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(71) Applicant: **PellasX Spółka z o.o. Spółka
Komandytowa**
64-920 Pila (PL)

(72) Inventor: **Brzeski, Michal**
64-920 Pila (PL)

(74) Representative: **Golebniak, Andrzej**
Kancelaria Patentowa
A.J. Golebniakowie
ul. Partyzancka 7
PL-61-495 Poznan (PL)

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(54) **COVER OF A ROTARY COMBUSTION CHAMBER IN A PELLET BURNER**

(57) The subject of the invention is a cover of the combustion chamber in the pellets burner, having a housing (1) with an inlet whole (2) for pellets and rotary combustion chamber (3) surrounded with a cylindrical cover (4), connected with the housing, in addition, a space between the combustion chamber (3) and the cover (4) is a ring-shaped duct supplying air into the combustion chamber circumferentially placed on it. The ring-shaped duct (5) supplying air into the combustion chamber is

closed in front of the cover (4) with its flange ring (6) directed towards inside of the chamber and a sealing ring operating together with it, connected permanently with the outer surface of the combustion chamber.

According to the invention, a rear part (8) of the cover (4) is permanently connected with a compensatory plate (9), a surface of which is perpendicular to the longitudinal axis of the cover (4) whereas, the compensatory plate (9) is elastically connected with the burner housing (1).

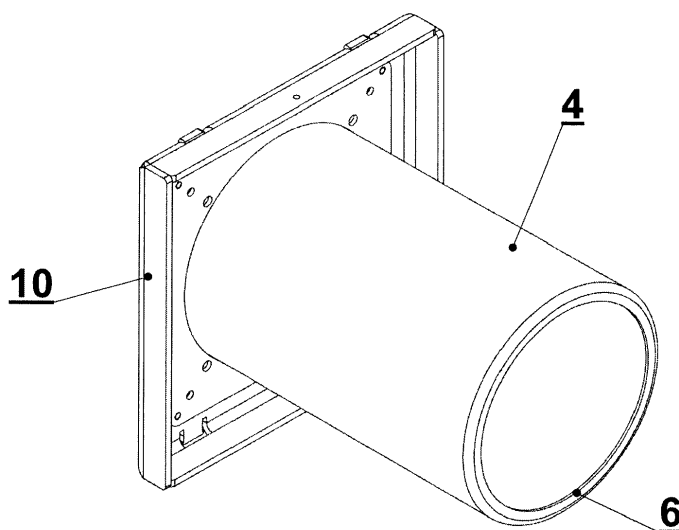


Fig. 4

Description

[0001] The subject of the invention is a cover of the combustion chamber in a pellet burner which can be applied both in households and other communal facilities objects, and store or production rooms.

[0002] Pellets and agropellets are much appreciated for their high comfort of use and therefore they are successfully used as an effective fuel for individual boilers of central heating systems, stoves, fireplaces and other heating devices designed for heating buildings and rooms, and equipped with a pellet container, a dosing device, and a feeder (conveyor). The burners designed for burning pellets, made of heat-resistant, acid-resistant, and stainless materials, are mounted in the doors of heating boilers of any type, i.e. the oil, gas or solid fuel ones.

[0003] There is known an aeration mechanism of the combustion chamber given in the Polish application description P.409186 (A1) and shown in a pellet burner presented in the drawing **Pos. 1a** and **Pos. 1b**, in addition, it relates to the burner comprising a steel body (1) which is a fixed housing with an inlet hole (2) for pellets and rotary combustion chamber (3) surrounded with a cylindrical, fixed cover, permanently connected with the body (1). In addition, a space between the combustion chamber (3) and the cover (4) is a ring-shaped duct (5) supplying air to the combustion chamber (3) throughout holes and/ or inflating nozzles (6) placed on its circumference. In this solution the rotary combustion chamber has several longitudinal diaphragms (7) having a form of shutters, swingably mounted on the outer surface of the combustion chamber and obscuring the inlet holes (6) of air, operating together with a fixed control ring (9) situated perpendicularly to the longitudinal axis of the chamber around its rear part, in addition, an inner surface of the control ring (9) functions as a cam pressing the diaphragms to the combustion chamber surface or releasing them in accordance with a sequence of the preset phases.

[0004] The combustion chamber has a form of a prism or a truncated pyramid, the base of which is a regular polygon.

[0005] The diaphragms are arranged in twos on either side wall of the combustion chamber.

[0006] The inner surface (10) of the control ring (9) has a shape of arcs of two radius connected with each other by short, straight segments.

[0007] The ring-shaped duct (5) supplying air to the combustion chamber (3) is closed in front of the cover (4) by its flange ring and a sealing ring operating together with it, which is permanently connected with the outer surface of the combustion chamber (3).

[0008] A certain disadvantage of this solution consist in the fact that when the material is heated up to a very high temperature of 700 - 800° C the evident thermal expansion of the combustion chamber inside the burner occurs, which may result in some friction and seizure events, followed by a possible overloading and stopping

a motor.

[0009] The subject of the invention is a cover of the combustion chamber in a pellet burner, having a housing with an inlet hole for pellets and a rotary combustion chamber surrounded by a cylindrical cover connected with the housing, in addition, a space between the combustion chamber and the cover is a ring-shaped duct supplying air to the combustion chamber throughout inlet holes and/or nozzles located on its circumference, the ring-shaped duct supplying air to the combustion chamber is closed in front of the cover by its flange ring, directed towards the inside, and a sealing ring operating together with it, permanently connected with the outer surface of the combustion chamber. According to the model, a rear part of the cover is permanently connected with a compensatory plate, a surface of which is perpendicular to the longitudinal axis of the cover, in addition, the compensatory plate is elastically connected with a seat of the burner housing. It is advantageous that the compensatory plate has mandrels, which are slidably mounted in holes of the burner housing seat and they are ended with heads. There are compensatory springs placed on these mandrels.

[0010] Thanks to the solution according to the invention, a simple solution improving the work of the pellet burner has been developed, especially useful in case of burners equipped with a rotary combustion chamber - preventing formation of thermal stresses, seizures, and friction during the burner's operation.

[0011] The subject of the invention presented in an exemplary embodiment is shown in a schematic drawing, Fig. 1 of which is a side view of the pellet burner; Fig. 2 shows a side view of the combustion chamber cover; Fig. 3 shows a longitudinal section of the combustion chamber cover; Fig. 5 shows a front part with a partial perspective view of the pellet burner; Fig. 6 shows a detail of the elastically mounted cover in the burner's off-position; Fig. 7 shows a detail of the elastically mounted cover in the burner's on-position.

[0012] A cover of the combustion chamber in a pellet burner, according to the invention, is designed for a burner comprising a housing **1** with an inlet hole for pellets **2** and a rotary combustion chamber **3** surrounded by a cylindrical cover **4** connected to the housing **1**, in addition, a space between the combustion chamber **3** and the cover **4** is a ring-shaped duct **5** supplying air to the inside of the combustion chamber **3** throughout inlet holes and/or nozzles placed on its circumference (not shown in the drawing).

[0013] The ring-shaped duct **5** supplying air to the combustion chamber **3** is closed in front of the cover **4** with its flange ring **6** directed towards inside of the chamber and operating together with a sealing ring **7** permanently connected with the outer surface of the combustion chamber **3**. A rear part of the cover **4** is permanently connected with the compensatory plate **9** the surface of which is perpendicular to the longitudinal axis of the cover, whereas the compensatory plate **9** is elastically con-

nected with the housing seat **10** of the burner housing **1**. For ensuring an elastic connection the compensatory plate **9** is provided with mandrels **11** slidably mounted in holes **12** of the seat **10** of the burner housing **1** and ended with heads **13**. There are compensatory springs **14** 5 placed (supported) on these mandrels **11**.

[0014] As a result of such mounting, the cover **4** can move along the axis in a reciprocating motion. When the temperature reaches the value of 700° C during the pellet burner's operation, the combustion chamber **3** is sub-ject 10 to the action of deforming forces which cause the thermal expansion of the chamber. The combustion chamber **3** expands and the sealing ring **7** placed on its circumference presses on the ring-shaped flange **6** of the cover **4** making it move forwards. The thermal contraction of the 15 combustion chamber **3** during the cooling-down process makes the sealing ring **7** move backwards which - releasing pressure in the ring-shaped flange **6** - makes the movement of the cover **4** backwards possible due to the 20 action of the compensatory springs **14**.

Claims

1. A cover of the combustion chamber in a pellet burner, 25 having a housing with an inlet hole for pellets and a rotary combustion chamber surrounded with a cylindrical cover, connected with the housing, in addition, a space between the combustion chamber and the cover is a ring-shaped duct supplying air to the combustion chamber throughout holes and/or nozzles 30 placed on its circumference, and the ring-shaped duct supplying air to the combustion chamber is closed in front by a flange ring directed inwards the chamber and a sealing ring operating together with 35 it permanently connected with the outer surface of the combustion chamber, **characterised in that** a rear part (**8**) of the cover (**4**) is permanently connected with a compensatory plate (**9**), a surface of which is perpendicular to a longitudinal axis of the cover, 40 whereas the compensatory plate (**9**) is elastically connected with the burner housing (**1**);
2. The cover according to claim 1, **characterised in that** the compensatory plate (**9**) has mandrels (**11**) 45 slidably fitted in the holes (**12**) of a seat (**10**) of the burner housing (**1**) and ended with heads (**13**) and supporting compensatory springs (**14**).

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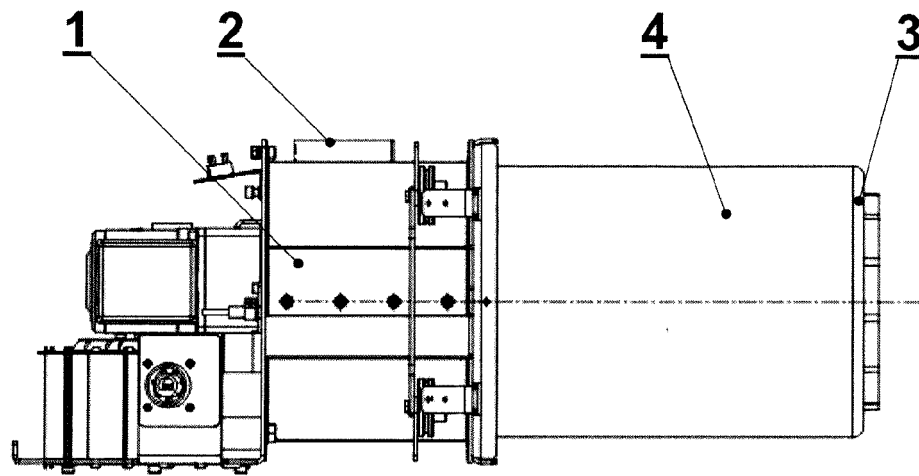


Fig. 1

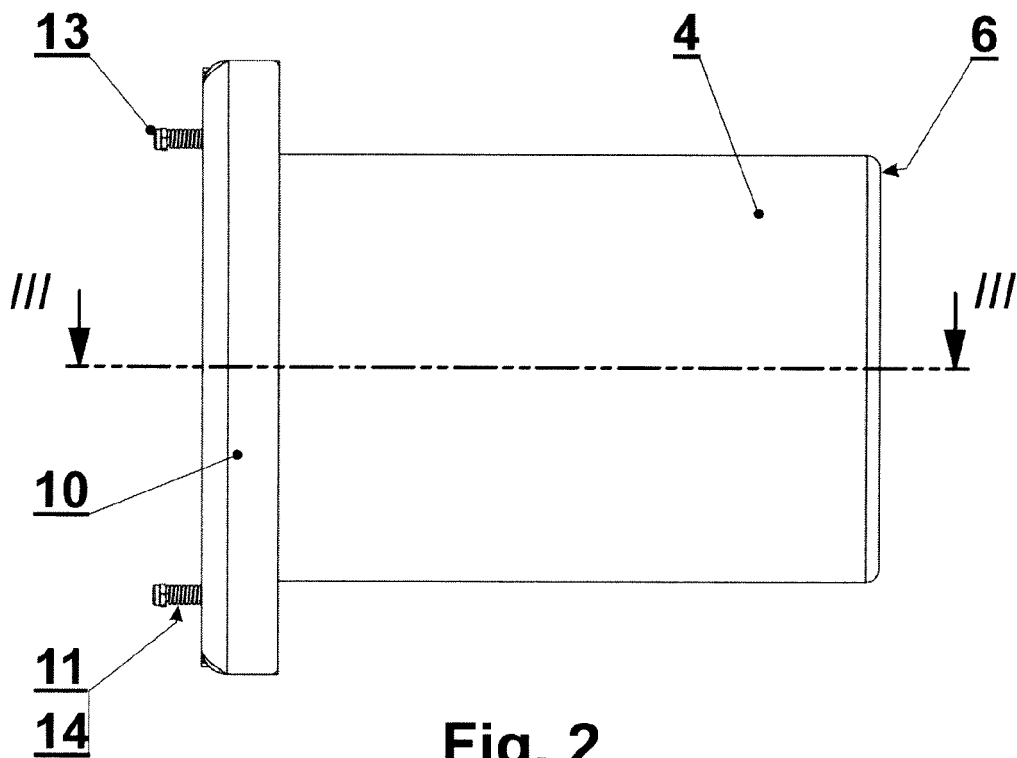


Fig. 2

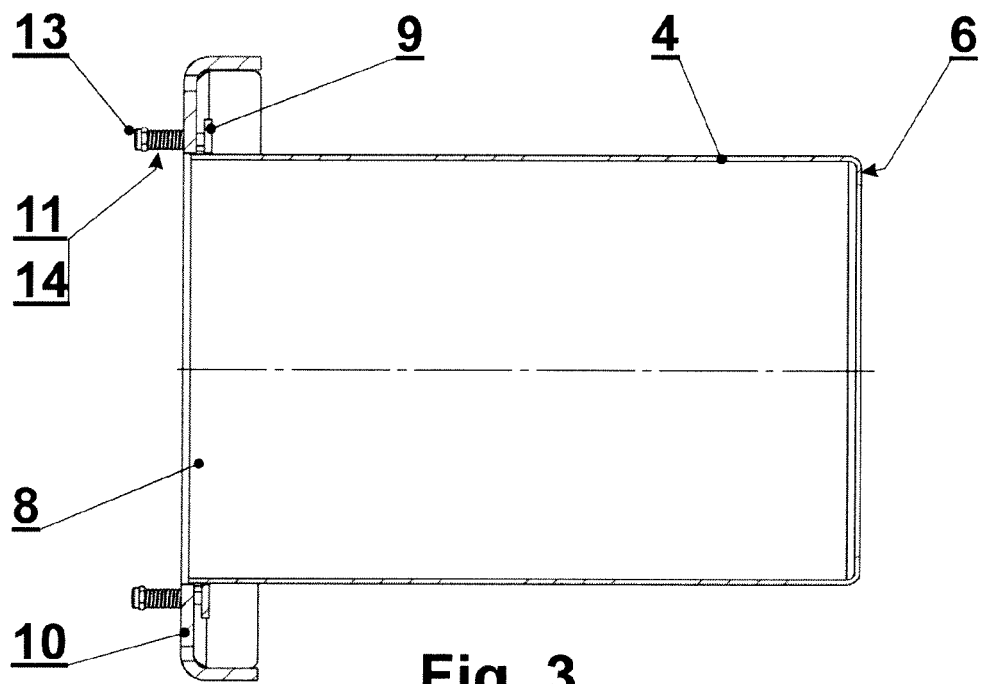


Fig. 3

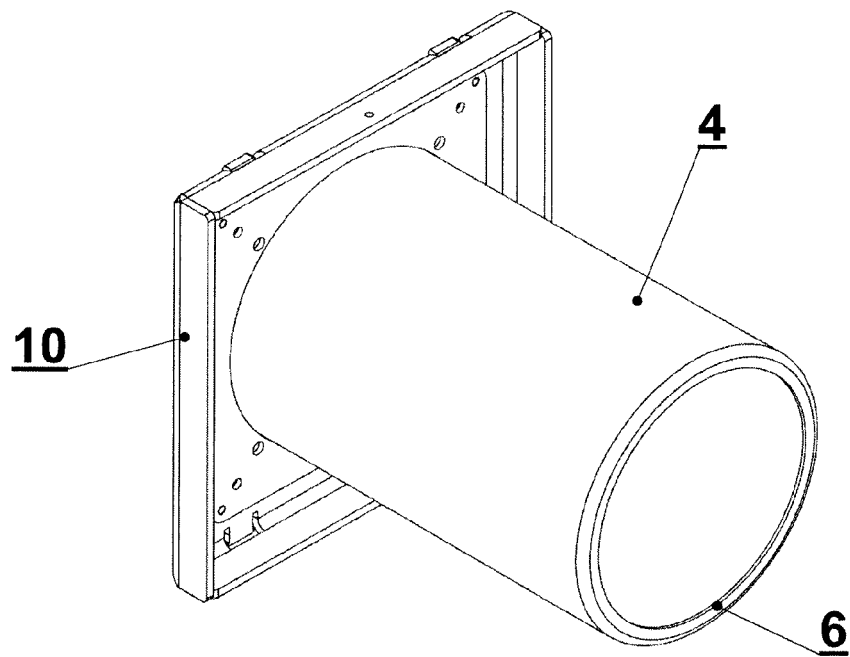


Fig. 4

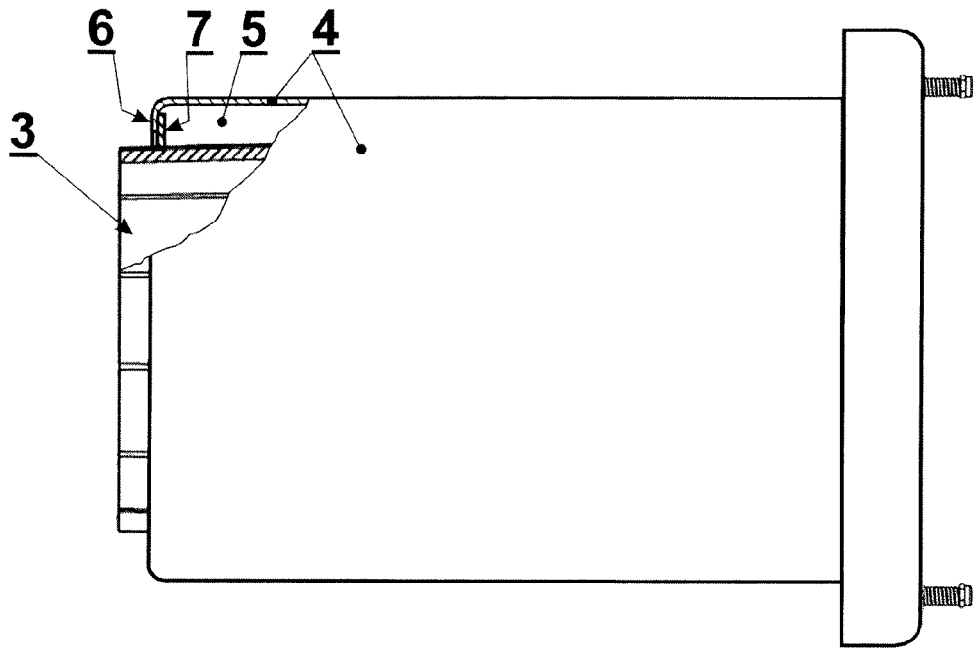


Fig. 5

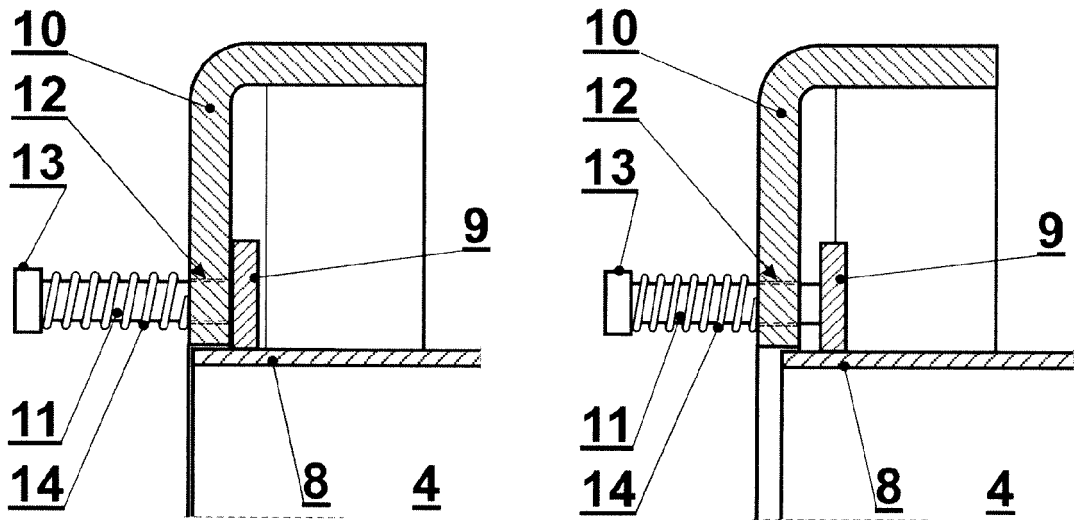
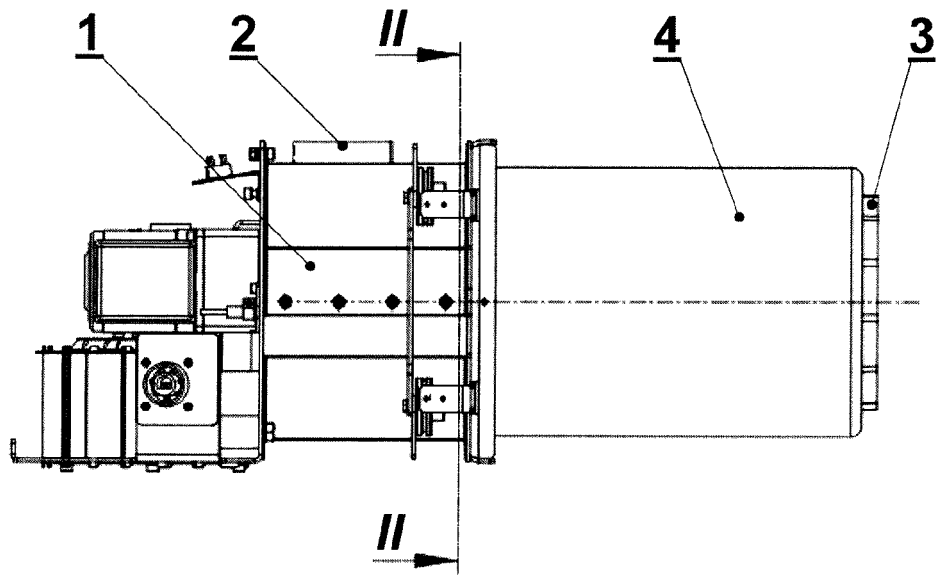
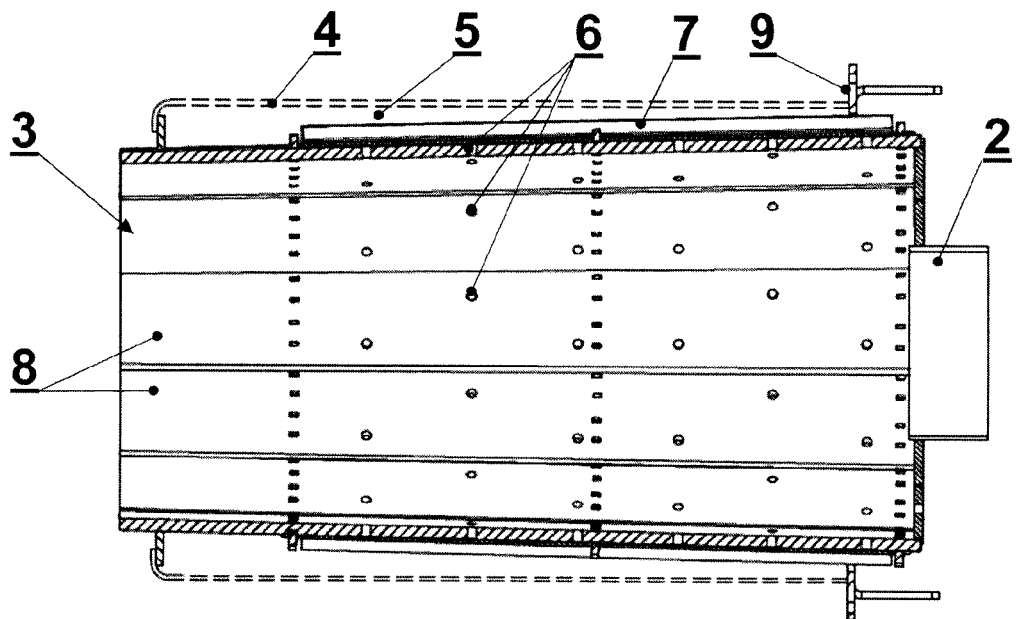


Fig. 6

Fig. 7



Pos. 1a



Pos. 1b



EUROPEAN SEARCH REPORT

Application Number
EP 15 46 0052

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			TECHNICAL FIELDS SEARCHED (IPC)
			F23B F23H F23M
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 January 2016	Examiner Vogl, Paul
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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EP 15 46 0052

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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