INVENTION

Patents of the Week

Device to help in harnessing fusion reactions, method of growing single crystals and a design for satellite vehicle awarded patents.

➤ THE DEVICE that has been used to achieve the greatest success yet in man's quest to control the fiery fusion reactions of hydrogen bombs for peaceful purposes has been patented.

Dr. James L. Tuck of Los Alamos Scientific Laboratory, Los Alamos, N. Mex., was granted patent No. 3,031,398 for the device. He assigned rights to the U.S. Atomic Energy Commission.

In Dr. Tuck's invention, a jet of gaseous plasma is directed into a magnetic field shaped so that the plasma, once having penetrated the field, is trapped within it. The plasma jet is injected into the magnetic field at a very high energy and the magnetic field is not thereafter changed.

Key to achieving control of fusion reactions, one of the ways in which the sun and other stars are stoked, is long-time confinement of the reacting plasma. A plasma is that state reached by ordinary matter, such as water or rocks, when it is heated to temperatures of many thousands of degrees. Plasma is sometimes called the fourth state of matter and is a collection of neutral particles, charged particles and free electrons that as a whole is electrically neutral.

Lightning bolts and fluorescent lights are common examples of plasmas.

Dr. John E. Osher, also of the Los Alamos Scientific Laboratory, which is operated by the University of California, has reported trapping a relatively high density plasma for a comparatively long time using a cusped magnetic field. This kind of magnetic field is also known as the "picket fence."

Dr. Osher found that the gas reached temperatures of 50 to 100 million degrees centigrade for one-thousandth of a second. Other scientists have trapped denser gases or trapped them longer, but this is the first time the combined result has been achieved.

Growing Single Crystals

One of the 1956 Nobel Prize winners, Dr. William Shockley of Los Altos, Calif., was awarded patent 3,031,275 for a method of growing single crystals, ribbons or sheets. Precise thin crystals in the form of plates, discs, flakes or films are increasingly in demand for use in transistors, rectifiers, diodes, solar batteries and other electronic devices.

Dr. Shockley devised a method for growing such crystals by supporting the growing crystal on a molten material, with a minimum of mechanical stress.

Orbiting Space Vehicle

A different design for an earth-orbiting satellite won patent No. 3,031,154 for Robert E. Roberson, Fullerton, Calif., and John V. Breakwell, Long Beach, Calif., who assigned rights to North American Aviation, Inc.

The space vehicle they designed has two separated sections held together by a rod. This configuration helps to stabilize the position of the vehicle in orbit, so that the control system would have to be used only for unpredictable or minor changes in the satellite's attitude.

The arrangement of the two sections is determined by the expected path of the satellite and the earth's gravitational field.

Other Patents of Interest

Other new patents of particular interest were:

An improved method and apparatus for growing good quality and larger diamond crystals, with particular emphasis on temperature control. Harold P. Bovenkerk of Royal Oak, Mich., received patent No. 3,031,269 for the method, rights being assigned to General Electric Company.

A process for removal of moisture from dehydrated food products, for which Arthur I. Morgan Jr. of Berkeley, Calif., Robert P. Graham of El Cerrito and Lewis F. Ginnette of San Leandro, Calif., won patents No. 3,031,312 and 3,031,313. They assigned rights to the U.S. Government through the Secretary of Agriculture.

A bottle specifically designed for christening boats or airplanes, for which William C. Loughran of Brielle, N. J., was awarded patent No. 3,031,095. The bottle has a weakened area of comparatively thin glass between a thick bottom and a thick neck portion.

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PSYCHOLOGY

Faulty Driving Distance Linked to Human Factor

➤ MAINTAINING improper distance behind another vehicle is related to certain human characteristics of the driver.

Men are just as likely to make errors of judgment of following distance as are women, Drs. Stuart Wright and Robert B. Sleight of the Applied Psychology Corporation of Arlington, Va., said in reporting a study of drivers to the Eastern Psychological Association meeting in Atlantic City, N. J.

Older drivers make greater errors than do younger drivers. Experienced drivers make better judgments than do the inexperienced. Drivers with a good education do better than those who drop out of school early. Visual abilities are important.

Highway and safety engineers both have an interest in this study of following distance, Dr. Sleight said.

Driving too close behind the car ahead may provoke an accident on the road. But leaving too much distance between cars prevents the traffic from getting the best possible use of the road.

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