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(54) Plasma propulsion apparatus and method.

(57) A projectile (16) is accelerated in a barrel bore by applying a plasma jet to a projectile propelling fluid (102). The plasma jet is derived from a structure forming a capillary passage (22) having a wall formed by a low molecular weight, dielectric powdery filler or water in many rigid containers, shaped as spheres (69) or strawlike tubes having axes parallel to the passage longitudinal axis. Low atomic weight constituents of the fluid are sufficiently heated to become mixed with the plasma to form a high pressure mixture that is injected into the bore to accelerate the projectile. The fluid (102) is dragged into the plasma during mixing to cool the plasma and form a boundary layer between the plasma and the barrel walls so that the mixture does not cause substantial damage to the walls of the bore. The plasma is energized by applying voltage from an electric pulse source to electrodes (23,24) at opposite ends of the passage (22). The wave shape and duration are such that the pressure applied to the projectile remains substantially constant while the projectile is being accelerated through the barrel.

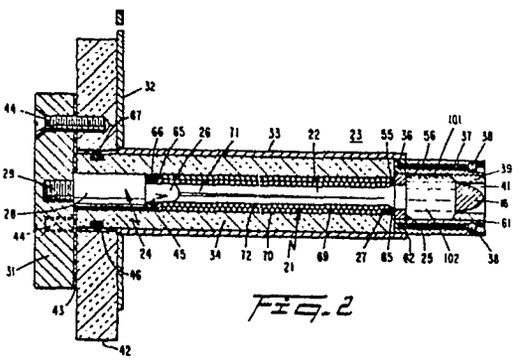

Fig. 2

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EUROPEAN SEARCH REPORT

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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 (Int. Cl.4)
A	US - A - 3 916 761 (J. C. FLETCHER, E.L. SHRIVER et al.) * Claims * --	1,9, 26,30	F 41 F 1/00
A	US - A - 3 431 816 (J.R. DALE) * Claims * --	1,9, 26,30	
D,P, A	US - A - 4 590 842 (Y.S.A. GOLDSTEIN, D.A. TIDMAN) * Fig. 1,2 * ----	1,9	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

F 41 F 1/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	16-11-1989	JASICEK

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
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E : earlier patent document, but published on, or after the filing date
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