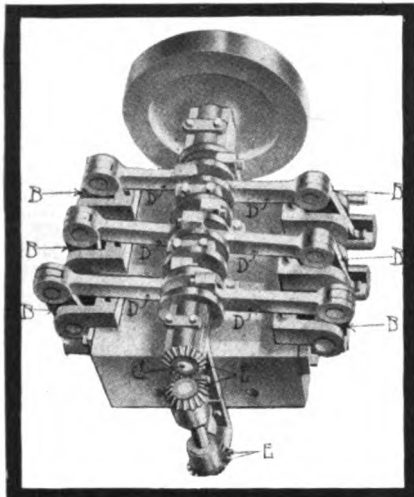


CARBONIC ACID GAS MOTOR DEMONSTRATED



CARROLL'S CARBONIC ACID GAS MOTOR

SOME years ago it became known around Philadelphia, Pa., that one John Carroll, a local mechanical genius, was hard at work on a scheme to adapt carbonic acid gas as a power to drive motor cars. The delay in the appearance of anything tangible, despite the favorable progress reported from time to time, made the local public—the motorist element particularly—decidedly skeptical as to the outcome of Carroll's effort.

But recently the inventor gave a private view of the workings of his engine in his shop and announced a public test on the following day. Both were apparently successful. In the shop test Carroll ran the motor $\frac{1}{2}$ hour, starting and stopping it at will. The street test was really quite convincing, and whatever the merits of his system, Carroll made good on this occasion. The engine was mounted on an old curved-front Oldsmobile runabout chassis, with an improvised seat for the operator. With a big crowd looking on and a number of newspaper men following in a gasoline car, the carbonic acid gas machine was driven up Broad street, out to Fairmount park, across City Line bridge, and up the stiff City Line hill from the Schuylkill river to the crest of the west bank, stopping and starting several times on the hill to demonstrate the engine's flexibility and power. At the top of the hill the left front tire exploded with a loud report, and everybody was afraid that something had happened to the engine. But Carroll reassured them and drove back to town with a flat tire, allowing the car to stand on the street with engine exposed for fully 2 hours while securing and adjusting a new tire. With the front axle jacked up, Carroll accomodatingly stopped work on the tire several times to answer questions and demonstrate the ease of control of his new power.

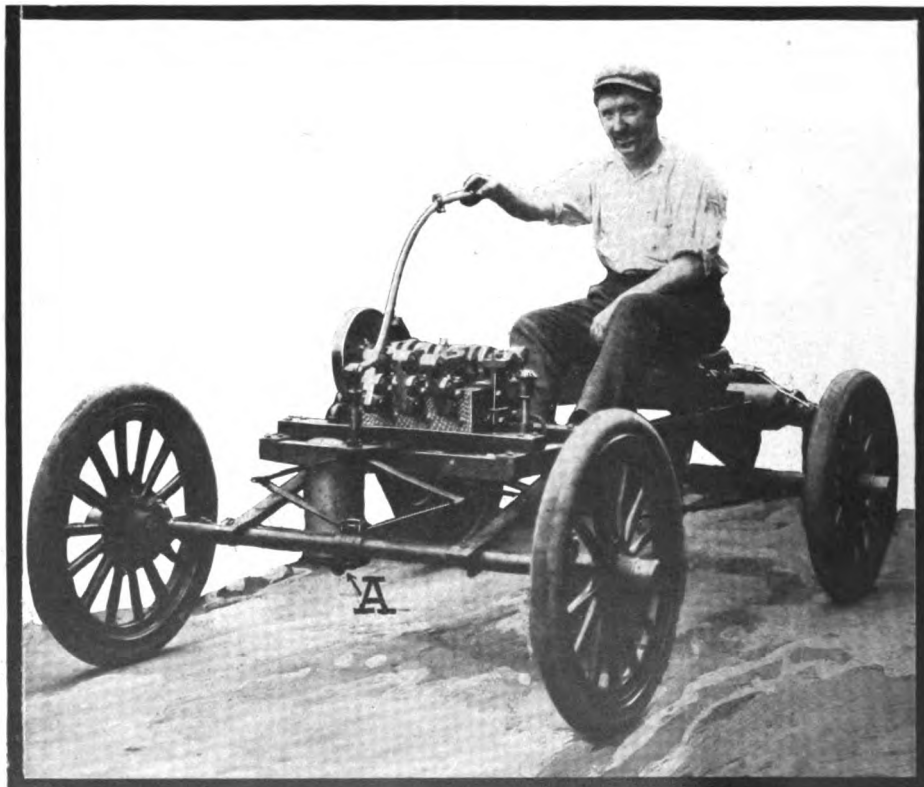
Carroll's engine seems remarkably small for the amount of power shown—even though it may not develop the 100-horse-

power he claims for it. In dimensions it is but $13\frac{1}{2}$ by $10\frac{1}{2}$ by $4\frac{1}{2}$ inches, machined from a solid piece of steel, and whatever its merits, the engine is certainly a beautifully fitting and well-finished bit of work. There are three cylinders and six pistons, the latter moving longitudinally. The cylinders are 2-inch bore and the pistons 2-inch stroke. At the right of and underneath the engine behind the front axle is the gas tank A which is connected with the engine by a small copper tube about $\frac{3}{8}$ inch diameter. The gas, passing through this tube into the engine, is allowed to expand between two pistons, forcing the latter outward, the pistons being connected to rocker arms B which in turn are connected with the crankshaft C which has six connecting rods D. The valve motion is connected by direct gearing, which never changes. Control is by a small hand lever, which starts, stops, accelerates or slows down the engine and reverses it when necessary. The control is altogether in the nature of throttling, and no changing of gears is provided for or necessary. The drive is by chain, direct to rear axle. When the gas has passed through the engine it is recondensed in a tank at the rear of the car, whence it flows back to the first tank, being used over and over again. In addition to these two tanks, which are of slightly greater capacity than the acetylene gas tanks carried on the footboards of many cars for lighting purposes, there is an auxiliary tank for conveying an extra supply of carbonic acid.

After returning from its trip from City Line hill the motor was cool; indeed, the operation of the engine produced little, if any, heat. Carroll says his motor cannot burn out or freeze. To prevent corrosion or oxidization in the tanks, a mixture composed mostly of kerosene is used.

To the average observer the absence of radiator, fan, carbureter and the many other requisites of the gasoline engine makes the Carroll power plant decidedly meager and bare looking. "Too simple to be good," one of the doubting Thomases said, although he admitted that the little engine was working beautifully. This very simplicity is Carroll's high card. He claims that it is possible to build carbonic acid gas motor cars in quantities at a cost not much, if any, in excess of 50 per cent of the present cost of building gasoline cars.

The low cost of upkeep is another of Carroll's strong talking points. The cost of fuel will be considerably less, while lubrication will be such a simple matter that mechanical oilers will not be necessary—a little lubrication applied by hand from time to time being all that is necessary. Since his first public demonstration of his carbonic acid gas motor Inventor Carroll has had many motorists examine the engine, all of whom apparently have been convinced of its simplicity. Carroll believes he has solved the motor problem and he is untiring in his efforts to convince others and at the same time to interest some maker, with the idea of manufacturing the motor in quantities.



INVENTOR CARROLL AND HIS CARBONIC ACID GAS MOTOR