

## SIMPLE GAS MIXER AT SMALL EXPENSE

Control From Seat Possible  
With Material Costing Not  
More Than 75 Cents.

By C. P. SHATTUCK, M. E.

During the past year a large number of devices for regulating the mixture from the seat have appeared on the market and the new cars as a rule, are equipped with a similar control. These devices are of value as they enable the driver to obtain an efficient mixture, and another important advantage is that considerably more mileage is secured from a gallon of fuel, as well as more power.

One of these regulators can be made and attached by the motorist at the cost of the material should not exceed 75 cents. Generally it is available in the garage or can be purchased second hand. The arrangement of the device is shown in an accompanying sketch, and as may be noted, it is simple and easily installed. It consists of an airtight petcock or priming cup, and two connections. The connections can be purchased for about 50 cents each, as they are leak proof and are easily and quickly fitted.

Elbows will not be required if the intake pipe is on the right-hand side of the motor and if the driver is located on the same side. Purchase one 1/2 inch pipe thread, and one 1/4 or 1/2 inch pipe thread priming or petcock, the size depending on the bore and stroke of the motor. Use tubing to fit the connections. If a large motor, use the 1/2-inch tubing.

Drill and tap the intake manifold between the carburetor and the cylinders to take the 1/4 or 1/2 inch male pipe connection, as shown at B. Next attach the solderless connection and tubing, carrying the latter through the dash up to a convenient place on the steering column under the wheel as shown at A. By using a straight female connection the tube can be attached to the priming cock. Secure the tubing to the steering column by clips. If desired, the priming cock can be fitted to the dash, but the column location is more convenient.

When starting the motor, the priming cock should be closed, but after the engine is warm and when operating at normal or high speeds, the petcock is opened to admit extra air, the supply being regulated to obtain the best results from the motor. When descending grades, the suction can be cut off and the priming cock opened fully, filling the cylinders with clean, cool air. The advantages of the seat control of the mixture are many. It permits of priming the cylinders from the seat, the introduction of kerosene for removing carbon and making for fuel economy, and the writer employed for breaking up the fuel when priming in extreme cold weather. The cost and trouble of installing the auxiliary air control device will amply repay the motorist, particularly if the carburetor does not provide a uniform mixture at all speeds.

## Caring for One's Own Car

By "GEARS."

"Gears" is a mechanical engineer who drives and cares for his own car. He will discuss your problems in this column weekly. Inclose self-addressed, stamped envelope for answer to questions not of general interest.

One of the troubles sometimes experienced with cars that have seen considerable service is the high speed slipping out of engagement. This is caused by worn clutches or dogs of the intermediate gear which are meshed with the constant mesh gear when utilizing the high. The trouble can generally be overcome by grinding the faces of the clutches to restore their contour.

**Making Headlight Brace.**  
Much of the trouble experienced with the bulbs of the electric headlights is due to vibration. When electric lighting was first adopted by the manufacturer it was not considered necessary to utilize a brace for the lamps, but it was found that the vibration was largely responsible for the filaments breaking. Motorists experiencing trouble with bulbs on cars not fitted with a brace will find that the device will eliminate much of their trouble. It is not a difficult matter to make and fit a brace and any blacksmith can make one. The brace can be used to carry the license plate.

**Locating Leaks.**  
Locating minute leaks is a simple matter if a mixture of soap and water is employed. Soap suds will be found to be exceedingly useful for locating puzzling leaks in inner tubes, for ascertaining faulty connections in the pressure fuel systems, exhaust line, etc. Apply the soap suds with a brush. Any leak will be instantly noted by the bubbles given off. This method is successful where the usual treatment fails.

**Overcoming Ignition Trouble.**  
The vibrating type of ignition coil requires periodic attention as the platinum points become fused and pitted, setting up considerable resistance to the passage of the primary current. To clean the points it is customary to utilize a very fine file. These may be obtained at any supply house. As it is important to observe the proper gap between the points of the plug, the following suggestion for combining a file and a gauge will be of value. The tang or end of the file is, as a rule, in excess of 1-32-inch. Take the file to a machine shop or a garage equipped with a grinder, and have the tang ground down to exactly 1-32-inch, making sure that the workman uses the micrometer when measuring the work. If a magnet is employed for ignition and the type calls for a 1-64-inch gap of the contact points, have the tang of the file ground to this dimension.

Filling a grease gun with hard grease takes time. A simple method is to remove the plunger and the spout or nozzle and push the empty tube into the grease. This will fill the gun and save handling the lubricant.

**How to Test Ignition.**  
When testing the ignition of a car equipped with a timer or distributor, the usual practice for locating a faulty con-

nection or primary wire is to crank the motor until a contact is established by the timer. Another method is to short circuit by using the blade of a screwdriver by making a connection between the terminal of the timer and metal. When it is desired to test the action of a vibrator take a piece of wire and attach one end to the steering column or metal of the chassis. Take the free end of the wire and touch it to the adjusting screw or post to which the lead from the timer is attached.

This will obtain the same conditions as when the motor is cranked to obtain a contact at the timer. By using the wire each unit of the coil may be easily and conveniently tested and adjusted. The method is also of value in ascertaining which unit of the coil is at fault.

**Testing Spark Plugs.**  
To test the spark plugs, short circuit the terminals of the timer with the screwdriver as previously explained, and in laying the plugs on the cylinders make sure that the terminals of the cables do not touch any metal, else the high tension current will not jump the spark plug gap, but will take the path of the cylinder which will offer the least resistance.

### Sees Automobile as Aid In the Study of History

Hoover Holton, special representative of the Briggs-Detroit Company, has been in Washington for the past two weeks. Mr. Holton is primed with news concerning business conditions throughout the country. He also has ideas on the automobile industry in general, and takes a broad view of the effect of the automobile on society. In an interview today, Mr. Holton said: "As an instructor in geography, the automobile has long been accorded a generous recognition, but it is only recently that it has begun to take its proper place as a potent factor in extending a knowledge of history."

"Numbered battlefields which figure prominently in the history and tradition of our country, famous landmarks that are rich in associations both in war and

### Light Six Machine Stands Test Well

"A Hayes light six stock car motor has just completed a run of 54,513 miles in the showroom of the Newark, N. J. branch, of the Burger Motor Company, distributor of America's first car." The run was conducted as a test to determine the wear of parts. "The results show that an average speed of twenty-two miles per hour was maintained for 2,122 hours, with a gasoline consumption of 24.39 miles per gallon. The average consumption of cylinder oil was 4.30 miles per quart, and of water in the cooling system, 130 miles per pint. The temperature in the radiator averaged 177 degrees, even though no artificial cooling was used, and the exhaust was conducted from the muffler through twenty-two feet of inch and a half pipe.

"At the end of the run the motor was torn down. The wear on the crank shaft and cam shaft bearings was five ten-thousandths of an inch. The valves were a surprise. The intake valves were still bright and needed no grinding. The exhaust valves were in good condition and showed but slight pitting. The valve stems and push rod adjusting screws showed no appreciable wear.

"The platinum breaker points were cleaned and set twice during the test. The piston rings were perfectly bright all around, and showed no appreciable wear. They were perfectly bright and absolutely free from scoring.

"The generator was opened but once for inspection. No work was done, and the original brushes are still in use. The original fan belt is also still in service. The test proved conclusively that the ignition, lubrication, and cooling are practically perfect.

"Following the inspection, the motor was assembled and the car driven 217 miles. All gears were quiet, and the same power and flexibility were given as when the car left the factory."

### Automobile Accidents Now Are on Decrease

"It is better to be safe than to be sorry is the theory now adopted by practically all automobilists and pedestrians," says Irvin T. Donohue, Washington distributor for accessories. "As a consequence, there are fewer sorry people now, in comparison with the number of motor cars driven, than ever before. Automobile accidents are on the decrease.

"The safety first movement is largely responsible for this. The pedestrians themselves and the drivers are becoming educated to the requirements for safety—they have greater respect for the rights of the other fellow, and a better observance of these rights.

"The motorist naturally believes that he has the right of way between crossings, although he should, and does, retain control of his car. But when children or any persons dart out unexpectedly in front of the car he cannot answer for the consequences. Records show that 75 per cent of all accidents occur in the middle of the block. Every one should cross at the crossings made and provided for that purpose, or, for the sake of self-protection, they should use care when indiscriminately crossing.

"Motor vehicles should be equipped with dependable brakes—with Sparton horns that are heeded. It should be the religion of every motorist to drive slowly when passing schools, children, vehicles, going around corners or approaching crossings. He should obey the law which forbids that any machinery be left running while the vehicle is standing on any public highway without an attendant."

### Ford Factory Model Seen at Exposition

Every Building, Foot of Track,  
Traveling Crane, Freight  
Car Reproduced.

A remarkable model of the Ford factory at Detroit, Mich., is a feature of the Sociological Exhibit in the Palace of Mines at the San Francisco Exposition. The model, which is constructed of metal, was built entirely in the Ford

factory, by Ford employees. It is scientifically correct to a scale of one-sixteenth of an inch to the foot and reproduces in exterior detail the great plant itself.

Not only is every building, foot of track, traveling crane, window, freight car and the like exactly reproduced in this remarkable model, but all the colors and architectural effects are preserved.

Every building is electrically lighted and in the tiny power house engines work away just like the big engines at the factory. Freight trains hurry back and forth and at regular intervals a little gate flies open and out dashes a new Ford car, perfect in detail, but scarcely larger than one's thumb nail.



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1912 Locomobile Touring, overhauled and repainted, \$500.

1914 32 Hupp, equipped with starter, \$275.

1913 State Touring, in elegant shape, \$850.

1913 Locomobile Touring, very good shape, \$400.

More Roadsters, equipped with top, glass front, good shape, \$175.

1915-14-13 Kirt Touring Cars, full factory equipment, \$300 to \$375.

1914 Oakland Touring, electrically equipped, sacrifice, \$500.

1914 Cadillac Touring, full factory equipment, many extras, \$900

Six Cylinder Hudson 7-passenger Touring, at a snap.

1912 Oakland Touring, equipped with top, glass front, \$200.

1913-12-11 Overland Touring Cars, all equipped with top, glass front, some with starters, \$250 to \$350.

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