



Joachim Gotsche Giaver

Champion of Structural Registration Laws

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Joachim G. Giaver always seemed to be the right person, in the right place, at the right time, beginning with his immigration to the U.S. in 1882, one year after graduating from one of Norway's most renowned civil engineering colleges. Upon arriving in America, he was immediately employed by the Pacific Railroad Company in St. Paul, Minnesota. A year later, he moved to Pittsburgh, Pennsylvania, to work for the Shiffler Bridge Company, a J.P. Morgan venture newly founded to build bridges and furnish structural steel for all types of complex structures and buildings. The company had just secured the contract to furnish the structural steel for the framework of the Statue of Liberty.

After his stint with Shiffler, Giaver moved to Chicago to design state-of-the-art structures for the 1893 Columbian World's Exposition. There he met and befriended the Fair's lead architect, Daniel Burnham (1846-1912), who along with his colleagues shortly thereafter embarked on a long and impressive run as designers of landmark buildings and skyscrapers nationwide.



Statue of Liberty, New York, NY. Courtesy of Wikimedia Commons-Misterweiss.

By the time Giaver began thinking of opening his own consulting engineering firm in 1915, commerce through the newly opened Panama Canal was having a major impact on the U.S. economy overall. Foreign trade soared to a record high, much of it also sparked by the multi-nation war developing in Europe. One year later, when Giaver formed a partnership with former Burnham associate Fred Dinkelberg to provide architectural and engineering services, the future looked promising indeed.

Joachim was born on August 15, 1856, in the tiny hamlet of Jovik, near Tromsø, Norway, the ninth child of 13, four of whom would not make it to adulthood. He was only two when his newborn brother Jens, Jr. died in 1858, and was barely eight when his 16-year-old sister Anna and three-year-old brother Carl both died in the same year, 1864. Those experiences tempered him for similar tragedies that he and his wife would experience with their own offspring years later in America.

Joachim's father Jens H. Giaver, who was from a prominent Norwegian family, was a major landholder in northern Norway and a leading figure in its fishing industry. His mother Hanna Brigitte (Holmboe) Giaver was in charge of the home-schooling of Joachim and his siblings in preparation for college. Joachim's university choice was Trondhjem Technical College at Trondheim, Norway, nearly 500 miles (as the crow flies) southwest of his hometown. It was next to a sizeable body of water connected to the Norwegian Sea and surrounded by high mountains, offering many opportunities for outdoor activities like boating, hiking and climbing.

On September 3, 1885, Giaver married Louise Caroline Schmedling, a native of Trondheim then living in New York. He was 29 and she was 21. They would have eight children, three of whom died as infants. Their five surviving offspring were two daughters, Astrid (Mrs. Ralph Holmboe) and Brigit (Mrs. Amasa Bull), and three sons, Erling, Finn, and Einar William "Bill." Erling went into the construction supply business, Finn became a civil engineer like his father, and Bill studied engineering at Georgia Tech prior to a varied career first in professional football

and the movies, and finally in the construction industry.

Around the time of his marriage, Giaver was named chief engineer of Shiffler. In his five years in that position, he was in charge of the design and construction of several large bridges, including two in Pittsburgh – one over the Allegheny River and the other crossing the Monongahela River – and numerous multi-story structures. By far, Giaver's most noteworthy Shiffler assignment was producing the structural framework for the Statue of Liberty. His work involved design computations, detailed fabrication and construction drawings, and oversight of construction.

In completing his engineering for the statue's frame, Giaver worked from drawings and sketches produced by the famous French structural engineer Gustave Eiffel (1832-1923). Not only would Eiffel be remembered for the statue's framework, he would, soon after it debuted, design and build the monumental Tower that still bears his name for the extravagant 1889 Paris Centennial Exposition.

Three-and-a-half years after President Grover Cleveland officially dedicated the Statue on October 28, 1886, President Benjamin Harrison signed into law confirmation of Chicago as the location for the Columbian Exposition, in celebration of the 400th anniversary of Columbus discovering America. Engineers, architects, contractors and building suppliers from around the country took notice. A considerable amount of innovation, design and new construction would be required – and fast. Almost immediately, companies from all over the country began setting up operations in Chicago to get in on the action. With them came many leading structural engineers, including two daring ones from Pittsburgh, both still in their early thirties, Joachim Giaver and George Ferris (1859-1896). Of course, Ferris would erect for the 1893 Exposition the greatest observation wheel the world had ever seen.

In addition to the frantic and massive construction frenzy that the Fair generated, Chicago in the late 1880s and early 1890s



Joachim G. Giaver. Courtesy of Library of Congress Prints and Photographs LC-B22-206-2.



Museum of Science and Industry (Columbian Exposition's Palace of Fine Arts), Chicago, IL. Courtesy of Robert B. Johnson.

was experiencing a commercial construction boom with longer-term ramifications. Although the 1885 Home Insurance Building stood less than 150 feet tall, its load-carrying, iron-steel framework earned it the label of the world's first skyscraper. Other notable buildings with steel skeletons instead of the traditional masonry bearing wall construction that were built or being completed when Giaver arrived in Chicago included the Rookery, Tacoma, Rand McNally, Old Colony, Reliance, Marquette and Republic, each with its own legitimate claim to being the nation's first *true* steel-framed "skyscraper."

Shortly after moving to Chicago in 1891, Giaver became the assistant chief engineer for the Fair, for which Burnham was the lead architect in charge of all construction. Serving Giaver well in this position with Burnham's group was his experience in designing complicated foundation systems for difficult soils, such as the mostly unstable swampland of the Exposition's site. Also coming into play was his extensive experience with state-of-the-art wind bracing systems for complicated structural frameworks, which the bulk of the Fair's buildings also required.

Among Giaver's most noteworthy "White City" buildings for the Fair were its Administrative Building and the Palace of Fine Arts. For the latter's dome, Giaver designed a unique three-hinge arch, which at that time was the largest truss of its kind in the world, having a span of 368 feet. The structure survives today as the Chicago Museum of Science and Industry adjacent to Lake Michigan in Hyde Park. Following the Exposition, Giaver was engaged in the general contracting business from 1893 to 1896, and served as the bridge designer for the Sanitary District of Chicago from 1896 to 1898. In the latter position he designed various bridges over the main Chicago Drainage Canal. It was while with the Sanitary District that Giaver

received his final papers as a citizen of the United States in 1896.

In 1898, Giaver rejoined Burnham's company as its chief engineer, a position he held for 18 years. During that time, Giaver helped hone modern skyscraper design into a fine art, moving engineering solutions away from cast iron and wrought iron frameworks on spread footings to more cost-effective structural steel bearing on caisson foundations. Among his more popular inventions was the "Giaver Belled-Caisson" footing. While with Burnham, Giaver was

in charge of over 400 of the largest buildings in the U.S., among them the Flatiron, Gimbel, Maiden Lane and Equitable in New York City; the Field Museum, Continental National Bank, Railway Exchange and Conway Field in Chicago; the Union Station and Post Office in Washington D.C.; the Frick, Oliver, Smithfield and First National Bank in Pittsburgh; the May Company in Cleveland; the Wanamaker and Land Title in Philadelphia; and the dome of the Mount Wilson Observatory in California.

Prior to resigning from Burnham's firm and opening his own consulting engineering business, Giaver began questioning the laws licensing structural engineers in the State of Illinois. Up until that time, only architects could stamp and seal drawings for obtaining building permits. Giaver was the leader of the engineers who got this changed, securing the passage of a bill by the Illinois State Legislature in 1915 that allowed structural engineers to practice their profession on equal terms with architects in Illinois. This new licensing law made it possible for building plans to be lawfully approved if bearing the signature of a professionally registered structural engineer.

A year later, Giaver formed his partnership with Dinkelberg to provide architecture and engineering services. The most notable work of their partnership, finished a few months before Giaver's death, was the 35 East Wacker Building. Also known as the Jewelers' Building, the 40-story, 522-foot-tall East Wacker structure was the tallest building outside of New York City when completed in 1927. It had commanding views of the Chicago River and a special elevator for individual automobiles so that jewelers could remain in their cars with their gems while going back and forth to work. The building is listed on the National Register of Historic Places as part of the Michigan-Wacker Historic District, and is designated a Chicago Landmark.



Jewelers' Building (35 Wacker Building), Chicago, IL. Courtesy of Robert B. Johnson.

In 1920, Giaver was decorated with the Royal Norwegian Order of St. Olaf, 1st Class, by His Majesty King Haakon VII of Norway, in recognition of his prominence as a structural engineer and his activities on behalf of Norwegians worldwide.

For leisure, Giaver was an enthusiastic yachtsman, winning numerous prizes racing his boats on Lake Michigan. His favorite yacht was named "Mavourneen" – Irish Gaelic for "marvelous beauty" or "my sweet one."

Giaver was a trustee of the Norwegian American Hospital in Chicago, president of the Structural Engineers Association, a director of the Western Society of Engineers, president of the Norwegian Engineers Association, president of the Chicago Norske Klub and vice-commodore of the Columbia Yacht Club. He was also an active member in Svenska Klubben, Chicago Athletic Club, and Chicago Yacht Club.

Giaver passed away on May 29, 1925, two-and-a-half months shy of his 69th birthday. ■

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