



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.04.2016 Bulletin 2016/15

(51) Int Cl.:
F23K 3/14 (2006.01) **F23B 40/00** (2006.01)
F23L 5/02 (2006.01)

(21) Application number: **15460093.6**

(22) Date of filing: **07.10.2015**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA

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(30) Priority: **07.10.2014 PL 40972514**

(54) **A DRIVE UNIT FOR A FEEDER SUPPLYING A COMBUSTION CHAMBER OF A PELLET
BURNER**

(57) A drive unit of a worm feeder supplying the combustion chamber of a pellet burner, being the subject of the invention, relates to a burner comprising a steel body, which is a fixed housing with an inlet hole for pellets and a rotary combustion chamber, equipped with a multipoint blow-in of air throughout holes and/or nozzles, to which

pellets are being dosed by the worm feeder.

According to the invention the drive unit has a centrifugal fan with an internal motor and a mounting plate (6) of the housing, whereas the centrifugal fan (1) and its motor (2) are connected throughout a centring sleeve to a/the reduction gear (7).

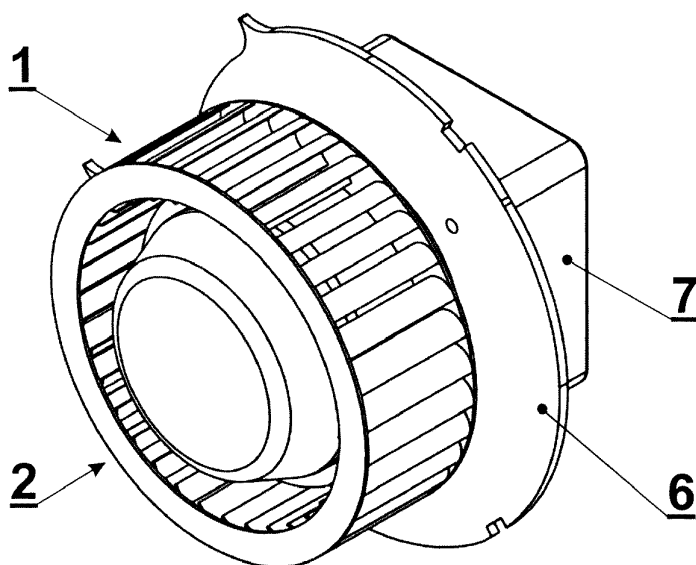


Fig. 1

Description

[0001] The subject of the invention is a drive unit for a feeder (conveyor) supplying the combustion chamber of a burner designed for burning pellets which can be used both in households and other communal facilities buildings and store or production rooms.

[0002] There are known burners designed for burning pellets which are equipped with a worm feeder supplying the combustion chamber of a burner with a dosed amount of fuel in a form of granular pellets. The feeder is driven by a motor and a reduction gear such that each of these devices is a separate element of the drive. In addition, there is a fan located in the burner housing, or outside it, which blows in into the combustion chamber a flow of air necessary for performing the combustion process. The fan is driven by a separate motor.

[0003] A drive unit of the feeder supplying a pellet burner which is the subject of the invention, relates to the burner comprising a steel body which is a fixed housing with an inlet hole for pellets, and a worm feeder driven by a drive unit, dosing pellets supplied to the combustion chamber, which is provided with a multipoint blow-in of air throughout holes and/or nozzles.

[0004] In the solution according to the invention, there is a fan used for driving a worm feeder supplying the combustion chamber of a burner, comprising a housing, a motor situated inside the housing, and a rotor with blades directed outwards, which elements, all together, form one monolith unit. The radial fan is connected with a reduction gear by a special shaft ended with a rack, adapted for transmitting drive from the fan's motor to the reduction gear where from - by the use of the driving shaft - the drive is transmitted to the worm conveyor' shaft delivering pellets to the combustion chamber.

[0005] In accordance with the invention, there is a construction element placed between the radial fan and the reduction gear in a form of a centring sleeve having an outer flange, in addition, the outer flange is fixed to a mounting plate from one side and it is tightly fitting with a seat of the reduction gear from the other side, whereas a cylinder segment of the centring sleeve passes through a hole of the mounting plate and it is slidably and tightly fitted with a centrifugal fan's hole.

[0006] Thanks to the solution according to the invention, a simple design solution has been developed, improving the drive of the feeder supplying the pellets burner, in a form of one compact unit of small dimensions, which allows the drive's assembling space to be significantly limited at the evident reduction of the installing costs.

[0007] The subject of the invention is shown in an exemplary embodiment in a schematic drawing, Fig. 1 of which shows a perspective view of the driver unit of the feeder supplying the pellet burner; Fig. 2 - shows a perspective view of the reassembled details of the drive unit; Fig. 3 - shows a side view of the drive unit, and Fig. 4 - a rear view of the drive unit.

[0008] The drive unit for the feeder according to the invention, supplying the pellet burner, has been used in a pellet burner comprising a steel body (not shown in the drawing), being a fixed housing with an inlet hole for pellets and a rotary combustion chamber (also not shown in the drawing) equipped with a multipoint blow-in of air throughout holes and/or nozzles, to which doses of pellet are being delivered by a worm feeder (not shown in the drawing).

[0009] To drive the worm feeder supplying the combustion chamber of the pellet burner a centrifugal fan **1** has been used, comprising a housing not shown in the drawing, a motor **2** located inside the housing, an outer rotor **3** of a motor has blades **4** arranged on its outer circumference, and a stator **5** located inside the housing. These elements all together form one monolith unit. A rear wall of the fan's **1** housing is formed by an mounting plate **6**, adapted properly to the shape of housing.

[0010] The motor **2** of the centrifugal fan **1** is connected with a reduction gear **7** by a special shaft ended with a rack (not shown in the drawing), adapted for transmitting drive from the fan's **1** motor **2** to the reduction gear **7**, where from - by using a driving shaft **8** - a torque is transmitted to the shaft of the worm feeder (not shown in the drawing) supplying pellets to the combustion chamber (also not shown in the drawing).

[0011] There is a construction element placed between the centrifugal fan **1** and the reduction gear **7** in a form of centring sleeve **9a** having an outer flange **9b**. The outer flange **9b** is removably mounted to the mounting plate **6** using bolts **10** from one side, and it is tightly fitted with a seat **11** of the reduction gear **7** from the other one, whereas a cylinder segment of the centring sleeve **9a** passes throughout a hole of the mounting plate **6**, and it is slidably and tightly fitted with a hole of the fan **1**.

[0012] The shape of the mounting plate **6** is almost a circle-like, however this circle has an irregular contour on the length equal almost $\frac{1}{4}$ of its circumference. This shape is adapted properly to the one of the fan's housing **1** (not shown in the drawing), which looks like a shell.

List of labels

[0013]

- 1 - centrifugal (radial) fan
- 2 - motor
- 3 - outer rotor of the motor
- 4 - fan's blade
- 5 - motor's stator
- 6 - mounting plate
- 7 - reduction gear (transmission)
- 8 - driving shaft
- 9a - centring sleeve
- 9b - centring sleeve flange
- 10 - bolt
- 11 - reduction gear's seat

Claims

1. A drive unit of a worm conveyor supplying the combustion chamber of a pellet burner, comprising an electric motor and a reduction gear **characterised in that** it has a centrifugal (radial) fan **(1)** with an outer motor **(2)** and a mounting plate **(6)** of the housing, whereas the centrifugal fan **(1)** and the motor **(2)** are connected throughout a centring sleeve **(9a)** with the reduction gear **(7)**.

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2. The drive unit according claim 1, **characterised in that** the mounting plate **(6)** has a shape adapted to the shape of the centrifugal fan's **(1)** housing.

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3. The drive unit according claim 1, **characterised in that** the centring sleeve **(9a)** has a flange **(9b)** removably mounted to the mounting plate **(6)**, and tightly fitted with a seat **(11)** of the reduction gear **(7)** from the other side.

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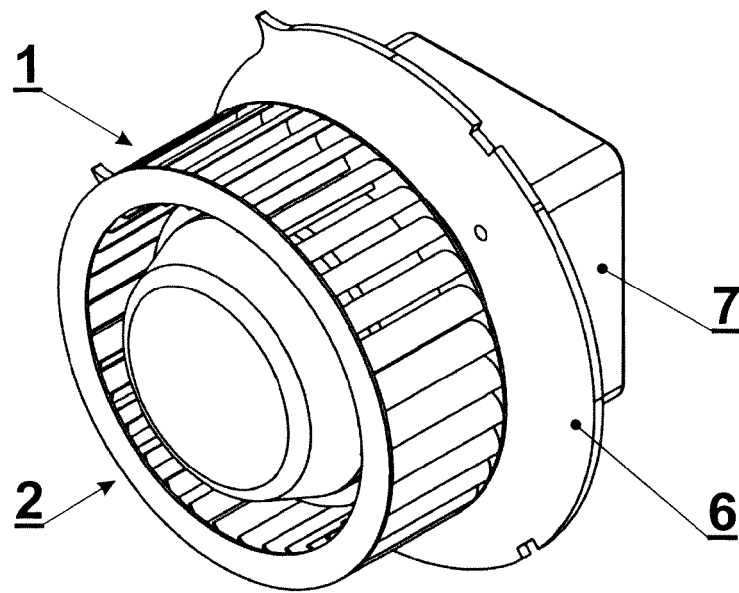


Fig. 1

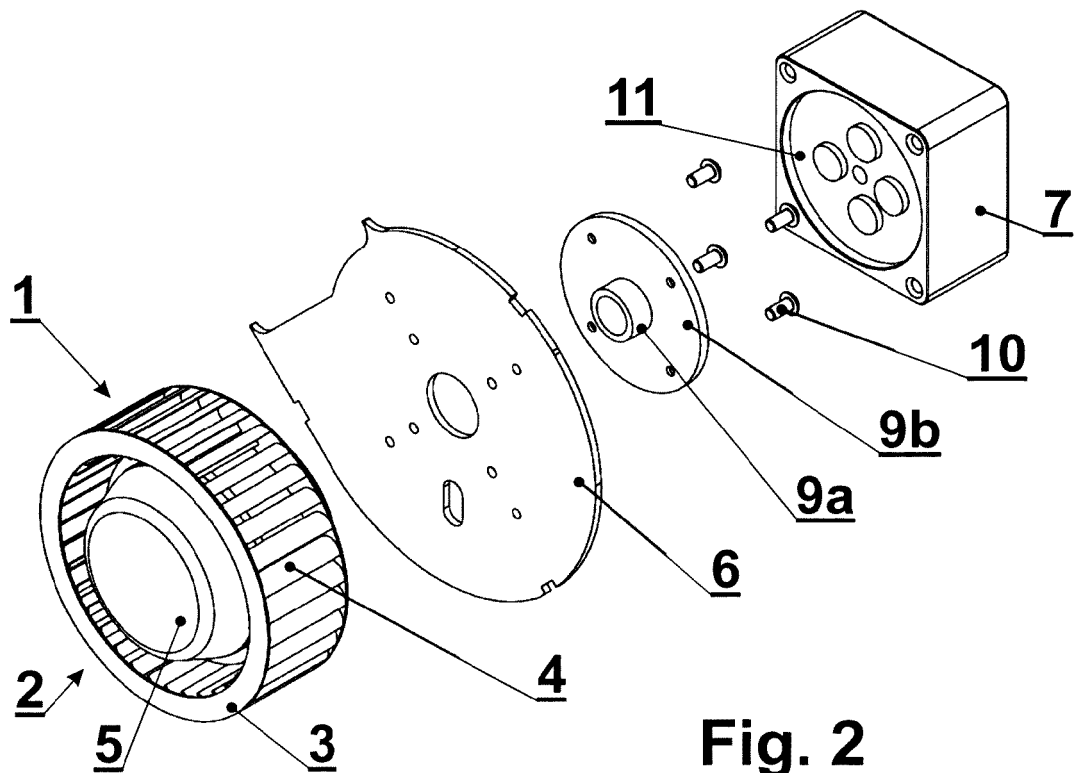
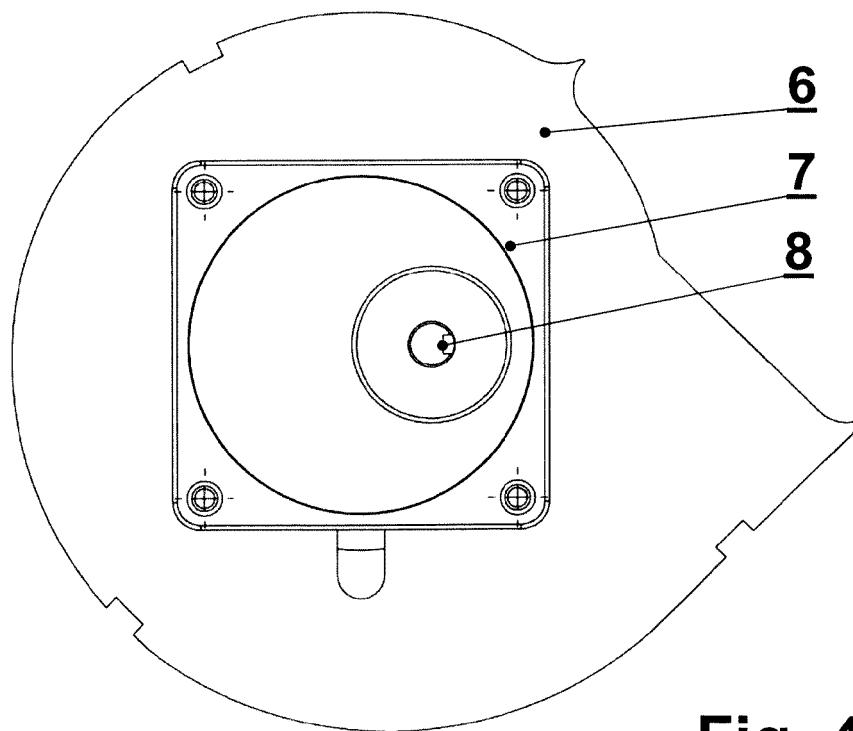
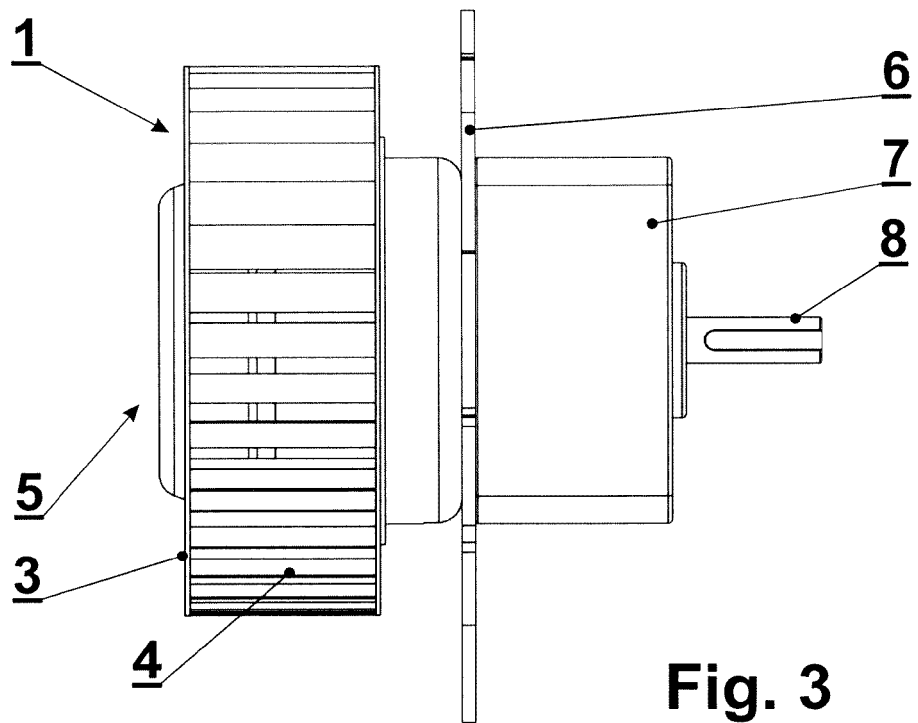


Fig. 2





EUROPEAN SEARCH REPORT

Application Number
EP 15 46 0093

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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	US 2 324 042 A (SWENSON CARL E) 13 July 1943 (1943-07-13) * page 2, line 40 - page 3, line 122; figures 1-11 *	1,2	INV. F23K3/14 F23B40/00 F23L5/02
A	US 2 200 660 A (SUMAN ROBERT W ET AL) 14 May 1940 (1940-05-14) * page 1, line 36 - line 55; figures 1-6 *	1	
A	DE 94 11 426 U1 (BUDERUS HEIZTECHNIK GMBH [DE]) 8 September 1994 (1994-09-08) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F23K F23B F23L F04D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 26 January 2016	Examiner Harder, Sebastian
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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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 46 0093

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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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26-01-2016

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EPO FORM P0459

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