

OLDS ABOLISHES CLUTCH BY USE OF LIQUID DRIVE

Marks Radical Alteration in Transmission.

BY C. L. McCUEN
[General manager of Oldsmobile.]

Development by Oldsmobile of the new hydraulic drive that does away with the clutch and clutch pedal, relieving the driver of the labor of gear shifting, marks the most radical advancement in transmission design since motor cars were invented. Because my life work has been engineering, no one can appreciate better than I the difficulties faced by our engineers when they tackled this job eight years ago.

In essentials, the mechanical clutch and sliding gear transmission that have been standard for years are just what they were when Panhard-Levassour first introduced them 40 years ago. Since that day, however, automotive engineers succeeded in designing better clutches, learned how to cut better gears, and how to silence gear shifting by synchro-mesh. They moved the gear shift lever up under the steering wheel, but still clutch and transmission remained similar to the first device.

Many Types Are Tried.
True, a planetary transmission was used for 20 years by one maker, but, aside from that, the sliding gear transmission and clutch have been supreme. Many other forms, from the friction drive of the Carter-Car to the electrical Owen-Magnetic, have been tried.

Oldsmobile's first successful step toward an entirely new clutch was the problem of power transmission between engine and rear axle came with the perfection more than two years ago of the automatic safety transmission. It made use of the clutch unnecessary, except in starting and stopping the car, and reduced the work of gear shifting to the mere flipping of a lever between two positions. Today about 30,000 are in use. The friction gear, however, was not eliminated.

Turn to Liquid Coupling.
Then Oldsmobile engineers turned to liquid coupling, which already had had several years of successful use in England. The British designers first had used it to solve the problem of designing a clutch that would stand up well under the extremely heavy demands of buses in London traffic. Successful in that exacting use, where friction clutches quickly wore out, it was thereafter adopted by Daimler, Lanchester and Armstrong-Siddley, all makers of high grade cars.

The basic principle of the liquid coupling was not new—it had been used by German submarine designers for power transmission as early as 1901, and in English dynamotors in 1877.

A mechanical clutch depends upon friction to apply engine power gradually. It will work until friction has worn the parts until they are no longer efficient. Then the worn parts have to be replaced.

Two Rotors Are Used.
The liquid coupling applies engine power gradually by the use of two rotors—somewhat like two electric fans facing each other—immersed in oil. As the one attached to the crankshaft revolves, oil is thrown by centrifugal force against the vanes of the other, causing it to turn also. Since the only contact between the rotors is that of oil, wear is eliminated.

Why has not the liquid coupling been adopted before, since it is simple in principle, and practically wear-proof and very smooth in applying power? Well, the difficulty has been to make it take over all the functions of a clutch. If you design it so that the slip of the oil between the rotors is so great that there is no power transmitted at engine idling speeds, you will have too much power loss by excessive slip at driving speeds.

In combination with the Oldsmobile automatic transmission, however, it has been possible to design liquid coupling so that it does take over all the functions of a clutch, yet there is a slip of less than one-quarter of 1 per cent between the driving wheels at driving speeds.

Engine Can't Stall.
With the hydraulic drive it is impossible to stall the engine, the car starts with a smoothness no friction clutch can give it, the gears automatically change themselves as needed back and forth thru the four ranges. In a single position of the lever beneath the steering wheel the driver has options of speeds from a mile an hour to full throttle, merely by varying the pressure of his foot upon the accelerator.

The drive actually does give the gasoline engine the flexibility of an electric or steam powered vehicle. I believe that eventually the device will render the clutch and clutch pedal and sliding gear transmission as obsolete in the American automobile as the two-wheel brake, the starting crank, or carbide lamps.

MORE EVEN FUEL DISTRIBUTION IS A 1940 FEATURE

In one of its numerous engine refinements for 1940, precedent is broken in the Cadillac and La Salle V-8 engines by the mounting of the manifold at an angle with the engine. Ever since the first automobile, manifolds had been mounted parallel with the bottom of the motor block. In recent years motors were placed in their frames with a slight slope toward the rear, forcing a tilt in the manifold. Cadillac tests indicated that a more even fuel distribution would result if the manifold ran parallel to the ground instead of following the motor angle.

Driving Made Easier by Oldsmobile



Here is the front compartment in an Oldsmobile equipped with hydraulic drive. The clutch and clutch pedal are eliminated. About all the driver has to do is step on the accelerator and turn the wheel.

WORDS COINED FOR NEW AUTO DEVELOPMENTS

BY J. L. BLUNDEN.
Many new words are being created for the dictionary with the continued progress in automotive engineering. It has been necessary to coin new words to name new products or to arrange new combinations of old ones to describe with accuracy new products and new devices.

For example, this year Oldsmobile found it necessary to describe the new adjective, hydraulic, to characterize the new combination of liquid flywheel, or drive, and a fully automatic transmission. The source of the name is obvious when you know the transmission is fully automatic, and is operated by hydraulic pressures.

Knee-action to describe front wheel suspension has long since become a standard term in the motor world. Synchro-mesh, too, is familiar. Duo is another coined word which is as standard as Kodak. Chrome is an old word with an entirely new meaning conferred upon it since the automotive industry contracted chromium plate to the abbreviated form.

Urge River Bank Curve to Eliminate Harlem Ave. Jam

Construction of a sweeping curve along the banks of the Des Plaines river to carry Washington boulevard traffic over to Lake street is being urged by the Oak Park Chamber of Commerce as a means of eliminating the present left turn needed at Harlem avenue and Lake street for U. S. 20 traffic. According to Randall H. Cooper, executive vice president of the chamber, this left turn required of westbound traffic results in severe congestion in Oak Park, particularly during peak traffic periods.

Double Parkers Hog Street



This photograph was taken at 10:45 a. m. in the 200 block of North Des Plaines street. Parked cars occupy all the pavement except the street car tracks. Cars next to the curb, in spaces posted for "one hour only," can't be moved until double parkers move.

YOUR NEW DODGE WILL RUN BETTER... LAST LONGER WITH QUAKER STATE MOTOR OIL

270 DEGREE TURN TRAFFIC CIRCLE IS SLATED TO GO

Elimination of the traffic circle at Cumberland avenue and Forest Preserve drive will be included in Cook county's current five year highway construction program, Maj. George Quinlan, county superintendent of highways, has announced.

Because of the shortness in the diameter of the circle, with turns as much as 270 degrees for traffic entering it, safety experts contend that the circle constitutes a driving hazard.

Present plans call for substitution of a conventional intersection.

SAFE DISTANCE BETWEEN CARS AVOIDS MISHAPS

Six car lengths at 30 miles per hour, 15 car lengths at 60 miles per hour, are the minimum distances to keep between your car and the motorist ahead in order to avoid serious mishaps on the open road, according to safety experts. Trailing the fellow ahead too closely is one of the major causes of rear-end collisions. This same fault often results in head-on crashes, because the driver cannot see cars coming toward him when he attempts to pass another car if he's riding the bumper ahead.

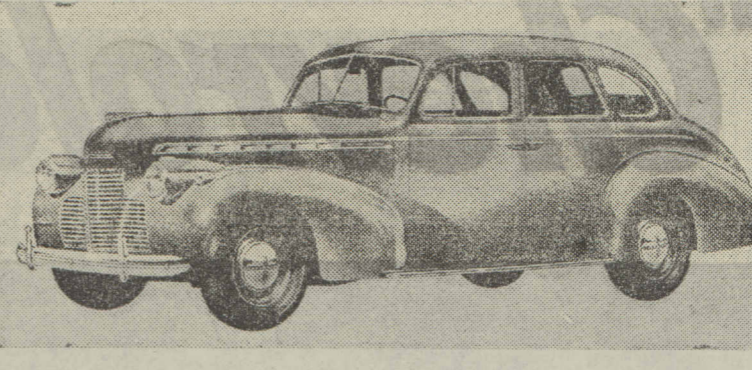
CHEVROLET USES 10 BILLION POUNDS MATERIAL A YEAR

50,000 Box Cars Roll to Plants Monthly.

BY M. E. COYLE
[General manager, Chevrolet division, General Motors.]

Men and materials are essential to industry. For without either production ceases and the plant becomes an empty shell. The part that workmen play in the building of automobiles is well known. But figures and statistics with respect to materials used by the automobile industry have little place in the public's mind. And interesting above all is the way materials are assembled from every corner of the land to go into the production line with timetable precision. For every hour's production in the

Chevrolet Changes Its Appearance



Here is the 1940 Chevrolet Special De Luxe Sport sedan.

motor plants of this country, 1 million dollars is spent for materials and parts. As one of the world's largest purchasers of materials, Chevrolet annually spends millions of dollars. It buys about 10 billion pounds of materials a year. Every month about 50,000 freight cars tumble into and out of the Chevrolet plants with materials and parts.

Production Lines Synchronized.
No state in the union is overlooked in these purchases and few nations have so little of the world's wealth that they are passed by. The amazing part in the gathering of these supplies is the way their delivery to the production lines in the various plants is synchronized, for a slight delay may stop the assembly of cars.

In a general way, the story of production can be summarized in this fashion: Chevrolet's sales department analyzes the market and estimates the number of cars it will need to meet the public demand. Then the actual impetus of production comes from the materials and purchasing department, which integrate their operations to provide materials for the manufacturing and assembly plants. Raw materials are scheduled for

shipment to the manufacturing plants. The freighters of the Great Lakes fleet heap huge piles of pig iron at the docks. By rail and truck, sheet steel and various other materials arrive at the plants. Coal is hauled in and huge stocks of the other supplies needed are accumulated.

Great Quantities of Acid.
Production is started at the forges, foundries, the various plants which turn out gears, axles, frames, bodies, engine blocks, steering wheels, nuts, bolts, lock washers, upholstery, insulation, tires. Great quantities of acids are needed. So are asbestos, asphalt, wool, paper, porcelain, cork, glue, soap, wax, and other things.

Once component parts have been fabricated from the raw materials production gets under way. The manufacturing plants begin shipments to the scattered assembly centers. For every automobile that rolls out of a Chevrolet assembly plant with a final gross weight of approximately 3,500 pounds, at least two tons of material have been collected beforehand. How it is collected and placed in the assembly plants at exactly the time it is needed is one of the feats of "motor magic."

It is the duty of the traffic crew to have supplies of parts and materials always on hand at the assembly lines. All through day and night a flow is maintained of materials and parts. Shutdowns due to material shortages are rare in Chevrolet plants.

TO THE PEOPLE OF CHICAGO—

Give Us 10 Minutes To Introduce You To THE NEW DODGE "Full-Floating Ride"

ALIVE WITH INNOVATIONS

1940 Dodge 4-door Sedan \$855, delivered in Detroit.*

This Is Your Invitation to Experience the Greatest Motorcar Advance in 25 Years!

WOULDN'T you like to spend just 10 minutes of your time to have one of the most exciting experiences the automotive industry has ever offered?

Then here's a special invitation to come in and let us introduce the new Dodge Full-Floating Ride to you! Words alone cannot tell the truly remarkable comfort of this new kind of ride. You've got to let the Full-Floating Ride tell its own exciting story!

We're so enthusiastic about this sensational new advance in riding comfort that we want you to experience it for yourself! It's our treat and yours too!

Come in today! Take a look at the 1940 Dodge from every angle—looks, luxury, new ideas and riding comfort! You, too, will wonder how such a magnificent car can sell for only a few dollars more than a small car!

Tune in on the Major Bones Original Amateur Hour, Columbia Network, Thursday, 9 to 10 P. M., E. S. T.

SCOTCH DYNAMITE!
That's what we call this amazing 1940 Dodge engine, with its flashing performance and its great combination of sensational gasoline and oil-saving features—built to save you money every mile you drive!

EASY CHAIR COMFORT
with new "Airfoam" seat cushions now available in all Dodge Deluxe models! "Airfoam" is a porous air-filled rubber which conforms instantly to every body movement, gives you unsurpassed motoring comfort!

COMFORT ZONE
NEVER BEFORE a ride like this in a car priced so low! For years engineers have been trying to perfect a design that would take the rear seats off the axles where road shocks are transmitted to passengers above. This year, for the first time, it is an impressive reality—in the new Full-Floating Ride in the new 1940 Dodge (Luxury Liner) Center of gravity is lower, wheelbase is longer and wheels are moved backward so all passengers ride in the buoyant "Comfort Zone" between the axles!

NEWEST TRUCKS FOR 1940 PRESENTED BY DODGE AT THE SHOW!
Sensational Dodge-Built Cab-Over-Engine Highlights New 1 1/2-Ton Line
Complete Line — 1/2-3/4-1-1 1/2-2-3-Ton—Built to Fit YOUR Job

THERE ARE MORE DODGE CARS IN USE TODAY THAN ANY OTHER FINE CAR!

NEW DODGE—NEW PLYMOUTH—NEW DODGE TRUCKS—PHONE TODAY FOR DEMONSTRATION!			
CENTRAL Bender-Rieger, Inc. 933 Washington Blvd. M. I. Lanahan, Inc. 2542 S. Michigan Ave. Albany Park Motor Sales, Inc. 2954-56 Lawrence Ave. Clauson Bros. Auto Sales Corp. (Dodge) 2431 Irving Park Road (Only) Dannan-Schmitt Co. 1019 Davis St., Evanston Feiz Motor Sales, Inc. (Dodge) 1132 Diversey Parkway (Only) Feiz Auto Sales, 3224 Southport Ave. James F. Goodwin, Inc. 5719-25 Broadway Inland Motors, Inc. 4201-07 Milwaukee Avenue Rogers Park Motors, Inc. 6517 N. Clark St. W.C. Sands Motor Sales (Dodge) 6147 North Western Ave. (Only)	SOUTH Woods-O'Brien, Inc. 6115-23 Northwest Highway Best Motors 19557 South Michigan Ave. Central Auto Sales & Service Farrington-Renn, Inc. 3453 So. Morgan St. 13357 So. Ashland Ave. Fiedler-Mahr Motor Co. 18357 So. Western Ave. Blue Island Gerds Motor Sales, Inc. 7355 Exchange Ave. Hijina Motor Sales 1386-44 Cottazee Grove Avenue Knox Motors, Inc. 7124 S. Halsted St. Fred W. Rembold, Inc. 6130 Cottazee Grove Avenue Siegel Motors 7918-22 Stony Island Avenue	WEST South Town Motors, 2306 W. 63rd St. Anderson Bros. Motor Company 5539 Ogden Ave., Berwyn T. G. Arnold & Company 3729 Ogden Ave. Cicero Motor Sales 6429 West 22nd St., Cicero Hart Motor Company, Inc. 4011-15 W. Madison St. Jackson Kedzie Motor Co., Inc. 3210-16 W. Jackson Blvd. Murphy Auto Sales, Inc. (Dodge) 2650 N. Cicero Ave. (Only) North Ave. Motor Sales 3140-48 West North Ave. Oak Leaf Motor Sales, Inc. 218 Madison Street, Oak Park Royal Sales and Service 2479 Milwaukee Avenue West Grand Motor Sales 7329-35 W. Grand Ave., Elmwood Pk.	SUBURBAN State Road Motors Aurora, Feiz Motor Co. Chicago Heights Asher Auto Sales, Inc. Nagel Sales & Service A. Dale Schlander Motors Elsin, Harry Hitz Incorporated Elmhurst O'Donnell Plaza Motors, Inc. Faichury, Grovera Garage Geneva, J. H. Mitchell Motor Co. Grays Lake, E. J. Sheldon's Garage Harvey, Kickert Motor Sales Highland Park Van Guilder Motors, Inc. Hinsdale, Ed. H. Fleck Lisle, Ed. Garage Joliet, Ferguson Motors Kankakee, K. J. Chamberlain Motor Co. La Grange, Rydell Motor Sales