

# Andrew Muhl Nominated 2014 ASHRAE Pioneer of Refrigeration Equipment 1831 to 1892

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Andrew Muhl was born in Paris, France in the Alsace Region on February 17, 1831. He attended college in Paris, France learning the machinist and locksmith trades and served his time in the in the French Army.<sup>(1)</sup> He was a contemporary of the Carre in Paris, France who invented the Ammonia Vapor Absorption Cycle Ice Manufacturing Machine using a burner arrangement to heat the condensed ammonia vapor water solution and drive the ammonia vapor out of the water to allow for the endothermic reaction of dissolving ammonia gas in water ice. Andrew was making ice and ice cream in France before he left to go to Mexico. At the age of 34, in 1865 he immigrated instead to America to Washington, D.C, Atlanta, and New Orleans before settling in San Antonio, Texas in 1865. One newspaper account has his ship be swept to off course on the way to Mexico and he wound up in New Orleans.<sup>(2)</sup> He tried to patent his invention in Washington D.C. or Atlanta, Georgia in 1865, but was unable to properly file the necessary documents. He met and married a Miss Josephine Fischer in 1866 in San Antonio, Texas and they raised a large family of thirteen children.<sup>(3)</sup> His oldest son J. A. Muhl was born in 1868 in San Antonio and under Andrew's tutelage and on the job training as he grew up became a Machinist and Ice Machine Builder, Operator in Waco.<sup>(4)</sup>

1867 was reported as the start of operations of the Andrew Muhl Ether Ice Making Machine in San Antonio, Texas in August 17, 1871 Scientific American Patent Agency publication listed November 28, 1871.<sup>(5)</sup>

Brunet and Muhl Iron and Brass Machine Shop on Press Street River Bank, a new advertisement was listed May 21, 1868 in San Antonio Express.<sup>(6)</sup> In 1870 the population of San Antonio was listed as 12,256. In a Bird's Eye View of San Antonio, Texas produced by Augustus Koch shows the location of the ice house as near the bend in the San Antonio River.<sup>(7)</sup>

Daniel Livingston Holden obtained a Carre Ammonia vapor Absorption Ice Machine which he set up in San Antonio, Texas in the fall, 1865 and produce commercial quantities of ice. Beefsteak was costing \$0.02 per pound and imported natural ice cost \$0.10 per pound in 1865.<sup>(8)</sup> San Antonio went Ice-happy and in 1867 when the U.S. Census listed six ice houses, three of them were in San Antonio, Texas.<sup>(9)</sup>

Deed of Trust between Andrew Muhl and M. Paggi to Carl Elmendorf was recorded in Bexar County on May 19, 1868 and release to same was recorded in Bexar County December 7, 1868.<sup>(10)</sup>

Contract of Sale, between Andrew Muhl and M. Paggi to Carl Elmendorf was recorded in Bexar County on December 8, 1868 this was probably for the Ether Ice Machine that was relocated from San Antonio to Austin, Texas.<sup>(10)</sup>

San Antonio Express Sunday October 4, 1868 Notes: that a "Guenther and Muhl build new ice factory." Sunday July 18, 1869 Notes: that a "Mr. Guenther starts operation of an ice factory patented by Andrew Muhl of San Antonio."<sup>(11)</sup>

San Antonio Express: March 29 or 30, 1870, Reports "Dam moved by San Antonio Authorities." Wednesday March 31, 1870 Reports "Mr. Muhl's mill wheel moved."<sup>(12)</sup>

Article in San Antonio Dailey Herald March 29, 1873 referring to those previous articles Stated "A Very Great Outrage -Some three years ago, a poor but worthy hard working French mechanic by the name

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of Muhl, came to San Antonio, and promptly leased a vacant lot on the river at the east end of the old dam above Lewis Mill, putting up a temporary building and commenced a brass foundry in a humble way, among other improvements digging a short trench into the bank of the river and putting in a snug water wheel to propel the machinery." His industry, science and skill soon attracted attention and Mr. Guenther a wealthy German of this city, last summer employed him to make two ice machines, which were pronounced a success and are now supplying our city with ice." During the course of that Muhl realized he needed more power for his water wheel to drive all of the equipment and correctly deduced that raising the level of the dam would give him the additional power and without thinking through the consequences for the people downstream of reduced flow, mosquito bogs and smelly stagnant water. "Since the completion of that job Mr. Muhl has been struggling along working every day with his own hands in doing such jobs as he could get and adding to his machinery. Yesterday morning the city authorities without the least notice and against the solemn entreaties of Mr. Muhl sent and had the dam torn away in such a manner to render Mr. Muhl's machinery useless to him and to his very great injury. That dam had been there for a great many years; and though no one objects to its removal, we denounce the manner of its being done without notification to Mr. Muhl, so that he could have provided motive power, as an outrage upon a poor hardworking mechanic who was doing a great service to San Antonio. "Can there be any key to such treatment to this worthy mechanic?" Mr. Muhl was not born on the right side of the Rhine to please the ring who run our city government! If he had he could have filled the river with machinery and all would have been well".<sup>(13)</sup>

The San Antonio Express on March 30, 1870 ran this rebuttal column: Clap Trap- The Herald of yesterday, in its eagerness to make a point against the city authorities, bewails the hard fate of Mr. Muhl, whose water wheel had been stopped by the removal of the dam. We sympathize with Mr. Muhl in his loss, and stand ready to contribute our quota towards making him reparations, but we think that the city officials should be blamed if blamed at all for too little rather than too much speed in the removal of a nuisance.

The dam has been for years a constant source of well-grounded complaint on the part of those dwelling on the banks of the river. Sediment, scum, stagnant water, and consequent sickness have been the result, while the danger of overflow has been greatly interfered. Mr. Muhl, too, has been adding to the height of the dam and augmenting the annoyance and apprehension it caused. Finally the property owners on the river, without regard to political opinion, united in a petition which had the desired result. Mr. Muhl had warning enough of what was coming when the court declared his obstruction a nuisance and his occupancy was lengthened beyond reasonable hopes.

The attempt by the Herald to make a little political capital out of this affair is simply – Characteristic."<sup>(14)</sup>

Advertisement in newspaper for Velocipede (bicycle or tricycle powered by operator) wheels manufactured by S.N. Brown Company in Dayton Ohio were offered. City Intelligence - indicated that San Antonio was progressing because "Our enterprising friend Andre Muhl has built a Velocipede, which we will presume our good citizens will soon have the pleasure of seeing cavorting around our streets. Who will hereafter say that San Antonio is not a fast place?"<sup>(15)</sup>

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A couple of inches down the same news page Notes **Ice Machine for Austin** – “We learn that Messrs. Muhl and Paggi of this city have engaged to take one of their ice machines to Austin and run it for the benefit of the people of that one horse town. This will not interfere with San Antonio’s arrangements about Mint Juleps.”<sup>(15)</sup>

Michael Phegi born in Italy around 1940, he studied art in France and was forced to flee to Mexico during the Austrian Italian conflict and when French and Italian nationals were being arrested, changing his Italian name Phegi to Paggee, Patci, Paggi and other variants that disguised his ancestry. Michael Paggi of the Paggi Carriage and Wagon Dealership at what is now 421 East 6<sup>th</sup> Street in Austin, Texas. Lived for a time in San Antonio where he became interested in ice manufacturing.<sup>(16)</sup> He met and entered into contracts with Andrew Muhl of San Antonio to relocate one of Muhl’s’ Ether Ice machines from San Antonio to Austin.<sup>(10)</sup> The 1870 census indicates that he was living in Austin’s Barton Creek area. In 1871 he leased a turbine water wheel, a mill, several houses, an ice machine and a grist mill on Barton about a quarter of a mile below Barton Springs. Later that year he went to Europe to purchase an ice machine that could produce 2.5 tons a day of ice. By 1872 he was superintendent of the Austin ice Company at San Jacinto Street on the Colorado River. He also produced soda water, syrup and ice cream at a shop on Pecan (later 6<sup>th</sup>) and Brazos Streets in Austin, Texas. He later diversified and by late 1871, ran a bath house at Barton Springs and a Carousel that is described as a Mexican Fandango described as a set of horses and carriages that moved in a circle accompanied by organ music. He also ran a small iron steamboat between the City of Austin and Barton Springs.<sup>(17)</sup>

April 2, 1868 San Antonio Herald notes: ” We had a call from Dr. W. G. Kingsbury, of this city, but who for the last several months has been busily engaged in Victoria, Texas in Superintending the erection of the New Beef Packing Establishment at that place. The doctor appears to be very sanguine that his enterprise will be successful. His Ice machine, steam engine and all fixtures are now on the ground and mechanics are busily engaged in putting up the necessary buildings for the works. The expectation is that he will be able to put up fifty beeves per day, and hence it may be inferred that the establishment is to be on a large and liberal scale. He expects to do most of his packing in the summer and fall and to get into full operation in the next 2 or 3 months. We wish the enterprise the most unbounded success.”<sup>(18)</sup>

Release W.G. Kingsbury to Andre Muhl was recorded In Bexar County on December 15, 1870.<sup>(10)</sup>

Deed Andrew Muhl to James Wood was recorded In Bexar County on December 30, 1870. This was probably the deed for the land and machine shop less the Ether ice Making Equipment on Press Street at the river bank.<sup>(10)</sup>

Deed of Trust Andrew Muhl to W.G. Kingsbury dated January 14<sup>th</sup>, 1870 was recorded in Bexar County.<sup>(10)</sup>

Deed Andrew Muhl and wife to Alexander Varga Dated January 03, 1871 was probably the sale of their homestead property in San Antonio.<sup>(10)</sup>

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Deed of Trust Andrew Muhl to Joseph Fischer was recorded In Bexar County on January 29, 1870 and Release of Deed of Trust Joseph Fischer to Andrew Muhl recorded In Bexar County on January 06, 1871.<sup>(10)</sup>

Sale of Patent Andrew Muhl to J. B. LaCoste Dated January 1, 1872 was recorded in Bexar County.<sup>(10)</sup>

Andrew Muhl, San Antonio, Texas U.S. Patent Office #121,402 dated 11/28/1871 Improvement in Apparatus for Manufacture of Ice Witnessed by C.B. Guenther and Th. Thielepape. This was an Ether Vapor Ice Machine Apparatus Improvement.<sup>(19)</sup>

Articles of partnership between Muhl and Guenther were recorded with Bexar County in October 8<sup>th</sup>, 1868 and rescinded and annulled in December 05, 1868.<sup>(10)</sup>

James E. Sears Waco, Texas U.S. Patent office #118,649 dated 08/29/1871 Improvement in Apparatus for Manufacture of Ice Witnessed by J.N. Campbell and Edm. F. Brown. This was a “Chymogene Petroleum Vapor” Ice Machine Apparatus Improvement.<sup>(20)</sup>

Andrew Muhl, Waco, Texas U.S. Patent Office #121,888 dated 12/02/1871 Improvement in Apparatus for Manufacture of Ice Witnessed by M. Bailey and C.B. Nottingham. This was an Ether Vapor Ice Machine Apparatus Improvement.<sup>(21)</sup>

Andrew Muhl, Waco, Texas U.S. Patent Office #146,267 dated 01/06/1874, application filed 12/08/1871 Improvement in Apparatus for Cooling the Air of Buildings described in Tellier U. S. Patent Office # 85,719, dated 01/05/1869 Witnessed by M. Bailey and C.B. Nottingham. This was an Ether Vapor horizontal coil and blower arrangement which achieves a more uniform temperature distribution and positive ventilation within the room apparatus improvement.<sup>(22)</sup>

History of the Waco Medical Association with Reminiscences and Irrelevant Comments by William O. Wilkes, M.D. Printed in 1931. The ten founders of the Waco medical Association together with James E. Seares, Andrew Muhl and George Coates organized a company in 1869 with \$20,000.00 capital to build an ice factory in Waco, Texas. It was erroneously listed as the 1<sup>st</sup> in Texas by John Sleeper's Waco City Directory. The directory stated that “the plant was doing a booming business at that time (1869) with artificial ice 15 degrees colder and in purity and general good qualities superior to natural Brazos River Winter Harvested Ice and at a much reduced cost.” The plant had a capacity of 2.5 tons of ice per day and when beer was introduced to the city, the demand for ice grew because people liked to drink beer cold (the fear of frozen stomach walls had dissipated by this time). The plant produced at full capacity and had to be expanded to meet the demand. By that time the cost for ice was \$1.00 per 100 pounds. The first ice was not produced until May, 1871 under the Andrew Muhl Ether Ice Machine Patents. Before this factory was built, ice cost \$0.15 to \$0.25 per pound being brought by rail from Houston to the terminus of the railroad at Millican or Bremond. This new ice factory reduced the cost of ice from \$0.15 per pound to that fell to \$0.80 Cents per pound. One of the new customers called the ice plant manager that she had been shorted on her ice delivery. She had ordered 100 pounds of ice and only received 75 pounds of ice due to melting during delivery. Egan, the plant manager had special run made for 3three 100 pound blocks made and sent to her the next day! An ice war was started with the Austin Ice House and sales for ice at \$0.80 per 100 pounds. In 1944 during the war ice shortages

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developed in that summer as it was the hottest summer on record for 83 years. The original Ice House stood at the present day location of the power House for Citizens Street Railroad Company which he owned and ran for 10 years. He traded this for the Conger and Wilcox Machine Shop. He later traded for the Star Foundry and Iron Works which made structural iron for building materials and later a Boiler and Machine Works. He moved to Temple, Texas and operated an Ice House there for some time where he suffered a stroke at work and died in 1892. His wife Josephine died suddenly in 1901. <sup>(23)</sup>

His son J. A. Muhl born in August 27, 1868 in San Antonio under his tutelage of his father became a very successful Machinist and Operator of Ice Works. He became the chief engineer for 10 years for the Geyser Ice Plant and later was in charge of the Brazos Ice Company's Industry. He also owned and operated a 4 ton per day ice plant at 705 South 11<sup>th</sup> Street in Waco. He was married to Miss Margaret Philbin who was born in Ireland, in April 3, 1894. They had two daughters and five sons. <sup>(24)</sup>

Andrew Muhl died in Temple, Texas from a stroke suffered at work on January 15, 1892 and is buried in Waco's Holy Cross Cemetery. <sup>(25)</sup>



Andrew

Muhl

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The majority of this research was performed by family members, Aunt Agnes, Jaime Muhl and his brother Michael Muhl. Andrew Muhl was their great-grandfather. He came to America in the 1860's and met Josephine Fischer in San Antonio, Texas where they married and went on to have thirteen children. Andrew's oldest son J. A. Muhl was born in 1868 in San Antonio and under his father's tutelage became a Machinist and Refrigeration Plant operator. Their grand-father was Edmond Alfred who was born in Waco, Texas on September 15, 1875. He married his wife, Josephine Meyer in Waco. Their father was Julius Ignatius Muhl, born in Waco, Texas on August 1, 1915.

They have articles that place Andrew Muhl in places like Austin, Dallas, Victoria, Temple, New Birmingham, Fulton Beach, Texas, and Shreveport, Louisiana. Also and were told that he helped set up an ice house in Cameron Texas. These articles and hear-say need more collaboration before anything is written about them. Their interest in the background of my great grandfather started as a child who had the privilege of being able to visit my grandfather's house on the old Ft. Graham Road, especially weekends and summers. Although my grandfather had passed on years earlier we had grand times at the old home place. Several cousins, aunts and uncles would most probably be in attendance. After everyone relaxed then the stories would come out. They would talk of Edmond's hardware store on the square and how he had invented a tool to measure the curvature of the earth. They talked of his father Andrew who had come over from France, the first of many Muhl's, and how he had invented air-conditioning. There was a lot of talk about his air-conditioning patent but little talk about his refrigeration patents. I had seen an old bird's eye view map that listed Andrew's icehouse on the banks of the Brazos River in Waco but never knew that he had started a machine shop in San Antonio on the river there in the 1860's. Come to find out that wasn't common knowledge. My interest peaked in my early teens when with a cousin, we did a science report on Andrew as the inventor of air-conditioning. We brought our dated patents as proof. Apparently, they impressed our teacher since we received a good grade. This was as far as we looked, except for a few visits to the library until just recently, after inheriting my Aunt Agnes's research dating back to the 1860's. This renewed our interest in knowing more about Andrew. (26)

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- 3) A Century and Ten Years of Mechanical Refrigeration in Texas and Louisiana by W.R Woolrich, U.T., Dallas Section of ASRE Presentation February 13, 1957.
- 4) Who's Who in Waco & Central Texas, The Forrister History Company, Regan Printing House J.G. Forrister Publisher. 1912, page 133, Muhl, J.A.
- 5) Scientific American, Volume XXVII, No. 7; "Ether Ice Machines Patent by Andre Muhl", dated New York, August 17, 1872
- 6) Brunet and Muhl Iron and Brass Machine Shop on Press Street River Bank, a new advertisement was listed May 21, 1868 in San Antonio Express
- 7) Amon Carter Museum; San Antonio in 1873 Bird's Eye View
- 8) When San Antonio Went Ice-Happy
- 9) When San Antonio Went Ice-Happy
- 10) Letter to Agnes Muhl from Bexar County Clerk Fred Huntress dated April 9, 1957 listing eleven different recorded documents related to the Muhl Family.
- 11) San Antonio Express Sunday October 4, 1868 Vol III, #183 Notes: that a "Guenther and Muhl build new ice factory." Sunday July 18, 1869 Notes: that a "Mr. Guenther starts operation of an ice factory patented by Andrew Muhl of San Antonio."
- 12) San Antonio Express: March 29 or 30, 1870, Reports "Dam moved by San Antonio Authorities." Wednesday March 31, 1870 Reports "Mr. Muhl's mill wheel moved."
- 13) Article in San Antonio Daily Herald page 2, March 29, 1873 referring to those previous articles Stated "A Very Great Outrage"
- 14) The San Antonio Express on page 3, March 30, 1870 ran this rebuttal column: "Clap Trap"
- 15) The San Antonio Daily Herald
- 16) The San Antonio Daily Herald, "Paggi Carriage Shop"
- 17) San Antonio Daily herald, May 6, 1869.
- 18) The San Antonio Daily Herald, April 2, 1868

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- 19) US Patent Office #121,402; Dated: 11/2//1871
- 20) US Patent Office #118,649; Dated: 08/29/1871
- 21) US Patent Office #121,888; Dated: 12/02/1871
- 22) US Patent Office #146,267; Dated: 01/06/1874, application filed 12/08/1871
- 23) Excerpt, from History of the Waco Medical Association with Reminiscences and Irrelevant Comments by William O. Wilkes, M.D. Printed in 1931
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- 25) Waco Sunday Tribune Herald August 13, 1944: Waco Feared Muhl's Ice Would Freeze Up Innards"
- 26) Andrew Muhl Family Photo taken in Waco at family home.