

A Short History of the Automotive

TRANS- MISSION

By Bob Coiro

Because Brass Era automobiles' electric motors and steam engines could deliver 100% of their rated torque from a standing start, there was no need to equip them with multiple-speed transmissions. However, that wasn't true of the internal combustion engine. Cars thus equipped would not only need some form of step-down gearing but also a "neutral" which would allow the car to sit still while the engine was idling. And the automotive transmission came into being.

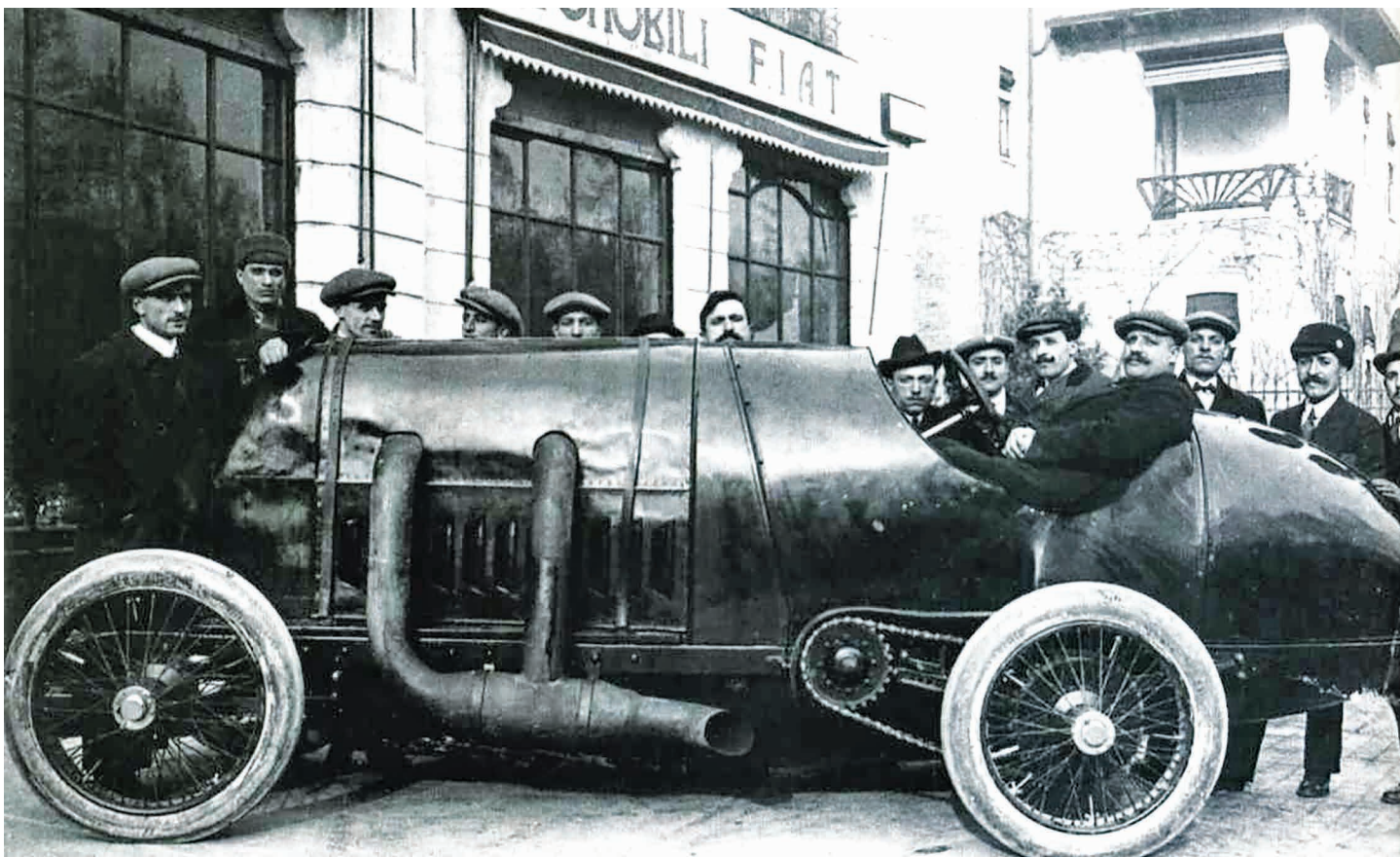
On January 29, 1886, a German engineer, Karl Benz, applied for a patent for a gas-powered vehicle, the "Benz Patent Motorwagen." It had three wheels, which begs the question of whether the first semi-practical motor vehicle design was a motorized tricycle or what we now refer to as a "car." It had no transmission to speak of, just a single-speed affair with a tension-adjustable leather belt drive acting as a clutch. Its little one-horsepower engine ran flat-out all the time, and the driver operated a lever to vary the belt drive's tension against a spinning disc, thus controlling the speed of the vehicle. By today's standards it might be thought of as a powered wheel-chair, especially in light of its ten mph top speed. Still, Mr. Benz called it a

"motorwagen," which translates from German to English as "motorcar." As he was the first to build one, he could name it whatever he pleased and be absolutely correct. So, ja, das ist ein Motorwagen.

Nine years later, two Frenchmen, Louis-Rene Panhard and Emile Levassor, invented what amounted to the three-speed sliding gear transmission. If Germany could be considered the birthplace of the automobile, France was the cradle—and the playpen, kindergarten, and elementary school. The Germans would eventually be venerated for their automotive engineering. During the early days of the automobile, the French engineers were the very best of the very best. Panhard and Levassor's non-synchronous sliding-gear principle would remain in general use into the 1930s and beyond, particularly in trucks. Even today, big rig truckers are no strangers to double-clutching a completely non-synchronous gearbox.

The 1886 Benz Patent Motorwagen replica owned by the Gilmore Car Museum in Hickory Corners, Michigan.





The 1911 Fiat "Beast of Turin" race car.

Of course, the unsynchronized transmissions of Brass Era automobiles were rather difficult to shift, and that's part of the reason why engines of the day were designed with tall cylinders and long-stroke, slow-revving crankshafts. I'll quote Jay Leno as having said, "Back in those days, 1,600 rpm sounded like the end of the world." Such long-legged engine configuration made for enough low-end torque that most of the time, when steering around slow corners, a driver could simply lug the engine instead of down-shifting and thus avoid some unpleasant gear-clashing orchestration. A wonderful example of an extremely tall, extremely low-revving, extremely powerful engine would be that of the 1911 Fiat "Beast of Turin" S76 racer, which churned out close to 300 horsepower at a ridiculously low 1,400 rpm. Now, that's a lot of low-end grunt!

Automobile races got a lot of press coverage during this era. The French, of course, would come to be known for their Grand Prix and the most grueling endurance competition of all, the 24-hour race at Le Mans. Well, two Panhard et Levassor cars did even better than that, holding together for an absolutely astounding 48 hours to take first and second place at the Paris-Bordeaux-Paris race of 1895. Emile Levassor drove one of those race cars. Vive la France (and thank heaven for little gears)!

A 1912 Panhard et Levassor ad. Panhard et Levassor manufactured autos from 1891-1967. (Photo courtesy of <https://www.citroenet.org.uk/>)

Ce qu'il y a
de mieux
à Paris:

la femme
et..



la Sans-Soupapes
PANHARD

24, Avenue des Champs-Élysées — 19, Avenue d'Ivry
PARIS





Earl Avery Thompson.
Date of photo unknown.

In 1918, Earl A. Thompson, a genius American engineer from Elgin, Oregon, invented the first synchronized gear transmission. This was a game-changer, but initially, he couldn't sell the idea to Detroit car-makers. Thompson was persistent. The first cars manufactured with the Thompson Synchronmesh transmission were the 1928 Cadillac and LaSalle. Buick would follow suit in 1931. Today, every car with a stick-shift features his invention, and Thompson should have been as rich as Westinghouse. However, he sold his Synchronmesh patent to General Motors for a paltry one-million dollars. In any case, the synchronmesh gearbox made driving a car much more effortless. Now, anybody could do it—except a Millennial (Relax, it's just a joke).

Again—Oldsmobile Steps Out Ahead!



WITH TWO DASHING NEW STYLE LEADE Both Offering THE AUTOMATIC SAFETY TRANSMISSION

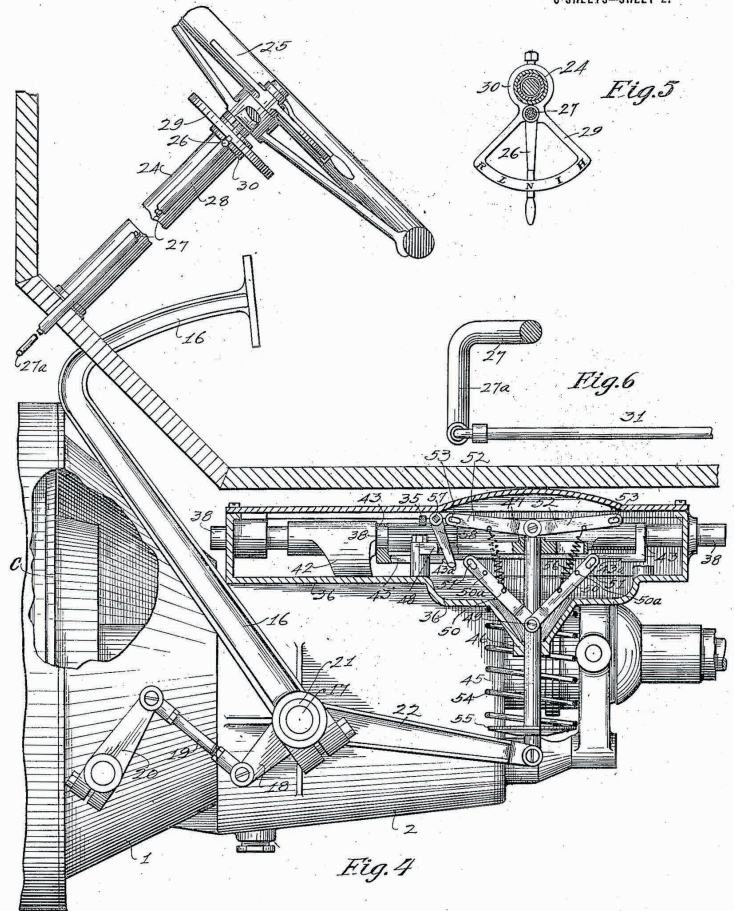
STYLING that sets the style for America to follow... features that represent the greatest roll call ever announced in cars of popular price... you get them all in Oldsmobile's dashing new Six and dynamic new Eight for 1938. And if you want super-performance... a thrilling new big in flashing, flowing action... it's yours with Oldsmobile's sensational new Automatic Safety Transmission, optional at extra cost in all models both the Six and Eight. Step ahead with an Oldsmobile for 1938... in styling, performance and value, it's the smartest buy of the year.

The 1938 Oldsmobile "Steps Out Ahead" touts the 1939 models with the Hydramatic transmission.

E. A. THOMPSON.
AUTOMATIC GEAR SHIFTING MECHANISM FOR SLIDING GEAR TRANSMISSION.
APPLICATION FILED MAR. 9, 1918.

1,435,430.

Patented Nov. 14, 1922.
6 SHEETS—SHEET 2.



INVENTOR.
Earl A. Thompson
BY
Mack & Litzberg
ATTORNEY.

Page two from Thompson's 1922 United States Patent.

In 1934, General Motors put Thompson in charge of the team that would create and develop the automatic transmission. Its first incarnation, the Automatic Safety Transmission, which first appeared in 1937, was a planetary semi-automatic that did shift itself but still required a clutch pedal. You might think that the first fully automatic would be an outgrowth of the basic two-speed design, but it wasn't. Instead, the Hydramatic was quite sophisticated, featuring four (Count 'em, four!) self-shifting forward gears and a fluid coupling replacing the familiar friction clutch. First appearing on the 1939 Oldsmobile, it was the most significant automotive development since the electric self-starter. Nevertheless, it still used the epicyclic gearing system invented by the ancient Greeks—and our story might have come full circle at that point except for the fact that this same basic planetary gear set-up is still being used in automatic transmissions to this very day.

The two-speed planetary transmission, so popular during the Brass Era, had a history that went way back. I mean way,



"LOOK!" *There isn't any clutch pedal*



**LOOK TO OLDS
FOR ALL THAT'S NEW!**

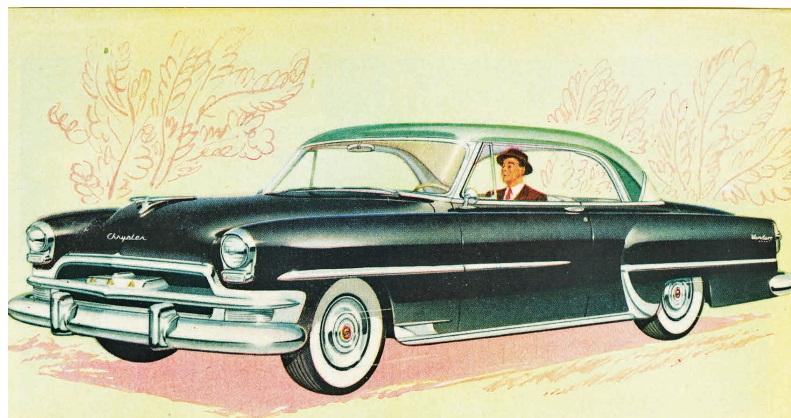
In addition to the new Hydra-Matic Drive, the 1946 Oldsmobile offers many other surprises. The modern beauty of its newly styled front end... the smart luxury of its newly tailored interior... the alert performance of its finer, smoother engine... all combine to make this car the finest in Oldsmobile's 48-year history!

Hydra-Matic Drive is in the spotlight again. This famous General Motors feature, made even better and smoother than ever as a result of wartime use on tanks, is now being offered in all models of the brilliant new 1946 Oldsmobile.

Hydra-Matic Drive takes the clutch pedal right out of the car. There's no clutch to push down... no clutch to let up... no clutch to think about at all. There's no gear shifting to bother with either; the gears shift by themselves—*automatically*—through all four forward speeds. All you do to drive an Oldsmobile with Hydra-Matic Drive is step on the gas to go, and step on the brake to stop. The rest is simply steering. Because Hydra-Matic Drive combines a fluid coupling with a fully automatic, four-speed transmission, it offers a combination of driving ease and performance that no other "drive" can match.



OLDSMOBILE *Product of* **GENERAL MOTORS**



*New Wings for the Chrysler Windsor DeLuxe
to match its Cloud-Soft Ride*

**YOU'LL MARVEL AT THE SWIFT ACCELERATION OF
POWER FLITE FULLY AUTOMATIC TRANSMISSION**

You're away—with the swiftness of wings—when you accelerate the 1954 Windsor DeLuxe with PowerFlite.

PowerFlite is the finest and smoothest of all fully-automatic transmissions, designed to free you from strain, tension and all gear-shifting work. It lets you pass other cars safely—slip through traffic with newfound confidence—master the steepest grades with the greatest surety.

You'll enjoy driving the new Windsor DeLuxe for so many reasons. An advanced system of spring suspension gives you a cloud-soft ride and exceptional stability on curves. Optional Full-Time Power

Steering* does four-fifths of the steering and parking work by power.

And you'll like the new Windsor's unmistakable air of prestige. From the long, graceful lines to the luxurious appointments of its exquisite two-tone interior, there's beauty and style that says you own the leader.

You'll have every reason for pardonable pride when friends remark—

"I see you drive a Chrysler!"

*Full-Time Power Steering is available at moderate cost on all 1954 Chryslers.

Proudly displayed by your Chrysler-Plymouth-Fargo Dealer



DRIVE ONE OF THE BEAUTIFUL

Chryslers for 1954

AND PROVE THE DIFFERENCE

MANUFACTURED IN CANADA BY CHRYSLER CORPORATION OF CANADA, LIMITED

Left to right are period ads featuring automatic transmissions from Oldsmobile and Chrysler.

way back—like around 500 BC. Known back then as "Epicyclic Gearing," the ancient Greeks used the principle to create mechanisms that kept track of the orbit of the planets. The famous "Antikythera Mechanism," the function of which confounded archaeologists for quite some time, was later determined to have been used to predict, years in advance, the positions of the planets and the moon along its orbit around the Earth, even compensating for its elliptical track! In automotive applications, planetary transmissions were used in the earlier, more lightweight, horseless carriages like the 1901 Curved Dash Oldsmobile, the 1904 Franklin Type A, the 1905 Buick Model B, and most famously, the 1909 Ford Model T. These basic planetary units were the ancestors of the first two-speed automatic transmissions like Chevrolet's Powerglide, which first appeared in 1950, Chrysler's Powerflite, which came out in 1954, and Ford's Borg-Warner designed Ford-O-Matic of 1959. So it may be that Henry Ford got the planetary transmission through József A. Galamb, who might have gotten it through Leonardo da Vinci, but apparently, a toga-partier by the

name of Archimedes hit on the idea first. A funny thing happened on the way to the Parthenon.

As an aside, it's kinda humorous that there's no shortage of automotive historians who feel that back in the days of tailfins and whitewall tires, it was the automatic transmission that enabled countless women to drive cars. Apparently, those dudes are unaware of how the Arsenal of Democracy—including 297,000 aircraft, 86,000 tanks, 560,000 trucks and over 700,000 jeeps had only just been built by twenty-million "Rosie the Riveters." I think it's safe to say those women were okay with manual transmissions. In any case, my mother Angela Coiro, gave that little automatic-transmission thingie on top of the steering column its name. She called it a "Prndlo."

(Artwork and images by Bob Coiro and Tracy Leshner)

