

# United States Patent

Granted on May 9, 1995 to

**George R. Boone**

**Max E. Weitz**

**-INVENTORS-**

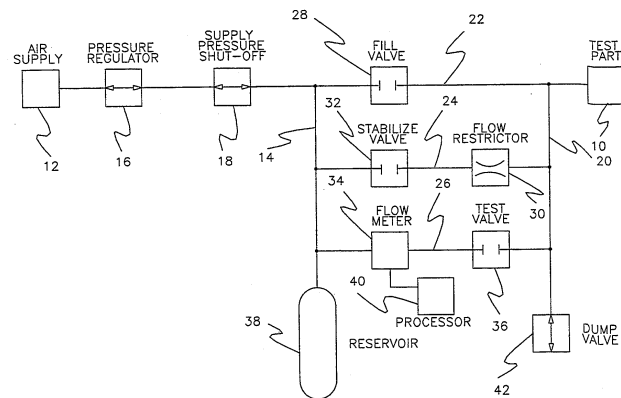
Patent No. 5,412,978

Phase 1 Instruments, Inc.

The  
United  
States  
of  
America

## **LEAK DETECTION SYSTEM**

A leakage test apparatus and method whereby a test part may be tested for leaks using either a dynamic flow method or a pressure decay method. The apparatus includes an air supply and first, second and third conduits arranged in parallel with each other and extending from a first manifold pipe connected to the air supply to a second manifold pipe connected to the test part. The first conduit is adapted to fill the part with air from the air supply at a high flow rate, the second conduit includes a flow restriction orifice and is adapted to fill the part at an intermediate flow rate less than the high flow rate of the first conduit and the third conduit includes a flow meter adapted to measure flow from the first manifold pipe to the second manifold pipe during flow through the first conduit in a fill mode of operation and is further adapted to measure flow from the first to the second manifold pipe during flow through the second conduit in a stabilize mode of operation. In addition, a test mode of operation is provided during which leaks within the test part may be detected. Each of the stabilize and test modes of operation are initiated in response to the measured flow of a previous mode of operation approaching zero whereby the present test method operates on the basis of a flow rate measurement rather than on a time basis.



*The Commissioner of Patents and Trademarks has received an application for a patent for a new and useful invention. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law, Therefore, this*

## **United States Patent**

*grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.*

**Michael J. Brock**

*Acting Commissioner of Patents*

