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(54) **Suitcase with injection mould web**

Koffer mit spritzgegossenem Netz

Valise avec toile moulée par injection

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Description

[0001] The present invention relates to a suitcase with an injection mould web.

[0002] The use of injection mould techniques is known for making polypropylene suitcases which provide an injection point from which the plastic fluid flows.

[0003] Said technique has the disadvantage of having to provide a bodywork thickness of not less than 2 mm to ensure that the plastic fluid completely fills the mould.

[0004] To limit the course of the hot fluid it was thought to provide the injection point at the centre of the bodywork. However, a limit of 2 mm of bodywork remains, below which the injection mould is not effective. This implies a limit for the press tonnage and the overall weight of the suitcase.

[0005] The object of the present invention is to provide a suitcase with a lightened bodywork with a thickness of less than 2 mm which does not compromise the quality of the injection mould.

[0006] A further object is to use a press with a clamping force of not more than 1300 tons.

[0007] JP-2006-219515 discloses a suitcase made of plastic.

[0008] In accordance with the invention, this object is achieved with a suitcase as disclosed in claim 1.

[0009] These and other features of the present invention will become more apparent from the following detailed description of practical embodiments thereof, shown by way of non-limiting examples in the accompanying drawings, in which:

figure 1 shows a frontal view of the suitcase;
figure 2 shows a rear view of the suitcase;
figure 3 shows a first lateral view of the suitcase;
figure 4 shows a second lateral view of the suitcase;
figure 5 shows a top plan view of the suitcase;
figure 6 shows a section view according to the line VI-VI of figure 1, with a detail included in an enlarged circle A.

[0010] A suitcase 100 made of plastic material, preferably polypropylene but also polycarbonate or similar, has a bodywork or frontal shell 1 coupled to a bodywork or rear shell 2 by means of a hinge 3, a lateral handle 4 with closing flap 5, an upper handle 6 sliding into guides 7, additional closing flaps 8 along the adjoining edges of the two bodyworks 1, 2, as well as inferior rotating wheels 20. A further upper handle 66 is also provided.

[0011] On frontal bodywork 1 (figure 1), a web 10 is visible consisting of mould channels 11 adapted to allow the flow of the plastic fluid during the moulding phase from a central injection point 12 to the periphery of bodywork 1. Of said web 10 it is possible to distinguish peripheric knots or widenings 13 in which several channels 11 converge to facilitate the correct moulding of the zones of bodywork 2 farthest from centre 12 and therefore most difficult to reach.

[0012] Rear bodywork 2 (figure 2) has a web 10 with a similar but different design to house upper handle sliding guides 7, though also having peripheric knots 13 and a central injection point 12 beneath the guides 7 and therefore not visible from the outside, but visible from the inside (so that the channels are never cut off).

[0013] Both bodyworks 1, 2 also have internal knots 14 useful to maintain the viscosity of the fluid and distribute it throughout the entire mould of the bodyworks.

[0014] The channels 11 of web 10 have a thickness of about 2.5 mm, the remaining portion 50 of bodywork 1, 2 having a thickness of about 1.2 mm, significantly smaller than the minimum value of 2 mm found in the suitcases present on the market (see the enlarged circle A in figure 6). Despite having to be slightly thicker to satisfy stricter rigidity requirements, the peripheric portions 21 and 22 of bodyworks 1, 2 also have a thickness of 1.6 mm, definitely lower than 2 mm. In general, the thickness of the channels is comprised between 2 and 2.5 mm and the thickness of portions 50 comprised between the channels is less than 1.8 mm.

[0015] Carefully observing the enlarged circle A, it is noted that the channels 11 protrude both inwards (predominantly) and outwards. The portions of bodywork 1, 2 comprised between the channels 11 are thus reached by the plastic fluid which is injected with efficiency being surrounded by said web 10.

[0016] Advantageously, a 30% increase in weight advantage was verified with respect to the same type of suitcase with the same capacity in litres; for example, a suitcase with a capacity of about 100 litres obtained with injection mould without web weighs about 6 kg; the same type of suitcase obtained with injection mould with web weighs about 4 kg.

[0017] Advantageously, it is possible to use presses with tonnages significantly lower than 1300 tons because the "effort" required by the fluid to reach every point of the mould is lower thanks to the channels 11 which efficiently channel the plastic fluid.

[0018] It is possible to provide further injection points.

Claims

1. Suitcase (100) made of plastic material comprising a couple of bodyworks (1, 2) hinged between them, **characterized in that** each bodywork (1, 2) comprises a web (10) consisting of injection mould channels (11)
adapted to allow the flow of the plastic fluid during the moulding phase from at least a central injection point (12), said injection mould channels (11)
being of higher thickness in respect of the portions (50) of the bodywork (1, 2) comprised between said channels (11).

2. Suitcase (100) according to claim 1, **characterized in that** said channels (11) protrude inward and out-

ward in respect to the portions (50) of the bodywork (1, 2) comprised between said channels (11).

3. Suitcase (100) according to claim 2, **characterized in that** the channels (11) protrude even more inward than outward.

4. Suitcase (100) according to any one of the preceding claims, **characterized in that** the channels (11) have a thickness at least twice that of the remaining portions (50) of the bodywork (1, 2).

5. Suitcase (100) according to claim 4, **characterized in that** the channels (11) have a thickness comprised between 2 and 2,5 mm, and the remaining portions (50) of the bodywork (1, 2) have a thickness less than 2 mm.

6. Suitcase (100) according to claim 5, **characterized in that** the central portions (50) of the bodywork (1,2) have a thickness less than 1,5 mm, the lateral portions (50) of the bodywork (1, 2) have a thickness less than 1,8 mm.

7. Suitcase (100) according to claim 6, **characterized in that** the central portions (50) of the bodywork (1, 2) have a thickness of about 1,2 mm, the lateral portions (50) of the bodywork (1, 2) have a thickness of about 1,6 mm.

8. Suitcase (100) according to any one of the preceding claims,
characterized in that said web (10) provides internal knots (14) and
peripheric knots (13).

9. Hot injection molding process for bodyworks (1, 2) for suitcases (100) made of plastic material, **characterized in that** it provides the central injection of the plastic fluid suitable to reach the periphery of the bodywork (1, 2) by means of a web (10) consisting of injection mould channels (11) comprised in said bodyworks (1, 2), said injection mould channels (11) being of higher thickness than the thickness of the remaining portions (50) of the bodywork (1, 2) comprised between said channels (11).

Patentansprüche

1. Koffer (100) aus Kunststoffmaterial, mit einem Paar Körperelementen (1, 2), die zwischen einander gelenkig angebracht sind,
dadurch gekennzeichnet, dass jedes Körperelement (1, 2) ein Netz (10) aus Spritzguss-Kanälen (11) aufweist, die dazu ausgebildet sind, das Fließen des Kunststofffluids während der Gießphase von mindestens einer zentralen Einspritzstelle (12) zu ermöglichen, wobei die Spritzguss-Kanäle (11) in Bezug auf die zwischen den Kanälen (11) gebildeten Bereiche (50) der Körperelemente (1, 2) eine größere Dicke aufweisen.

2. Koffer (100) nach Anspruch 1,
dadurch gekennzeichnet, dass die Kanäle (11) in Bezug auf die zwischen den Kanälen (11) gebildeten Bereiche (50) der Körperelemente (1, 2) nach innen und nach außen vorstehen.

3. Koffer (100) nach Anspruch 2,
dadurch gekennzeichnet, dass die Kanäle (11) nach innen stärker vorstehen als nach außen.

4. Koffer (100) nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass die Kanäle (11) eine Dicke aufweisen, die mindestens das Doppelte der Dicke der übrigen Bereiche (50) der Körperelemente (1, 2) beträgt.

5. Koffer (100) nach Anspruch 4,
dadurch gekennzeichnet, dass die Kanäle (11) eine Dicke aufweisen, die zwischen 2 und 2,5 mm liegt, und die übrigen Bereiche (50) der Körperelemente (1, 2) eine Dicke von weniger als 2 mm aufweisen.

6. Koffer (100) nach Anspruch 5,
dadurch gekennzeichnet, dass die zentralen Bereiche (50) der Körperelemente (1, 2) eine Dicke von weniger als 1,5 mm aufweisen und die seitlichen Bereiche (50) der Körperelemente (1, 2) eine Dicke von weniger als 1,8 mm aufweisen.

7. Koffer (100) nach Anspruch 6,
dadurch gekennzeichnet, dass die zentralen Bereiche (50) der Körperelemente (1, 2) eine Dicke von etwa 1,2 mm aufweisen und die seitlichen Bereiche (50) der Körperelemente (1, 2) eine Dicke von etwa 1,6 mm aufweisen.

8. Koffer (100) nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass das Netz (10) innere Knoten (14) und periphere Knoten (13) vorsieht.

9. Heißspritzgussverfahren für Körperelemente (1, 2) für Koffer (100) aus Kunststoffmaterial,
dadurch gekennzeichnet, dass es das zentrale Einspritzen des Kunststofffluids in geeigneter Wiese bis zum Erreichen der Peripherie der Körperelemente (1, 2) mittels eines Netzes (10) vorsieht, das aus in den Körperelementen (1, 2) gebildeten Spritzguss-Kanälen (11) besteht, wobei die Spritzguss-Kanäle (11) eine größere Dicke aufweisen als die Dicke der zwischen den Kanälen (11) gebildeten übrigen Bereiche (50) der Körperelemente (1, 2).

Revendications

1. Valise (100) faite de matière plastique comprenant un couple de corps (1, 2) articulés entre eux, **caractérisé en ce que** chaque corps (1, 2) est composé d'un réseau (10) consistant en des canaux de moulage par injection (11) adaptés pour permettre l'écoulement du plastique fluide pendant la phase de moulage depuis au moins un point d'injection (12) central, lesdits canaux de moulage par injection (11) ayant une épaisseur supérieure relativement aux parties (50) du corps (1, 2) comprises entre lesdits canaux (11).

2. Valise (100) selon la revendication 1, **caractérisée en ce que** lesdits canaux (11) font saillie vers l'intérieur et vers l'extérieur relativement aux parties (50) du corps (1, 2) compris entre lesdits canaux (11).

3. Valise (100) selon la revendication 2, **caractérisée en ce que** les canaux (11) font saillie encore plus vers l'intérieur que vers l'extérieur.

4. Valise (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les canaux (11) ont une épaisseur au moins double de celle des parties restantes (50) du corps (1, 2).

5. Valise (100) selon la revendication 1, **caractérisée en ce que** les canaux (11) ont une épaisseur comprise entre 2 et 2,5 mm, et les parties restantes (50) du corps (1, 2) ont une épaisseur inférieure à 2 mm.

6. Valise (100) selon la revendication 1, **caractérisée en ce que** les parties (50) centrales du corps (1, 2) ont une épaisseur inférieure à 1,5 mm, les parties (50) latérales du corps (1, 2) ont une épaisseur inférieure à 1,8 mm.

7. Valise (100) selon la revendication 1, **caractérisée en ce que** les parties (50) centrales du corps (1, 2) ont une épaisseur d'environ 1,2 mm, les parties (50) latérales du corps (1, 2) ont une épaisseur d'environ 1,6 mm.

8. Valise (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit réseau (10) comprend des intersections intérieures (14) et des intersections périphériques (13).

9. Processus de moulage par injection à chaud pour des corps (1, 2) de valises (100) faits de matière plastique, **caractérisé en ce qu'**il permet l'injection centrale du plastique fluide convenant pour atteindre la périphérie du corps (1, 2) au moyen d'un réseau (10) consistant en des canaux de moulage par injection (11) compris dans lesdits corps (1, 2), lesdits canaux de moulage par injection (11) étant d'épaisseur supérieure à l'épaisseur des parties restantes (50) du corps (1, 2) comprises entre lesdits canaux (11).

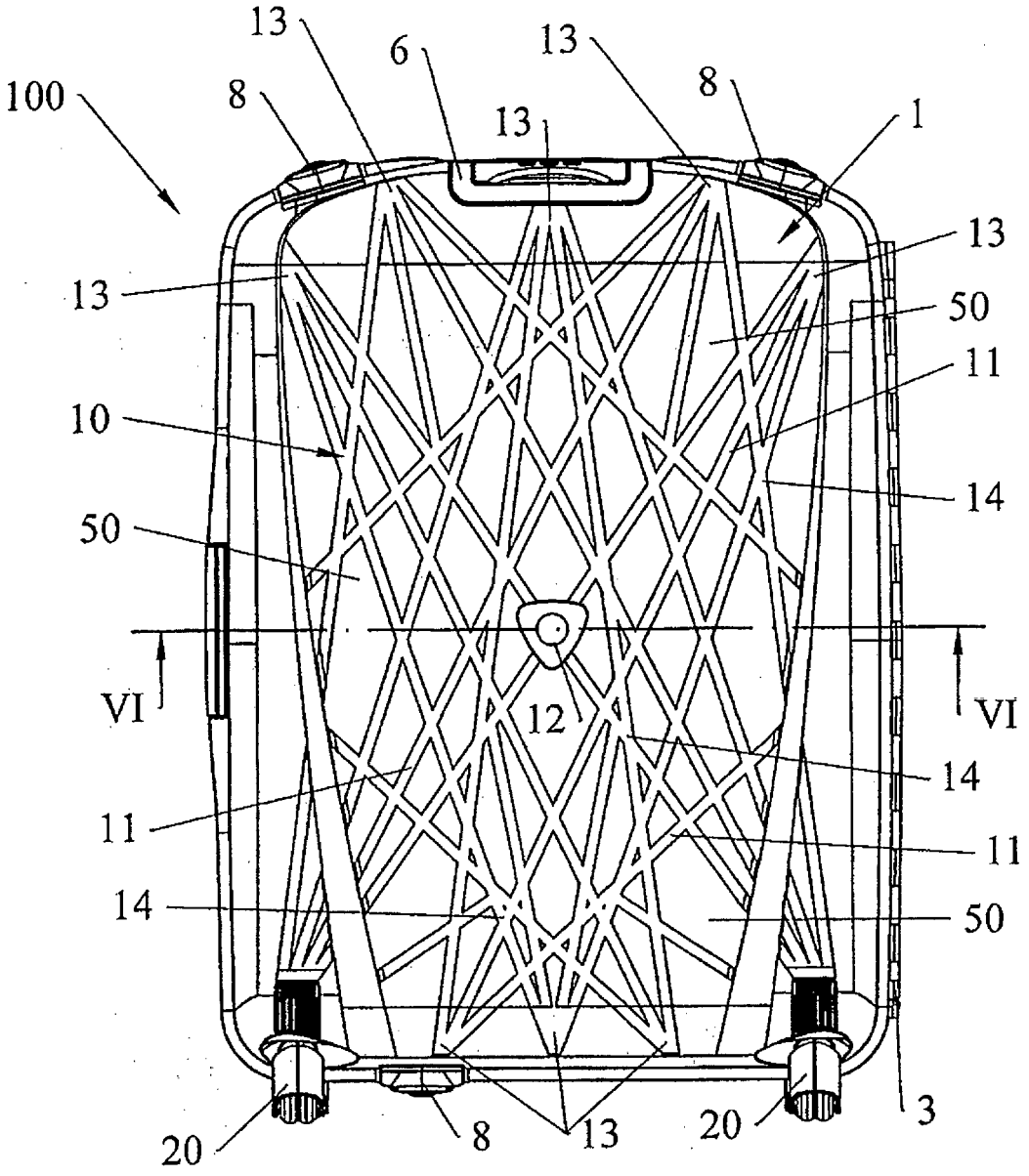

100
13
6
13
8
8
13
1
13
13
50
11
10
14
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VI
VI
12
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11
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3

FIG.1

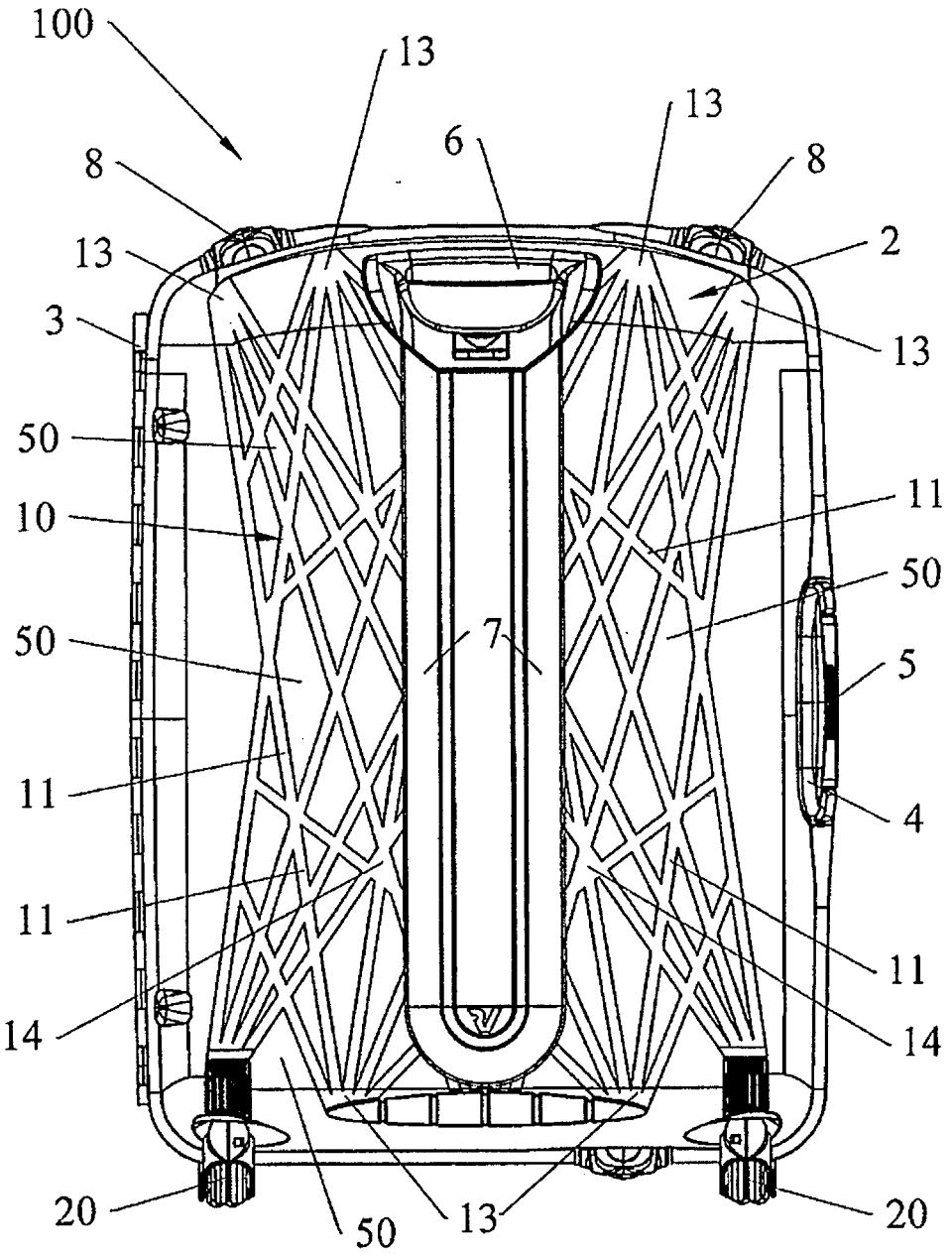


FIG.2

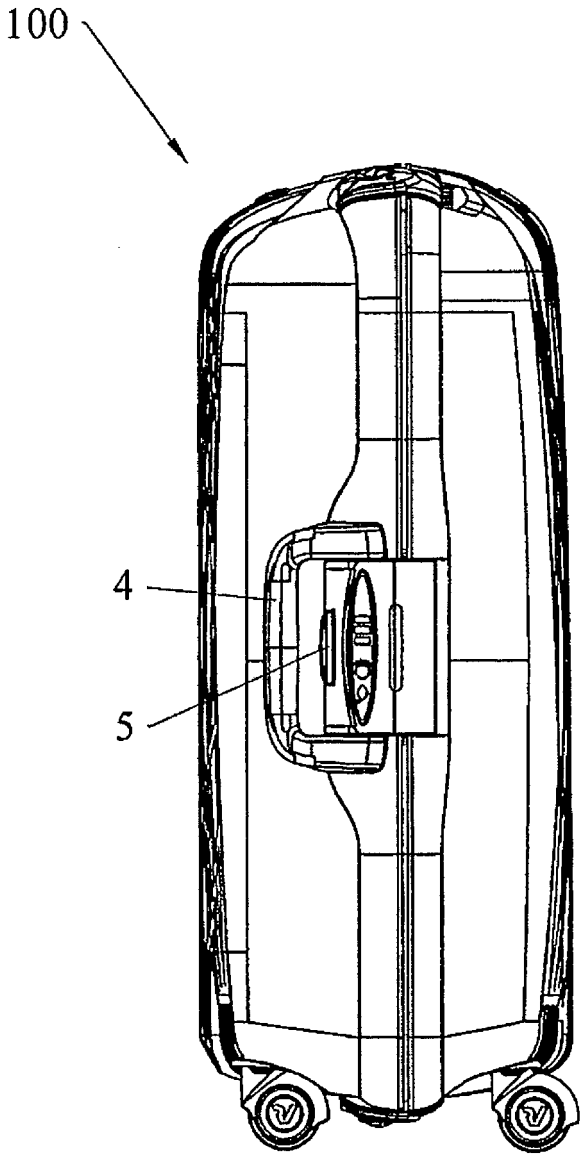


FIG.3

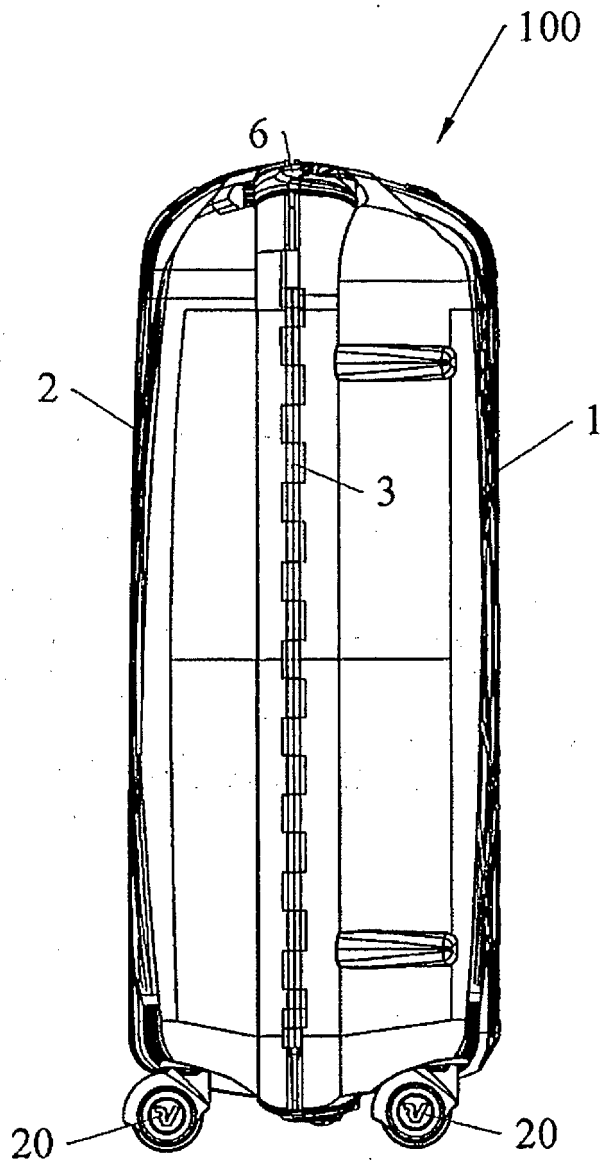


FIG.4

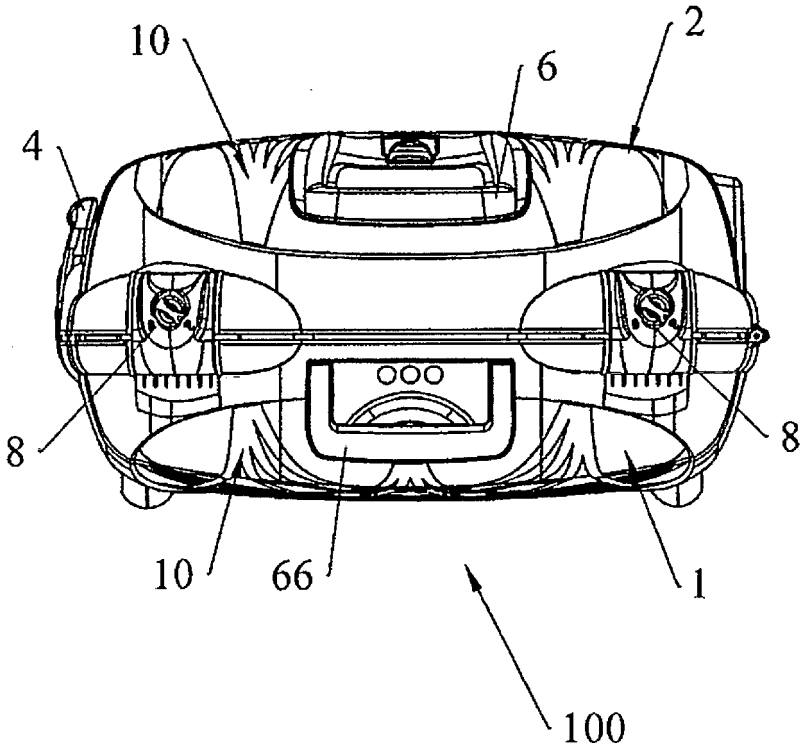


FIG.5

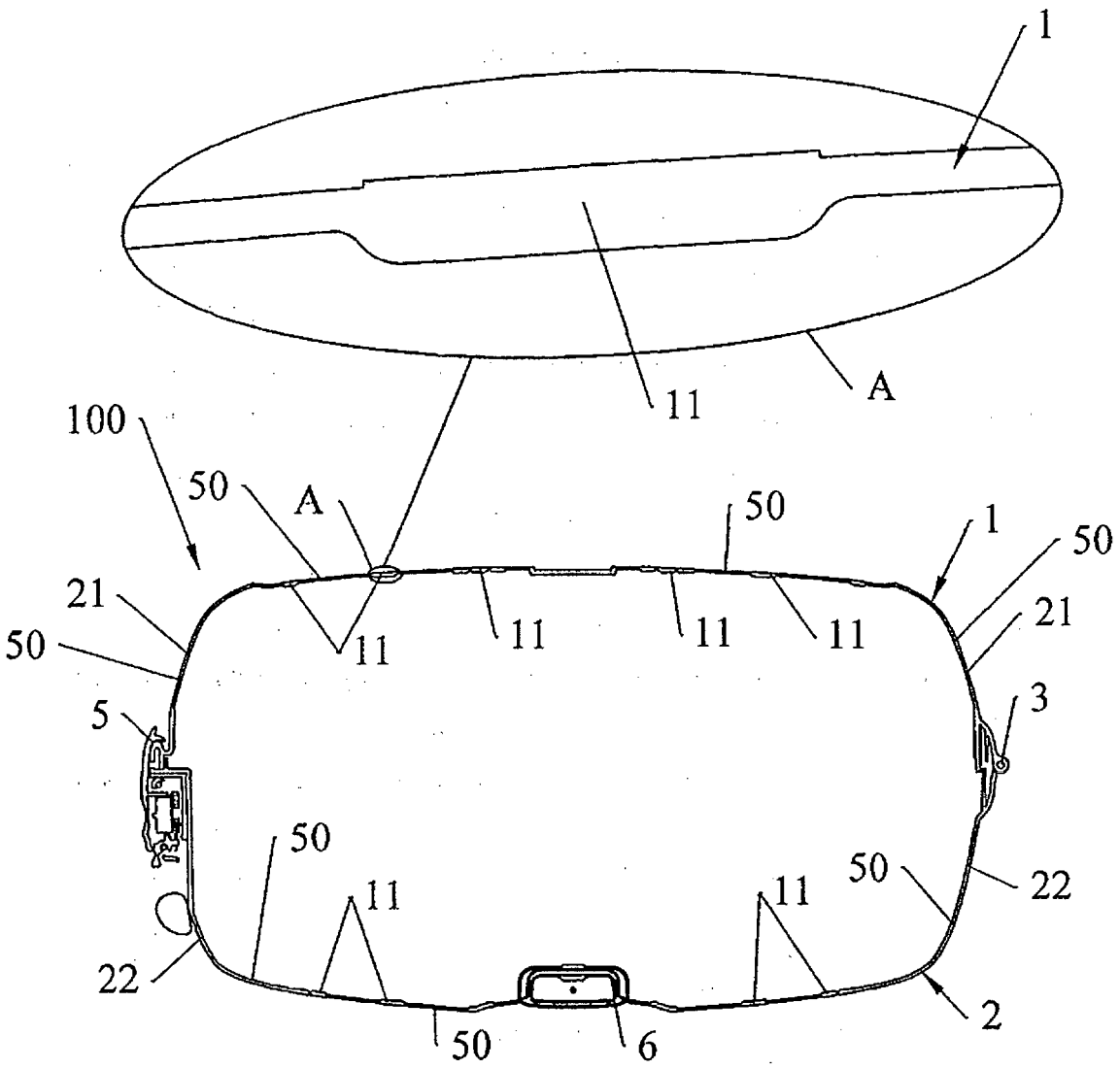


FIG.6

REFERENCES CITED IN THE DESCRIPTION

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