

Title (en)  
PLASMA PROPULSION APPARATUS AND METHOD

Publication  
**EP 0232594 A3 19900124 (EN)**

Application  
**EP 86308921 A 19861114**

Priority  
US 80907185 A 19851213

Abstract (en)  
[origin: EP0232594A2] 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. The fluid and jet interact so the fluid is heated by the jet, whereby 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 pulse has a wave shape and duration for initially igniting the plasma source and for thereafter applying energy to the ignited plasma to control the pressure of the mixture. Initially, the fluid cools the plasma without the mixture developing sufficient pressure to accelerate the projectile appreciably. 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, as occurs during about one-half of the projectile travel time in the barrel.

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**F41F 1/00**

IPC 8 full level  
**F41B 6/00** (2006.01)

CPC (source: EP)  
**F41B 6/00** (2013.01)

Citation (search report)  
• [A] US 3916761 A 19751104 - FLETCHER JAMES C ADMINISTRATOR, et al  
• [A] US 3431816 A 19690311 - DALE JOHN R  
• [APD] US 4590842 A 19860527 - GOLDSTEIN YESHAYAHU S A [US], et al

Cited by  
US5233903A; US5223662A; US5935461A; US6001426A; US5970993A; EP0295136A1; GB2260187A; FR2681939A1; US5331879A; GB2260187B; US6124563A; GB2218495A; GB2218495B; US5115743A; WO9005278A1; WO9712194A1; EP0338458B1

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