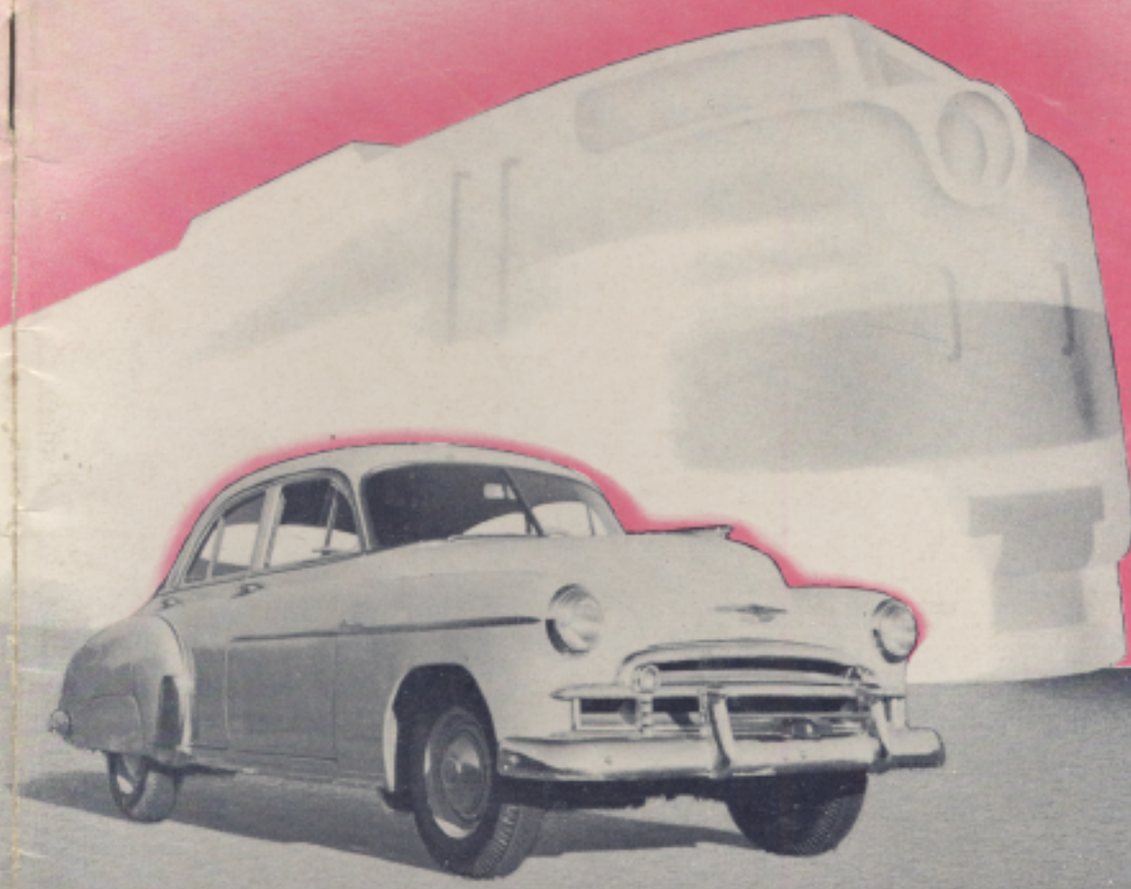
CHEVROLET

LITHO IN U.S.A.

TOMORROW'S DRIVING . . .



. . . TODAY!

CHEVROLET

TOMORROW'S DRIVING . . .

. . . TODAY!

CHEVROLET'S

New

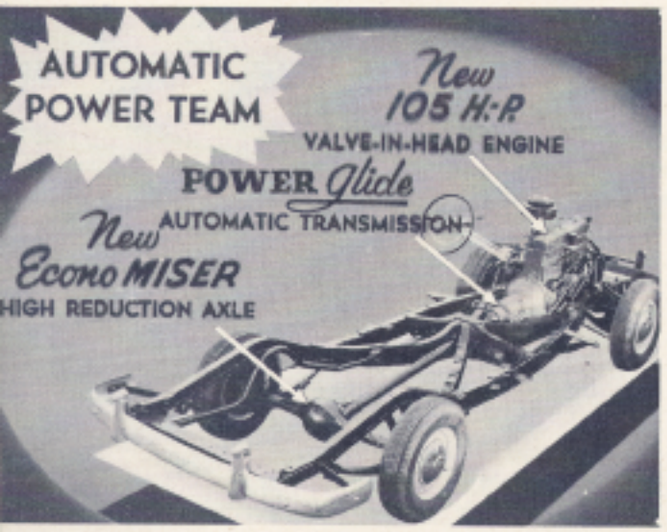
AUTOMATIC POWER TEAM

What it does . . .

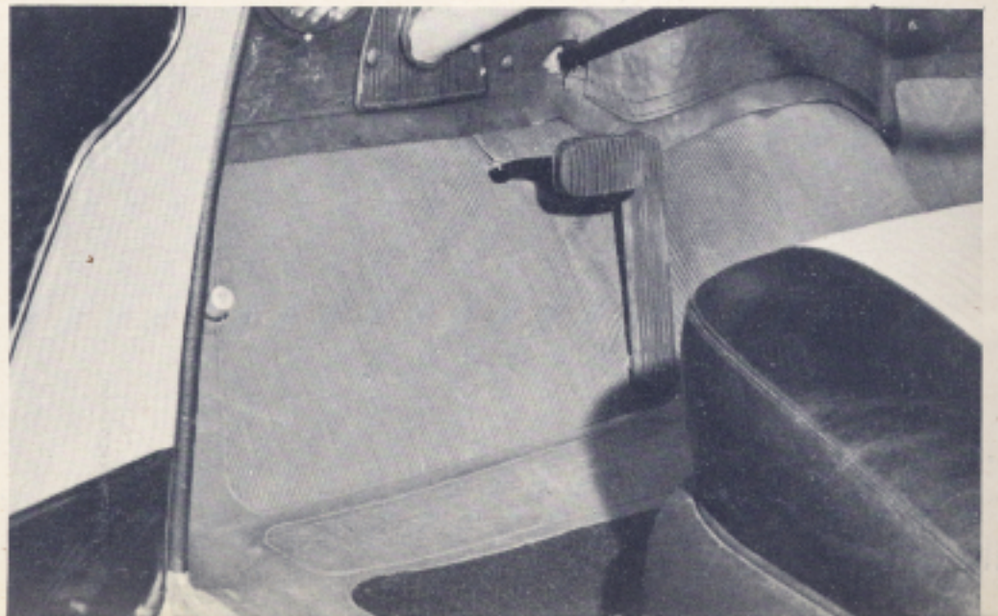
How it works . . .

Tomorrow's driving has long been an engineer's dream of the ultimate in automotive power; the same smooth power as that of the modern streamliner — smooth, surging power from standstill to top speed at the touch of a single control!

And now, at last, tomorrow's driving is here — today! It's Chevrolet's sensational new Automatic Power Team — with the amazing new POWERGLIDE Automatic Transmission — the new 105 Horsepower Valve-In-Head Engine — and the new EconoMISER High-Reduction Rear Axle. And all developed, as an option, to bring Chevrolet owners, for the first time in the low-priced field, surging power carried smoothly to the rear wheels at the touch of the toe to the accelerator — from standstill to full speed ahead!



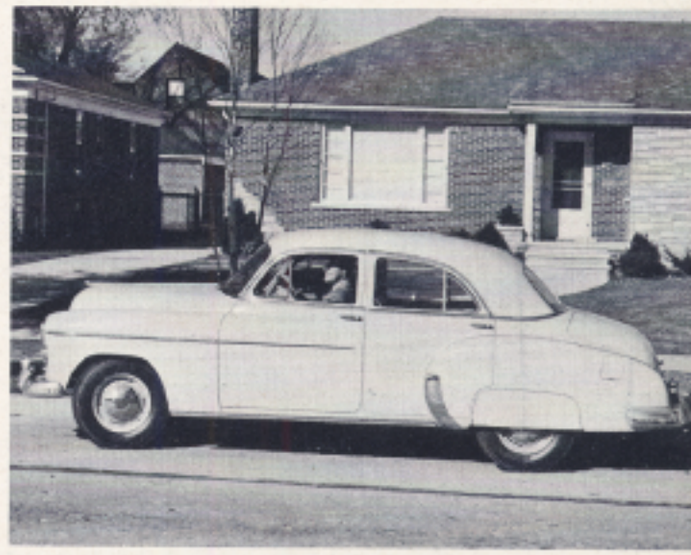
Yes, the power team of the future frees you forever from clutch-pushing because there is no clutch. You find only a simple pilot control lever — and instead of the fifteen motions required to get going with the standard or conventional transmission, you need but three. Start the engine. Move the control lever. Press the accelerator. And that's all there is to it.



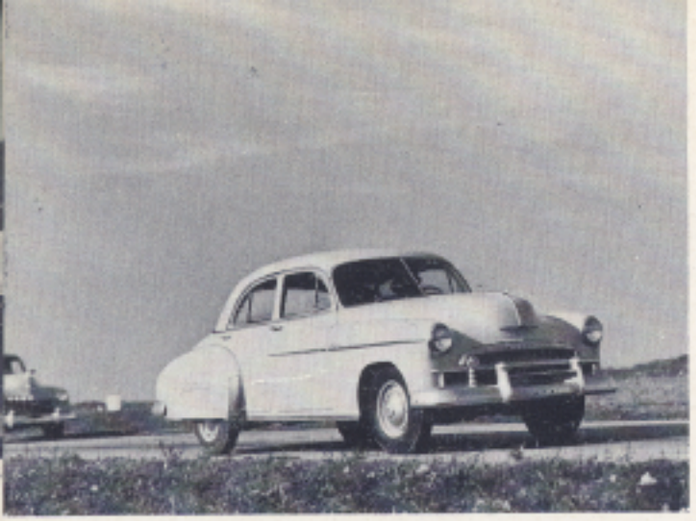
But now, let's get behind the wheel — and see what it is to guide the power team of the future! The control dial is marked "Park" — "N" for neutral — "D" for normal driving — "L" for emergency low — and "R" for reverse.

First, you start the engine — and it will only start with the lever in "Park" or "N." That's an important safety feature. Now, with the engine running, you flick the lever to "D" — and you're free to drive in city or country, uphill or down — without taking a hand from the wheel, without a gear ever shifting.

Now you make many amazing discoveries about tomorrow's driving. You pull away from the curb with liquid smoothness — no jerking, no clashing of gears, not even a sensation of gears shifting.

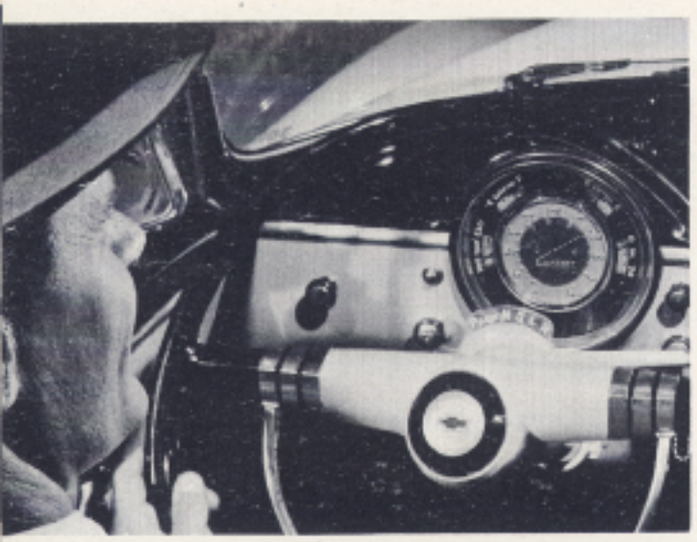


You stop for traffic — and glide away with just a touch of the toe — with no danger of being embarrassed by engine stalling which often occurs where a conventional clutch is thrown in too quickly. More speed at the take-off? Rather *lead* the pack? It's up to you. You can easily keep up through normal acceleration in "D" — but when you want or need a faster getaway, you simply start in "L" then flick the lever to "D" without taking your foot off the accelerator!



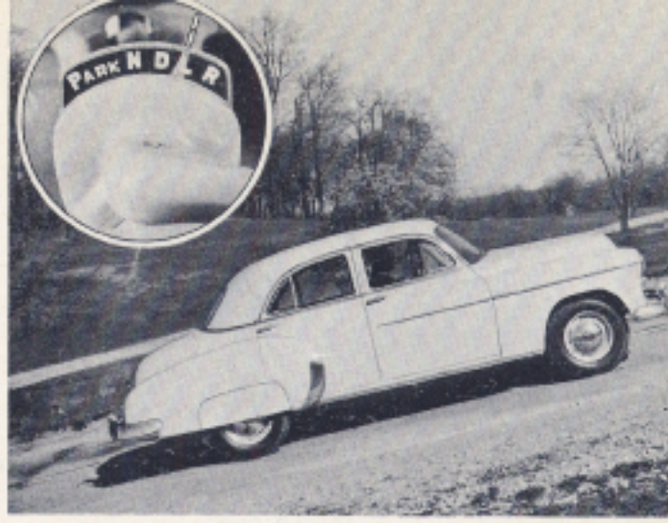
On the open road, you make more amazing discoveries. You discover an unbelievably quiet, smooth, vibrationless ride. That's because the new, quiet engine with hydraulic valve lifters and the cushioning effect of the fluid transmission.

And there's an extra reserve of power for passing — all the power of the new 105 Horsepower Engine, which has helped increase this Chevrolet's top speed by 6 to 8 miles per hour. But watch that speedometer! You may be traveling faster than you realize because the usual engine noise and vibration are lacking.



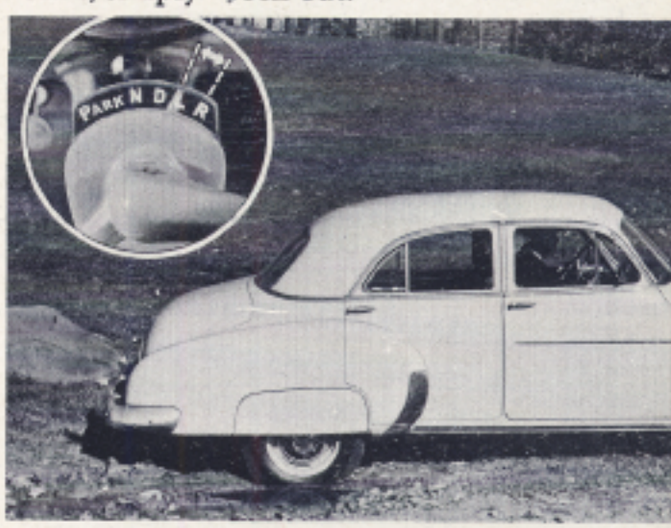
If you stop for gas — another pleasant surprise! Even with such superb performance, this new Chevrolet retains its traditionally high gasoline economy — if the trip has been entirely on the open road, you'll find extra gas savings.

Try a woodland trail. Ease along, enjoying the scenery — and be as relaxed when driving as when just riding. In *this* car, you can meter out power in any quantity *you* want, large or small — without ever a thought about gear-shifting.



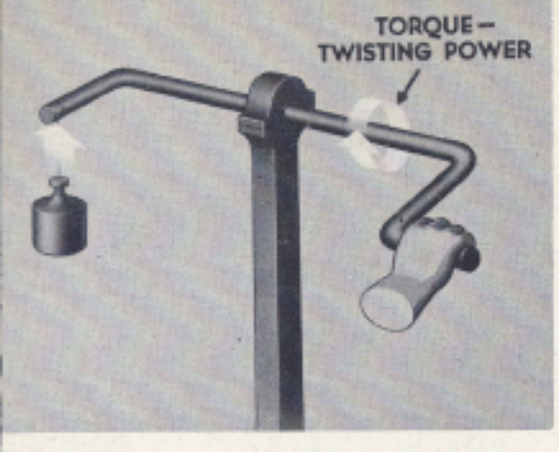
When you come to a grade, just press the accelerator. Your POWERGLIDE Automatic Transmission selects exactly the right amount of power. And if the grade is exceptionally steep—either up or down—simply flick the lever to "L" without releasing the accelerator. You climb up effortlessly — and come down safely, getting the full braking power of the engine. You can do this safely at any speed under forty.

And if you should bog down in mud or sand, simply "rock out." Hold the engine at moderate speed and move the lever back and forth between "L" and "R."

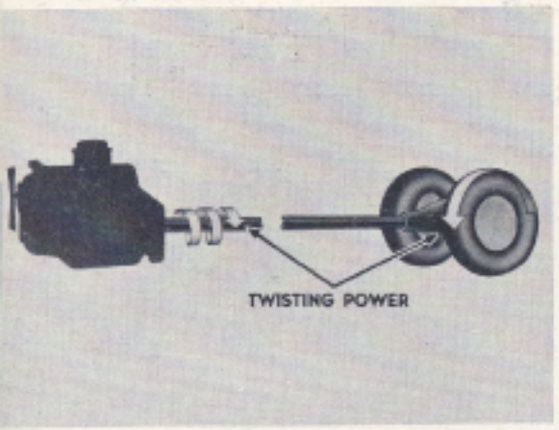


Park on a hill. Flip the lever to "Park" and walk away. The rear wheels are safely locked independently of the braking system. And you can't accidentally select either "Park" or "Reverse." The lever must be lifted slightly to move into either.

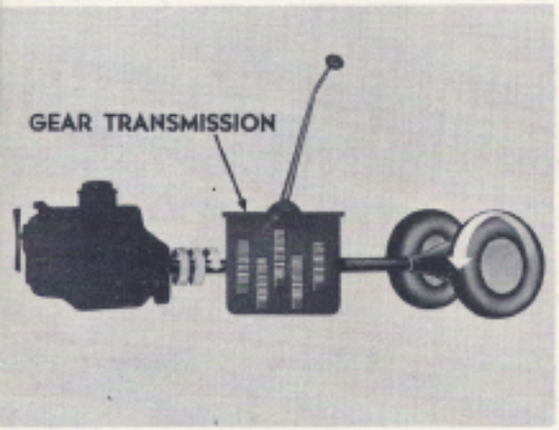
But by now you're probably wondering what's behind the amazing performance of Chevrolet's Automatic Power Team. So, first, let's see how the POWERGLIDE Transmission does its job.



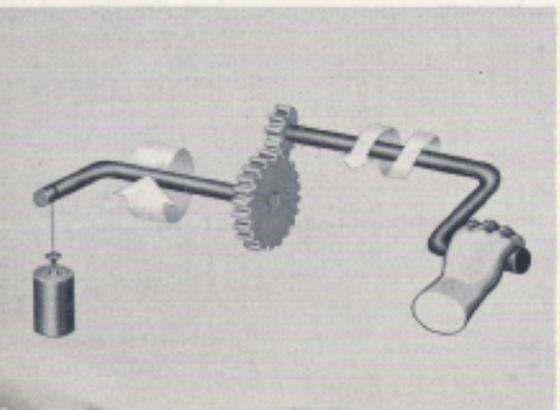
Technically, the POWERGLIDE Automatic Transmission is known as a torque converter. So we should understand that torque is simply an engineering term for measuring *twisting power*—and it's this kind of power we'll be referring to from now on, rather than horsepower.



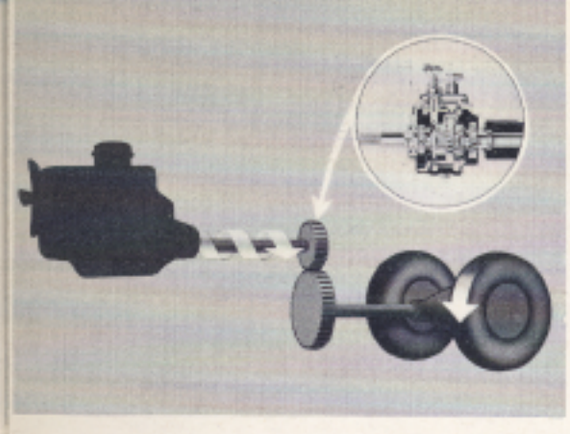
It's the twisting power of the engine which turns the wheels of the car. And it takes more twisting power to turn the wheels when starting or on a grade, than when the car is moving on the level.



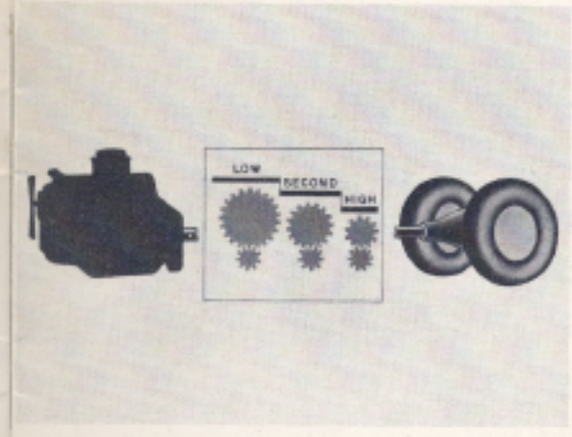
So there must be some device to *multiply* the engine power when necessary. A gear transmission is the traditional device used to do this. And the gear transmission principle is simple.



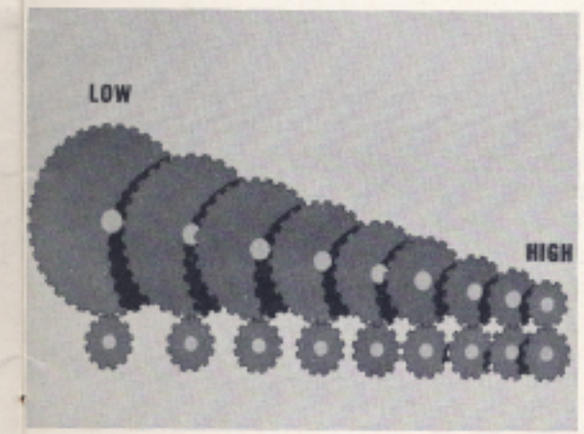
A gear with a certain amount of twisting power on its shaft can produce twice as much on the shaft of a gear twice as large. Naturally, the larger gear turns only half as fast.



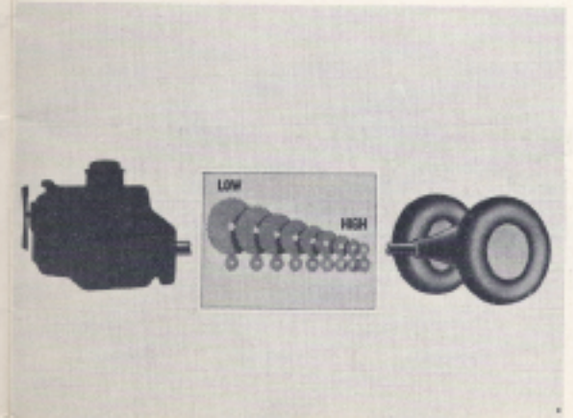
Thus, the gear transmission multiplies engine power and passes it on to the rear wheels.



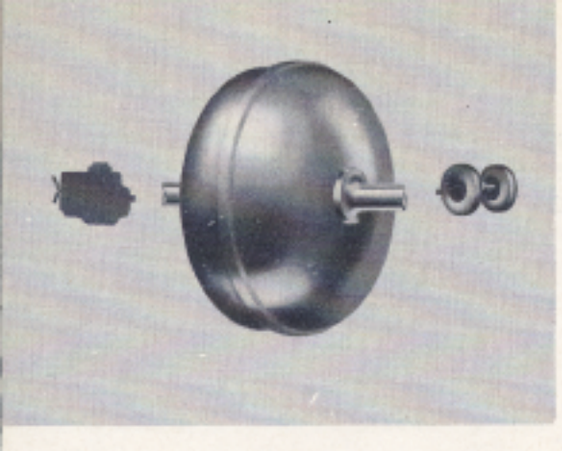
Gear transmissions usually contain only three speeds forward. So exactly the right amount of power multiplication is obtained at but three points in acceleration, with a power interruption at each shift.



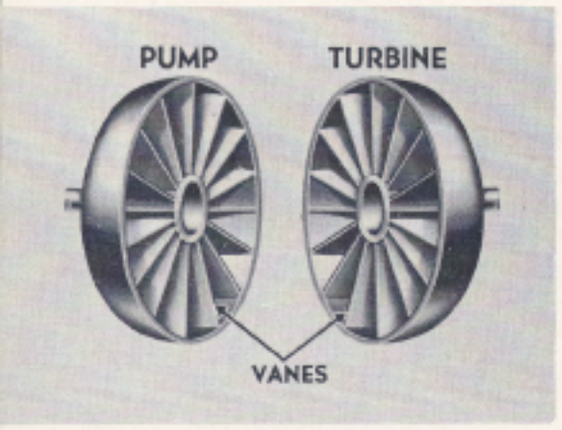
The ideal transmission would have an infinite number of gear ratios—arranged in tiny graduations to provide just the right amount of power for every step in acceleration. This is impractical with gears.



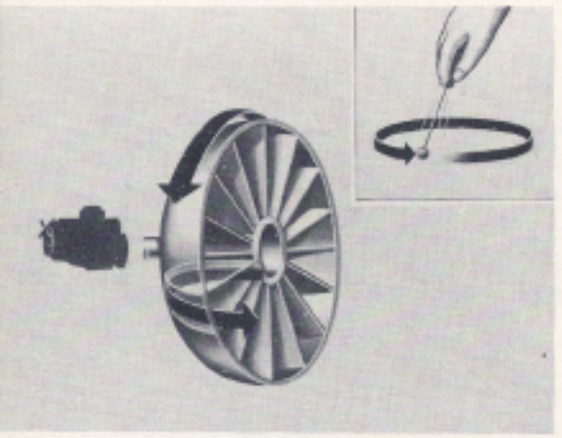
Chevrolet's POWERGLIDE Automatic Transmission provides this infinite number of power ratios—without gears.



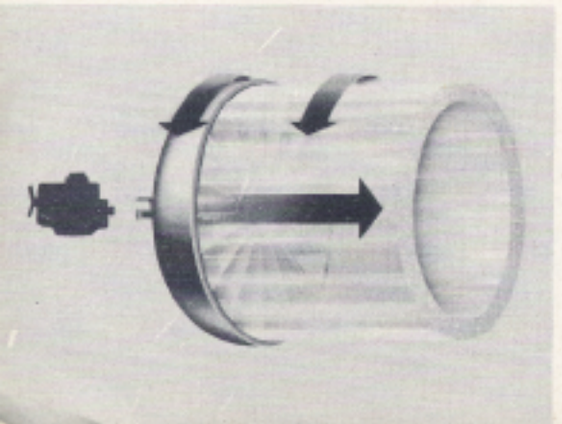
To see how this is done, let's first review the operation of the simple fluid coupling, such as some cars now use.



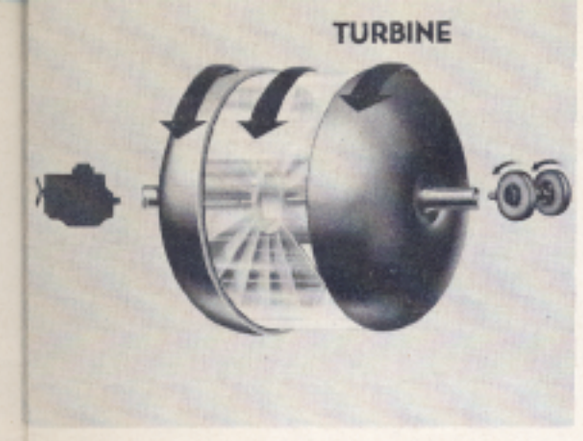
The fluid coupling has a pump driven by the engine and a turbine which drives the wheels. Both have vanes which curve outward from near the hub. When assembled, the vanes form a doughnut-shaped section, and the whole assembly is filled with oil.



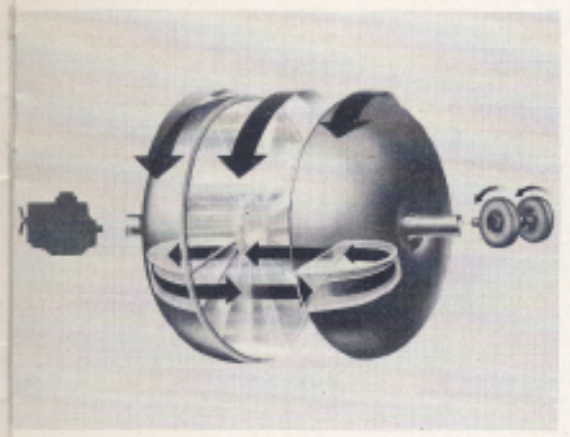
When the pump rotates, it pumps oil by centrifugal force—the same force which causes a weight twirled on a string to fly outward. Oil is thrown from the inner ends of the vanes outward, and it gushes from the outer ends.



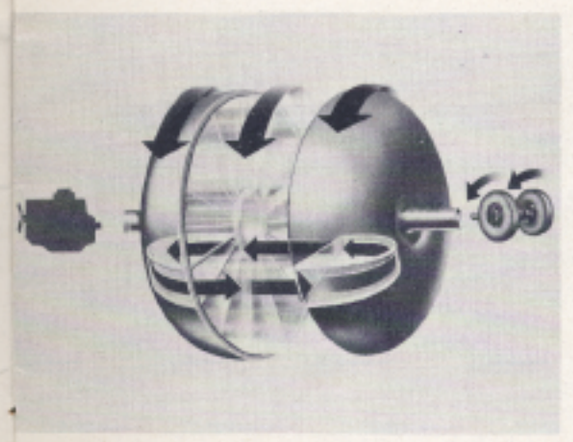
Because of the shape of the vanes, the oil gets away from the pump. The flow from all the vanes forms a rotating, cylindrical jet of oil, moving away from the pump.



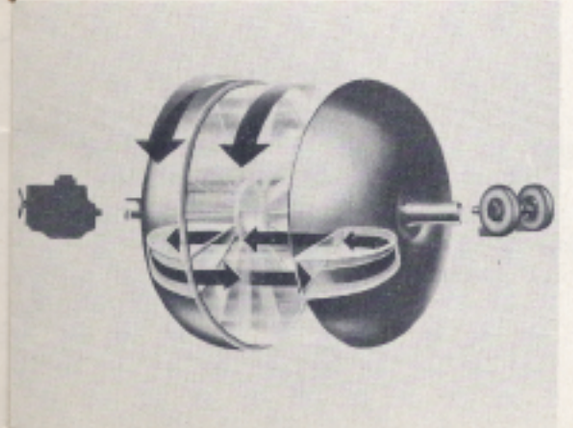
When the turbine is placed facing the pump, the oil enters the turbine vanes and twists the turbine—so the turbine turns.



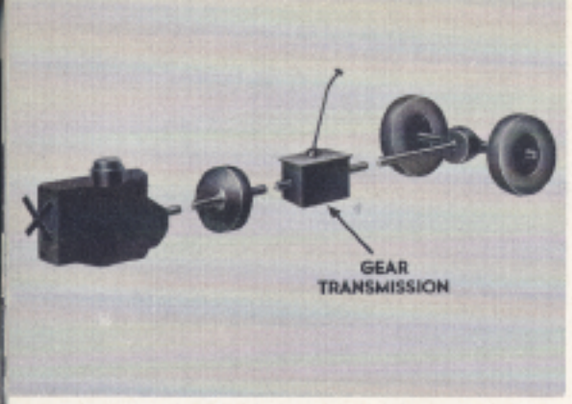
Meanwhile, the oil returns from the turbine—through the pump—back through the turbine — around and around. The oil is transferring engine power to the rear wheels.



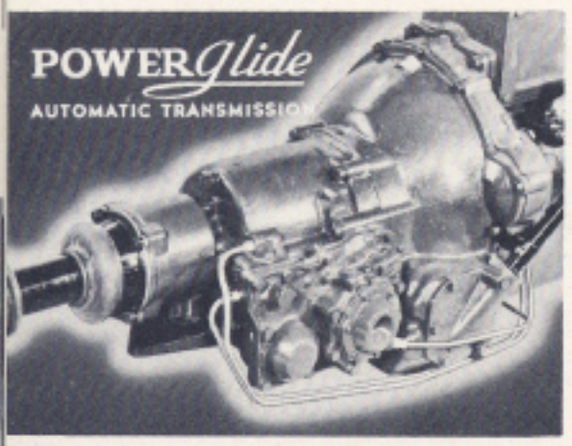
Once the turbine and the rear wheels have started to turn, they gain speed — until the turbine is turning about as fast as the pump and the rear wheels are up to driving speed, although this may take some time.



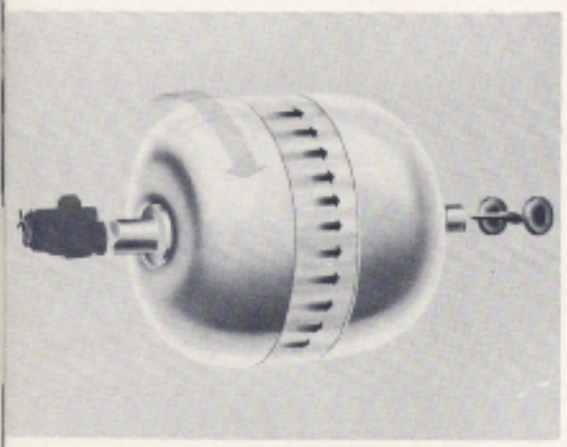
However, the fluid coupling alone cannot multiply power. On a grade, or with a heavy load, the pump simply spins—and the turbine cannot move.



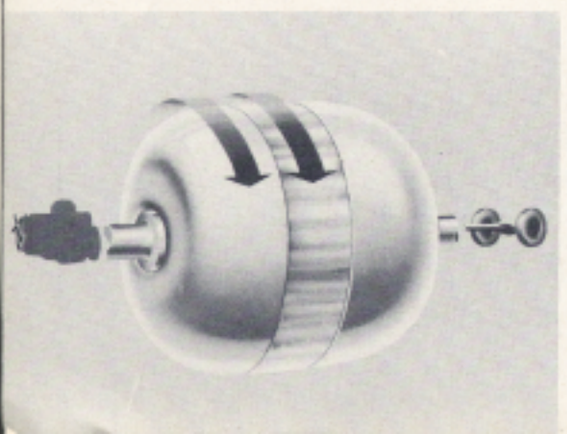
So in cars with a simple fluid coupling, a gear transmission must be used—requiring shifting, either by hand or automatically.



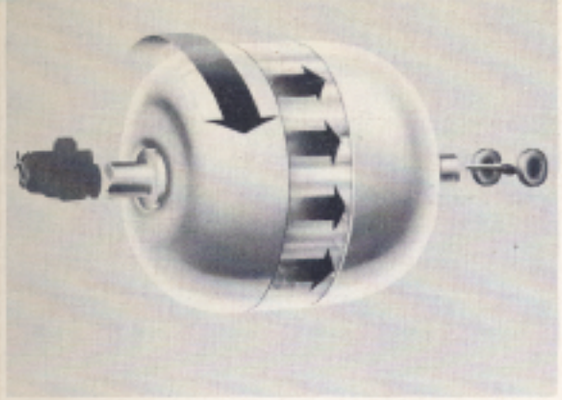
The Chevrolet POWERGLIDE goes much further than the fluid coupling. It multiplies power and selects exactly the right amount for any normal driving condition. Let's see how.



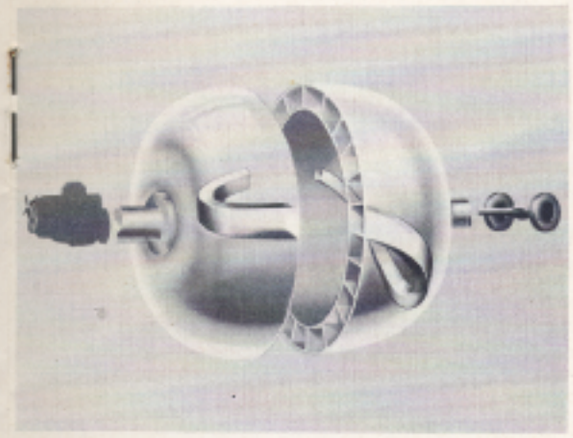
In the fluid coupling, the only means of transferring power is the surging oil from the pump. So to multiply power, a way had to be found to make the oil move faster than the pump could move it.



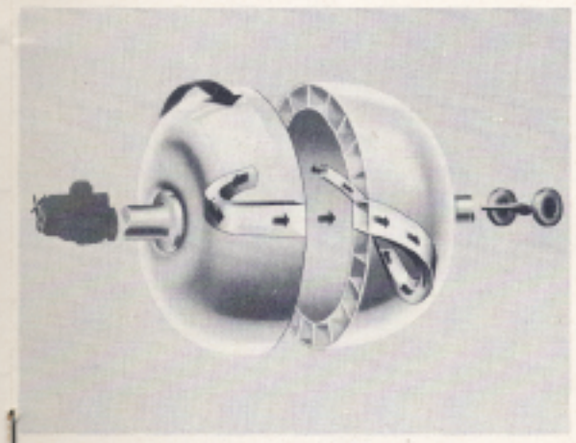
Obviously, the oil cannot *rotate* faster than the pump. However, the oil is not *only* rotating.



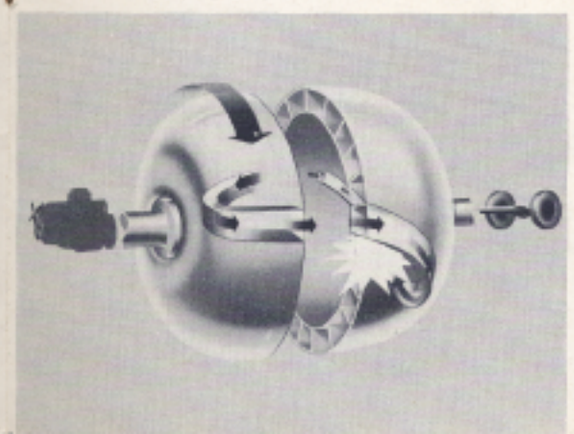
The oil is also surging from pump to turbine, and a way was found to move it in this direction with more force than the pump alone could impart.



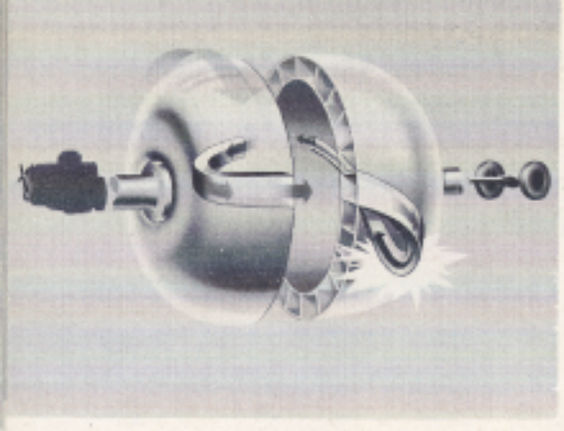
To accomplish this, the turbine vanes were reshaped to permit the easiest possible oil flow and to take fullest advantage of the oil's twisting force.



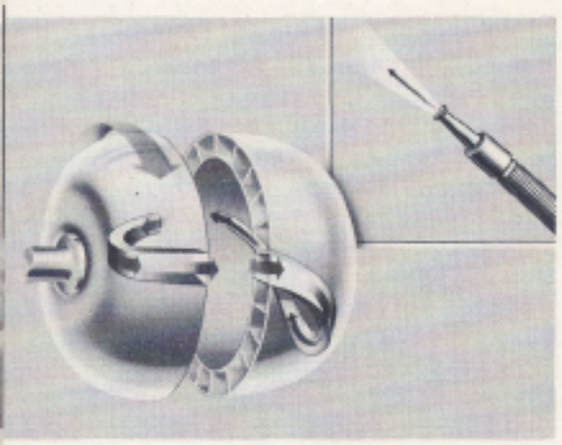
When the engine is idling, the pump turns slowly and the motion of the oil does not move the turbine.



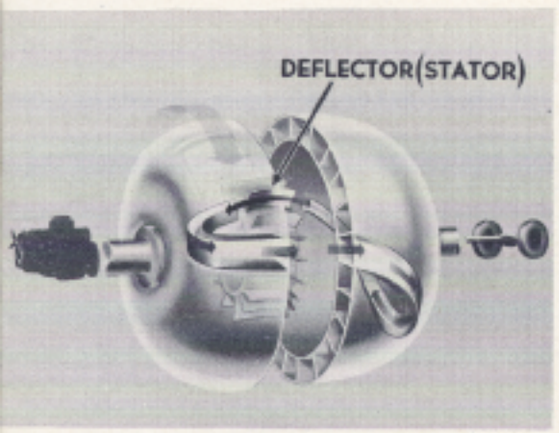
Then, when the engine is speeded up, the pump throws more oil into the turbine, where it exerts its twisting power.



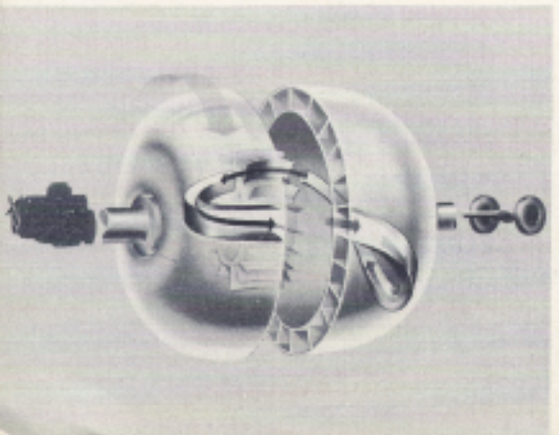
Because of the shape of the turbine vanes, the oil also pushes on the turbine—to take more advantage of the twisting action. But there is still no power multiplication.



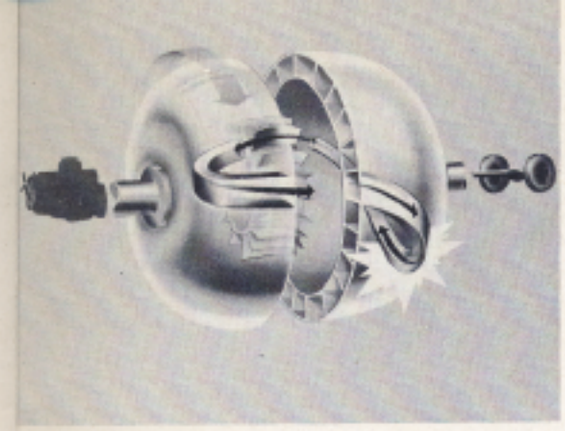
However, when the oil leaves the turbine it has a lot of energy left. And each turbine vane acts like a hose nozzle because the vane is smaller at the inner end.



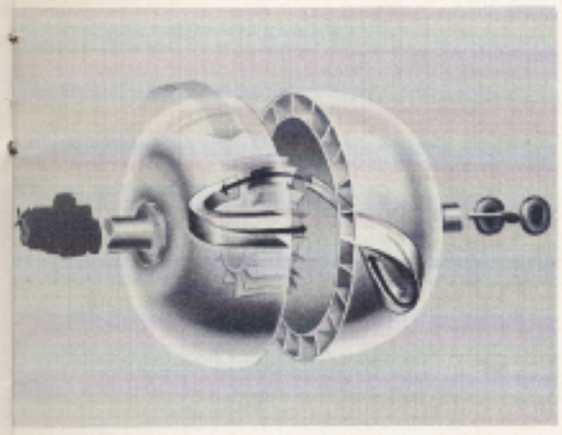
Then, a series of fixed deflectors, called a stator, directs the oil from the turbine back into the pump—in exactly the same direction as the flow of oil through the pump.



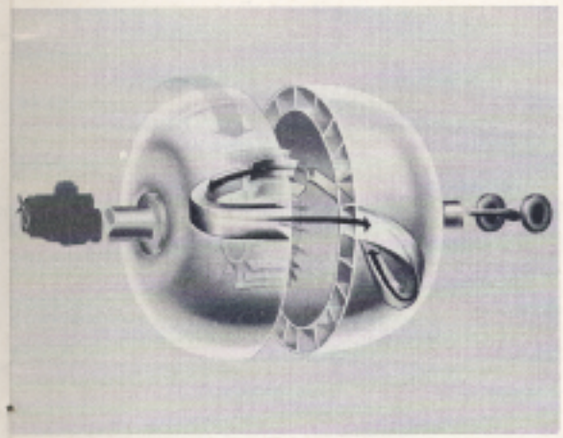
Inside the pump vane, the speed of the oil deflected by the stator is added to the speed built up by the pump. So the oil in the pump is traveling much faster than before.



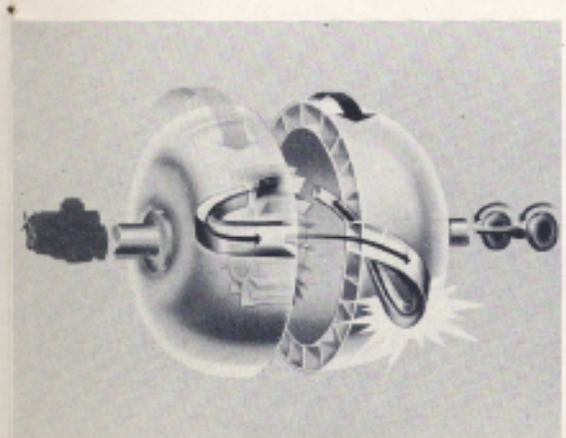
And when the oil re-enters the turbine, it exerts more force. Power has been multiplied because the oil is traveling with more force than the pump alone could provide. However, it still may not move the turbine.



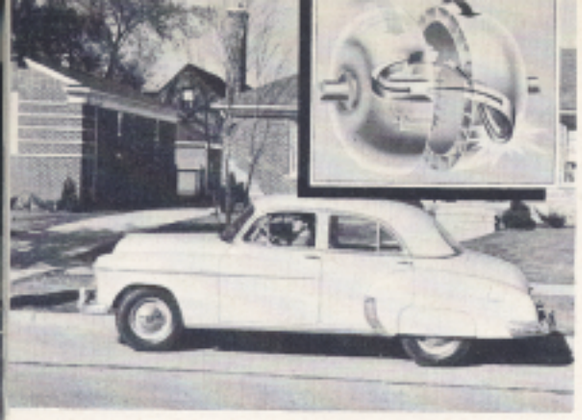
So the oil, moving still faster, is again deflected into the pump.



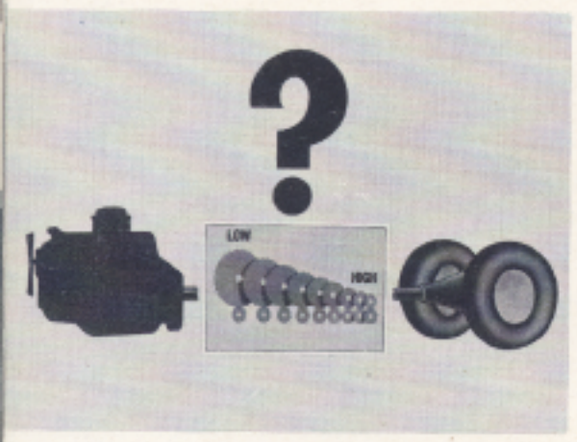
The speed and force of the oil moving through the pump is increased still more —



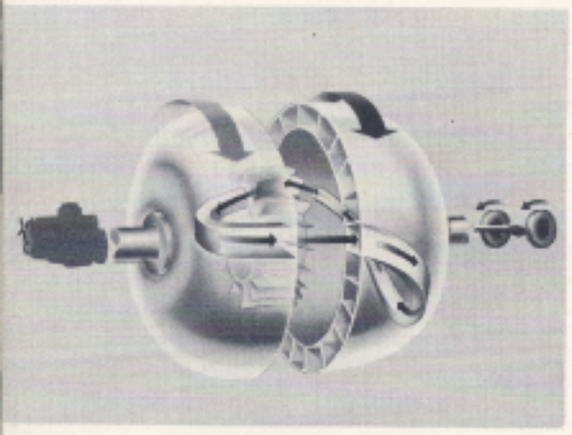
— and the oil exerts more and more force until there is enough power multiplication to move the turbine and start the car.



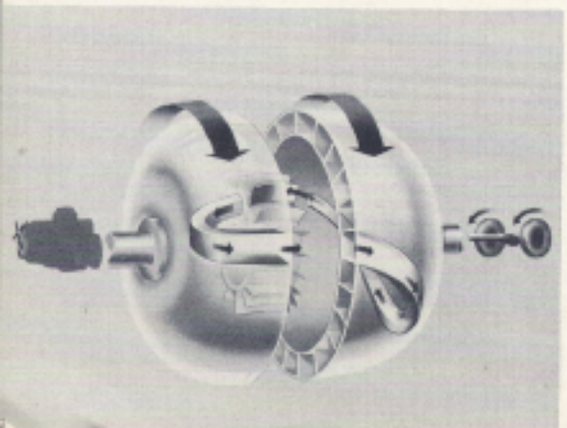
The power built up is only the amount needed to do the starting job—but it can build up, quickly, to a power ratio of more than two to one.



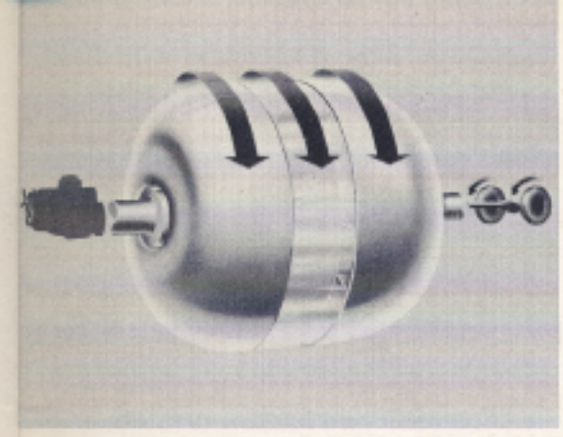
But now, how does the POWER-GLIDE Transmission get from low to high, continuously changing the amount of power multiplication? There are many technical reasons but, basically, this is what they add up to.



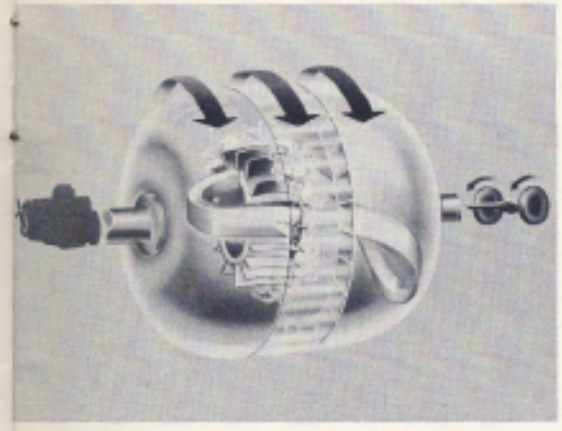
As the turbine picks up speed, the oil flow through the vanes slows down. So there is less and less power multiplication.



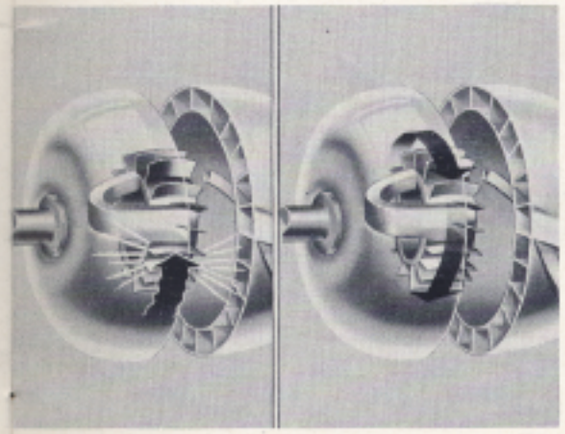
And when the turbine approaches the speed of the pump—equivalent to high gear—there is not enough oil circulation through the vanes to cause further power multiplication.



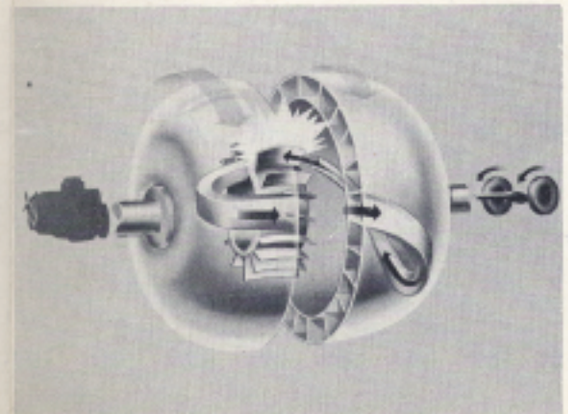
At this point the pump, all the oil, and the turbine are moving together — transferring engine power directly to the rear wheels.



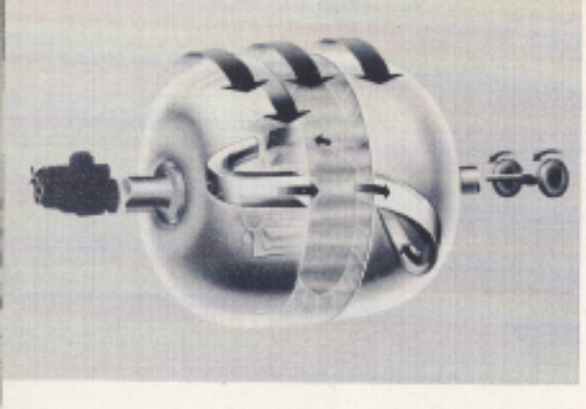
However, the stator, which directs the oil in the right direction to help multiply power, would interfere with the oil if it remained stationary as the transmission approaches the high driving range.



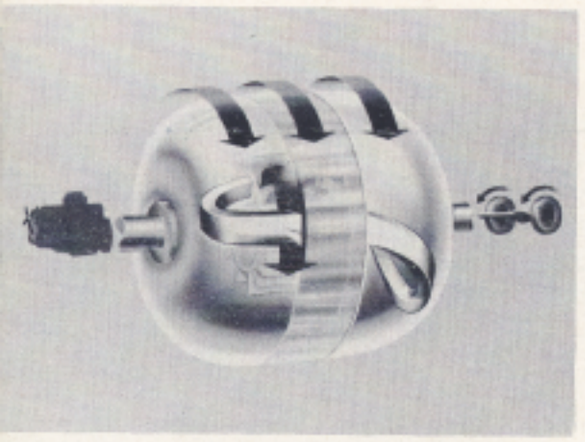
So the stator is mounted so that when pushed from one direction it will not move—while pressure from the other direction causes it to turn freely.



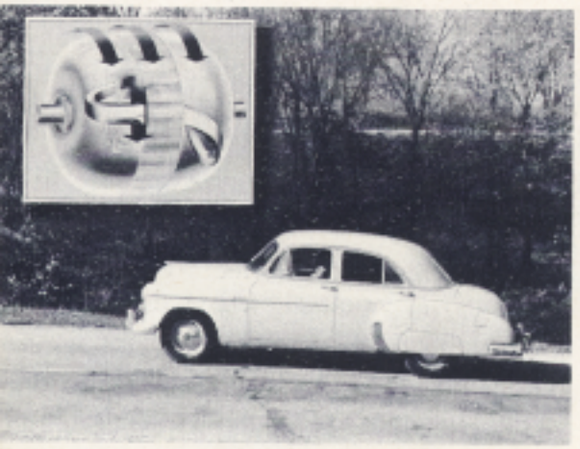
Thus, when power multiplication is needed, the force of the oil from the turbine vanes holds the stator rigid.



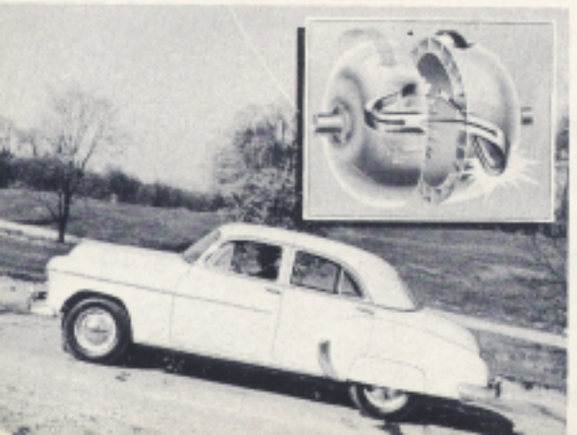
Then, as the turbine picks up speed, oil pressure begins to come from the other direction and the stator begins to turn.



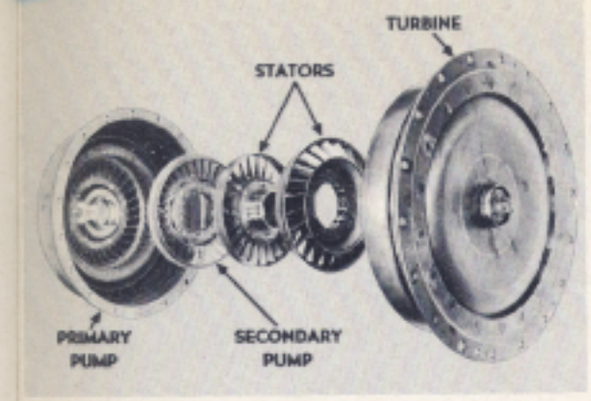
Finally, pump, stator, and turbine are all turning together —



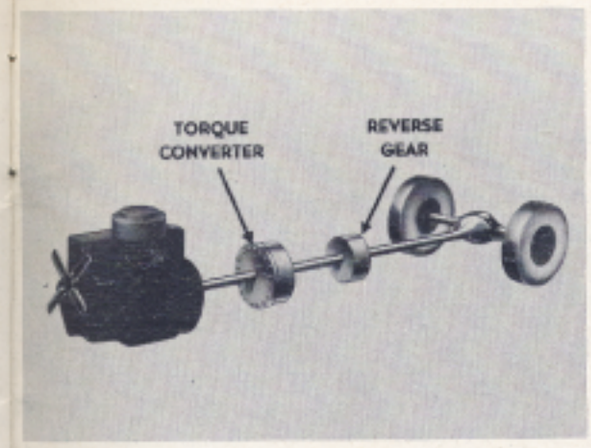
— and your car is speeding down the road, in high, with all mechanical motion cushioned by oil—without a transmission gear having turned.



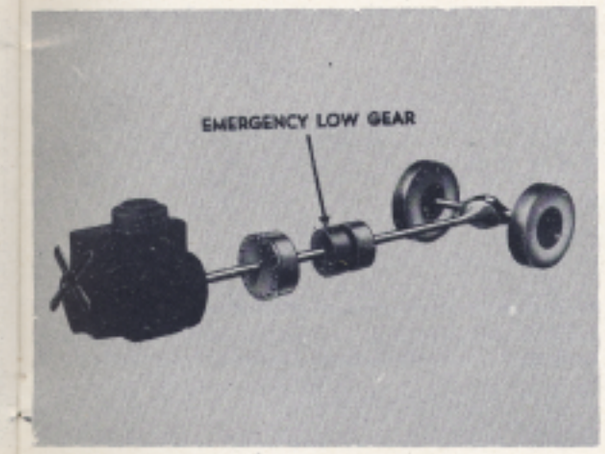
Of course, if the car starts up a grade—or if you accelerate at low speeds—so that the turbine is turning more slowly than the pump, circulation through the vanes again increases and you have exactly the amount of power multiplication needed.



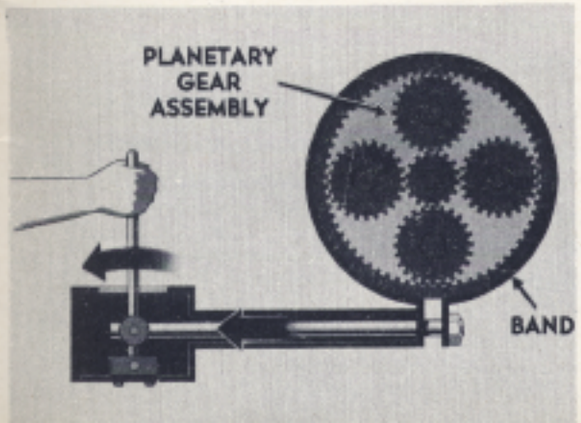
This is what the transmission looks like. Actually there is the pump, a secondary pump, two stators, and the turbine. And there are some other refinements.



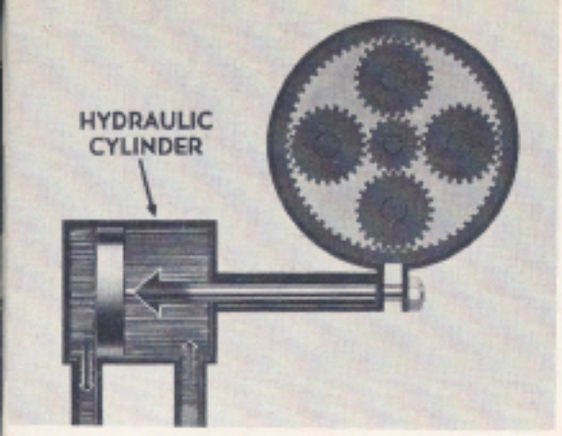
We have seen that no gears are used in the POWERGLIDE Automatic Transmission. But, since the oil flow cannot be reserved, a reverse gear is required.



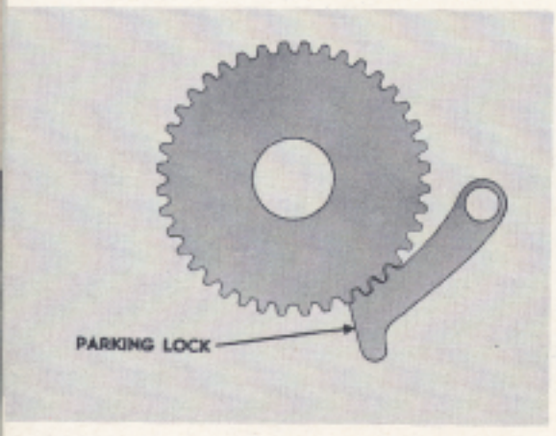
And to assure ample power for every emergency, a low gear is added. The automatic transmission alone can multiply power by more than two times, and the low gear multiplies it again by nearly as much — giving a combined low of 4 to 1. This is much more powerful than the usual passenger car low.



The emergency low and the reverse gears are called "planetary" gears. The ratio—or direction of rotation —is changed by clamping the outer gear with a band, without the gears actually shifting.

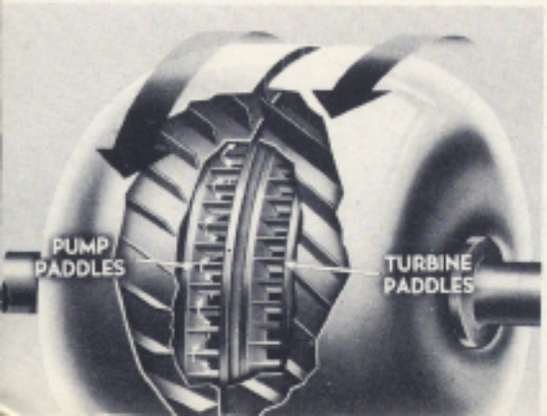


Bands are applied and released by oil from hydraulic cylinders, controlled by the pilot control lever.

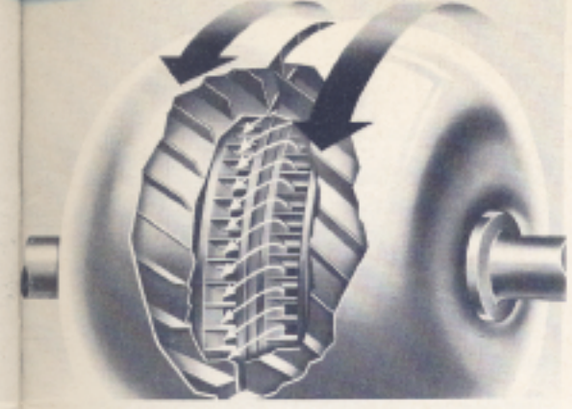


Finally, for the parking lock, a toothed lever meshes with teeth on the reverse gear drum. This drum is connected with the rear wheels, locking them when the lever is engaged.

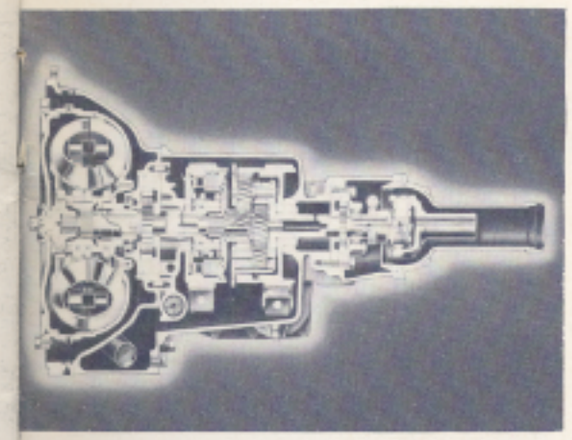
There's one more feature—exclusive to Chevrolet. It provides engine braking and, in case of battery failure, permits push-starts as low as 12 miles per hour in "low"—or 18 miles per hour in "drive."



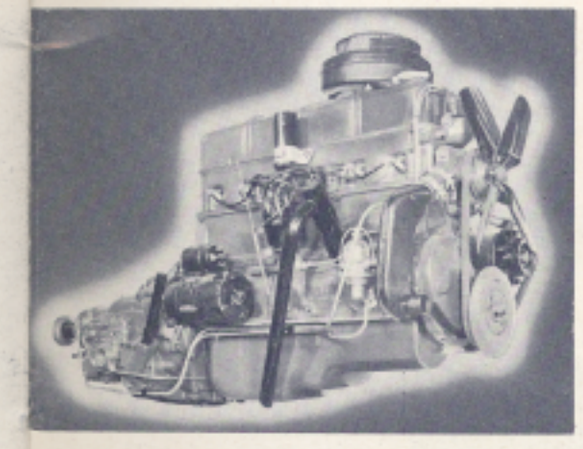
This is done by paddles in the pump and turbine, arranged so that when the pump is turning faster than the turbine, its paddles slide through the oil with little effect.



However, when the turbine turns faster—as on a downgrade or when the accelerator is released—the turbine paddles throw oil against the pump paddles. This tends to couple the units and provide engine braking.



Chevrolet's new POWERGLIDE Automatic Transmission is the last word — not only in operation, but also in durability. It is manufactured and assembled with maximum precision in a new, especially-equipped plant. And since all parts operate in oil, wear is almost non-existent.

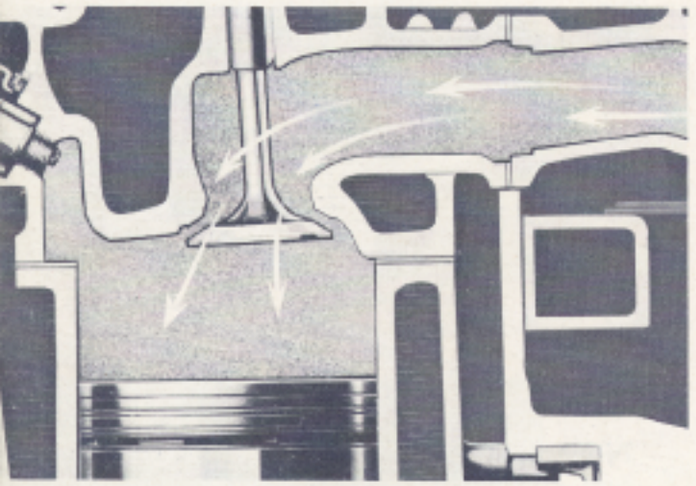


Now, let's examine briefly the second and third members of Chevrolet's Automatic Power Team. First, there's the great new 105 Horsepower Valve-in-Head Engine — the engine specifically designed for the POWERGLIDE Automatic Transmission.

The third member is the Econo-MISER High-Reduction Rear Axle. Rear axle ratio has been decreased from 4.11 to 3.55 to one — to take fullest advantage of the power in the new engine, and to assure economical driving.

Equally as important as the automatic transmission, the new engine is a combination of new design and time-proved features. It is, of course, valve-in-head design—and such advantages as complete, uniform cooling, specialized four-way oiling and cast-iron pistons have been retained.

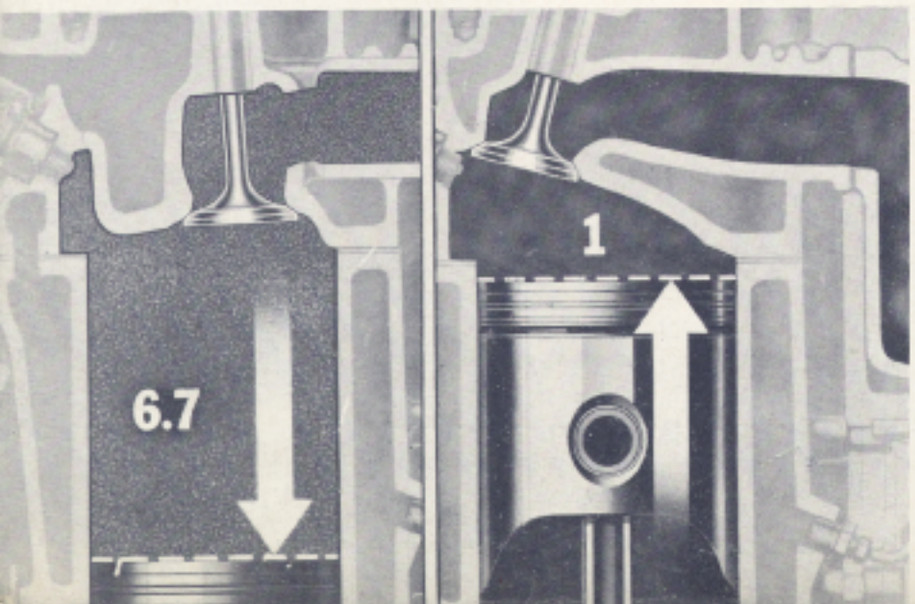
But the most important thing about the new engine is that it has been designed specifically for the job it has to do — develop great power at low speeds and avoid the need for racing the engine to start the car.

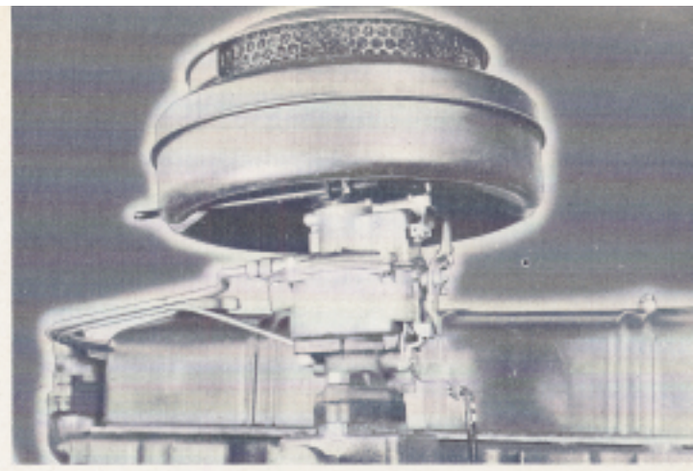


It is larger. Its 105 H.P. rating is the highest in the low-priced field.

Breathing capacity has been increased. Inlet and exhaust valves and passages are larger, providing easier entrance of fuel and exit of burned gases—for greater power.

Compression ratio is increased. It is now 6.7 to 1—the highest needed with an engine of such great breathing capacity, using regular grades of fuel.

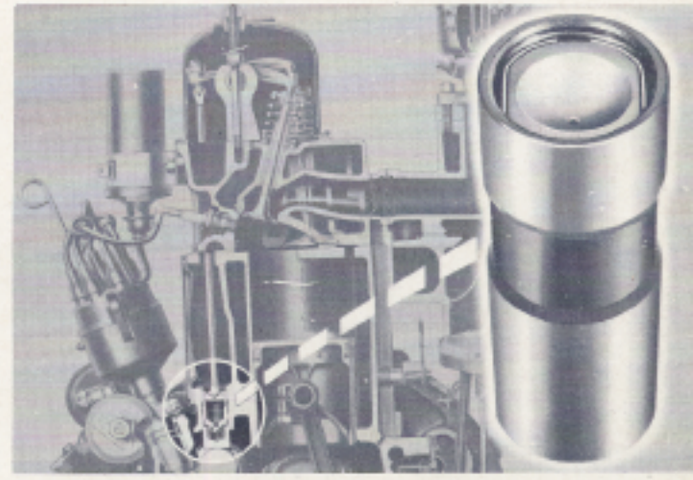




The amazing new Power-Jet Carburetor—standard on all 1950 Chevrolet engines—assures better starts and smoother performance under all conditions.

New Hydraulic Valve Lifters — for the first time in the low-priced field — subdue tappet noises, automatically compensate for wear (eliminating periodic tappet adjustments) and increase power and valve life by assuring full opening and closing under all conditions.

With its many engineering advances, it's the new Chevrolet 105 Horsepower Valve-in-Head Engine—which produces the power that the new POWERGLIDE Automatic Transmission turns into such smooth performance.



To complete Chevrolet's Automatic Power Team there is the new EconoMISER High-Reduction Rear Axle, with its new ratio (3.55 to 1). This new ratio maintains cruising speed with a ten (10%) per cent reduction in engine revolutions — providing the "overdrive" result and greater gas economy you get on the highway.

Yes, the engineer's dream of smooth, surging, continuous power at the touch of the toe . . .