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(54) Titre : DISPOSITIF DE REPRISE D'EMBALLAGES VIDES, EN PARTICULIER DE BOUTEILLES EN MATIERE PLASTIQUE ET DE BOITES METALLIQUES

(54) Title: DEVICE FOR THE RETURN OF EMPTY GOODS, ESPECIALLY PLASTIC BOTTLES AND METAL CANS

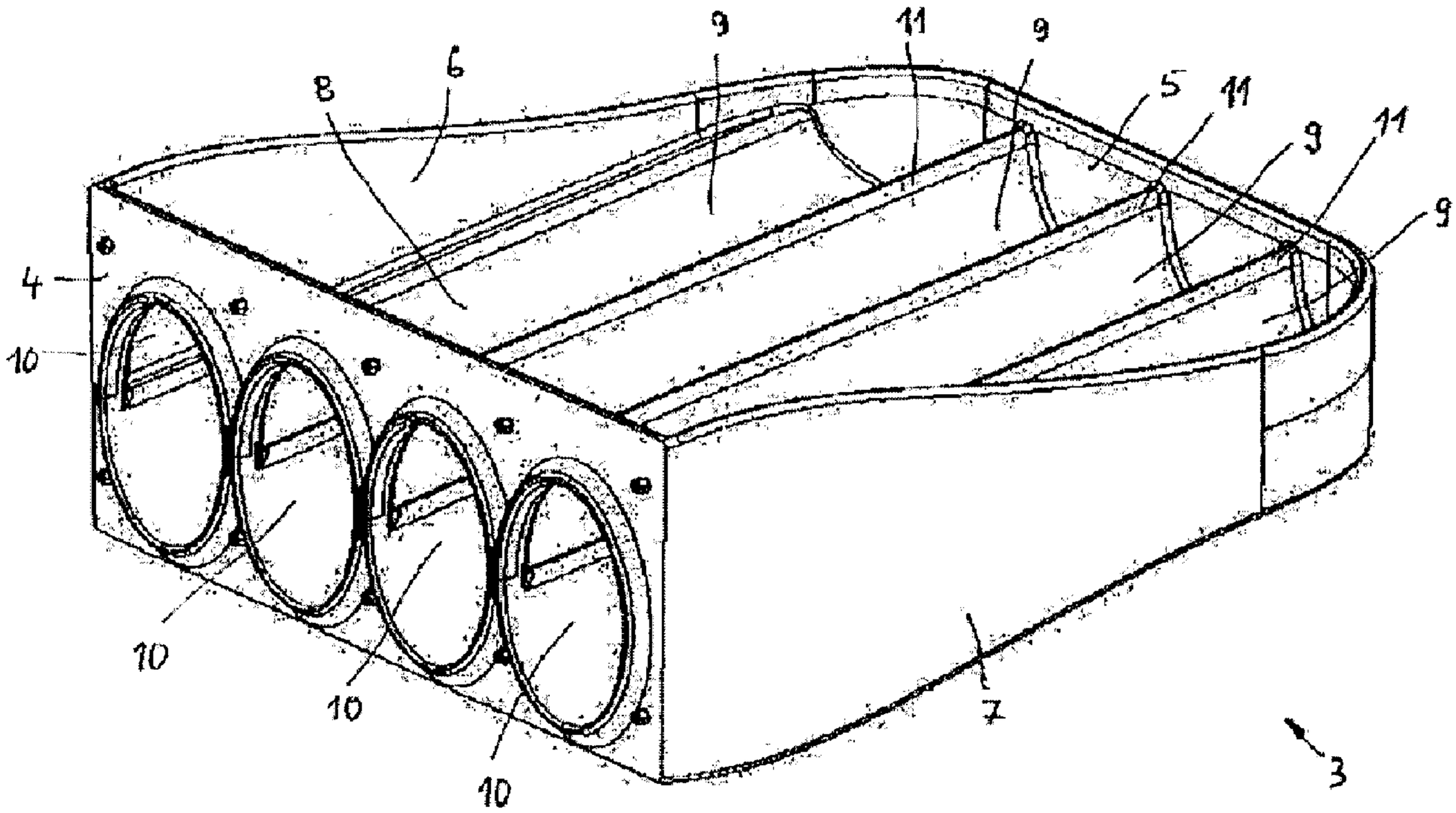

Fig.2

(57) Abrégé/Abstract:
The invention relates to a device for recycling empty containers, in particular plastic bottles and metal cans, comprising a housing (1), which accommodates apparatuses for handling the inserted empty containers, and comprising an insertion chute (3), which is accessible from outside and which receives the empty containers as bulk goods and which has a bottom (8) pointing downward in

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(57) Abrégé(suite)/Abstract(continued):
the insertion direction (19), wherein means are provided that prevent or hinder the insertion of objects that are too large into the device. The aim of the invention is to provide a generic device by means of which empty goods can be inserted into the insertion chute (3) as bulk goods in a nearly unimpeded manner, wherein at the same time objects that are too large are prevented from entering the device. Said aim is achieved in that the bottom (8) of the insertion chute (3) comprises a plurality of grooves (9) arranged next to each other and extending in the insertion direction (19), wherein said grooves each open into a respective passage opening (10) leading into the device, the cross-section of the passage openings being dimensioned in such a way that empty containers (18) oriented in the insertion direction (19) by the grooves (9) can pass without force. The device comprises an elevator (15).

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[Fortsetzung auf der nächsten Seite]

(54) **Title**: DEVICE FOR RECYCLING EMPTY CONTAINERS, IN PARTICULAR PLASTIC BOTTLES AND METAL CANS

(54) **Bezeichnung** : VORRICHTUNG ZUR RÜCKNAHME VON LEERGUT, INSBESONDERE VON KUNSTSTOFFFLASCHEN UND METALLDOSEN

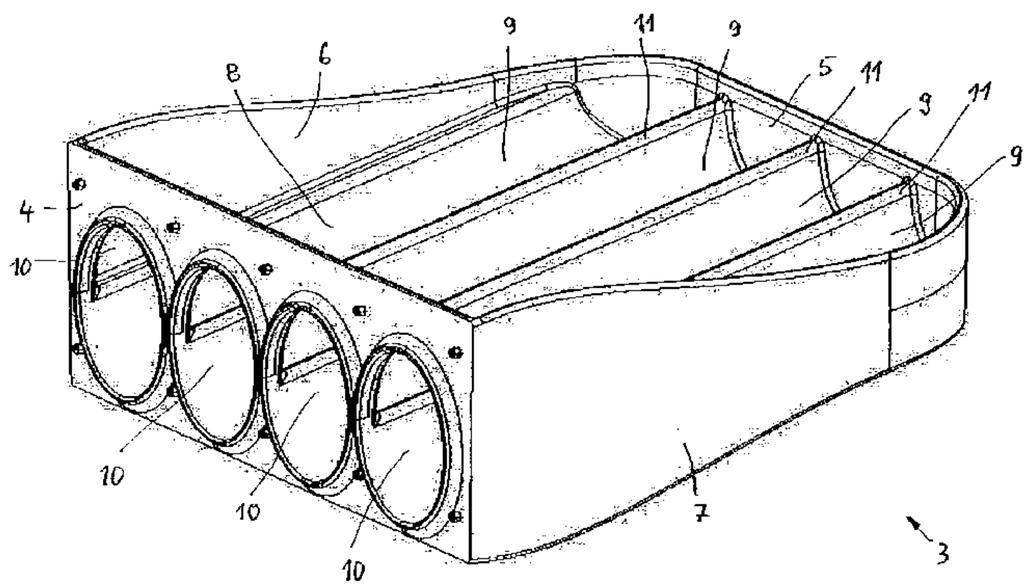

Fig.2

(57) **Abstract**: The invention relates to a device for recycling empty containers, in particular plastic bottles and metal cans, comprising a housing (1), which accommodates apparatuses for handling the inserted empty containers, and comprising an insertion chute (3), which is accessible from outside and which receives the empty containers as bulk goods and which has a bottom (8) pointing downward in the insertion direction (19), wherein means are provided that prevent or hinder the insertion of objects that are too large into the device. The aim of the invention is to provide a generic device by means of which empty goods can be inserted into the insertion chute (3) as bulk goods in a nearly unimpeded manner, wherein at the same time objects that are too large are prevented from entering the device. Said aim is achieved in that the bottom (8) of the insertion chute (3) comprises a plurality of grooves (9) arranged next to each other and extending in the insertion direction (19), wherein said grooves each open into a respective passage opening (10) leading into the device, the cross-section of the passage openings being dimensioned in such a way that empty containers (18) oriented in the insertion direction (19) by the grooves (9) can pass without force. The device comprises an elevator (15).

(57) **Zusammenfassung**:

[Fortsetzung auf der nächsten Seite]

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— *vor Ablauf der für Änderungen der Ansprüche geltenden Frist; Veröffentlichung wird wiederholt, falls Änderungen eingehen (Regel 48 Absatz 2 Buchstabe h)*

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Die vorliegende Erfindung betrifft eine Vorrichtung zur Rücknahme von Leergut, insbesondere von Kunststoffflaschen und Metalldosen, mit einem Gehäuse (1), welches Einrichtungen zur Behandlung des eingegebenen Leerguts aufnimmt, und mit einer von außen zugänglichen Eingabeschütte (3), die Leergut als Schüttgut aufnimmt und einen in Eingaberichtung (19) nach unten geneigten Boden (8) aufweist, wobei Mittel vorgesehen sind, die eine Eingabe von zu großen Gegenständen in die Vorrichtung verhindern bzw. erschweren. Aufgabe der Erfindung ist es, eine gattungsgemäße Vorrichtung zur Verfügung zu stellen, mit der eine nahezu behinderungsfreie Eingabe von Leergut als Schüttgut in die Eingabeschütte (3) gewährleistet ist, wobei gleichzeitig verhindert wird, dass zu große Gegenstände in die Vorrichtung gelangen können. Gelöst wird diese Aufgabe dadurch, dass der Boden (8) der Eingabeschütte (3) mehrere in Eingaberichtung (19) verlaufende, nebeneinander angeordnete Rinnen (9) aufweist, die jeweils in eine in die Vorrichtung führende Durchlassöffnung (10) münden, deren Querschnitt so bemessen ist, dass durch die Rinnen (9) in Eingaberichtung (19) längs ausgerichtetes Leergut (18) zwängungsfrei passieren kann. Die Vorrichtung umfasst einen Steilförderer (15).

Device for the Return of Empty Goods, Especially Plastic Bottles and Metal Cans

The present invention relates to a device for the return of empty goods, especially plastic bottles and metal cans, in accordance with the generic part of claim 1.

Such a device is known from US 4,505,370. This device serves in particular for the return of metal cans. It has a housing that houses devices that serve for the further treatment and optional processing of introduced cans. Furthermore, the device has an input chute accessible from the outside that receives empty goods as bulk goods and has a bottom inclined downward in the direction of the input. In order to prevent or make more difficult the input of objects that are too large the input opening of the input chute is covered by a grating with a suitable screen. The grating is formed by crossing rods. This solution has the disadvantage that empty goods introduced as bulk material can collect on the grating, e.g., by becoming jammed and thus prevent the passage into the input chute so that massive manual interventions are required to ensure or reestablish the passage into the input chute.

The present invention has the ask of making a generic device available with which an input of empty goods as bulk goods into the input chute is ensured almost without hindrance, whereby it is prevented at the same time that objects that are too large can pass into the device.

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This task is solved in accordance with the invention with a device for the return of empty goods that has the features of claim 1.

As a result of the grooves provided in accordance with the invention on the bottom of the input chute and running in the direction of input and of the inclination of the bottom in the input direction, empty goods resting on the bottom of the input chute are automatically aligned with the passage openings so that they can readily pass through them. Subsequently sliding empty goods are also aligned on the bottom. If necessary, only a slight amount of manual help is necessary in the aligning of the empty goods.

Other advantageous embodiments of the invention result from the subclaims.

The invention is described in detail in the following with reference made to an exemplary embodiment. In the associated drawings shown in a schematic manner:

Fig. 1 shows a housing section of a device for the return of empty goods with an input chute set on the outside of the housing, and

Fig. 2 shows a perspective view of the input chute in accordance with fig .1 by itself.

Fig. 1 shows a part of a housing 1 of a device that is otherwise not shown in more detail for the return of empty goods 18. An input chute 3 is constructed on a vertical wall 2 of the housing 1 from the outside. The housing 1 is shown in an open section in the area of the built-on location of this input chute 3 in order to make visible the installations are arranged in the housing 1 in this area.

The input chute 3 consists, relative to the installation position, of a rear wall 4, a front wall 5 and two side walls 6 and 7 as well as of a bottom 8 that is inclined downward, that is, toward the housing 1 by approximately 15° in the input direction 19 (fig. 1).

The bottom 8 is formed by four grooves 9 arranged adjacent to each other that run between the front wall 5 and the rear wall 4 and have the same cross section over their entire length, namely, that of a semicircle. The grooves 9 empty in the rear wall 4 into a circular passage opening 10 whose radius corresponds to that of the grooves 9. Adjacent grooves 9 merge directly into each other, forming a ridge 11. The cross section of the passage openings 10 and with them also that of the grooves 9 is selected in such a manner that in any case even empty goods 18 with the largest diameter that are to be returned can pass without hindrance.

The input chute 3 is fastened by its rear wall 4 on the vertical wall 2 of the housing , e.g., by screws. The housing wall 2 has a window in the area of the installation site of the input chute 3 so that a free entrance into the interior of the housing 1 is present through the passage openings 10.

Inside the housing 1 the bottom 8 of the input chute 3 is followed by a bottom 12 of an input collection chamber 13, which bottom is also inclined downward in the input direction 19 and which collection chamber has two side walls 14 and is open in the input direction 19. This open side of the input collection chamber 13 is closed by a steep conveyor 15 whose upper side 16 thus forms, as it were, the rear wall of the input collection chamber 13. The steep conveyor 15 comprises roller-shaped cams 17 extending over the entire width of the input collection chamber 13.

Empty material 18, e.g., PET bottles, to be returned in introduced by being poured out into the input chute 3, e.g., from a bag, as bulk material as it were. The ridges 11 formed between the grooves 9 act as guide edges and ensure that the empty goods 18 lying stochastically in the input chute 3 are aligned longitudinally in the input direction 19 and thus pass into the grooves 9 and slide under the action of gravity through the passage openings 10 into the input collection chamber 13. Due to the inclination of the bottom 12 of the input collection chamber 13 the empty goods 18 slide under the force of gravity toward the steep conveyor 15. The cams 17 of the steep conveyor 15 run through the input collection chamber 13, as a result of which the empty goods 18 lying on the cams 7 are entrained. The cams 17 are so wide transversely to the direction of transport of the steep conveyor 15 that at least two pieces of empty goods 18 can come to lie adjacent to one another on one cam 17. The steep conveyor 15 transports the received empty goods 18 to other treatment stations of the device that are not essential for the present invention and are therefore not shown.

Claims

1. A device for the return of empty goods, especially plastic bottles and metal cans, with a housing that receives devices for the treatment of the introduced empty goods and with an input chute accessible from the outside that receives the empty goods as bulk goods and has a bottom inclined downward in the input direction, whereby means are provided that prevent or make more difficult the inputting of objects that are too large into the device, characterized in that the bottom (8) of the input chute (3) comprises several grooves (19) arranged adjacent to each other and running in the input direction (9), which grooves empty into a passage opening (10) leading into the device and whose cross section is dimensioned in such a manner that longitudinally aligned empty goods (18) can pass freely through the grooves (9) in the input direction (19).

2. The device according to claim 1, characterized in that adjacent grooves (9) merge directly into each other, forming a ridge (11).

3. The device according to claim 1 or 2, characterized in that the input chute (3), viewed in the input direction (19), has a front wall (5), a rear wall (4) and two side walls (6, 7), whereby the grooves (9) run between the front wall (5) and the rear wall (4) and have the same cross section over their entire length.

4. The device according to claim 3, characterized in that the grooves (9) have a semicircular cross section and empty into a circular passage opening (10) provided in the rear wall (4) which opening has the same radius as the grooves (9).

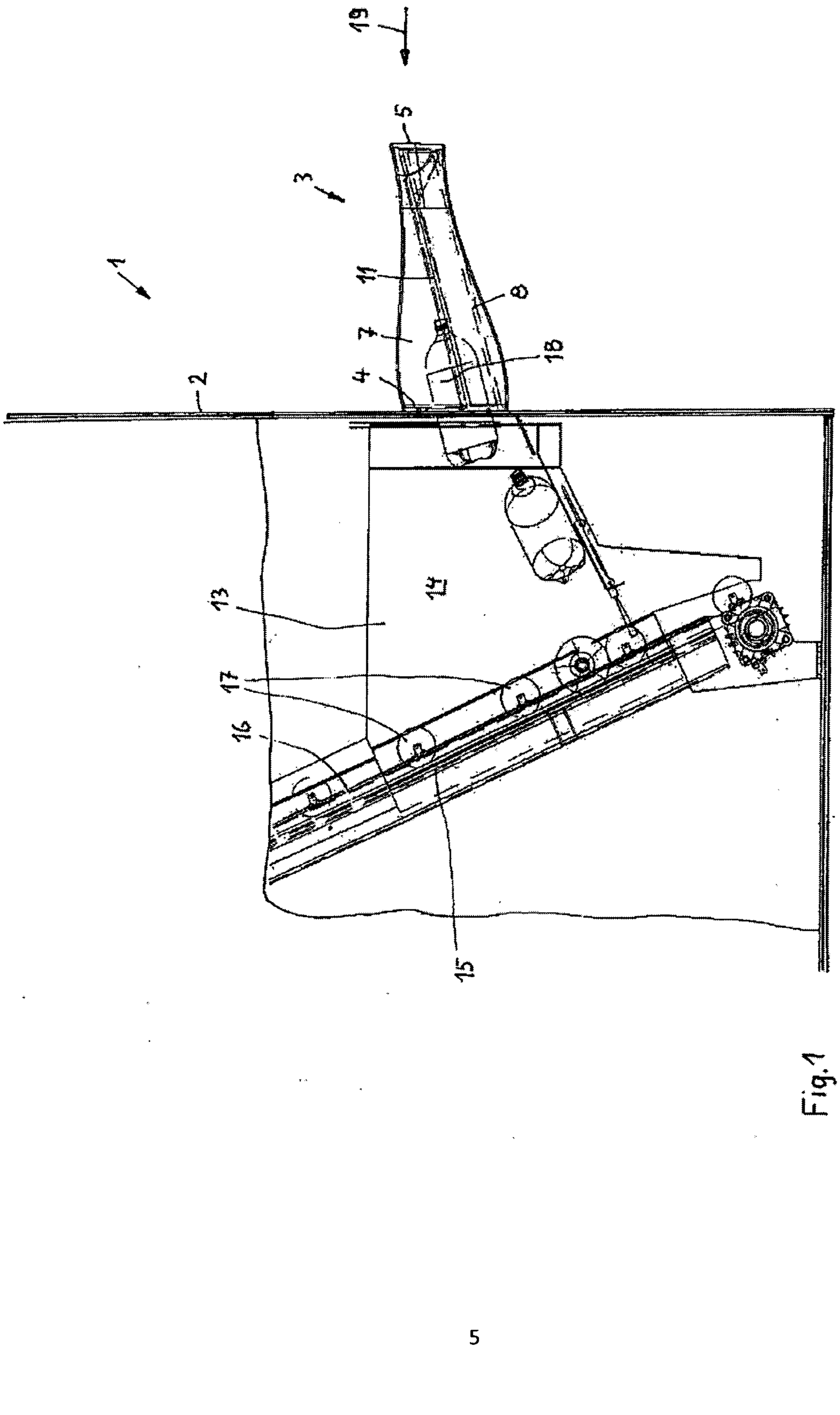

Fig.1

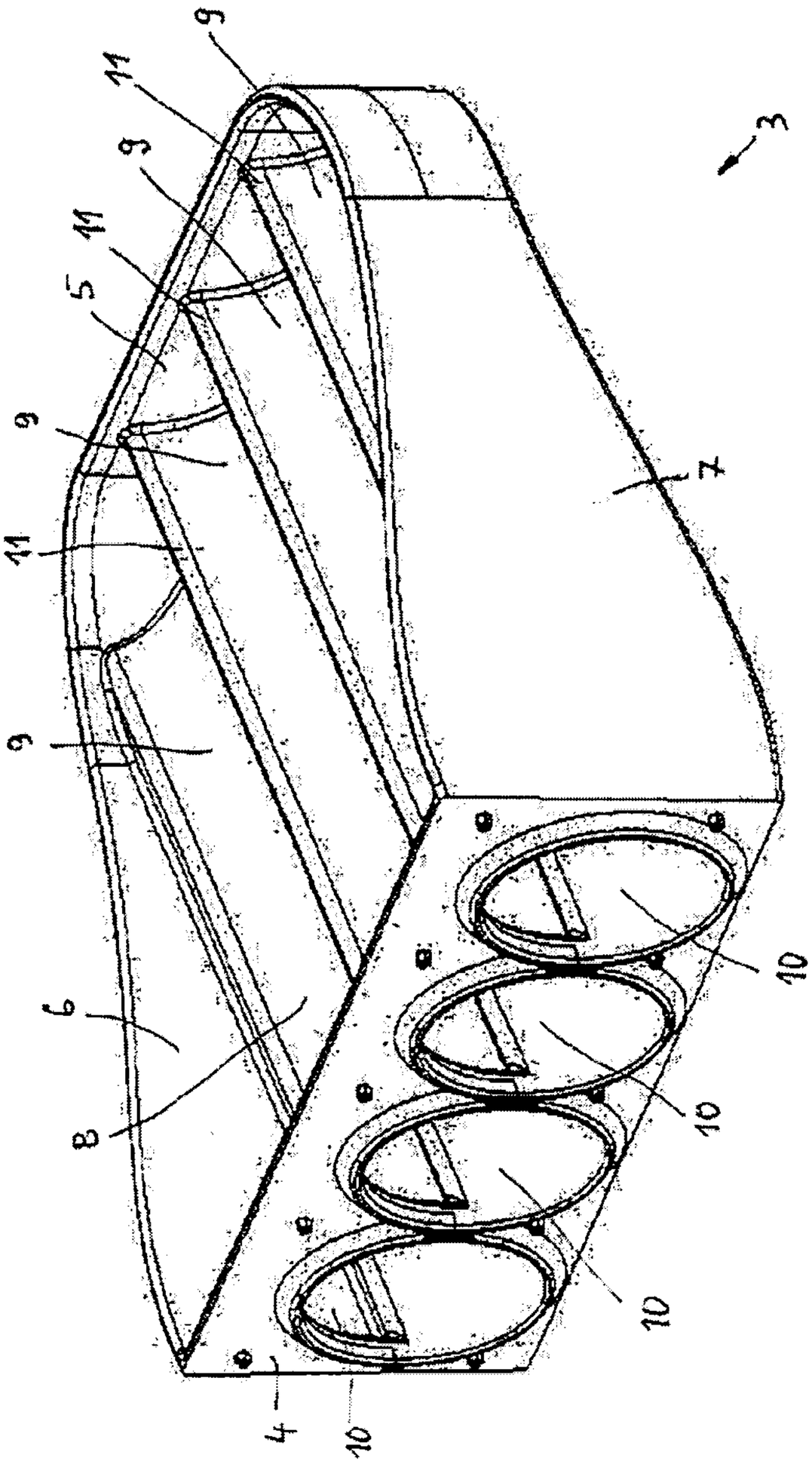

Fig.2

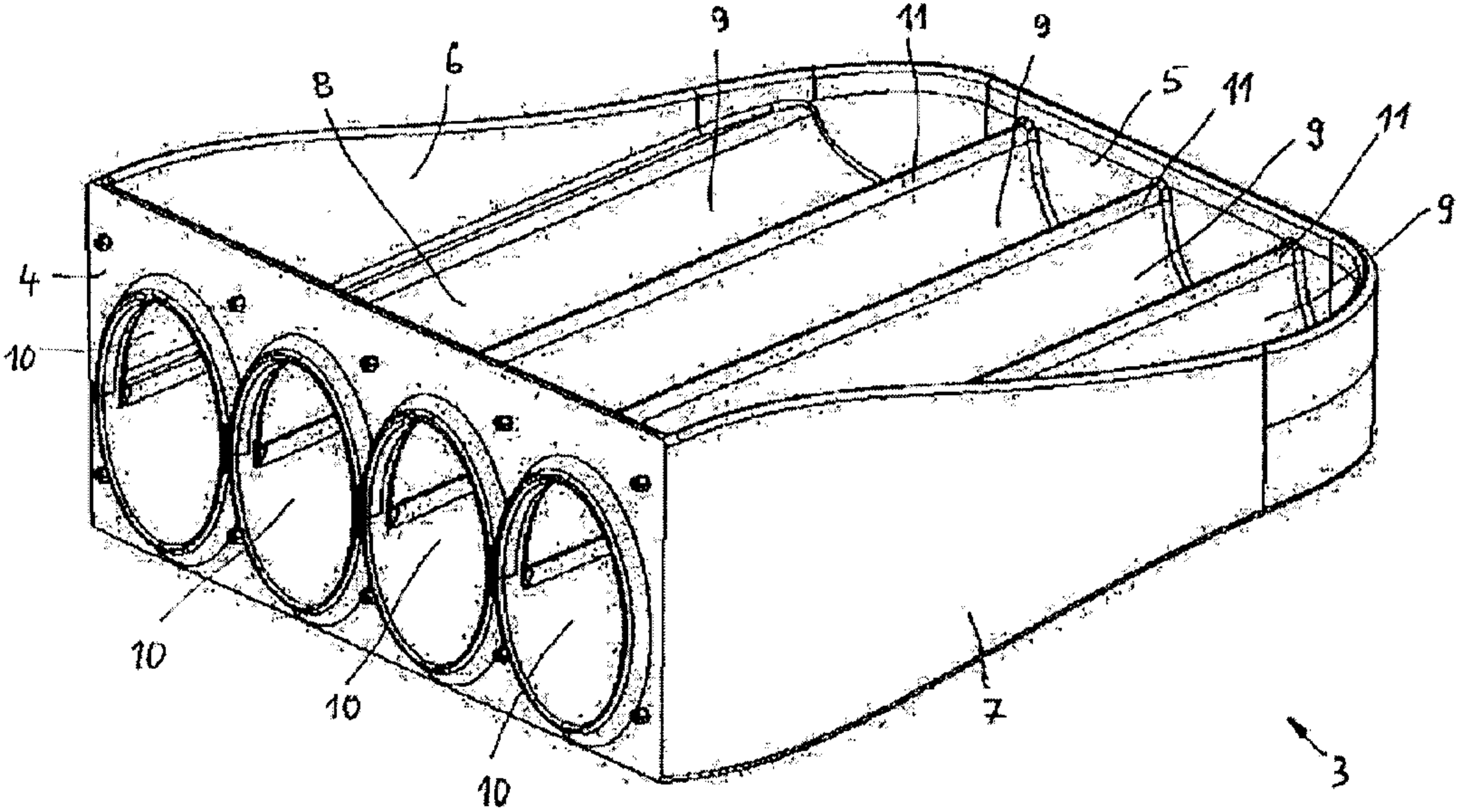

Fig.2