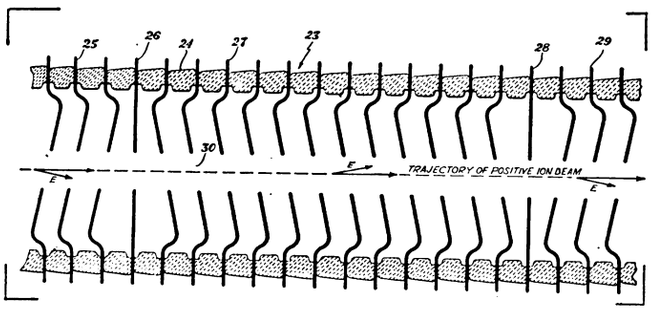
Current Patents



Van de Graaff High-Voltage Tube

Dr. Robert J. Van de Graaff, who died last January, was awarded a patent last week for a high-voltage vacuum tube which can increase the capacity of the type of particle accelerators which bear his name, Van de Graaff generators. The new tubes are used in very large generators such as the new Emperor tandem machine at Yale University.

The newly developed vacuum tube is designed to overcome the so-called total-voltage effect, which limits the amount of charge which the generator can hold without breaking down. It is the charge on the generator which accelerates particles to be tested, and the bigger the charge, the more the particles are accelerated.

The total voltage limitation comes from ions which may be formed by particles striking the sides of the tube or the few stray atoms left in the evacuated section. If these ions are themselves accelerated, they can form other ions in increasing numbers so that the voltage in the tube is finally discharged. This process can happen no matter how good the insulation of the tube itself.

The new invention provides an electric field which is bent slightly instead of being straight as in previous accelerators. In the bent field, any stray ions that are formed are steered into the sides of the tube before they pick up enough energy to cause other ions. The main beam of particles is moving so fast that it is curved only slightly by the bent field—not enough to send it into the side of the tube. In extra-long tubes, where the beam might be affected too much, the field is bent first one way and then the other, sending it back to the middle of the path.

The patent, No. 3,308,323 was assigned to the High Voltage Engineering Corp.

In-Place Rail Welder

A method of welding iron rails while in place on the track bed was patented last week by Dr. Clyde M. Adams Jr. of the Massachusetts Institute of Technology. Dr. Adams assigned the patent, No. 3,308,266, to the American Machine and Foundry Corp.

Welded rails are increasingly interesting the railroad industry, Dr. Adams says, because the traditional jointed tracks, which cause the train's familiar clickety-clack sound, are a major cause of track breakdown. New track presently being laid is welded in quarter-mile sections ahead of time and hauled to location in long trains, but this process is a lot of trouble. Besides, this doesn't help the millions of miles of track already laid.

Dr. Adams said that tests of welds produced by his machine showed that they would hold up under 700,000 test cycles, which, although not as good as expected, was still a useful weld. He said the advantages of welding made a poor weld better than a very good mechanical joint.

New Ideas and Gadgets

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

Portable Cabana

Protection from the sun and sand are provided with this 4¼ by 4¼ by 4¼-foot portable cabana that folds into its own carrying case. Made with a polished aluminum frame, the cabana, which can also serve as a duck-blind or play tent for children, has a colorful waterproof nylon cover resistant to mildew, sun rot and abrasion. Snap-on side curtains are available separately.

R.J. Sporting, Inc., P.O. Box 52, Rochester, N.Y. 14601

Time-Delay Relay

Suitable for a variety of applications in automotive, safety, hobby, computer, aircraft and display systems, this thermal time-delay relay for on-off control of electrical systems is a compact bimetal unit which inhibits current flow from 3 to 30 seconds. The unit operates on 6- to 18-volt DC power sources.

Sylvania Electric Products, Inc., 730 Third Ave., New York, N.Y. 10017

Fold-Down Light for Boats

A tilt-type base allows this bow and anchor light to be swung down to clear overhead obstructions. Easily mounted by ship builder or do-it-yourselfer, the brass chromium-plated pole light is made with two bulbs to provide either single or dual illumination. Its clear plastic lenses are of fresnel design to give maximum illumination.

Perkins Marine Lamp & Hardware Corp., 16490 Northwest 13th Ave., Miami, Fla.

Chloride Ion Determiner

A direct continuous measurement of the chloride ion present in biological fluids, water supplies or insecticides is provided by this solid state instrument. Determinations can be made with this sensing device, even in the presence of oxidizing agents such as cupric, ferric and dichromate ions.

Orion Research Inc., 11 Blackstone St., Cambridge, Mass.

Expendable Deepwater Thermometer

A graphic record of the temperature of ocean waters down to depths of 1,500 feet is provided within 90 seconds by this expendable probe system. The system consists of a strip-chart type recorder, a gravity launcher and probes containing a miniature plastic-coated thermister. At 1,500 feet the trailing wire breaks, shutting off the recorder. It can be used at speeds up to 30 knots.

Sippican Corp., Marion, Mass.