

Current Patents

COMPUTERS

Optical Data Processor

An optical computer system that uses photographic film of varying density to perform many thousands of calculations simultaneously received Patent no. 3,305,669 last week. Inventor George L. Fan assigned rights to IBM Corp.

In order to be processed by the device, numbers have to be arranged in a pattern called a matrix. Mathematicians have found that many complex and tedious computations can be simplified by arranging numbers in matrices and multiplying the numbers in the columns of one matrix by those in the rows of another.

In practice, a matrix with more than five numbers on a side, or a total of 25 numbers, becomes too unwieldy to be useful. Even an electronic digital computer can hardly handle a matrix with 200 elements on a side, because it doesn't have the capacity in its internal memory circuits to store the multiplied numbers that result.

The optical computer can handle a matrix with 10,000 numbers on a side, or a total of 10 billion numbers. This is because it performs its multiplications simultaneously, instead of one after another as in the digital computer, so it doesn't have to remember the result of one multiplication while it is doing the next.

In the optical device, numbers are represented by different densities in photographic film. A particular density at a particular spot on a film would represent

an element or number in a matrix. Ten thousand such elements could be squeezed into a square centimeter of film.

Elements in one matrix are multiplied by elements in another by shining a light through both elements and measuring how much it is dimmed. The dimming depends on the product of the two densities.

Since matrix operations call for multiplying the column elements of one matrix by the row elements of the other, the second matrix is set on its side. This way the rows of the first matrix are parallel to the columns of the other. Shining the light through the whole matrix film at once performs all the multiplications simultaneously. Fan says laser applications now being developed will improve the process further.

OPTICS

Stereo Through Fibers

A method for sending stereo images through a fiber optic cable was patented by Anwar K. Chitayat, who assigned Patent no. 3,303,739 to Optomechanisms, Inc., of Plainview, N.Y.

The system provides for two images to be fed into the optic cable alternately at a rate fast enough to prevent the images from flickering. A pair of rotating glass discs, half-silvered and half clear, alternately block off and transmit the two images to the input end of the cable. A similar system operates at the other end.

New Ideas and Gadgets

Disposable Yeast Sampler

The presence of yeast dead or alive in fluids under pressure can be tested in 15 minutes with this disposable sampler preloaded with a membrane filter. Samplers come sterilized and packaged in an autoclave envelope, while the disposable sterilized needles come packed separately. Clips for fixing membranes to glass slides are included with each box of 20.

Gelman Instrument Co., 600 South Wagner Rd.,
P.O. Box 1448, Ann Arbor, Mich.

Electroluminescent Diodes

A new means of recording sound on film is made possible by light-emitting silicon carbide diodes with possible applications in eight-millimeter home movies and electronics, computers and film recording. This diode, smaller than a match head, requires no lenses or optics and needs only a small solid state amplifier and a microphone to record sound on film. If incorporated in a 16-millimeter camera, the components would take up less than 10 percent of conventional space requirements.

Norton Co., 50 New Bond St., Worcester, Mass. 01606

Moisture Meter

The moisture content in percent of net weight of wood, wall board, plastic, plywood and similar materials

can be read directly on the meter of this portable moisture meter. Useful to wood products manufacturers, forestry personnel as well as lumber mills, the unit comes housed in a steel carrying case and includes probe pins for inserting into the material.

Soilfest Inc., 2205 Lee St., Evanston, Ill. 60202

Slide Viewer and Sorter

Requiring no electricity for operation, this simple portable viewer allows viewing slides individually or in groups. Consisting of a platform of polished plastic, the unit depends on reflected light for viewing the slides that are placed upright in parallel grooves running across its surface. It is especially designed for 35-millimeter and Kodak Instamatic slides.

Frank Smead, Indemar Inc., P.O. Box 7443, Rochester, N.Y.

Protection Systems for Schools

Classroom loudspeakers are converted into sensitive microphones in this new system for protecting school property. Any unusual noise inside a school building activates a warning light installed in police headquarters, and by pressing a button a policeman can listen in to determine the nature of the sound. The system can also turn on school lights and sound an alarm.

Dukane Corp., Communications Systems Division, St. Charles, Ill. 60174