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(54) **The composite tank and the technology of its manufacturing**

Behälter aus Verbundwerkstoff und dessen Herstellungsverfahren

Réservoir en matériau composite et procédé de fabrication

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Description

[0001] The object of the invention comprises a composite tank.

[0002] The composite tank with a short neck liner made of plastic with a collar embedded in it during manufacturing process is known from the European notification of the invention - EP 0 821 194. The collar rests on the external part of the liner and the neck, whereas from the side of the neck, it has indentions to nest the notches of the neck of the liner.

The valve element is pushed in, and rests on the interior of the ring shaped collar, while the tip is shaped congruently to the tip of the neck of the liner; For convenience both elements are cone-shaped.

The collar and the liner are jointly wrapped with a composite material.

There is a known way of manufacturing the composite tank according to the description: USA No 5,476,189, where a composite fiber is partially wrapped over the liner with the collar and then the pads of the material absorbing the blow are placed in it; and afterwards, the external layer is wrapped over the item, thus covering the pads. US 5 287 987 discloses a composite tank with a liner and a collar.

[0003] The nature of the invention comprises a composite tank, which has a liner and a collar connected to it, to be attached to the valve element; and is peculiar, because it consists of two parts and its internal part has the external surface to connect it with the neck of the liner and a fragment of a section to connect it to the external part, which in turn, has the internal surface congruent with a fragment of the internal part, enabling their mutual connection; and also has a resistance collar to rest on the external surface of the liner and the tip to assembly the valve element, while the collar and the liner have layers of the composite material.

The external surface of the internal part of the collar has appendages to connect to the liner neck.

A fragment of the section of the internal part of the collar is threaded.

The neck of the liner is internal.

The internal part between the external surface and external section has a molded collar.

The neck has notches at the closing section of the opening

The neck is shaped as a sleeve at the internal fragment of the opening.

[0004] The nature of the way of manufacturing of the composite container by joint molding of the liner with the collar consists in manufacturing of a two-part collar whose internal part is molded with the liner, leaving the lower, internal surface not connected with the liner; then the manufacturing process of the liner molded in such a way takes place, to which in turn the external part of the collar is attached and the whole item assembled in such a way is covered with the layers of the composite material.

Carbon fiber is the composite material, which his wrapped over in the wet technology.

After the process of covering of the liner with the layers of the composite material, the drying and hardening takes place.

The external layers of the tank are covered with the glass fiber.

There are eight layers of the composite material.

[0005] The construction and the way of manufacturing of the composite tank permits molding with good sealing and adaptation of its construction to the uniform internal tension; and provides resistance to concussions with no need to add diverse pads.

[0006] The object of invention was presented in the attached drawing where Fig. 1 represents the internal part of the collar, Fig. 2 represents the liner with the cross section of the internal part of the collar, Fig. 3 represents the cross section of the composite container with the whole collar.

[0007] The composite container, according to the invention, consists of a liner 1 made of plastic with the internal neck 2 in which the internal part 3 of the collar 4 is mounted.

[0008] The neck 2 has notches 5 at the closing part of the opening of its internal surface and a sleeve shaped opening 6 behind them. The collar 4 consists of two parts: the internal part 3 and the external part 7.

[0009] The internal part 3, consisting of a fragment of the sleeve, has appendages 8 on one end of its external surface to connect the closing fragment of the neck 2 of the liner 1, and on the other end, has a fragment of the section 9 to connect the external part 7, which is the external thread 9.

The internal surface consists of a molded collar 10 resting partially on the sleeve wall 6 of the neck 2.

The external part 7 of the collar 4 has a form of a sleeve with a resistance collar 11 resting on the external surface of the liner 1 and with the internal thread 12 to connect with the thread 9 of the internal part 3. The tip 13 is adapted to connect the valve element.

The internal part 3 of the collar 4 is connected to the liner 1 in one manufacturing process, and afterwards is connected to the external part 7 and the liner constructed in this way is wrapped over with the composite material layer after layer 14.

An example of manufacturing:

[0010] The collar is made by means of mechanical methods of two aluminum elements, which constitute its internal and external parts.

Then, the internal part is molded together with the liner and the tank molded in this way constitutes one item, where the liner with the internal neck wrapping the fragment of the internal part of the collar is made of polyethylene.

[0011] The external part of the collar is mounted on the internal part and eight layers of the composite material,

carbon fiber are wrapped over it in the wet technology by earlier saturation.

After the carbon fiber has been wrapped over, the whole tank is dried and hardened and then the external layers of fibers - glass fiber - are wrapped over.

The layers of glass fiber provide resistance of the container to concussion.

Claims

1. Composite tank with a liner and a collar attached to it to be connected to a valve element and wherein the collar consists of two parts, wherein the neck (2) of the liner (1) is internal and has the shape of a sleeve (6) on a fragment of the interval opening, wherein the collar (4) have external part (7) and internal part (3) and whose internal part (3) has an external surface (8) to connect with the neck (2) of the liner (1) and a fragment of a section (9) to connect with the external part (7), which in turn has the internal surface (9) congruent with a section of the internal part (3) enabling their mutual connection; and which has a resistance collar (11) to rest on the external surface of the liner (1) and the tip (13) to fix the valve element, whereas on the collar (4) and the liner (1) there are layers (14) of the composite material, **characterised in that** the liner has notches at the end of the opening.
2. The composite tank, according to claim 1, **characterised in that**, the external surface (8) of the internal part (3) of the collar (4) has appendages (8) to connect the neck (2) of the liner (1).
3. The composite tank, according to claim 1, **characterised in that**, the fragment of the section (9) of the internal part (3) of the collar (4) is threaded.
4. The composite tank, according to claim 1, **characterised in that**, the internal part (3) between external surface (8) and the external section (9) has a molded collar (10).

Patentansprüche

1. Der Verbundbehälter, der ein Liner hat und mit ihm einen verbundenen Flansch zum Verbinden mit einem Ventilelement sowie einen Flansch aus zwei Teilen, der dafür charakteristisch ist, dass der Hals (2) von Liner (1) ein innerer Hals ist und er hat im Endteil der Öffnung Kerben (5) und eine Buchse (6) auf seinem Fragment der Innenöffnung und er hat einen Flansch (4) der einen Außenteil- (7) und Innenteil (3) hat, wobei der Innenteil (3) eine Außenfläche (8) zum Verbinden mit dem Hals (2) von Linear

(1) und ein Profilfragment (9) zum Verbinden mit dem Außenteil hat (7), der wiederum eine Innenfläche hat (9) die an das Fragment des Innenteiles anwächst (3) die ihre gegenseitige Bindung ermöglicht, und er hat auch einen Widerstand- Flansch (11) zum Stützen auf der Außenfläche von Liner (1) und Endung/ Aufsatz (13) zur Montage des Ventilelementes, wobei auf dem Flansch (4) und Linear (1) die Schichten (14) des Verbundmaterials sind.

2. Der Verbundbehälter nach dem Vorbehalt 1, der dafür charakteristisch ist, dass die Außenfläche (8) des Innenteiles (3) des Flansches (4) Vorsprünge (8) zum Verbinden mit dem Hals (2) von Liner (1) hat.
3. Der Verbundbehälter nach dem Vorbehalt 1, der charakteristisch dafür ist, dass der Fragment des Profils (9) des Innenteiles (3) des Flansches (4) ein Gewinde hat.
4. Der Verbundbehälter nach dem Vorbehalt 1, der charakteristisch dafür ist, dass der Innenteil (3) zwischen der Innenfläche (8) und dem Außenprofil (9) einen geformten Flansch (10) hat.

Revendications

1. Le bac de compostage ayant un liner et une bride pour assembler avec un élément de soupape ainsi qu'une bride de deux parties, **se caractérisant par** le col (2) du liner interne (1) possédant des fentes dans la partie extrême de l'ouverture (5), une douille (6) sur le fragment de l'ouverture interne, une bride (4) avec une partie externe (7) et interne (3) ayant une surface externe (8) pour relier avec le col (2) du liner (1), un fragment du profil (9) pour assembler avec une partie externe (7) ayant une surface interne (9) jointe au fragment de la partie interne (3) permettant leur assemblage commun, une bride d'assise (11) pour l'appui sur la surface externe du liner (1), un bout (13) pour le montage de l'élément de soupape, des couches (14) du matière de compost sur la bride (4) et le liner (1).
2. Le bac de compostage selon la spécification qui se **caractérise par** me fait que la surface externe (8) de la partie interne (3) de la bride (4) a des languettes (8) pour assembler le col (2) du liner (1).
3. Le bac de compostage selon la spécification 1 qui se **caractérise par le fait que** le fragment du profil (9) de la partie interne (3) de la bride (4) est équipé en filetage.
4. Le bac de compostage selon la spécification 1 qui se **caractérise par le fait que** la partie interne (3) entre la surface externe (8) et le profil externe (9) est

équipé en bride moulée (10).

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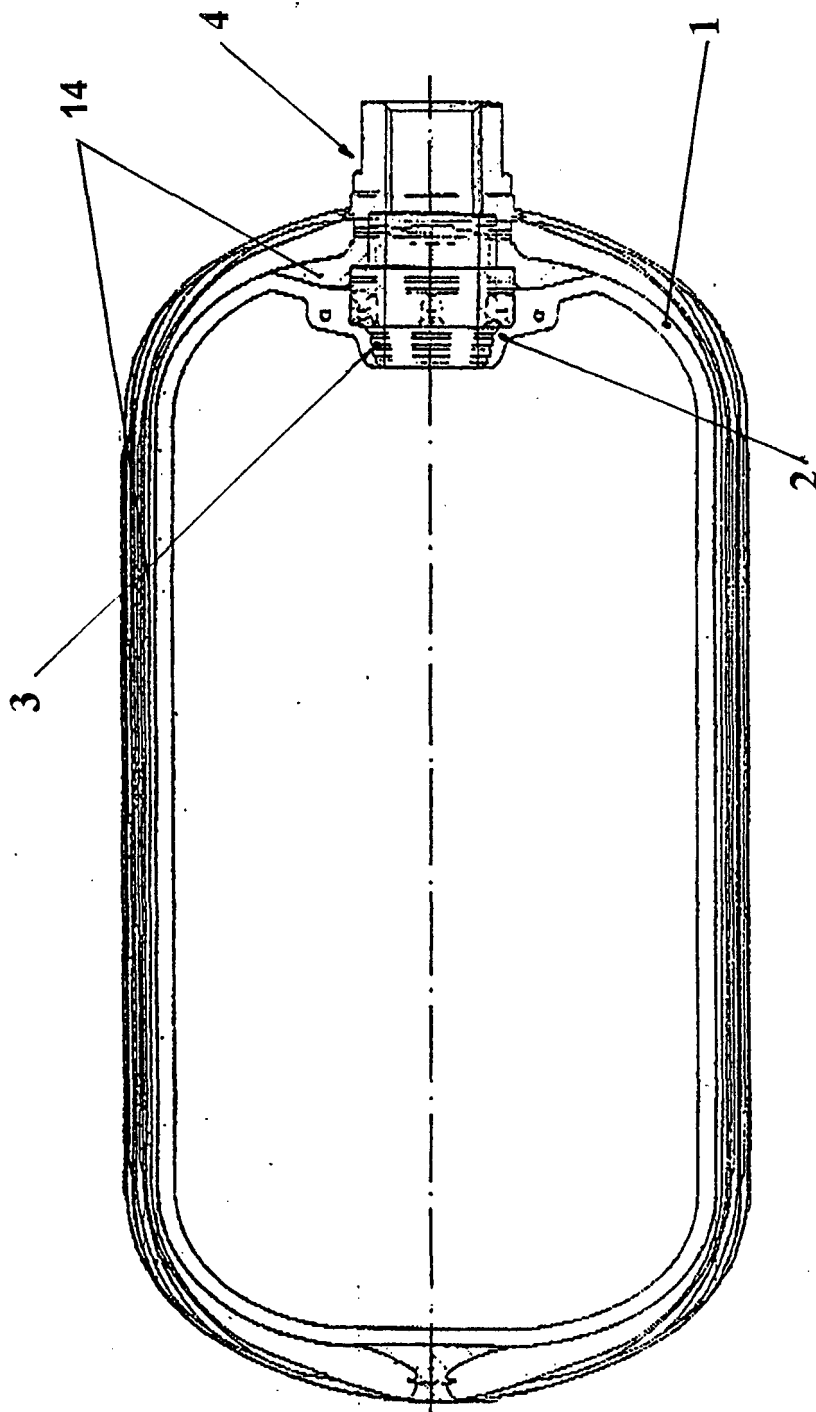


FIG.4

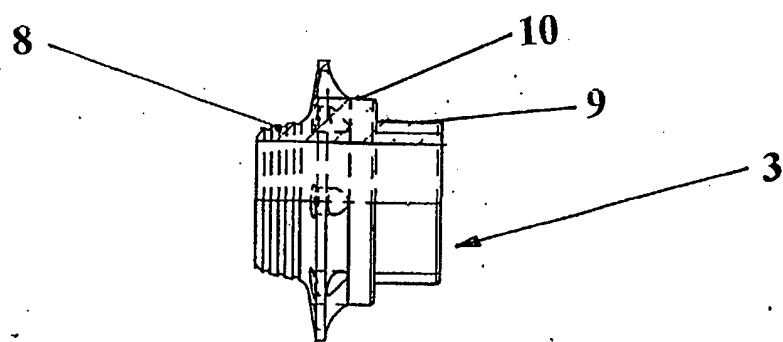


FIG.1

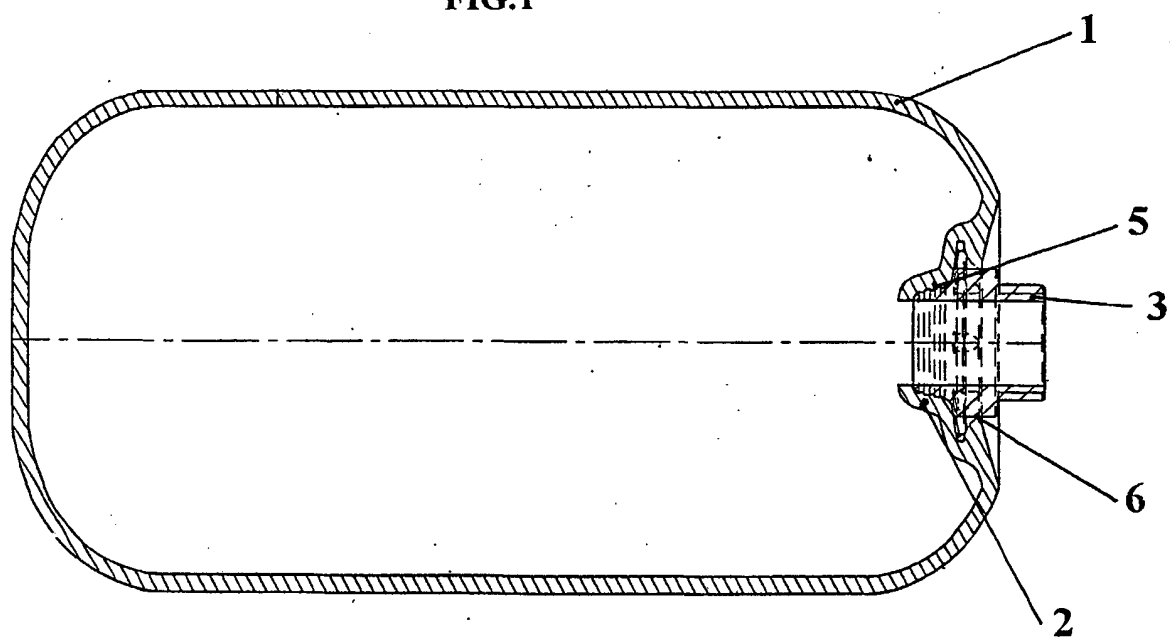


FIG.2

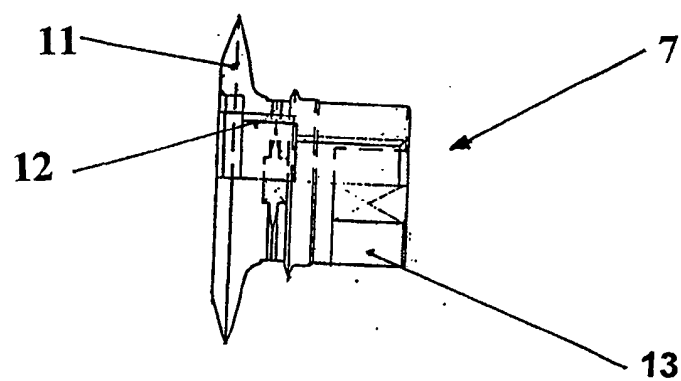


FIG.3

REFERENCES CITED IN THE DESCRIPTION

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