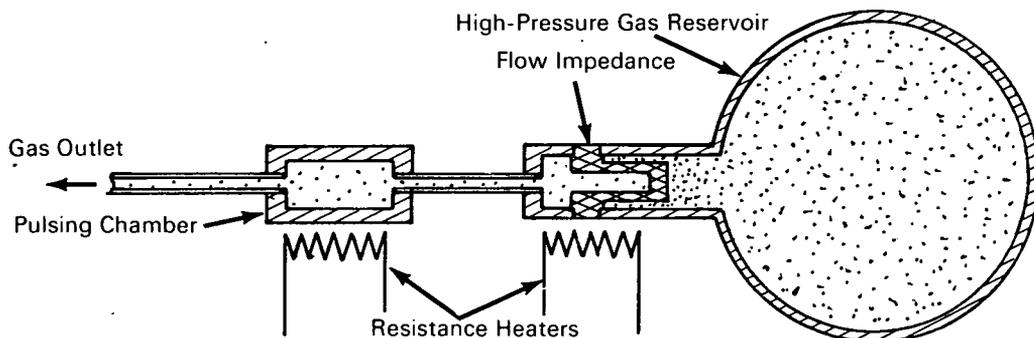


NASA TECH BRIEF



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Device Provides Controlled Gas Leaks



This device provides a controlled release (leak) of very small quantities (approximately 10^{-4} cc at standard temperature and pressure) of gas at low or medium pressures. It has no moving parts, requires less than 5 watts to operate, and is capable of releasing the gas either continuously or in pulses at adjustable flow rates. The device is a modification of the "palladium leak" used for many years to provide small hydrogen flow rates.

The device basically consists of a reservoir containing a gas under high pressure and a metal plug which serves as a flow impedance. The temperature of the metal plug is regulated by a resistance heater to control the rate of diffusion of the gas through the metal plug. If it is required to pulse the gas flow, a pulsing chamber is attached to the outlet of the flow impedance. The gas leaks slowly into this chamber, which is heated rapidly to expand the gas when a pulse is required. Some of the gases and the preferred flow impedance materials are as follows:

Hydrogen: Ni, Pt, Pd, Cu, Fe, Al, Mo
 Nitrogen: Mo, Fe
 Carbon Monoxide: Fe
 Oxygen: Ag

Notes:

1. The most common uses for this lightweight device would be to measure the sensitivity of leak detectors and the speed of vacuum pumps and to calibrate pressure gages.
2. Inquiries concerning technical details may be directed to:

Technology Utilization Officer
 NASA Pasadena Office
 4800 Oak Grove Drive
 Pasadena, California 91103
 Reference: B68-10142

Patent status:

This invention is owned by NASA, and a patent application has been filed. Royalty-free, nonexclusive licenses for its commercial use will be granted by NASA. Inquiries concerning license rights should be made to NASA, Code GP, Washington, D.C. 20546.

Source: H. J. King and S. K. Kami
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