



(51) International Patent Classification:

F02C 3/08 (2006.01) F02C 5/12 (2006.01)

F02C 3/14 (2006.01) F02C 7/32 (2006.01)

F02C 5/02 (2006.01)

(21) International Application Number:

PCT/LT2019/000001

(22) International Filing Date:

18 June 2019 (18.06.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(72) Inventor; and

(71) Applicant: STANEVIČIUS, Algimantas Aleksandras
[LT/LT]; Bišpilio g. 26, 74207 Jurbarkas (LT).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to the identity of the inventor (Rule 4.17(i))

(54) Title: IMPROVED ROTARY INTERNAL COMBUSTION ENGINE

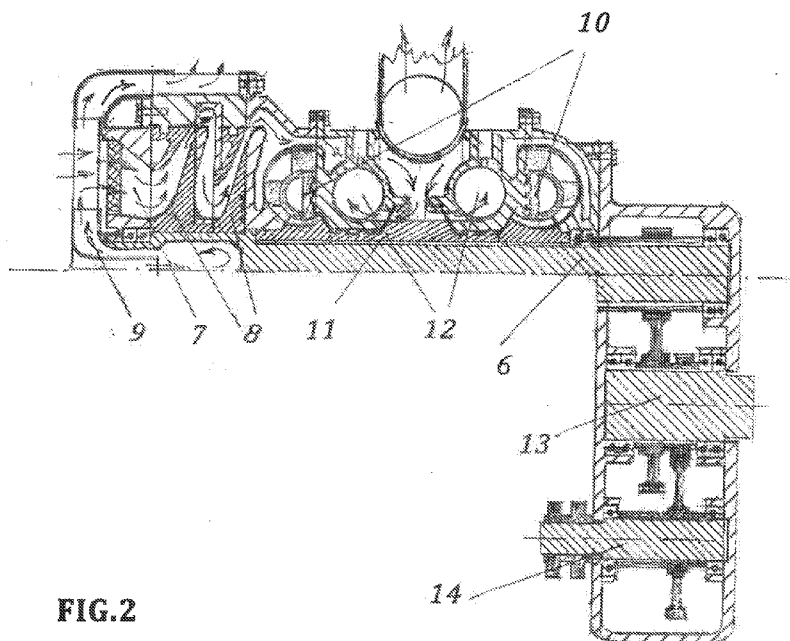


FIG. 2

(57) Abstract: Compression rotor, having axially air compression impellers and power rotor, comprising a cascade of the power turbines rotates on the separate bearings, which are under action of high temperature and requires of special cooling, therefore instead of separate rotating two rotors is arranged a main shaft (6), having by left screw mounted centrifugal compression impellers (8) and hollow impeller (9) on the one end and on the other end, having mounted by the teeth connection two power rotors (10) and alternatively air filling up valve (11) between them. A complicated system of gearwheels can not assure required rotational speed for different devices, therefore was arranged reducer (3), where in its outer wall through the bearings are mounted the main shaft (6), on the upside are located fuel pump (4) and starter-generator (5).



Published:

— *with international search report (Art. 21(3))*

Improved rotary internal combustion engine

BACKGROUND OF THE INVENTION

(0001) This invention relates to improvement of former patented
5 my rotary internal combustion engine, patent LT Nr 5238.

(0002) The rotary internal combustion engine, known to the
applicant, having a multi stage axial air compression rotor, valve
which alternatively filling up the combustors with the compressed air
and closing them, where after sprinckled with the compressed fuel
10 achieves combustion, generating high compression gas, which flows
through the cascade of turbines, rotating rotor.

(0003) This engine has next defects:

The axial compression impellers generates insufficient
15 compression, therefore for achievment of proper compression requires
big number of impellers.

Power rotor with compressor are joined by the teeth connection,
which is placed on the end of engine shaft. They rotates on the
separate bearings affected by the high temperature, therefore requires
20 to be cooled by oil supplied by oil pump.

This system of gearwheels are not be able to assure needed
rotational speed for starter-generator, fuel and oil pums.

A teeth sealing, which is arranged for stopping of gas penetration
between of stacionary and rotating surfaces, can not asure proper gas
25 stopping.

OBJECT OF THE INVENTION

(0004) Accordingly it is an object of the present invention to provide
5 improvement of rotary internal combustion engine by changing big
number inefficient axial compression impellers onto few more
efficient centrifugal compression impellers. Another purpose of this
invention is to replace the complicated gearwheel system, which do
not assure proper rotational speed for starter - generator, fuel and oil
10 pumps and to do reducer, generating needed rotational speed for
different devices, also on the outer wall trough bearings mounting a
main shaft, on the upside locating starter-generator and fuel pump.
The next purpose of the invention is instead of two separate rotating
compressor and power rotors, having by high temperature affected and
15 by oil cooled bearings, is to arrange a main shaft, with by left screw
mounted centrifugal air compression impellers and hollow impeller on
one end, on the other end having mounted by teeth connection two
power rotors, comprising cascade of turbines and alternatively air
filling up valve between them. The other purpose of the invention is to
20 assure gas flow stopping between stationary and rotating surfaces.

SUMMARY OF THE INVENTION

(0005) The above noted objects are accomplished by the provided
25 improved rotary internal combustion engine, comprising a main shaft
with left screw mounted centrifugal air compression impellers and

hollow impeller on the one end and by the teeth connection mounted two power rotors, comprising a cascade of power turbines and alternatively air filling up valve between them on the other end.

5 (0006) The main shaft is mounted trough bearings into stabilizer, other end into outer wall of reducer, which is made for replacing the complicated system of gearwheels. These bearings are affected by low temperature, therefore any cooling by oil became not required.

10 (0007) One corner of teeth in the barrier sealings need to cut on thirty degrees and nascent emptiness to fill by mixture of oil with granules of graphite. These granules pushing by gas compression will fully close the gap between stationary and rotating surfaces, generating no friction.

15

BREAF DESCRIPTION OF THE DRAWINGS

(0008) This invention will now further be described by way of
20 example, with reference to the accompanying drawings wherein:

Figure 1 is a common view of rotary internal combustion engine according to the invention;

Figure 2 according to the figure 1 here is a longitudinal section of engine with compressor till axis and full section of reducer.

25

DESCRIPTION OF THE PREFERED EMBODIMENTS

5 (0009) In figures 1 - 2 is alone embodiment of improved rotary internal combustion engine according to the invention and designated by the reference.

(0010) In Figure 1 are presented the main units of engine: compressor 1, engine 2, reducer 3, fuel pump 4 and starter-generator 5.

10 (0011) In Figure 2 are presented section of reducer 3 and section till axis of whole engine with compressor, where is presented a main shaft 6, which is mounted trough bearings into stabilizer 7 and into outer wall of reducer 3. On the main shaft 6, at the section of compressor 1 are presented by left screw mounted centrifugal compression impellers 8 and inertial air filtering and compressor cooling turbine 9, at the
15 section of engine 2 by the teeth connection are mounted two power rotors 10, comprising cascade of power turbines and valve 11, alternatively air filling up to the combustors 12 between them.

(0012) In section of reducer 3 are presented a drive shaft 13 and
20 servo-shaft with pulleys for driving fuel pump and starter-generator.

CLAIMS

- 5 1. An improved rotary internal combustion engine, comprising
compressor (1), engine (2) and reducer (3) with fuel pump (4)
and starter-generator (5) located on the top **characterized in**
10 **that**, the main shaft (6) is fit in by bearings into stabilizer (7)
and into outer wall of reducer (3), where in sector of
compressor (1) by left screw are mounted centrifugal air
compression impellers (8) and inertial air filtering and
compressor cooling turbine (9), in sector of engine (2) by the
teeth connection are mounted two power rotors (10),
15 comprising a cascade of power turbines and between them is
mounted valve (11), alternatively filling up combustors (12)
with the compressed air.
- 20 2. An engine as claimed in claim (1) **characterized in that**,
having purpose to eliminate separate rotating compression and
power rotors is arranged a main shaft (6), whose one end
through the bearings is mounted in to stabilizer (7), another end
in to outer wall of reducer (3), where in the sector of the
compressor (1), by the left screw are mounted centrifugal air
compression impellers (8) and inertial air filtering and
compressor cooling turbine (9), in the sector of engine (2) by
25 the teeth connection are mounted two power rotors (10), with
the cascade of three power turbines and valve (11) between

them, which alternatively filling up the combustors (12) with the compressed air.

3. An engine as claimed in claim (1) **characterized in that**, having purpose to eliminate complicated gearwheel system, which do not assure needed rotational speed for the engine aggregates, is arranged reducer (3), with located fuel pump (4) and starter-generator (5) on the top.
4. An engine as claimed in claim (1-2) **characterized in that**, having purpose stopping of gas penetration between of stationary and rotating surfaces, one corner of the teeth on the barrier sealings is cut by angle of thirty degrees and nascent volume is filled by mixture of oil with granules of graphite. The granules of graphite by gas compression will fully close a gap, generating no friction.

1/2

FIG.1

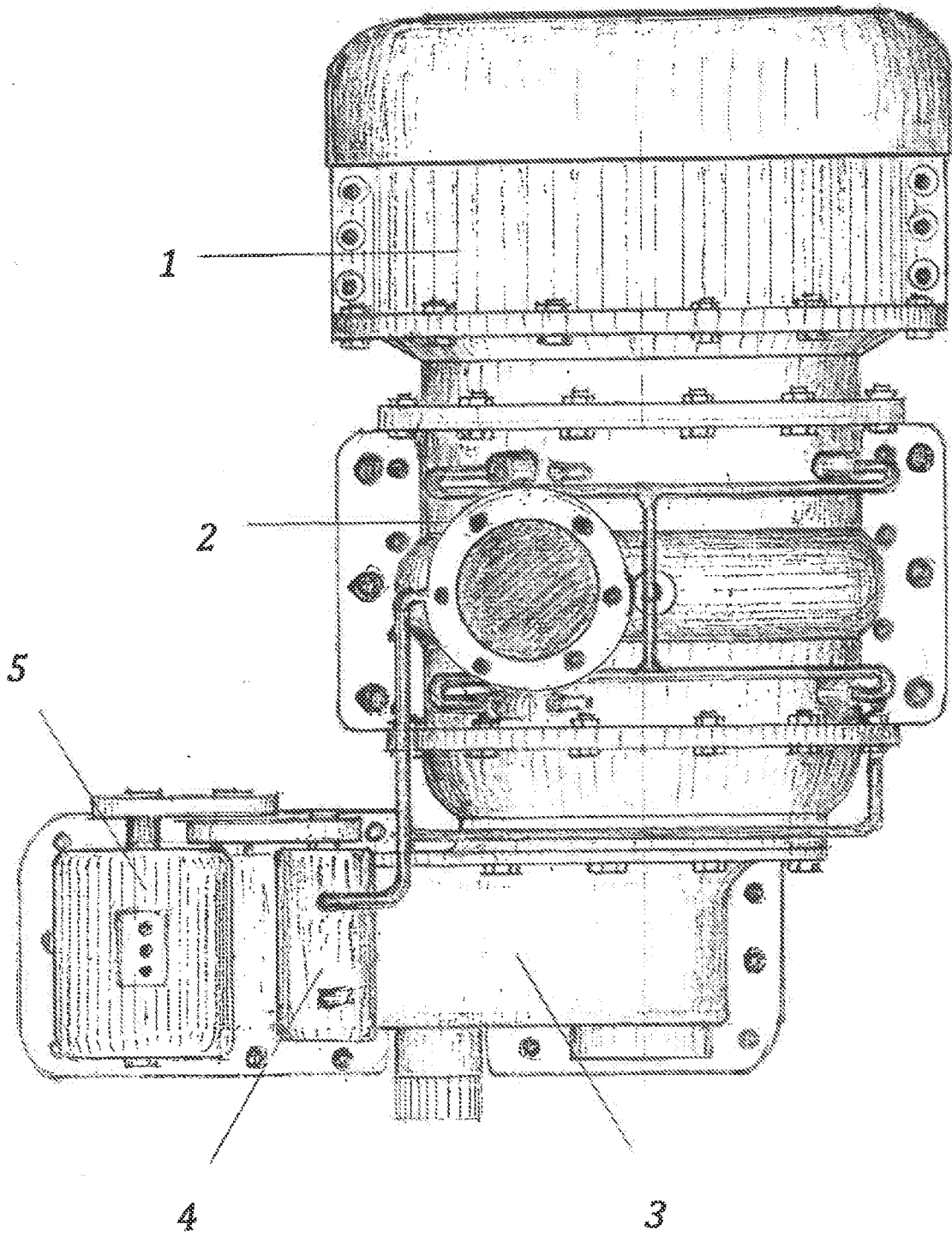
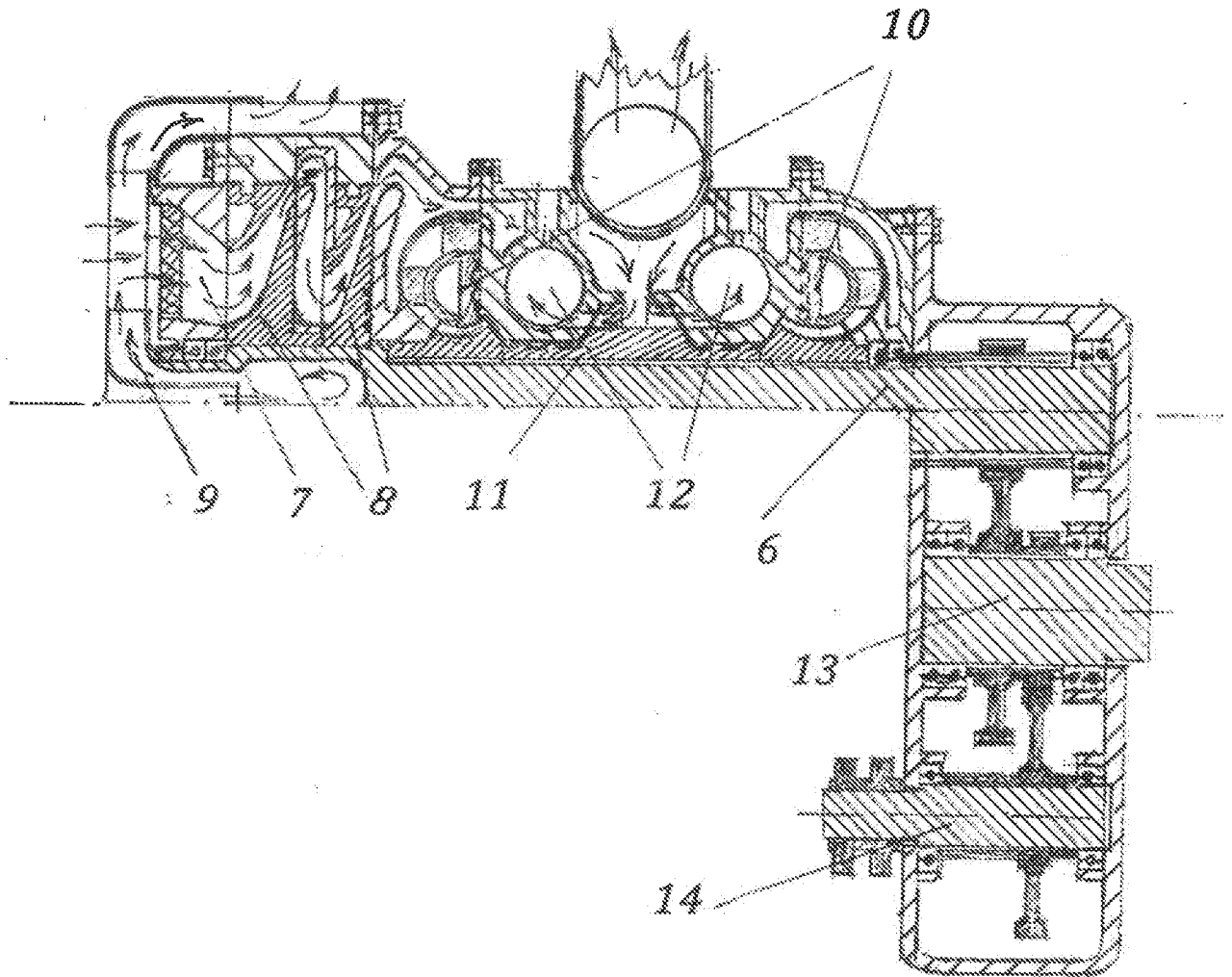


FIG.2



INTERNATIONAL SEARCH REPORT

International application No
PCT/LT2019/000001

A. CLASSIFICATION OF SUBJECT MATTER INV. F02C3/08 F02C3/14 F02C5/02 F02C5/12 F02C7/32 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) F02C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 478 833 A1 (STANEVICIUS ALGIMANTAS ALEKSAN [LT]) 24 November 2004 (2004-11-24)	1,3,4
A	paragraph [0007] - paragraph [0008] paragraph [0020] - paragraph [0026] figures	2
A	----- US 4 603 549 A (ALBRECHT HANS G [DE]) 5 August 1986 (1986-08-05) column 4, line 15 - column 6, line 2 figures 1,6,8	1-4
A	----- EP 0 811 752 A1 (ABUNDANCIA NAVARRO JUAN CARLOS [ES] ET AL.) 10 December 1997 (1997-12-10) column 1, line 45 - column 2, line 9 column 4, line 16 - column 5, line 8 abstract; figure 1 -----	1-3
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search <p style="text-align: center;">10 March 2020</p>	Date of mailing of the international search report <p style="text-align: center;">19/03/2020</p>	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center;">O'Shea, Gearóid</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/LT2019/000001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1478833	A1	24-11-2004	AU 2002239148 A1
			EP 1478833 A1
			JP 4152894 B2
			JP 2005518516 A
			US 2004154310 A1
			WO 03072917 A1

US 4603549	A	05-08-1986	DE 3503563 A1
			EP 0154205 A1
			US 4603549 A

EP 0811752	A1	10-12-1997	AU 5502696 A
			DE 69610195 D1
			DE 69610195 T2
			EP 0811752 A1
			EP 0838532 A1
			ES 2150119 T3
			WO 9702407 A1
