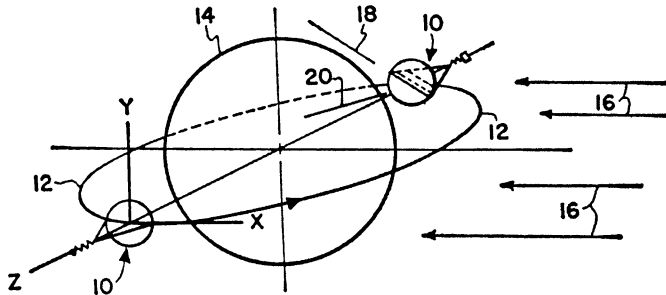


# current patents

## SPACE TECHNOLOGY

### Keeping satellites on station

Satellites can be used as passive communications reflectors provided they can be kept from drifting off station. An invention by William H. Phillips of Hampton, Va., uses solar radiation and the earth's magnetic field to keep the satellites where they belong.



The satellite of the invention is lens shaped. It carries a solar sail which supports a damping weight that cooperates with proper inertia distribution in the body to stabilize the satellite in pitch and roll. Proper mass distribution provides a preferred orientation for the satellite's yawing motion so that the period of oscillation in yaw is twice the orbital period.

In this ratio the yaw oscillations permit the solar radiation forces to feed energy into the satellite's orbital motion. To keep the amount of energy right for station-keeping a ground-controlled electrical coil interacts with the earth's magnetic field to rotate the sail.

Rights are assigned to the National Aeronautics and Space Administration.

Patent 3,386,688

## COMMUNICATIONS

### Color TV and earth magnetism

Color television screens consist of arrays of triads of phosphors. Each triad has one phosphor that scintillates in each of the three primary colors of light: red, green and blue. To insure proper color of the picture it is necessary that each phosphor be struck only by electrons from its own proper electron beam.

A combination of electron source location, electron lenses and a mask between the screen and the electron sources is used to insure proper relationships. However, the earth's magnetic field affects the flight of the electrons and can deviate them enough to strike the wrong phosphor. James W. Schwartz of Western Springs, Ill., has patented a system of auxiliary lenses to compensate for terrestrial magnetism. This he says, is an improvement over previous practice, which tried to compensate by shifting the screen with respect to the mask.

Rights are assigned to National Video Corp. of Chicago.

Patent 3,386,354

## METROLOGY

### Wavelength-independent radiometer

A device that measures the intensity of incident radiation independently of its wavelength has been patented

by Richard W. Treharne of Xenia, Ohio. Previous radiometers of the sort, says the patent, were used mainly as infrared-sensitive thermometers, and their response in the wavelength range below one micron was not important. Instruments used for measuring the power of incident radiation, however, need to respond in the near ultraviolet and visible parts of the spectrum as well as the infrared.

To provide this response, Treharne's invention uses a thermistor as an integral part of a blackbody bolometer. The thermistor is bonded to the back of an optically flat black disk, which insures total absorption of radiation in the range from 0.2 micron to 40 microns. Another thermistor, shielded from the radiation to be measured, serves as a check against changes in ambient temperature.

Rights are assigned to the Charles F. Kettering Foundation of Yellow Springs, Ohio.

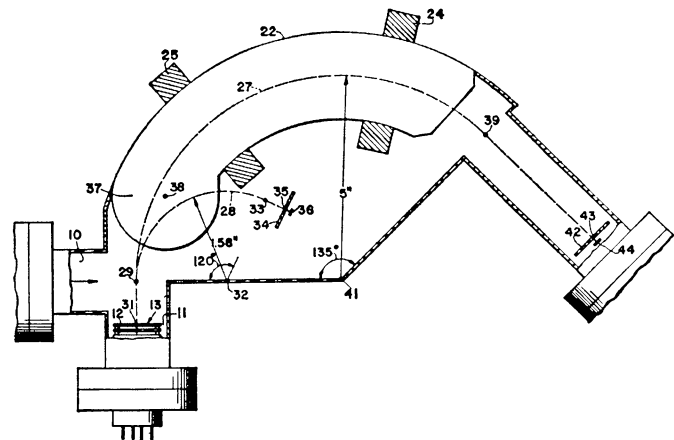
Patent 3,387,134

## ANALYSIS

### Wide range mass spectrometer

A mass spectrometer that uses dual orbits to separate and monitor ions whose masses range from 1 to 100 atomic mass units has been patented by John C. Helmer of Menlo Park, Calif.

Such a device uses electric fields to accelerate the



particles to be analyzed and magnetic fields to bend their paths. The amount of curvature depends on the mass of the particles so that particles of different mass arrive at slightly different points on the collector.

In previous spectrometers, to sweep from mass 1 to mass 100 would require a voltage sweep from 100 to 10,000. But high-voltage breakdown problems would occur around 5,000 volts.

Helmer's invention gets around this difficulty by its dual orbit principle. Ions of mass 1 to 10 and those of mass 10 to 100 are moved by the same fields simultaneously in two widely different orbits and collected by two different collectors. In this way the voltage variation need be only 100 to 1,000 volts.

Rights are assigned to Varian Associates of Palo Alto, Calif.

Patent 3,387,131