

## INVENTION

# Patents of the Week

A system to control the orientation of space satellites from the ground, a headlight for spectacles and a method for making germicidal paper were awarded patents.

► A SYSTEM to control the orientation of space satellites from the ground, in order that their radio antennas may serve as more efficient links in a communications system, has been granted patent 3,060,425.

In the invention, a series of transmitting antennas around the middle of a satellite send signals of different frequencies to a station on the ground. This station measures the differences between the frequencies coming from certain parts of the satellite's surface and sends the information through a computer, which corrects the satellite's orientation automatically.

Cassius C. Cutler of Gillette, N. J., assigned rights to Bell Telephone Laboratories, Inc., of New York.

## Illuminated Eyeglasses

Headlights for your spectacles have been patented by Anton J. Fortuna of Clinton, Ind. The device consists of a pair of glasses with an opening above each lens occupied by an elongated reflector. In the middle of the reflector is a small light bulb, powered by a dry cell battery clipped to the earpiece.

The invention, patent 3,060,308, may also be powered by outside sources such as house current.

## Germicidal Paper

A system for producing a paper with permanently germ-free characteristics was awarded patent 3,060,079. It involves treating the fibers of paper pulp with some germicidal chemical before they are made into paper, thereby achieving permanence.

The technique has been used in the manufacture of test groups of paper towels and napkins.

Donald K. Pattulloch of New York assigned joint rights to Michigan Research Laboratories, Inc., Long Island City, N. Y., and Electro-Chem Fiber Seal Corp., New York.

## Healthful Cigarettes

A plug in the mouthpiece of a cigarette that causes the smoke to flow along a narrow, extended path won patent 3,059,649 for Edgar Bernhard, Glencoe, Ill.

The plug, just slightly smaller than the cigarette itself, forces the smoke to the outer edge of the cigarette, so that its closeness to the wrapper and the outside air will provide increased cooling. The plug is also constructed so as to create turbulence, which, according to the invention, enhances removal of nicotine and tars from the smoke.

## A Left-Handed Can Opener

William J. Landry, Independence, Mo., has invented a can opener that can be used either from the right or left side.

Patent 3,059,333 has handles which can be reversed with respect to the can opening mechanism and then are held in place by permanent spring clips.

Rights were assigned by the inventor to John C. Hockery, trustee for Henry M. Talge and Foster L. Talge.

## Anti-Skid Device

This invention is designed to prevent skidding of an automobile by reducing the skid. The key to the device is an apparatus

The key to the device is an apparatus that senses when a wheel is decelerating very rapidly compared to the car, and then reduces brake pressure on only that wheel, thereby preventing the skid but retaining safe stopping characteristics.

Millis C. Parshall, Pontiac, Mich., assigned rights to General Motors Corp., Detroit, for Patent 3,059,973.

## TV in Your Hat

A small television set, mounted inside a helmet, so that the wearer can view the image simply by raising his eyes to an overhanging mirror won patent 3,059,519 for Austin N. Stanton of Garland, Texas, who assigned rights to Varo, Inc.

• Science News Letter, 82:302 November 10, 1962

## TECHNOLOGY

## New Kind of Intense Light Beam Developed

► A NEW KIND of laser in which an intense beam of light is generated directly by passing an electric current through a semiconductor has been developed.

The device produces a sharply beamed radiation pattern of infrared light. The electric current is passed through a crystal of semiconducting gallium arsenide.

Semiconductors are the tiny devices that replace vacuum tubes for many uses, such as hearing aids. Lasers, or optical masers, are a family of electronic devices that generate highly directional light beams of a single frequency.

The new kind of laser was developed by Dr. Robert N. Hall and a group of his associates at the General Electric Research Laboratory, Schenectady, N. Y. They describe their simple, direct method for achieving laser action in the Physical Review Letters, Nov. 1, 1962.

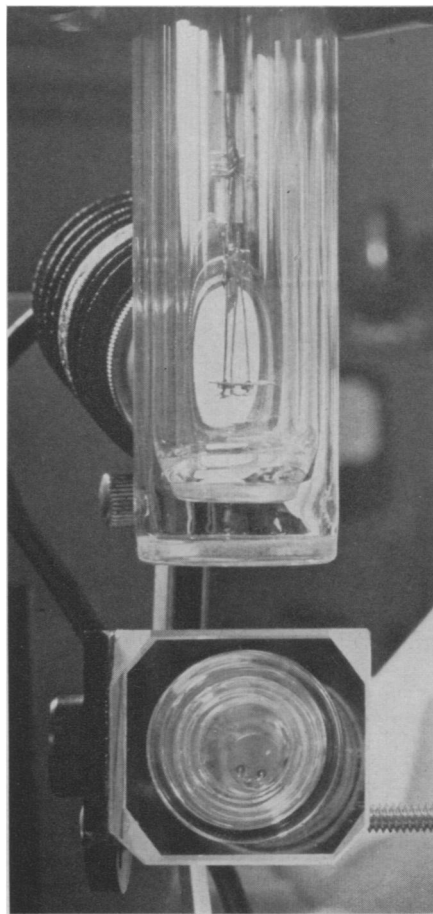
To achieve laser action, intense electric currents as high as 20,000 amperes per square centimeter (two-fifths of an inch) are applied. The electrons (and holes) are injected into the plane of the junction region, which is less than a ten-thousandth of an inch thick, in the middle of a tiny semiconducting diode of gallium arsenide.

The directional and coherent beam of infrared light, with a wavelength in the vicinity of 8,400 angstroms, is emitted from the junction-plane edges at two carefully polished and precisely parallel sides of the device.

Since gallium-arsenide diodes are extremely efficient sources of light energy, the new device promises efficiencies far higher than those of gas or crystal lasers, the kind previously known.

Working with Dr. Hall on the new laser were Gunther E. Fenner, Jack D. Kingsley, Theodore J. Soltys and Richard O. Carlson of the GE Research Laboratory, and Nick Holonyak of GE's Semiconductor Products Department, Syracuse, N. Y.

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General Electric

**NEW LASER**—The new type of laser is suspended inside a glass container filled with liquid nitrogen which keeps it cool when an electric current is passed through its junction to generate a beam of infrared light. In the reflecting prism below, the laser crystal is shown as a small spot between two connecting electrodes.