



Grumman

**UMBRELLA PLANE**—The Grumman Hawkeye is provided with an umbrella to protect it against attacking aircraft. Called a "flying brain" by the Navy, the aircraft is carrier based and is shown being readied for its first nose tow launching off the U.S.S. Enterprise.

## INVENTION

## Patents of the Week

An undersea "island" for oil drilling operations that is anchored by a huge buoyant tank submerged in the water has earned a patent for the inventor of Fuller domes.

► AN UNDERSEA "ISLAND" containing a derrick for oil-drilling operations earned patent 3,080,583 for Richard Buckminster Fuller, Forest Hills, N. Y.

Mr. Fuller is best known for his concept of the geodesic, or Fuller, domes. They are used around the world in a wide variety of buildings, more than a thousand in 21 countries.

One of Mr. Fuller's spectacular proposals is his idea for a hemispherical dome two miles in diameter to enclose a large part of downtown New York.

Most well-drilling rigs are now fixed platforms erected on pilings driven into the ocean floor. Mr. Fuller's patent covers an anchoring system using a huge buoyant tank submerged in the water. It would be held there by anchor ropes extending from the sides of the island to anchors distributed around it.

Several of the ropes extend clockwise and several counterclockwise, so that the caisson is held in the grip of opposing forces. Because it is submerged, the caisson would be protected from wind and wave damage. The well-drilling system is inside the caisson.

### Typewriter Visual Aid System

A typewriter instruction system in which instructions from the teacher are given visually by controlling the illumination on a nearby typewriter chart earned Ray N. Conrath of Indiana, Pa., patent 3,080,661.

The new system greatly reduces the time required to teach typewriting. Another advantage is that the letters of the keyboard may be learned in groups in step-by-step learning.

The system works by linking together the typewriter keyboard in front of the student and the "dummy" keyboard nearby. Alphabetical letters are selectively illuminated under the control of the instructor, so that the student learns to type without looking at the keyboard in front of him.

### Other Patents

Other patents include:

A combined picture frame and easel, which earned patent 3,080,670 for Jacob Fraimowitz of Brooklyn, N. Y.

A combination baby bed, a dresser cabinet, and a table, which gained patent 3,080,573 for Geejse Marsman of Burnaby, British Columbia, Canada.

A safety windshield for autos that reduces the impact force of the body against the windshield gained patent 3,081,127 for Egon Orowan of Belmont, Mass.

An antiskid shoe for automobile tires, particularly adapted for traveling over icy roads and wet pavements, which earned patent 3,080,906 for Sumas Payne of Chicago, Ill.

A protective cover for an aerial missile, utilizing a displaceable seal which may be used for closing the ports of a missile nose probe until after missile launching.

Ralph O. Robinson Jr. and Thomas W. Sheppard, both of Silver Spring, Md., assigned rights to patent 3,080,817 to the Government as represented by the Secretary of the Navy.

A mouth-to-mouth resuscitator made of plastic and shaped for use, which earned patent 3,080,864 for Robert A. Berman of Far Rockaway, N. Y., who assigned rights

to Medical Plastics, Inc., Jamaica, N. Y. The device insures that the exhaled breath of the operator reaches the person being revived, Mr. Berman states.

• Science News Letter, 83:194 March 30, 1963

## TECHNOLOGY

## Largest Cooling Tower in U. S. Under Construction

See Front Cover

► THE LARGEST cooling tower installation in the United States, capable of cooling 272,000 gallons of water per minute, is under construction by Foster Wheeler Corporation.

The first of two identical units, already completed, is shown on this week's front cover. The unit, located at the Etiwanda steam-electric generating station of Southern California Edison Company, is capable of cooling 136,000 gallons of water per minute. The structure is 576 feet long, 60 feet wide and 57 feet high.

The second half of the installation is expected to be finished this spring.

The towers will provide cooling water for two new generating units being constructed by the company and will increase the company's generating capacity by 620,000 kilowatts.

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## TECHNOLOGY

## New Transistor Uses Light, Not Electricity

► SIGNALS are carried by light rather than by electric current in an entirely new type of transistor developed by the International Business Machines Corporation, Yorktown, N. Y.

The experimental device, called an optical transistor, was devised by Richard F. Rutz of IBM's Thomas J. Watson Research Center. It has been operated at high frequencies and is relatively easy to construct.

The optical transistor, which is made of gallium arsenide, performs the functions of a transistor but operates on a completely different principle from the conventional transistor.

In the optical transistor, some of the energy of the incoming electric current is converted into light. After passing partly through the device, the light is absorbed and frees electrons on the output side. Electrons then pass into the external circuit as output current. The effect is as if current were passing through the device, but the energy is actually carried by light.

The advantage of the optical transistor principle is that light moves much faster than electric charges through the "base," or middle portion, of the device.

To obtain high frequency operation in a conventional transistor, the base must be made extremely thin to shorten the time required for electric charges to move across it. Such extremely thin base regions, which are difficult to make, are not necessary with the optical transistor.

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