly greater compared to a stack of waste bins made with the waste bins according to the prior art.

[0011] Another purpose of the present invention is to devise a waste bin that, when arranged on top of another waste bin, does not prevent the access to the lower waste bin.

[0012] These purposes are achieved in accordance with the invention with the features listed in the appended independent claim 1.

[0013] Advantageous achievements appear from the dependent claims.

[0014] The waste bin according to the invention is defined by claim 1.

[0015] For explanatory clarity, the description of the waste bin according to the invention continues with reference to the appended drawings, which are for illustrative and non-limiting purposes only, wherein:

Fig. 1 is an axonometric view of the waste bin according to the invention;
Fig. 1A is a sectional view of the waste bin of Fig. 1 taken along the PS-PS plane shown in Fig. 1;
Fig. 2 is an axonometric view of the waste bin seen from a different angle than Fig. 1;
Fig. 3 is an exploded axonometric view of the waste bin according to the invention;
Fig. 4 is an axonometric view of two waste bins stacked one on top of the other;
Figs. 5, 6 and 7 are sectional views of the way in which an upper waste bin is disposed on top of a lower waste bin;
Fig. 8 and Fig. 9 are diagrammatic sectional views of the coupling of an upper waste bin with a lower waste bin by means of alternative anti-tilt means.

[0016] With reference to the appended figures, a stackable waste bin according to the invention is described, which is comprehensively indicated with reference letter (P).

[0017] The waste bin (P) according to the invention comprises a container (1) comprising a bottom (10), a front wall (11) and at least one lateral-rear wall (12, 13). The bottom (10) and the walls (11, 12, 13) define a compartment (V) of the container (1) wherein a bag suitable for containing objects or waste is suitable for being inserted.

[0018] Specifically, in the embodiment shown in the appended figures, said lateral-rear wall (12, 13) consists of two side walls (12) and a rear wall (13) opposed to the front wall (11).

[0019] It should be noted that the lateral-rear wall (12, 13) can have a different shape, such as a semi-cylindrical shape or a C-shape.

[0020] Each one of said walls (11, 12, 13) comprise an upper edge (11a, 12a, 13a) which defines an access opening (A) to said compartment (V).

[0021] Preferably, a plurality of notches (9) is provided on said upper edges (11a, 12a, 13a) to allow bags of different sizes to be applied inside the container (1) of the waste bin (P) so that the waste bin (P) is versatile and capable of receiving bags with a smaller access opening compared to the access opening (A) of the container (1).

[0022] With reference to Fig. 3, the waste bin (P) also comprises a removable lid (2) arranged on the upper edges (11a, 12a, 13a) to close the access opening (A). The lid (2) comprises a front area (22) provided with an opening (A2) positioned above the front wall (11) of the con-

tainer (1), and a rear area (21) suitable for acting as a supporting surface for the bottom (10) of a container of an additional waste bin arranged on top of the waste bin (P).

[0023] The lid has the same shape as the container and therefore, in the embodiment shown in the appended figures, it has a square shape comprising a rear side (2a), a front side (2b) and two side walls (2c).

[0024] Said lid (2) preferably comprises an oscillating door (20) attached to the opening (A2). In particular, said oscillating door (20) is hinged to the lid (2) by means of a pair of side pins (20p) aligned with each other, which are pivotally threaded into a pair of holes (2f) in the lid (2).

[0025] Said front wall (11) is sloping towards the bottom (10) and is disposed under the opening (A2) of the lid (2).

[0026] The front wall (11) that is sloping towards the bottom (10) allows to reduce the volume of the bottom (10) in such a way that the bottom (10) is suitably dimensioned to rest only on the rear area (21) of the lid (2) of a lower waste bin, thus leaving the opening (A2) of lid (2) of the lower waste bin free, as shown explicitly in Fig. 4. In such a way, therefore, the user can access the compartment of the lower waste bin via the opening (A2), even when another waste bin is arranged on top of it.

[0027] In order to further facilitate the access to the opening (A2), the front area (22) is sloping outwards, whereas the rear area (21) acting as a supporting surface for the upper waste bin substantially lies on a horizontal plane.

[0028] According to the preferred embodiment of the invention, said container (1) comprises two front columns (16) which are arranged at the sides of the front wall (11) and project forwardly with respect to the front wall (11). Said front columns (16) increase the stability of the waste bin (P), basically acting as front support feet of the waste bin (P).

[0029] In the case where said front area (22) is sloping outwardly, said front area (22) is also provided with two platforms (22a) that are flush with the rear area (21) of the lid (2) and are arranged at the sides of the opening (A2) on which the front columns (16) of a container (1) of a waste bin disposed on top of the lid (2) are rested.

[0030] The lid (2), the door (20) and the container (1) are made of injection molded plastic material.

[0031] Optionally, the waste bin (P) according to the invention may comprise a handle (8) with a U-shape, which consists of two arms connected by a gripping and operating crosspiece.

[0032] Said handle (8) has pivoting means of said arms to said lateroposterior wall of the container (1), with respect to a hinge axis (X-X) that is transverse to the access opening (A) of the container (1). In view of the above, said handle (8) comprises two ends (81, 82), the first one being obtained on one arm and the other one being obtained on the other arm on which pins (80) are obtained and revolvingly threaded into corresponding holes (19) aligned and obtained on the two side walls (12).

[0033] The lid (2) also comprises centering and stabilizing means of a container (1) of a waste bin disposed in upper position.

[0034] The centering means consist of:

- a peripheral edge (25) that surrounds said lid (2), at least partially; in particular, said peripheral edge defines said rear area (21) of the lid (2) posteriorly and laterally; and
- a stop edge (6) disposed between the rear area (21) and the front area (22) of the lid (2), which comprises a rear face (60), facing the rear area (21) of the lid, on which a base section of the front wall (11) of a waste bin disposed on top of the lid (2) is suitable for being in contact.

[0035] When seen in a top view, the peripheral edge (25) has a substantially U-shape and comprises two opposite side sections that extend partially along the two side walls (2c) of the lid (2) and a transverse section that extends for the entire length of the rear side (2a) of the lid (2).

[0036] The peripheral edge (25) and the stop edge (6) prevent a container disposed on top of the lid (2) from moving forward-backward and sideways.

[0037] The rear face (60) of the stop edge (6) is inclined by an angle (β) greater than 90° and lower than 150° with respect to the plane on which the rear area (21) of the lid (2) lies.

[0038] The front wall (11) is inclined by an angle (γ) identical to the angle (β) with respect to the bottom (10). Otherwise said, the angle (γ) defined by the front wall (11) and by the bottom (10) is greater than 90° and lower than 150°.

[0039] The waste bin according to the invention also comprises first anti-tilt means (4) disposed on the lid (2) and second anti-tilt means (5) disposed on the container (1).

[0040] The first anti-tilt means (4) are configured in such a way as to cooperate with second anti-tilt means (5) of an upper waste bin to prevent said upper waste bin from tipping forwards.

[0041] In turn, therefore, the second anti-tilt means (5) are configured in such a way as to cooperate with first anti-tilt means (4) of a lower waste bin to prevent the lower waste bin (P) from tipping forward.

[0042] Said anti-tilt means (4, 5) comprise at least one rib (41, 51) and at least one groove (42, 52) which can be coupled together and configured in such a way that, when coupled, they prevent the bottom (10) of the container (1) of the upper waste bin from detaching from the rear area (21) of the lid (2) of the lower waste bin.

[0043] The at least one rib (41, 51) and the at least one groove (42, 52) extend along directions parallel to each other and orthogonal to a median plane (PR) that is orthogonal to both the bottom (10) and the front wall (11).

[0044] Specifically, in the preferred embodiment of the invention, the first anti-tilt means (4) comprise a retaining

rib (41) that is arranged on the rear area (21) of the lid (2) and extends toward the front area (22) of the lid (2). Said retaining rib (41) projects like a shelf from said peripheral edge (25) and superiorly defines a first groove (42) which is inferiorly defined by a portion of the rear area (21) of the lid (2) below said retaining rib (41).

[0045] The first groove (42) has an access opening facing the front area (22) of the lid (2).

[0046] The second means of anti-tilt (5) comprise a stop rib (51) that is formed on the lateral-posterior wall (12) of the container (1), in the vicinity of the bottom (10), and is configured so as to be engaged in the first groove (42).

[0047] Preferably, the second anti-tilt means (5) also comprise a second groove (52) formed above the stop rib (51) and configured in such a way as to accommodate the retaining rib (41) of the first anti-tilt means (4). The second groove (52) makes the coupling between the first anti-tilt means (4) and the second anti-tilt means (5) even more stable and secure.

[0048] Advantageously, said stop rib (51) is inserted into a recess (S) in such a way that said stop rib (51) does not protrude from the rear wall (13).

[0049] The recess (S) comprises said second groove (52) which is inferiorly defined by the stop rib (51).

[0050] With particular reference to Fig. 1A, the retaining rib (41) comprises a lower face (41a) that faces the lid (2) and is inclined by an angle (α) comprised between 30° and 60° with respect to the plane on which the rear area (21) of the lid (2) lies.

[0051] The stop rib (51) has an upper face (51a) having the same inclination as that of the lower face (41a) of the retaining rib (41). Otherwise said, the upper face (51a) of the stop rib (51) is inclined by an angle comprised between 30° and 60° with respect to the bottom (10) of the container.

[0052] Figs. 5, 6 and 7 illustrate the way in which an upper waste bin is rested on a lower waste bin by coupling the anti-tilt means (4, 5) with each other.

[0053] As it can be seen from Fig. 5 and 6, in order to couple the anti-tilt means (4, 5) to each other, the upper waste bin must be slightly inclined with the front wall (11) slightly raised so that the stop rib (51) is engaged in the first groove (42) and the retaining rib (41) is engaged in the second groove (52).

[0054] Once the stop rib (51) and the retaining rib (41) are engaged in the first groove (42) and the second groove (52), respectively, the upper waste bin can be fully lowered so that the bottom (10) rests completely on the rear area of the lid (2) and the base section of the front wall (11) is abutting against the rear face (60) of the stop edge (6) (see Fig. 7).

[0055] In such an arrangement, it is well understood how the upper waste bin is firmly anchored to the lower waste bin. In fact, in the event that a user exerts an unintentional downward push at the front area (22) of the lid (2) the waste bin will not be tipped forward since it is held by the anti-tilt means (4, 5), namely by the coupling of the ribs (41, 51) with the respective grooves (42, 52).

[0056] In order to remove the upper waste bin from the lower waste bin, it will be necessary to hold the upper waste bin and lift it not along a vertical direction but rather along a direction substantially parallel to the rear surface (60) of the front stop edge (6) in such a way to detach the ribs (41, 51) and the grooves (42, 52) from each other.

[0057] As a result of the foregoing description, the idea of the applicant to solve the drawbacks of the stackable waste bins of the prior art is now evident.

[0058] In particular, the provision of the stackable waste bin (P) with the anti-tilt means (4, 5) makes it possible to obtain a stack of waste bins in which each waste bin (P) is firmly anchored to the lower waste bin, preventing the upper waste bin from tipping forward with respect to the lower waste bin.

[0059] In addition, it is worth noting that due to the presence of the stop edge (6) and of the peripheral edge (25), the upper waste bin cannot move with respect to the lower waste bin, either sideways or forward or backward.

[0060] With reference to Figs. 8 and 9, two alternative embodiments of the anti-tilt means (4, 5) will be described below. In particular, the ribs and grooves of the anti-tilt means (4, 5) can differ from those shown in Figs. 1 to 7 while still obtaining the same advantages.

[0061] By way of example, with reference to Fig. 8, the first anti-tilt means (4) comprise a retaining rib (41) that protrudes obliquely from the rear area (21) of the lid (2), whereas the second anti-tilt means (5) comprise a groove (52) obtained directly into the bottom (10) of the container (1).

[0062] Now referring to Fig. 9, the second anti-tilt means (5) comprise a rib (51) that protrudes from the rear wall (13) of the container (1), whereas the first anti-tilt means (4) comprise a groove (42) or a notch obtained on the peripheral edge (25).

[0063] Although not shown in the appended figures, said first anti-tilt means (4) may comprise two inclined and aligned ribs protruding from the two side walls (12) of the container (1), whereas said second anti-tilt means (5) comprise two opposing notches obtained on the peripheral edge (25) at its two side sections.

[0064] Numerous variations and modifications may be made to the present embodiment of the invention, within the reach of a person skilled in the art, but within the scope of the invention as expressed by the appended claims.

Claims

1. Stackable waste bin (P) comprising:

- a container (1) comprising a bottom (10), a front wall (11) and at least one lateral-rear wall (12, 13); said walls (11, 12, 13) comprising an upper edge (11a, 12a, 13a); said container (1) comprising a compartment (V) defined by said bot-

tom (10) and by said walls (11, 12, 13), and an opening (A) that provides access to said compartment (V) and is defined by the upper edges (11a, 12a, 13a) of said walls (11, 12, 13); wherein said front wall (11) is sloping towards the bottom (10);
- a removable lid (2) disposed on the upper edges (11a, 12a, 13a) to close the access opening (A); said lid (2) comprising a front area (22) provided with an opening (A2), disposed above the front wall (11) of the container (1), and a rear area (21) suitable for acting as supporting surface for the bottom (10) of another waste bin disposed on top of the waste bin (P);

characterized in that it comprises first anti-tilt means (4) disposed on the lid (2) and second anti-tilt means (5) disposed on the container (1); wherein the first anti-tilt means (4) are configured in such a way as to cooperate with the second anti-tilt means (5) of a waste bin disposed in upper position to prevent said waste bin disposed in upper position from tipping over.

2. The waste bin (P) according to claim 1, wherein said anti-tilt means (4, 5) comprise at least one rib (41, 51) and at least one groove (42, 52) that can be coupled together in such a way as to prevent the bottom of the container of the waste bin disposed in upper position from being detached from the rear area of the lid of the waste bin disposed in lower position.

3. The waste bin (P) according to claim 1 or 2, wherein:

- said first anti-tilt means (4) comprise a retaining rib (41) which is disposed in the rear area (21) of the lid (2) and extends towards the front area (22) of the lid (2), and a first groove (42) provided with an access opening, facing the front area (22) of the lid; said first groove (42) being superiorly defined by the retaining rib (41) and being inferiorly defined by a portion of rear area (21) of the lid (2) below the retaining rib (41);
- said second anti-tilt means (5) comprise a second rib (51) which is obtained on the lateral-rear wall (12) of the container (1), near the bottom (10), and is configured in such a way as to be engaged in the first groove (42).

4. The waste bin (P) according to claim 3, wherein said second anti-tilt means (5) comprise a second groove (52) obtained above the retaining rib (51) and configured in such a way as to accommodate the retaining rib (41) of the first anti-tilt means (4).

5. The waste bin (P) according to claim 3 or 4, wherein said container (1) comprises a recess (S) wherein said retaining rib (51) is disposed.

6. The waste bin (P) according to any one of claims 2 to 5, wherein said at least one groove (41, 51) and said at least one rib (42, 52) of the first and second anti-tilt means (4, 5) extend along directions parallel to each other and orthogonal to a median plane (PR) orthogonal to both the bottom (10) and the front wall (11).

7. The waste bin (P) according to any one of the preceding claims, wherein said lid (2) comprises a stop edge (6) disposed between the rear area (21) and the front area (22) of the lid (2); said stop edge (6) comprising a rear face (60), facing the rear area (21) of the lid, whereon a base section of the front wall (11) of a waste bin disposed on top of the lid (2) is suitable for abutting.

8. The waste bin (P) according to any one of the preceding claims, wherein said rear area (21) of the lid (2) lies on a horizontal plane, whereas said front area (22) of the lid (2) is sloping towards the outside of the waste bin.

9. The waste bin (P) according to any one of claims 3 to 8, wherein said lid (2) comprises a peripheral edge (25) that surrounds said lid (2), at least partially; wherein said retaining rib (41) projects from a section of said peripheral edge (25).

10. The waste bin (P) according to any one of the preceding claims, wherein said upper edges (11a, 12a) comprise a plurality of notches (9) for applying bags of different size inside the waste bin (P).

11. Assembly comprising at least two waste bins (P) according to any one of the preceding claims disposed one on top of the other; wherein said first anti-tilt means (4) of the waste bin disposed in lower position are coupled with the second anti-tilt means (5) of the waste bin disposed in upper position.

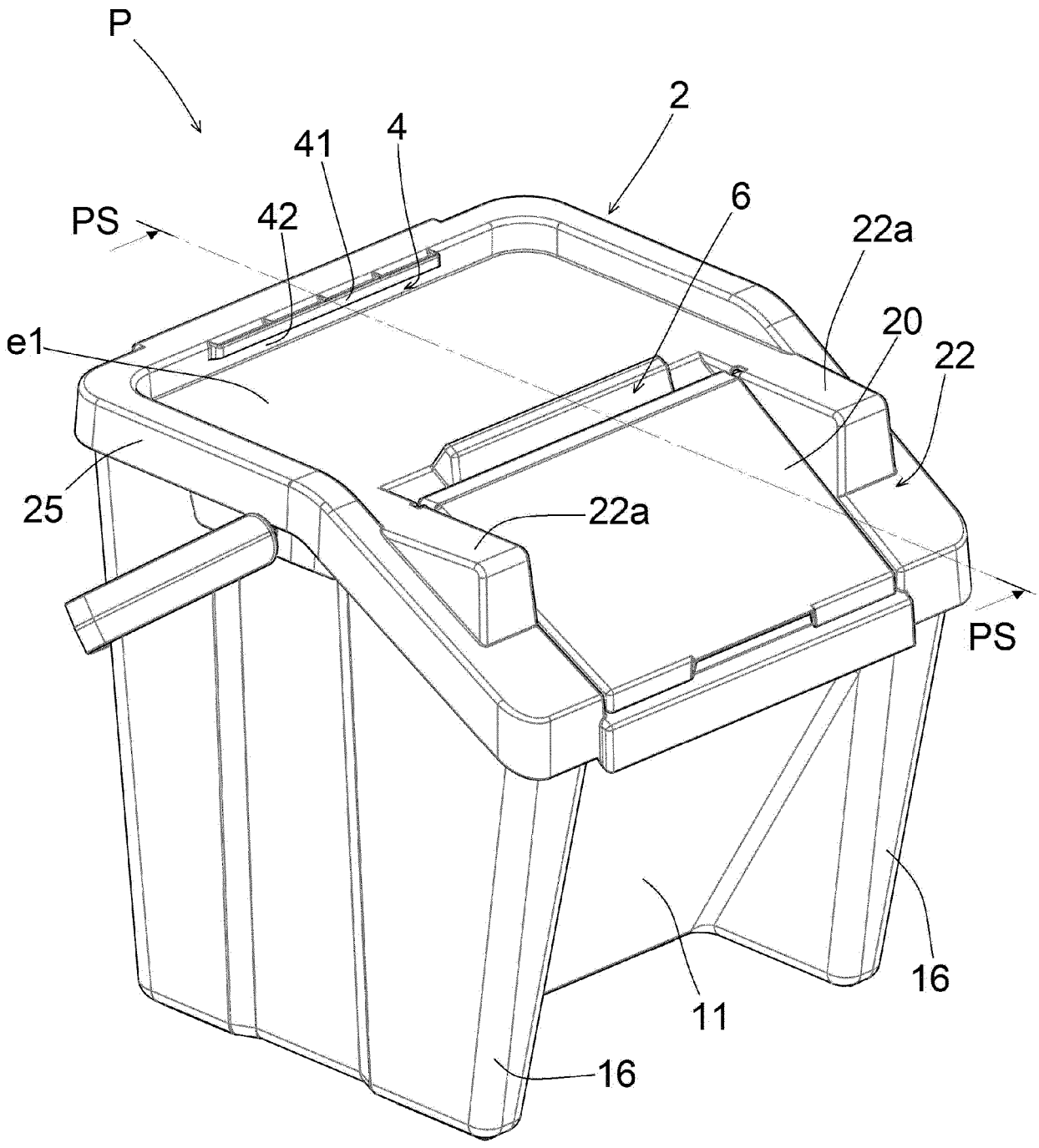


FIG. 1

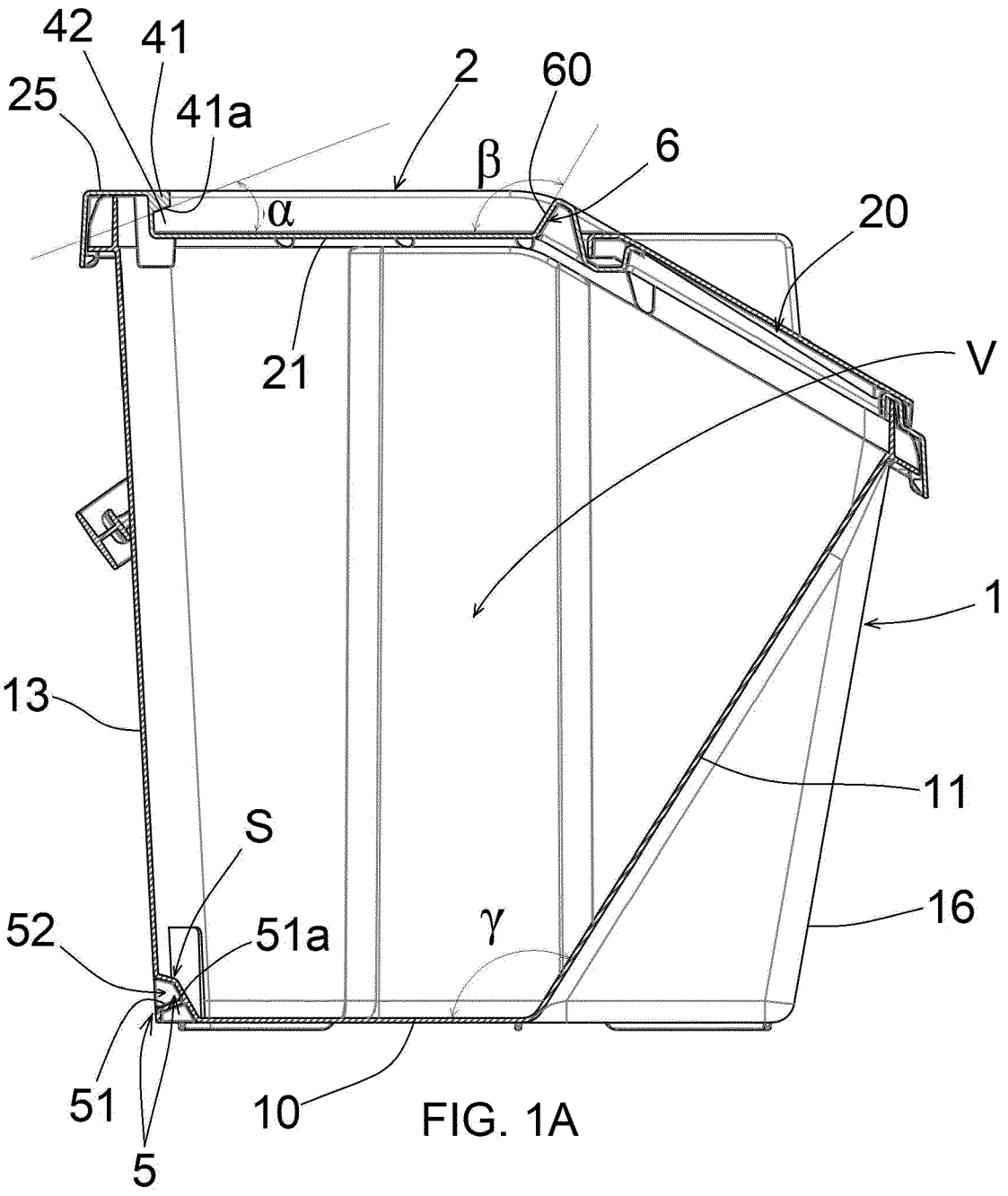


FIG. 1A

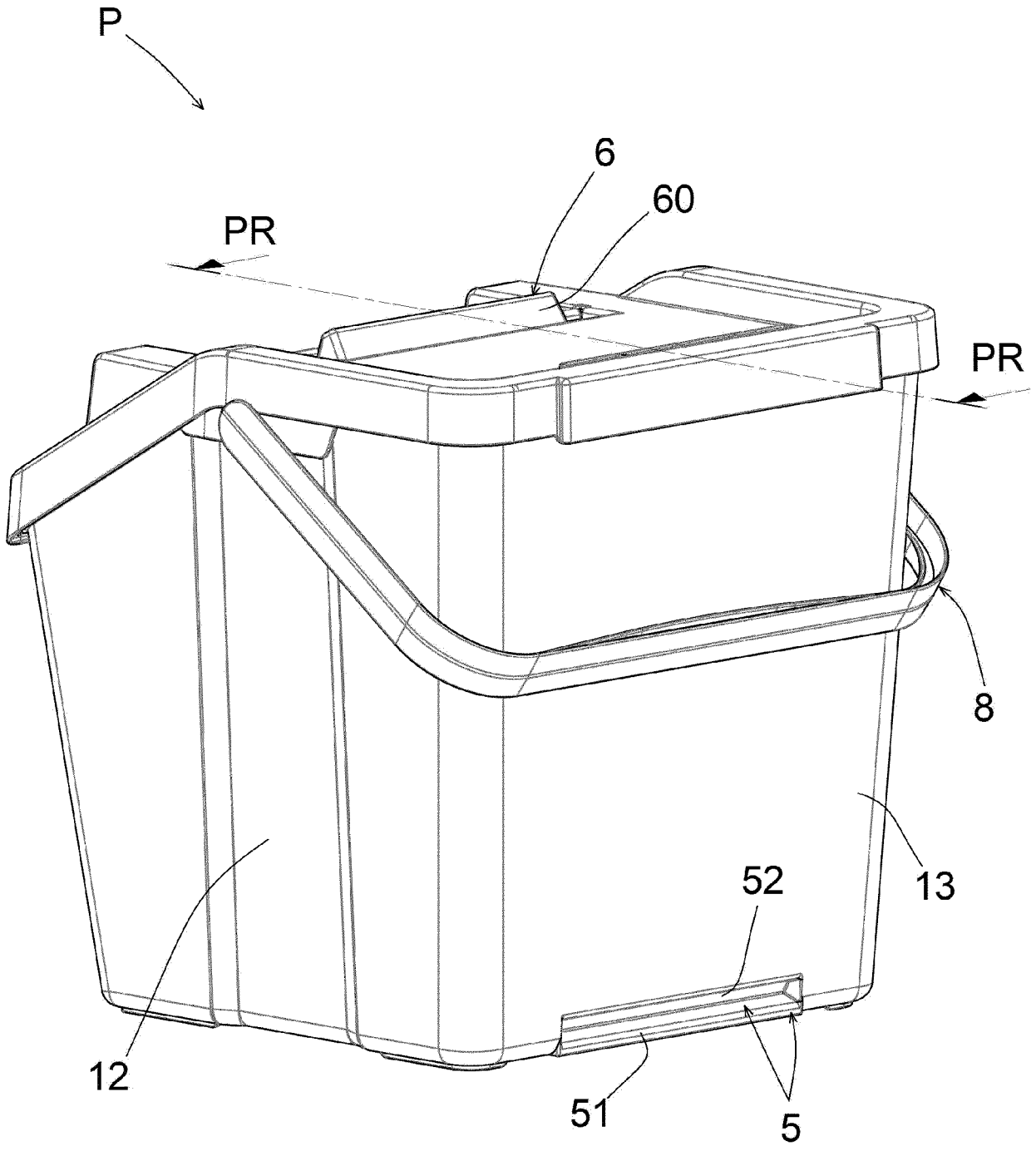
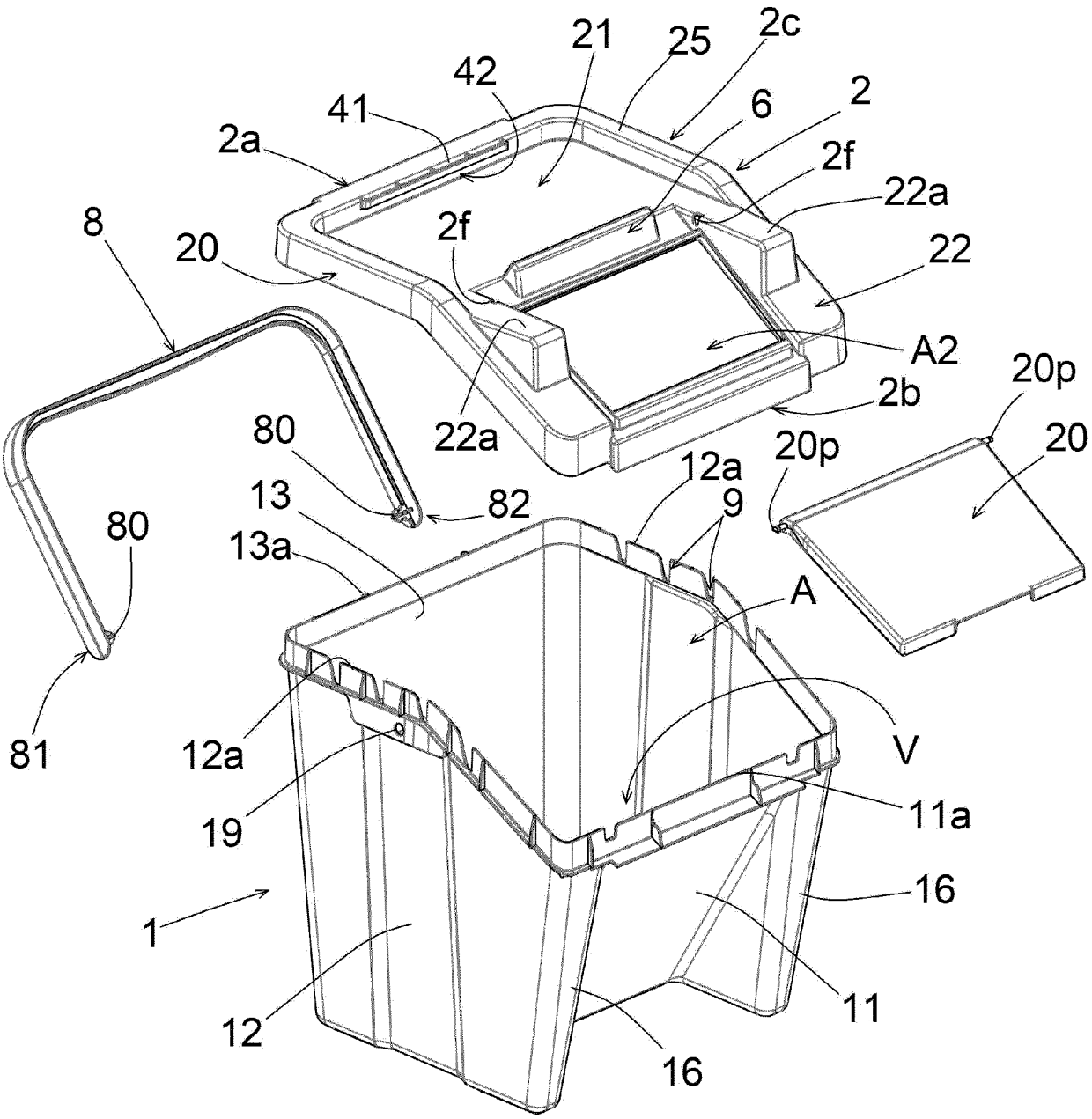


FIG. 2


21
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2c
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11
16

FIG. 3

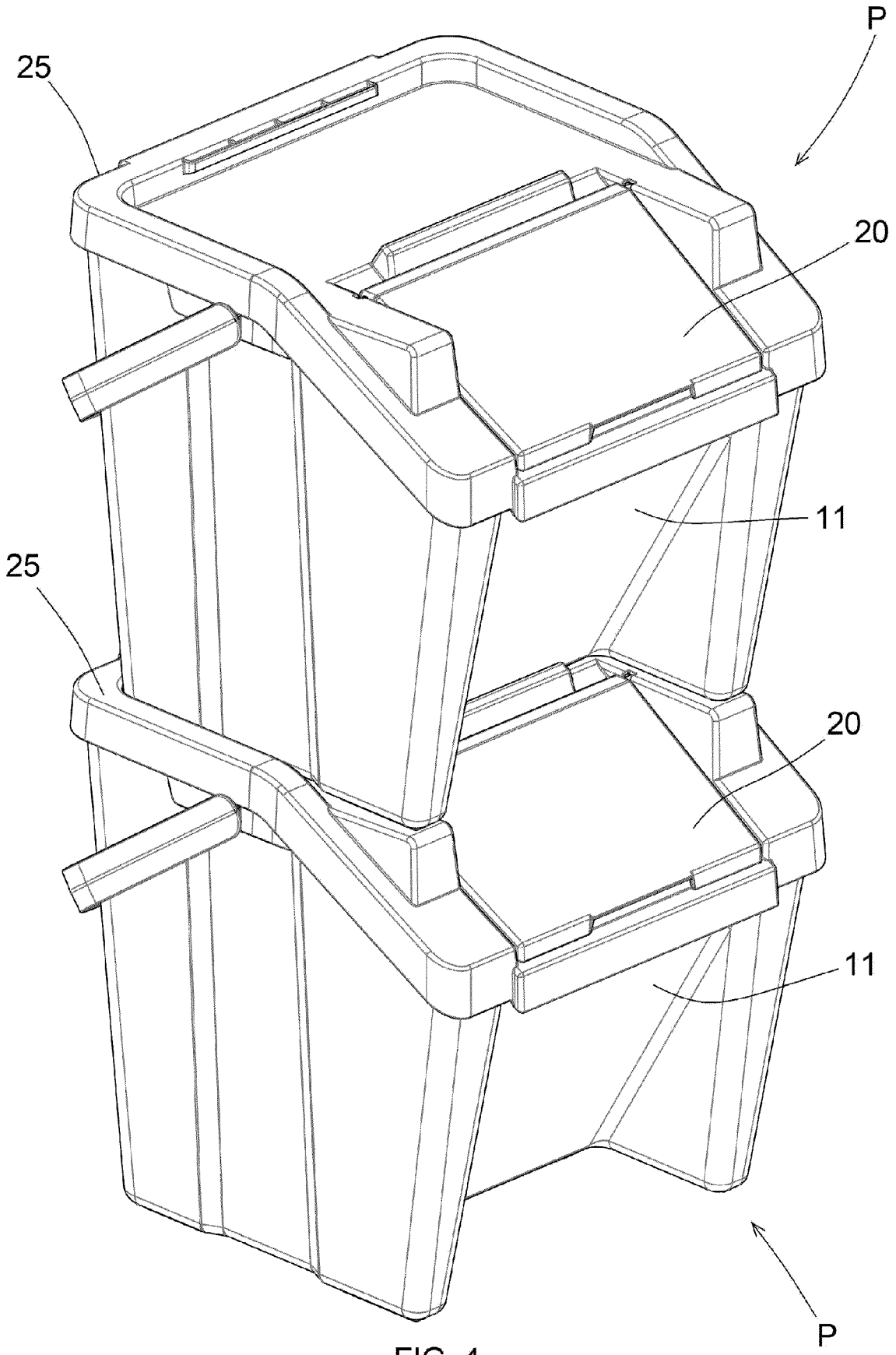

FIG. 4

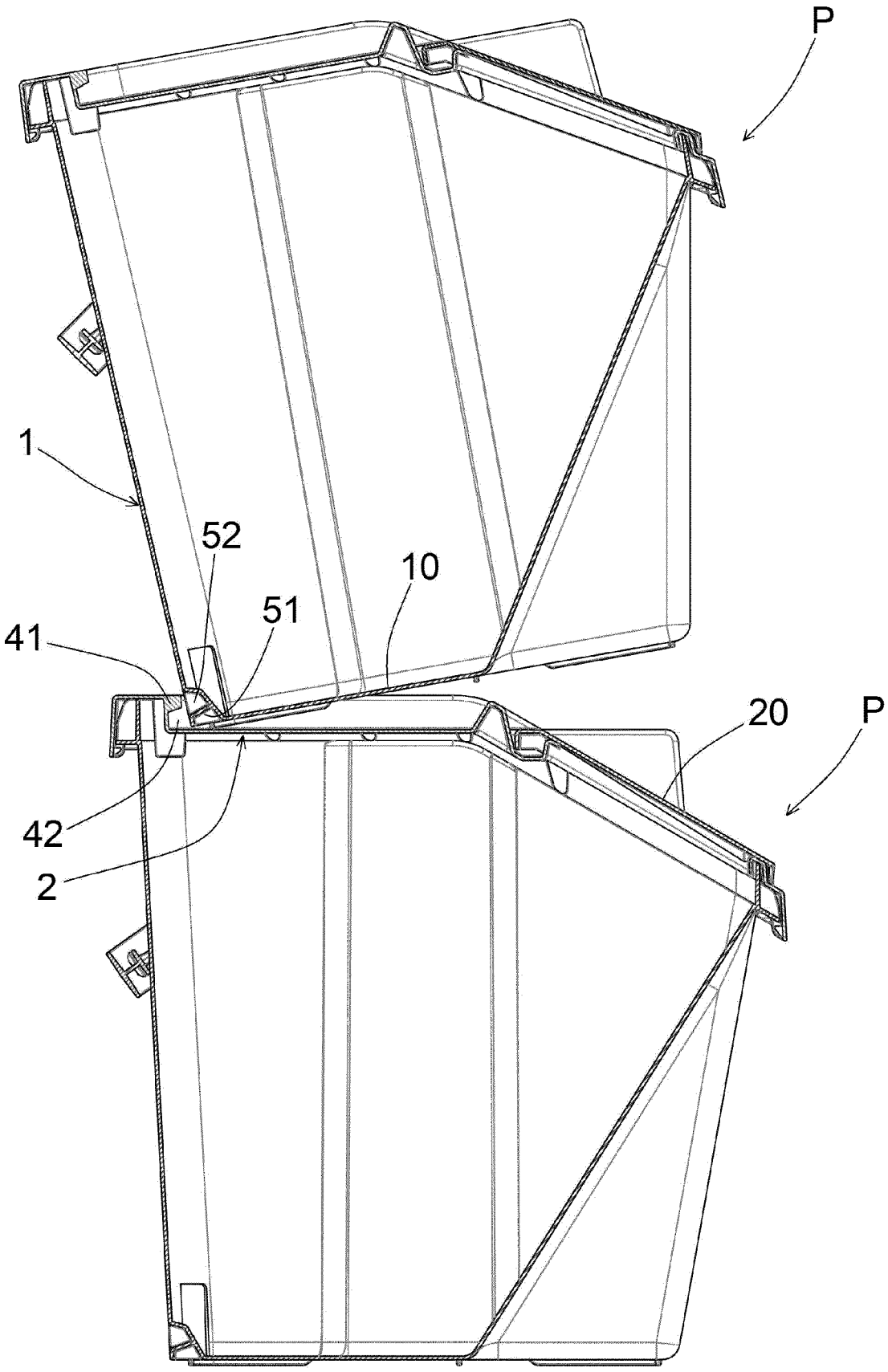

FIG. 5

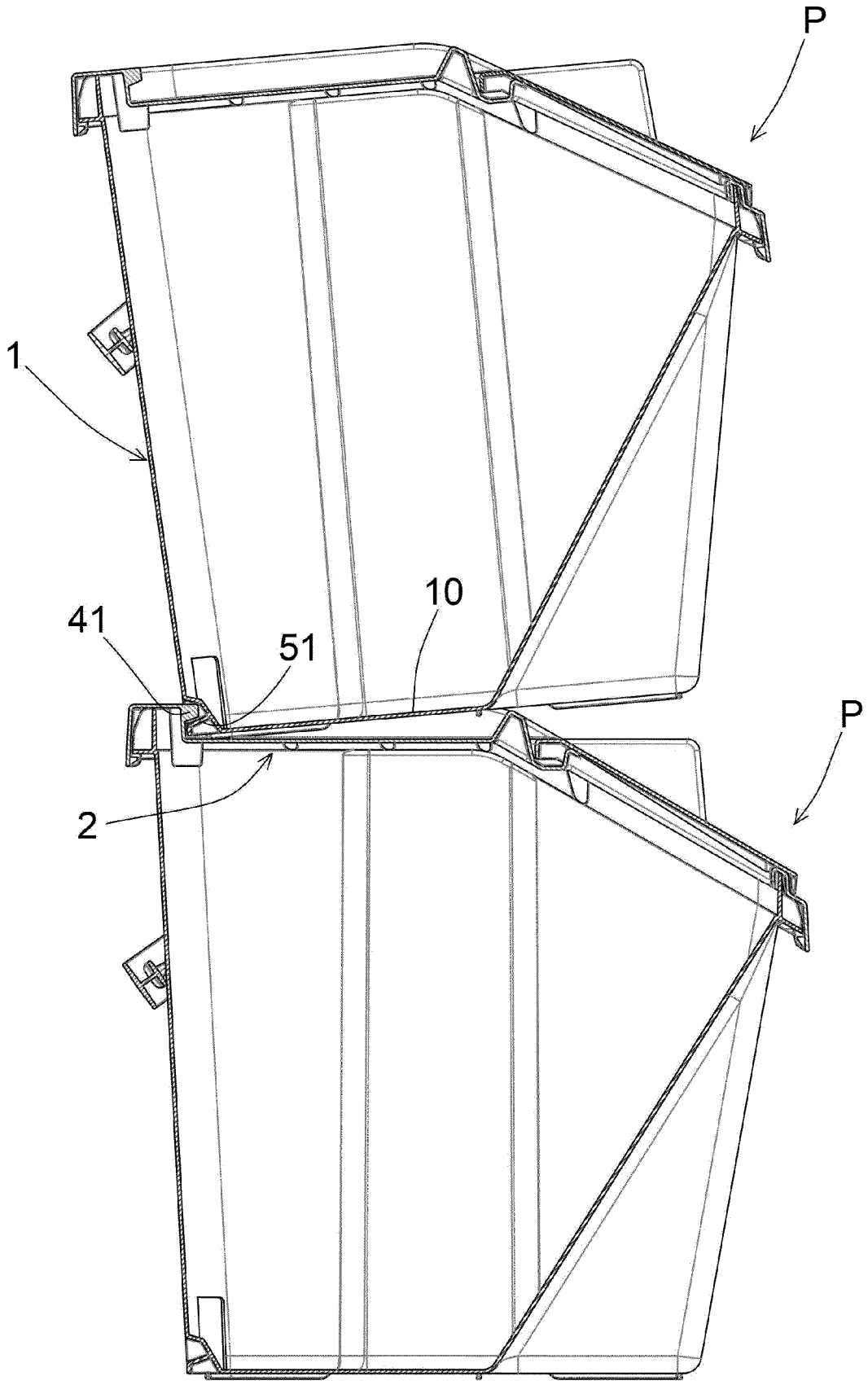

FIG. 6

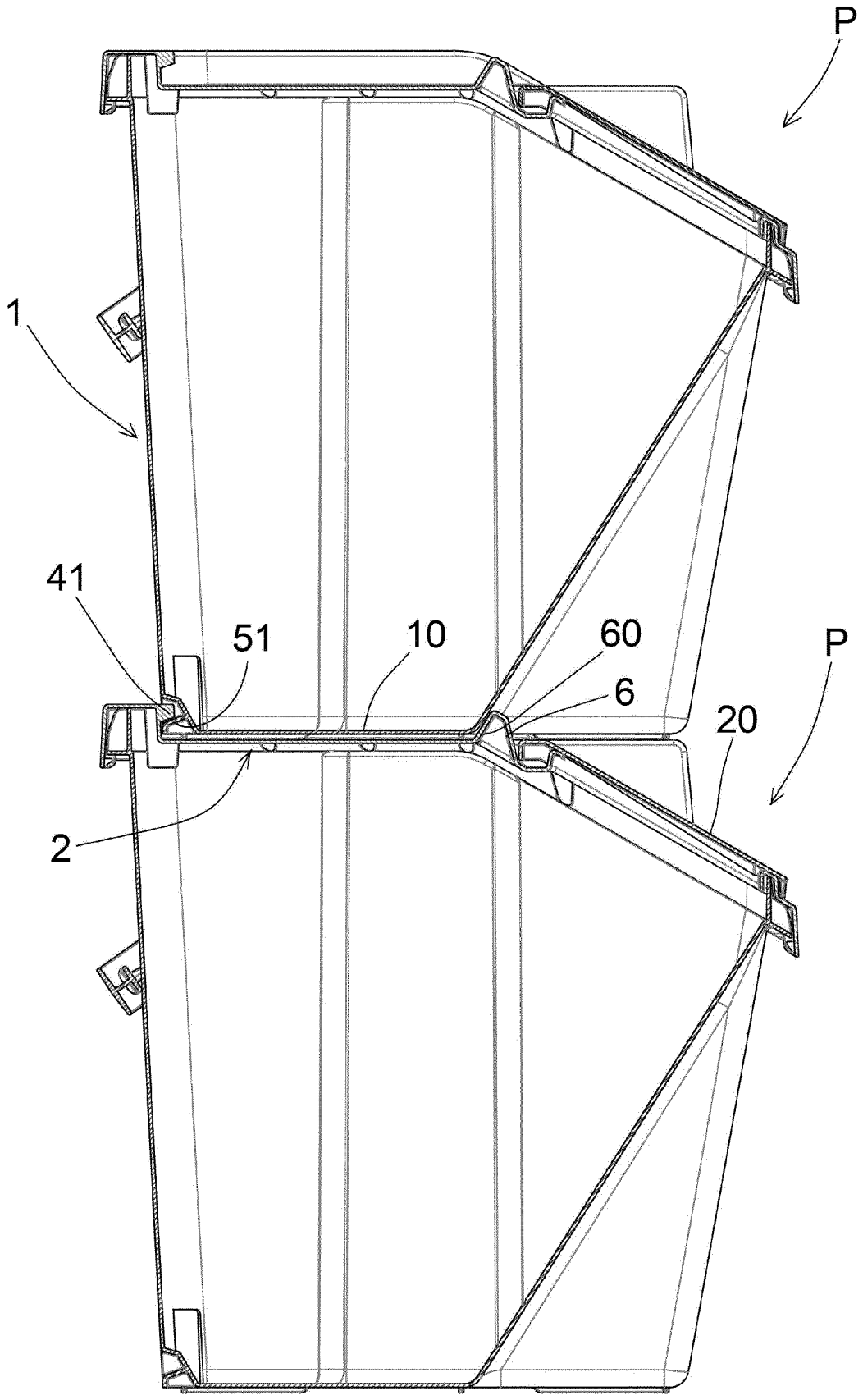

FIG. 7

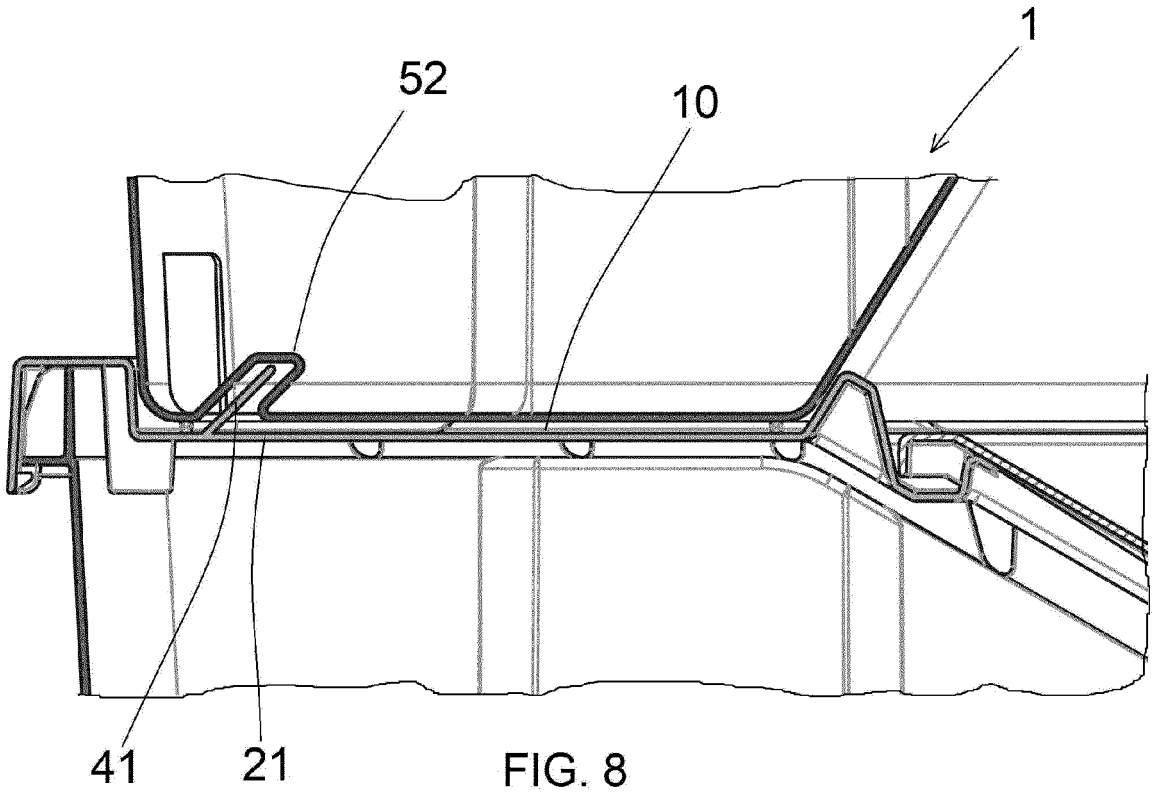

FIG. 8

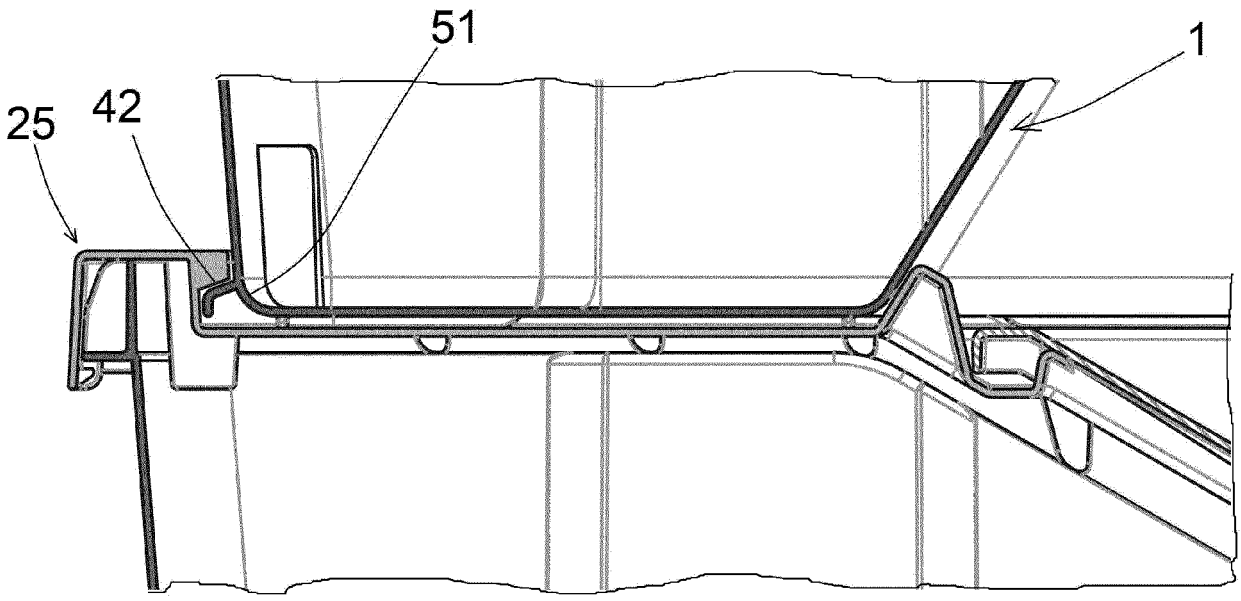

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 23 16 6693

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	IT 2019 0000 7833 A1 (BA MA S P A [IT]) 3 December 2020 (2020-12-03)	1-9,11	INV. B65F1/00 B65F1/06 B65F1/14 B65F1/16
Y	* figures 2,3a,4,5,6a *	10	
X	WO 2009/138873 A1 (SIMONCELLI GIANCARLO [IT]) 19 November 2009 (2009-11-19) * figure 4 *	1,11	
Y	CA 2 066 841 A1 (FINLAY SYLVIA P [CA]; LOUDENGREGG JANICE M [CA]) 23 October 1992 (1992-10-23)	10	
A	* figure 6A *	1	

TECHNICAL FIELDS SEARCHED (IPC)

B65F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	31 July 2023	de Miscault, Xavier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 16 6693

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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31-07-2023

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