

NOMINATION OF HISTORIC BUILDING, STRUCTURE, SITE, OR OBJECT
PHILADELPHIA REGISTER OF HISTORIC PLACES
PHILADELPHIA HISTORICAL COMMISSION

SUBMIT ALL ATTACHED MATERIALS ON PAPER AND IN ELECTRONIC FORM (CD, EMAIL, FLASH DRIVE)
ELECTRONIC FILES MUST BE WORD OR WORD COMPATIBLE

1. ADDRESS OF HISTORIC RESOURCE *(must comply with an Office of Property Assessment address)*

Street address: 4600 Disston Street and 6913 Ditman Street

Postal code: 19135

2. NAME OF HISTORIC RESOURCE

Historic Name: Frank Shuman Home and Laboratory

Current/Common Name: _____

3. TYPE OF HISTORIC RESOURCE

☒ Building

☐ Structure

☐ Site

☐ Object

4. PROPERTY INFORMATION

Condition: ☐ excellent ☐ good ☒ fair ☐ poor ☐ ruins

Occupancy: ☒ occupied ☐ vacant ☐ under construction ☐ unknown

Current use: Multi-family residence (Home) and Contracting company office (Laboratory)

5. BOUNDARY DESCRIPTION

Please attach a narrative description and site/plot plan of the resource's boundaries.

6. DESCRIPTION

Please attach a narrative description and photographs of the resource's physical appearance, site, setting, and surroundings.

7. SIGNIFICANCE

Please attach a narrative Statement of Significance citing the Criteria for Designation the resource satisfies.

Period of Significance (from year to year): from 1895 to 1918

Date(s) of construction and/or alteration: Home (1895, 1995, 1928) and Laboratory (circa 1895)

Architect, engineer, and/or designer: _____

Builder, contractor, and/or artisan: _____

Original owner: Frank Shuman

Other significant persons: _____

CRITERIA FOR DESIGNATION:

The historic resource satisfies the following criteria for designation (check all that apply):

- ☒ (a) Has significant character, interest or value as part of the development, heritage or cultural characteristics of the City, Commonwealth or Nation or is associated with the life of a person significant in the past; or,
- ☐ (b) Is associated with an event of importance to the history of the City, Commonwealth or Nation; or,
- ☐ (c) Reflects the environment in an era characterized by a distinctive architectural style; or,
- ☐ (d) Embodies distinguishing characteristics of an architectural style or engineering specimen; or,
- ☐ (e) Is the work of a designer, architect, landscape architect or designer, or engineer whose work has significantly influenced the historical, architectural, economic, social, or cultural development of the City, Commonwealth or Nation; or,
- ☐ (f) Contains elements of design, detail, materials or craftsmanship which represent a significant innovation; or,
- ☐ (g) Is part of or related to a square, park or other distinctive area which should be preserved according to an historic, cultural or architectural motif; or,
- ☐ (h) Owing to its unique location or singular physical characteristic, represents an established and familiar visual feature of the neighborhood, community or City; or,
- ☐ (i) Has yielded, or may be likely to yield, information important in pre-history or history; or
- ☒ (j) Exemplifies the cultural, political, economic, social or historical heritage of the community.

8. MAJOR BIBLIOGRAPHICAL REFERENCES

Please attach a bibliography.

9. NOMINATOR

Organization _____ Date 5/9/2019; Revision submitted 7/19/2019

Yen Ho, Student; Edited and supplemented by the
Name with Title staff of the Phila. Historical Commission Email hohoangyen@hotmail.com

Street Address 408 Gordon Road Telephone 267-210-0214

City, State, and Postal Code Amber, PA

Nominator ☐ is ☒ is not the property owner.

PHC USE ONLY

Date of Receipt: Submitted 5/9/2019; revision submitted 7/19/2019

☒ Correct-Complete ☐ Incorrect-Incomplete Date: 15 August 2019

Date of Notice Issuance: 15 August 2019

Property Owner at Time of Notice:

Name: (See attached)

Address: _____

City: _____ State: _____ Postal Code: _____

Date(s) Reviewed by the Committee on Historic Designation: 18 September 2019

Date(s) Reviewed by the Historical Commission: 11 October 2019

Date of Final Action: 11 October 2019

☒ Designated ☐ Rejected

12/7/18

Notifications sent to:

- **Owner of 4600 Disston Street:**

Jan Smiarowski

Apt 2A

4600 Disston Street

Philadelphia, PA 19135

- **Owner of 6913 Ditman Street:**

Penn Industrial Installations

6913 Ditman Street

Philadelphia, PA 19135

5. BOUNDARY DESCRIPTION

The proposed designation includes two separate tax parcels, 4600 Disston Street and 6913 Ditman Street in Philadelphia, Pennsylvania, both of which were associated with Frank Shuman.

1. 4600 Disston St

Beginning at the point formed by the intersection of the Southwesterly side of Disston Street (sixty feet wide) and the Southeasterly side of Ditman Street (fifty feet wide); thence extending Southeastwardly along the Southwesterly side of Disston Street one hundred five feet, four and five-tenths inches to a point; thence extending Southwestwardly on a line at right angles to the said Disston Street one hundred eighteen feet, two inches to a point; thence extending Northwestwardly on a line parallel with Disston Street ninety seven feet, seven and one-half inches to a point on the Southeasterly side of Disston Street; thence extending Northeastwardly along the Southeasterly side of Ditman Street one hundred eighteen feet, five inches to the Southwest side of Disston, being the first mentioned point and place of beginning.

2. 6913 Ditman Street

Beginning at a point on the Southeasterly side of Ditman Street fifty feet wide, at the distance of one hundred thirty-three feet, nine and one-half inches Northeastwardly from the Northeasterly side of Longshore Avenue, fifty feet wide; thence extending Southeastwardly on a line parallel with Longshore Avenue one hundred thirty-three feet nine and one-eighth inches to a point; thence extending Northeastwardly on a line at right angles to Longshore Avenue twenty-one feet six inches to a point; thence extending Northwestwardly on a line parallel with Longshore Avenue thirty-nine feet, eleven and one-eighth inches; thence extending Northeastwardly on a line at right angles to Longshore Avenue, thirty-six feet five inches to a point; thence extending Northwestwardly on a line parallel with Longshore Avenue ninety-seven feet, seven and one-half inches to a point on the Southeasterly side of Ditman Street; thence extending Southwestwardly along the Southeasterly side of Ditman Street fifty eight feet one-half of an inch to the first mentioned point and place of beginning.



Figure 1: Birds-eye view looking south at the Frank Shuman House (#1), constructed in 1895, and the Frank Shuman Laboratory (#2), constructed in the period between 1895-1900.

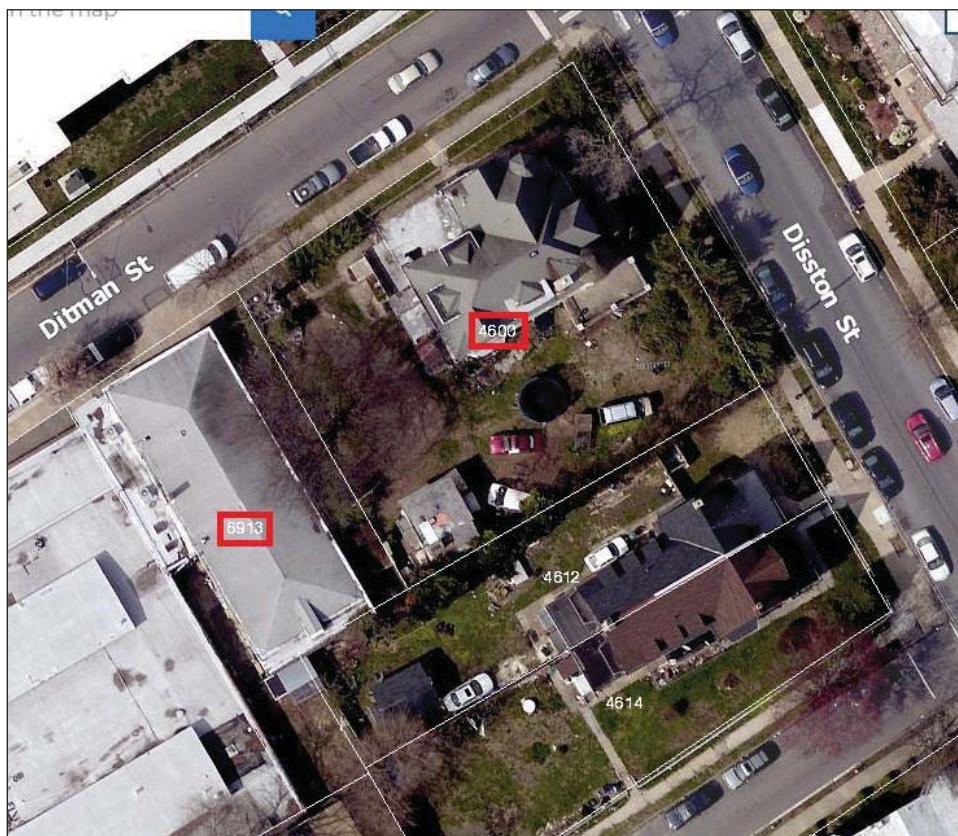


Figure 2: 4600 Disston Street and 6913 Dittman Street. Source: City of Philadelphia CityAtlas.

6. DESCRIPTION

4600 Disston Street

4600 Disston Street, historically known as the Frank Shuman House, is located at the intersection of Disston Street and Ditman Street in the Tacony neighborhood of Northeast Philadelphia. It is a three-story, red brick house with a stone foundation. The building has a rectangular footprint, asymmetrical façades, and irregular roof shape. Constructed in 1895, the building's design embodies the Queen Anne style, a style typical of the Victorian era. In Pennsylvania, this architectural style for housing was most fashionable during 1880-1910 period. The building's Queen Anne design is expressed through its distinctive form, rich and varying decorative detail, corner towers, and expansive porch.

Despite alterations that have occurred since 1895, 4600 Disston Street continues to maintain much of its Queen Anne style, through both form and material. The most visible alteration was the removal of the rounded front porch in the 1980s. It was replaced with a rectangular porch although the foundation of the historic porch remains in place. Other changes include alterations to window openings, removal of most of the slate roof, exterior brick painting, and chimney removal. Built originally as a single-family home, it was converted to a multi-family property with nine apartments in the 1950s.¹

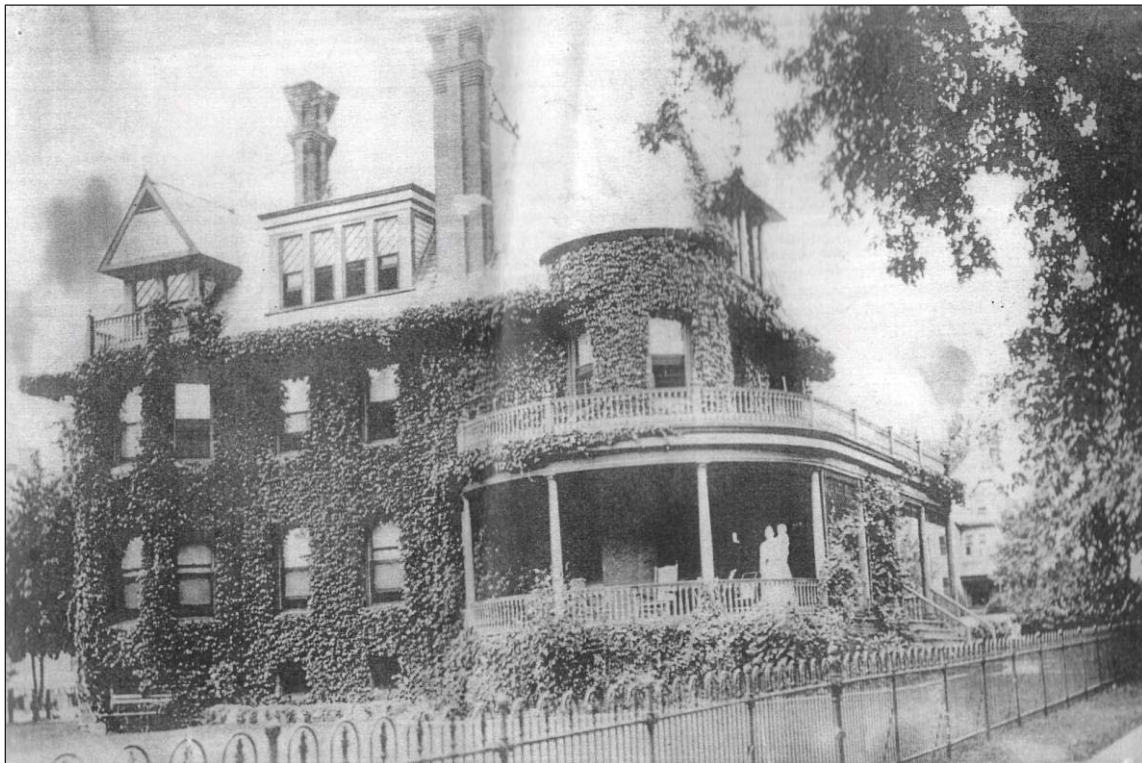


Figure 3: 4600 Disston Street, in the early 1900s, during the time period Frank Shuman and his family lived in the house.

¹ City of Philadelphia. Zoning records for 4600 Disston Street via CityAtlas. <https://atlas.phila.gov>. Accessed 13 August 2019.



Figure 4: 4600 Disston Street, east elevation (2019).



Figure 5: Aerial view of 4600 Disston Street with the south and east elevations visible (2019).
Image provided by Pictometry.

East façade

The east façade, or front facade, shows asymmetry with a hipped roof and corner turrets on each side. Both corner turrets are different in shape and size but have a similar ornamental frieze with spiral scrolling and floral elements. The south turret maintains its slate roofing and the north turret has asphalt/fiberglass shingles. The north elevation's asymmetrical roof contains multiple hipped roofs. The roof is primarily sheathed in asphalt/fiberglass shingles.

The main dormer on the east side is supported by three columns. The front porch is rectangular with a wood picket railing. The front door is a paneled door with a single upper light. All windows are double-hung with a one-over-one configuration.



Figure 6: Front (east) elevation facing Disston Street (2019).

North façade

The north façade of has four windows on each floor, plus a small, square window on the first floor. There are three windows located on the basement floor, but only one window that is a square-shaped. There are two different types of dormer windows shown: a hipped roof dormer with fish-scale patterns on front and a flat roof dormer set back. A side entry door is accessed through concrete steps. A stone foundation runs along the base of this elevation and around the perimeter of the building.



Figure 7: North elevation along Ditman Street (2019).

West façade

The west façade, or rear elevation, of the house shows many varying window sizes: two small, square windows, one horizontal window, and the three windows that are similar to the north façade windows. Another flat roof dormer is located on the west side, and it's perpendicular to the other flat roof dormer on the north side. An area of the rear extension appears as a more recent change due to its structure and paint.



Figure 8: West elevation/rear of building (2019). The back of the building faces Shuman's laboratory.



Figure 9: View from Ditman Street with the north and west elevations visible (2019).

South façade

The south façade has double-height bay window, multiple dormers, and a patterned brick chimney. One dormer has a hipped-roof with double windows and fish-scale wood shingles in the gable. The other dormer has a flat roof dormer with four windows that feature diagonal muntins in their upper sash. This elevation holds a decorative date marker.



Figure 10: South elevation (2019).



Figure 11: Roof above the south elevation (2019). Surviving details such as fish scale shingles, diagonal muntins, slate shingles, and a decorative frieze are visible on the south elevation.



Figure 12: Detail photo of the “1895” marker survives on the south elevation (2019). The marker was installed during its year of construction.



Figure 13: Detail of spiral scroll ornamental detail (2019).



Figure 14: Detail of spiral scroll ornamental detail (2019).



Figure 15: Close-up of the front elevation's side hipped roof dormer supported with three columns (2019).

6913 Ditman Street

Frank Shuman's laboratory stands directly west of the house. It has the appearance of a service structure, such as a garage, rather than an industrial building. The most visible facades, the north and east elevations, are clad and detailed in a manner that would have allowed Frank Shuman's laboratory building to blend in with the surrounding residential properties in the early 1900s.

6913 Ditman Street is a one-story, rectangular building, constructed primarily of brick and stucco. It has a hipped roof with a moderate pitch and is covered with 3-tab gray asphalt shingles. A small addition fills the space between the building's original west wall and the adjacent building along Ditman Street. This addition extends halfway along the Laboratory's west wall.

The exterior façade of the east and north elevations are red brick set in a common bond pattern. The edge of the roof has a slight eave overhang with a simple cornice and a patterned brick entablature below it. The exterior facade of the west and south elevations are tan stucco, and although the roof does have an eave overhang, it does not have the brick entablature.



Figure 16: View of the north elevation of Laboratory building along Ditmas Street (2019). The Laboratory was constructed in close proximity to Frank Shuman's house. In this photograph, the house is visible on the left side of the image. The small addition is visible on the right side of the photograph. The division between the original building and the addition is visible by the difference in brick and mortar color.

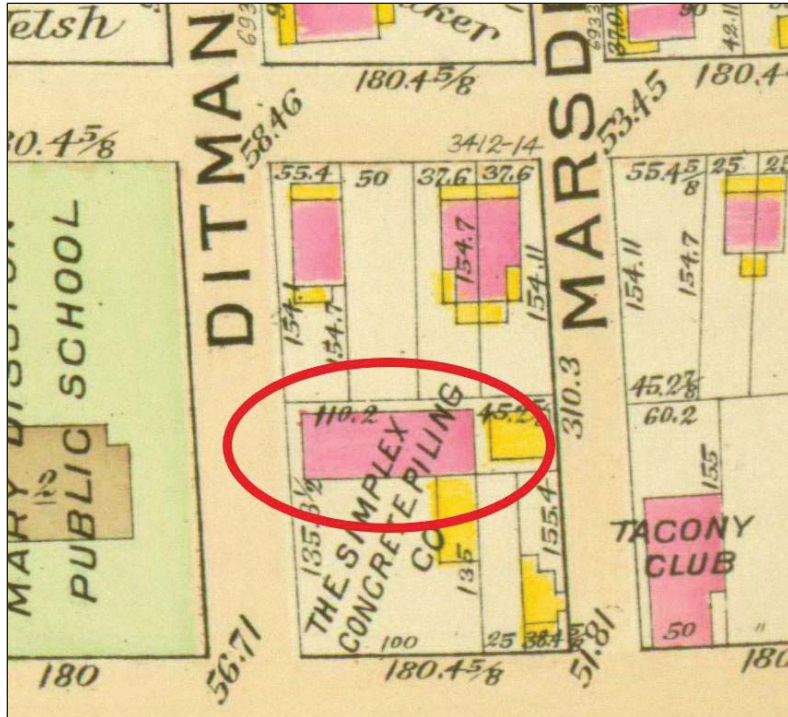


Figure 17: 1910 map showing the brick laboratory building (in pink). The yellow section of the building has been demolished. *Plate 17, J.L. Smith, Atlas of the 23rd, 35th, & 41st Wards of the City of Philadelphia (Philadelphia, 1910)*



Figure 18: Aerial view (2019) of the laboratory building. Although there is now a physical connection to the newer, larger structure on the adjacent lot, the laboratory building maintains its historic one-story, rectangular configuration.

North elevation

The north façade faces Disston Street and is divided into three bays with a garage door, main entry door, and paired double-hung windows. The front entry door is a metal single-leaf door within a wood or metal frame. The garage door is vinyl and framed with wood molding. The entry door and windows have metal lintels (with metal bolts). The windows have their original brick molding and masonry sill with vinyl or aluminum double-hung inserts now installed. Metal security bars cover the windows. A metal coal chute door remains in place directly below the windows. A metal coal chute door remains in place directly below the windows.



Figure 19: View of Laboratory building (north elevation) along Ditmas Street (2019).

East elevation

The east elevation is a seven bay façade with seven window openings evenly spanning length of the façade. The window openings have metal lintels (with metal bolts) and masonry sills. Windows visible from the sidewalk appear to retain their original brick molding. Original windows have been removed and are now vinyl or aluminum double-hung inserts. Metal security bars cover the windows. The fourth window in from the street is covered with plywood. Two aluminum downspouts run vertically down the façade at each end of the building. The east wall is braced with six vertical steel beams that start at ground level and stop at the bottom of the brick entablature. The steel beams then connect to a steel plate that runs vertically up to the soffit. The steel plates appear to cut through and into the building.



Figure 20: East elevation of Laboratory building (2019). A sidewalk runs the length of the east façade. The entrance to this area is delineated by a non-historic metal gate and fence.

South and West elevation

The south and west elevations are not visible from the street that surround the house and Laboratory. Both facades appear (from aerial photographs) to be stucco. There are no door or window openings visible. On the south elevation, small accessory structures appear against or close to the building. A small dormer-like opening appears on the roof just above the south wall, most likely providing building ventilation.



Figure 21: Aerial view looking north with the south and east elevations of 6913 Ditman Street visible. The facades appear as stucco and do not have any visible openings for doors and windows.

7. SIGNIFICANCE

Statement of Significance:

The “Inventor’s Compound” of Frank Shuman (1862-1918) survives largely intact today at 4600 Disston Street and 6913 Ditman Street in the Tacony neighborhood of Philadelphia. The house and laboratory reflect an important time in the late 19th century and early 20th century when Tacony reflected Philadelphia’s role as a center for industry and invention. Shuman, a prolific inventor with more than 60 U.S. patents to his name, constructed a home and laboratory at this location for his family and business that enabled him to successfully imagine, develop, and test his innovations within his own neighborhood and community. 4600 Disston Street and 6913 Ditman Street are significant under *Criteria A and J* for their association with the life of Frank Shuman and whose inventions—including pioneering glass and solar power innovations—exemplifies the cultural, economic, social and historical heritage of Tacony in the late 19th and early 20th century.

Criteria A and J:

Frank Shuman was born on January 23rd, 1862, in Brooklyn, New York to German immigrants. He dropped out of school early on and did not attend college.² At the age of 18, he pursued his interest in science through a position as a chemist with an aniline dye company in West Virginia.³ During his late 20s, Shuman experimented with glass and explored ways to increase the material’s safety.

In 1892, at the age of 30, Shuman patented a wired safety glass system that embedded wire mesh into glass. Shuman noted in his patent application that the wire glass was intended for uses such as skylights in railway depots or train-sheds to prevent particles from falling if the glass cracked.⁴

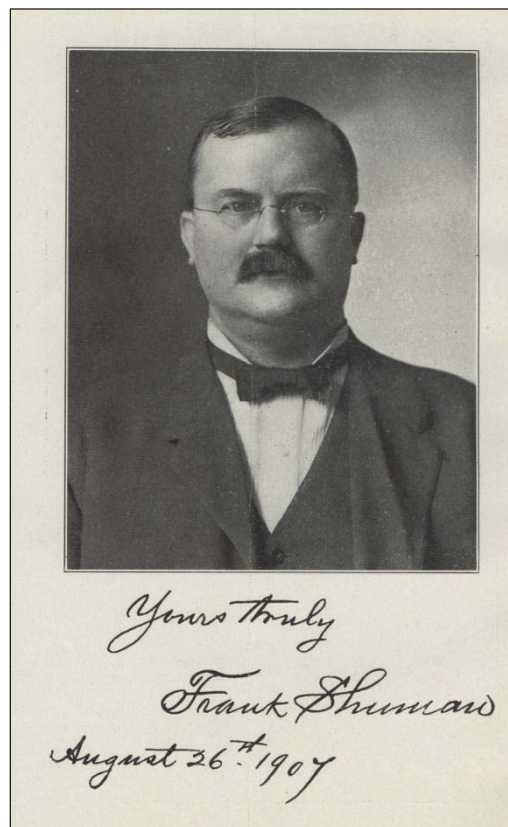


Figure 22: Frank Shuman in 1907

² Dougherty, Christopher R. *Hidden City, Frank Schuman: Finding the Future in Tacony, A Century Ago*, 2014. <https://hiddencityphila.org/2014/05/frank-shuman-finding-the-future-in-tacony-a-century-ago/>. Accessed 12 August 2019.

³ Silcox, Dr. Harry C. *Remembering Northeast Philadelphia*. Pennsylvania: The History Press, 2009: 50.

⁴ Frank Shuman, "Process of embedding wire-netting in glass." U.S. Patent no. 483,021 (filed: July 6, 1892 ; issued: September 20, 1892). Accessed via Google patents search on 8/15/2019.

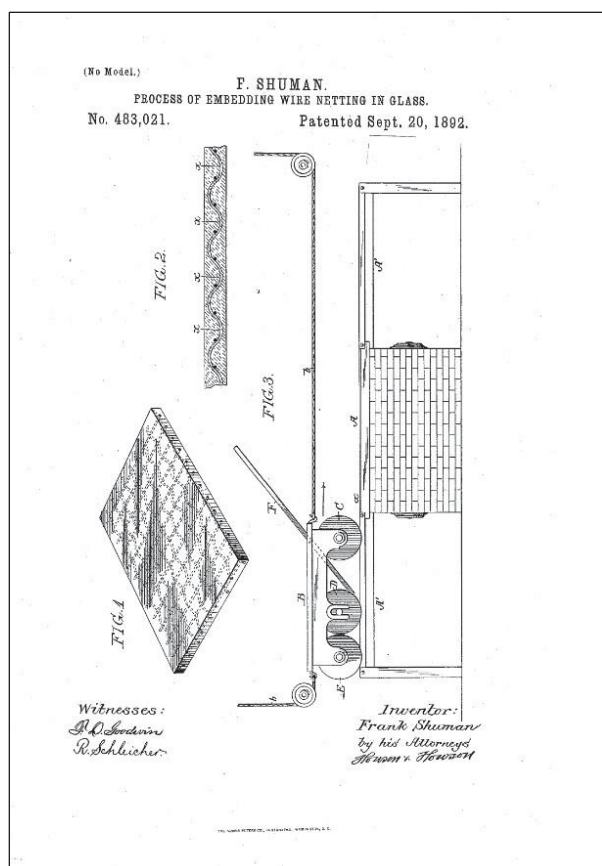


Figure 23: Image from U.S. Patent No. 483,021 for embedding wire-netting in glass. Filed on July 6, 1892 and issued on September 20, 1892.



Figure 24: Cover of *Scientific American*, November 8, 1892. The article focused on Frank Shuman's wire glass invention.

In 1891, he moved to Tacony at the invitation of his uncle Frank Schumann (who maintained the German spelling of the family name), president of the Tacony Iron & Metal Works. Shuman was hired for a specific project – to create an electroplating process to fuse coats of aluminum on a statue being cast in their shop. The coating was necessary to protect the 37-foot statue William Penn statue from weather and pollution on top of City Hall. During this same period, Shuman opened the American Wire Glass Manufacturing Company in Tacony through the financial investment of Jacob Disston and W.L. Elkins.⁵ The company resided on land owned by Disston Saw Works.⁶

⁵ Dougherty, Christopher R. *Hidden City, Frank Schuman: Finding the Future in Tacony, A Century Ago*, 2014. <https://hiddencityphila.org/2014/05/frank-shuman-finding-the-future-in-tacony-a-century-ago/>. Accessed 12 August 2019.

⁶ Silcox, Harry C. *A Place to Live and Work: The Henry Disston Saw Works and the Tacony Community of Philadelphia*. Pennsylvania: The Pennsylvania State University Press, 1994: 60.

The scientific community took notice of Shuman's glass and coatings innovations with multiple articles published in *Scientific American* in 1892.⁷ In 1894, he was given the John Scott Medal by the Franklin Institute for the "Process and apparatus for embedding wire netting in glass". This award, presented every year since 1822 through present day, is awarded to "the most deserving men and women whose inventions have contributed in some outstanding way to the comfort, welfare, and happiness of mankind."⁸

Building an "Inventor's Compound" in Tacony for family and business

The critical and financial success Frank Shuman experienced in the early 1890s allowed him to purchase land and build a personal residence, homes for family and a laboratory. City deed records from 1894 and 1895 show multiple land purchases by Shuman on the block bounded by Ditman Street, Disston Street (then Washington), Marsden Street, and Longshore Avenue (see Figure 26). With wealth garnered from his wire glass inventions and production, historic maps show that Shuman first constructed a brick twin on the land he purchased from Thomas W. South. Extended family most likely occupied these homes, which stand today at 4612-4614 Disston Street.⁹ He then built a Queen Anne-style brick residence directly adjacent to the twin. In the years that followed, Shuman constructed a laboratory behind the house where he and his wife, Yetchen, lived and raised their children.

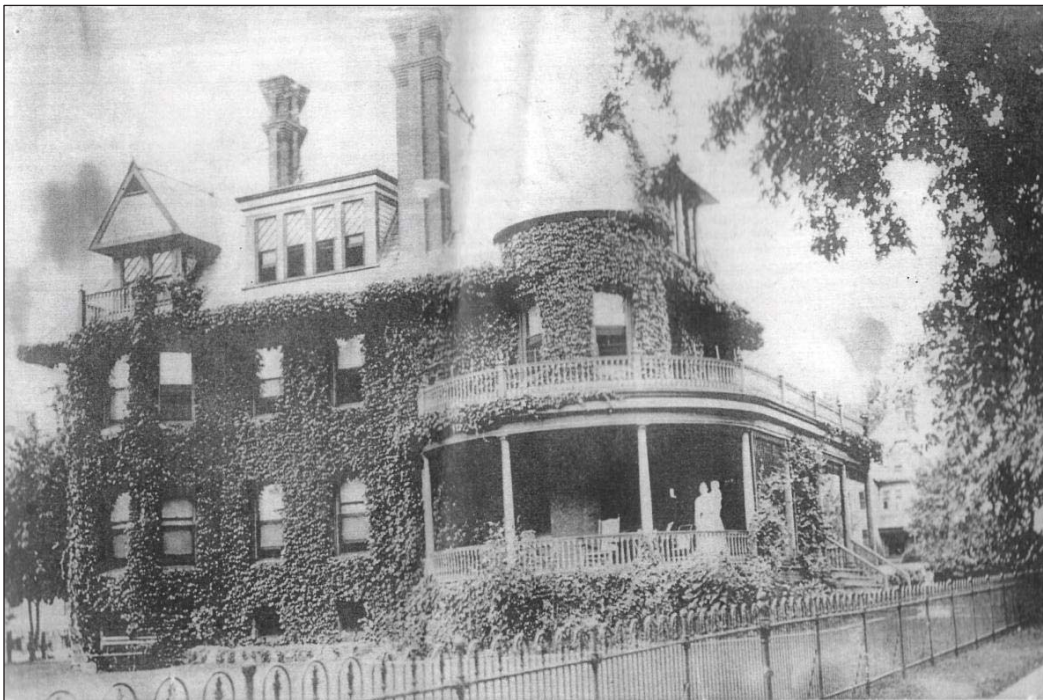


Figure 25: 4600 Disston Street, in the early 1900s, during the period Frank Shuman and his family lived in the house.

⁷ Dougherty, Christopher R. *Hidden City, Frank Schuman: Finding the Future in Tacony, A Century Ago*, 2014. <https://hiddencityphila.org/2014/05/frank-shuman-finding-the-future-in-tacony-a-century-ago/>. Accessed 12 August 2019.

⁸ <http://www.garfield.library.upenn.edu/johnscottaward.html> (accessed 8/15/2019)

⁹ Silcox, Dr. Harry C. *Remembering Northeast Philadelphia*. Pennsylvania: The History Press, 2009: 51.

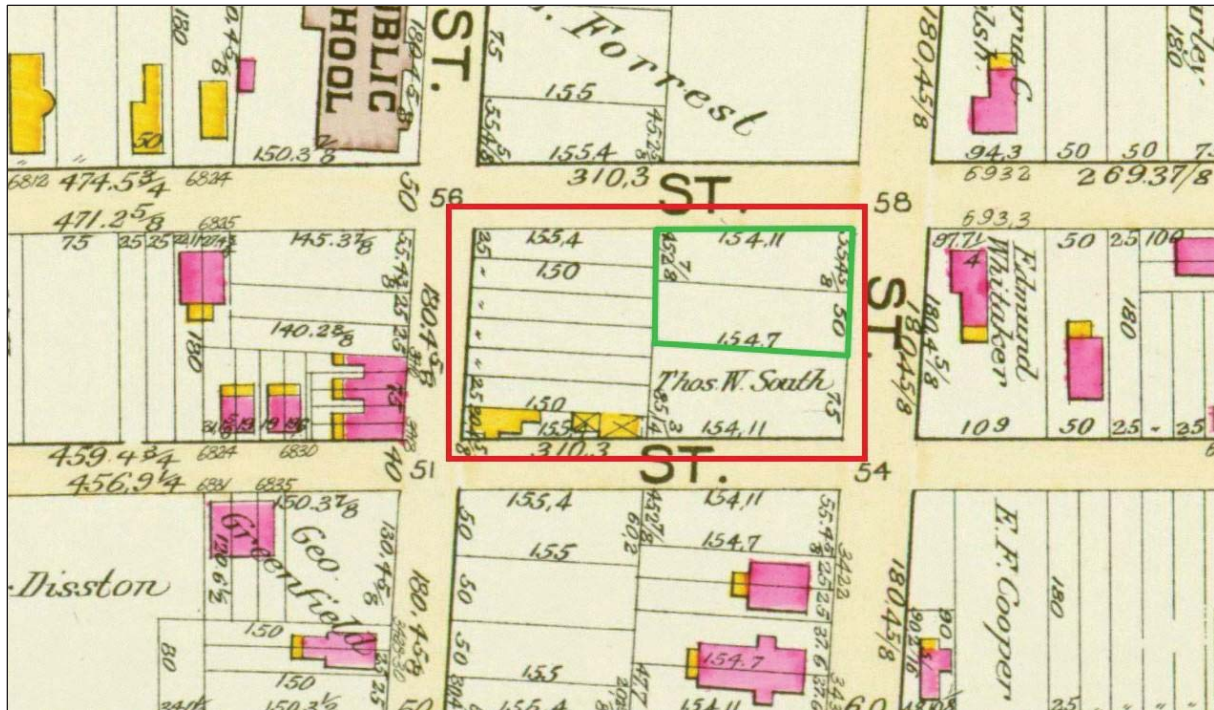


Figure 26: Map showing the area (in red) of land that Shuman begins to purchase in 1894. The green area indicates the future location of his house. Plate 10, Geo. W. and Walter S. Bromley, *Atlas of the City of Philadelphia, 23rd & 35th Wards*, from actual surveys and official plans (Philadelphia, 1894).

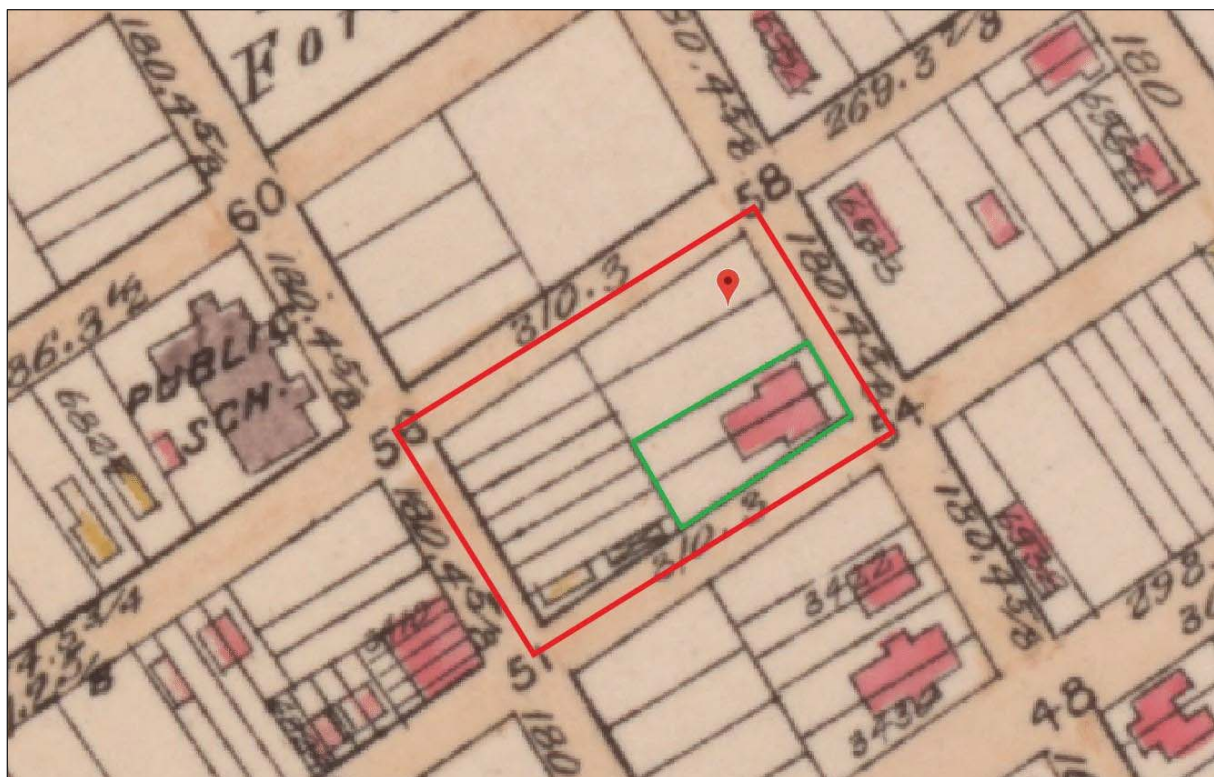


Figure 27: 1895 map showing the area (in red) of land that Shuman begins to purchase in 1894. The green outline indicates the first building constructed on his property. This twin provided housing for extended family. 1895 Philadelphia Atlas, G.W. Bromley. Greater Philadelphia GeoHistory Network. <http://www.philageohistory.org/geohistory/>. August 2019.

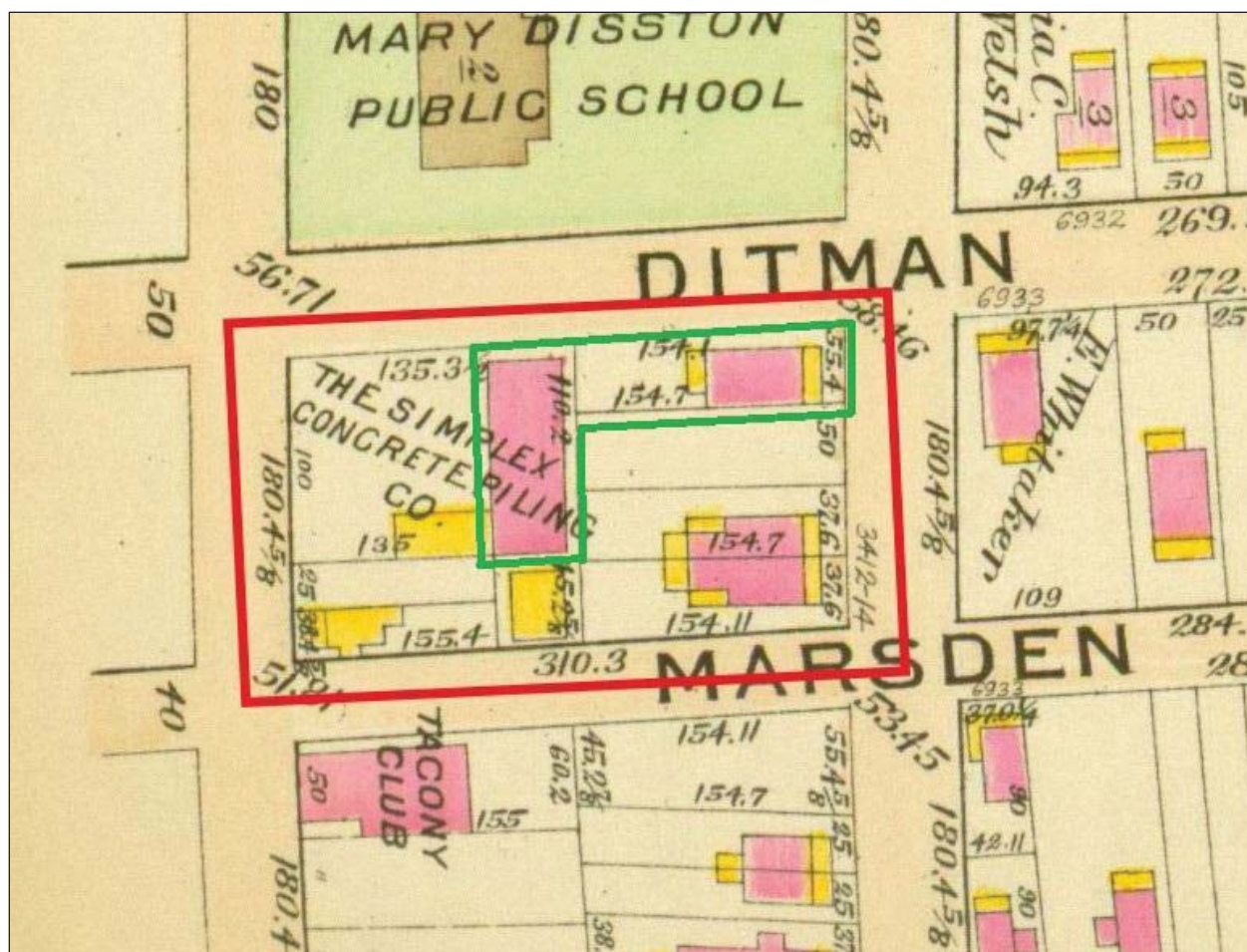


Figure 28: 1910 maps showing the property with the house and laboratory completed (in green). The location of the laboratory is labeled as “The Simplex Concrete Piling Co.” – the name of Shuman’s company. Plate 17, J.L. Smith, *Atlas of the 23^d, 35th, & 41st Wards of the City of Philadelphia* (Philadelphia, 1910).

The laboratory at 6913 Ditman Street served as the home office of Shuman’s Simplex Concrete Piling Company, as well as a place to explore new ideas and perform testing. His piling company created new structural products and materials for construction. Shuman’s time living and working at the compound was productive. A review of patents filed between 1895 through 1918 show that the majority was done during this time period (see Appendix for patent list).

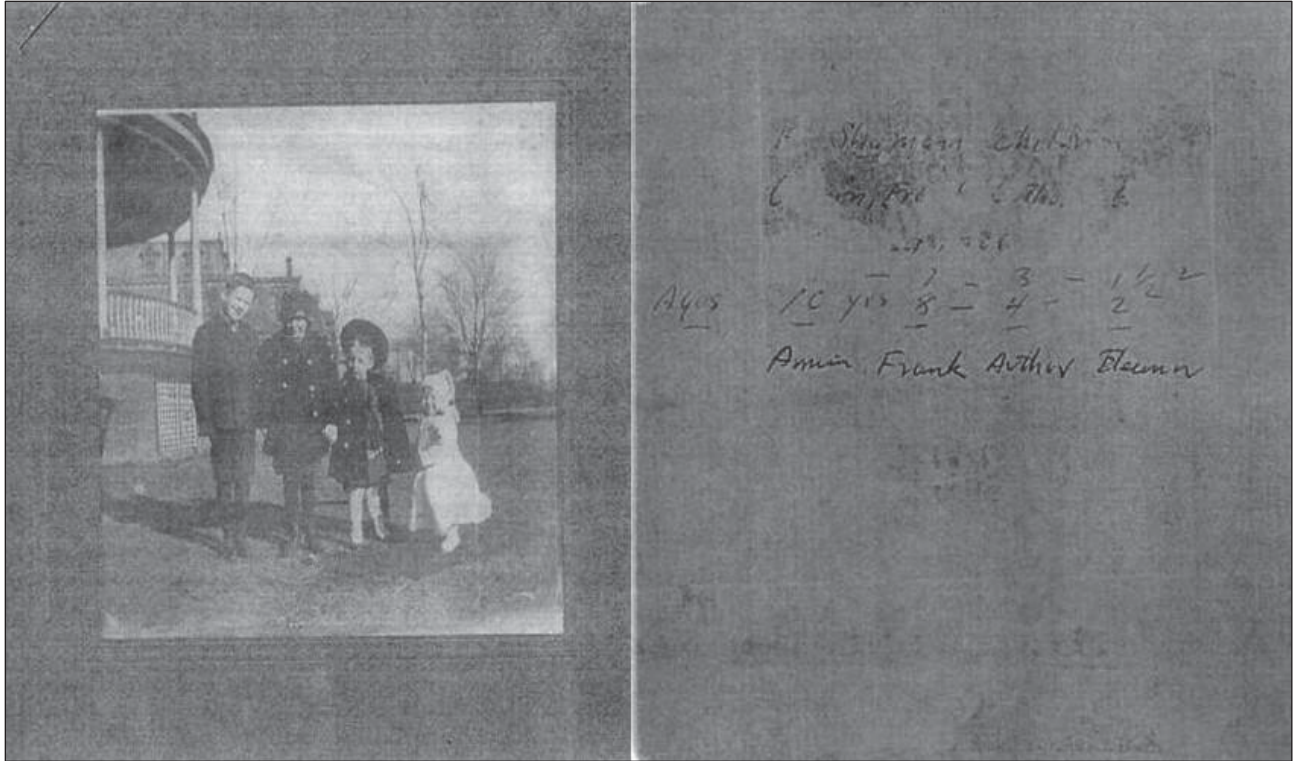


Figure 29: 1906 photograph of Frank Shuman's children standing in front of porch on the front lawn of 4600 Disston Street. Left to right: Armin, Frank, Arthur, and Eleanor. with the house in the background (1906). Source: Historical Society of Tacony



Figure 30: Armin and Eleanor with the house visible in the background, circa 1915. Source: Historical Society of Tacony

Solar pioneer

In the early 1900s, Shuman became interested and followed international developments in solar power. In 1906, Philadelphia passes its first pollution control ordinance, in response to heavy coal consumption and use of fossil fuels by homes, railroad, and industry.¹⁰ It is during this year that Shuman begins exploring solar power and the potential for creating a solar engine.

In the summer of 1907, he constructs a small-scale demonstration plant in his backyard. Attracted to the demonstrations through handbills and newspaper advertisements (Figure 31), visitors came to witness the development of his solar energy engine. Shuman invited famous scientists and other VIPs to Tacony to see his progress with the solar energy engine. Margaret Dorsey Farley, who lived next door to the Shuman family and was twelve years old at the time, recalls Shuman escorting people from around the world down the streets of Tacony to his demonstration.¹¹

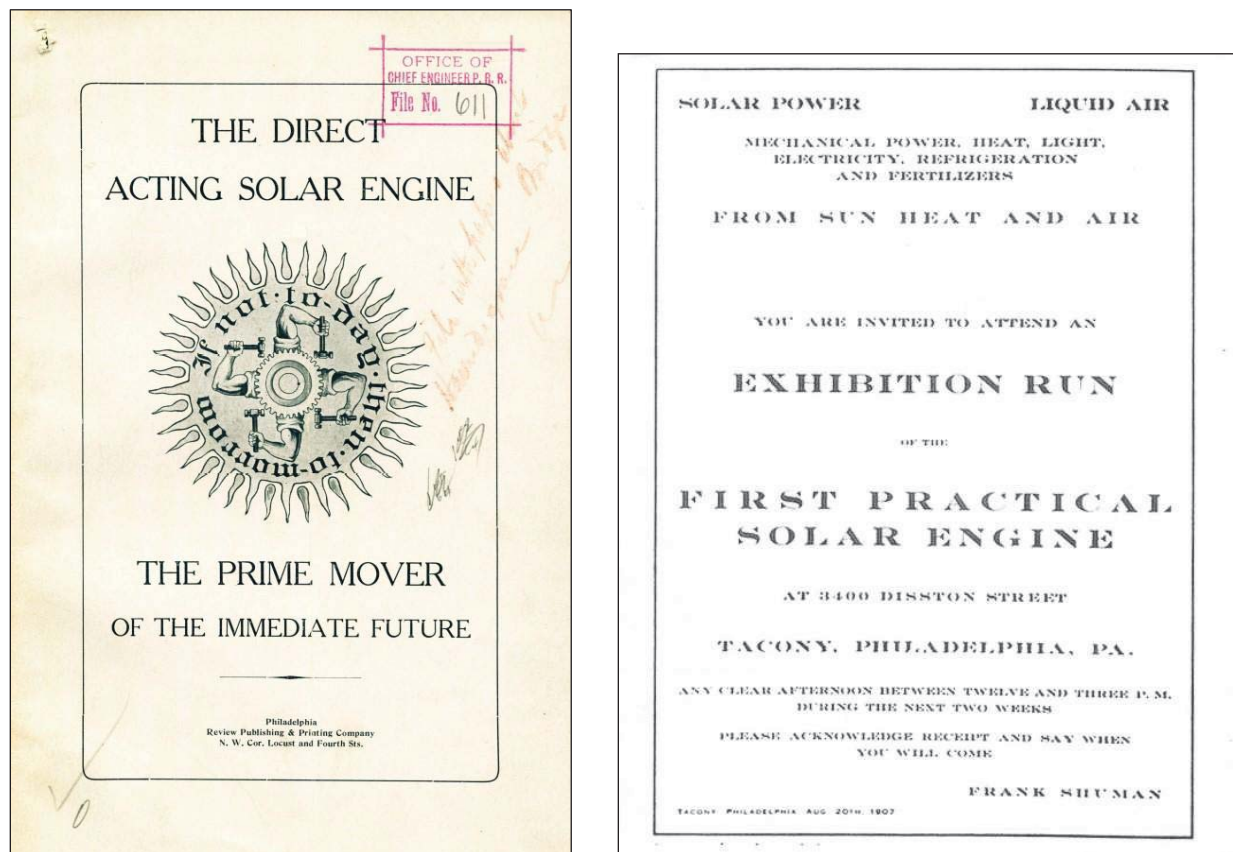


Figure 31: Left: Cover of Frank Shuman's 14-page booklet published in 1907. *Source: Hagley Museum Digital Archive.* Right: Advertisement for solar engine demonstration in 1907. *Source: Historical Society of Tacony.*

¹⁰ Dougherty, Christopher R. *Hidden City, Frank Schuman: Finding the Future in Tacony, A Century Ago*, 2014. <https://hiddencityphila.org/2014/05/frank-shuman-finding-the-future-in-tacony-a-century-ago/>. Accessed 12 August 2019.

¹¹ Zebe, Mike. "Early 20th-century inventor harnessed the sun in Tacony." *The Philadelphia Daily News* (Philadelphia, PA), July 1, 1993.

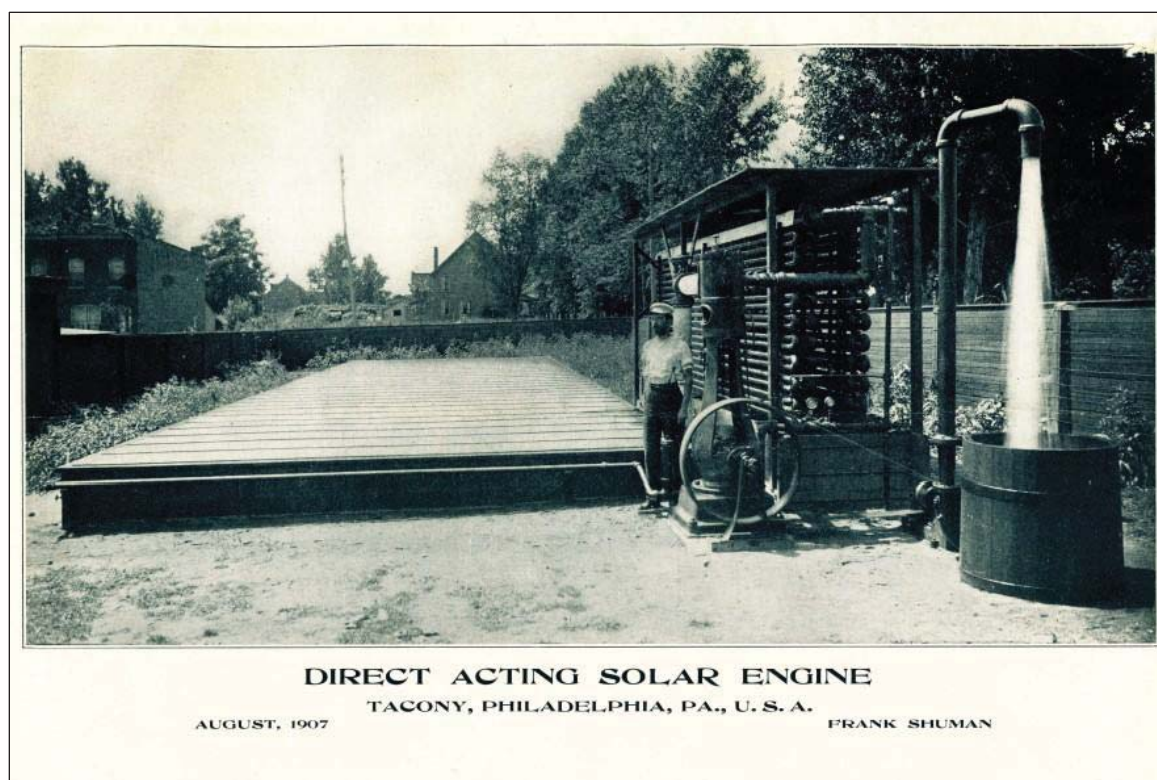


Figure 32: 1907 photograph from the booklet: "The Direct Acting Solar Engine: The Prime Mover of the Immediate Future." Source: *Historical Society of Tacony and Hagley Museum Digital Archive*.

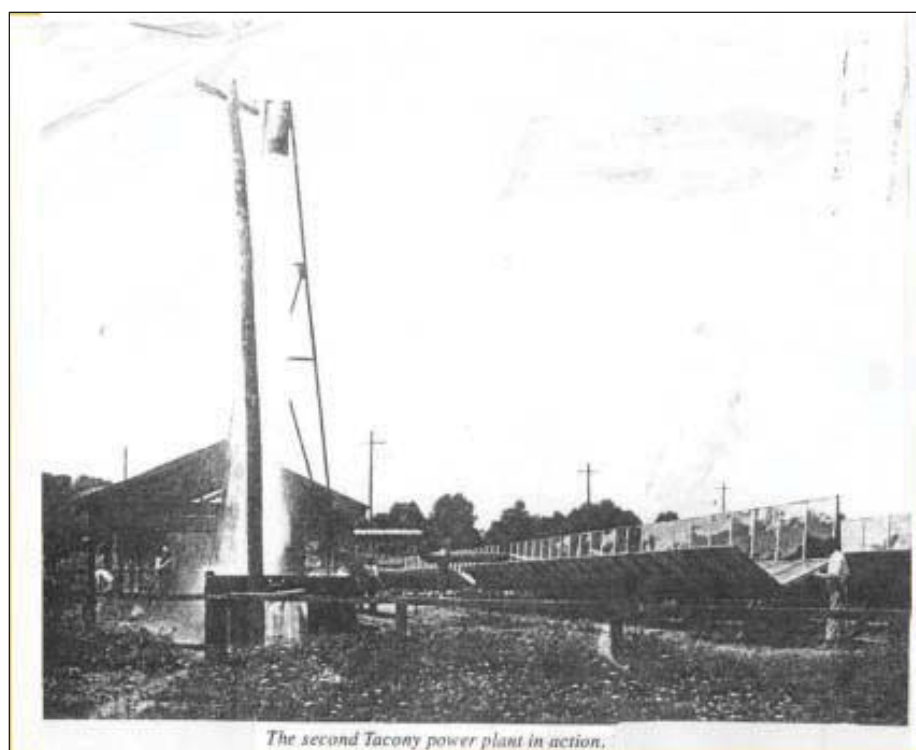


Figure 33: Photograph showing a later version of the solar engine. Source: *Historical Society of Tacony*.

Shuman also publishes a small booklet in 1907 (see Figure 31) titled, “*The Direct Acting Solar Engine: The Prime Mover of the Immediate Future.*” He also announces the creation of a new company – The Sun Power Company. In the booklet, he states the following:

All of the coal we are burning is merely the stored-up power of the sun delivered on the earth some millions of years ago. We dig far into the ground to get this out, whereas the sun is delivering an equal power every day, right at our doors, free of all charge. It is only necessary for us to devise the proper means for receiving this infinite power and using it to advantage.

Shuman’s ongoing development and experiments attracted the attention of publications who published articles on his work related to solar energy and engines. Publications such as *Scientific American*, *Electrical Experimenter*, local newspapers and more followed and reported on his research and testing.

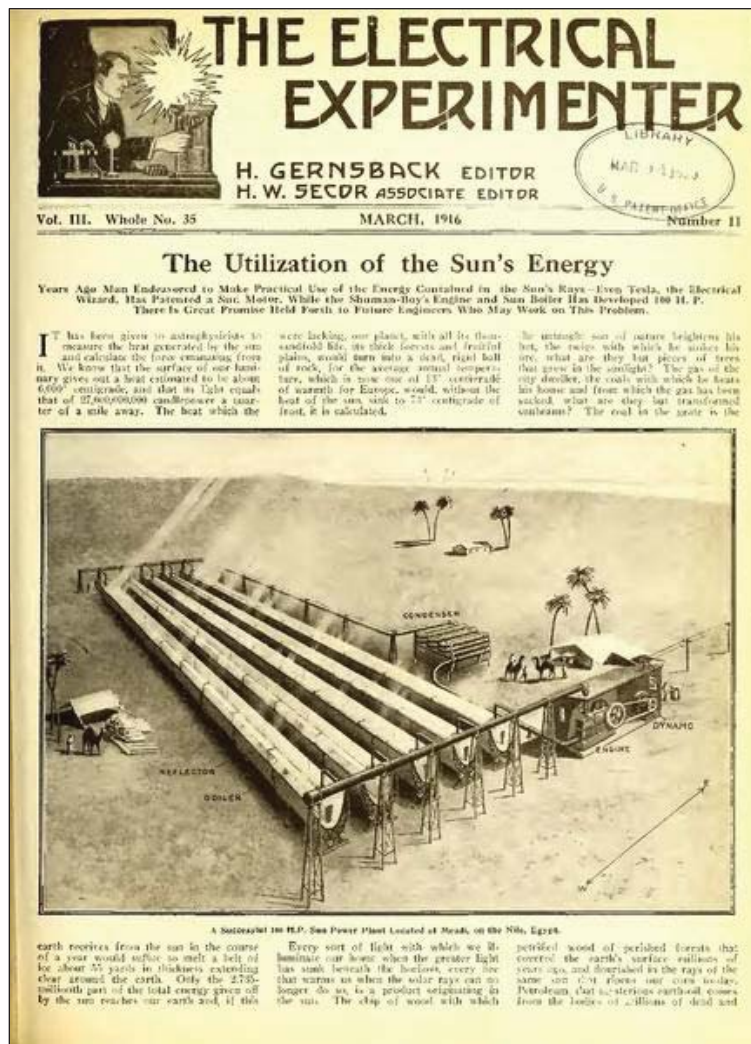


Figure 34: Article in *The Electrical Experimenter*, March 1916.

In 1912, Shuman was invited to Egypt by Lord Horatio Herbert Kitchener who was interested in Shuman's solar work and thought it would be an ideal device to irrigate the Nile Valley, and turn it into an agricultural area. British investors commissioned Shuman to supervise the construction of a massive solar array in Maadi, located near Cairo, to help with irrigation of cotton fields . The full-scale sun energy plant was a success, and *Scientific America* praised his work, as something that was thoroughly practical in every way.¹²



Figure 35: Left: Frank Shuman in Egypt. Right: Shuman and his group from Philadelphia with Egyptian workers in 1913. Source: *Historical Society of Tacony*.

Margaret Dorsey Farley, Shuman's neighbor, was one of the many local residents who went to the Liberty Theatre on Torresdale Avenue to watch a film about the sun energy plant in Egypt. The film was brought back to the United States by Shuman himself and became the talk in Tacony for the next few months.¹³

Earlier solar pioneers, such as Augustin Mouchot in Europe and John Ericsson in the United States developed solar engines during the 1870s and 1880s but their inventions could not compete against the lower cost of coal as a source of energy. Shuman's invention was different than the earlier engines through his use of a "hot box" rather than mirrors to concentrate the sun's rays. Shuman's solar engine, developed by him between 1906-1918, is today recognized as the first commercially viable solar engine.¹⁴

¹² Silcox, Dr. Harry C. *Remembering Northeast Philadelphia*. Pennsylvania: The History Press, 2009: 52- 53.

¹³ Silcox, Dr. Harry C. *Remembering Northeast Philadelphia*. Pennsylvania: The History Press, 2009: 54.

¹⁴ Hagley Library. <https://hagleylibrary.wordpress.com/2009/04/30/spotlight-on-collections-the-direct-acting-solar-engine/>. Accessed 15 August 2019.

Unfortunately, his dream ended when World War I broke out soon after completion of the energy plan. The plant's materials were recycled for war materials.¹⁵ Even with his dream that ended due to World War I, he recognized that fossil fuels were finite, and hoped that solar energy would help make the earth sustainable. Despite his prediction, oil became cheap and the internal combustion engine became convenient delaying solar energy experiments for many years.¹⁶ Shuman continued to work on solar energy experiments until his death in 1918.

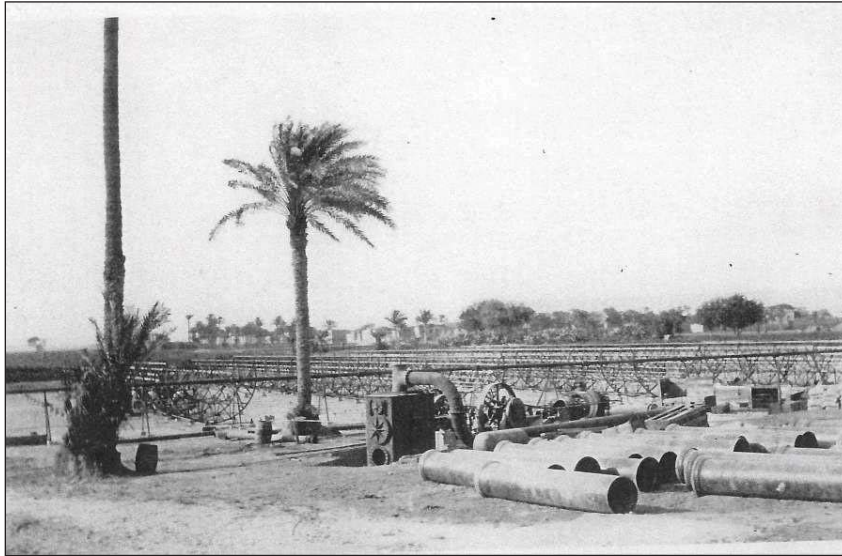


Figure 36: Progress with the sun energy plant in Maadi, Egypt. *Source: Historical Society of Tacony.*

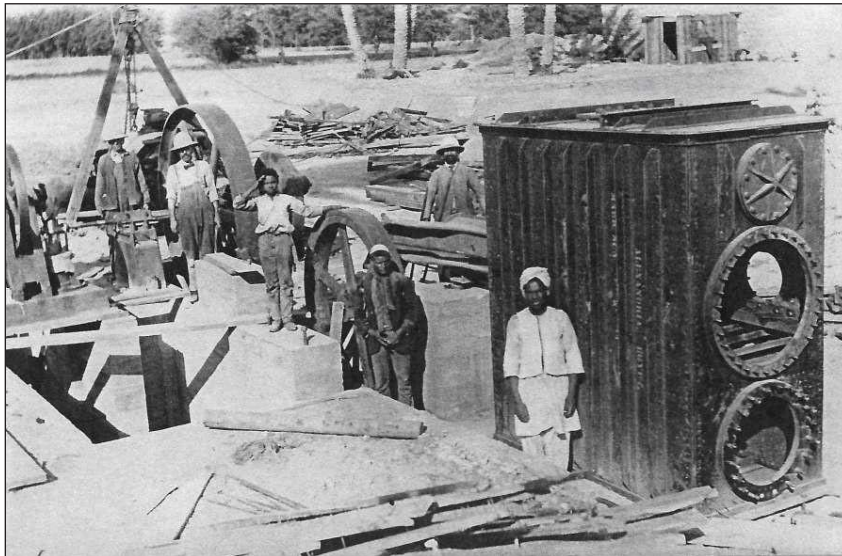


Figure 37: Construction in Maadi, Egypt. *Source: Historical Society of Tacony.*

¹⁵ *Cosmos: A Spacetime Odyssey Season 2*, episode 12, “The World Set Free,” narrated by Neil deGrasse. Tyson, aired on June 1, 2014 on Fox.

¹⁶ Silcox, Dr. Harry C. *Remembering Northeast Philadelphia*. Pennsylvania: The History Press, 2009: 54.

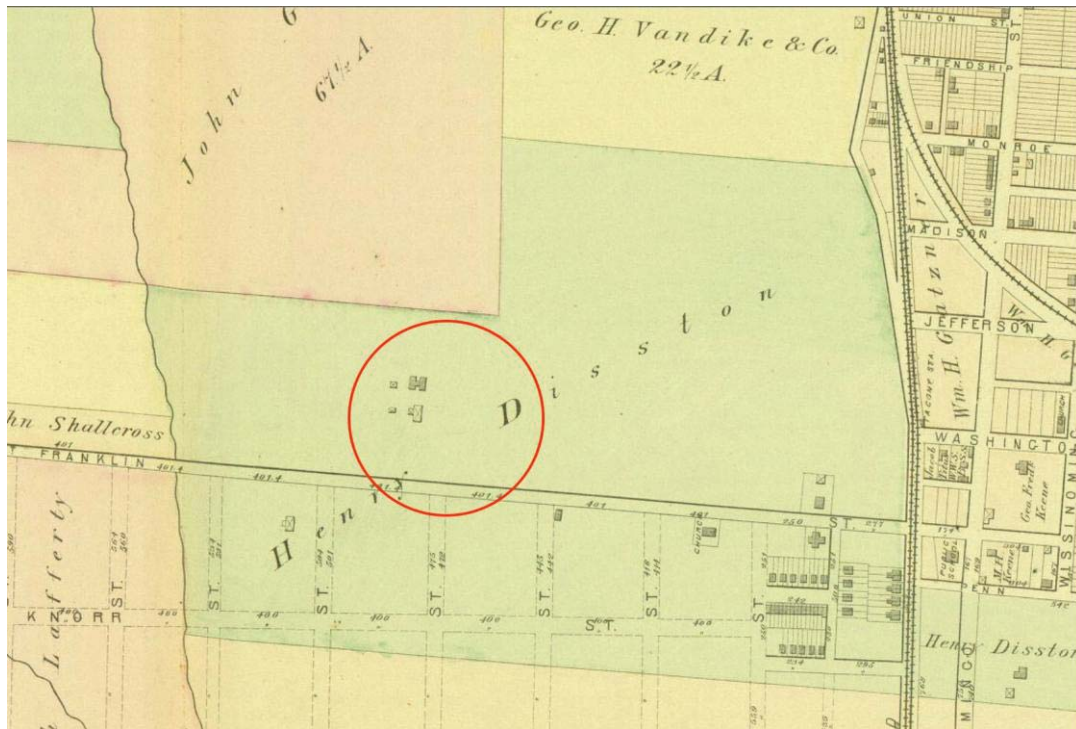
Conclusion:

Frank Shuman's "Inventor's Compound" located at 4600 Disston Street and 6913 Ditman Street, survives as a reminder of industry and invention in Tacony at the turn of the 20th century. 4600 Disston Street and 6913 Ditman Street are significant under *Criteria A and J* for their association with the life of Frank Shuman and whose inventions—including pioneering glass and solar power innovations—exemplifies the cultural, economic, social and historical heritage of Tacony and should be designated to the Philadelphia Register of Historic Places.

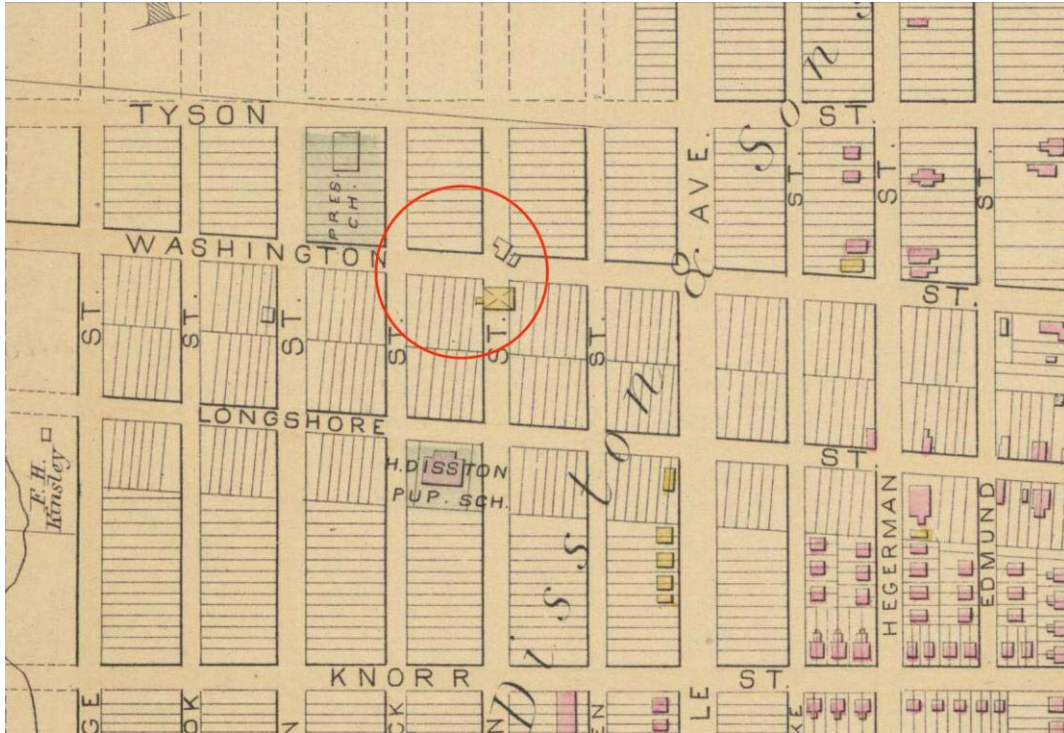
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- Zebe, Mike. “Early 20th-century inventor harnessed the sun in Tacony.” *The Philadelphia Daily News* (Philadelphia, PA), July 1, 1993.

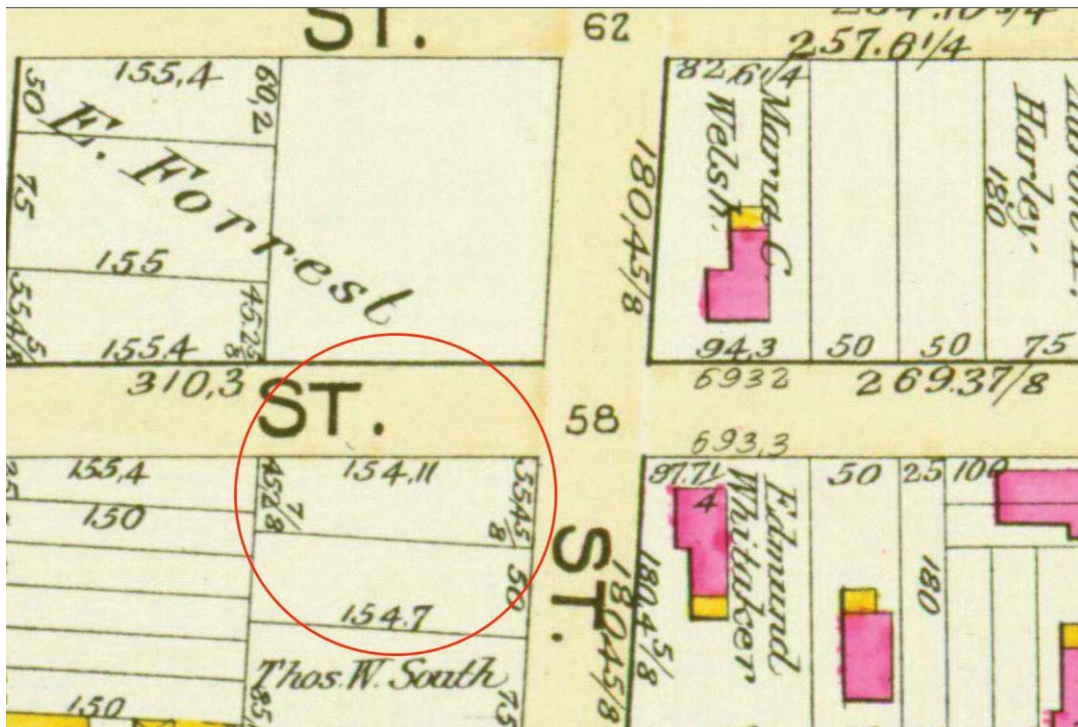
APPENDIX



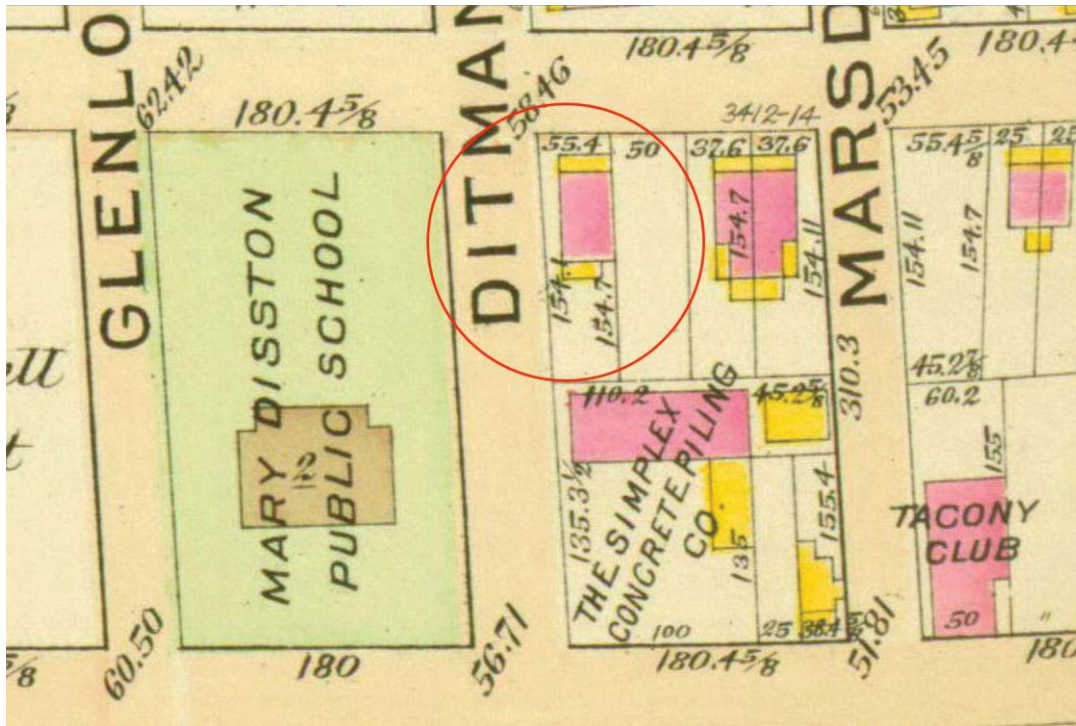
Detail of land before Shuman House, Plate J, G.M. Hopkins, *City Atlas of Philadelphia by Wards*, Complete in 7 Volumes, Vol. 3, 23rd Ward (Philadelphia, 1876)



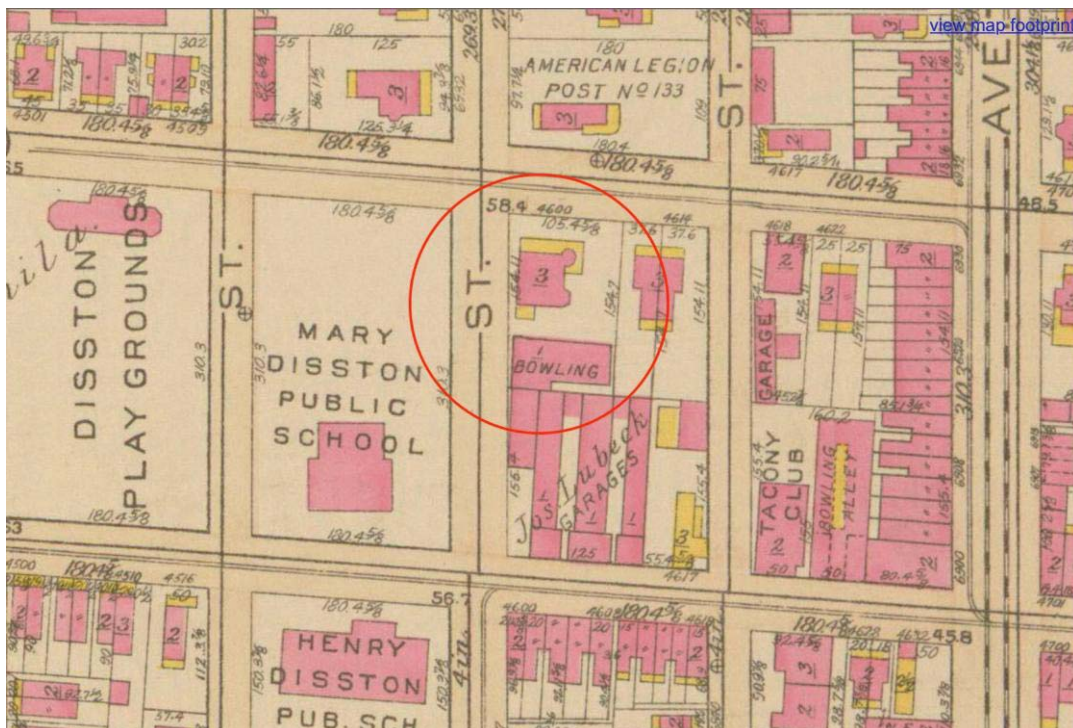
Detail of land before Shuman House, Plate 2, G.M. Hopkins, *Atlas of Properties near the Philadelphia and Trenton Rail Road (New York Div., Pennsylvania Rail Road), Frankford to Trenton* (Philadelphia, 1885)



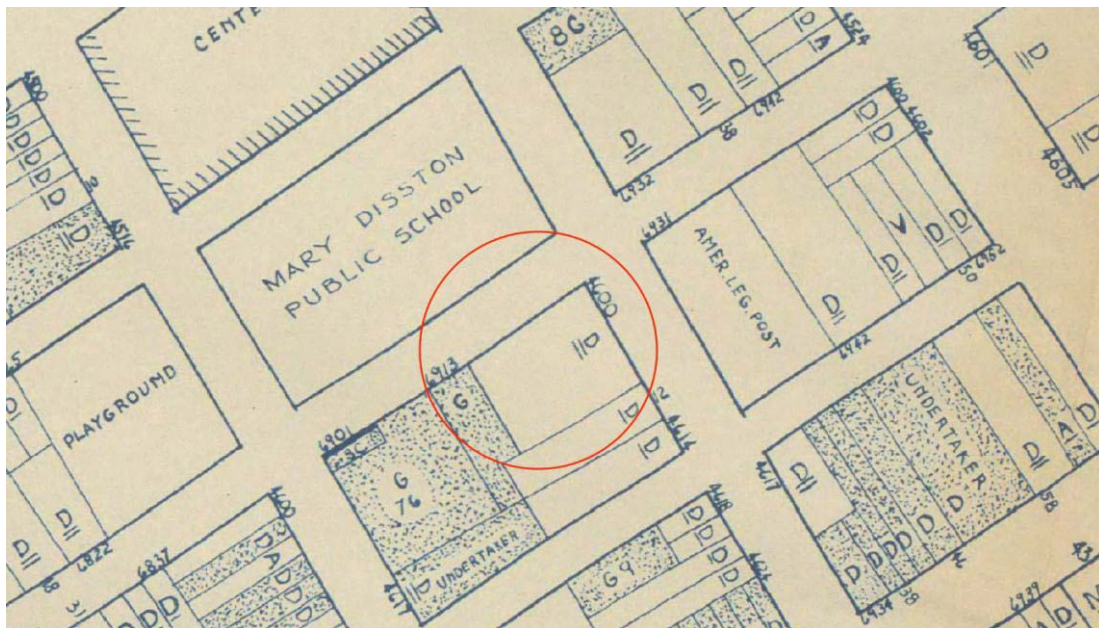
Detail of where the Shuman house would be at, Plate 10, Geo. W. and Walter S. Bromley, *Atlas of the City of Philadelphia, 23rd & 35th Wards*, from actual surveys and official plans (Philadelphia, 1894)



Detail of Frank Shuman house, Plate 17, J.L. Smith, *Atlas of the 23rd, 35th, & 41st Wards of the City of Philadelphia* (Philadelphia, 1910)



Detail of Frank Shuman house with bowling alley, Plate 19, Geo. W. and Walter S. Bromley, *Atlas of the City of Philadelphia, 23rd and 41st Wards* (Philadelphia, 1929)



Detail of Frank Shuman house, Plate 7C-2, Plans & Registry Division, Bureau of Engineering Surveys & Zoning, Department of Public Works, Federal Works Progress Administration for Pennsylvania, *Philadelphia Land Use Map*, Land-Use Zoning Project No. 18313 (Philadelphia, 1942)



Frank Shuman House in 2005. Front Side View
Source: Historical Society of Tacony



Frank Shuman House in 2005. View: Southeast Side
Source: Historical Society of Tacony



Frank Shuman House in 2005. View: Northeast Side
Source: Historical Society of Tacony



Frank Shuman House in 2005. Close-up of the front porch
Source: Historical Society of Tacony

the "popular trend among inventors was to get away from people, go out to the woods, and an idea would come to you from God. It was thought important not to have the world misdirect you."

Shuman's work on the tower, and later his invention of a cheap method of installing concrete pilings for building foundations, brought him to the attention of industrialist Jacob Diston and the Philadelphia mogul John W. Aldrich. With their backing, Shuman went about developing his inventor's compound.

Solar energy, apparently, had always intrigued Shuman. More than 60 years before the solar revolution, he wrote in a 1906 time when fossil fuels would be king, "The time when solar energy would become the world's hope," *Silcox* wrote in his book, "The History of Tacony, Holmesburg, Mayfair."

"One thing I feel sure of," Shuman wrote, "and that is, at the end of the race, we will finally utilize sun power or revert to barbarism."

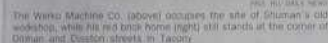
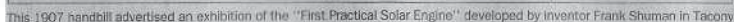
Inventors had been tinkering with solar energy as far back as ancient Greece. But modern scientists couldn't create a functional solar plant that could harness enough energy at a practical cost. Shuman himself believed that size and cost were "the rock on which, thus far, sun power propositions were wrecked."

Shuman copied other inventors' designs for so-called "hot boxes" that collected sunlight and drove low-temperature engines. Visitors to the Shuman compound recall seeing a variety of laboratory experiments involving toy train engines powered by the sun, according to Sileas.

In August 1907, Shuman announced he was ready for a public demonstration.

Handbills were distributed, inviting the public to attend an "Exhibition Run of the First Practical Solar Engine at 3400 Disston Street (now numbered as the 4400 block), on any clear afternoon between noon and 3 p.m. during the next two weeks." The demonstrations were so well received that he

See SOLAR Page NE-7



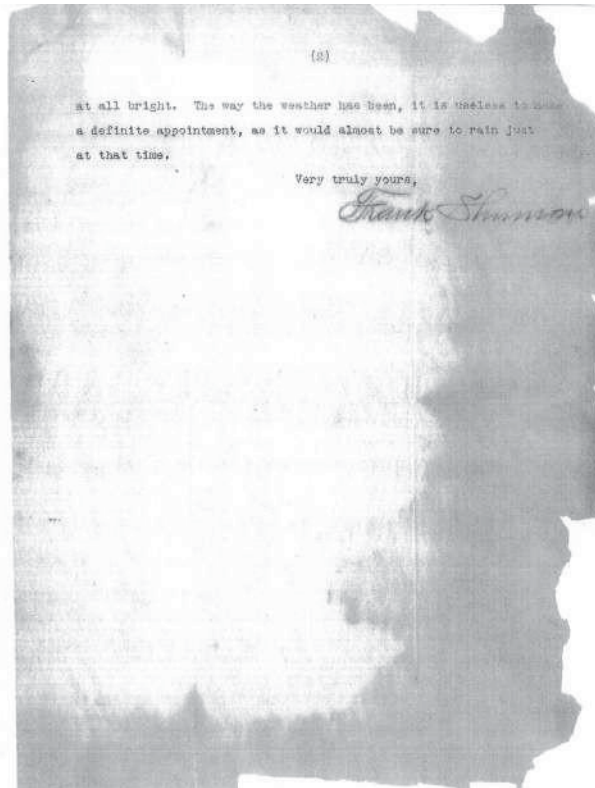
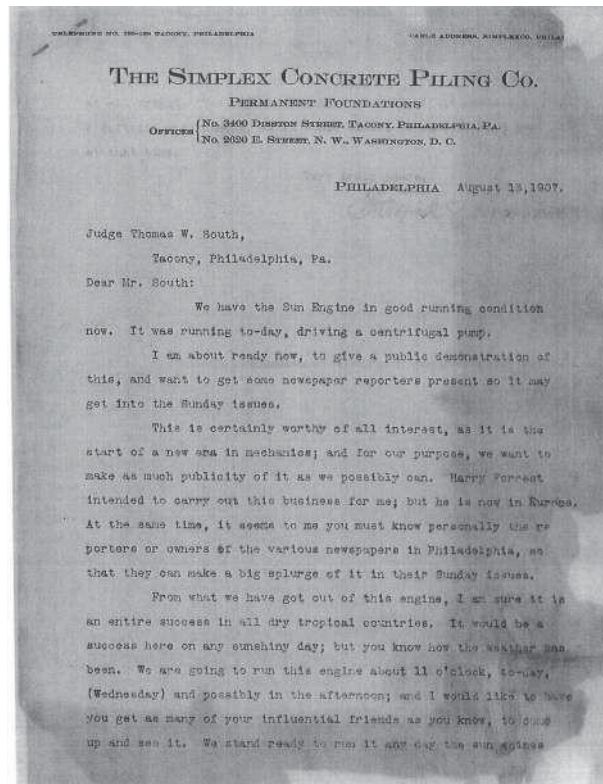
Solar energy pioneer made his bright ideas work in Tacony

Continued from Page HE-1
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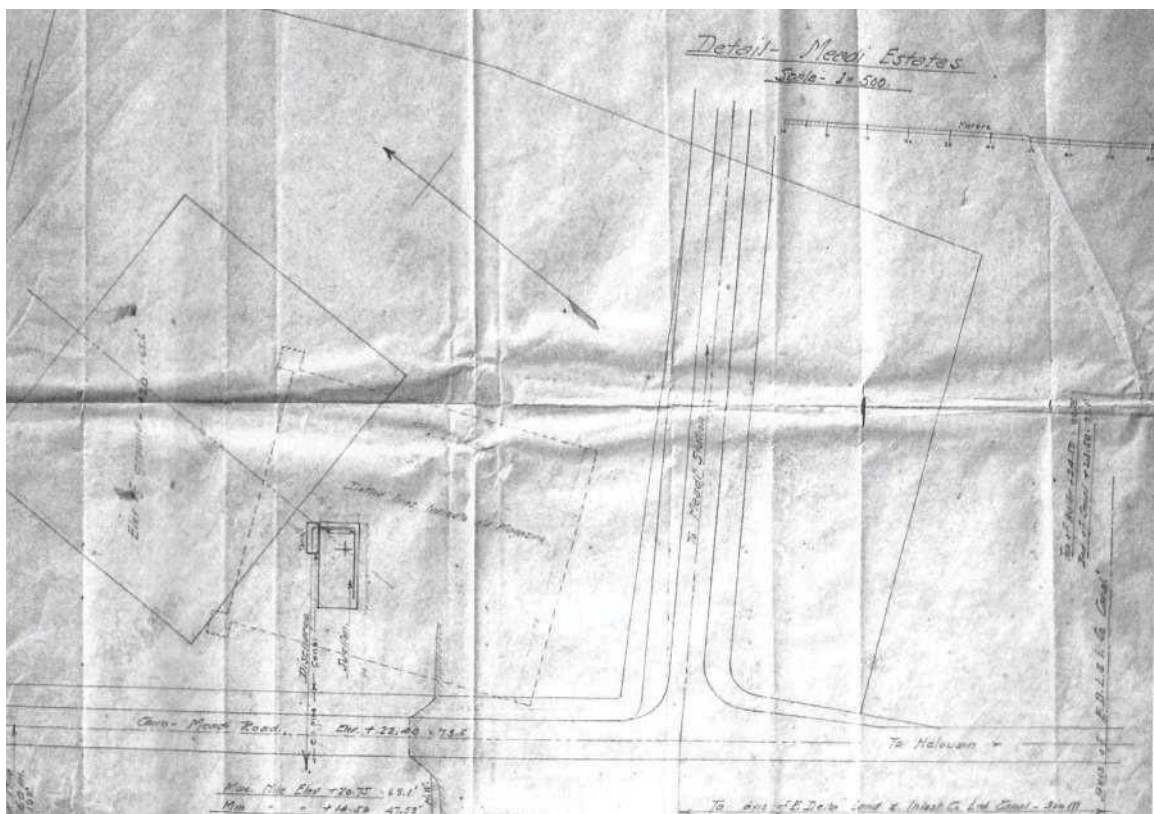
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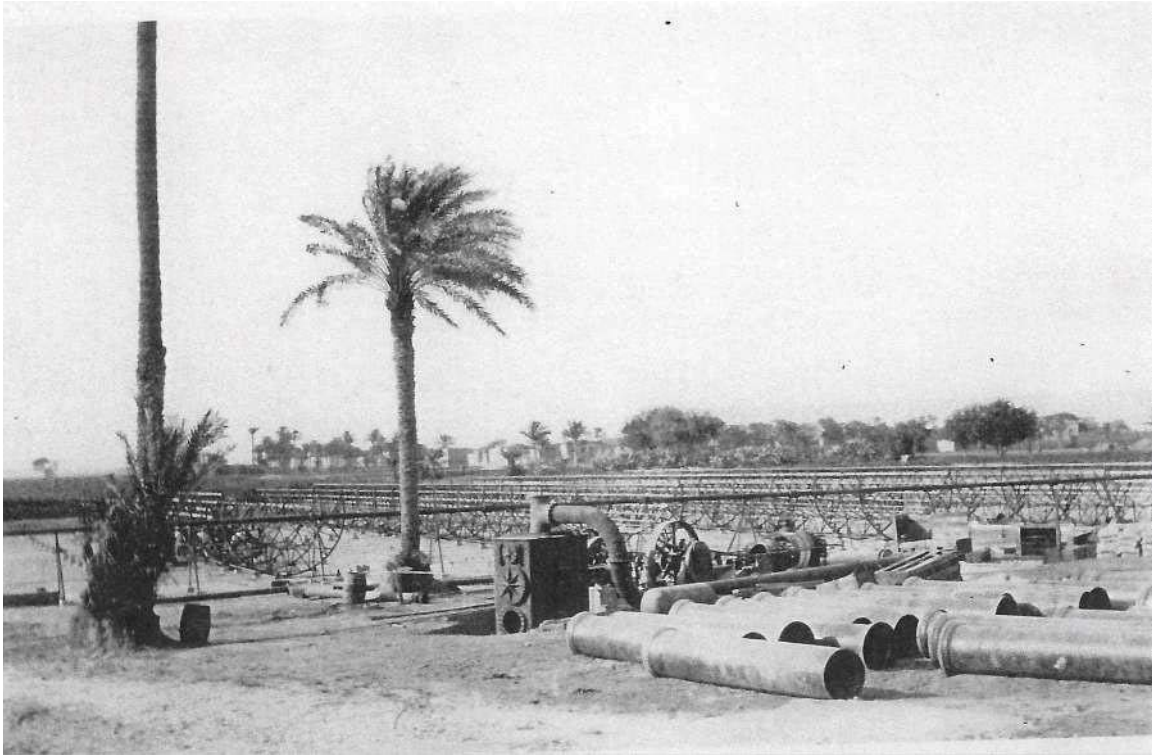
Newspaper from 2009 that talked about Shuman's impact on solar energy
Source: "Frank Shuman: *Our ray of sunshine*" in *Northeast Times* by Dr. Harry C. Silcox



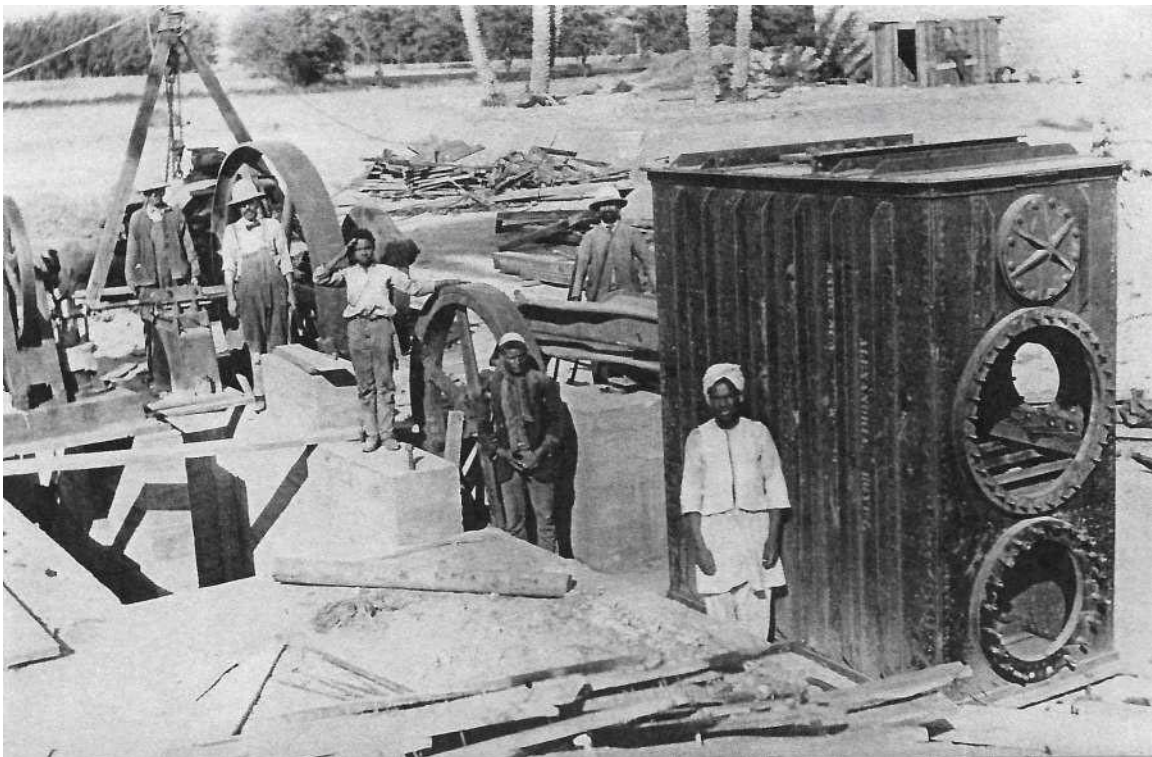
A Letter to Thomas South from Frank Shuman, saying he's ready to demonstrate his sun machine in 1907
Source: Historical Society of Tacony



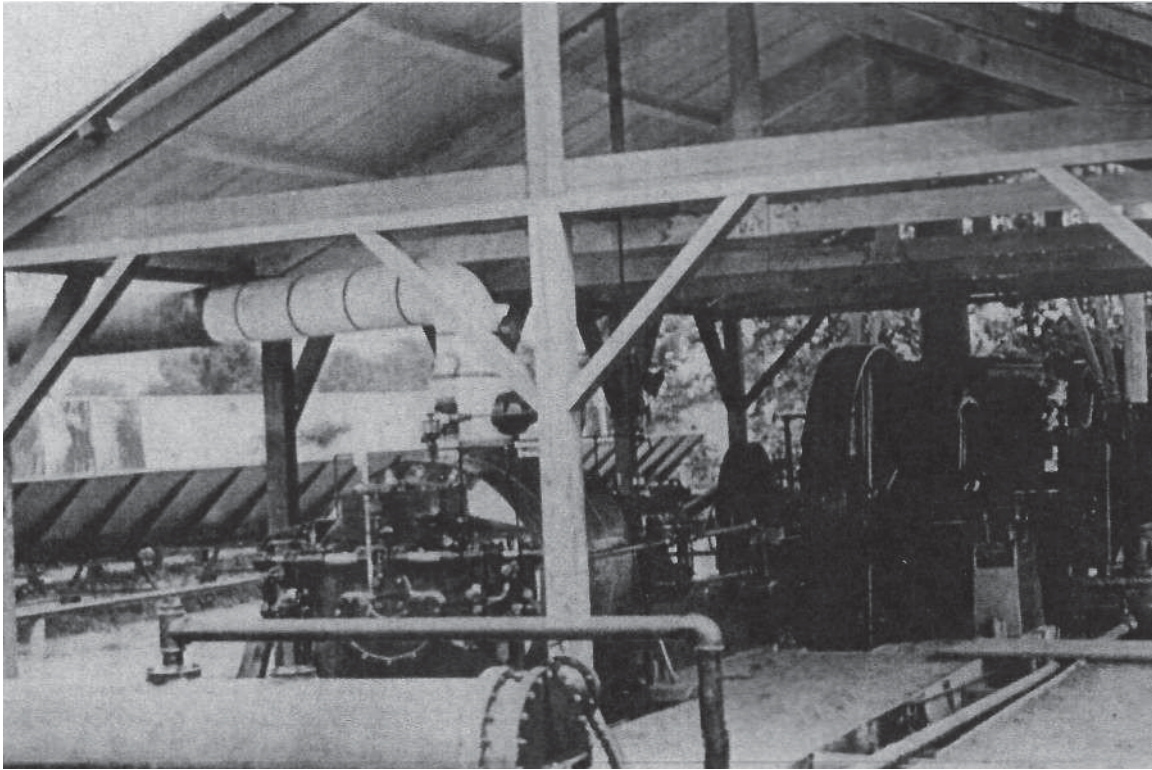
Hand drawn map of the solar plant at Maadi drawn by Shuman
Source: Mark Shuman, grandson of Frank Shuman



Progress with the sun energy plant in Maadi, Egypt
Source: Historical Society of Tacony



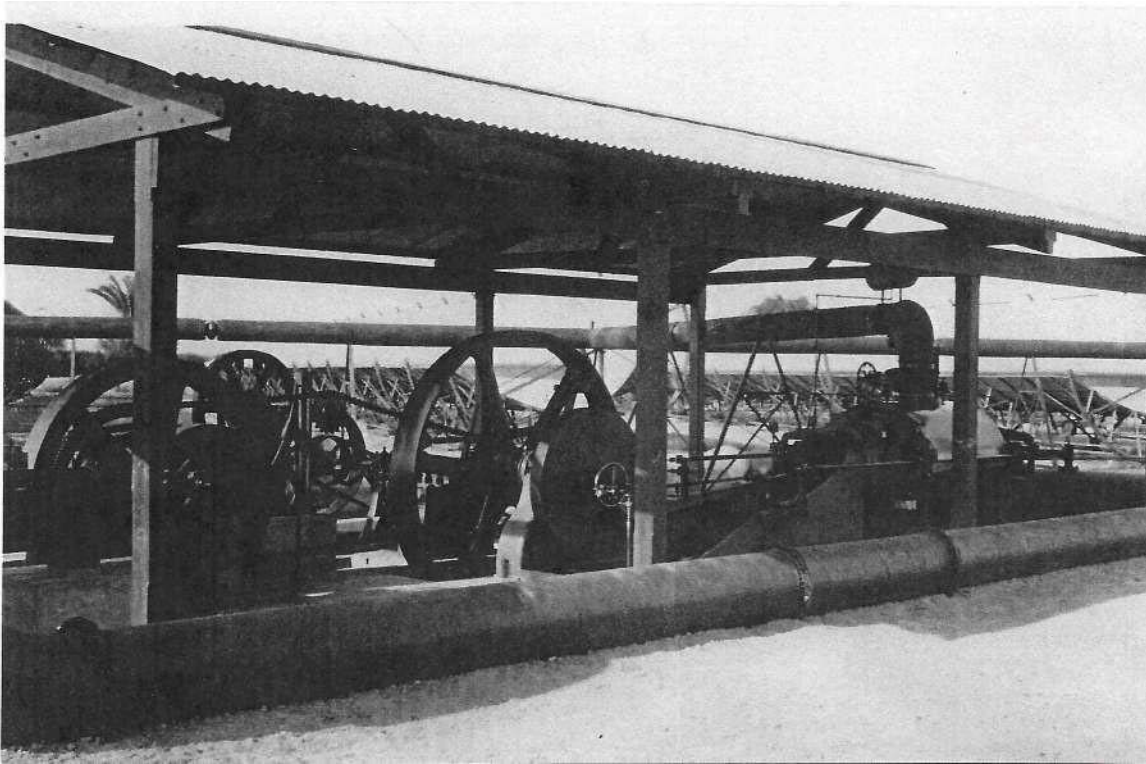
Progress with the sun energy plant in Maadi, Egypt
Source: Historical Society of Tacony



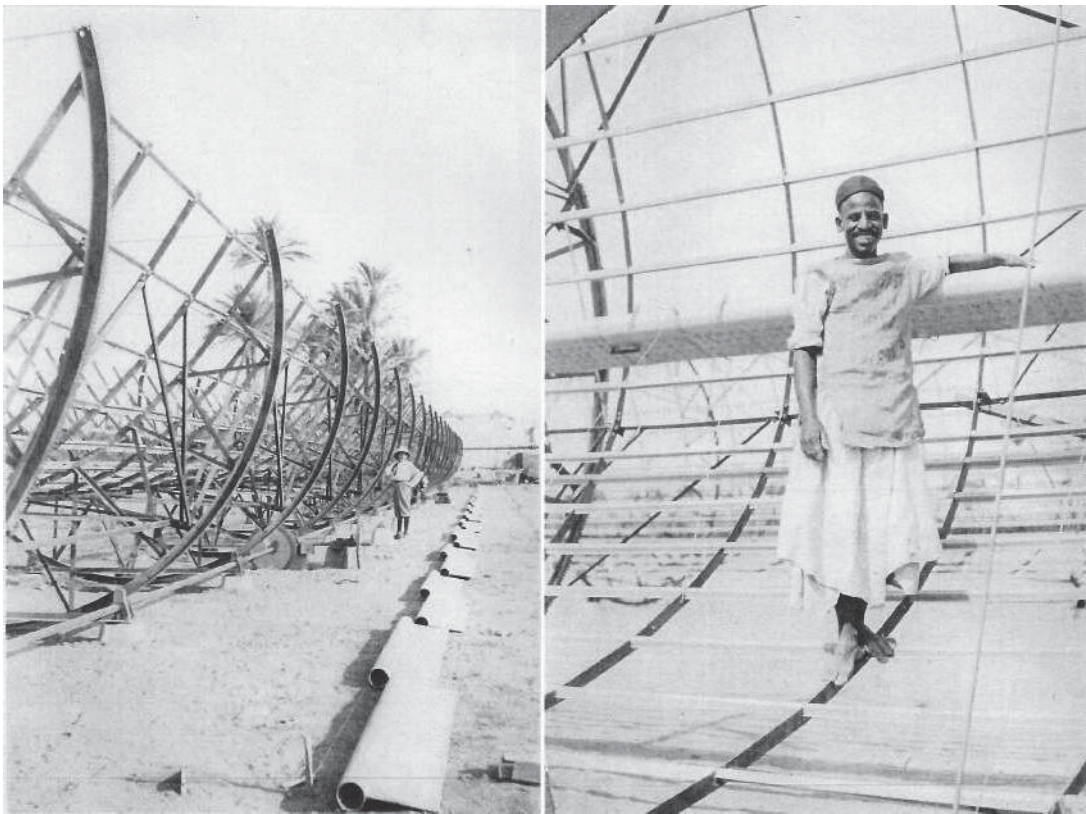
Sun energy plant engines
Source: Historical Society of Tacony



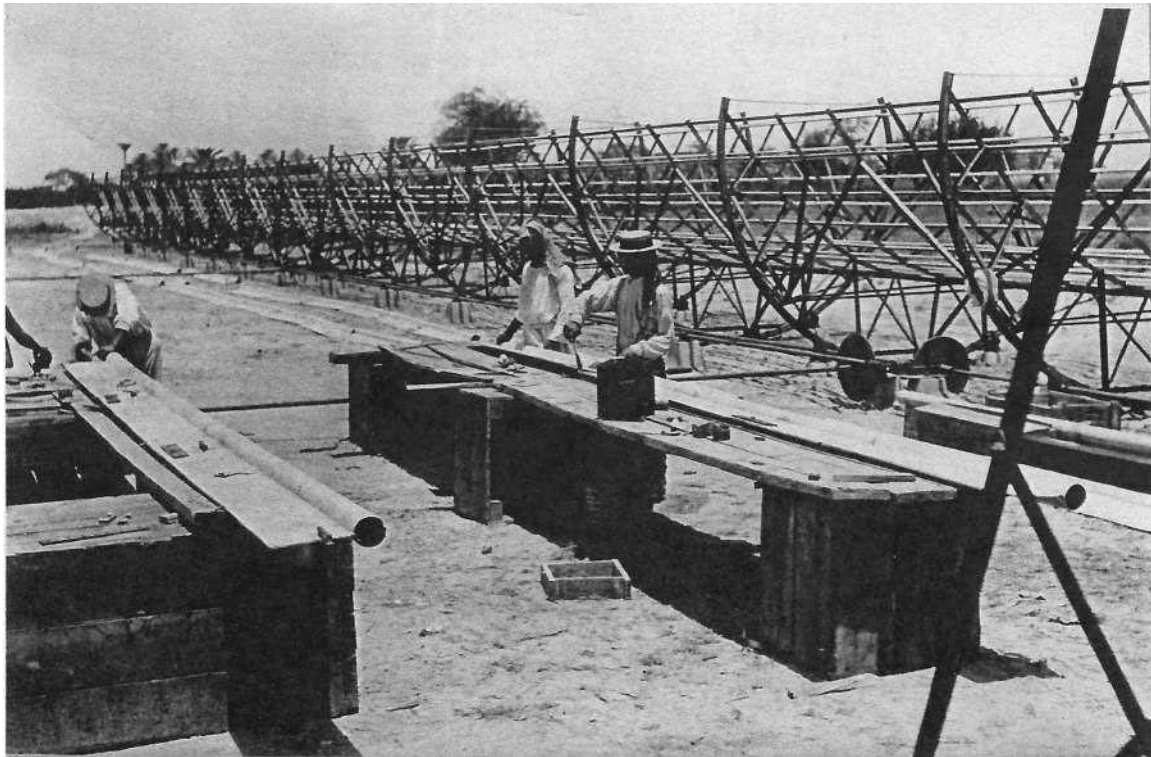
Sun energy plant engines
Source: Historical Society of Tacony



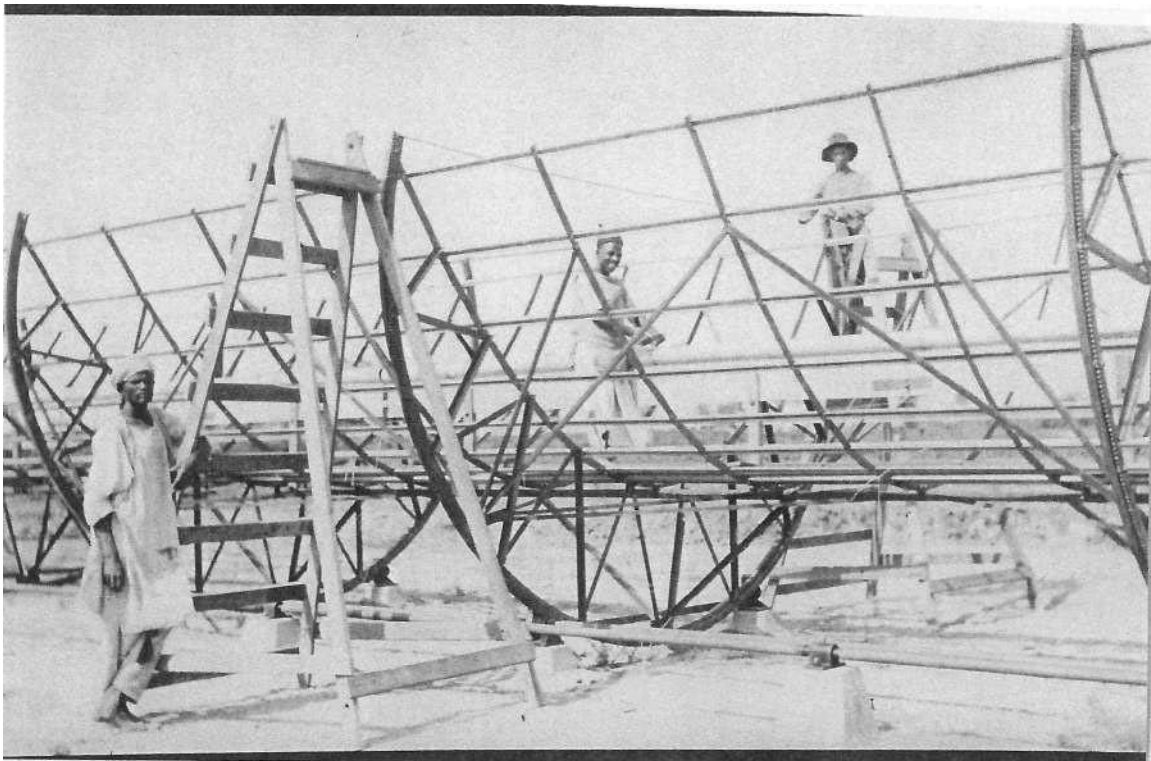
Sun energy plant engines
Source: Historical Society of Tacony



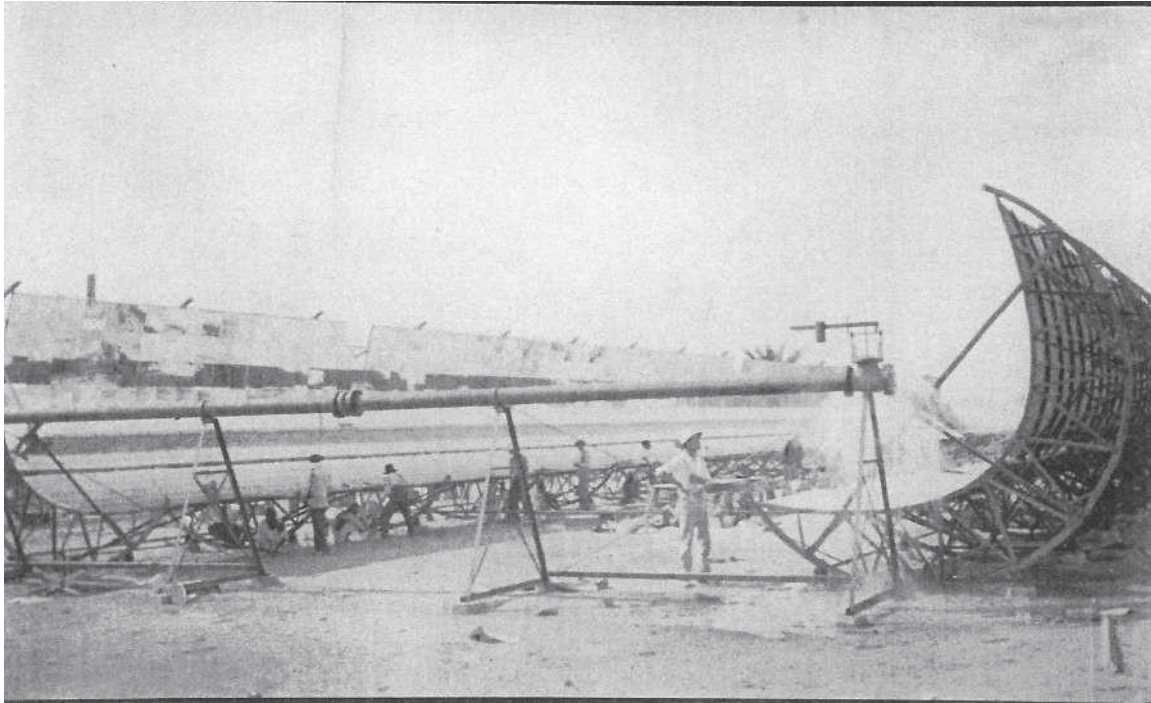
Building the sun energy plant
Source: Historical Society of Tacony



Building the sun energy plant
Source: Historical Society of Tacony



Building the sun energy plant
Source: Historical Society of Tacony



Testing the sun energy plant
Source: Historical Society of Tacony

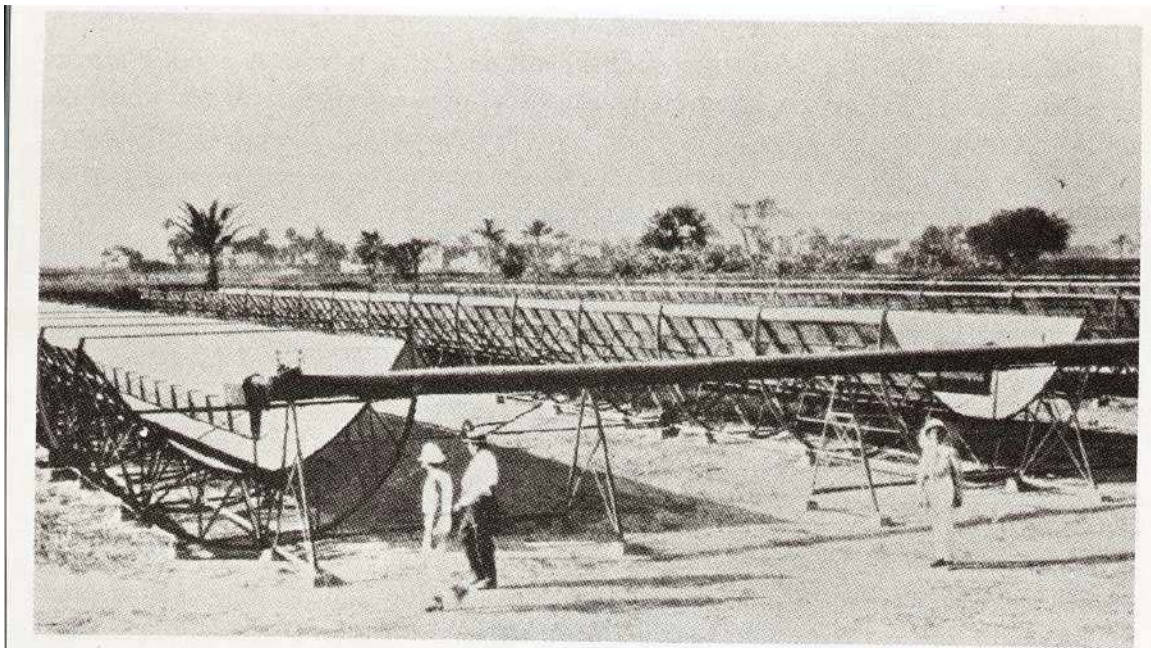


Fig. 1.8 A view from the south of the Shuman-Boys solar collector system constructed at Meadi, Egypt, in 1913.

Frank Shuman - U.S. Patents¹⁷

Number	Date filed	Issue date	Description
D37803	December 18, 1905	January 30, 1906	Design for Sheet-Glass
D43349	August 19, 1910	December 17, 1912	Design for Sheet-Glass
483020	July 6, 1892	September 20, 1892	Process of Embedding Wire-Netting in Glass
483021	July 6, 1892	September 20, 1892	Machine for Embedding Wire-Netting in Glass
510716	September 22, 1893	December 12, 1893	Machine for Embedding Wire in Glass
510822	December 29, 1892	December 12, 1893	Process of Manufacturing Wire-Glass
510823	December 29, 1892	December 12, 1893	Machine for Manufacturing Wire-Glass
531874	July 5, 1894	January 1, 1895	Process of Cutting Wire-Embedded Glass
542539	November 14, 1894	July 9, 1895	Apparatus for Removing Obstructions from Car-Tracks
545826	May 3, 1894	September 3, 1895	Ladle for Dipping Glass
546196	May 28, 1894	September 10, 1895	Apparatus for Embedding Wire in Glass
561920	November 14, 1892	June 9, 1896	Machine for Embedding Wire in Glass
574458	November 23, 1893	January 5, 1897	Machine for Embedding Wire in Glass

¹⁷ Wikipedia. https://en.wikipedia.org/wiki/Frank_Shuman. Accessed 10 August 2019. Random patent numbers were cross-checked on USPTO web site to confirm accuracy of list and patents. This web link provides patent images and specifications. <http://patft.uspto.gov/netahtml/PTO/patimg.htm>. Accessed 10 August 2019.

Number	Date filed	Issue date	Description
593440	September 17, 1896	November 9, 1897	Process of Treating Metal Structures
605754	January 20, 1896	June 14, 1898	Process of and Machine for Embedding Wire in Glass
647334	July 21, 1897	April 10, 1900	Process of Making Rolls
661649 ^b	July 21, 1900	November 13, 1900	Mercerizing-Machine
670438 ^a	September 20, 1900	March 26, 1901	Machine for Molding Glass
671240	October 13, 1900	April 2, 1901	Process of Extinguishing Fires
673067	September 20, 1900	April 30, 1901	Mercerizing-Machine
727004 ^a	June 14, 1902	May 5, 1903	Meshed Wire for Wire-Glass Manufacture
727005 ^a	June 14, 1902	May 5, 1903	Manufacture of Wire-Glass
727006 ^a	June 14, 1902	May 5, 1903	Method of Manufacturing Wire-Glass
727007 ^a	June 14, 1902	May 5, 1903	Process of Manufacturing Wire-Glass
733286	January 13, 1903	July 7, 1903	Removable Pile for Forming Concrete Piles
733287	April 23, 1903	July 7, 1903	Process of Making Concrete Piles
733288	January 13, 1903	July 7, 1903	Removable Pile for Forming Concrete Piling

Number	Date filed	Issue date	Description
733335	June 4, 1903	July 7, 1903	Process of Forming Openings in the Ground
733336	April 23, 1903	July 7, 1903	Process of Forming Concrete Piles
733337	April 23, 1903	July 7, 1903	Process of Forming Concrete Piles
735680	April 23, 1903	August 4, 1903	Process of Making Concrete Piles
739268	June 8, 1903	September 15, 1903	Process of Making Concrete Piles
752003	April 23, 1903	February 9, 1904	Process of Forming Concrete Piles
756805	January 13, 1903	April 5, 1904	Removable Pile for Forming Concrete Piling
763212	February 5, 1904	June 21, 1904	Preparatory Pile for Use in Forming Concrete Piles
763213	February 25, 1904	June 21, 1904	Method of Forming Concrete Piles
786058	April 7, 1904	March 28, 1905	Process of Manufacturing Wire-Glass
792172 ^a	March 20, 1905	June 13, 1905	Process of Making Wire-Glass
805936	January 9, 1905	November 28, 1905	Concrete Piling and Method for Making the Same
806755	April 21, 1904	December 5, 1905	Pile for Piers or Pier Casings
806587	April 21, 1904	December 5, 1905	Pier and Pier Casing

Number	Date filed	Issue date	Description
817595	April 21, 1904	September 18, 1906	Setting Concrete Piles
831481	July 26, 1905	April 10, 1906	Constructing Piles
875857	June 14, 1902	January 7, 1908	Method for the Manufacture of Wire-Glass
876307	June 14, 1902	January 7, 1908	Method for the Manufacture of Wire-Glass
889341	July 20, 1897	June 2, 1908	Roll and Process for Making Same
898517	May 31, 1906	September 15, 1908	Concrete Pile and the Process of Constructing the Same
899339 ^b	December 22, 1905	September 22, 1908	Extracting Grease and Potash Salts from Wool
899440 ^b	December 29, 1905	September 22, 1908	Apparatus for Extracting Grease and Potash Salts from Wool
905469 ^a	March 20, 1905	December 1, 1908	Wire-Glass Structure
957477	March 20, 1905	May 10, 1910	Method of and Means of Annealing Glass
979579	March 18, 1907	December 27, 1910	Utilizing Waste Heat of Compressors
992814	May 1, 1907	May 23, 1911	Utilizing Waste Heat of Distillation
1002768	July 20, 1907	September 5, 1911	Utilizing Heat for the Development of Power
1014418	December 13, 1907	January 9, 1912	Process for Utilizing Waste Heat of Distillation

Number	Date filed	Issue date	Description
1156186	March 7, 1906	October 12, 1915	Method of Making Composite Piles
1167944	July 20, 1909	January 11, 1916	Method of and Means for Melting Metals
1200893	January 9, 1914	October 10, 1916	Steam-Engine
1218219	March 9, 1910	March 6, 1917	Steam-Engine
1240890 ^c	September 30, 1912	September 25, 1917	Sun-Boiler
1258482	October 2, 1915	March 5, 1918	Pile Form and Method of Driving the Same
1281860	October 2, 1915	October 15, 1918	Apparatus for Forming Piles
1310253	February 25, 1916	July 15, 1919	Submarine and Method of Operating the Same
1420345	March 23, 1916	June 20, 1922	Danger Signal

^a with Arno Shuman

^b with Constantine Shuman

^c with Charles Vernon Boys

HISTORICAL SOCIETY OF TACONY

Allen W. Wetter, Founder

Louis M. Iatarola
President

Michael Barone
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William J. Pulaski
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Charles McCloskey
Secretary



Louis A. Iatarola, President Ex-Officio

July 24, 2019

Philadelphia Historical Commission
Committee on Historic Designation
One Parkway, 13th Floor
1515 Arch Street
Philadelphia, Pennsylvania 19102

Attention: Jonathan E. Farnham, Ph.D., Executive Director

Dear Dr. Farnham:

The purpose of this letter is to convey the strong support of our organization regarding the nomination of the Frank Shuman house and inventor's compound to the Philadelphia Register of Historic Places. Located at 4600 Disston Street and 6913 Ditman Street, these buildings have been prominent and notable in Tacony since 1895 and lie within the boundaries of the Tacony-Disston Community Development National Historic District.

These buildings hold a significant place in the history of Tacony and our country. Generally accepted as America's solar power pioneer, Frank Shuman exemplified why neighborhoods like Tacony were known as the "Workshop of the World." By preserving his home and workshop, we will be able to teach future generations about this influential person and his groundbreaking work.

This designation will assure that these buildings, built by Peter E. Costello, can continue to be used as a multi-family dwelling and machine shop space or adapted for alternative uses. On behalf of our membership and Board of Directors, I would like to thank Yen Ho for her fine work on this nomination and thank the Historical Commission for its consideration.

Very truly yours,



Louis M. Iatarola
President

cc: Yen Ho