

## REASSEMBLING GEAR DRIVE HISTORY

Getting rid of personal mementos is an arduous housekeeping ritual for some of us; every last gear has a memory. One man's trash is another man's gold, after all, or in some cases, one failed business is a forgotten piece of personal and mechanical genealogy. Such is the case of the Hill-Climber chainless bicycle, the remains of which were pulled from a family junk pile after nearly half a century.

The Hill Climber's patented three-speed shaft, changeable gear drive assembly occupies a special place in transportation history as the first model of its type to appear in North America. The gear drive was pretty high-tech for 1902, but many bike historians and enthusiasts are unaware it existed. The story was only recently unearthed by a descendent of one of the original investors. What began as a mysterious paper trail found in 2003, led Al Tietjen on a journey to unearth a relic of both gear technology and his family's history. [Ed. note: Full details are documented in a memoir penned by Tietjen, "Restoration," which is available from Amazon]

Tietjen recovered the basic frame assembly of the bike from his uncle Louie Muller, and he eventually discovered most of the critical components necessary to reassemble it from a crawl space in the farm garage. "The bicycle remnants I received had the gear mechanisms and clutching devices fully intact, though the bearings in the crank assembly were missing," Tietjen says. "I did not even need to disassemble the drive train, merely clean and lubricate it externally. This was fortunate, as I would have had to manufacture some special tools to take it apart and reassemble it."

Gear engineering is not Tietjen's area of expertise, so he was lucky the restoration project didn't require him to machine any parts. One exception was a missing crank assembly adjustment ring, which he learned had a non-standard size. A nephew of his was learning machining techniques in school, so he was able to make this part with help from his teachers.

As a former architect and graphic designer, Tietjen didn't have trouble reading the complex patent illustrations recovered, and he could tell they were cutting edge. "What is noteworthy about the configuration is that it was an improvement over other single-speed bevel-gear shaft drive bicycles at the time, in fact, certainly the first multi-speed bicycle of any kind, to be produced in America," Tietjen

says. "Though its production and ultimate success was severely hampered by market conditions in the bicycle trade at this time, it would have been considered the 'top-of-the-line' in this product category."

Historically, as the Hill-Climber was developed and marketed around 1902, the transportation industry was on the verge of dramatic transformation. With the advent of the automobile and its mass production, the Hill-Climber's advanced

gear assembly was probably doomed from the start. "The bicycle industry was in a downward spiral," Tietjen notes. "Between 1900 and 1903, roughly two-thirds of manufacturers just dropped out of the business. The remaining big players put together a consortium to prop up prices, and that failed too. It was going downhill fast. Automobiles were right there ready to be developed."

Tietjen's research, with help from his brother William, led him to conclude that the Hill-Climber's original inventor, Peter J. Scharbach, was in tune to these transportation technology trends rapidly advancing. There was a line in Scharbach's manufacturing partnership agreement that stated they would eventually produce autos and other equipment. "Scharbach had the prescience to know there were other things they were going to make," Tietjen says.

Sadly, the biggest mystery that remains is why the Hill-Climber Manufacturing Corporation ultimately failed. Tietjen has entertained many theories, and the most likely scenario is that for one reason or another, they simply ran out of money. The inventors would have undoubtedly been proud to know their original design appeared on the street a century later. Although it exists mainly as a historical object, Tietjen did manage to ride the restored Hill-Climber. "I put it back together and rode it around the block," Tietjen says. "It was fun; a little scary because it was so old. The gears worked, you could change them, and you could see how it would have been an interesting ride in 1902.

"What I came away with was a new view of 'technology' at the time, and the ability of small-scale machine shops (mostly former blacksmiths) to produce a high-quality product that they hoped to mass-produce," Tietjen says. "Machine tool technology and general knowledge was pretty far advanced. There were a great many blacksmiths who were making the transition to becoming machinists through bicycle production, automobiles, airplanes and small motors applied to a variety of tasks. There were multiple 'revolutionary' ideas that came together at this time that determined the course of the next century."

To learn more about the Hill-Climber restoration project, visit [www.fusionstudios.com/hill-climber](http://www.fusionstudios.com/hill-climber).

