

## INVENTION

# Patents of the Week

A tiny device called "persistatron" for use in computers, a control unit for guided missiles and two methods for transporting optical images using fibers were among patents awarded.

➤ A TINY DEVICE that is used in computers operating at very low temperatures was granted a patent.

The device is called a "persistatron" because the current it carries is persistent. Its use in giant "brains" could considerably reduce their size and very much increase their operating speed.

The persistatron is so small that 100 could fit into a thimble. It operates only at temperatures near absolute zero, which is 459.7 degrees below zero Fahrenheit. The device consists of a straight piece of wire about a tenth of an inch long wound with a control wire about the size of a human hair.

At temperatures near absolute zero, many metals are superconducting, offering apparently no resistance to electrical currents. Devices such as the persistatron are man's first practical use of this property, discovered nearly 50 years ago but still not completely understood.

The persistatron can be used either as a memory unit or as a directional switch. It won patent 3,043,512 for Michael J. Buckingham and William M. Fairbank of Durham, N.C. Mr. Buckingham assigned his rights to Duke University, Inc., Durham. Similar low-temperature units are called "cryotrons."

## Instrument Mounting for Satellites

Fred H. Esch of Silver Spring, Md., assigned to the Government through the Secretary of the Navy his rights to patent 3,043,644 for a method of supporting instruments inside satellites.

To eliminate heat by conduction and reduce vibration, Mr. Esch fastens the inner structure on which the instruments are mounted to the satellite's shell by nylon lacing under tension.

This is similar to the method used to support the electronic equipment in Telstar, the 170-pound communication satellite that was used to successfully transmit live television programs from the U.S. to Europe. Telstar, the first privately owned satellite, was built for American Telephone and Telegraph Company.

## Guided Missile Control

Guided missiles launched by infantrymen can be controlled with the device for which John W. Piper of Godalming and William Harry Fryer of Byfleet, England, received patent 3,043,197. They assigned rights to Vickers-Armstrongs (Aircraft) Limited, London.

The control unit has two handle grips, one in front of the other for lining up the target and a trigger switch connected by

wires to the launcher for firing the missile. Movements of the operator's thumb control the missile's flight path.

## Other Significant Patents

Other interesting patents include:

Two methods of transporting optical images using fibers, both assigned to American Optical Company, Southbridge, Mass.

Patent 3,043,179 was granted to Joseph M. Dunn of Sturbridge, Mass. It provides for obtaining a three-color TV image from three individual color groups, each of which is produced by a separate picture tube.

Patent 3,043,910 was awarded to John W. Hicks, Jr. of Fiskdale, Mass. It is also for TV use, and allows the image transferred by fibers to be greatly enlarged during transfer.

A method of making plaster of Paris for casts so that it is creamy when wet yet gives good adherence when wrapped onto previously set plaster casts. Leo Brickman of Metuchen, N.J., and Martin L. Edendbaum of New Brunswick, N.J., won patent 3,043,298 covering the addition of hydroxy propyl methyl cellulose in the plaster of Paris to accomplish this.

An encoder for transmitting the information on which weather maps are based. Henry Hoffmann, Jr., Rome, N.Y., assigned rights to patent 3,043,911 to the Government through the Air Force. Using his invention, the operator can encode much faster and more efficiently, Mr. Hoffmann claims.

A multicell magnesium battery that is not subject to swelling and leaking. Patent 3,043,899 granted to Joseph J. Coleman of Freeport, Ill., who assigned rights to Servel, Inc. (Burgess Battery Company Division), also of Freeport.

• Science News Letter, 82:50 July 28, 1962

## SPACE

### H-Bomb Could Blast Hole In Radiation Belt

➤ AN ATTACK upon the radiation belt around the earth, believed to endanger astronauts flung into outer space, may be the objective of the forthcoming 500-mile-high H-bomb blast in the Pacific.

Scientists differ in opinion as to whether or not it will disrupt the Van Allen radiation zone of charged atomic particles—electrons and protons—that could put a space traveler out of commission.

It will assuredly interfere with shortwave radio communication, like the lower 200-mile thermonuclear blast of July 9. How long the effect will last is a question as the



**MOON LAUNCH POWER**—This is the manufacturing line for the thrust chamber of F-1 rocket engine—the most powerful engine the United States is developing. A liquid propellant engine, F-1 produces 1,500,000 pounds of thrust. Rocketdyne, a division of North American Aviation, Inc., is developing it for National Aeronautics and Space Administration. It will be used in a cluster of five in the first stage of the C-5 Advanced Saturn lunar space rocket. Advanced Saturn will be used to send a crew of three U.S. astronauts to the moon.

previous blast was not as long-lasting as expected.

It will form an aurora. It will give a gigantic surge of electric current that will change the earth's magnetic field.

The real purpose of the H-blasts is not to acquire scientific information but to discover whether electronic warnings of missiles flung at the United States in time of nuclear war will be put out of commission by the H-blasts.

Two previous high-altitude tests in the current Pacific series have fizzled due to malfunction in the missile used to launch the bombs into the atmosphere.

The scheduled 500-mile test has been criticized by scientists on the basis that it could disrupt the Van Allen radiation belt, since it will be exploded within the lower levels of this radiation region.

After studying the problem, however, scientific experts concluded that the effects would probably be minor and temporary. Whatever the effects, they can be measured by two U.S. satellites now in orbit—Injun and Traac.

Advance notice of the explosion will be given to scientists around the world by the National Bureau of Standards' World Warning Agency at Ft. Belvoir, Va.

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