

The
United
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United States Patent

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-INVENTOR-

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Vacuum Instrument Corporation

METHOD AND APPARATUS FOR MASS ANALYZING A GAS WHICH IS SELECTIVELY DESORBED FROM A BODY

Analysis of material is achieved by distinguishing its constituent elements by their respective masses and desorption temperatures. The constituent elements of adsorbed material are selectively desorbed from a filament by controllably increasing the filament temperature. In one embodiment the desorbed molecules are periodically introduced into one end of a drift tube at recorded times corresponding to specified filament temperatures, the molecules traversing the drift tube at a speed determined by their respective masses. The arrivals of bunches of molecules at the other end of the tube are recorded in relation to their time of introduction into the drift tube to provide a correlation between the mass and desorption temperature of the molecules. In an alternative embodiment the desorbed molecules are periodically ionized at recorded times corresponding to specified filament temperatures, the resulting ions being accelerated in a mass spectrometer in which the ions of different masses are scanned across a single exit slit synchronously with the periodic ionization of the desorbed molecules. The ion current at the slit is recorded as a function of mass during each ionization period to correlate mass and desorption temperature of the desorbed molecules.

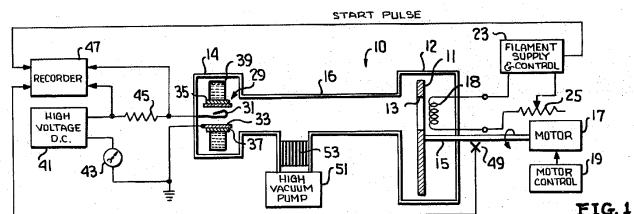


FIG. 1

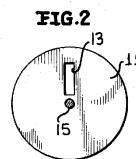


FIG. 2

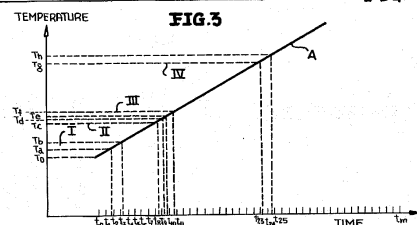


FIG. 3

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

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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.

William F. Lindquist

Acting Commissioner of Patents

