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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : F02K 9/42

A2

(11) International Publication Number: WO 95/26467

(43) International Publication Date: 5 October 1995 (05.10.95)

(21) International Application Number: PCT/SI95/00008

(22) International Filing Date: 28 March 1995 (28.03.95)

(30) Priority Data:
P-9400154 29 March 1994 (29.03.94) SI

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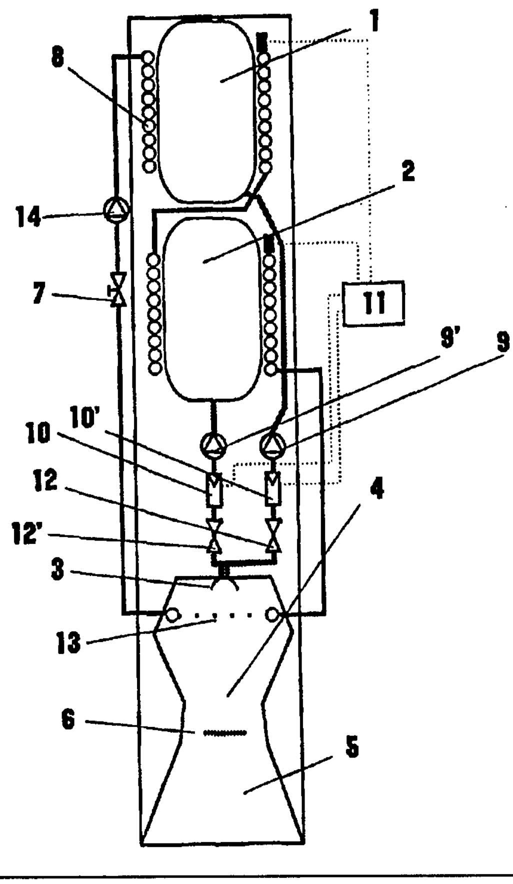
(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: SYNTHESISED FUEL-POWERED REACTION ROCKET MOTOR

(57) Abstract

The invention is a synthesised fuel-powered reaction rocket motor, powered by fuels based on labile compounds which can be used as fuel only if they have previously been synthesised or processed. The synthesised fuel-powered reaction rocket motor has two synthesised compounds stored in separate tanks (1, 2), which are combined in the antechamber and which react in the combustion chamber (4). The resulting gases give the required thrust.



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SYNTHESISED FUEL-POWERED REACTION ROCKET MOTOR

The invention is a sythesised fuel-powered reaction rocket motor, powered by fuels based on labile compounds which can be used as fuel only if they have previously been synthesised or processed.

The technical problem successfully solved by this invention is the use of compounds which are basically very labile and which cannot be used as fuel for rocket or similar motors under normal circumstances.

Standard rocket motors are fuelled by a mixture of fuel and oxidant, kept separately in two tanks. Combination of the two components in the combustion chamber causes a chemical reaction and the thrust to move the rocket.

This synthesised fuel-powered reaction rocket motor uses two synthesised compounds stored in separate tanks, which are combined in an antechamber and react in a fusion nozzle. The synthesised fuel burns in the combustion chamber and the resulting gases provide the necessary thrust.

I will describe the synthesised fuel-powered reaction rocket motor in more detail on the basis of the construction sample and the drawing, which shows:

Fig. 1 Scheme of the synthesised fuel-powered reaction rocket motor

The synthesised fuel-powered reaction rocket motor shown in Fig. 1 has: two tanks 1 and 2, a combustion chamber 4 and a thrust nozzle 5. In the tanks 1 and 2 there are two compounds. Tank 1 holds nitric acid HNO_3 and tank 2 holds NH_3. Both tanks have preheater units for controlled heating of the compounds in the tanks. The water which surrounds the tanks with the compounds can be heated by microwave heaters controlled by a microprocessor 11 until the motor is started. Both tanks are surrounded by a preheating system 8 consisting of water pipes fitted around the tanks. The water in the preheating system is heated by means of the cooling grid 13 and kept at 85°C with an electric thermostat valve 7 and pump 14. HNO_3 boils at 85°C and the acid vapours are condusted through a fuel pipe and pump 9 and regulator 10 to the combustion chamber 4. The NH_3 in tank 2 is heated to an equal temperature and the vapour is conducted via pump 9' and regulator 10'. Both regulators 10 and 10' are controlled by a microprocessor 11. Regulators 10 and 10' control the dosage of the compound and safety valves 12 and 12' control reverse pressure.

Regulators 10 and 10' at the exits of both tanks 1 and 2 provide conditions for the heated compounds from the tanks to mix in a fixed ratio, which is, in this version, 1:1. From here small drops of the now synthesised fuel NH_4NO_3 go through the mixing nozzle 3 to the combustion chamber 4 and through the cooling grid 13, which wards off the blast resulting from the explosion of the drops of fuel. The cooling grid 13 is cooled by the water from the preheating system 8. As the drops leave the cooling grid, they travel down the combustion chamber 4 where an ignition coil 6 is mounted. With the help of the ignition coil 6, the drops of fuel explode, producing a temperature of 2710°C. The pressure at this moment is 994 MPa. The hot gases gush from the combustion chamber with supersonic speed through the narrow exit of the Laval nozzle and cause a reaction.

In the second version of the synthesised fuel-power reaction rocket motor, tank 2 contains glycerol. The ratio between the glycerol from the tank 2 and the HNO_3 from tank 1 is 3:1.

The glycerol in tank 2 is preheated to 85°C and then vaporised by pressure. The HNO_3 is also vaporised. The vapours of both compounds are mixed in a ratio of 3:1. Because of the high temperature, glycerol and HNO_3 combine into small drops of the fuel - nitroglycerin. These drops explode at the ignition coil 6. The gases (which have a temperature of 4250°C) are thrust through the Laval nozzle, where they expand. The inner energy is partially transformed into kinetic energy and we get the reaction.

PATENT CLAIMS

1. Synthesised fuel-powered reaction rocket motor,

characterised by

a process in which previously thermally-treated synthesised fuels stored in separate tanks (1,2), with the possibility of further thermal treatment, are conducted through a mixing nozzle (3) to a combustion chamber (4), where vapours of the synthesised fuels explode and the resulting gases gush through the thrust nozzle (5), causing a reaction.

2. Synthesised fuel-powered reaction rocket motor, under item 1,

characterised by

the fact that tank (1) contains nitric acid HNO_3 and tank (2) contains NH_3, which are mixed in a ratio of 1:1.

3. Synthesised fuel-powered reaction rocket motor, under item 1,

characterised by

teh fact that tank (1) contains nitric acid HNO_3 and tank (2) contains glycerol, which are mixed at a ratio of 3:1.

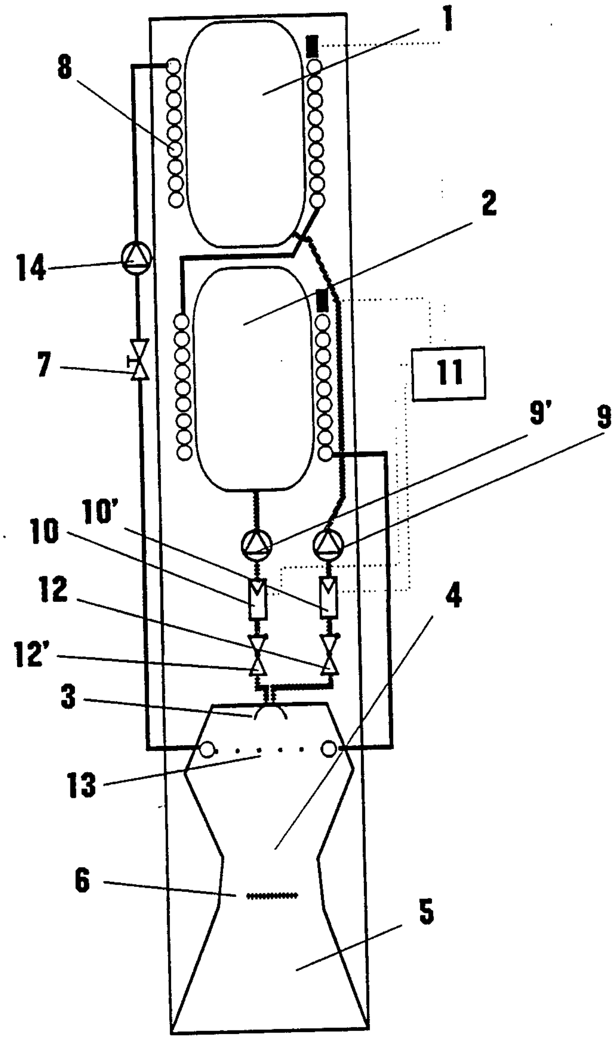

Fig. 1