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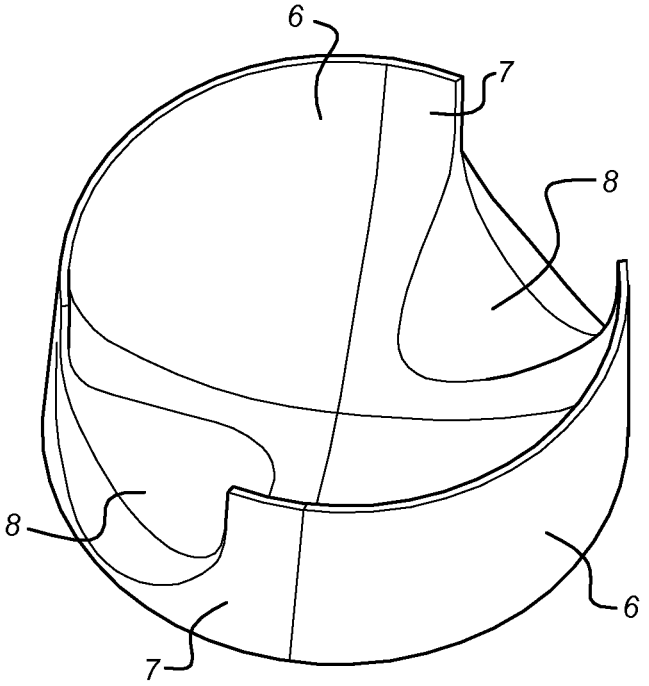
(54) **Inspection chamber and method for producing an inspection chamber with base segments**

(57) An inspection chamber comprises a plastic sleeve as well as a plastic base attached to the sleeve and provided with at least two openings to which a pipe can in each case be attached, which plastic base has a flow profile which extends between the openings, and is made up of at least two separate base parts which, at the edges thereof facing towards each other, are fixedly attached to one another by means of a joining technique, such as gluing, welding and/or pop rivets. The flow profile has a rotational symmetry about a central axis which is oriented in the longitudinal direction of the sleeve.

Fig 3



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Description

[0001] The invention relates to an inspection chamber, comprising a plastic sleeve as well as a plastic base attached to the sleeve and provided with at least two openings to which a pipe can in each case be attached, which plastic base has a flow profile which extends between the openings, and is made up of at least two separate base parts which, at the edges thereof facing towards each other, are fixedly attached to one another by means of a joining technique, such as gluing, welding and/or pop rivets.

[0002] The invention furthermore relates to a method for producing an inspection chamber with base segments, as well as a method for producing such base segments.

[0003] An inspection chamber of this type is known from NL C 1024276. The latter offers the possibility of making up different inspection chambers from a number of shafts and base parts. The length of the shafts can differ and can be chosen based on the installation depth of the inspection chamber. Furthermore, it is possible to choose from various base parts from which, depending on the number of base parts, a specific number of bases can be constructed, all of which have a different pattern with branches and associated flow profile.

[0004] With this known inspection chamber, a specific number of predetermined bases can be produced with the aid of the base parts. In this case, it is possible that none of these specific bases can be accurately attached to the pipes in a concrete situation. For this reason, a separate base or base part is required for every situation. Furthermore, a relatively large number of base parts of this type have to be kept in stock.

[0005] It is therefore an object of the invention to provide an inspection chamber which offers a large number of different arbitrary bases using a limited number of varying base parts.

[0006] This object is achieved by an inspection chamber whose flow profile has a rotational symmetry about a central axis which is transverse to the openings. As a result of the rotational symmetry of the flow profile, it is possible to divide base parts into base part portions which form a specific desired base in combination with other base parts when rearranged around the central axis. The base parts, each of which has a flow profile, are preferably arranged next to one another in the direction around the central axis and can be assembled in many different ways.

[0007] This offers the significant advantage that a relatively large number of bases can be produced using a limited stock of different base parts. Preferably, only two types of base parts are kept in stock, one with an opening to which a pipe can be attached and one without an opening. Preferably, a base then comprises four base parts, each of which covers 90° in the peripheral direction.

[0008] Preferably, the flow profile is hollow on that side of the base which contains the openings. Preferably, the flow profile, viewed in a cross-sectional plane through the central axis, along the periphery thereof, runs substantially in the longitudinal direction of the sleeve. Preferably, the flow profile, viewed in a cross-sectional plane through the central axis, near the central axis, runs substantially at right angles to the longitudinal direction of the sleeve. This improves the through-flow through the inspection chamber.

[0009] In the case of the inspection chamber according to the invention, it is also possible to adjust the diameter. This can be achieved if the base comprises central base parts as well as base parts which form a ring, which ring-forming base parts adjoin the outer periphery of the central base parts, to the outer periphery of which ring-forming base parts the sleeve is attached, and which ring-forming base parts are profiled in such a manner that their flow profile forms a continuation of the flow profile of the central base parts.

[0010] The shaft may be a double-walled shaft with a smooth inner tube and a ribbed outer tube attached to the inner tube. Furthermore, a sleeve may be provided, to which the shaft and the branches can be attached and inside which sleeve the assembled base parts can be accommodated.

[0011] In order to simplify assembly of the base and in order to increase the strength and tightness thereof, the base may comprise an end partition or end ring on which the assembled base parts are supported. The end partition/end ring is preferably attached to one end of the sleeve, while the other end of the sleeve is attached to the shaft.

[0012] In an embodiment of the inspection chamber, the base is provided with ribs at the side facing away from the flow profile for strengthening the base. Preferably the strengthening ribs are mutually arranged at predetermined angles so that the strengthening ribs may serve as reference for dividing base parts in base part portions.

[0013] Preferably, an inspection chamber is produced by means of a method comprising the following steps:

- providing at least two base parts, which base parts together can form a complete base,
- arranging the base parts next to one another in the peripheral direction,
- attaching the base parts to one another,
- dividing at least one of the base parts into base part portions along a radial section,
- arranging the base part portions differently,
- connecting the base part portions and other base parts together according to the different arrangement,
- exchanging base part portions when arranging them differently in the peripheral direction,
- placing at least one base part portion between two other base parts,
- exchanging base part portions in the peripheral direction,

- placing at least one base part portion between two other base parts.

This method results in an inspection chamber having a specific desired base in which the openings to which a pipe can be attached are located at the desired position. It will be clear that, if desired, it is possible to make a suitable selection from the steps of the method.

The present invention further relates to a method for producing base parts for a plastic base provided with at least two openings to which a pipe can in each case be attached, which plastic base has a flow profile which extends between the openings, and in which the flow profile has a rotational symmetry about a central axis, comprising the steps of;

- producing at least two base parts which are mutually joined by connection members at the circumference of the base and/or at the side of the base facing away from the flow profile,
- removing the connection members.

[0014] This method has the advantage that more separate base parts that match can be produced simultaneously, and that the base parts mutually fit well after removal of the connection members, in which burrs which possibly are left behind after removal do not affect the mutual fit of the base parts.

[0015] The invention will be explained in more detail below with reference to a number of exemplary embodiments illustrated in the figures, in which:

Fig. 1 shows a side view in cross section of an embodiment of the inspection chamber according to the invention;

Fig. 2 shows a side view in cross section of an assembly comprising a base and sleeve;

Fig. 3 shows a base in perspective view;

Fig. 4 shows a top view of a possible arrangement of the base parts, with associated pipe sections;

Figs. 5a-5d show a top view of further variants of arranging the base parts;

Figs. 6a-6d show a top view of arrangements of the central base parts and ring-forming base parts.

Figs. 7a-7d show base parts in different views during a method for producing base parts.

[0016] The inspection chamber illustrated in Fig. 1 comprises a shaft 1, to which a base 2 is attached. The base 2 has a flow profile 3. This flow profile 3 is rotationally symmetrical about the central axis 20. The base 2 has two branches 4, 5 into which the flow profile 3 opens.

[0017] The shaft 1 and the base 2 are attached to one another by means of a sleeve designated in its entirety by reference numeral 14. This sleeve runs around the shaft 1 in a tight-fitting manner, in particular around the profiled outer part thereof. The interior of the shaft 1 has a smooth wall 16.

[0018] At its top side, the sleeve 14 has an outwardly deflecting edge 17 which facilitates the introduction of the shaft 1. At its bottom side, the sleeve 14 has a collar 18 which rests on the base 2. The shaft 1 rests on the shoulder 22 in the interior of the sleeve 14. Attached in the shaft 1 is a top piece 13 to which a manhole cover (not illustrated) is attached. The attachment is such that the cover can be fitted at street level.

[0019] Fig. 2 shows the base 2 and the sleeve 14 from Fig. 1 in a side view in cross section in more detail. In addition, it also shows variants of the flow profiles 3, 3' and 3". All these flow profiles 3, 3' and 3" are rotationally symmetrical about the central axis 20.

[0020] Fig. 3 shows a base according to the invention in perspective. The base in each case comprises two base parts 6 and 7. The base has a rotationally symmetrical flow profile between the openings 8.

[0021] Fig. 4 shows a top view of a base made up from the base parts 6 and 7. The base parts 7 may have different openings 8, as a result of which pipes 10 of different diameters can be attached to the base. In this figure, the base part 6 is divided into base part portions 11 and 12, as a result of which a specific base is produced using the illustrated arrangement. In this example, the base part 11 covers approximately 80° of the base part 6 illustrated in Fig. 3, the base part 12 covering the remaining 10° thereof.

[0022] Figs. 5a to 5d show four different variants of bases composed of two different base parts. In this case, the parts in question are the base parts 6 which have a rotationally symmetrical flow profile and base parts 7 which have a rotationally symmetrical flow profile and an opening 8. Fig. 5d shows a base comprising base part portions 11 and 12. These base part portions 11 and 12 have been produced by dividing a base part 6, which may be carried out along a radial section, as is illustrated in Fig. 5d. In this way, a specific base is obtained. By dividing the base part 6 differently into base part portions 11 and 12, it is essentially possible to make up any desired type of base.

[0023] The variants in Figs. 6a to 6d show bases made up from the base parts 6 and 7. In order to increase the diameter of the base, rings have been laid around the latter, in particular consisting of the ring parts 11, 12. A flow profile in a base part continues in a ring part 12. By means of these ring parts 11, 12, the diameter of the inspection chamber according to the invention can be increased in a simple manner. In the embodiment illustrated in Fig. 6d, two base parts 8 are designed as sectors of approximately 70°, while a sector of approximately 40° of a base part 6 is used to complete the base.

[0024] In Figs 7a-7d base parts 6, 7 are shown in different views. Initially the base parts 6, 7 are mutually joined by connection members 21, 23. After manufacturing of the base parts 6, 7, the connection members 21, 23 are removed. The connection members 21, 23 are placed such that after removal of the connection members 21, 23, the base parts 6, 7 can be close-fitted to each other. The connection members 21 are provided

with radial protruding flanges 24. These flanges are joined in pairs by a bridge 25, such that a slot 26 is enclosed. By cutting or sawing through the flanges 24 according to their longitudinal direction, the base parts 6, 7 are separated, without burrs left on opposing surfaces such that the base parts 6, 7 can be close-fitted to each other.

[0025] Fig. 7d shows a bottom view of the base parts 6, 7. At the side facing away from the flow profile 3, the base parts 6, 7 are provided with strengthening ribs 22 to strengthen the base and to support the flow profile 3. The strengthening ribs 22 are placed at pre-defined angles of 15° to each other to serve as reference when dividing base parts 6, 7 into base part portions 11, 12 in Fig. 4. The base parts 6, 7 may be sawn or cut through, such that base part portions 11, 12 are obtained with a desired angle.

Claims

1. Inspection chamber, comprising a plastic sleeve as well as a plastic base attached to the sleeve and provided with at least two openings to which a pipe can in each case be attached, which plastic base has a flow profile which extends between the openings, and is made up of at least two separate base parts which, at the edges thereof facing towards each other, are fixedly attached to one another by means of a joining technique, such as gluing, welding and/or pop rivets, **characterized in that** the flow profile (3) has a rotational symmetry about a central axis (20) which is oriented in the longitudinal direction of the sleeve (14).

2. Inspection chamber according to Claim 1, in which the flow profile (3) is hollow on that side of the base (2) which contains the openings (8).

3. Inspection chamber according to one of the preceding claims, in which the flow profile (3), viewed in a cross-sectional plane through the central axis (20), along the periphery thereof, is oriented substantially in the longitudinal direction of the sleeve (14).

4. Inspection chamber according to one of the preceding claims, in which the flow profile (3), viewed in cross-sectional plane through the centre axis (20), near the central axis (20), runs substantially at right angles to the longitudinal direction of the sleeve (14).

5. Inspection chamber according to one of the preceding claims, in which the base (2) comprises central base parts (6, 7) as well as base parts which form a ring (11, 12), which ring-forming base parts adjoin the outer periphery of the central base parts, to the outer periphery of which ring-forming base parts the sleeve (14) is attached, and which ring-forming base parts are profiled in such a manner that their flow profile forms a continuation of the flow profile (8) of the central base parts.

6. Inspection chamber according to one of the preceding claims, in which a shaft (1) is provided which is attached to the sleeve (14).

7. Inspection chamber according to Claim 6, in which the shaft (1) is double-walled with a smooth inner tube (16) and a ribbed outer tube (15) attached to the inner tube.

8. Inspection chamber according to one of the preceding claims, in which the base comprises an end partition or end ring on which the assembled base parts are supported.

9. Inspection chamber according to one of the preceding claims, in which openings (8) are provided with connections.

10. Inspection chamber according to one of the preceding claims, in which the base (2) is provided with strengthening ribs (22) at the side facing away from the flow profile (3).

11. Inspection chamber according to claim 10, in which the strengthening ribs (22) are mutually arranged at pre-defined angles.

12. Method for producing an inspection chamber, comprising a plastic sleeve (14) as well as a plastic base (2) attached to the sleeve and provided with at least two openings (8) to which a pipe (10) can in each case be attached, which plastic base has a flow profile (3) which extends between the openings, and is made up of at least two separate base parts (6, 7) which, at the edges thereof facing towards each other, are fixedly attached to one another by means of a joining technique, such as gluing, welding and/or pop rivets, and in which the flow profile has a rotational symmetry about a central axis (20) which is oriented in the longitudinal direction of the sleeve (14), comprising the steps of:

    - providing at least two base parts, which base parts together can form a complete base,
    - arranging the base parts next to one another in the peripheral direction,
    - attaching the base parts to one another.

13. Method according to Claim 12, comprising the steps of:

    - dividing at least one of the base parts into base part portions (11, 12) along a radial section,
    - arranging the base part portions differently,

- connecting the base part portions and other base parts together according to the different arrangement.

14. Method according to Claim 13, comprising the step of:

- exchanging base part portions when arranging them differently in the peripheral direction.

15. Method according to Claim 13, comprising the step of:

- placing at least one base part portion between two other base parts.

16. Method according to Claim 13, comprising the steps of:

- exchanging base part portions in the peripheral direction,
- placing at least one base part portion between two other base parts.

17. Method for producing base parts (6, 7) for a plastic base (2) provided with at least two openings (8) to which a pipe (10) can in each case be attached, which plastic base has a flow profile (3) which extends between the openings, and in which the flow profile has a rotational symmetry about a central axis (20), comprising the steps of;

- producing at least two base parts (6, 7) which are mutually joined by connection members (21, 23) at the circumference of the base (2) and/or at the side of the base (2) facing away from the flow profile (3),
- removing the connection members (21, 23).

18. Set for an inspection chamber according to one of the preceding claims, in which the set comprises at least two different base parts (6, 7), one base part of which being provided with an opening (8).

19. Set according to claim 18, in which the base parts are mutually joined by connection members (21-26).

Fig 1

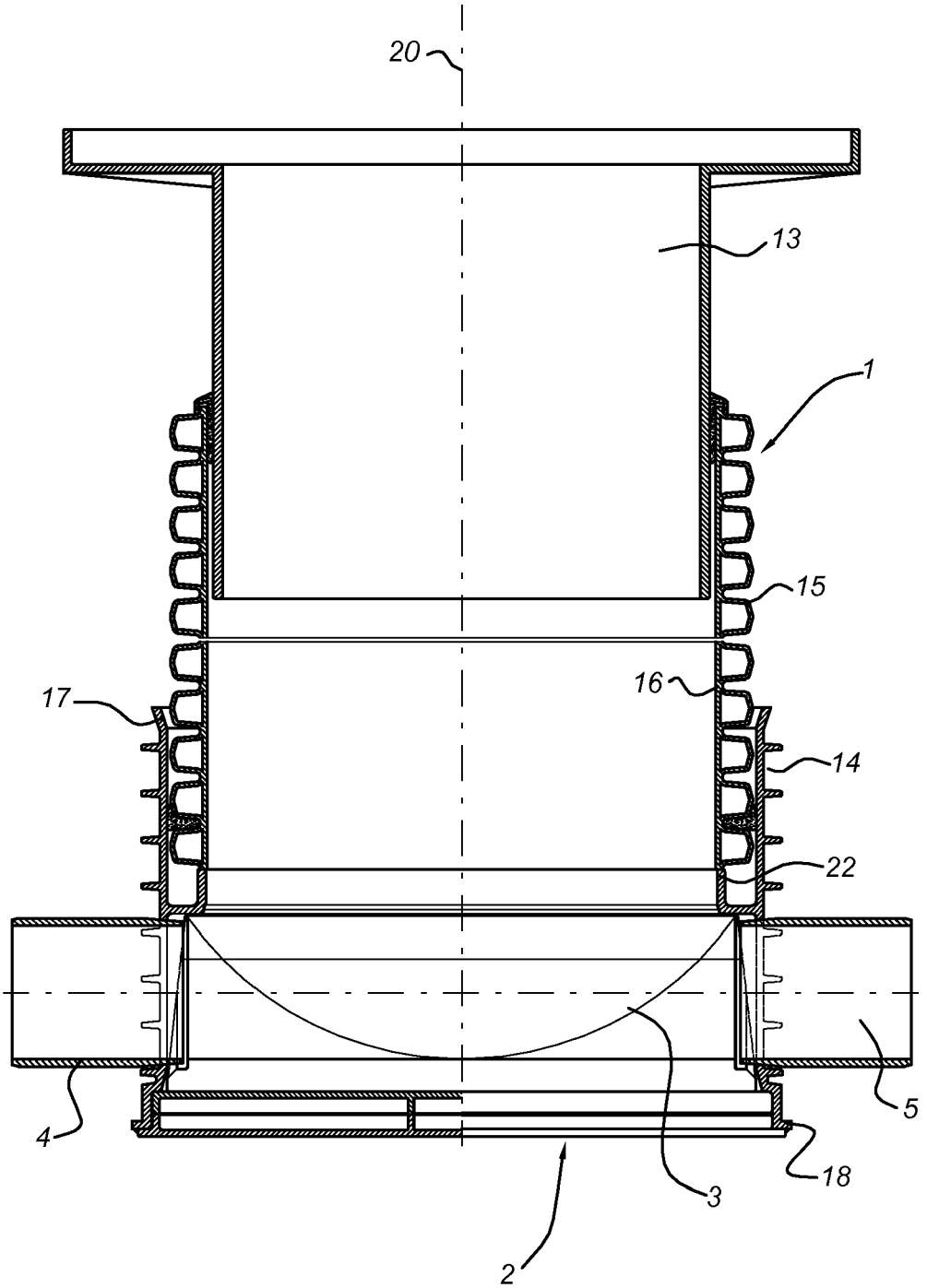


Fig 2

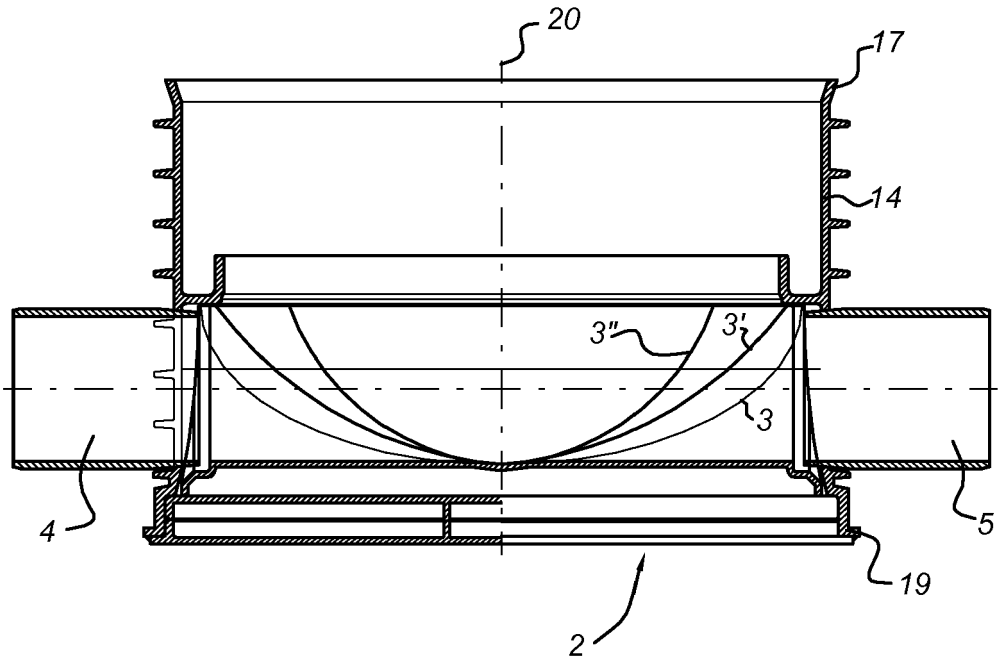


Fig 3

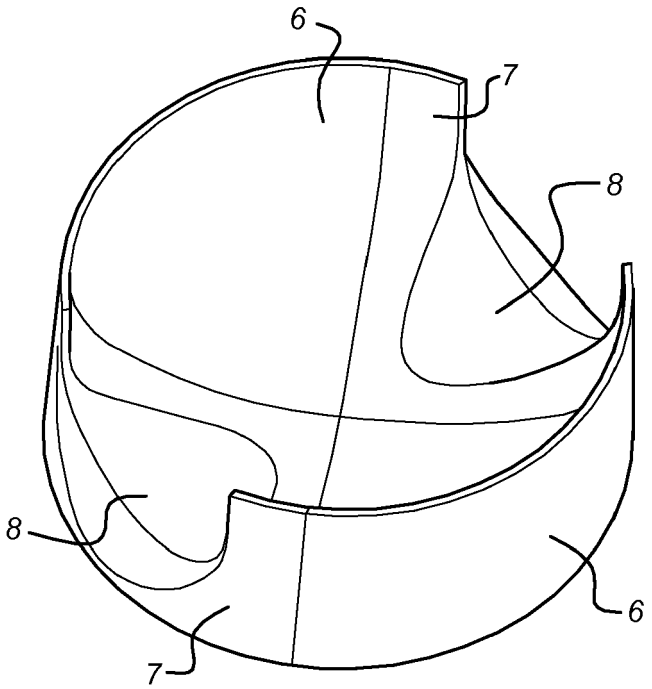


Fig 4

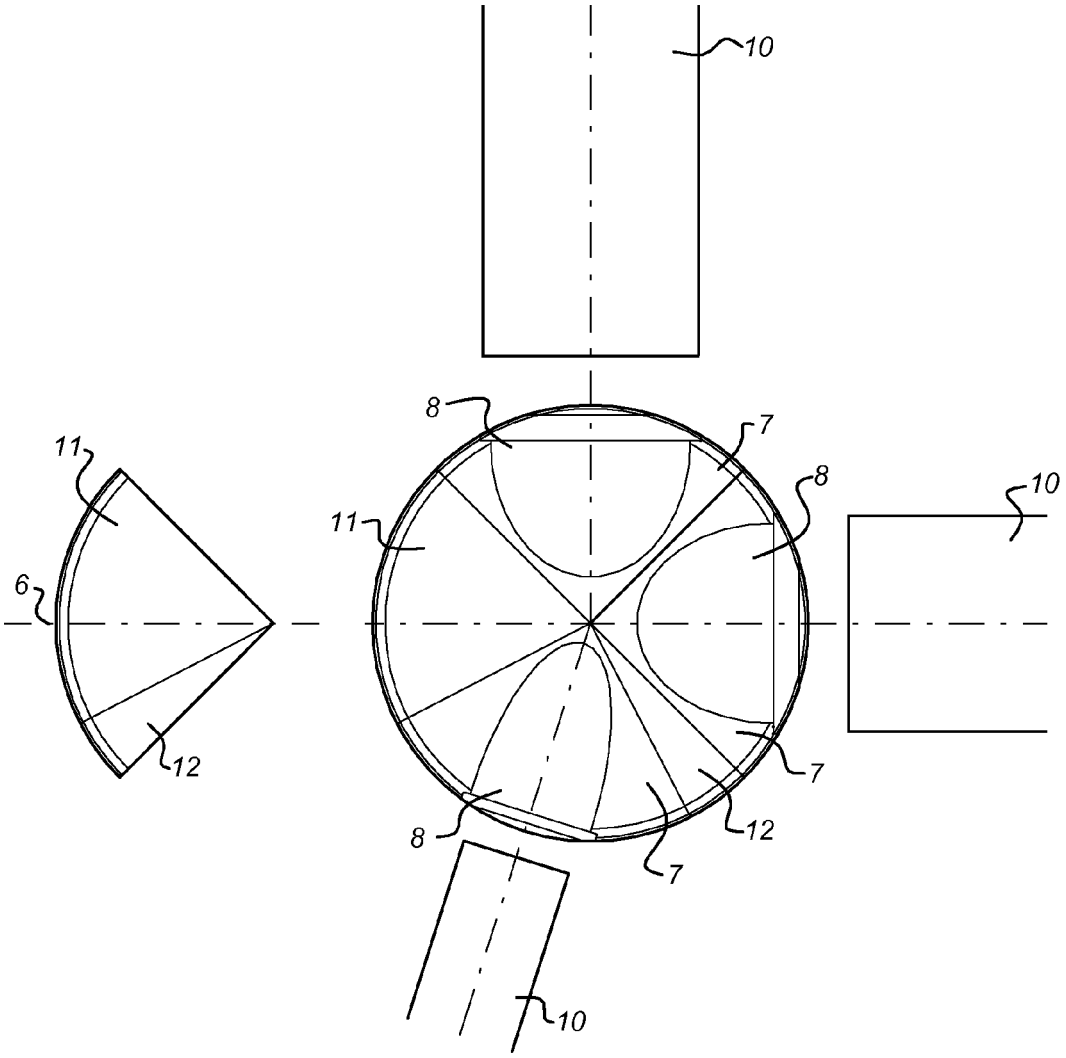


Fig 5a

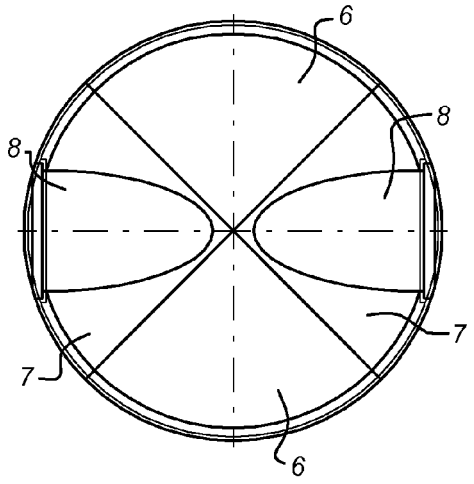


Fig 5b

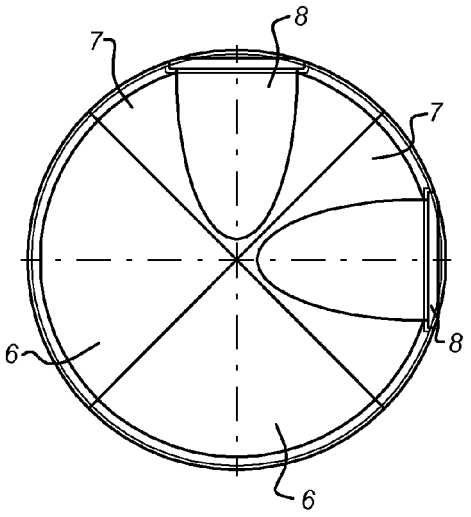


Fig 5c

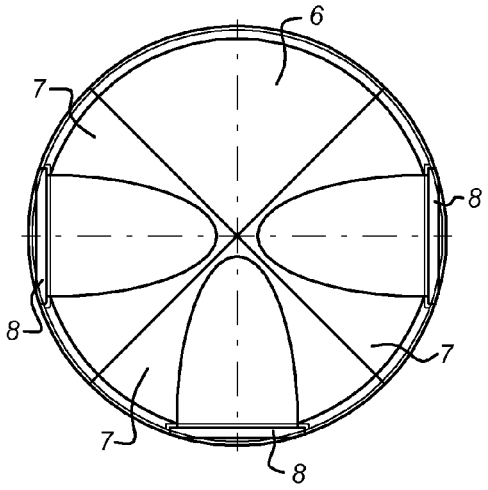


Fig 5d

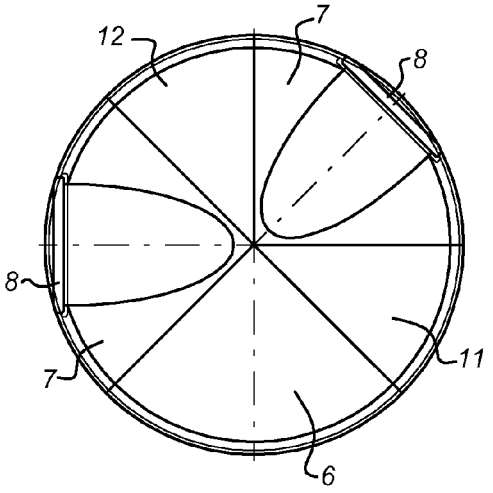


Fig 6a

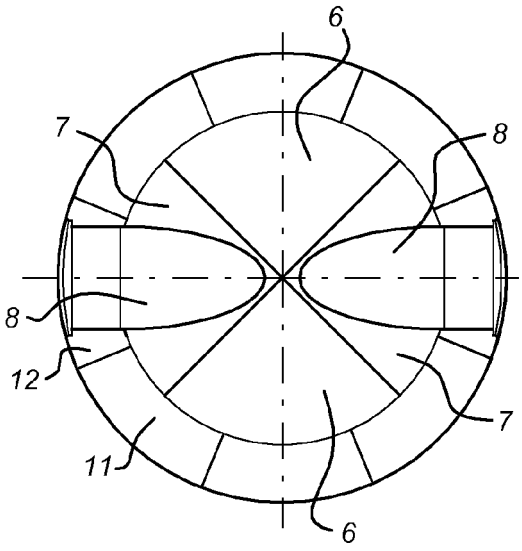


Fig 6b

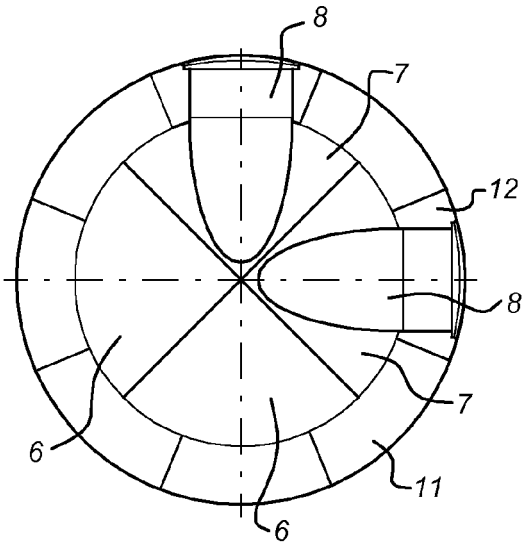


Fig 6c

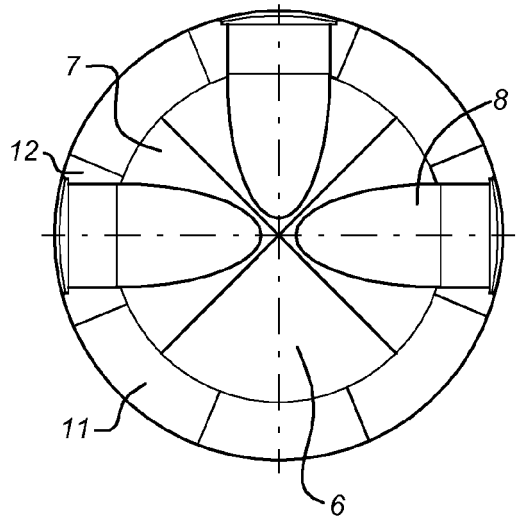


Fig 6d

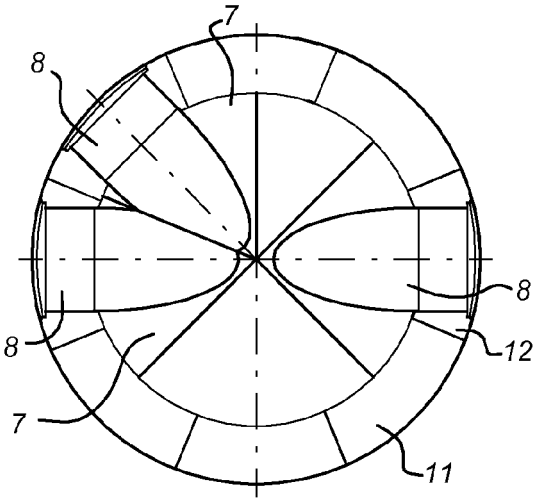


Fig 7a

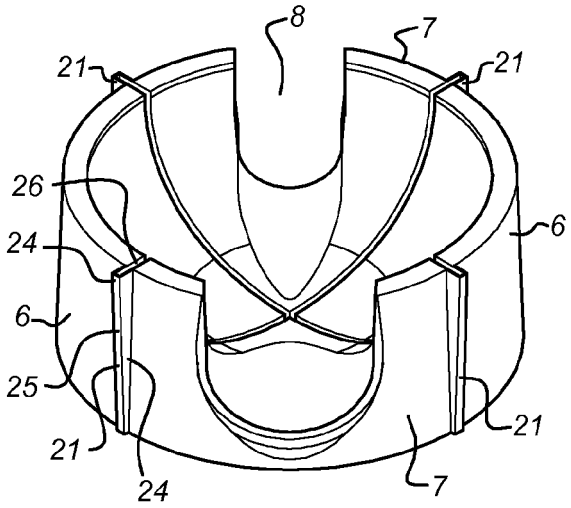


Fig 7b

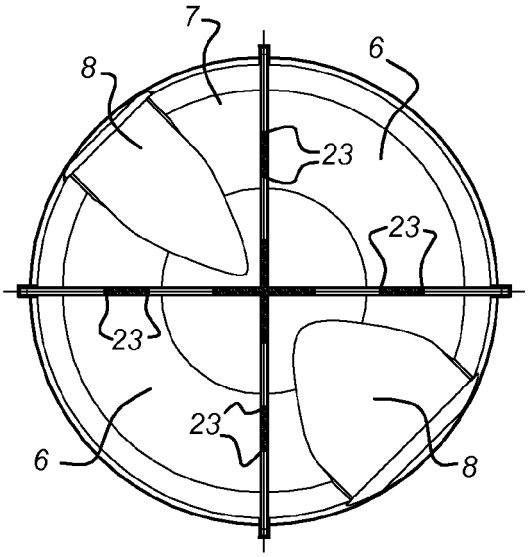


Fig 7c

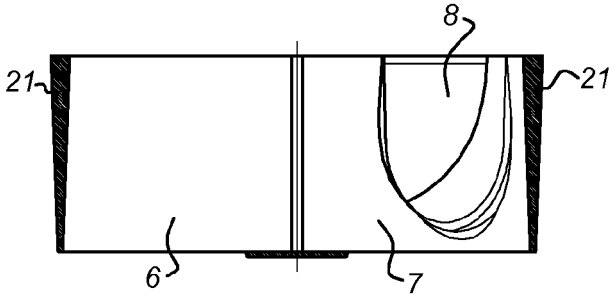
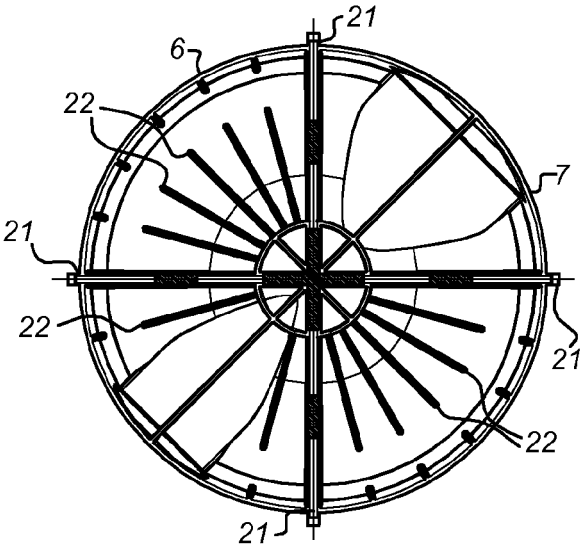


Fig 7d



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EUROPEAN SEARCH REPORT

Application Number
EP 07 12 3963

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	GB 1 471 862 A (MOLYNEUX LTD) 27 April 1977 (1977-04-27) * page 2, line 94 - page 4, line 54; figures *	1-4,6-9, 12,17-19	INV. E03F5/02
X	GB 2 080 355 A (GEKATON ABWASSER KORROSIONS SC) 3 February 1982 (1982-02-03) * the whole document *	1-19	
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D,A	NL 1 024 276 C2 (PIPELIFE NEDERLAND BV [NL]) 16 March 2005 (2005-03-16) * the whole document *	1,2,5-8, 12,17,18	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 April 2008	Van Bost, Sonia

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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