PHYSICS

Electricity Could Be Collected From Light Beam

Amount of Current Is So Minute, However, That It Will Not Be Possible to Use It as Useful Source

A POWERFUL beam of light can act as a battery, so that electricity can be collected from it at two different points. This is indicated by the experiments of Dr. Felix Ehrenhaft, Director of Physical Institute of the University of Vienna in the days before Austria ceased to exist. Dr. Ehrenhaft, now in New York, has reported his results in a communication to the English scientific weekly *Nature* (Jan. 4).

The experiments give no hope, however, of the use of search-light beams as a useful source of wireless power. The amounts of electricity involved are so minute that only the most delicate measurements can detect them.

The experiments were made by watching the behavior of minute particles, which floated in the air in the path of the light beam. They were surrounded by an electrical field and sometimes they moved towards the light, sometimes away from it. This was due, Dr. Ehrenhaft believes, to the interaction between the field of the beam itself and that induced around it. Similar effects were obtained with magnetic fields, showing also that the light beam is magnetized.

From these studies, he concludes that along the beam at different points there must be differences of electrical potential, as there are between the terminals of a dry cell, though far smaller. Thus, theoretically, it would be possible to insert electrodes into the beam at different places, and draw current off, though it is difficult to imagine how such minute currents could be detected.

Such drawing of current from a light beam is different from the conversion of light energy into electrical energy, when it falls on a photoelectric cell, or "electric eye."

Science News Letter, February 1, 1941

PHYSICS

Fuse for Time Shells Uses Weights, Not Springs

NEWEST precision clockwork fuse for time shell works on the old-fashioned principle of a grandfather clock, driven by weights instead of a spring. The only difference is that instead of being pulled upon by the force of gravity, they are subjected to the centrifugal force produced by the spinning of the shell as it flies along its trajectory. But the weights do run a clock in the nose of the shell, and when it is time for the clock to strike it goes "bang" instead of "bong."

The device has just been granted U. S. patent 2,228,905. It is the invention of Frederick W. Bold of Chelsea, Mass., who has assigned his rights to the Waltham Horological Manufacturing Company.

Largely as a result of need for greater precision in timing the burst of anti-aircraft shell, the old-fashioned powder-train fuses in use up to the time of the first World War have been displaced by compact clockwork trains, that can be turned out on mass-production basis by this country's great timepiece manufacturers. Those in use at present are spring-driven, like watches. This increases their complexity somewhat; also, if fuses with wound-up springs are kept in storage for several years the metal in the springs may undergo changes that will make their action undependable. A springless fuse is therefore highly desirable.

In Mr. Bold's fuse, small steel balls are fed by an automatic device into deep teeth or pockets around the rim of a wheel mounted a little off-axis in the pointed nose of the shell. The spin imparted to the shell by the rifling of the gun tends to throw the balls away from the center, by centrifugal force. As they push toward the outside, they turn the toothed wheel that holds them. At the outmost point in the rotation, each ball finds a small round hole through which it can escape, while another is fed into an empty pocket, back where it started from.

Thus the wheel is kept rotating, and in turn drives the clockwork train to which it is geared. When this reaches the point for which it was set, a strong coiled spring drives a firing pin into the primer and explodes the shell.

Science News Letter, February 1, 1941

GENERAL SCIENCE—OPTICS

Microscope Cover Slips Now Made From Plastics

COVER slips, used over preparations to be examined in the microscope, are usually made of glass, but now they can be secured of transparent plastic. They are satisfactory for many purposes, though they do not resist strong acids, alcohol or acetone. (*American Medical Specialties Co., 12 East 12 St., N. Y. C.*)

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