

ENGINEERING

Rear-Engined Automobile Is Patented by Henry Ford

Compact Arrangement of Engine and Other Mechanism Mounted Over Rear Axle for More Direct Transmission

HENRY FORD is inventor of a rear axle engined automobile that may result in a new breed of Ford cars, it is revealed by U. S. patent, 2,123,005 just granted.

This new motor vehicle may be the realization of the long-predicted rear-engined passenger auto, with driver sitting up front enjoying an unobstructed view of the road.

The patent drawings show a compact arrangement of a V-type 8 cylinder engine, transmission, differential, flywheel, starting motor and other mechanism, all mounted over the rear axle, so as to transmit more directly the drive from the engine to the wheels.

The engine is transversely mounted on one side of the rear axle. The transmission and differential are in the center, while the engine flywheel, clutch and other heavy parts are on the other side, balancing the construction.

"In the past," Mr. Ford says, in the patent, "considerable difficulty has been

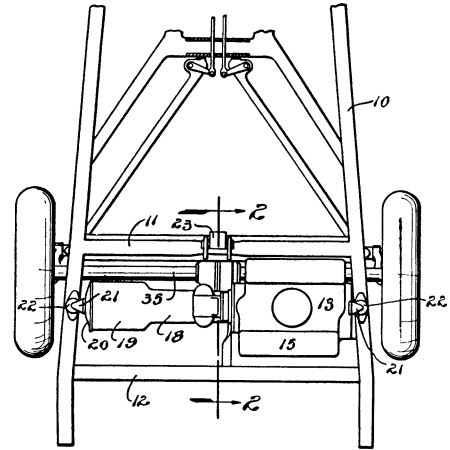
experienced with all driving units of like nature because of the difficulties in maintaining exact alignment between the various units comprising the assembly. It is extremely costly to machine the various parts so that the axis of the engine crankshaft is exactly aligned with the axis of the transmission and driving pinion. In all other assemblies known to the applicant if such alignment is not maintained, noisy operation invariably results."

Wear in the bearings is the biggest factor in causing a shift of alignment, the patent relates.

The claim of the new patent is that the Ford engine assembly permits an appreciable amount of out-of-line displacement and still gives good operation.

Three and a half closely printed pages, intricate diagrams containing 59 numbered parts and seven claims are needed to explain the construction of the new motor vehicle.

Science News Letter, July 16, 1938



PATENT DRAWING

This is one of the drawings with which Mr. Ford made clear the specifications of his patent on the new rear-engined car.

Built of cast iron and without any special effort at constructing a lightweight assembly, the engine weighs 240 pounds. Larger models with more cylinders grouped closer together and manufactured from lighter materials will produce, according to Mr. Alfaro, a liquid-cooled engine weighing slightly more than one and a quarter pounds per horsepower. A unit which he believes will develop 2,000 horsepower and weigh less than 2,000 pounds is projected.

"Wobble-plates," curving fins attached to the crankshaft, are pushed by rods on the piston rods to transmit the power developed in the cylinders. Compactness of the compression chamber and absence of hot valves allow a much higher compression ratio, making for great fuel economy, Mr. Alfaro points out.

Science News Letter, July 16, 1938

AERONAUTICS

"Barrel" Engine For Airplane Is Smaller and Lighter

FINAL acceptance tests for a U. S. Bureau of Air Commerce rating have been completed at the Massachusetts Institute of Technology for a radically new type of airplane engine declared by its designers to be smaller and lighter than comparable engines of conventional type.

Developed by Heraclio Alfaro in cooperation with engineers of M. I. T.'s Engine Laboratory and of the Indian Motorcycle Company, the new engine is of the so-called "barrel" type. It is believed to be the first engine of this design able to meet performance requirements of the Air Commerce Bureau.

With its cylinders parallel to the

crankshaft on which the propeller turns, instead of perpendicular to it as in radial and V-type engines, the "barrel" engine is one of the most compact ever designed.

Its diameter, exclusive of small protruding parts which may possibly be eliminated in later models, is but 15½ inches. More powerful models will still be much narrower than today's great radial engines, with consequent decrease of wind resistance in aviation use.

The model built by Mr. Alfaro with the help of Profs. C. F. and E. S. Taylor of M. I. T. is a four-cylinder crankless engine. It developed 115 horsepower at a speed of 2,000 revolutions per minute.

ENGINEERING

Light Rays Are Woven Into Strange Patterns at Show

See Front Cover

LIGHT RAYS are woven into odd patterns to demonstrate for the public how they may be controlled in an exhibit at Nela Park's General Electric Institute this year.

Lens, prism, reflector and mirror are used by the operator shown on the front cover of this week's SCIENCE NEWS LETTER to steer the light rays in any direction he desires. Criss-cross patterns and weird designs of highlight and shadow are created at will and are made striking by the element of motion.

Science News Letter, July 16, 1938