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(54) **Column and device for underground collection of waste provided with such a column**

(57) Column (1) for a device for underground collection of waste, which device further comprises a container which can be sunk into the ground and which is provided with at least one bottom part which is movable for the purpose of providing a discharge opening and with a cover part with an inlet opening, wherein the column is supported by the cover part for providing an inlet channel above ground surface level which debouches above

the inlet opening, and the column (1) is provided with at least one engaging element (10,11,12) fixedly coupled thereto for engaging the device thereon, wherein the engaging element (10,11,12) is formed by a non-specific part (7) which can be coupled to the column (1) and a shape-specific part (14) co-acting with engaging means as required, and the column (1) is adapted for coupling to the non-specific part (7) of the engaging element (10,11,12), and device provided with such a column (1).

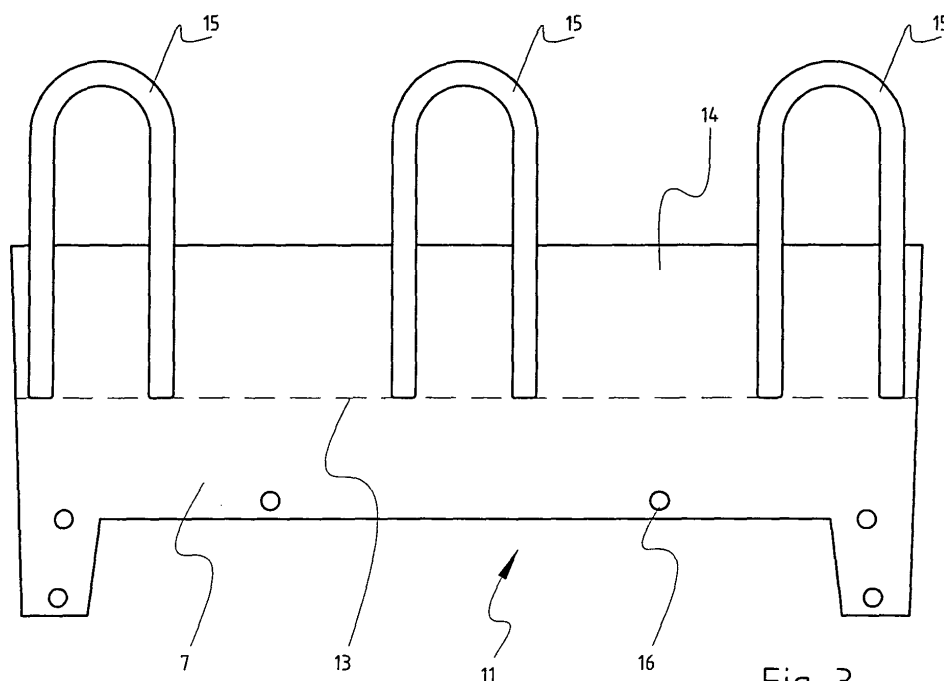


Fig. 3

Description

[0001] The invention relates to a column for a device for underground collection of waste, which device further comprises a container which can be sunk into the ground and which is provided with at least one bottom part which is movable for the purpose of providing a discharge opening and with a cover part with an inlet opening, wherein the column is supported by the cover part for providing an inlet channel above ground surface level which debouches above the inlet opening and is provided with at least one engaging element fixedly coupled to the column for engaging the device thereon.

[0002] Known from Netherlands patent no. 1005958 is a suspension element for a waste container which can be sunk into the ground and which is provided with bottom parts which can be folded open. The upper part of this container is connected to a fixed frame on which rests a cover through which extend two standing tubes, which are connected at their top by a transverse connection to a lifting eye. Through each of the tubes is guided a pull rod which is provided on its top side with a pull ring and coupled on its underside to the pivotable bottom parts by for instance chains, cables or rods which are positioned along side walls of the container. When the container rests on a horizontal ground surface, the bottom parts are in a closed position, as a result of which the pull rods hang in their lowest position. During emptying of a filled container the pull rods are first pulled upward on the respective pull rings, as a result of which the bottom parts remain suspended in a closed position so that the whole device can be raised on the lifting eye and manoeuvred above a loading platform. Above the loading platform the pull rods are moved downward again, as a result of which the bottom parts fold open and the content of the container drops into stated loading platform. After emptying of the container the pull rings are pulled upward again so that the bottom parts fold shut and the device can be replaced at the original position, wherein the pull rods can again drop downward. Hoisting of the known waste container and operating the pull rods thereof takes place using a hoisting and operating device designed for this purpose, which is provided with a hoist on which three hydraulic cylinders are mounted parallel and adjacently to each other, wherein the piston rod of the middle cylinder and the outer cylinders respectively is provided with a hook corresponding to the lifting eye and one of the pull rings respectively of a waste container.

[0003] During emptying of the known waste container it is required that the pull rods which operate the folding bottom are first pulled up using the two outer cylinders of stated hoisting and operating device, before the waste container is hoisted upward. If the pull rods are not pulled up, the bottom is not locked, so that it opens when the waste container is hoisted upward and the content of the waste container drops into the pit intended for this container. The method for emptying the known

waste container is therefore not inherently reliable, which is considered a drawback.

[0004] It is further considered a drawback that emptying of the known waste container is relatively time-consuming as a result of the above described procedure.

[0005] In addition, maintenance and repair of the movable components in the column and in the interior of the container are necessary after a time, this being expressed in increased cost of operating the known waste container.

[0006] The known waste container provides the advantage that, through a central placing of the inlet opening, the volume thereof can be utilized optimally, wherein no water collects in the sunken container. The container does not hang askew when it is hoisted.

[0007] It is an object of the invention to provide a column for a waste container which can be sunk into the ground, on which the waste container can be hoisted in an inherently safe manner without this however detracting from the advantages of the waste container known from the cited patent application.

[0008] This object is achieved, and other advantages gained, with a column of the type specified in the preamble, which is provided with at least one engaging element fixedly coupled thereto for engaging the device thereon, wherein according to the invention the engaging element is formed by a non-specific part which can be coupled to the column and a shape-specific part co-acting with engaging means as required, and the column is adapted for coupling to the non-specific part of the engaging element.

[0009] A column according to the invention provides the advantage that, in combination with this column, a container can suffice which is provided with locking means for locking the movable bottom part on the container. For operation of such locking means no movable components are necessary in the column and in the interior of the container, but it is for instance sufficient to provide a stop point, which co-acts with the locking means, on the loading platform into which the waste in the container must be deposited.

[0010] Because the column is adapted for coupling the non-specific part of an engaging element, the column can be manufactured as a half-product in exceptionally cost-effective manner. By arranging an engaging element with the correct shape-specific part this half-product can be made suitable in simple manner for engagement with a hoisting and operating device as required. In practical situations this means that a user or an operator of a large number of underground waste containers, for instance a municipal service or a private waste collection company, can readily manage waste containers, which according to the prior art are provided with movable components in the column and in the interior of the container, in addition to simpler waste containers provided with locking means for locking the movable bottom part on the container. Use can herein be made of one type of hoisting and operating device, and

early write-off of prior art waste containers is not necessary.

[0011] In an embodiment of a column according to the invention, the non-specific part of the engaging element is formed by an elongate coupling body which is horizontal in the operating situation, and the column is provided at its top with an elongate slot for receiving this coupling body therein.

[0012] Such a column is made suitable for co-action with a specific hoisting and operating device by arranging the engaging element with its elongate coupling body suitable for this purpose in the slot of the column and then fastening it.

[0013] In one embodiment the shape-specific part of the engaging element comprises at least one lifting eye.

[0014] In subsequent embodiments the shape-specific part of the engaging element comprises two or three lifting eyes.

[0015] In a further embodiment, the shape-specific part of the engaging element comprises a pillar which is vertical in the situation of use and which is provided with at least one disc-shaped peripheral edge.

[0016] In a practically advantageous embodiment, the column comprises a closing flap for the inlet channel and a tiltable drum open on one side which is coupled to the closing flap such that, when the flap is opened, the open side of the drum is directed toward the opening left clear by the flap, and when the flap is closed the open side is directed toward the inlet opening in the cover of the container.

[0017] The invention further relates to a device for underground collection of waste, comprising an above described column and a container which can be sunk into the ground and which is provided with at least one bottom part which is movable for the purpose of providing a discharge opening, and a cover part with an inlet opening, wherein the container is provided with locking means for locking the movable bottom part on the container.

[0018] The locking means comprise for instance a lever which is movable between a first position, in which the lever locks the bottom part in closed position, and a second position in which the lever unlocks the bottom part.

[0019] The container in a device according to the invention is for instance a rectangle or a square in horizontal cross-section, wherein the inlet opening is provided above the intersection of the diagonals of this rectangle or this square.

[0020] The invention will be elucidated in the following on the basis of exemplary embodiments, with reference to the annexed drawings, in which corresponding components are designated with the same reference numerals.

[0021] In the drawings:

Fig. 1 shows a part of the interior of an embodiment of a column according to the invention in cut-away

perspective view,

Fig. 2 shows a front view of a first embodiment of an engaging element,

Fig. 3 shows a front view of a second embodiment of an engaging element, and

Fig. 4 shows a front view of a third embodiment of an engaging element.

[0022] Figure 1 shows a part of the interior of a metal column 1 with front wall 2, side wall 3 and top wall 4. Formed in top wall 4 is an elongate slot (not shown) which extends over the width of column 1 between the side walls (of which side wall 3 is shown), and which is bounded by solid flat metal support beams 5, 6 which have a wide U-shape and which are welded along the legs of this U-shape and the connecting piece to respectively the side walls 3 and top wall 4 of column 1. Between support beams 5, 6 is received the non-specific part 7 of an engaging element, wherein the form of the non-specific part 7 and the thickness thereof corresponds to respectively the form of support beams 5, 6 and the distance therebetween. The non-specific part 7 is fixed to support beams 5, 6 with bolts 8 and nuts 9.

[0023] Fig. 2 shows an engaging element 10 formed by a solid metal plate with a non-specific part 7 (shown in the figure by a bounding broken line 13) and a shape-specific part 14. The non-specific part 7 forms a coupling body which is horizontal in the operating situation, and is intended for receiving between support beams 5, 6 of the column 1 shown in fig. 1; holes 16 are provided for the fastening. The shape-specific part 14, which is intended to protrude out of column 1, is provided with a welded-on U-shaped metal rod forming a lifting eye 15.

[0024] Fig. 3 shows an engaging element 11, the shape-specific part 14 of which is provided with three welded-on U-shaped metal rods which each form a lifting eye 15, and which is otherwise the same as engaging element 10 of fig. 2. The distance between lifting eyes 15 is compatible with the distance between the hooks of the hoisting and operating device provided for emptying the waste container for which the column is intended.

[0025] Fig. 4 shows an engaging element 12, the shape-specific part 14 of which is provided with a welded-on round metal rod 20, an end piece 17 of which has a diameter smaller than the welded-on part 20, wherein the welded-on part 20 is provided on the part protruding outside the plate with a first disc-shaped peripheral edge 18 and the end part 17 is provided on its outer end with a second disc-shaped peripheral edge 19, the diameter of which is smaller than that of the first peripheral edge 18. The dimensions of components 20, 17, 18 and 19 are compatible with the dimensions of the corresponding component of the hoisting and operating device provided for emptying the waste container for which the column is intended.

[0026] It is noted that the inventive concept is not limited to the exemplary embodiments shown in the figures

and elucidated in the description. The terms "lifting eye" and "disc-shaped peripheral edge" must be understood to mean any component suitable for engagement by a hoist. When there are support beams in the column for receiving the non-specific part of the engaging element therebetween, a different type of coupling element can also be provided outside the column for fastening of an engaging element, without thereby departing from the scope of the invention.

Claims

1. Column (1) for a device for underground collection of waste, which device further comprises a container which can be sunk into the ground and which is provided with at least one bottom part which is movable for the purpose of providing a discharge opening and with a cover part with an inlet opening, wherein the column is supported by the cover part for providing an inlet channel above ground surface level which debouches above the inlet opening, and the column (1) is provided with at least one engaging element (10, 11, 12) fixedly coupled thereto for engaging the device thereon, **characterized in that** the engaging element (10, 11, 12) is formed by a non-specific part (7) which can be coupled to the column (1) and a shape-specific part (14) co-acting with engaging means as required, and the column (1) is adapted for coupling to the non-specific part (7) of the engaging element (10, 11, 12).
2. Column (1) as claimed in claim 1, **characterized in that** the non-specific part (7) of the engaging element (10, 11, 12) is formed by an elongate coupling body (7) which is horizontal in the operating situation, and the column (1) is provided at its top (4) with an elongate slot for receiving said coupling body (7) therein.
3. Column (1) as claimed in claims 1-2, **characterized in that** the shape-specific part (14) of the engaging element (10) comprises at least one lifting eye (15).
4. Column (1) as claimed in any of the claims 1-3, **characterized in that** the shape-specific part (14) of the engaging element (11) comprises two lifting eyes (15).
5. Column (1) as claimed in any of the claims 1-3, **characterized in that** the shape-specific part (14) of the engaging element (11) comprises three lifting eyes (15).
6. Column (1) as claimed in claims 1-2, **characterized in that** the shape-specific part (14) of the engaging element (12) comprises a pillar (20, 17) which is vertical in the situation of use and which is provided with at least one disc-shaped peripheral edge (18, 19).
7. Column (1) as claimed in any of the claims 1-6, **characterized in that** it comprises a closing flap for the inlet channel and a tiltable drum open on one side which is coupled to the closing flap such that, when the flap is opened, the open side of the drum is directed toward the opening left clear by the flap, and when the flap is closed the open side is directed toward the inlet opening in the cover of the container.
8. Device for underground collection of waste, comprising a column (1) as claimed in any of the claims 1-7, and a container which can be sunk into the ground and which is provided with at least one bottom part which is movable for the purpose of providing a discharge opening, and a cover part with an inlet opening, **characterized in that** the container is provided with locking means for locking the movable bottom part on the container.
9. Device as claimed in claim 8, **characterized in that** the locking means comprise a lever which is movable between a first position, in which the lever locks the bottom part in closed position, and a second position in which the lever unlocks the bottom part.
10. Device as claimed in claims 8-9, **characterized in that** the container is a rectangle in horizontal cross-section, and the inlet opening is provided above the intersection of the diagonals of said rectangle.
11. Device as claimed in claim 10, **characterized in that** the container is a square in horizontal cross-section.

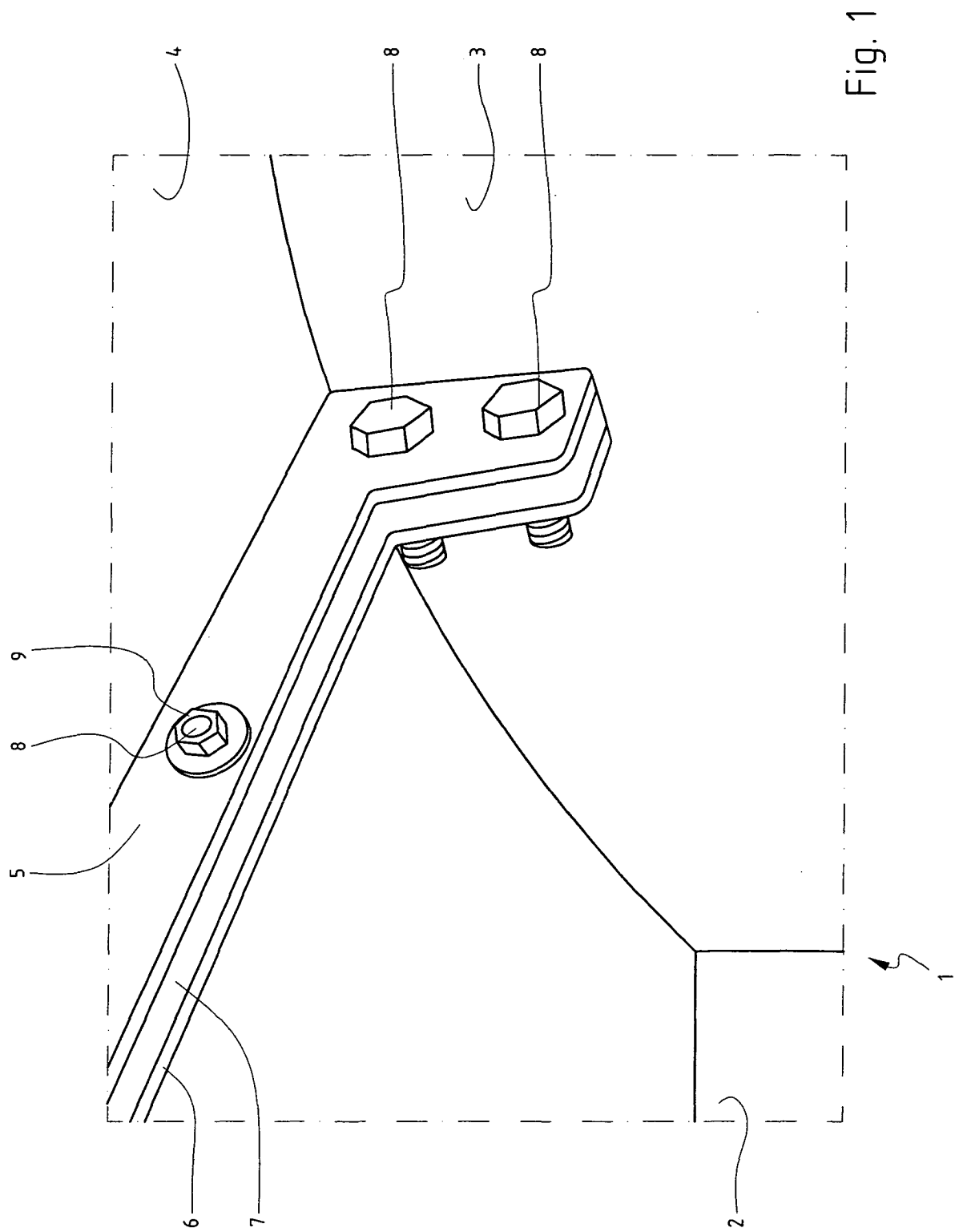
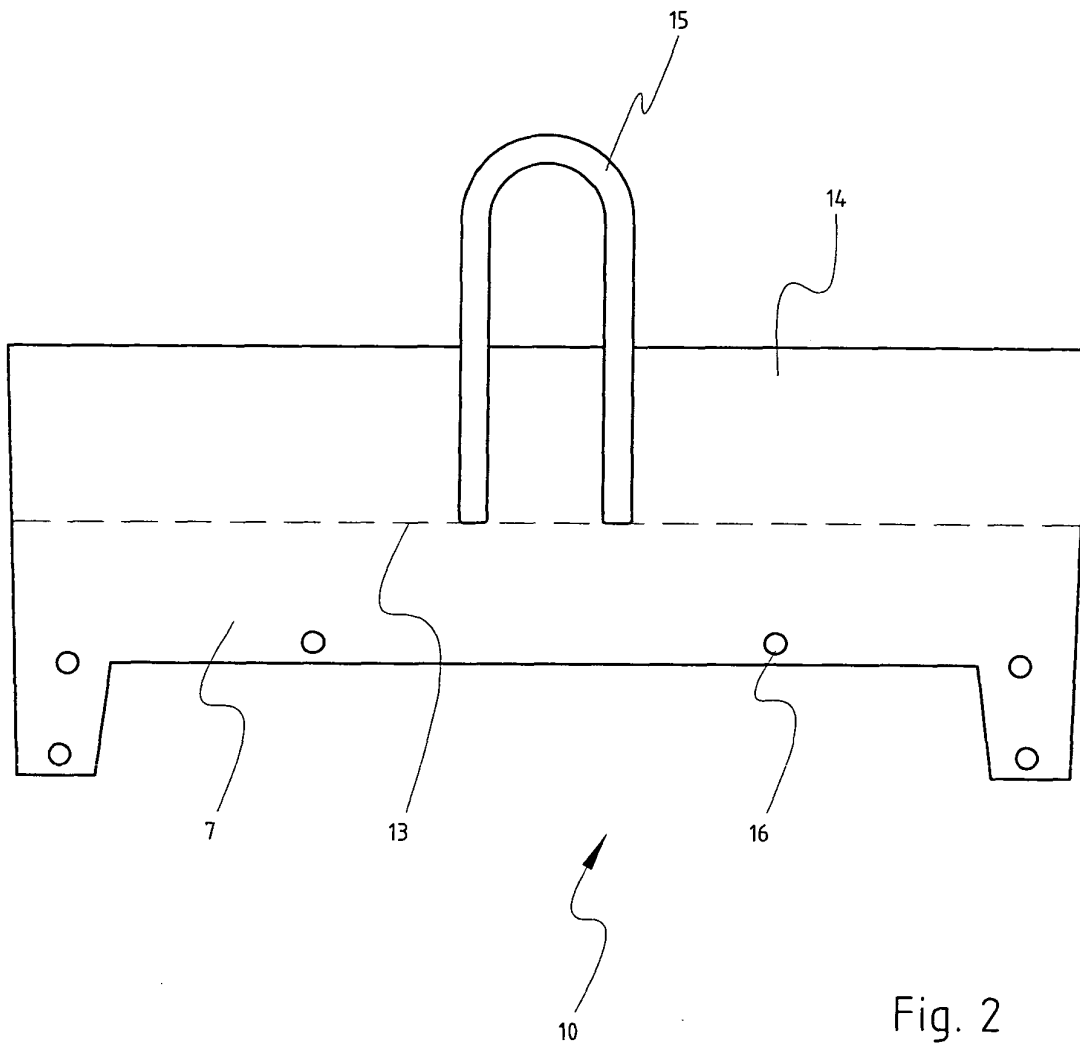
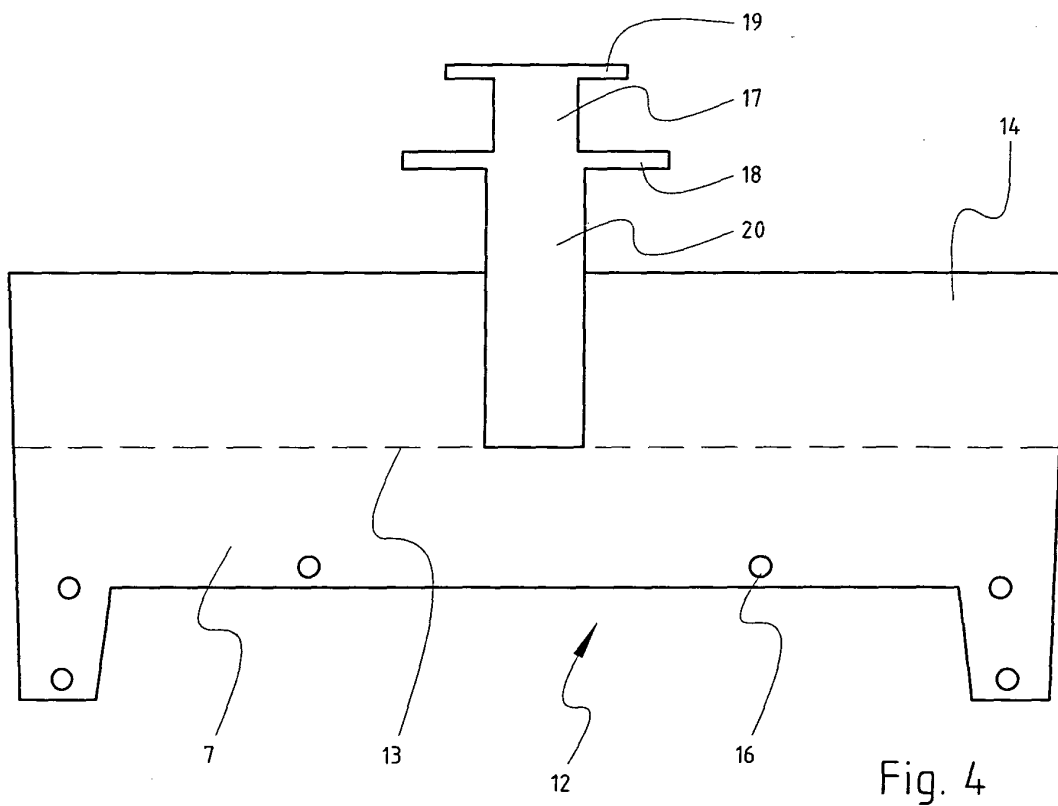
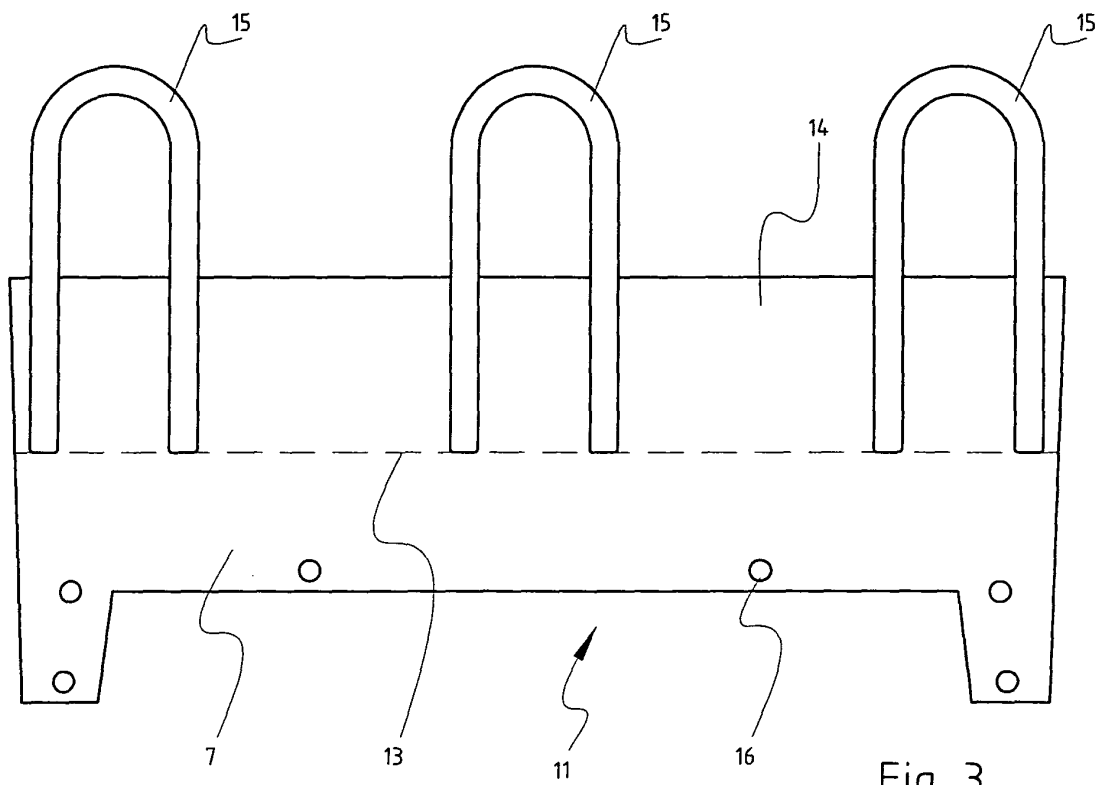


Fig. 1







European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 07 6258

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 August 2005	Examiner Smolders, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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