

[54] **INERT GAS FUEL, FUEL PREPARATION APPARATUS AND SYSTEM FOR EXTRACTING USEFUL WORK FROM THE FUEL**

[75] Inventor: **Joseph Papp**, Santa Ana, Calif.

[73] Assignee: **Papp International Incorporated**, Lincoln, Nebr.

[21] Appl. No.: **184,405**

[22] Filed: **Sep. 4, 1980**

[51] Int. Cl.³ **F01K 25/08**

[52] U.S. Cl. **60/509; 60/516; 60/531; 60/721; 123/1 A; 123/536; 376/146; 376/317; 376/318**

[58] Field of Search **376/318, 317, 346; 123/1 A, 198 A, 536; 60/509, 516, 531, 513, 721**

[56] **References Cited**

U.S. PATENT DOCUMENTS

| | | | |
|-----------|--------|---------------|---------|
| 2,169,844 | 8/1939 | Marshall, Jr. | 123/1 A |
| 2,590,168 | 3/1952 | Felici | 310/10 |
| 3,386,245 | 6/1968 | Garage | 376/318 |
| 3,549,490 | 7/1970 | Moore | 376/317 |
| 3,670,494 | 6/1972 | Papp | 60/23 |
| 3,680,431 | 8/1972 | Papp | 89/7 |
| 3,977,191 | 8/1976 | Britt | 60/509 |
| 4,023,065 | 5/1977 | Koloc | 376/146 |
| 4,081,712 | 3/1978 | Bode et al. | 313/226 |

FOREIGN PATENT DOCUMENTS

| | | | |
|---------|--------|----------------------|---------|
| 2056199 | 5/1972 | Fed. Rep. of Germany | 376/318 |
|---------|--------|----------------------|---------|

OTHER PUBLICATIONS

Essentials of Astronomy, (7/68) Motz et al., p. 394.
 Condensed Chemical Dictionary, 9th Ed, Hawley Ed, VanNostrand Reinhold Co., New York pp. 431 and 621.
 New Scientist (5/24/79) pp. 626-630.

Primary Examiner—Sal Cangialosi
 Attorney, Agent, or Firm—Senniger, Powers, Leavitt and Roedel

[57] **ABSTRACT**

An inert gas fuel consisting essentially of a precise, homogeneous mixture of helium, neon, argon, krypton and xenon. Apparatus for preparing the fuel includes a mixing chamber, tubing to allow movement of each inert gas into and through the various stages of the apparatus, a plurality of electric coils for producing magnetic fields, an ion gauge, ionizers, cathode ray tubes, filters, a polarizer and a high frequency generator. An engine for extracting useful work from the fuel has at least two closed cylinders for fuel, each cylinder being defined by a head and a piston. A plurality of electrodes extend into each chamber, some containing low level radioactive material. The head has a generally concave depression facing a generally semi-toroidal depression in the surface of the piston. The piston is axially movable with respect to the head from a first position to a second position and back, which linear motion is converted to rotary motion by a crankshaft. The engine's electrical system includes coils and condensers which circle each cylinder, an electric generator, and circuitry for controlling the flow of current within the system.

71 Claims, 36 Drawing Figures

