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INVENTION

Patents of the Week

An automatic air-traffic control system, a frost preventer for fruit growers and an automobile windshield visor for outdoor movie watching in the rain have been patented.

➤ AN AUTOMATIC device for air-traffic control system blanketing areas several thousand square miles in size is envisioned in an invention just patented.

The device would be entirely automatic, omitting all errors resulting from human operations in the present tracking systems, inventor Dan C. Ross of Wappingers Falls, N. Y., claimed.

Under this system, the position of airplanes operating in a certain area is determined by pulsed radio signals sent out from the plane. Ground stations sprinkled over a large area pick up the signals when a plane enters their region. The signals are timed by an "electronic clock" at each ground station and transmitted to a central computer station where the airplane's position is determined.

Readings from four different stations are needed to fix the exact position. The patent rights of this invention, patent No. 2,972,742, were assigned to International Business Machines Corporation.

Patent No. 2,972,208 was granted to Howard H. Martin of Waterford, Calif., for a frost preventer that is essentially a smudgeless smudgepot on wheels. To keep the usual smoke and soot from collecting on the fruit and the trees, Mr. Martin has devised a burner arrangement that he states will burn the fuel more efficiently and produce less

dirt in the process. The heated air is then blown toward the trees by a fan. The whole assembly is mounted on a platform that requires no tractor for pulling but can be driven to the spot where it is needed.

Drive-in movie fans can now go to the movies even when it is raining, Edwin N. Jacobs of Louisville, Ky., claims. Mr. Jacobs has invented a rain visor that can conveniently be mounted over an automobile windshield when the skies open up.

The flexible waterproof or plastic visor is attached by rubber suction cups. It is inexpensive, easily mounted and may be stored in a small place such as underneath the automobile seat, the inventor reported.

Windshield wipers help to some degree but they create a serious drain on the battery and motor. For his invention, Mr. Jacobs was awarded patent No. 2,972,377.

A new underground method for detecting oil-bearing sands and shales has won patent No. 2,972,251 for Elton Floyd Neil Harper of Tulsa, Okla. The method, assigned to Well Surveys, Incorporated, is based on resonance principles, the same phenomenon that makes a piano string vibrate in tune with a tuning fork. In the case of oil, however, the resonance involved is not sound but heat resonance, in the infrared region.

• Science News Letter, 79:158 March 11, 1961

MATHEMATICS

Computer Designs Plant

➤ A SYSTEM OF LOGIC by which an electronic computer can be used to design the most efficient plant to produce any type of chemical has been devised by a Shell research team of engineers and mathematicians.

In a final test of the system, the computer designed a chemical plant that would cost from \$250,000 to \$600,000 less to build than the best previous design. This saving represents from five percent to six percent of total construction costs.

The plant is designed to produce ethylene oxide—used in making antifreeze. The computer's design also reduced the cost of producing the chemical by five percent to ten percent.

The initial parts of the new computer program were tested on a process to make polyisoprene, the synthetic twin of natural rubber, and on the design of plants used to produce gasoline. Similar savings were obtained for these processes.

The system of logic, called CHEOPS for chemical engineering optimization system, is set up to handle mathematical models for

each of the units used to manufacture chemicals. The units are tied together by equations governing the flow of all chemical streams that could possibly wind through the plant complex.

To design a plant, an engineer feeds the computer three types of information.

1. He tells the computer which of the units are needed to produce the given chemical and the route by which streams should flow between the units.

2. He gives the machine the best available information on the process to make the chemical, including advice to ignore impractical situations such as reaction temperatures that would melt steel.

3. The factors the computer can vary in working its way to the most economical design, that is, temperature, pressure and other environmental conditions in which the raw chemicals are turned into end product.

With this information, the computer does the rest.

• Science News Letter, 79:158 March 11, 1961