



US005372069A

# United States Patent [19]

[11] Patent Number: **5,372,069**

74835

Hart et al.

[45] Date of Patent: **Dec. 13, 1994**

[54] **PYRONOL TORCH**

[75] Inventors: **George L. Hart, Yuma, Ariz.; Edwin L. McCluer, Palms, Calif.; Alexander G. Rozner, Potomac, Md.; William R. Walton, Clarksville, Md.; James C. Waldron, Silver Spring, Md.**

4,372,213 2/1983 Rozner et al. .... 102/301  
 4,374,686 2/1983 Davitt et al. .... 149/21  
 4,424,086 1/1984 Christopher .... 149/19.3  
 4,495,848 1/1985 Rozner et al. .... 89/1.1

*Primary Examiner*—Peter A. Nelson  
*Attorney, Agent, or Firm*—Roger D. Johnson

[73] Assignee: **The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

### [57] ABSTRACT

[21] Appl. No.: **118,349**

A pyrotechnic, molten metal jet torch which employs a loose pyrotechnic starter powder such as (1) magnesium powder, or an intimate mixture of (2) Mg and CuO, (3) Mg and Fe<sub>2</sub>O<sub>3</sub>, (4) Mg and Co<sub>3</sub>O<sub>4</sub>, (5) Al and CuO, or (6) Al and Fe<sub>2</sub>O<sub>3</sub> powders which are capable of being ignited by a conventional military incendiary grenade fuse and which generated enough heat to ignite pyronol pellets which are pressed from an intimate powder mixture of (1) nickel, (2) metal oxide, (3) a component selected from the group consisting of (a) aluminum and (b) a mixture of at least 50 weight percent aluminum and a metal that is magnesium, zirconium, bismuth, beryllium, boron, or mixtures thereof.

[22] Filed: **Sep. 9, 1993**

[51] Int. Cl.<sup>3</sup> ..... **C06B 33/00**

[52] U.S. Cl. .... **102/288; 102/289; 149/37**

[58] Field of Search ..... **102/286, 288, 289; 149/37**

### [56] References Cited

#### U.S. PATENT DOCUMENTS

3,503,814 3/1970 Helms, Jr. et al. .... 149/37  
 4,280,409 7/1981 Rozner et al. .... 102/364

**19 Claims, 1 Drawing Sheet**

