INVENTION

Patents of the Week

A new method of sending and receiving radio waves across the ocean and a method for making diamonds by growing them on other diamonds have been patented.

➤ A NEW METHOD of sending and receiving radio waves to communicate across the ocean has been patented.

The method involves using a naturally available layer of air known as the trade-wind inversion as a channel for radio messages over the South Atlantic. The system could also be used for intercontinental television transmission, its inventor, Martin Katzin of Silver Spring, Md., claims.

He won patent No. 3,030,500 for the communication system, assigning rights to the Electromagnetic Research Corporation, Washington, D. C.

The trade winds are very stable and blow virtually throughout the year. Overlying the trade winds is the trade inversion, which is due to dry, subsiding air that forms a stable blanket preventing the upward motion of the moist air from below.

At the level of the inversion, sharp increases of temperature and variations of moisture content of the air take place. These form the elevated ducts that extend entirely across the oceans.

To use such ducts for communications, the sending and receiving antennas must be placed in the duct. Mr. Katzin recommends either attaching the antennas to balloons or placing them on aircraft.

Typical inversion heights range from 2,000 to 5,000 feet, which would give a line-of-sight transmission of 200 miles. However, by placing the antennas in the ducts, distances much longer than 1,500 miles can be spanned. Arrangements, such as temperature-responsive systems, are made to maintain the antennas within the ducts.

The transoceanic communications method was investigated following observations during World War II that radar sets at Bombay, India, often showed the entire coast of Arabia, and frequently ranges of up to 1,700 miles were obtained. A radar range of 1,700 miles means the radar waves actually traveled up to 3,400 miles.

Because weather conditions over the South Atlantic are similar to those that produced the record radar scans over the Arabian Sea, conditions over the South Atlantic were investigated to determine if an atmospheric layer there could be used for radio communications. A duct is present most, if not all, of the time.

Mr. Katzin suggests using frequencies above 30 megacycles for the transoceanic radio messages. The communications would be relayed to the ground at each end by conventional radio means.

Making Diamonds From Methane

A method of making diamonds by growing them on other diamonds won patent No. 3,030,188 for William G. Eversole of Kenmore, N. Y., who assigned rights to Union Carbide Corporation.

He said his method is a commercially acceptable way of producing man-made diamonds and is suitable for continuous production. Carbon-containing gas, such as methane, is passed over the seed crystals of diamond. The carbon is deposited as diamond, particularly when temperatures are around 1,800 degrees Fahrenheit.

Principal use of natural diamond powder of the size on which it is commercially practical to grow diamonds synthetically is as an abrasive or polishing powder. Better growth rates are achieved with smaller seeds.

Black carbon is also deposited, and that has to be removed. Ethane, propane, methyl chloride, methyl mercaptan and acetone can be used instead of methane as the carbon source.

Other Patents of Interest

Patent No. 3,030,297 was awarded to Wilburn C. Schroeder of College Park, Md., who assigned rights to Fossil Fuels, Inc., for a method for rapid hydrogenation of coal to produce liquid hydrocarbons.

A system was patented for monitoring all parts of an allocated frequency band simultaneously, "memorizing" such signals and later transmitting sustained carriers at each of those frequencies where there was a detected signal. Inventor Otto H. Schmitt of Mineola, N. Y., assigned rights to patent No. 3,030,502 to the Government through the Secretary of the Navy.

A hatching tablet containing shrimp eggs, which may be added to fresh water for hatching shrimp, won patent No. 3,029,784 for Charles H. Elbreder and Edward J. Ross of St. Louis, Mo.

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Questions

MEDICINE—Is aspirin an anti-inflammatory agent as well as a pain reliever? p. 276.

METEOROLOGY—How small an object in Tiros pictures can be seen of the ice-covered St. Lawrence River? p. 277.

PHYSICS—How long did it take to cook egg yolk at room temperature under high pressures? p. 275.

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