Journal of the Patent and Trademark Resource Center Association

Volume 34 Article 1

6-1-2024

Connecting the Dots: Sharing Hidden Histories of Regional Inventors' Patents

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Abstract

Patent and Trademark Resource Centers (PTRCs) support inventors, entrepreneurs, and researchers with patent and trademark information. Some PTRCs share regional patent history as part of their community outreach. This article focuses on PTRCs that have developed online databases and published works documenting regional patents, thereby providing hidden historical insights for historians, genealogists, and students. It spotlights the development of *Georgiavation,* a historic patent database developed by the PTRC at Georgia Southern University. Finally, this article offers guidance for libraries, museums, and other institutions interested in documenting their state or regional patent histories. This can result in a more inclusive narrative of innovation in the United States, supporting discussions around equity, regional business trends, and educational outreach. By documenting previously overlooked inventors, the project aligns with initiatives to promote racial equity and support underserved communities, reinforcing the importance of inclusive historical narratives in the context of technological innovation.

Introduction

Technology has long been one of the key drivers of economic growth worldwide, especially in the United States. While technology delineates opportunities for economic progress, charting its history illustrates how knowledge itself is produced and distributed. In addition to their primary mandate of providing non-legal advice for potential patentees, the outreach efforts of Patent and Trademark Resource Centers (PTRCs) include sharing the history of intellectual property in their regions. Historical research on U.S. patent inventorship is vital for tracing the history of innovation, technological evolution, and understanding the legal and economic frameworks governing patents. These past stories of innovation foster contemporary inventors and creators, from young school-aged students to adults in science, engineering, business, entrepreneurship, education, creative arts, and the digital humanities.

To advance their charge, some PTRCs have developed online databases, websites, and traditional published works documenting historic patents of inventors from their regions. These unique intellectual property resources provide a historical snapshot of regional innovation for historians to trace regional business and technology trends, for genealogists to inform their family histories and students to utilize for school history projects. Research of this type offers insights into the inventive minds who sought to shape industrial and societal progress throughout our history. Researchers in this area seek to preserve the legacies of innovators, inform contemporary debates on patent-related topics, and contribute to the ongoing dynamics and conversations regarding technological innovation in the United States.

Georgiavation is a new resource utilized to uncover the hidden history of innovation in Georgia. The beta site at the time of this

publication is located at https://digitalcommons.georgiasouthern.edu/georgiavation/. Since addresses of websites may change in the future, here is a persistent identifier:
DOI: 10.20429/ptrc.georgiavation.2024.01.
The *Georgiavation* database and other specialized history databases published by various PTRCs are also found on the Patent and Trademark Resource Center Association (PTRCA) website section devoted to Historical, Regional and Specialized Patent and Trademark Research: https://ptrca.org/history/. The inception and designing process of *Georgiavation* is shared in this article for others to follow so that they might pursue related research and unveil the unique contributions of inventors within their states or regions, highlighting the roles of technological advancements and economic development.

Historic Databases of Inventor Patents from Specific States or Regions

This article provides an introduction for libraries, special collections, museums, and cultural heritage centers focusing on innovation history to learn about *Georgiavation*, a new online database (beta) of over 7,500 historic patents from Georgia's inventors (see Fig. 1). Patent documents provide more than a legal right to an invention; patents also serve as a "primary source for cultural, scientific, and community history" (Hampton, 2017). This article includes background on previous databases which fostered the development of the showcased *Georgiavation* database at a newly opened Patent and Trademark Resource Center (PTRC) in Statesboro, GA. PTRCs are a nationwide network of public, state, and academic libraries that are designated by the U.S. Patent & Trademark Office to disseminate patent and trademark information and to support the diverse intellectual property needs of the public (USPTO, Patent and Trademark Resource Centers, 2024, https://www.uspto.gov/learning-and-resources/support-centers/patent-and-trademark-resource-centers-ptrcs). PTRC outreach efforts include supporting the diversity of IP, which this type of database provides. In addition, historic databases such as *Georgiavation* provide a snapshot of famous inventors from diverse backgrounds. Many PTRCs have created such databases (and related publications), spotlighting the hidden history of such famous inventors of color, including Granville Woods, Elijah McCoy and others (Schlipp, 2021; Eschner, 2017; Mason, 1973). This type of research supports the USPTO initiative in following President Biden's Executive Oder 13985, Advancing Racal Equity and Support of Underserved Communities. Relating the histories of underrepresented communities is a powerful force in giving notice to those who feel left out in the U.S. history of innovation. [1]

Figure 1.
Screenshot of the *Georgiavation* homepage at: https://digitalcommons.georgiasouthern.edu/georgiavation/.

[1] Exec. Order No. 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, January 20, 2021, *Federal Register*, published January 25, 2021.

Besides supporting innovation and economic development by assisting inventors and entrepreneurs with patent and trademark searching, some PTRCs provide regionally focused historical innovation education and outreach with programming, exhibits, online blogs, databases, websites, etc. PTRCs at public (or state) libraries usually provide one-on-one reference, patent and trademark searching sessions for library workshops, and inventor or small business community events. PTRCs at academic (or law) libraries serve both community and campus customers. In addition to what PTRCs at public libraries provide, academic libraries offer intellectual property awareness library instruction sessions for college classes. A few PTRCs at academic libraries provide full-semester, credit-bearing courses covering intellectual property (Crocket Sneed, 1999; Hayes-Rines, 2003; Hoppenfeld, 2020; Irvin, 2018; Jenda, 2005/2006; Schlipp, 2007; Zwicky & Stonebraker, 2020).

As all U.S. patents contain identifying information and location data, the ability to chart the geographic distribution of this data has long been available, but because of formatting issues, the data has not always been presented in a manner that makes research efficient. Since 1975, the United States Patent and Trademark Office (USPTO) has been recording patents electronically but work from the historical period from 1794–1920, has been mostly regionalized. (Petralia, Balland & Rigby, 2016)

At the individual state level, only a limited number of projects have been undertaken to catalog these datasets for practical use. Historical inventor databases delineating state or regional content of U.S. patents were first offered online by PTRCs located in Iowa, Pennsylvania, and Wyoming. The Iowa Invention Database was completed by the Iowa State Library in 2000. A focus on the Pittsburgh and Allegheny City Patentees was introduced shortly thereafter by the Carnegie Library of Pittsburgh. The Wyoming Inventors Database was completed by the Wyoming State Library in Cheyenne in 2003. These databases assist regional history and genealogical researchers to find and access patents that are relevant to their interests and needs (Comfort, 2001; King and Rohan, 2004; Rohan and Saunders, 2003).

Both the Wyoming State Library and the Edmon Low Library at Oklahoma State University (OSU) in Stillwater currently offer exemplary models for displaying historic patent information, which have been referenced for the creation of this Georgia-based iteration. OSU's historical patent database has listings from 1880 until 1907, while the State of Wyoming's Inventor's Database has datasets from 1867 until the present (King and Rohan, 2004; Rohan and Saunders, 2003). By 2007, there were over one dozen specialized historical inventor databases published online from PTRCs, including numerous unique subjects ranging from women inventors to Confederate patents. Database content representing specific states or metropolitan regions were published, including historic patents for Alabama, Idaho, Louisiana, Nevada, Ohio (Cincinnati and Dayton), and South Carolina (Patent and Trademark Depository Library Association, 2007). These databases were, and some continue to be, helpful information tools for regional historians and genealogists looking for patents of their region.

Some of these databases are still available, while others have since ceased due to the retirement of key PTRC representatives or database designers. In some instances, there were technological glitches where there were no backup data files. In other situations, new library administration did not understand the value of these specialized homegrown databases and ended the project. The primary author of this article experienced an unfortunate demise of a database in Kentucky and encourages those creating such databases to maintain backup datasets in the event that

another regional library is able to adopt the database. For example, the Davenport (IA) Public Library inherited the Iowa Inventor Database originally created by the State Library of Iowa (Lewin, 2024).

Besides these regionalized databases, other sources such as indexes, journals, and histories of families and businesses may be available at PTRCs to support regional history and genealogical research. Patents can reveal valuable details about ancestry and innovation. In addition, they help researchers to trace migrations patterns, occupations, and social status of patentees and their families. The list of cited resources at the end of this article offers references to tools that assist researchers to find, access, and interpret patent records for regional history and family genealogy. (See Table 1 for highlights of indexes and listings.) The stories found in such patents reveal remarkable inventors and their contributions to history and society, including underserved innovators of diverse backgrounds. Patents uncover names and locations of ancestors, as well as insights on their creative and inventive abilities (Comfort, 2001; D'Alto, 2004; Hertel, 2003; Melvin, 2002; Rohan, 2005; Zastro, 2015).

Table 1.

Indexes and listings of historic inventors' patents.

Format	Title	Author	Description	Date Coverage
Annual series	***Annual Report of the Commissioner of Patents for the Year…***	U.S. Patent Office	Annual patent listings, includes inventor residence; series title varies.	1837-various years
Spreadsheet	***Black Inventors by State or County of Residence, 1834-2008***	Collins, M.J.	Index of U.S. patents granted to black inventors; not comprehensive.	1834-2008
Monograph	***Name and Date Patents July 31, 1790-July 2, 1836 (1999)***	U.S. Patent and Trademark Office	Comprehensive index of earliest U.S. patents issued prior to fire at Patent Office.	1790-1836
Three volume monographs	***Subject-Matter Index of Patents for Inventors…1790 to 1873 (1874)***	Leggett, M.D.	Three volumes list U.S. patents granted from 1790 to 1873. Inventor residence included.	1790-1873
Monograph	***Women Inventors to Whom Patents Have Been Granted…1790 to July 1, 1888***	U.S. Patent Office	Index of U.S. patents granted to women inventors; not comprehensive	1790-July 1888

Note: This list is not complete. See full list in cited resources at the end of this article.

New PTRC Georgia Grand Opening Autumn 2023

In September 2023, Georgia Southern University (GSU) Libraries became a designated Patent and Trademark Resource Center by the USPTO—the second in the state, following the Georgia Institute of Technology (Georgia Tech) in Atlanta. There was a two-day grand opening inauguration on both the Savannah and Statesboro campuses at GSU. In attendance was Derrick Brent, Deputy Under Secretary of Commerce for Intellectual Property and Deputy Director of the United States Patent and Trademark Office, who formerly served as a professor of the Department of Political Studies and International Studies at GSU. In an onsite interview with WTOC-TV 11 of Savannah, Mr. Brent said, "If we grow innovators, entrepreneurs, and inventors in our country, we can add up to $1 trillion to the gross domestic product. I'm confident we could do that in Savannah." (Syed, C., 2023. September 27, 2023. Georgia Southern celebrating new Patent and Trademark Resource Center. WTOC. https://www.wtoc.com/2023/09/27/georgia-southern-celebrating-new-patent-trademark-resource-center/.)

In the context of the State of Georgia, delving into its historic patents is a new enterprise. Following the grand opening, a research project was initiated by GSU's PTRC to undertake this ongoing project.

Early Georgia Innovations

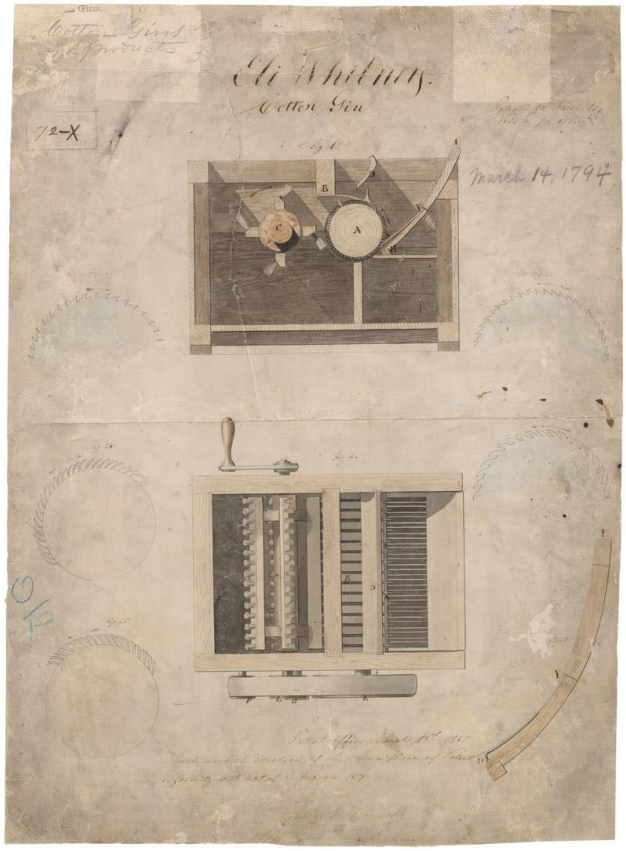
As the PTRC associates at GSU began their research, they uncovered many rich historical gems that had been hidden in early patents granted in Georgia during the colonial, antebellum, and early-nineteenth century periods. Innovation contributions of coastal native Americans, enslaved persons of African descent—including the Gullah Geechee culture—and Scots-Irish colonists were all part of many undocumented developments related to boat-making, basket weaving, and rice farming techniques. During these early days, Georgia stood apart from its Carolina colonies to the north. Georgia's founders, including James Oglethorpe, initiated a utopian vision that did not originally include a slave-based economic model. Further, Oglethorpe proved progressive in other areas. For example, he established the Trustees' Garden in the early 1730s in Savannah based upon botanical gardens at Oxford and Chelsea, England. It was an experimental environment for semi-tropical products like silk, wine, orange trees, olives, and cotton, backed by investors in England including the Crown. The idealistic experiment to promote small freeholder farmers rather than larger plantations failed by the early 1750s. Effective January 1, 1751, the British House of Commons overturned a 1735 act prohibiting slavery in Georgia with one that permitted it (Butler, 1949; Georgia Humanities Council, *New Georgia Encyclopedia*, 2009, entries: "Slavery in Colonial Georgia," and "Trustee Georgia, 1732-175;" Sweet, 2009).

Early centers of agrarian and capital innovation in Georgia emerged in Savannah and Darien, along the Atlantic Coast region. Indeed, over half of the earlier U.S. Patents granted through 1836, in Georgia originated in the Lowcountry coastal plain region stretching from Darien to Savannah, then north along the Savannah River, to Augusta (United States Department of Commerce, Patent and Trademark Office, 1999).

Perhaps the most famous earlier U.S. Patent associated with Georgia was for Eli Whitney and the Cotton Gin (U.S. Patent 72X, granted March 14, 1794; see Fig. 2). "The invention of the cotton gin in 1793 by Massachusetts-born and Georgia-transplanted Eli Witney was fostered by the soaring demand of raw cotton to supply the burgeoning British textile industry" (Gillespie and Delfino, 2008). Whitney developed the invention as a guest at widow Catharine Greene's Mulberry Grove

plantation near Savannah. Industrialization historian Danielle Thorne and Denise Pilato claim that Greene was not only an inspiration for Whitney for his cotton gin patent, but also perhaps a collaborator. Greene's role in advancing Whitney's invention underscores the importance of women's support networks and their impact on innovation overall (Pilato, 2000; Thorne, 2019).

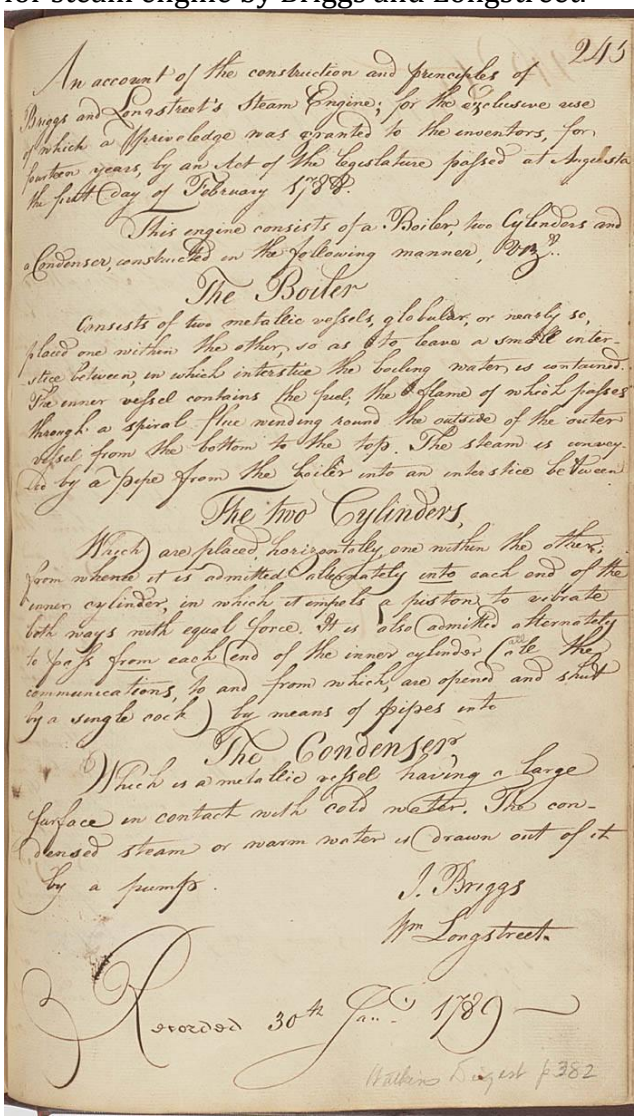
Figure 2.
Primary drawing from Whitney's Cotton Gin patent.



Whitney's U.S. Patent 72X is part of a significant number of approximately 10,000 Early American U.S. Patents which are known as the "X-patents," or merely as the "Name and Date" patents. X-patent are the earliest patents granted by the U.S. government between 1790 and 1836. No patent numbers were assigned for these early patents when originally granted. The first issued patents with numbers occurred in 1836 after a fire at the Patent Office that destroyed all patents onsite. Only an index of this range of patents between 1790 and the fire survived. Of these, about one-quarter of the original duplicates have been found and posted on the Patent Public Search database of the USPTO. Early unnumbered patents issued between 1790 to 1836 were retroactively given numbers preceded by an "X" (Chartrand, 2004; Hampton, 2021).

One of the more well-known X-patents from Georgia is U.S. Patent 401X. This was a prototype for a riverboat steam engine meant to traverse the Savannah River from Augusta south to Savannah. Isaac Briggs of Maryland and William Longstreet of New Jersey, though both were Georgia residents at the time, invented this engine. They obtained their original patent in 1789 (see Fig. 3) through an Act of the Georgia General Assembly on February 1, 1788, which was the Articles of Confederation's final year as the country's governing document (Georgia Archives, 2024). Under the Articles, the federal government did not possess the right to issue patents, so this was issued by the State of Georgia itself for a term of fourteen years. This is most likely the first U.S. Patent for a steamboat (Digital Public Library of America, 2024). Scholarship by PTRC representatives affirm that some of these earlier patents could have been issued by a state, a colony, or even another country like Great Britain (Comfort, 2001; Rohan 2005). After the U.S. Constitution was enacted, Briggs and Longstreet submitted for a U.S. patent application, which was granted on October 9, 1802, with the U.S. patent number of 401X.

Figure 3.
First Georgia General Assembly issued patent for steam engine by Briggs and Longstreet.



An account of the construction and principles of Briggs and Longstreet's Steam Engine; for the exclusive use of which a Privilege was granted to the inventors, for fourteen years, by an Act of the Legislature passed at Augusta the fifth day of February 1788.

This engine consists of a Boiler, two Cylinders and a Condenser, constructed in the following manner, viz.

The Boiler

Consists of two metalic vessels, globular, or nearly so, placed one within the other, so as to leave a small interstice between, in which interstice the boiling water is contained. The inner vessel contains the fuel, the flame of which passes through a spiral flue winding round the outside of the outer vessel from the bottom to the top. The steam is conveyed by a pipe from the boiler into an interstice between

The two Cylinders,

which are placed horizontally one within the other, from whence it is admitted alternately into each end of the inner cylinder, in which it impels a piston to vibrate both ways with equal force. It is also admitted alternately to pass from each end of the inner cylinder into the communications, to and from which are opened and shut by a single cock by means of pipes into

The Condenser,

which is a metalic vessel having a large surface in contact with cold water. The condensed steam or warm water is drawn out of it by a pumps.

J. Briggs
Wm Longstreet.

Recorded 30th Jan. 1789

If you know the story of Robert Fulton and his voyage of the *Clermont* down the Hudson River in New York state, history records him as the first person to pilot a steam-powered boat on August 17, 1807—almost five years after Briggs and Longstreet filed their X-patent (noted above) with the U.S. government. However, Fulton did not obtain his patent until February 11, 1809—U.S. Patent number 996X. Briggs and Longstreet already had their patent and piloted their own steamboat up the Savannah River on August 19, 1807, not knowing what Fulton had done just two days before. Also, Briggs and Longstreet piloted their boat against the Savannah River's current, whereas Fulton traveled downstream with the current to New York City.

When describing Briggs and Longstreet, Lucian Lamar Knight, author of *A Standard History of Georgia and Georgians* from 1917, wrote that "Dame Fortune eluded them at every turn; and it was reserved finally for Robert Fulton, a New Yorker, with his little boat, the *Clermont*, on the waters of the Hudson River, in 1807, to overtake the fleet wings of the fickle goddess" (Knight, 1917). While efforts to create a steam engine go back to the eighteenth century, Knight further claims that Fulton should only get the credit for the invention of the modern paddlewheel steamboat.

Additional early X-patents from Georgia were granted to inventors William Scarbrough of Savannah and Thomas Spalding of Darien. Scarbrough was granted numerous X-patents tied to nautical innovation, such as 3874X Planking Vessels. He was one of the principal co-owners of the *SS Savannah*, which was the first steamship to cross the Atlantic Ocean (Georgia Historical Society, 2024). Spalding was granted 8104X for his Steam-Boiler Indicator. He also advanced scientific farming techniques on his plantations, such as crop rotations and diversification (Georgia Humanities Council, *New Georgia Encyclopedia,* 2009, entry: "Thomas Spalding.")

These *Georgiavation* historical inventor findings will be published on GSU's open access Digital Commons institutional repository at https://digitalcommons.georgiasouthern.edu/georgiavation/. As of the time of publication of this article, a beta site has been launched detailing this earlier period of innovation in Georgia. We recommend checking the latest version of this site, as it is updated with additional patents and inventor information. The goal of this research is for more institutions, such as libraries, special collections, museums, and heritage centers, to

create similar resource databases for their regions. Understanding the historical evolution of patents provides a localized perspective on innovation, legal frameworks, and entrepreneurial endeavors. This research not only honors the history of the inventive minds from Georgia, but also informs discussions on patent-related outreach and its impact on the state's innovation landscape.

Designing Your Own State or Regional Historic Patent Database

Patents of regional interest are a growing part of homegrown datasets published in institutional repositories on university campuses (Stvilia, 2021). These digitization projects offer unique regional content, providing value-driven collections that foster diversity and inclusion.

Likewise, scholarship relating to such digital enterprises is rapidly increasing. These include published books and news articles relating to inventors and their regional stories, including Texas, Ohio, and Kentucky (Alan, 2010; Dalton, 2001; and Schlipp, 2018). State and regional inventor databases of patents further support outreach, research support, and collaborative endeavors (Mays, 2020). A historical study published by Tim Martens in 2021 documents a positive association between the local availability of patent information at PTRCs and local trading volume after a patent is granted (Martens, 2021). Martens' research reveals that specialized PTRC databases, tracking patents by geographic region, display patterns of intellectual capital of potential stock investment transactions.

Another aspect of historical patent databases tied to institutional repositories at academic libraries is how universities manage and showcase their own patents. Recently published literature shares that three PTRCs focused on their institutions' own patents as part of their published historical patent databases. The Oklahoma State University site preserves and disseminates information about its issued patents, while Clemson University and Rice University have implemented similar sites. All three of these sites applied patent management, documentation, institutional repositories, and collaboration within academic environments. Each PTRC focused on different facets of the patent landscape, contributing valuable insights to many fields of patent literature (Reinman and Ahrberg, 2020; Comfort, 2016; Wesolek, 2015; Edlund, 2023). Inclusion of patents of the faculty and staff of GSU will be added in the *Georgiavation* database too.

In the late 2010s, there was a concerted effort to find ways to make USPTO records more usable. Among these databases were the Comprehensive Universe of U.S. Patents (CUSP), HistPat, Sarada-Andrews-Ziebarth (SAZ), Jim Shaw, Kogan-Papanikolaou-Seru-Stoffman (KPSS), and the USPTO Historical Patent Data file (HPDF). These databases all sought to search scanned historic patent records and translate the images into readable text. All worked to a limited degree (Andrews, 2021; Sergio, 2016).

While the USPTO does have a patent database that is searchable, known as the Patent Public Search (PPS), the metadata prior to 1920 is not very robust and requires training and assistance from workers within PTRCs to help researchers find the historic data they are looking for. Adding additional metadata to specific Georgia-based records is one of the several stated goals of the *Georgiavation* database. For instance, if you wanted to search for all patents issued prior to 1899 in PPS, the required Boolean search expression, which is a type of search query that uses Boolean operators (such as AND, OR, or NOT) to combine keywords and phrases to narrow or broaden search results in databases or search engines, to find these results would be "@PD<=18991231 *AND* Georgia," but with this Georgia-based database, users will be able to search date range through a tool in

Digital Commons platform, entering a date range as MM/DD/YYYY through MM/DD/YYYY like seen here:

Without knowing how to utilize Boolean search functions, it is difficult to find the results a user could be looking for. Similarly, if a user wanted to search for improvements to ceiling fans from an inventor Georgia through the PPS, the Boolean expression would look like this:

((electric *ADJ* fan) *OR* (mechanical *ADJ* fan)) *AND* ceiling *AND* Georgia

The search function of our *Georgiavation* regional database cuts through this detailed, expression-heavy searching, and only requires searching for the term *Ceiling Fan.* This catalog seeks to democratize the searching of Georgia-based patents. It allows users who are not familiar with coding language to perform historical searches without the assistance of a PTRC representative walking them through the process of searching via the USPTO's PPS.

In October 2023, GSU's PTRC began compiling all the historical U.S. patents that were filed and granted in the State of Georgia from 1794 to 1920 to be included the *Georgiavation* database. These historical patents were only peripherally available to patrons by searching through assorted databases like Google Patents, The Lens: Patent Search, and through the new Patent Public Search (PPS) database online at the USPTO (Lewin, 2024). However, with the new *Georgiavation* resource, the historical data for all Georgia-based U.S. patents up until 1920 will be indexable, searchable, and easily downloadable. The database fields planned will include last name, first name, suffix (sr., jr., etc.), other designee or assignor, name of the invention, the date in YYYY-MM-DD formatting, patent number, location in Georgia (city and county), and current CPCI classification codes.

Classification codes are helpful when reviewing an era of similar patents to any identified patent(s) by one inventor via the USPTO's PPS database. Browsing by classification codes in an isolated time frame also helps when searching by an inventor name reveals no patent (Melvin, 2002). In some instances, Optical Character Recognition (OCR) scanned images of historic patents are illegible or misread by the search entry in Patent Public Search. The *Georgiavation* database workflow includes a field for notes, if needed, as well as a sources field for historical or biographical data, or any other usable data that lacks a specified field.

The original goal for the project was to leverage emergent technology into automating the data ingest process and was limited in its scope—only the Georgia Lowcountry. Eventually it was expanded to cover the entire state. We reviewed the content of other similar databases such as the ones from Wyoming and Oklahoma for Best Practices. The primary author of this article also managed the research and development of similar databases previously in Ohio and Kentucky. Based upon the advice of a professor of history and GSU's Chair of Digital Humanities, the PTRC staff originally planned to utilize an Application Programming Interface (API) for the automation process. After several months of failed attempts, the PTRC staff realized that Python coding was outside of their skill set. A member of the university's library IT staff recommended that we use Visual Basic, an object-oriented BASIC programming language developed by Microsoft. Once again, the staff was unable to make the code work and outsourced the work to be done by hand to the PTRC's graduate student assistant, who serves as the secondary author of this article. In the time it would have taken to learn a programming language, the assistant was able to complete the database in less than two months. There is clearly room for the growth of data science within this field, but specialized staff would

be recommended regarding similar projects, especially in states with a much broader patent history from the same periods, like New York, Massachusetts, or Ohio.

Many of the historic patents within the USPTO search tool Patent Public Search are listed as "OCR SCANNED DOCUMENT" but this was not the case for a small number of entries where the name of the invention and author, along with other potential metadata fields, were present. Staff also utilized the artificial intelligence (AI) model Google Gemini (previously known as Bard) in cleaning up incomplete, inaccurate, and grammatically incorrect information, either from the database entries that did contain information or our own introduced spelling errors. In other cases, AI was used to update inconsistencies in formatting. For instance, some entries within the database were from a community called Excelsior in Bulloch County, Georgia, but later boundary changes moved the unincorporated community into neighboring Candler County. Similarly, within the USPTO's PPS tool, all listings with included author and/or invention names are written in all capital letters. For instance, U.S. Patent 627,661 is listed as "EMERGENCY-RECORDER FOR AIR BRAKES," but with the help of AI, a large portion of these listings can be fed into the tool all at once, and the AI can be instructed to rewrite them in both uppercase and lowercase letters, e.g., "Emergency-Recorder for Air Brakes," without staff having to manually rewrite each individual listing by hand. The same can be done with inventor names. AI has proved reliable in many situations in backing up staff via data cleanup—though staff must check after the AI for the introduction of its own potential mistakes.

This aggregated data has proven invaluable in two major areas. First, it validates earlier findings indicating Georgia's historical underperformance in patents per capita compared to other states. Though not part of this dataset, investment in higher education since the 1990s, notably through programs like the Georgia HOPE (Helping Outstanding Pupils Educationally) Scholarship, has begun to alter this trend. Second, this accumulated data has shown shifts in urban/rural patent types, as well as participation by women and racial minorities.

The PTRC staff's collected data show that, starting in 1867, a boom of patents related to railroad, electrical, refrigeration, and other technologies were coming specifically from Atlanta, while the rest of the state was still largely creating agriculturally-related patents and improvements to them. Our findings have also shown that participation from women was emerging mostly from the Atlanta area. Of course, the reports of researchers of nineteenth century women inventors, Khan, Pilato, and Thorne, assert that rural female inventors also made significant contributions to technological advancements during this period. Many of the women inventor patents were for domestic applications. Yet some of the patents found in Georgia were for improvements in materials like medical salves, heating elements, and machines for processing foodstuffs. Finding such patents uncover the hidden history of major innovations by women inventors in these regional inventor databases. For example, Denise Pilato sets the record straight that Nancy M. Johnson of Philadelphia, PA was the first inventor of the hand-cranked ice cream freezer for U.S. Patent 3,254 granted September 9, 1843. Johnson's revolutionary ice cream processing innovation had been hidden behind the shadows of William G. Young's similar U.S. Patent 5,601 granted in 1848. (Khan, 2000; Pilato, 2000, Thorne, 2019).

Uncovering the History of Innovation by Overlooked Inventors

For our research of overlooked inventors, we utilized specialized indexes and databases listed at the end of this article that include

African Americans, women, and other underrepresented innovators. Looking at the names of inventors on historic patent documents does not always reveal the overlooked individual. For example, how does one determine if an inventor was indeed African American? Various indexes and databases have been compiled based upon the research of civil rights activist and patent examiner Henry Edwin Baker and his historic list of black inventors from the nineteenth Century (Oakes, 2023; Department of Interior: Patent Office, 1921). In addition, the U.S. Patent Office published an index entitled *Women Inventors to Whom Patents have Been Granted by the United States Government: 1790 to July 1, 1888.* It lists many women inventors of the nineteenth century, helping to verify female patentees. Recently, scholars have confirmed that such lists are incomplete and should be used as a starting point or sample rather than a comprehensive index. Referring to city directories and regional history resources for local history and genealogy can offer additional insights for finding such hidden groups of inventors (Khan, 2000). Reading published books and websites dedicated to inventors of underserved groups has been beneficial when Georgia inventors are disclosed. The three scholars of women inventorship cited above were helpful. Such books and indexes are listed at the end of this article.

Besides PTRCs, other libraries, museums, or cultural heritage centers could create content revealing the hidden history of overlooked innovators. PTRC representatives are able to collaborate with such community partners by shared programming, events, blogs, and even published articles in local news media.

A series of history innovation articles tied to multiple PTRCs have been published by the primary author of this article in the *Northern Kentucky Tribune*, showcasing the innovation of Kentucky and Ohio inventors ranging from African-American Granville Woods, known as the "Black Edison," to early women inventors of Kentucky. These articles use much of the same content that supports historic inventor databases. In addition, city directories, Ancestry.com, and other regional history resources such as local newspapers offer valuable clues.

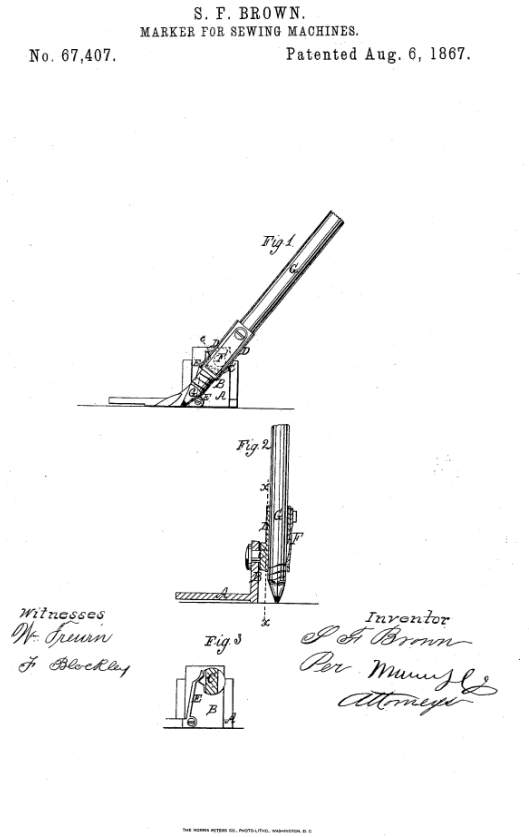
One such example covers Granville Woods. He held numerous patents tied to his research in modernizing railway technology. Yet in 1888, Woods was "unmercifully beaten" by Louisville and Nashville Railroad (L&N) employees. He had purchased a first-class ticket on the L&N train line from Cincinnati to Nashville. During the first stage from Cincinnati to Louisville, Woods sat in the first-class section. When he changed trains in Louisville *en route* to Nashville, a new train crew "objected to a colored man riding through the 'Dark and Blood Ground' [the South] in first class style, and attempted to eject him from the car." When Woods refused to leave first class, the crew attacked him. This incident is missing from the history books but revealed in an 1888 news story in the *Cincinnati Post,* his home region where he was highly respected. The irony is particularly sad considering how Woods' many inventions literally made American railroads safer. In fact, one of his principal patents enabled instantaneous telegraphic communication between the conductors of moving trains and stationmasters. Thanks to Woods' invention, railroads could better monitor the whereabouts of their trains to prevent collisions (Schlipp, 2021).

Our research of historical patent indexes listed at the end of this article led us to what appears to be the first Georgian of color to be issued a patent, Charles Ritchey of Atlanta. Former PTRC representative Margaret Collins created a useful spreadsheet index entitled "Black Inventors by State or Country of Residence, 1834-2008," from where we located Ritchey of Atlanta. His U.S. Patent 592,448 for a Railroad-Switch, was issued on June 15, 1897. From the Lowcountry area, we believe Robert Lee to be the first Black

patentee in Savannah. He received U.S. Patent 2,132,304 for a Safety attachment for automotive vehicles, which was issued on October 4, 1938. The design prevents automobiles from swerving in case of a blown tire. We were able to use the “Black Inventors" index created by Collins of the Illinois State Library as a jumping off point (Collins, 2008, https://ptrca.org/history/). This resource lists patentees of color including the state of Georgia to examine what was already known about patents registered from the area. There are other resources which help in tracking inventors of color by geographic region including civil rights activist and patent examiner Henry Edwin Baker and his historic list of black inventors from the nineteenth century (Department of Interior: Patent Office, 1921; Johnson, 2019; Oakes, 2023).

Sarah F. Browne of Savannah appears to be the earliest female Georgian to hold a U.S. Patent, An Improvement in Marker for Sewing Machines, U.S. Patent number 67,407 (see Fig. 4 for drawing). The patent was granted to Browne on August 6, 1867. It shows a man named Charles W. Brunner of Savannah as the assignee. According to various city directories from the 1870s, as well as the inhabitants listed in censuses of 1860 and 1870, Brunner operated a dry goods store in Savannah. It is likely that Browne worked for Brunner and was about 18 years old at the time of the patent being issued (Estill, 1870, 1874; Haddock, 1871; United States: Bureau of the Census, 1860, 1870).

Figure 4.
Sarah F. Browne’s patent for improvement in Marker for Sewing Machine.


S. F. BROWN.
MARKER FOR SEWING MACHINES.
No. 67,407. Patented Aug. 6, 1867.
Fig 1.
Fig 2.
Fig 3
Witnesses
Inventor
Per
Attorneys

Patent history, as evidenced by *Georgiavation*, offers insights not just into technological progress but also into one of the most troubling episodes in American history. White inventors and their innovations can be directly linked to Native American removal in the Trail of Tears (1837–1839). The discovery of gold in Dahlonega (Lumpkin County, northeast of Atlanta) in 1829, located on Cherokee-held land, led to President Andrew Jackson’s signing of the Indian Removal Act in 1830. Five years later, the Mint Act of 1835 established a new federal mint branch at Dahlonega. (Georgia Humanities Council, 2004, New Georgia Encyclopedia, entry: Gold Rush). This economic transformation had profound effects on the Cherokee people, including displacement, loss of livelihood, and cultural erosion.

By 1849, Georgia's gold holdings had all but dried up and were abandoned, when gold was

discovered in California. Congress closed the mint in 1906. (Georgia Humanities Council, 2004, New Georgia Encyclopedia, entry: Branch Mint at Dahlonega). Today, the Dahlonega Walmart store sits atop the remnants of the Consolidated Gold Mine, now a tourist attraction. (https://consolidatedgoldmine.com/).

Roswell King of Darien, a white man whose name is commemorated in the City of Roswell in Fulton County, north of Atlanta, amassed his wealth during the gold rush era. He held two gold-related U.S. X-patents, including 6138X for a trough that separated gold, and 6139X for a gold washer and separator—both filed in 1830.

This historical connection between the Cherokee removal and patent history emphasizes some of the specific economic drivers behind the 1830 Indian Removal Act and its devastating impact on Native American communities. White Americans profited from the gold on Cherokee lands, demonstrating a direct economic incentive that fueled the permanent displacement of thousands of Georgia's Cherokee population. These stories, linking patent history to broader historical narratives, highlight the importance of this research in uncovering overlooked aspects of Georgia's past and providing a more comprehensive understanding of the nation's history.

A History of the Early Patent Offices: the Patent Office Pony is a book available at most PTRCs. It contains an appendix of Civil War era patents granted by the Confederate Patent Office. There were a significant number of patents issued related to firearms and war implementations, including inventors from Augusta and Savannah, Georgia that are included in the *Georgiavation* database (Kenneth, 1994). This listing is also found on the PTRCA website within the section on Historical, Regional and Specialized Patent and Trademark Research: https://ptrca.org/history/.

Conclusion

On the community engagement front, the *Georgiavation* database provides many useful services. Content retrieved for this database has uncovered the hidden narratives of historically underserved innovators of color and others forgotten or intentionally overlooked. Once again, this supports the USPTO initiative in following President Biden's Executive Order 13985, *Advancing Racial Equity and Support of Underserved Communities.* Relating the histories of underrepresented communities is a powerful force in giving voice to those who sometimes feel voiceless. Overcoming immense social, political, cultural, and political restrictions, these historic inventors broke barriers in helping to create modern America.

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