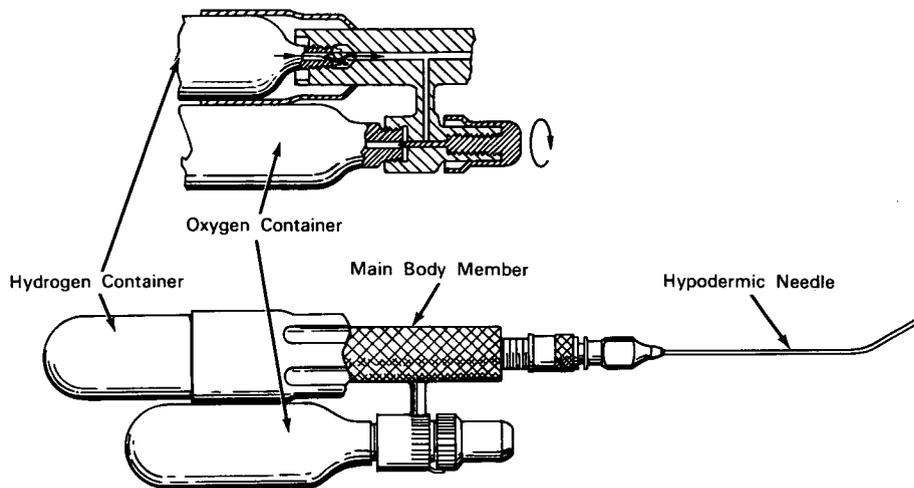


NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the NASA space program.

Miniature Oxygen-Hydrogen Cutting Torch Constructed from Hypodermic Needle



The problem: Design an exceptionally small cutting torch that is self-contained and is thus not dependent on a gas hose or an electrical connection.

The solution: An oxygen-hydrogen torch utilizing a conventional hypodermic needle and two miniature containers for the gases.

How it's done: A cylindrical body member is constructed to form the basic unit of this torch. The body member provides a means of mounting the two gas containers, valves for controlling gas flow, and the hypodermic needle that acts as a mixing tube and flame tip. Standard, off-the-shelf parts are utilized, except the body member. It can be fabricated using standard shop machines.

Oxygen and hydrogen bottles are arranged in "piggy-back" fashion. A bell cap at the top of the oxygen container turns a needle valve so that the flow of oxygen can be regulated or turned off. Regulation

of hydrogen flow is accomplished by turning the container itself and thus operating another valve mechanism. An adapter member is threaded to fit a conventional hypodermic needle.

Notes:

1. This miniature cutting torch can serve as toolbox equipment, needing no bulky tanks or hose for use at a work site.
2. Repair of miniaturized equipment would be a potential application for this innovation. It could be used in cramped spaces and would be available quickly and easily, regardless of location.

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Paul Shlichta
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