ENGINEERING

Foresee End of Spare

NEW IMPROVEMENTS may soon end the days of the spare tire.

The improvements being considered by three companies are based on the idea of a tire within the tire. In effect, the tires would have built-in spares.

In addition to the obvious advantage of increased trunk space, the company spokesmen pointed out that elimination of the spare would decrease car weight and allow greater freedom of styling.

The dual compartment tire, being developed by the B. F. Goodrich Tire Company and the Goodyear Tire & Rubber Company, consists of two chambers, one inside the other. Each compartment is inflated through a separate valve. In case of a blowout, the inner tire would serve as a crutch to get the car to a service station. Tests conducted by Goodyear on taxicabs revealed that both outer and inner tires were punctured in only six percent of the blowouts.

The reserve chamber tire, under development by United States Rubber Company, has a deflated inner tube within the regular tire. If the outer tire is punctured, the "safety diaphragm" can be inflated with a seven and one-half-inch-long cartridge of compressed gas. This allows the motorist to continue for "many miles" before repairing his tire.

General acceptance has received considerable attention in eliminating the spare: "Every possible assist must be given the spare-elimination proposition if it is to overcome the psychological resistance present in the general public," said the spokesman for Goodrich.

Company representatives who presented the talks to the Society of Automotive Engineers' meeting in Atlantic City were: R. E. Davies for Goodrich, Walter Lee for Goodyear, and H. B. Hindin for U.S. Rubber.

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CHEMISTRY

Radioisotopes Calculate

RADIOACTIVE ISOTOPES soon may be used by oil refineries to calculate bills for some of their customers, Esso Research and Engineering Company has announced.

Hydrogen sulfide, a by-product of oil refining, is sent to sulfur recovery plants with some other impurities. At the recovery plants, sulfuric acid is prepared from the hydrogen sulfide for industrial uses.

To determine how much to bill the sulfur recovery plants for the hydrogen sulfide, the refineries must know what percentage of the by-product was actually usable hydrogen sulfide. To find the percentage, iron 55, a radioactive isotope, is placed in a small cell in the gas line carrying the hydrogen sulfide waste from the refinery.

Rays from the iron 55 are absorbed by the sulfur in the hydrogen sulfide. By seeing what quantity of the iron's energy rays are absorbed, the amount of sulfur present can be determined. Knowing the amount of sulfur, one can find the quantity of hydrogen sulfide. And, knowing the amount of hydrogen sulfide, the refinery can send out its bill.

The cost of the analyzer is estimated at $3,000 to $4,000. Some minor problems must be solved before the device is ready for commercial market, Esso reported.

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ENGINEERING

Sensitive Radar "Talks"

A SUPERSENSITIVE radar that can "talk" to an intercontinental ballistic missile to keep it accurately on its target course is being developed for the U. S. Air Force.

It was disclosed that General Electric's Ordnance Department is building the ultra-high-precision antenna for the radar tracking system. This has solved a local mystery surrounding a new GE plant in a remote section of the Berkshire Hills.

The antenna is to be so accurate that it will distinguish the north from the south end of a 100-foot house in Los Angeles more than 2,500 miles away—if radar could be transmitted directly between these two points.

The antenna will focus the electronic radar beam on the flying missile and report instantly and precisely the position of the flying missile. An electronic computer will put out corrections and feed them to the radar. The radar will relay them to the missile to effect automatic, fast correction of flight errors.

All of this must be done rapidly to establish the missile on the calculated trajectory that ends at the target.

A one-degree launch error could cause the nose cone to miss its bull's-eye by about 100 miles. The corrections must be made before the missile goes out of the radar's reach, or before it burns up its fuel.

Such high precision is required that the manufacturing plant had to be built on exceptionally stable earth, and in a place free of vibrations from railroads or highways. Across a valley on another mountainside is situated a radio-frequency transmitter for aligning and testing the tracker units.

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