...And Still More About Vacuum Windshield Wiper Motors

Often, and frustratingly, solving one problem uncovers others. And even in the age of the Internet and instantaneous answers, some questions are not answered.

Now, as I was researching the history of the Trico Company for the introduction to this article, I came across some paperwork and a diagram on another style of Windshield Wiper Motor: the Folberth Brothers Fred and William Folberth are credited with the invention of the vacuum windshield wiper motor in 1921 (six years after Trico was credited with that invention).

From the Ohio State website, www.ohiohistorycentral.org, "Historians debate exactly who invented the first automatic windshield wiper. Most scholars attribute the first automatic windshield wiper, where a motor powered the wipers instead of the driver doing so by hand, to Hawaiian Ormand Wall. Other scholars suggest Cleveland Ohio residents William M. and Fred Folberth, two brothers, invented the automatic windshield wiper. The Folberths were clearly the first Americans to develop an automatic windshield wiper.

"The Folberths' wiper was vacuum powered. They utilized air from the engine manifold to propel a single wiper across the windshield. Upon reaching the edge of the window, the wiper returned to the window's other side. While the Folberths invented this wiper in 1919, William did not receive a patent for this product until August 16, 1921. In the meantime, William Folberth had already begun to manufacture the wiper in a factory in Cleveland. In 1925, Folberth sold his company.

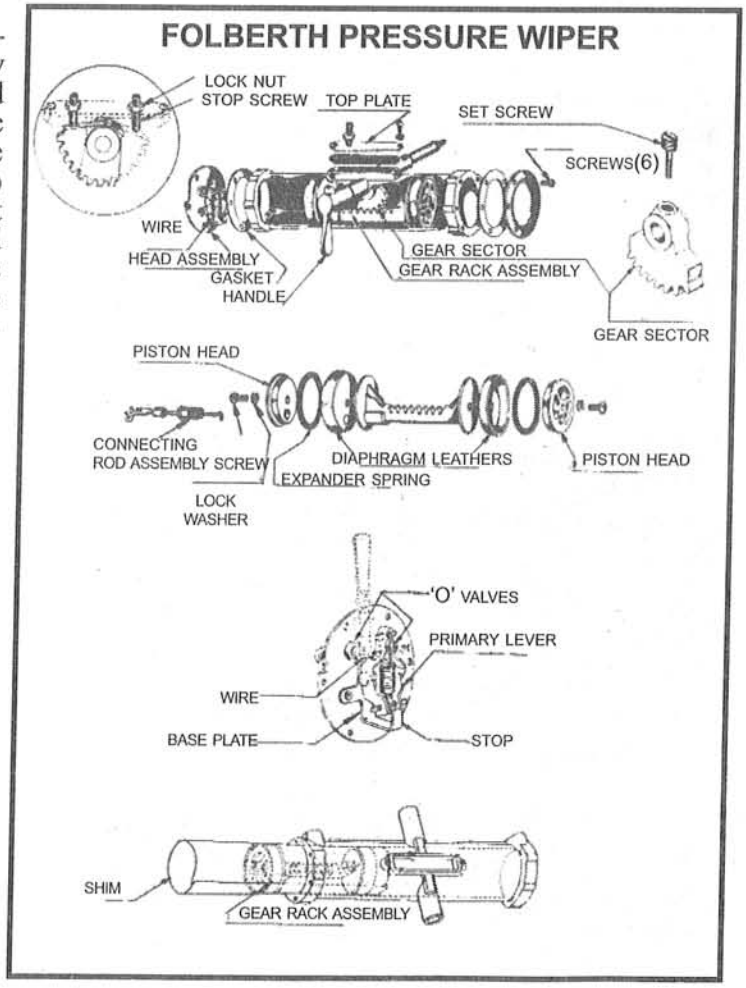
"The Folberths' wiper quickly was replaced because unfortunately, the wiper was not reliable. By utilizing air from the engine manifold, the wiper would slow down and speed up as the car slowed down or sped up. Drivers desired a more consistent wiper, and during the 1930s, dramatic improvements occurred in electrical wipers, making the Folberths' version obsolete."

The drawing at the right, illustrating the parts of the Folbert Motor, comes from a file document on Trico letterhead. Trico acquired the Folberth company in the late 1920s.

Mechanically, there are several notable differences between the drawing below (Folberth) and the circa 1925 Folberth motor. I do not have information on whether the drawing is of an early Folberth motor or whether it is of a later example after Trico acquired the company. The Folberth example that I have is marked, "PAT'D FEB 7, DEC 6, DEC 12, 1922, OCT 30 (19)23, APR 8 (19)24, APR 13, (19)26."

"Windshield wipers date back to the early 1900s," I was told by an extremely helpful representative of Trico. The earliest wipers were not made for automotive use, but for use on trains. It makes sense!

Occasionally something happens that makes me want to give myself a 'dope slap' on my head, and say, "Duh!". Such a thing happened with my Folberth wiper motor. Granted, I can blame the



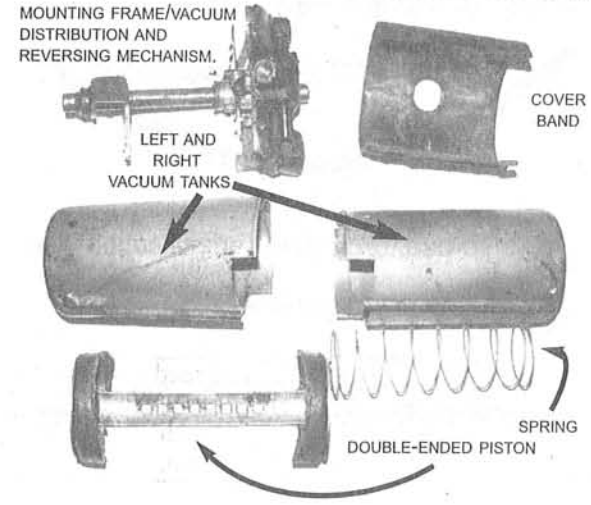
A four page reprint of a repair bulletin issued by Trico on the Repair and Lubrication of the Folbert Pressure Wiper is available at a cost of $6.00 ppd. Send a check to Skinned Knuckles, PO Box 6983, Huntington Beach, CA 92615

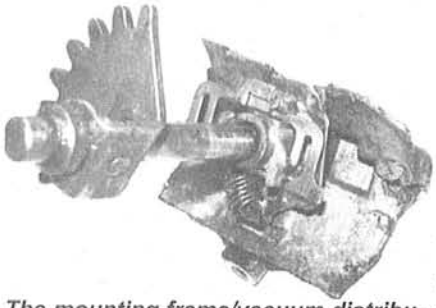
rust and corrosion, but the error was still mine. Fortunately better minds than mine prevailed, and the error was caught before it went to print.

As I examined the motor and attempted to read the name, it appeared that there were decorative graphics bracketing the name. It looked like the name was Olberti. Strangely though, both the 'Olberti' Company and the Folberth Company were based in Cleveland. As I questioned the gentleman from Trico about the 'Olberti' Company, he asked whether it was possible that the graphics before and after the 'Olberti' name actually partially obliterated parts of the name. A stronger magnifying glass proved him right. The name was not 'Olberti' but **FOLBERTI-1.**

The Folberth vacuum windshield wiper motor began appearing in the mid-1920s. I know that they were used in 1925/'26. How much later I haven't yet discovered. There are no patent numbers, but patent dates are 1922, '23, '24, and 1926.

The Folberth wiper motor consists of a double air tank with a double-ended piston and a reversing mechanism. Vacuum is supplied through a rubber tube coming from the intake manifold. The double-ended piston consists of two discs bound together with a gear-driven metal strap. The 'piston rings' are made of leather. The combination wiper shaft and the reversing mechanism consists of a fragile pot metal frame into which the vacuum tube is fitted. There are also two other vacuum tubes fitted to the same piece, each going to one half of the two tanks, with vacuum being controlled by a sliding switch. At the other end of the shaft is an eight-tooth gear segment which engages with the piston assembly. A single compression spring in only one of the air tanks appears to 'kick start' the motor when the vacuum on-off switch is turned to 'on'.



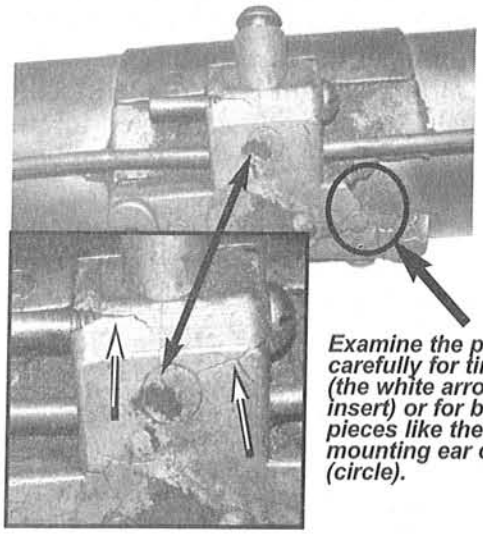


The mounting frame/vacuum distribution are made of pot metal and are very fragile.

All in all it is a pretty basic mechanism, and the two weak points appear to be 1) the pot metal mounting portion and vacuum distribution chamber, and 2) the leather piston rings. Otherwise there is very little to get out of order.

Like the Trico motor, it is imperative that you note the location of each part during dis-assembly. All of the parts must be thoroughly cleaned (do not clean the leather with a water-based solvent). The leather pistons should be soaked in a light oil for at least an hour prior to re-assembly. A light coat of Vaseline® in the tanks will lubricate and help seal the pistons.

Examine the pot metal segment very carefully. Even a tiny crack could allow vacuum to escape and cause failure of the motor. Often a two-part epoxy like Permatex Cold Weld can be rubbed into the cracks to seal them. Do not use too much epoxy. Raised edges or bumps caused by too much epoxy could cause vacuum failure. A drop of light oil on the reversing mechanism and the motor is ready for re-assembly.



Examine the pot metal carefully for tiny cracks (the white arrows on insert) or for broken pieces like the one mounting ear on the right (circle).

S.K.