INVENTION

Patents of the Week

A "survival couch" to protect astronauts, a method for analyzing weather information gathered by radar and a process for restoring dehydrated fruits were awarded patents.

➤ THE FORM-FITTING couch in which U.S. astronauts recline during their earth-circling flights was granted a patent.

The U.S. Patent Office calls the device a "survival couch." The design granted patent No. 3,038,175 is basically the one for which each of the seven astronauts in Project Mercury was individually fitted. Four of the contour couches have so far been used, two in sub-orbital flights and two in globe-girdling trips.

The couch gives support and protects the astronaut from the stress of launch, separation, retrofiring, entry, parachute deployment and water landing of the spacecraft. The force of gravity (g) builds up to nine times that at the earth's surface during launch and reentry.

Possible emergencies include escape at launching, at the time of highest speed immediately before entering orbit, or while in orbit; or possible ground landings.

Before the patent was applied for in 1959, centrifuge studies had shown that a reclining position, with head and shoulders raised slightly and knees drawn up in a seated position was best for withstanding the normal or possible emergency forces. This shape for the couch is described in the patent.

The contour support is preferably made of Fiberglas, Maxime A. Faget of Newport News, Va., and William M. Bland Jr. and Jack C. Heberlig of Hampton, Va., state in their patent. They assigned rights to the Government through the National Aeronautics and Space Administration.

Controlling H-Bomb's Powers

A method for producing the high-temperature gases necessary for taming the hydogen bomb's nuclear fusion reactions for peaceful purposes was awarded patent No. 3,039,01. Inventor Chieh Chien Chang of Minneapolis, Minn., assigned rights to the Government through the U.S. Atomic Energy Commission.

His method is a modification of the fusion machine known as the Astron to provide for intermittent, or pulsed, operation. Key to the Astron approach is a cylindrical sheet of high-energy electrons, the negatively charged bits of matter that carry electric currents.

This electron sheet, called the E-layer, is responsible both for providing the magnetic confinement of gas, or plasma, and for heating it to fusion temperatures. The same kind of mirror effect found in the Astron also works to trap electrons in the earth's magnetic field, as the planned high-altitude H-bomb explosion in the Pacific will again show.

Other Patents of Interest

Other interesting patents are:

A process for rapidly restoring to their original state fruits or vegetables that have been dehydrated. The method was developed by James Cording Jr., Philadelphia, and Roderick K. Eskew, Glenside, Pa., who assigned rights to patent No. 3,038,813 to the Government through the U.S. Department of Agriculture. The fruit or vegetable is cut in convenient-sized pieces, then dried and heated under pressure, superheating the contained water with respect to atmospheric pressure. The pressure is then instantly released, giving a porous product that can be rapidly restored to edible form.

A method for analyzing weather information gathered by radar, for which David Atlas of Newton Center, Mass., received patent No. 3,039,088. The inventor assigned rights to his radar method for predicting the rainfall from a particluar storm or cloud to the Government.

Compounds used in electronic "brains," or computers, known as ferro-ceramics. Dr. Francis E. Vinal of Weston, Mass., and Daniel L. Brown, Boston, assigned rights to patent No. 3,038,860 to the Government. They devised a process for manufacturing combinations of lithium and nickel particularly useful for computers because of their magnetic properties.

A use for old tires, which won patent No. 3,038,512 for Hubert Staton of Chicago. He suggests turning the tires inside out to make a container with decorative edges in which flowers can be planted.

A device for forecasting the future performance of a race horse, for which Maxwell H. Hill of Rochester, N. Y., was awarded patent No. 3,038,655. It has a graduated scale that takes into account the length of the race to be run as well as the horse's previous performance and the weight of the jockey.

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FOOD TECHNOLOGY

Just Add Water and Stir To Use Instant Cheeses

➤ INSTANT CHEDDAR and blue cheeses (add water and stir) will soon be on the grocer's shelf, adding to the growing list of compressed and condensed foods turned out by science.

These powdered cheeses were developed by Drs. C. M. Stine and R. L. Bradley, Michigan State University, East Lansing.

For use in cheese sauces or sprinkled on pizzas, casseroles and other dishes needing the cheese touch, these two cheeses will soon be on the market, the American Dairy Science Association meeting at the University of Maryland, College Park, was told.

The powdered cheese is made similarly to other dry milk products. Water is blended with plain cheese to make a liquid slurry, which is then homogenized. A heating process removes all water, leaving a uniform cheese powder, which can be reconstituted by the housewife.

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PHYSIOLOGY

Heart Rate Recorded During Sleep by Radio

➤ THE HEART BEAT of humans can now be recorded during natural sleep using an FM radio system.

Success of the telemetry method, similar to that used for radioing information from satellites, will make it possible to gather information on other functions of the body during undisturbed sleep. Such functions were previously difficult to observe, Drs. Gordon H. Ira Jr. and Morton D. Bogdonoff of Duke University Medical Center, Durham, N. C., reported in the Journal of the American Medical Association, 180: 976, 1962.

They found that there were some periods of increased heart rate during the night associated with movement during sleep. Records of brain activity made at the same time showed that the depth of sleep lightened at the time body movement and heart rate increased.

The physicians concluded that the plane of sleep is consistently reflected by the heart-rate pattern, being deep when the heart rate is level and lighter when it is variable.

Prolonged and uninterrupted recordings have heretofore been difficult to make because recording equipment was bulky. Now a radio transmitter the size of a package of cigarettes can be used. The patient's heart beat is picked up by leads attached to the chest, and the leads are connected to the transmitter worn in a wide belt.

The Duke researchers found that the heart rate of persons with hyperthyroidism did not decline during sleep.

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TECHNOLOGY

Pampered Grain Given Air Conditioning System

➤ WHILE TEMPERS are flaring over the Billy Sol Estes case, Texas grain elevators are remaining cool. Air conditioning has really come to farming.

This last word in storage techniques was reported to the American Society of Agricultural Engineers meeting in Washington, D. C., by Dr. J. W. Sorenson Jr., Texas A & M College. Grain elevators are being air-conditioned in an effort to curb the potential $5,000,000 annual loss in stored grain.

Tests begun last year to determine feasibility of air conditioning have shown that the reduction of moisture in grain, a big problem, can be controlled economically.

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