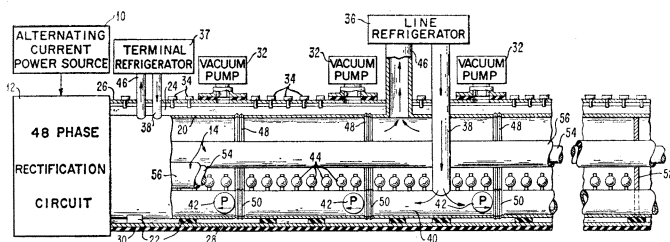


Current Patents

CRYOGENICS

Supercooled Electric Cable

Hundreds of billions of watts of electricity can be carried in a pair of wires about an inch and a half in diameter, if the lines are cooled by liquid helium, claims physicist Richard L. Garwin. The method could be an answer to the high cost of sending electric power over long distances.



Sending that amount of electricity 600 miles over ordinary lines would require more than a million tons of aluminum cable, Dr. Garwin says. Besides the high cost of the installation, and its unsightly effect on the landscape, there would be a five percent loss of electricity in transmission—at the cost of billions of dollars per year, he claims.

A number of metals and alloys, when cooled to very low temperatures, become superconductors, passing large amounts of electric current with practically no resistance.

By surrounding a pair of superconducting wires with a jacket of liquid helium, kept to about minus 250 degrees C. by a series of refrigerator units spaced about 12 miles apart, a high power transmission line can be built at greatly reduced cost, according to a patent Dr. Garwin received last week. The patent was assigned to IBM Corp.

The transmission line could be contained in a small ditch, according to the patent. PATENT 3,343,035.

CYBERNETICS

Elliptical Films Aid Computers

One way of storing numbers in a computer's memory is to use small metal cores that can be easily magnetized.

Miniaturization has led computer engineers to substitute thin magnetic films for the core memory units. Besides being smaller and having fewer heat problems, thin films don't need such a strong magnetic field to switch from on to off and back again.

One problem with films, though, has been that they need fairly high electric currents to operate: currents bigger than many semiconductor components can handle.

In a patent granted last week, two Sperry Rand engineers claim that shaping the magnetic film like an ellipse makes it possible to switch the unit with a much lower current than an ordinary film requires; an ellipse is more easily magnetized in one direction than is

a circle. The lower current makes it more compatible with other computer components, say Thomas J. Matcovich and Henry S. Belson, who assigned the patent to Sperry Rand. PATENT 3,343,144.

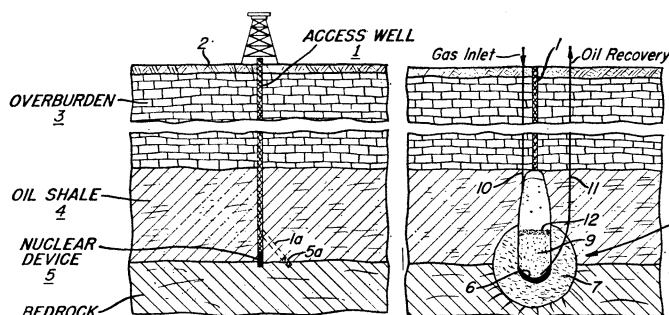
RESOURCES

Atomic Blast Recovers Oil

Shale oil, in vast quantities, lies deep under earth and stone in deposits of impermeable rock that must be crushed before the oil can be removed.

Nuclear explosions to crush the shale underground are being considered by the Atomic Energy Commission under a program called Plowshare.

One way of recovering shale oil with atomic ex-



plosives, patented last week, consists of crushing the rock with a nuclear bomb, then forcing hot gas into the rubble-filled cavity formed by the explosion. A conduit at the bottom of the cavity brings up the oil as it is forced through the broken shale by the gas.

The patent, granted to Robert B. Jacobs and Lawrence T. Wright, was assigned to the Standard Oil Co., Chicago. PATENT 3,342,257.

FLUIDICS

Control System Gives Short Pulses

Some automatic control systems require a component that can take a steady signal and convert it into a series of short pulses.

In fluidic systems, the signals are carried by a flow of air or other medium through tubing. A fluid oscillator that converts a steady flow of air into a series of pulses was patented last week by Eugene Groeber of Sperry Rand Corp.

The oscillator is in the shape of a Y, with the steady flow coming in the base of the Y. Where the two arms join there is a flexible shaft fastened so that the flow causes it to vibrate. This causes it to cut off flow first in one arm of the Y, then in the other.

The speed at which the shaft vibrates depends on the pressure of the incoming flow, according to the patent. At very high pressures, the shaft stops vibrating, cutting off one arm permanently. The patent was assigned to Sperry Rand. PATENT 3,342,198.