

## Socony Gasoline—Every Gallon Uniform—Every Drop Full of Power

44.

Our gasoline engine is a "heat and pressure" engine. It depends for its power on the amount of heat and pressure developed by burning gasoline in its cylinders to drive its pistons. The greater the heat the greater the pressure, and the greater the power, up to certain limits, of course.

Some brands of gasoline develop more power than others, but will not start so quickly. Some brands will start quickly, but will not develop the same amount of power. Some gasoline will do neither, and form excess carbon as well.

Some gasolines contain sulphur in their makeup. Sulphur, combining with moisture, forms harmful sulphuric acid, which in time may eat away our floats, strainers and other metallic parts of our fuel system.

The difference in gasolines, as we have observed, is simply a matter of balance.

Socony Gasoline is the properly balanced fuel for our motor. It contains just enough highly inflammable parts to start our engine quickly. It contains the right amount of less inflammable, but more powerful parts to produce the heat and pressure to our cylinders necessary for maximum power.

And due to the fact that every drop of Socony Gasoline is scientifically balanced, it burns completely at each explosion, insuring a minimum of carbon.

It is refined in the most completely equipped plants in the world, by men long skilled in the art of refining the products of petroleum. And its quality is assured whether you purchase it in Portland, Maine, or Mastic, Long Island.

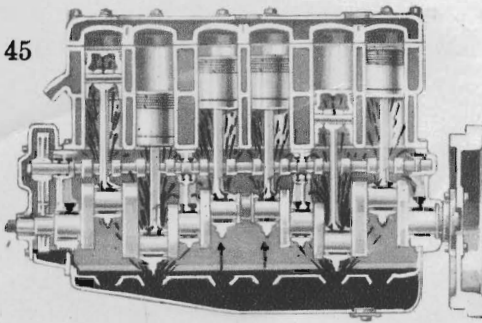
Socony dealers pride themselves in the service they offer. You may be assured that you will receive courteous and prompt attention from them everywhere. Service and the best of products are the methods upon which they hold your trade.

Start this season off right. When your tank is almost empty, fill it up with Socony Gasoline and let it prove its worth in your engine.

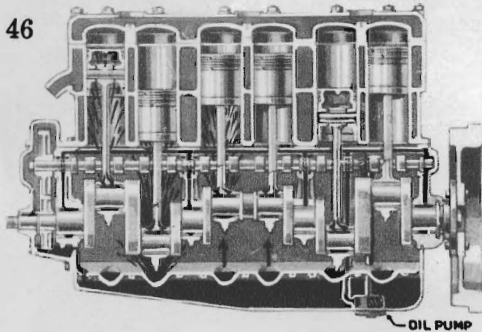


## Lubricating Our Motor

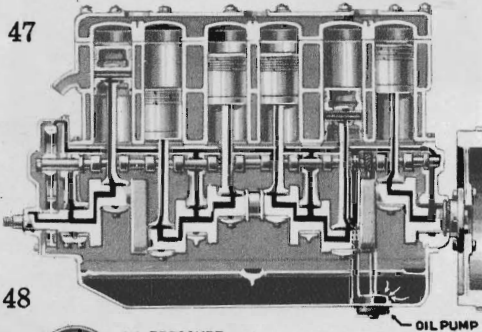
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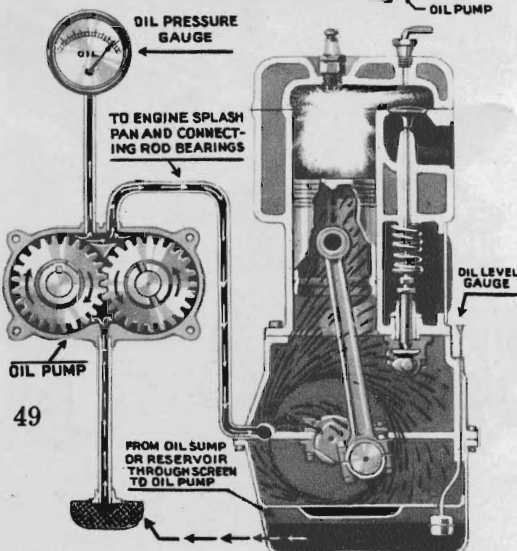
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### 45. *Splash Circulation*

The Splash System of engine lubrication means exactly what its name implies. The oil is "splashed" from troughs to the various moving parts of the engine by scoops on the ends of the connecting rods.

In the Model T Ford engine, the oil is continuously thrown into small cups whence it flows by gravity to the main or crankshaft bearings. The centrifugal action of the flywheel acts as a pump and makes possible a continuous flow of oil in the crankcase.

### 46. *Splash and Pressure*

In the Splash and Pressure System the oil in the crankcase is pumped to the main bearings and overflows to the connecting rod troughs where it is splashed to other bearings.

### 47. *Pressure System*

The Pressure System, the most positive of all lubrication systems, forces the oil, under pressure, by means of a pump, to the principal moving surfaces within the engine, such as crankshaft bearings, connecting-rod bearings, wrist-pin bearings, cylinder walls, timing gears and valve mechanism.

### 48. *Oil Level Gauge*

There is an oil level measuring rod in the crankcases of all cars by which we may check the quantity of oil in our crankcase. Be sure to maintain the correct level.

It is vitally important that we check our crankcase oil, for if we allow it to run low we are in danger of causing serious and expensive damage to our motor.

### 49. *Oil Pump*

Our oil pump usually consists of two gears which revolve in opposite directions in a small metal case about the size of a snuff box.

After the oil has been filtered through a screen it enters one side of the pump case and the rotating gears force it out at the other side.

Our oil gauge indicates the pressure exerted in forcing the oil through our engine.

## Tasks Our Motor Oil Must Perform

### 50. Reduce Friction

All moving parts of our car are supported by bearing surfaces which, when properly oiled, reduce friction and wear. To the naked eye a bearing surface appears as smooth as glass. But when we examine it under a microscope we find it resembles a file in its roughness.

Should we permit bearing surfaces of this rough nature to come together, the effect would be similar to filing a piece of metal.

The first task for our motor oil is to provide a layer of lubricant between moving surfaces, an oil film which will prevent direct metal-to-metal contact with each other. We need a coating of lubricant which will accomplish the same slippery effect in our bearing as a lather of soap and water gives to our hands when washing.

The efficiency of our car is retarded 10 per cent, or about 2 cents on each gallon of gasoline, through unavoidable friction. To prevent increase it is important that we use Socony Motor Oil in our motor.

### 51. Seal in Power

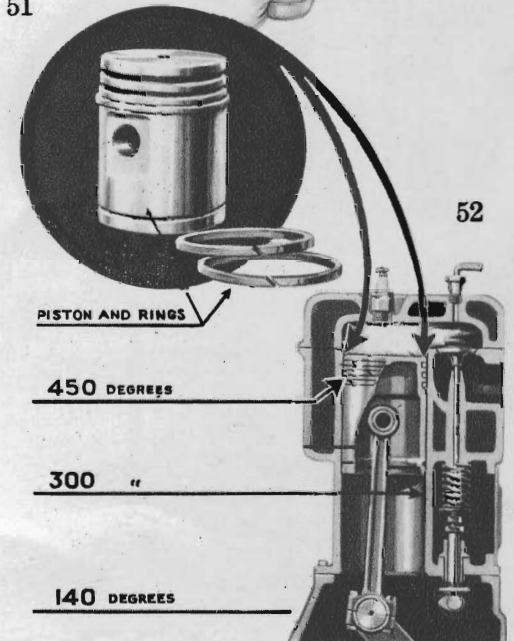
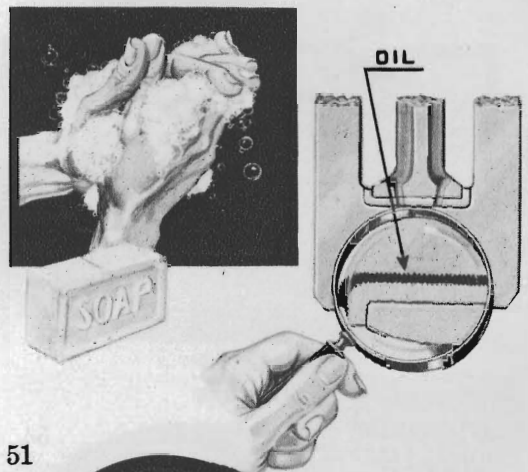
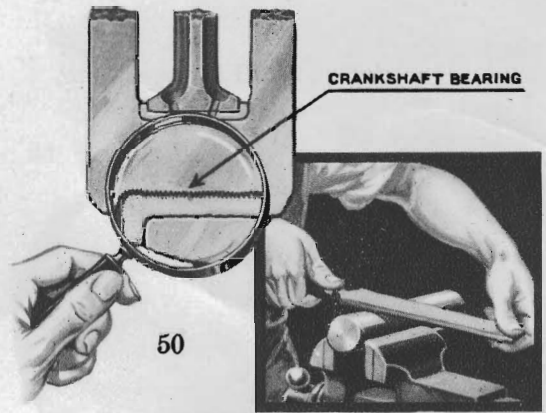
We use two or more metal rings on our pistons to form air-tight joints between pistons and cylinder walls. These joints must be leak-proof; otherwise the compressed gases in our cylinders will escape into the crankcase, and an excess of oil will form carbon in our cylinders.

Our motor oil must aid the piston rings in forming these power seals. It must actually seal each joint. Socony Motor Oil has an established reputation for its ability to make lazy motors take on new life and peppy motors maintain their pep.

### 52. Cool Motor

In various parts of our engine, the temperature ranges from 140 degrees Fahrenheit to as high as 450 degrees Fahrenheit on some parts of the cylinder walls. Our motor oil, as well as water and air, must do its part to reducing these temperatures.

In choosing Socony Motor Oil to lubricate our motor we are selecting a lubricant which insures the correct operating temperature for our engine. Socony Gasoline and Motor Oil are ideal working companions.



## Hazards Which Threaten Our Motor

### 53. Heat

We have described in preceding pages the terrific heat under which our motor operates. Normal running temperatures varying from 160 to 450 degrees.

Not every oil can stand under these temperatures. Socony Motor Oil is the ideal lubricant for our automobile engine because it stands up and does its work efficiently.



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### 54. Friction

Friction is a deadly enemy of motion. Permit any two surfaces to come in contact, without some form of lubricant to keep them apart, and the result may be likened to holding a knife against a grindstone.

Friction never can be overcome, but it can be greatly reduced through the use of proper lubricants.

### 55. Dilution

Another function of our lubricating oil is to form leakproof seals around the piston rings in our motor. If our oil fails in this, the compressed gasoline vapors will blow by the piston rings into the crankcase.

The effect of leaky piston seals is similar to that of running our engine with the carburetor choke pulled out. Gasoline washes the oil from the cylinders. Friction is set up, and our oil is diluted.

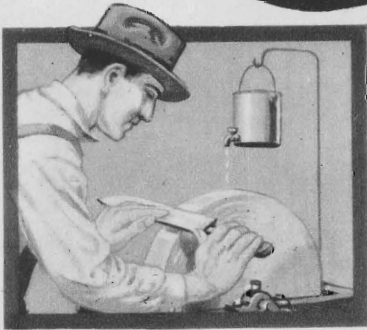
The oil we select to seal the power in our cylinders shoulders a great responsibility. To insure protection for our motor use Socony Motor Oil of the correct grade.

### 56. Dirt

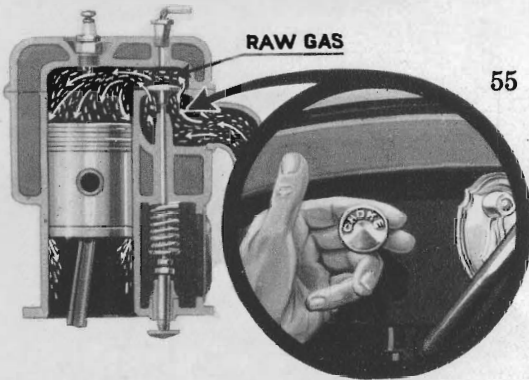
In an air space, the size of a hen's egg, there are a million dust particles. The greater part of this dust is blown out through the exhaust. But some particles adhere to the combustion chamber surfaces.

This remaining dust mixes with our oil and forms hard "carbon." Some of the dust mixes with the lubricating oil. In time the oil in our crankcase becomes mixed with this dirt and acts as a grinding compound.

In spite of devices for preventing the admission of dust and dirt to our engine, the safest plan to insure perfect lubrication is to change our motor oil at regular intervals.



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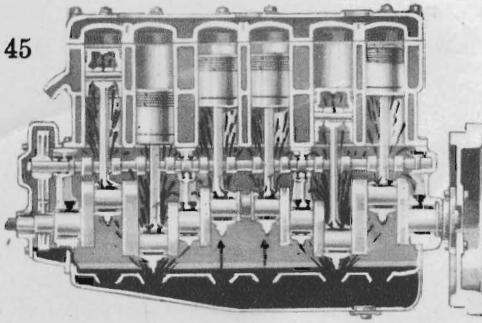
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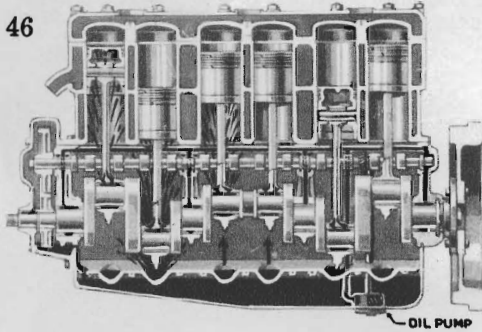


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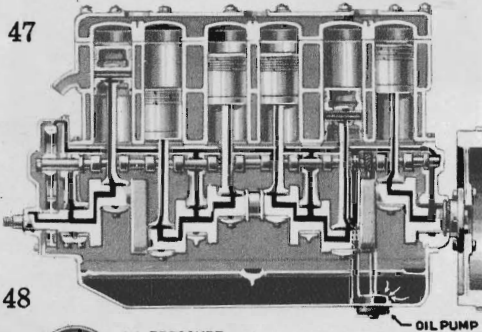
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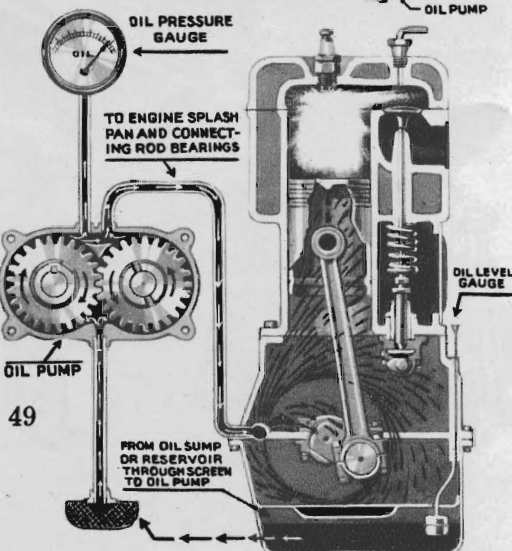
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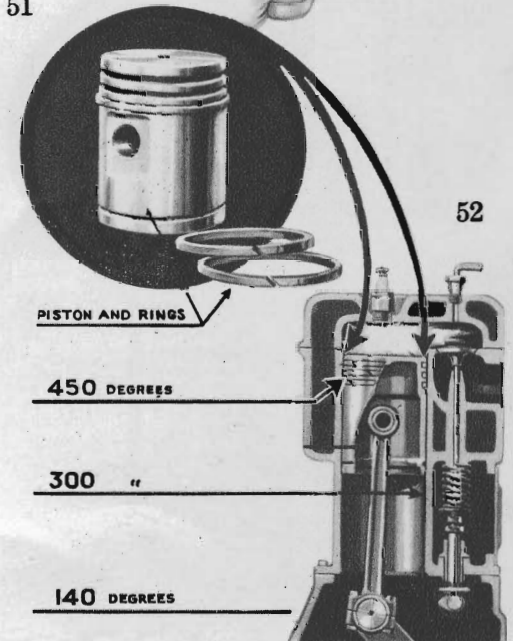
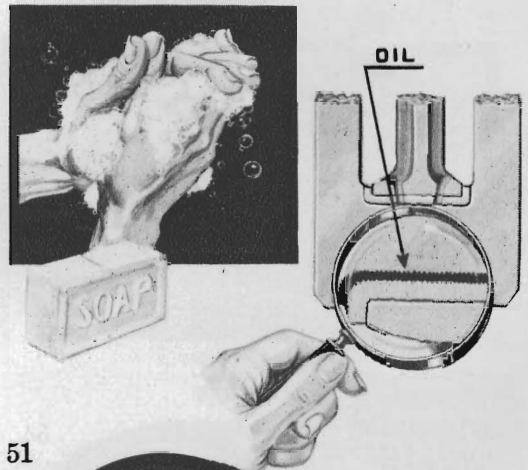
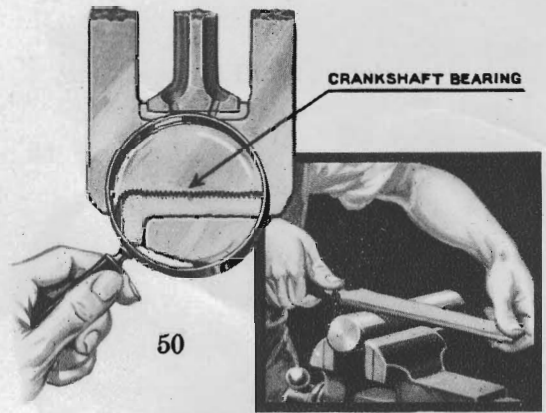
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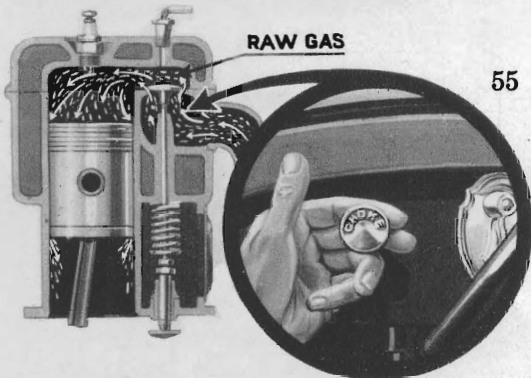
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## Why It Is Necessary to Change Our Motor Oil Frequently

57.

For genuine economy in running our automobile we should change our motor oil approximately every 500 miles.

Motor oil is refined from crude oil by heat. In our engine it is again subjected to running temperatures reaching 450 degrees Fahrenheit. Ordinary motor oils, not properly refined, cannot long endure these extreme temperatures.

Oil which has lost its lubricating value cannot effectively reduce friction or form the kind of piston seals necessary to seal the power in our cylinders, let alone stand up under more heat or aid in cooling our motor. For these reasons some motor oils must be changed more frequently than others.

Road dust and sand which work into our engine play havoc with the lubricating value of our oil. Unless our oil is changed frequently and the interior of our crankcase thoroughly washed out with a good cleanser, such as Socony Flushing Oil, sludge will accumulate in the bottom of our engine and endanger our bearing surfaces.

Sludge is a thick gummy mass, somewhat the same consistency as molasses. If sludge is present in our crankcase it may clog the oil leads and hence endanger our bearings.

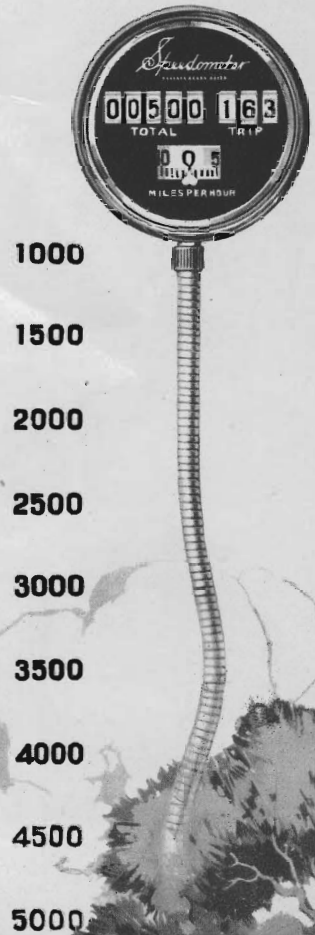
Kerosene should never be used as a flushing liquid, for it is quite impossible to drain all of it from our crankcase. Some of it is bound to remain and dilute the fresh oil.

As for the practice of periodically adding fresh oil without draining our crankcase, it stands to reason that half a gallon of clean oil added to half a gallon of dirty oil makes a gallon of dirty oil.

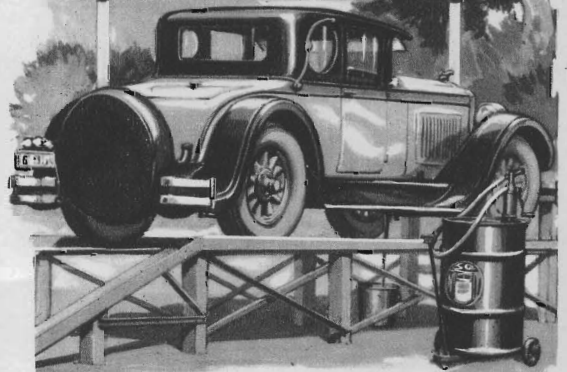
Socony dealers pride themselves on the service which they offer. Take advantage of this service and let your Socony dealer drain your crankcase, flush it out with Socony Flushing Oil, and refill it to its proper level with the grade of Socony Motor Oil recommended for your motor.

If you prefer to service your own car, Socony Motor Oil may be purchased from your dealer in containers from one quart to a barrel in size.

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*Drive in for FREE*  
Crankcase Service  
SOCONY MOTOR OIL





## Socony Motor Oils for Dependability

58.

Prior to 1859, when Colonel Drake of Buffalo pointed the way to the commercial production of mineral oil at Titusville, Pa., animal and vegetable oils were accepted as lubricants for anything and everything.

In 1872, George Selden began serious experiments in "road locomotion." Six years later he practically abandoned his ideas of perfecting his road vehicle because he found the lubricants unsuitable for his engine.

Not long after, Selden heard of a new heavy mineral oil. He secured a few gallons and to his surprise found this oil to perform satisfactorily. This was the turning point in motor development—today mineral oil is the base for all engine oils.

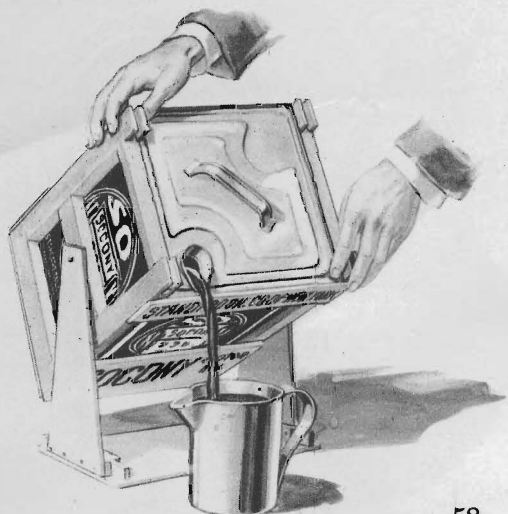
Standard Oil Company of New York was a pioneer in the oil industry. Since 1873 it has produced petroleum products, and its constant aim is to offer the best products within the skill of engineering knowledge.

Socony Motor Oils are as good lubricants for our automobile engine as money can buy. Due to extreme care in refining, Socony Motor Oils do not lose their lubricating qualities under the scorching engine heats. They reduce friction and consistently form piston seals which seal the power in our motor, mile in and mile out.

We must not overlook the fact that the automobile is one of the finest pieces of machinery in the world. We will be repaid for the attention we give it.

Our motor deserves the best. The cost of lubricating it properly with Socony Motor Oil is only about two percent of the yearly upkeep cost of the entire car. At such a low cost for proper lubrication it is a risky matter to experiment with motor oils, especially when the difference between proper and improper lubricants amounts to only \$2.00 or \$3.00 a year.

For economy's sake, consult the Socony chart at your dealer's station for the correct grade of Socony Motor Oil for your engine. You can secure every grade of Socony Motor Oil anywhere—and it's uniformly good no matter where you purchase it.



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## To Control the Power from Our Engine We Need a Clutch

### 59. How Our Clutch Works

Now that our motor is running we must apply the power it develops to turning our wheels. The first step is through the clutch. The clutch is a device for engaging and disengaging our motive power from the rest of the driving units, so our car may or may not move while the engine is running.

Nowadays the "disc" clutch is almost universally used. Engaging and disengaging our disc clutch is purely a matter of firmly clamping and unclamping a number of "discs," which are fastened to the ends of the crankshaft and the transmission shaft respectively.

The discs are clamped together and prevented from slipping by a stiff steel spring which holds them securely under a pressure as high as 300 pounds.

Mr. A. L. Dyke illustrates the disc clutch principle by placing a silver dollar between two half dollars and squeezing them together between the thumb and forefinger of the left hand. With the right hand, try to revolve the dollar. It requires but a slight pressure to make it impossible to move the dollar without moving the half dollars.

### 60. Types of Disc Clutches

The single plate clutch is a type in which one disc or plate is clamped between two others—illustrated in principle by the silver dollar between two half dollars described above. There are two general classes of single plate clutches—those which operate in oil, called "wet" and those which run "dry."

The multiple disc clutch consists of a number of discs, which are pressed together. When the clutch is "engaged," the friction between them causes one set of discs to drive the other.

When a wet clutch is disengaged, its discs are separated and oil flows between them. When we engage the clutch, this oil is squeezed out.

As the oil is squeezed from between the discs, the clutch slips and it eventually takes hold when the oil is entirely squeezed out. The idea of the slipping clutch allows our car to start smoothly without a sudden jerk.

