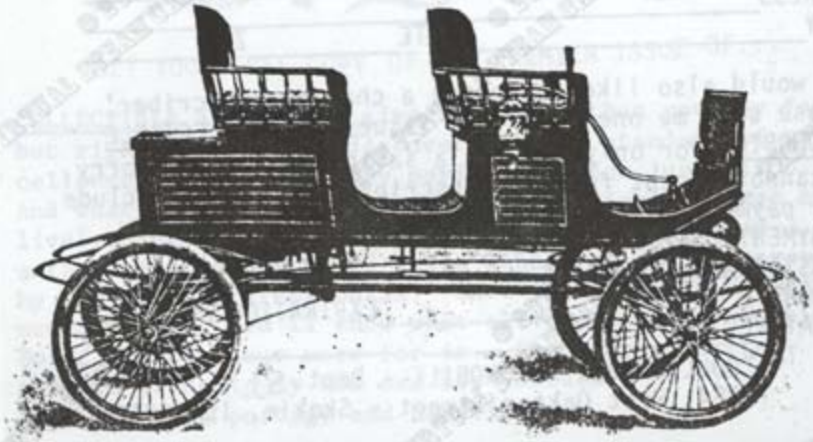
1900 - 1902
MILWAUKEE STEAMER
MILWAUKEE AUTOMOBILE CO.

by- Walter E. Wray

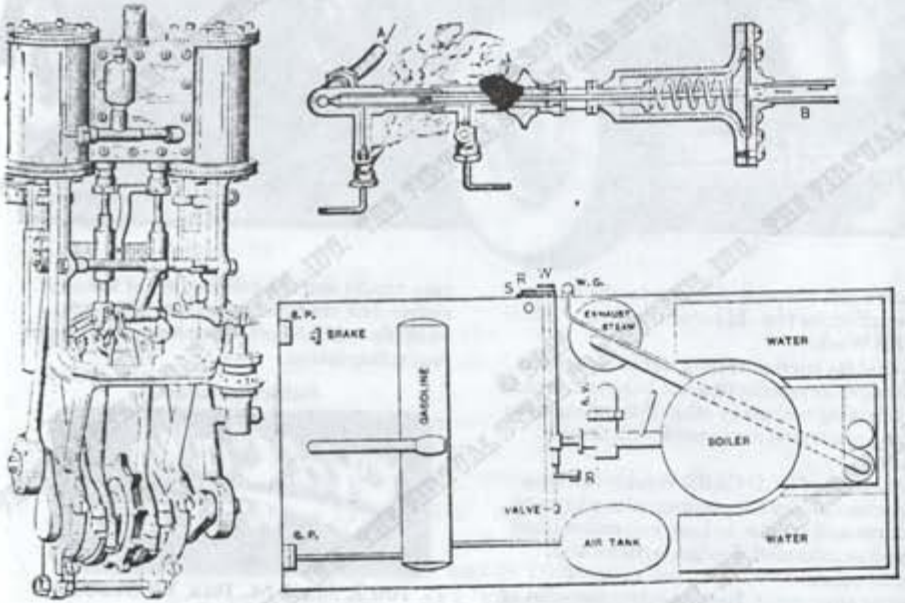
Most turn-of-the-century steam cars were near carbon-copies of the Stanley and the Locomobile. The Milwaukee Steamer, Wisconsin's only native mass-produced steam car, didn't stray from the pattern. Unlike some, however, one of its creators went on to become known in other automotive ventures: W. H. McIntyre who later became the power behind the Kiblinger high-wheeler, the McIntyre auto and the Imp cyclecar.

During the Milwaukee company's short life-span, five models were offered, ranging from the typical lightweight Stanhope of Stanley type, also known as the runabout style, to larger versions with increased seating capacity. Prices ranged from $750 for the basic transportation model to $1300 for the larger units. Larger boilers seem to have been used as vehicle size increased, and all tools and equipment were apparently included in the list price.

The light buggy-like bodies were mounted on three full-eliptic springs, one transverse, one in front, which were in turn secured to the running gear. The latter was composed primarily of 1½" seamless steel tubing, with forged joints riveted and brazed in place. Front and rear axles of the same material were of truss design, and quite strong. All the steering mechanism, plus differential and brakes were mounted on this unit.



To the casual observer, it might appear that plenty of luggage space was available within the boxy body. Not so, as every inch was crammed with machinery. Directly under the seat was a marine style vertical 2-cylinder double-acting engine that drove the rear axle via chain. A single brake drum occupied the same housing as the open differential. By calculations of the day, the 2½ x 3½ inch B & S engine turned out 6-7 HP at 400 RPM at approximately 180 lbs. steam pressure. Top speed was in the area of 25-30 MPH.



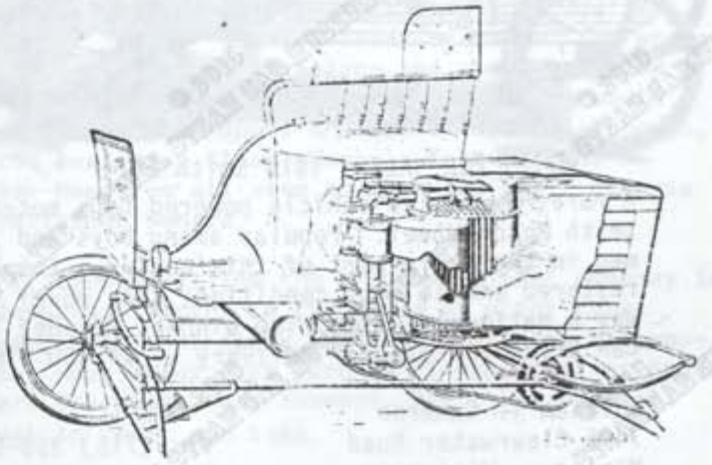
Nestled behind the engine was a boiler 18"x12" high, which was partially surrounded at the rear and sides by a semi-horseshoe shaped water tank. A self regulating gasoline fired burner was below, an air tank to one side, a steam muffler on the other, and controls, plumbing, etc., all around. The gas tank was below the footboards. Fuel economy wasn't spectacular by today's standards at 10-12 MPG. But gas was cheap, and gas engines weren't at this point very efficient either.

Steam power was considered the norm at the turn of the century, and most laymen found it easier to understand than the simplest of internal combustion engines.

Perhaps a few words here would help today's reader understand such a car's power system.

The boiler, known as a "locomotive type" generated steam by passing hot combustion gases through hundreds of small tubes running top to bottom through the water. This type boiler was able to store a great deal of power for reserve use, but took quite a while to make steam from a cold start. Flash type boilers, as used on the White steam cars, used a steam-on-demand system, by passing water through a long coiled single tube exposed to the burner's heat. It reaches a point where it bursts into steam, and then passes into the engine as needed. Chief disadvantage to this type is the extra control complexities such a system demands, plus a slight lag between throttling and acceleration.

Engines of the type used in the Milwaukee had been in use for many years in small steam launches - hence the "marine type" designation. Double acting refers to the fact that steam enters first one end of the cylinder, and then the other. In this way the piston is pushed back and forth, and with the addition of a second cylinder at 90° phase, is always self-starting. No flywheel is needed either, though in operation, the vehicle's inertia acts to smoothen the power pulses.



Because there is no "Otto cycle" to worry about - the steam engine doesn't "breath" like an internal combustion engine - every stroke in a double-acting type is a power stroke. A two-cylinder engine therefore, yields as many power impulses per revolution as an 8 cyl. internal combustion engine. The valve design allows one end of the cylinder to exhaust as the other takes in steam.

As might be suspected, this combination of power in a light vehicle produced astounding acceleration; that is, until the steam reserve is used up, at which time speed drops dramatically. The potency of steam was demonstrated by a Stanley racing car in 1906 when it set a world speed record of better than 127 MPH.

But the Milwaukee Steamer didn't last long. First produced in 1900, the company folded in 1902.

Note: The illustrations used in this article are of the almost identical Locomobile steam car of the same time period as similar material on the Milwaukee Steamer was not available and is probably non-existent.

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