

Current Patents

CRYOGENICS

Electronic Super-Cooler Patented

A means of obtaining temperatures of within a hundredth of a degree of absolute zero, received patent No. 3,296,825. The device, which works on an entirely different principle than the conventional compression-expansion technique of refrigeration, was invented by Dr. Werner Känzig at the General Electric Research and Development Center in Schenectady. G.E. was assigned the patent.

The heart of the cooling system is a crystal of potassium chloride to which hydroxyl (OH^-) ions have been added. Dr. Känzig discovered that at temperatures below 25 degrees Kelvin (minus 414 degrees F.) the hydroxyl ions will array themselves in line with an applied electric field. When the electric field is removed, the ions become disarrayed again. Most significant, when the ions lose their ordered pattern in this way, they absorb heat.

By placing the crystals in a receptacle of liquid helium to bring it below 25 degrees Kelvin, and then sending pulses of electric current through the crystal, it was possible to order and relax the hydroxyl ions repeatedly, bringing the temperature of the crystal down to 0.01 degree Kelvin, or within a hundredth of a degree of absolute zero, the point at which all molecular activity stops.

The cooling effect of the apparatus could be increased by attaching several crystal cooling systems together.

By using conventional techniques of compression and expansion of gasses, scientists have been able to reach as low temperatures as 0.3 degree Kelvin. Much lower temperatures, within 0.001 degree Kelvin, have been ob-

tained by repeatedly applying and removing a magnetic field from various salts. The new process does the same thing but uses an electric field.

CHEMICAL ENGINEERING

Cheaper Sulfur Recovery Method

Pan American Petroleum Corp. was assigned patent No. 3,297,409 last week for a new method of recovering sulfur from weak concentrations of hydrogen sulfide gas (H_2S). The new process is cheaper than previous methods used, an important item since sulfur prices have risen sharply in recent months.

The streamlined method applies to the first stage of sulfur refining, in which hydrogen sulfide gas is partially burned to produce sulfur dioxide (SO_2). If the concentration of hydrogen sulfide is too dilute, it is difficult to keep the fire going. One method is to split off part of the gas and burn it completely, then mix it with the unburned gas at a later stage. This requires higher temperatures and more expensive reactor vessels to withstand them, however.

The method patented by Pan American maintains the lower temperatures of the conventional method but allows the use of more dilute gas. It splits off some of the incoming gas, partially converts it into sulfur dioxide but does not burn it completely, then mixes it with the rest of the gas for further processing.

Pan American, one of the major sulfur producers in the country, has been using the new procedure in its Tulsa plant for about two years. The method was invented by L. V. Kunkel and G. M. Franklin. Sulfur, mostly in the form of sulfuric acid, is used in many products, including steel, tires, newsprint and paint.

New Ideas and Gadgets

New Ideas and Gadgets is an editorial service to readers; more information on items can be secured from the manufacturers.

Synthetic Seawater

Marine biologists will find the synthetic seawater useful for culturing marine animals in their studies of life cycles of very delicate sea organisms. The special formula synthetic seawater combines a large number of chemical components that permit the growth of the tiny organisms where others have failed.

Dayno Sales Co., 678 Washington St., Lynn, Mass.

Wristwatch Transmitter

Useful to businessmen, doctors, private investigators or plant supervisors for quick communication, the 17-jewel wristwatch is combined with a powerful micro-miniature transmitter and an electronic paging system. The unit has a telescopic antenna and can send a signal or transmit direct voice contact to persons with pocket-size receivers.

Continental Telephone Supply Co., Inc., 17 West 46 St., New York, N.Y.

Transducer Kit

Suitable as a source of ultrasource energy in school and research laboratories, the transducer kit delivers high intensity ultrasource energy above the audible fre-

quencies and produces standard sine waves on an oscilloscope. The kit includes all necessary materials and can be connected to existing air lines.

Teknika/Inc., Auburn Industrial Park, Auburn, Mass. 01501

Retractable Slide Rule

The rule will fit into a pocket or extend into a 10 inch slide rule and measuring instrument. Made of lightweight steel tape, the slide rule has A, B, C and D scales with the B and C scales folded in D^2 pi and D pi relationship to permit determination of circular areas and circumference by moving the cursor only. The rule folds into a square case $1\frac{3}{4}$ by $1\frac{3}{4}$ by 1 inch.

Gal-Tape, 1057 Kingston Park, Roann, Ind. 46974

Portable Experimenter

Designed for school laboratories, the portable self-contained laboratory station on electricity-electronics systems comes with a text that includes 24 low-voltage experiments. The experiments conducted with the unit can be used to help students learn the principles of light, heat, sound and motion.

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