

Olmsted 200

Two Centuries and More History of Olmsted Falls and Olmsted Township – First Farmed in 1814 and Settled in 1815

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Bruce Banks: His Inventions Helped NASA Soar High

Some people around Olmsted Falls and Olmsted Township might recognize Bruce Banks as a historian. Over the past few decades, he has given many talks and walking tours about Olmsted history. His research into that history has taken him to such places as the Trumbull County Courthouse to see early records of Connecticut's Western Reserve in Ohio and the National Archives in Washington, D.C. Among the items he found were documents that helped refute the long-told erroneous story that "Olmsted" once was spelled with an "a" in it. He also is the co-author of the 2010 book, *The Olmsted Story: A Brief History of Olmsted Falls and Olmsted Township*, which benefitted greatly from the many historical photos he gathered over the years.

However, researching Olmsted history was just a hobby for Banks, who lives in Olmsted Township. In his day job, he made history himself.

That day job was as a researcher for the National Aeronautics and Space Administration at what formerly was the Lewis Research Center and now is known as the John H. Glenn Research Center at Lewis Field. In 2021, the center inducted him into its Hall of Fame. The accomplishments he was cited for included earning 39 patents – the most for any individual in the center's



A WEWS (Channel 5) videographer interviewed Bruce Banks during the book launch for The Olmsted Story: A Brief History of Olmsted Falls and Olmsted Township at Odd Fella's Café (then in the former Grange Hall) at Grand Pacific Junction, August 16, 2010.

history. And that was just his United States patents. He also has one Canadian patent.

Those 40 patents (some earned in conjunction with others) also seem to be the most for any resident of either Olmsted Township or Olmsted Falls, outpacing the 31 patents Theodore TeGrotenhuis obtained over a few decades in the middle of the 20th century (as noted in Issue 111 of *Olmsted 200*). In addition, Banks's work has appeared in at least 276 technical publications and 34 technical briefs, and he has received more than 120 awards for inventions and meritorious performance from NASA and other organizations.





This May 1967 NASA photo shows Bruce Banks working in the Electromagnetic Propulsion Division less than a year after he entered employment at NASA.

physics from the Missouri University of Science and Technology at Rolla in 1966. He went to work on June 27, 1966, for NASA, where he has had a stellar career helping the nation reach for the stars.

After working for NASA for 41 years, Banks retired in 2007. However, "retired" doesn't express accurately what he did because he went right back to work for a NASA contractor, Science Applications International Corporation, which is based in Virginia. He took a job as the company's senior physicist working at Glenn Research Center.

"Same desk, same phone, same colleagues," Banks said in a story for the winter 2021 issue of *Case Alumnus* magazine. "I love my work. I love the people I work with."



This undated NASA photo shows Banks, right, with Jack Weigand as they examine a titanium material used in dental supports research.

On August 13, 2022, Banks wrote in an email to *Olmsted 200*: "I am still working as a contractor for NASA but only part time as a consultant."

According to an online NASA biography, Banks made significant contributions to NASA in electric propulsion, thin-film coatings, surface texturing, and atomic oxygen protection, plus he also "had the uncanny ability to find an array of alternative uses for these technologies in the private sector."

That biography describes atomic oxygen as one of the biggest challenges for long-term space missions: "Single oxygen atoms, naturally found only in space, corrode and weaken external components." It says Banks and his colleague, James Sovey, in the 1980s, developed protective coatings for polymers that were used to make thermal blankets for spacecraft. The Electro-Physics Branch that Banks led at Glenn expanded on that work in the 1990s.

"They developed a silicon dioxide thin-film coating that successfully protected the space station's solar arrays," the NASA biography says. "This prevented the costly process of periodically replacing the blankets, which NASA later estimated would have cost the agency more than \$15 million."



In this May 1987 NASA photo, Banks, right, receives a Power and Technology Division award from Ronald Sovie.

Other work by Banks has included evaluation of coatings for the thermal shields for the Hubble Space Telescope and investigation into ways to apply atomic

oxygen's damaging characteristics to beneficial uses, including sterilization of medical



This 1987 NASA photo shows James Sovey, left, and Banks demonstrating an ion beam sputtering system used to develop deposited metal oxide fluoropolymer atomic oxygen protective coatings.

implants, decontamination of aircraft components, improvement of seals, and the removal of soot and other contaminants from artwork while preserving the pigment.

Technology that Banks and his colleagues have developed has been on 71 space flights as experiments or functional applications. Those flights have been on the Space Shuttle, the International Space Station, 18 communication satellites, three Earth observation satellites and 12 global-position satellites.

"Many of the patents were for NASA's needs and are not for commercial application," Banks wrote in an email to *Olmsted 200* in May. "However, some of the patents have had commercial applications. One such patent is for scratch-resistant sunglasses with diamondlike coatings, which sold over 18 million dollars' worth of sunglasses of which NASA and the inventors were rewarded with a small fraction of that money as royalties."

The U.S. Patent Office issued the first and second patents bearing the name of Bruce Banks on January 5, 1971. The first was for an Ion Thruster Accelerator System for an application filed on September 9, 1968. The second was for an Ion Beam Detector for an application filed on June 6, 1969. His 39th and final U.S. patent was awarded on February 9, 2016, for a System and Method for Determining Fluence of a Substance. The application for that one was filed on May 20, 2011, Thus, he filed patent applications

over six different decades.

In between, Banks obtained patents for inventions with these titles: Process for Glass Coating an Ion Accelerator Grid, Ion Thruster Magnetic Field Control, Electromagnetic Flow Rate Meter, Sputtering Holes with Ion Beamlets, Method of Making Dished Ion Thruster Grids, Apparatus for Forming Dished Ion Thruster Grids, Method of Constructing Dished Ion Thruster Grids to Provide Hole Array Spacing Compensation, Anode for Ion Thruster, Texturing Polymer Surfaces by Transfer Casting, Surface Texturing of Fluoropolymers, Mechanical Bonding of Metal Method, Ion Beam Sputter-Etched Ventricular Catheter for Hydrocephalus Shunt, Method of Making an Ion Beam Sputter-Etched Ventricular Catheter for Hydrocephalus Shunt (also the recipient of a Canadian patent), Diamondlike Flake Composites, Deposition of Diamondlike Carbon Films, Diamondlike Flakes, Piezoelectric Deicing Device, Oxidation Protection Coatings for Polymers, Apparatus for Producing Diamondlike Carbon Flakes, Apparatus for Producing Oxidation Protection Coatings for Polymers, Ion Beam



This illustration accompanied the 1971 patent for an Ion Thruster Accelerator System, the first for Bruce Banks.

Sputter Etching, Oxidation Protection Coatings for Polymers, Oxidation Arc-Textured U.S. Patent Feb. 21, 1984 Sheet 3 of 3 4,432,853 High Emittance Radiator Surfaces, Semiconductor



Most of Banks's patents were inventions for space program uses, but this 1984 one for a Method of Making an Ion Beam Sputter-Etched Ventricular Catheter for Hydrocephalus Shunt had a medical use, as this drawing indicates.

High Emittance Radiator Surfaces, Semiconductor Cooling Apparatus, Method and Apparatus for Producing a Thermal Atomic Oxygen Beam, Atomic Oxygen Protective Coating with Resistance to Undercutting at Defect Sites, Heat Transfer Device, Process for Non-Contact Removal of Organic Coatings from the Surface of Paintings, Atmospheric Pressure Method and Apparatus for Removal of Organic Matter with Atomic and Ionic Oxygen, Method for Surface Texturing Titanium Products, Method for Fabricating Soft Tissue Implants with Microscopic Surface Roughness, Removal of Biologically Active Organic Contaminants Using Atomic Oxygen, for Energetic Atomic and Ionic Oxygen Textured Optical Surfaces for Blood Glucose Monitoring, Method for Texturing Surfaces of Optical Fiber Sensors Used for Blood Glucose Monitoring and Protective Coating and Hyperthermal Atomic Oxygen Texturing of Optical Fibers Used for Blood-Glucose Monitoring.

Obviously, Banks has been very adept at creating inventions and getting them patented. But he wasn't on his

own in submitting patent applications at NASA.

"Once you have submitted an invention disclosure, there is a rigorous process that NASA has to make sure it is worthy of patenting," he wrote in his August 13 email to *Olmsted 200*. "The NASA patent lawyers then draft the formal patent application in a manner that is legally consistent with typical patent practices [and] then it goes to the U.S. Patent Office who determines if the innovation is in-fact new. It is always satisfying to know that some new product or process has been created or improved as a result of a patent that has been created."



This drawing accompanied the last patent Banks received in 2016 for a System and Method for Determining Fluence of a Substance.

In addition to all his scientific work, as well as his research into Olmsted history, Banks was the founder and first president of the Olmsted Falls Academic Booster Club in 1981. He also served as a member of the Olmsted Falls Board of Education from 1981 to 1989.



The right NASA photo shows how the artwork on the left was restored using an atomic oxygen method to clean it. In June 2004, Banks shared with Sharon Miller the Jumpstart Innovation Award from NorTech for inventing that method. They also received a 2002 award from Research and Development Magazine.

This is a summary of some of the many accomplishments of Bruce Banks but far from all of them. For example, just printing his curriculum vitae takes up 40 full pages and half of the 41st. Banks is a soft-spoken man, but his work speaks volumes about his service to his country and his community.

The left NASA photo shows Banks and Sharon Miller receiving a 2004 award. The right one shows Banks in 2009 examining seals for a docking system.



Olmsted Inventors Were Key Figures in Local Industry

As noted in previous issues of *Olmsted 200*, Olmsted Falls and Olmsted Township have been home to many inventors who acquired patents from the middle of the 19th century on. In the 1800s, the patents were for such items as fences, buggy parts, brooms and railroad devices. By the latter years of the 1900s, Olmsted residents were getting patents for a wide range of inventions.

The list of those patents from the mid-1960s through 1990 shows that most of the patents were assigned by their inventors to many of the prominent employers in the Cleveland area. That reflects the role played by Olmsted Falls and Olmsted Township as "bedroom communities," where people lived while commuting to jobs in Cleveland and other nearby communities.

In addition to NASA, those employers included Cleveland Trust Company, TRW, Union Carbide, Republic Manufacturing, Ferro Corporation, Bendix-Westinghouse and Goodrich. Here is the list of Olmsted inventors who obtained patents from 1966 through 1990:

- January 18, 1966 Heinrich G. Kosmahl (and one other) Phase-Shift Amplifier with Cyclotron Wave Modulation of Pump Energy – Assigned to the Secretary of the Army
- January 3, 1967 Robert L. Miller (and three others) Printing Apparatus Assigned to Cleveland Trust Company
- January 24, 1967 Robert L. Miller Pinfall Detecting Apparatus with Shift Register Storage Means – Assigned to Cleveland Trust Company
- February 14, 1967 Albert M. Lord (and two others) Thermoelectric Generator Assigned to TRW, Inc.
- March 7, 1967 Victor Mandorf, Jr. –Preparation of Aluminum Nitride – Assigned to Union Carbide Corporation
- May 9, 1967 Frank L. Bridges (and one other) High Performance Falling-Film Cooler-Absorber – Assigned to Union Carbide Corporation
- June 13, 1967 John H. Mueller Directional Flow Control Valves – Assigned to Republic Manufacturing Company
- September 5, 1967 John H. Mueller (and one other) – Flow Regulator – Assigned to Republic Manufacturing Company
- March 12, 1968 Joseph F. Sabo Apparatus for Removing Radioactive Materials from Water



This illustration went with the January 24, 1967, patent Robert Miller got for "an apparatus for automatically detecting the number of pins knocked down" in a bowling game.

- August 27, 1968 Robert L. Miller Printing Apparatus Assigned to Brunswick Corporation of Chicago
- November 26, 1968 William F. Bozic (with four others) Bottom Structure for Liquid Containing Carton Assigned to U.S. Plywood-Champion Papers, Inc.
- March 11, 1969 John H. Mueller (and one other) Slide Valves for Full Flow and Fine Metering Assigned to Teledyne, Inc., of Los Angeles
- July 29, 1969 John H. Mueller Multiple-Ported Balanced Slide Valves Assigned to Teledyne, Inc., of Los Angeles
- September 30, 1969 Clive E. Waylett Oxidation Resistant Composites Assigned to Union Carbide Corporation
- February 3, 1970 Heinrich G. Kosmahl Linear Magnetic Brake with Two Windings Assigned to NASA
- March 17, 1970 Robert L. Miller (and three others) Apparatus for Selectively Returning Bowling Balls to Storage Pockets – Assigned to Brunswick Corporation of Chicago
- March 7, 1972 Channing C. Conger Induction Device with Vacuum Insulation – Assigned to NASA
- May 2, 1972 Victor Mandorf, Jr. (and one other) High Purity Hot Pressed Boron Nitride – Assigned to Union Carbide Corporation
- September 19, 1972 Gordon H. Johnson Inorganic Lithium-Chrome-Silicate Pigments – Assigned to Ferro Corporation of Cleveland
- January 23, 1973 David A. Hoffman Dual Circuit Brake Valve –Assigned to Bendix-Westinghouse Automotive Air Brake Company of Elyria
- May 29, 1973 James A. Burkhart Magneto-Plasma-Dynamic Arc Thruster – Assigned to NASA
- July 24, 1973 Henry G. Robinson Stackable Dispenser Container – Assigned to Lamson & Sessions Company of Cleveland
- October 9, 1973 James C. Laurence (and two others) – Method of Fabricating a Twisted Composite Superconductor – Assigned to NASA
- September 17, 1974 Michael Stuart Wood (and one other) Investment Casting Assigned to Foseco International Limited of Birmingham, England
- March 4, 1975 Richard H. Corrette (and one other) hard vacuum of ou Thread Rolling Dies and Method of Manufacturing space." The patent Same – Assigned to NL Industries of New York, N.Y. assigned to NASA.

James Burkhart received a May 29, 1973, patent for the Magneto-Plasma-Dynamic Arc Thruster depicted here. The application said: "This invention is concerned with the production of rocket thrust in the hard vacuum of outerspace." The patent was assigned to NASA

- July 15, 1975 Art Hightower (and two others) Material Removal Device – Assigned to Lee Turzillo Contracting Company of Brunswick, Ohio
- July 23, 1981 James M. Frank (and two others) German patent for Aqueous Acidic Coating Solution for the Treatment of Zinc or Zinc Alloy Surfaces – Assigned to ROHCO, Inc., of Cleveland
- November 21, 1989 Gordon H. Johnson (and three others) – Decorative and Protective Borders for Automobile Side and Rear Lights – Assigned to Ferro Corporation of Cleveland
- September 22, 1990 Joseph F. Sabo (and two others) – Canadian patent for Freely Positionable Load Carrying Attachment for an Automatic Guided Vehicle – Assigned to Caterpillar Industrial, Inc.

Olmsted residents have patented many more inventions since 1990 and presumably will continue to do so. In that way, they are playing a quiet, but important role, in shaping the course of the country and the world.

This drawing is from the patent Art Hightower and two colleagues received July 15, 1975, for a Material Removal Device.

David Kennedy of Olmsted Falls provided much help in the research for this and the previous story.

The Fitch-Stearns Reunion Was a Big Affair in the 1800s

In the 21st century, the names Fitch and Stearns are best known in Olmsted as two of the most important north-south roads in Olmsted Township, but in the 19th century the township and Olmsted Falls still had plenty of residents with those surnames, unlike today. They were members of two families who were among Olmsted's earliest settlers, and over the years, the two families had intermarried quite a few times. Thus, in the latter years of that century and into the early 20th century, one of the biggest social events each

year was the Fitch-Stearns reunion, which was held at different homes of family members from year to year.

Fitch today is better known as a road than the family for which the road was named. The overpass that now takes it over the railroad (left), has bypassed part of the original road, which now is called Old Fitch Road.

A good example was the Fitch-Stearns reunion held 125 years ago that made news in the September 3, 1897, edition of the *Berea Advertiser*:

The Fitch-Stearns reunion has grown to be one of the oldest and best on the list. This year it was held at the home of Mr. James Fitch, whose spacious grounds were well adapted to the purpose, and better still, when the rain came as it did just at the close of dinner there was ample room in the house for every one to keep dry....

The story went on to note that those in attendance included some Fitches that once were Stearnses and Stearnses that once were Fitches – a testament to how much the two families had intermarried. It also noted the

In 2016, a few years after Fitch Road's overpass opened, one along Stearns Road (above) also opened. Thus, both of Olmsted Township's main north-south roads named for early settlers now allow motorists to avoid the long delays caused by the railroad, which had plagued travelers for many decades.

presence of a few family members who had been around the longest:

Old folks? Yes, Aunt Sabra, smart and happy with her 95 years; Aunt Mary Ann, looking no older that last year, and the next in age to Aunt Sabra; Charles, 83 years; James 75, and others whose age I do not know, perhaps should not dare to tell if I did....

The story included many personal references, which are hard to decipher 125 years later. However, it also had this item indicating that, even though the Fitch-Stearns reunion was one of the most prominent in Olmsted, family members didn't want it to suffer from competition with other local reunions:

After dinner a business meeting was held with which I have no business only to tell you the meeting day has been changed from the third Thursday in August to the last Thursday in June, thus taking the lead in picnics instead of being in the midst of so many others, and being in perfect accordance with the Fitch-Stearns character. Next year they will meet at John Fitch's....

A previous story about the reunion in the August 27, 1897, edition of the newspaper revealed that the get-together, which was held on August 19, was the 18th annual reunion for the Fitch family and the fifth of the combined reunions for the both the

The graves of some members of the Stearns family who might have gone to the 1897 Fitch-Stearns reunion can be found in Butternut Ridge Cemetery in North Olmsted. This one is for Elijah Stearns, his wife and her parents. This Elijah was the son of another Elijah, who was one of the original six Stearns brothers who settled in the township.

Fitch and Stearns families. Perhaps so many members of the two families had married each other by then that it no longer made much sense to hold separate family reunions every summer.

Members of the Stearns family first arrived in Township 6, Range 15, of what had been Connecticut's Western Reserve in 1815. They became the second family of European descent to settle in the township after James Geer and his family moved into the township earlier in 1815. (In 1814, the year Olmsted Falls and Olmsted Township date their founding, Geer planted a small crop of corn in what became Olmsted Township, but he and his family still lived in Columbia Township until 1815.)

Members of the Fitch family first arrived in Olmsted Township in 1831. That was two years after the township changed its name from Lenox Township to Olmsted Township to avoid confusion with another Lenox Township in Ashtabula County.

The Stearns family mainly settled in the northwestern part of the township, including the part that later became North Olmsted. As the name of Fitch Road indicates, members of

that family also settled in that general area of northwestern Olmsted Township, but they also spread out a bit more to other sections, including the area that incorporated as

Olmsted Falls in 1856.

Although few members of the Stearns and Fitch families continue to reside in Olmsted Township, Stearns Road and Fitch Road remain important to the government and commerce of the township. The area around the intersection of Stearns Road and Bagley Road has become a commercial center with stores,

This strip mall that includes Shaker's IGA is among the ventures around the intersection of Stearns Road and Bagley Road that have made it a commercial center for Olmsted Township.

restaurants and entertainment venues, such as Swings-N-Things Fun Park and Razzles, a restaurant/bar/banquet facility with volleyball courts and other facilities.

Township Hall, left, was smaller than what the township needed as soon as it was built in 1939, but the township has spread out with newer and bigger facilities along Fitch Road since then. On the right are the fire station and police station.

The area of Fitch Road near its intersection with Cook Road has been the center of government for the township for more than eight decades. Prior to the construction of Township Hall in 1939, township government had conducted business in facilities in Olmsted Falls, sometimes sharing them with the Village of Olmsted Falls, since the late 1800s. In 1883, the township built a Town Hall in Olmsted Falls on the site of the current Moosehead Restaurant to serve both the township and the village, but after the township built the new Township Hall at the corner of Cook and Fitch roads in 1939, it left the old one solely for use by the village. Unfortunately for the township, the new building was quite modest.

This facility for administration and building services also includes the Community Room for banquets and other meetings. It is located on a part of Fitch Road bypassed by the overpass for the railroad.

"The building was pleasing in design but far too small for any other purpose than to accomodate [*sic*] the chairs and tables for the trustees and a few seats for spectators," Walter Holzworth wrote in his 1966 history of Olmsted.

In recent years, however, the township has expanded its facilities – although not without some problems – to include a new fire station, a new police station, a new center for administration and building services and the Community Room, which has become the site of modern reunions, such as those held by alumni of Olmsted Falls High School.

Thus, 125 years after that 1897 Fitch-Stearns reunion, Olmsted Township is a much different place, but the legacies of the Fitch and Stearns families remain important to the community.

Still to Come

The next issue of *Olmsted 200* will include a story about one of the oldest residences in Olmsted Falls and another about a medicine bottle from the drug store of Olmsted's Joseph Peltz that recently turned up in Georgia.

If you know of other people who would like to receive *Olmsted 200* by email, please feel free to forward it to them. They can get on the distribution list by sending a request to: <u>wallacestar@hotmail.com</u>. *Olmsted 200* has readers in several states beyond Ohio, including Arizona, California, Colorado, Connecticut, Florida, Idaho, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Washington, West Virginia and Wisconsin, and as well as overseas in the Netherlands, Germany and Japan.

Your questions and comments about *Olmsted 200* are welcome. Perhaps there is something about Olmsted's history that you would like to have pulled out of *Olmsted 200*'s extensive archives. Or perhaps you have information or photos about the community's history that you would like to share.

If you have missed any of the past issues of *Olmsted 200* or want to share them with someone else, all of them can be found on Olmsted Township's website. Go to <u>http://olmstedtownship.org/newsletters/</u>. A list of *Olmsted 200* issues is on the right side. Click on the number of the issue you want to read. All of the issues of *Olmsted 200* also are available on the website of the City of Olmsted Falls. Find them at: <u>http://www.olmstedfalls.org/olmsted_falls_history/index.php</u>. A link to *Olmsted 200* can be found on the left side of the page.

Except where otherwise noted, all articles in *Olmsted 200* are written by Jim Wallace. Thanks go to Mary Louise King for help in proofreading and editing many issues. Thanks also go to David Kennedy for frequently contributing research and insight

for some stories. Written contributions and photos, as well as comments and questions about items in this newsletter, will be considered for publication. Send any correspondence by email to: wallacestar@hotmail.com.

Olmsted 200 is written, researched and edited by Jim Wallace, who is solely responsible for its content. He is co-author (with Bruce Banks) of The Olmsted Story: A Brief History of Olmsted Falls and Olmsted Township, published in 2010 by The History Press of Charleston, S.C. The Olmsted Story is available at Angelina's Pizza in Olmsted Falls and the Berea Historical Society's Mahler Museum & History Center and through online booksellers.

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