EUREKA!

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Cover photo: 20th Century Mine lamp, one of the earliest adaptations of a carriage/bicycle lamp for use in mining. Dave Thorpe collection. See article by Hal Post and Tony Moon for an in depth review.

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The 20th Century Mining Lantern

by Hal Post and Tony Moon

Figure 1. 20th Century Lantern (left side)

[Foreword by Hal] At the recent 2015 Ouray Show, I noticed Bob Schroth showing an unusual lamp to Tony Moon and Paul Johnson early in the setup. Since it caught my attention, I joined the group to see what was going on. The lamp turned out to be a 20th Century lantern and by a stroke of luck, both Tony and Paul had the lamp already. Bob had it for sale so after an exchange of some cash it came home with me. It's always good to be in the right place at the right time. I was vaguely familiar with the lamp but I wanted to know more. This article presents a little more information about the lamp and its manufacturer gleaned by Tony and me from numerous discussions.

As shown in Figures 1 and 2, the lamp is an early carriage-type nickel-plated brass lantern known as the 20th Century Lamp and advertised for mining use. It's 13 1/2 in. high with a 5 in. dia. circular bottom with a steel clutch handle/hook. The burner portion has red and green colored jewels on either side and a glass lens with a 6 in. reflector. A swing open front with clasp allows access to the burner area and its fish tail burner tip. It's marked on back PATENTS AND DESIGN APPLD. FOR, 20th CENTURY MFG. CO., MADE IN U.S. OF AMERICA. The glass lens is also marked 20th Century.

Figure 2. 20th Century Lantern (front & right side)

The 20th Century Manufacturing Co. was founded by Lewis F. Betts on April 13, 1897 to become one of the five most successful automobile, motorcycle and bicycle lamp manufacturers in the U.S. Betts was born Dec. 23, 1829 and died May 18, 1911 at the age of 82. He was employed by Dietz and Company of New York, a manufacturer of lamps, burners and carbide fixtures, for nearly 25 years during which he patented a tubular street lamp (Patent No. 218,917 on Aug. 26, 1879) to be followed by at least an additional 25 patents for various lamps and improvements. During the last 30 years of his life, he and his brother Charles are widely credited with more improvements in lanterns than any others connected directly or indirectly with the lantern industry. On June 4, 1895 Betts was awarded patent No. 540,605 for a kerosene bicycle lamp called the 20th Century Bicycle Headlight. To manufacture the lamp, Betts created the Betts Patent Headlight Company with articles of incorporation filed in New York City on Nov. 18, 1895. On April 13, 1897 the company was refinanced and renamed the 20th Century Manufacturing Company with George Wilson as president and Betts a member of the Board of Directors. At various times the company occupied quarters at No. 10, No. 17 and No. 19 Warren St. in New York City before moving to 420-422 Ogden St. in Newark, NJ in 1910. The first carbide lamp of the company was advertised in October 1898. It was based on a design patent filed by then president William P. Crary as No. 29,789 on Dec. 13, 1898. This lamp established many of the common features to be shared with other 20th Century carbide lamps manufactured over the next 20 years. The second carbide lamp manufactured by the company known as the Model No. 2 Cycle Gas lamp was based on a follow on patent filed by Crary as No. 677,400 on July 2, 1901. This lamp, which became one of the most successful bicycle carbide lamps ever manufactured, is the lantern modified for mining and hand lantern use by 20th Century.

The wide range of lamps available from 20th Century is shown in a typical vignette from an envelope dated 1908. The envelope also included illustrations of lamps connected to a central acetylene generator for use in boats, motorcycles, small automobiles, and bicycles.

Figure 3. Typical Advertising Vignette (compliments of Steve Loftin)

The Scott Supply & Tool Co. of Denver, Colorado advertised the 20th Century Lamp as a Miner's Hand Lantern in the Dec. 5, 1901 issue of Mining Reporter noting it's equipped with a "clutch hook to hang the lamp to rocks."

Figure 4. Scott Supply Ad for 20th Century Lantern (from Henry Pohs' notes)

Like other carbide carriage/bicycle lamps around 1900 such as the Full Moon and Columbia Model C lamps, manufacturers made modifications to the lamps to take advantage of a new opportunity for sales, that of the mining market. Typically, the introduction of a handle or hook did the job. In the case of the modified 20th Century bicycle lamp, the manufacturers added a larger diameter base, a bail with handle/hook and an umbrella top to shield the burner for use in wet mines.

Figure 5. Left - Henry Pohs' Lamp; Right – Tony Moon's Lamp; both in Bronze Finish

Only a half-dozen or so of various versions of this lamp are known in museums and private collections marking its rarity. Both nickel-plated brass and bronzed finishes are known. Likewise, two different diameter reflectors are known as well. An early brochure describes the lamp with a 3 ½ in. diameter reflector as the "miners" hand lamp and a second identical version of the lamp with a larger 6 in. diameter reflector as an "auto" or portable hand lantern. The description of the lantern versions mentioned other applications for the lamps including firefighting, camping, dark roads, hunting, fishing, boating and barge use, along with the mining and vehicle options making sure a buyer could find some use for the lanterns. An examination of the lamp shows how simply the manufacturer created the larger reflector option by attaching it to the smaller diameter reflector with its glass lens. Of special note is the 20th Century lamp on display in the Cripple Creek Museum in Teller County, Colorado. This lamp is identified as the personal mining lamp of Winfield Scott Stratton. Stratton discovered the Independence Lode near Victor, Colorado on July 4, 1891, and became the Cripple Creek district's first millionaire. The 20th Century Mfg. Co. continued a successful lamp business until electric lighting overtook the kerosene and carbide lamp business. Sometime between 1915 and 1919, the 20th Century Manufacturing Co. was sold to Stevens and Co. of Manhattan. Stevens continued to manufacture the lamps at least until 1921. During the life of the 20th Century lamp production, it is conservatively estimated that over 1 million lamps were manufactured. These lamps were regarded with the highest reputation for quality and customer satisfaction largely due to the interchangeability of parts and service after sales. As to the modified bicycle lamp advertised for mining use in 1901, an illustrated list of 20th Century lamps dated 1907 shows both lantern options were still available, the larger reflector model as No. 12 and the smaller reflector model as No. 14.

Figure 6. W. S. Stratton Lamp

Figure 7. 1907 Illustrated 20th Century List (compliments of Neil Tysver)

Figure 8. 1901 Cropping from a 20th Century poster advertisement (compliments of Paul Johnson)

Dave

The Foster Patent Squib Safety Box

by Hal Post

I usually don't think of squib boxes as very exciting. More often than not, my image of a squib box is usually a tin, tube shaped case in various stages of oxidation, well used and dinged, with a slide off cap. There are exceptions and this is one of them. Recently a squib box caught my eye and looked very interesting. Better yet, I had the opportunity to acquire it. Neil Tysver, my good friend from Alaska, found an earlier *Eureka* article by Jim Van Fleet on "Squib Tins" that showed an assortment of squib boxes from the Lester Bernstein collection. There in the group was this squib box but only briefly mentioned by Jim as the "most famous squib box." Suddenly it became a research challenge. As it turns out, the brass box is very nicely made, patented and comes with a boatload of history. It's not the box itself that's of such interest but the people associated with the box. They include a relatively unknown newspaper editor in a small town in Pennsylvania who would become the father of correspondence schools in the US and a pioneer tobacco company in Baltimore, Maryland that would become the major part of the tobacco giant, American Tobacco Company.

Figure 3. Gail & Ax Safety Box

The safety box is shown in Figure 1. It's all brass and embossed on both sides with GAIL & AX'S "NAVY" SQUIB, MATCH AND TOUCH PAPER SAFETY BOX PATENTED JANUARY 27, 1885. The box is 7 3/8 in. long, 2 in. tall and 1 in. wide and has spring-loaded caps on each end, one of which is a match striker. It has three compartments inside for holding squibs, matches and touch paper (paper impregnated with potassium nitrate that burns steadily without flame and can be used as a fuse). Figures 2-4 show more of the features of the box. The safety box was patented by Thomas Jefferson Foster of Shenandoah, PA as Letter Patent No. 311,183 on January 27, 1885 as shown in Figure 5 and assigned to George W. Gail, Ernst Schmeisser and Christian Ax of the Baltimore, Maryland tobacco firm of Gail & Ax.

The details of the arrangement between Foster and Gail & Ax are not known but both parties are quite well known for different reasons and their association makes a lot of sense for both parties. Vocational education and industrialization in America owes much to the work of one man: Thomas Jefferson Foster – miner, patentee, printer, teacher, and the founder of the International Correspondence Schools of Scranton, PA in 1891.

Figure 4. Safety Box End Cap Open

Figure 5. Safety Box Match Striker End Cap

Figure 6. Safety Box Match Striker Cap Open

It's amazing that in the days of limited transportation and educational opportunities Foster's courses brought advancement and training to even the most remote post office box holder. Within fifteen years he had enrolled over a million students. In a month's time his schools were enrolling more students than Harvard, Yale, Princeton and Dartmouth combined in a year. At the turn of the century one American adult out of 27 had taken at least one of his courses. T. J. Foster was born at Pottsville, Pennsylvania, January 1, 1843. During the decade of the 1870s, he was editor of the *Shenandoah Herald*, a daily paper published at Shenandoah, in the coal-mining district of eastern Pennsylvania. As editor he reported on mine tragedies which were then an almost daily occurrence, and which he concluded were mostly due, not to fate, but to ignorance of mine gases, mine ventilation and mine engineering. He successfully lobbied for a revision of the state's mine laws that required mine foremen to pass an examination on safe mining practices. In 1879 he established the *Mining Herald*, a weekly publication devoted to technical and practical mining, in which he published a question and answer column on mining subjects in preparation for the in depth tests required of miners and inspectors by the new Pennsylvania Mine Safety Act of 1885. Publishing these columns ultimately led to the founding of the International Correspondence Schools. He served as president and general manager of the International Textbook Company, which he founded in 1895, to serve as proprietors of the International Correspondence Schools and to publish instruction papers, booklets, and textbooks for its subsidiary department, the International Correspondence Schools. Under his direction the schools gained a worldwide reputation for quality. The course offerings grew into over 240 separate areas. Businesses and governments encouraged their employees to enroll. At its height of success the printing plant turned out textbooks and lessons for Foster's students that was rivaled only by the United States Government Printing Office in size.

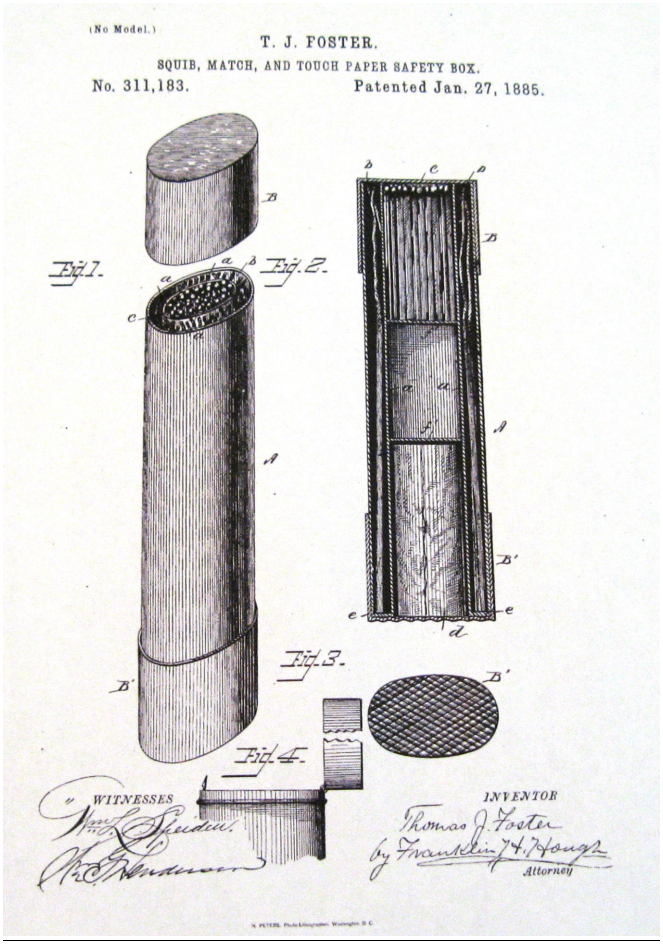


Figure 7. Foster's Safety Box Patent

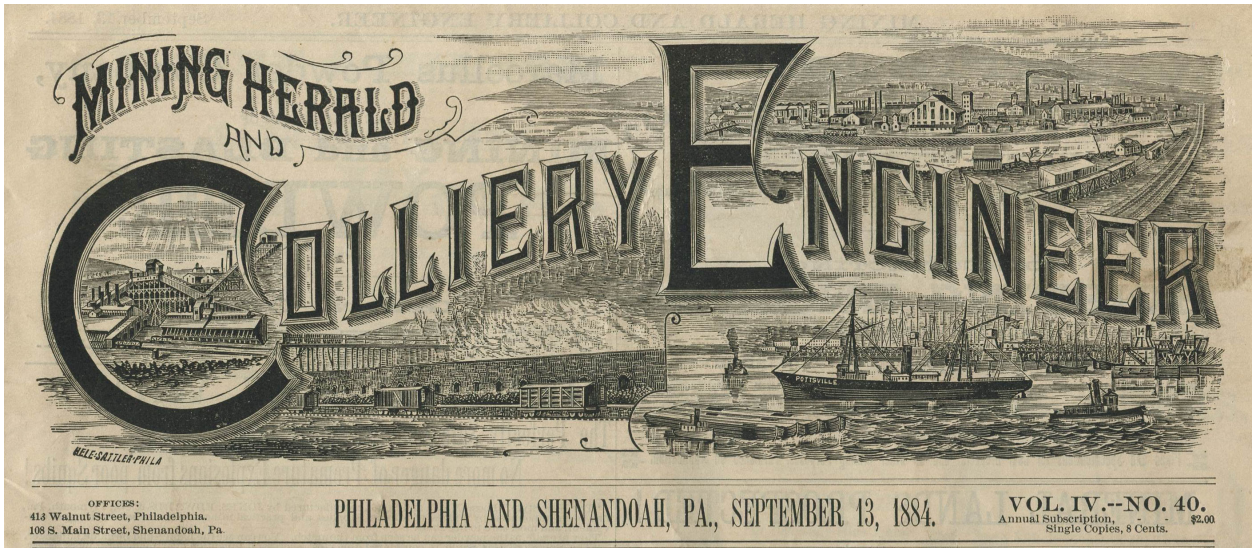
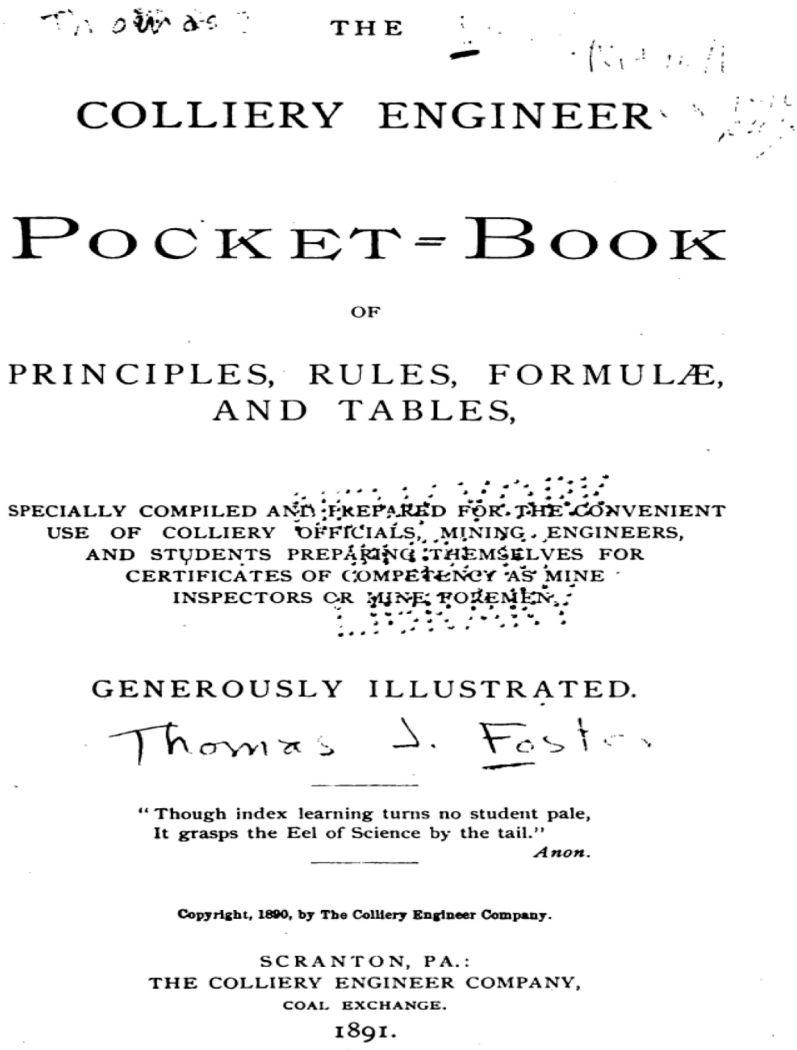


Figure 8. Heading for Sept. 13, 1884 Edition of the Mining Herald and Colliery Engineer (compliments of Tony Moon)

Along the way, Foster was joined by his cousin Rufus James Foster in 1888 to help in publishing the journal founded by T. J. Foster called the *Colliery Engineer*. This journal became the most widely circulated mining periodical in the world at the time. Over the years, Foster changed the name of the

journal to suit his purposes numerous times. Foster was editor and publisher of a weekly mining journal he started in 1879 which he called the *Mining Herald,* an outgrowth of the weekly newspaper *The Shenandoah Herald*. In August 1887, Foster changed *Mining Herald* to the *Colliery Engineer* after using both titles together for the previous three years. This name change was suggested by Foster's editorial friend of the English journal *Colliery Guardian.* By June 1894, the scope of the journal had widened and the name was changed again to the *Colliery Engineer and Metal Miner.* In 1897, the name was changed again to *Mines & Minerals*, with the Colliery Engineer Company controlled by Foster as the publisher. In 1913 the name was changed back to *Colliery Engineer*, this title being used until it was discontinued in October 1915. And if that wasn't enough, Foster wrote a popular technical reference for coal miners called the *Coal and Metal Miners' Pocketbook* that was revised through at least a dozen editions. In 1905, Foster fell victim to several bad investments that nearly bankrupted the schools. He resigned



THE

COLLIERY ENGINEER

POCKET-BOOK

OF

PRINCIPLES, RULES, FORMULÆ, AND TABLES,

SPECIALLY COMPILED AND PREPARED FOR THE CONVENIENT USE OF COLLIERY OFFICIALS, MINING ENGINEERS, AND STUDENTS PREPARING THEMSELVES FOR CERTIFICATES OF COMPETENCY AS MINE INSPECTORS OR MINE FOREMEN.

GENEROUSLY ILLUSTRATED.

Thomas J. Foster

"Though index learning turns no student pale,
It grasps the Eel of Science by the tail."
Anon.

SCRANTON, PA.:
THE COLLIERY ENGINEER COMPANY,
COAL EXCHANGE.
1891.

Figure 10. Cover Page of Foster's 1891 Edition of the Pocket Book

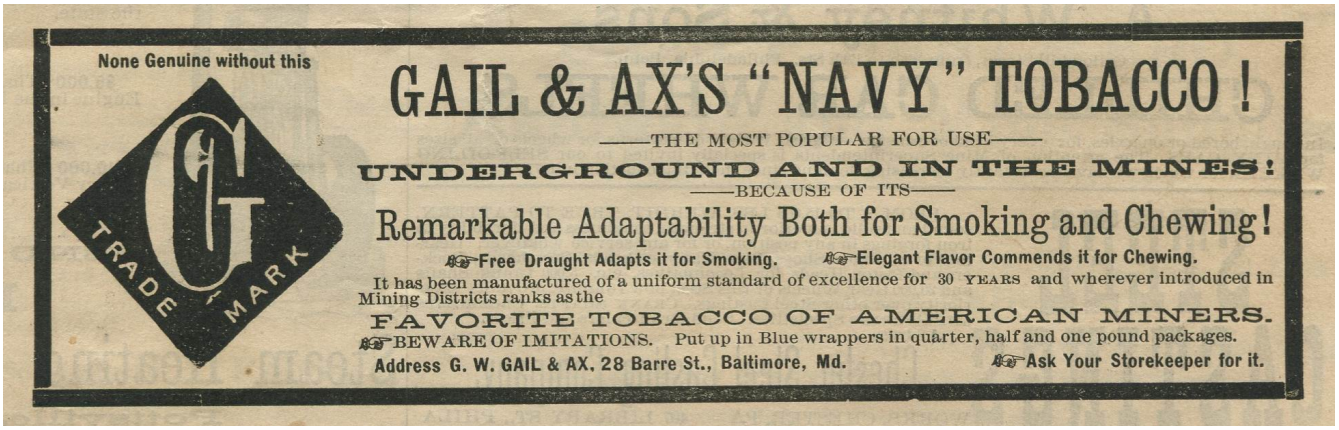
from his position and his ties to the International Textbook Company were severed. He died in 1936, at the age of 93, nearly penniless except for a small pension. Thomas J. Foster was elected to The National Educators' Hall of Fame in September 2001. His accomplishments in educating miners to safe practices underground have no equal. The International Correspondence Schools of Scranton, Pennsylvania, was operated under that name from 1895 till bankruptcy in 1996. It continues in operation today as the Penn Foster Career School.

The books published by Foster's International Textbook Company covering the many courses of study were used and made available to at least 184 colleges and at least 649 public libraries, a staggering accomplishment.

Figure 9. Home of International Correspondence Schools in Scranton, PA

Figure 11. Gail & Ax's Navy Brand of Tobacco

The firm of G. W. Gail & Ax in Baltimore was founded in 1850 by Georg Wilhelm Gail, one of the early pioneers in the tobacco manufacturing business. Georg Wilhelm was born July 8, 1828 in Giessen, Hesse-Darmstadt, Germany. He came to the US in 1847 to expand the family tobacco business he had learned in Germany. Arriving in Baltimore, he converted a small house on Pratt Street to a tobacco factory and by 1850 had started his business. In 1851 Christian Ax, his brother in law, arrived from Germany to join him as a salesman and field representative. The business at that time was under the name of G. W. Gail until January 1st, 1860 when the firm name of G. W. Gail & Ax was adopted. The first part of the company's large factory building on Barre Street was erected in 1853, and by 1858 a major extension was added. The Civil War significantly increased their revenue and in 1864 their output was 2,634,000 pounds of smoking tobacco. The firm continued to expand with its popular Navy brand of chewing and smoking tobacco and in 1882, Ernst Schmeisser, a son-in-law of G. W. Gail, joined the firm. In 1887 Christian Ax died and by 1888 Georg Wilhelm's son George W. Gail Jr. and Ax's son Christian Ax Jr. had both joined the firm. The total output of tobacco products of Gail & Ax in 1890 was 5,479,672 pounds, of which 614,475 pounds, or 11.2 per cent, was snuff. In 1891, Gail & Ax was sold to the recently organized American Tobacco Company. Georg Wilhelm Gail, the company founder, died at sea, October 5, 1905, while returning from a visit to Germany. Gail Jr. and Schmeisser continued with American to manage the Gail & Ax branch of the company. By 1911, the government sued American Tobacco Company for violations of the Sherman Anti-Trust Act. In May of that year, American was broken up and any remnants of Gail & Ax were lost to history. Gail & Ax had an extensive product line including fine tobacco products and advertising tins featuring their company building in Baltimore and the Navy brand which showed a sailor dressed in blue with a foot atop a package of the Navy tobacco wrapped in blue paper.


None Genuine without this

TRADE MARK

GAIL & AX'S "NAVY" TOBACCO !

—THE MOST POPULAR FOR USE—

UNDERGROUND AND IN THE MINES!

—BECAUSE OF ITS—

Remarkable Adaptability Both for Smoking and Chewing!

☞Free Draught Adapts it for Smoking. ☞Elegant Flavor Commends it for Chewing.

It has been manufactured of a uniform standard of excellence for 30 YEARS and wherever introduced in Mining Districts ranks as the

FAVORITE TOBACCO OF AMERICAN MINERS.

☞BEWARE OF IMITATIONS. Put up in Blue wrappers in quarter, half and one pound packages.

Address G. W. GAIL & AX, 28 Barre St., Baltimore, Md. ☞Ask Your Storekeeper for it.

Figure 12. Gail & Ax's "Favorite Tobacco of American Miners" Ad from the Sept. 13, 1884 Edition of Mining Herald and Colliery Engineer (compliments of Tony Moon)

Match cases, customer sample tins as well as larger tins that would later serve as kitchen canisters were all part of their advertising to attract new customers. In the case of the patented squib safety box, their marketing of the patented box is thought to be a win-win situation for both T. J. Foster and Gail & Ax. His patent would keep squibs and fuses out of the dampness and in an organized fashion that would lead to better practices for blasting safety. Gail & Ax was already a popular brand of tobacco, marketed to miners, and they could manufacture the boxes and distribute them widely for advertising. A handful of these safety boxes are known in private collections.

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Miners Folding Gimbaled Candlesticks

by Al Winters

Folding miners candlesticks are relatively rare as are candlesticks incorporating a thimble mounted in a gimbal. The purpose of the gimbal is to allow the candle to remain vertical regardless of the angle the candlestick is positioned in. This characteristic theoretically increases the life of the candle.

Folded Gimbaled Candlesticks (spike down). Left: Al Winters collection with detachable hook. Right: Roger Peterson collection with folding hook.

Three gimbaled candlesticks were patented and others that exist were most likely intended to be patented. Location of the three patents granted for a gimbal design was one from California and two from Oregon. Few examples of these patented sticks or any other gimbaled sticks are known and they are considered very rare.

Two of the known gimbaled sticks that were never patented are very unique in that they also incorporate folding mechanisms.

Both of the candlesticks shown were found in California. The candlestick shown on the left came from an estate sale in the mother lode country. The two are considered sister sticks and assumed to be made by the same hand. Most likely the maker was trying to develop a practical model that he could patent. A similar constructed non-folding stick is known and believed made by the same hand.
The metal work of both sticks is exceptional and required a lot of work in the design and build. Neither of the candlesticks was found with the hooks and Roger Peterson, owner of one of the sticks, took on the job of designing and building the hooks. The sticks were slightly different in the way the spike set when folded down as well as the spike locking devise. How exactly the maker was going to design the hook is unknown but it is assumed that he would have made the hook to fold or detach and lock in so that the candleholder could comfortably be carried in one's pocket when folded and not in use.

Folded Gimbaled Candlesticks (spike down). Above: Al Winters collection with detachable hook. Below: Roger Peterson collection with folding hook.

Roger's stick incorporates a folding hook which threads into the gimbal base ring and is locked down by the spike when folded. The sister stick incorporates a detachable hook that pins into an unthreaded base ring and locks down via a pin and encasing hook design which partially surrounds the thimble.

Which stick was made first is a good question. The stick on the left is a little beefier but the locking devise of the stick on the right is certainly better designed. Neither however, would probably survive for any length of time in a mining environment. What is needed now is a third sister stick to show up with the final design by the maker.

Left: Folded Gimbaled Candlesticks (spike up)

Canadian Candlestick Patents

by Tony Moon and Hal Post

Last year during one of those lazy afternoons I (Tony) stumbled upon a Canadian patent office web site that allowed for patent searches. In about an hour ten Canadian patents for miners' candlesticks were found. Of the ten Canadian patented miners' candlesticks, nine were patented first in the US by US residents and then patented later in Canada. There was one candlestick that is unique in that it's the only Canadian patented stick that originated in Canada.

Miner's Candlesticks - Canadian Patents

Inventors	Canadian Patent No	Date Issued	US Patent No	Date Issued
Buys	142,959	24-Sep-1912	996,308	27-Jun-1911
Clinch	58,487	23 Dec 1897	589,594	7 Sept 1897
Cornell & Troughton	72,729	13-Aug-1901	665,067	1-Jan-1901
Fielding & Peterson	86,601	19-Apr-1904	735,578	4-Aug-1903
Hansen	167,656	15-Feb-1916	1,163,912	14-Dec-1915
Howard & Howard	73,736	12-Nov-1901	662,565	27-Nov-1900
Lincinium & Lewis	54,154	23 Nov 1896	549,925	19 Nov 1895
Lindahl & Phillips	101,519	16-Oct-1906	801,465	10-Oct-1905
Walker	68,391	8-Aug-1900	None	
Winchester	128,039	6-Sep-1910	961,190	14-Jun-1910

The patents can be downloaded as adobe files from the web site generally in three parts – the initial description, claims, and the drawing. The copies of the written material are poor reminding one of third generation carbon copies (for those of us who remember carbon copies!). The drawings are the same as shown on the US patents. There is no rhyme or reason that can be seen as to why the US inventors pursued Canadian patents – only two (Lindahl and Fielding & Peterson) could be considered commercial successes, only two examples of the Buys patent have surfaced to date, and no examples of the other six have been found. The inventors are scattered over several states including Idaho, Montana, Oregon, Nevada and Colorado. It's interesting to note that all ten patents were issued in Canada over a 20 year period starting in 1896. Maybe the incentive was the inventor's ego or the enthusiasm of the patent attorneys!

The tenth patent is the most interesting. This candlestick was patented as Canadian patent No. 68,391 on August 8, 1900 by James Young Walker, a resident of the historic mining town of Rossland, British Columbia. The candlestick was only patented in Canada – no trace of a US patent. The patent drawing taken from the Canadian Patent Office Record is shown in Figure 1. There are three claims in the patent with the most interesting being "*A candlestick, provided with an upstanding stem, and a thimble fitted removably to the stem and having detachable interlocking engagement therewith, substantially as described*". The known examples of this candlestick are built with an upstanding stem separate from the hook and the thimble looks like it could be removed – but with considerable effort and who would want to try!

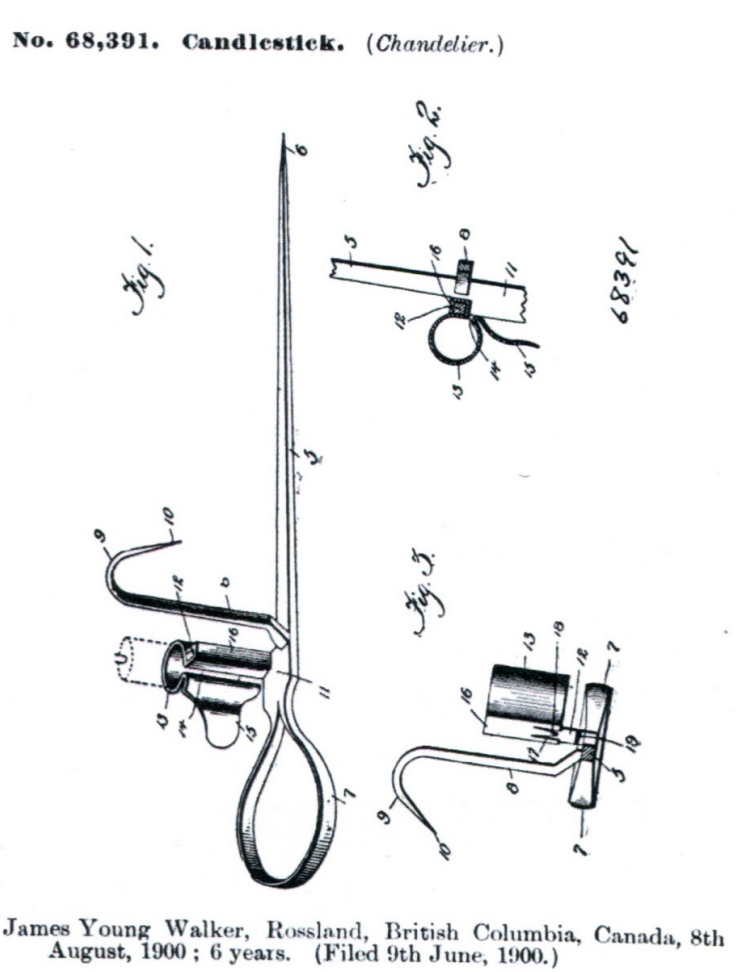

Figure 1 Patent Drawing

The topic of the Walker patent became even more interesting when earlier this year, a Walker patent stick was offered on ebay. I (Hal) was fortunate to win the auction helped by the fact that very few realized what it was. Discussions at our weekly lunch bunch of ourselves along with Paul Kouts and occasionally Jack Purson led to more research on the inventor. Walker was born in Scotland on July 11, 1869 to parents Alexander Walker and Mary Young. He immigrated to Canada in 1894 eventually settling in Rossland. He is first listed in the Rossland business directory in 1898 as a blacksmith on W. Kootenay Ave. He's listed in 1899 as a blacksmith at 29 N. Washington St. and again at the same address in 1900. In the 1900-1901 directory he's shown as a blacksmith in the partnership of McKay and Walker back at W. Kootenay Ave. After 1901 he's no longer listed in the Rossland business directory. His whereabouts are unknown until 1921 when he shows up living in Vancouver BC with his wife Alberta and working as a wire weaver for the Anchor Fence Co. The Vancouver business directories show him continuing as a wire weaver for several years. Walker died on Dec. 31, 1939 and is buried in Vancouver. His patented candlestick is marked on the thimble PAT. AUG. 8. 1900. Figure 2 shows one of three examples of this stick so marked that are known in collections. A close-up of the riveted thimble attachment on another of the known sticks is shown in Figure 3.

Figure 2 Example of Walker candlestick (Tony Moon collection)

Figure 3 Close-up of hook and thimble of Walker candlestick (Hal Post collection)

Two examples are known that include the marking W.PRICE ROSSLAND on the top of the shaft forward of the hook. Figure 4 shows an example of this variation. William Price is listed only in the 1900-1901 Rossland directory as a blacksmith and candlestick maker. Some slight differences are noted between the Price marked stick and the other style. The most notable is the shape of the hook with an offset bend as shown in the patent drawing unlike the Price marked stick. Our conjecture is that Walker made his early patent sticks, those with the offset hook, that are identical to the patent. Unfortunately we were unable to learn anything of the Price-Walker relationship and the sticks made by Price. It seems clear that Walker's patented candlestick was likely far from successful. However, they do turn up occasionally so keep an eye out.

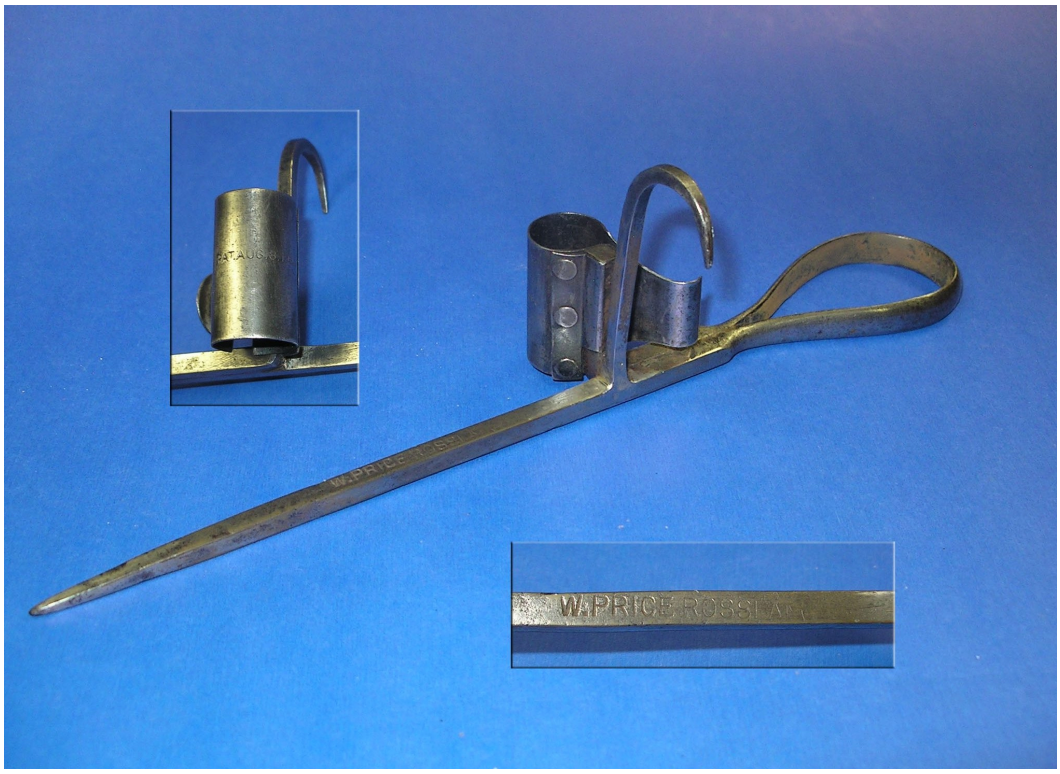

Figure 4 Example of candlestick by Price (Paul Johnson collection)

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Canadian Intellectual Property Office – Canadian Patents database:
http://www.ic.gc.ca/opic-cipo/cpd/eng/introduction.html
This will get you to the page where you can start your patent search.

Private communication – Al Winters August 2015

In Search of the Quirin Safety Lamp History

by Hal Post, Neil Tysver and Tony Moon

Earlier this year, my good Alaskan friend and oftentimes road trip partner Neil Tysver and I (Hal) planned another visit back east on the way to the Carter Caves show in Kentucky. Our previous trips in 2012 when Tony Moon joined us and 2014 provided opportunities to visit and enjoy the history of coal mining through the states of Ohio, Pennsylvania, Virginia, Maryland, West Virginia and Kentucky. The 2014 trip allowed us to visit Dottie and Larry Click and their fabulous collection prior to Larry's passing. We didn't miss many museums, Civil War battlefields or sites of interest on that trip or the previous one. Of course, all the trips culminated with the fun show put on by Chris Hacker and Colin Gatland and their wives at the Carter Caves State Resort Park. The target area for this year's trip was Scranton and anthracite country in northeastern Pennsylvania. For a mining artifact collector, it's a great place to visit. And of course, a visit to John Podgurski and his unbelievable collection of all things mining was at the top of our itinerary. But then prior to our trip, another target of opportunity was presented to us. I (Hal) was very fortunate to recently acquire a Quirin bullseye safety lamp. My research on the lamp focused on St. Clair, Pennsylvania, home of Peter Quirin and his foundry that made the lamp. And St. Clair was right smack dab in the middle of our visit area, not far from Scranton or Wilkes-Barre or John Podgurski or the original Yuengling brewery in Pottsville – all required stops. A few hours on Google indicated the Quirin Machine Shop was still in operation in St. Clair. So we decided to devote a day to finding it, visiting with any family members we could find and learning what we could about the Quirin bullseye lamp. We searched high and low for the place in St. Clair along the street it was supposed to be on and any side streets that looked likely. No luck. We finally gave up and headed back to Wilkes-Barre. The next day visiting with John Podgurski we mentioned our failed search – we did however see a lot of St. Clair – and he immediately noted that "you can't miss it – it's on your right on the hill at the second traffic light." Yep! The next day we found the large building on the hill surrounded by manhole covers that were left over from previous production runs. We found a man walking to his car and asked where the office might be. He directed us to a side door where we were greeted by a man wondering what we wanted. We're sure his feeling when we told him who we were and what we were looking for was who are these weirdos trying to find information on a lamp that was 130 years old. Anyway, he invited us to his office where we explained our visit. He fired up his computer and looked at Hal's website (www.halslamppost.com) for the lamp we mentioned. It turns out that Google was slightly wrong. The Quirin Machine Shop was out of business but the building was leased to another machine shop. He then picked up the phone, made a call and 10 minutes later a man carrying a

Figure 1 Quirin bullseye safety lamp (Hal Post collection)

Quirin Davy lamp showed up. The man was Ed Quirin, great grandson of Peter Quirin who made the lamp. What a find! We spent the rest of the day discussing his family, the original foundry and even visiting his home where a number of models and products from the business were on display. His pride and joy was that Davy lamp displayed prominently in his home. He directed us to the original location of the Quirin Brass Foundry but sadly it was an empty lot. We eventually left St. Clair thanking him profusely for sharing his knowledge of the lamp. He was totally gracious but we think he was still wondering why two guys from New Mexico and Alaska would travel all the way to St. Clair to find out information on a mining lamp from the late 19th century. Now about the lamp… Shown in Figure 1 (previous page), the detailed description is a brass and iron Mauchline patent bullseye lamp, 10 1/2 in. tall to top of hook ring, 2 1/2 in. base dia., 2 1/4 in. glass lens, marked on top P. QUIRIN MAKER ST. CLAIR. with flat wick and two wick lifters. The font, burner section and top bonnet are brass; gauze, support rods and hook are iron. The lamp matches the patent exactly. Extremely rare lamp manufactured early to mid-1880s by Peter Quirin Brass Foundry, St. Clair, PA. The bullseye safety lamps are highly sought after by collectors. Patented by Robert Mauchline of Shenandoah, PA as patent No. 307,210 awarded Oct. 28, 1884, the patent lamp shown below in Figure 2 has also been referred to as Mauchline's Headlight or Bull's Eye Surveyor Lamp.

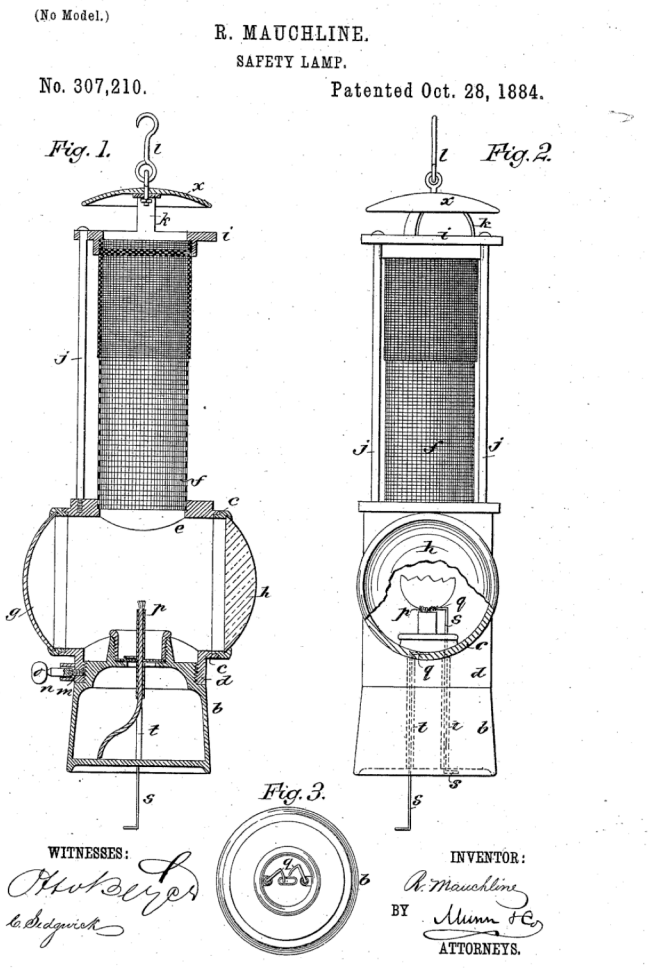


Figure 2 Mauchline safety lamp patent

The latter reference as a surveyor lamp seems problematic since the patent application does not associate it with any surveying application. Nevertheless the surveyor reference seems to have stuck. Mauchline (1837-1899) was the district mine inspector for District 2 of the Pennsylvania Anthracite Coal Field from 1881-1885 and author of the popular mining reference *The Mine Foreman's Handbook of Practical and Theoretical Information* in 1887. At least three US manufacturers have made safety lamps based on the Mauchline patent. James Everhart Maker and Hughes Bros. both of Scranton, PA have known models, all of which incorporate side openings in the burner tube compartment which the patent does not include. An Everhart bullseye lamp is shown in Figure 3 and a Hughes model is shown in Figure 4. An ad in the July 31, 1886 *Mining Herald and Colliery Engineer* shows that the Scranton Brass Works, James Everhart, Manufacturer was already producing the bullseye lamp as of that date. However it is likely the earliest manufacturer of the lamp was the Quirin Brass Foundry of St. Clair, PA, less than 10 miles away from Shenandoah and Mauchline. It is also telling that the Quirin model is an exact match to the patent lamp unlike both the Everhart and Hughes models. As noted in

the patent description, one end of the burner tube section is equipped with a concave reflector and the other end with a plano-convex glass lens. The lens has a focal distance of 1 1/4 in. with a curvature to illuminate a 50-deg. arc. The light is so concentrated that work can be done 30 ft. from the lamp and the lens renders the lamp more efficient as a detector of gas by making the elongation of the flame more visible in an explosive mixture of gas environment. The lamp is equipped with two wick lifters on either side of the flat wick. An interesting aspect of the Quirin lamp concerns the iron gauze. It is likely that significant use underground in a wet environment would require replacement of the iron gauze. Unfortunately, the gauze retainer ring inside the lamp is of such a diameter, it cannot be removed! While some Everhart and Hughes bullseye lamps have a screw off lens that could facilitate removal, the Quirin does not. The lens and reflector are pressed in to the burner compartment and removal would be very difficult.

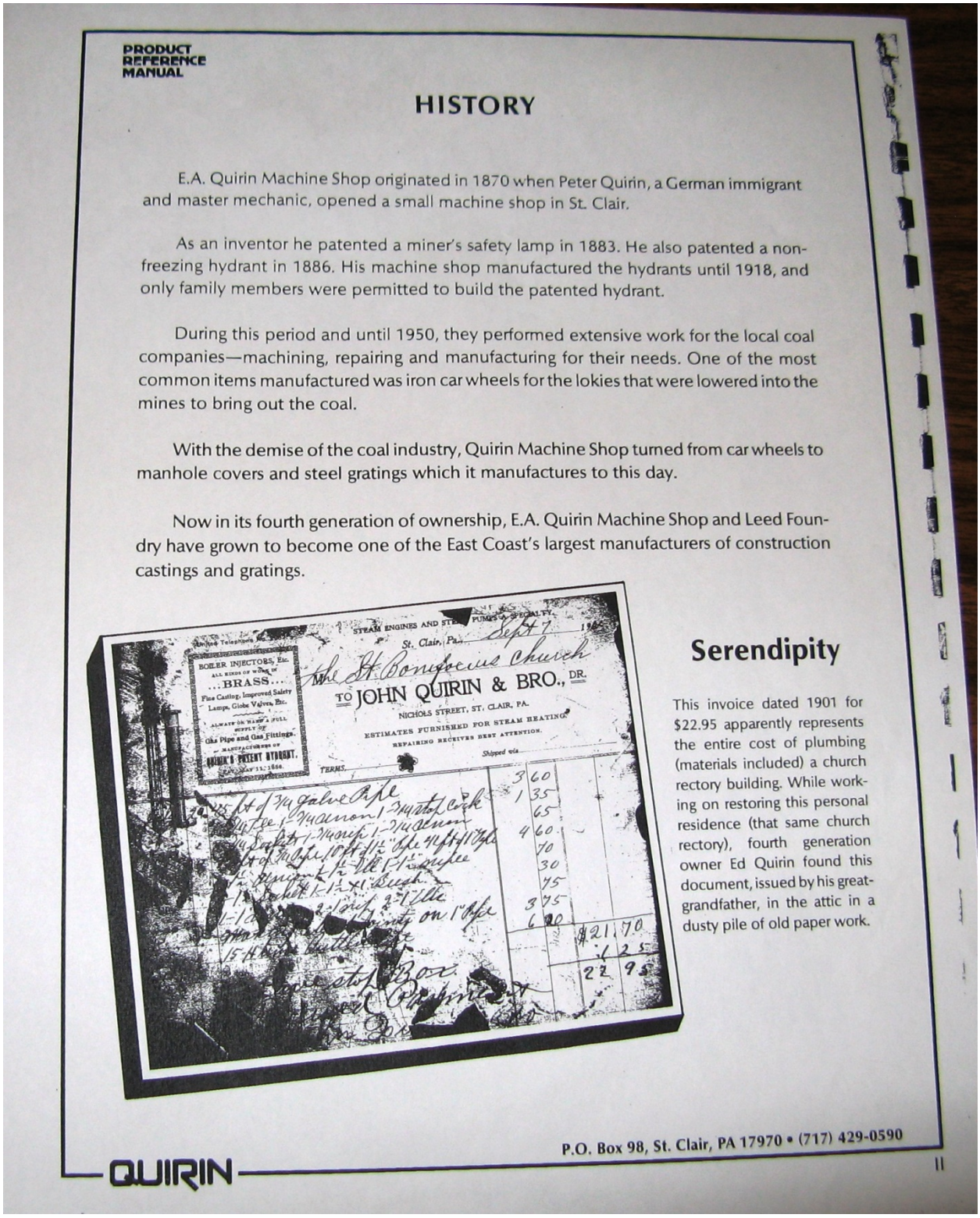
Figure 3 Everhart bullseye safety lamp (Tony Moon collection)

Figure 4 Hughes bullseye safety lamp (Dave Gresko collection)

Figure 5 Ed Quirin holding his Quirin Davy lamp

The Quirin bullseye lamps are quite rare with two, possibly three known examples in collections. Peter P. Quirin of St. Clair was born at St. Ingbert, Germany in 1835, one of five children born to parents Johann Quiring (the g was dropped at some point) and Barbara Schweissthal. He came to America in 1853 and settled in St. Clair in 1854. In 1856 he married Catharine Stief and fathered seven children, five daughters and two sons, Peter and John. As a trained master mechanic, he commenced his machine shop business in 1870 and opened a brass foundry located on South Nicholas Street in 1875. The machine shop took care of repairs for the machinery of the various collieries around town including the Wadesville shaft sixteen. It is thought he made the Mauchline patent lamp sometime prior to 1884. The relationship between Quirin, Mauchline and Everhart is intriguing. Quirin had been in business in St. Clair nine years prior to the patent award. It is highly likely that Mauchline as a district mine inspector and Quirin's work with collieries in the area made them quite familiar with each other. Mauchline's interesting note in his patent application states that he was aware that a lamp had been provided heretofore with a concave reflector and lens on opposite sides of the burner, (likely Quirin's lamp?), and that he did not wish to claim that in his invention. His patent drawing is quite detailed, as a machinist might prepare, and matched exactly the Quirin lamp. One could conjecture that an agreement between Quirin and Mauchline permitted Mauchline to file the patent for the lamp already made by Quirin for considerations to Quirin, perhaps cash as well as sole-maker status. Everhart's known ad in 1886 and quite possibly even earlier confirmed that Everhart was already manufacturing the Mauchline patent lamp with notable changes from the patent drawing. Everhart was a major foundry in Scranton while Quirin's business was machinist's work with a very small foundry. Again, one could conjecture that Quirin and Everhart as well as Mauchline reached an agreement whereby Everhart obtained the rights to manufacture the lamp for cash considerations to Quirin and/or Mauchline. Only the fly on the wall of Quirin's foundry when these discussions might have been held knows exactly what happened. Discussions with Ed Quirin, shown holding his prized Quirin Davy lamp in Figure 5, seem to support our conjecture. The front page history of the Quirin Machine Shop product manual states that Peter Quirin invented a miner's safety lamp in 1883 (Figure 6).

That's the family's position. To the rest of us, it's a mystery unlikely to ever being solved. Quirin was also an inventor of note, credited with patents for Improvement in Miners' Tools (patent No. 165,580 awarded July 13, 1875) and a Nonfreezing Water Hydrant (patent No. 341,687 awarded May 11, 1886). Quirin died in 1891. The Quirin family continued the



PRODUCT REFERENCE MANUAL

HISTORY

E.A. Quirin Machine Shop originated in 1870 when Peter Quirin, a German immigrant and master mechanic, opened a small machine shop in St. Clair.

As an inventor he patented a miner's safety lamp in 1883. He also patented a non-freezing hydrant in 1886. His machine shop manufactured the hydrants until 1918, and only family members were permitted to build the patented hydrant.

During this period and until 1950, they performed extensive work for the local coal companies—machining, repairing and manufacturing for their needs. One of the most common items manufactured was iron car wheels for the lokies that were lowered into the mines to bring out the coal.

With the demise of the coal industry, Quirin Machine Shop turned from car wheels to manhole covers and steel gratings which it manufactures to this day.

Now in its fourth generation of ownership, E.A. Quirin Machine Shop and Leed Foundry have grown to become one of the East Coast's largest manufacturers of construction castings and gratings.

Serendipity

This invoice dated 1901 for $22.95 apparently represents the entire cost of plumbing (materials included) a church rectory building. While working on restoring this personal residence (that same church rectory), fourth generation owner Ed Quirin found this document, issued by his great-grandfather, in the attic in a dusty pile of old paper work.

QUIRIN

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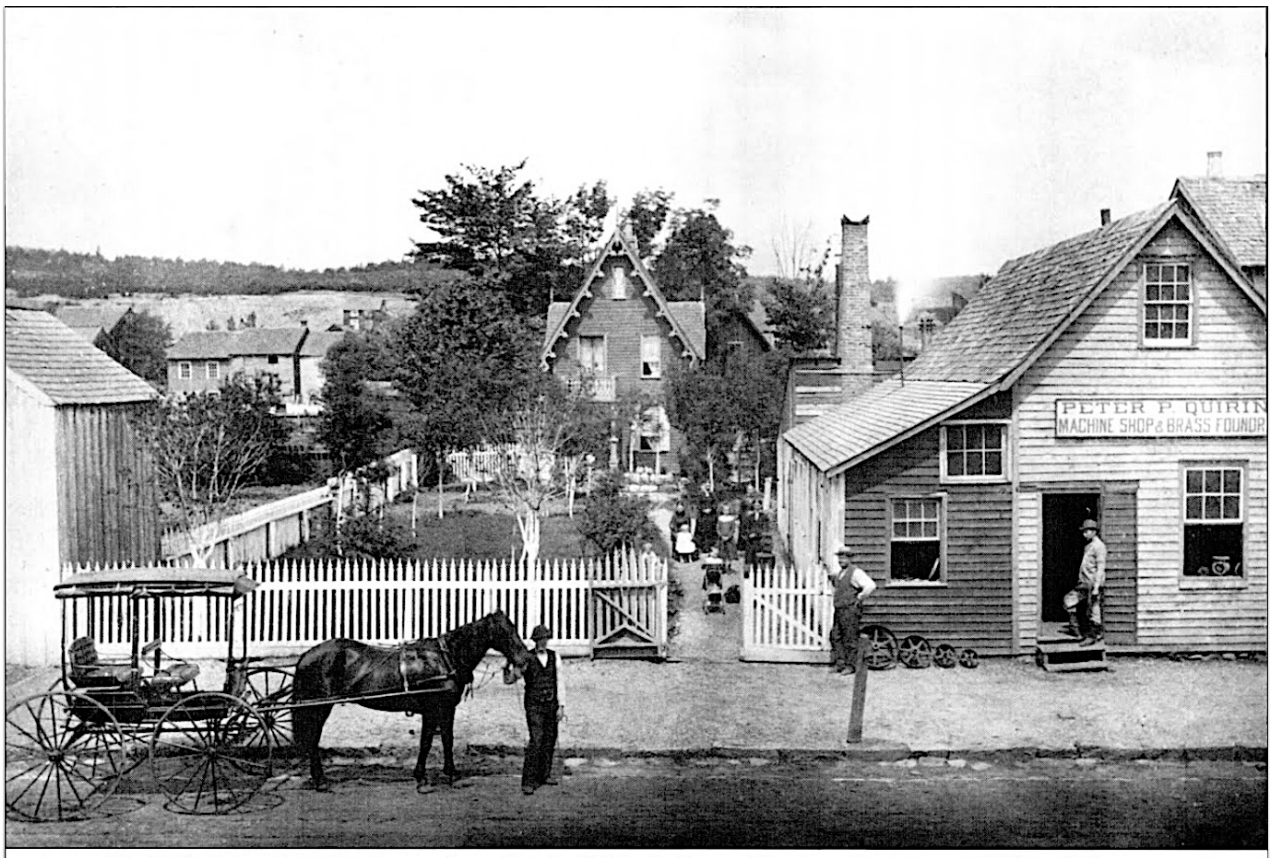
Figure 6 History page of E. A. Quirin Machine Shop product reference manual

business, moving the foundry to Hancock Street and then to a larger facility on a hill overlooking St. Clair where it ceased operation in 2011. Figure 7 shows an 1875 photo of the Quirin Machine Shop. A recent photo from March 2016 taken from a similar view across the street is shown in Figure 8. Nothing remains except an empty lot and part of the adjacent house.



Quirin's Brass foundry, located on South Nichols Street between Lawton and Carroll Streets, was the first location of a family-run business that continues to operate in St. Clair. Peter P. Quirin, an immigrant from Bavaria, settled in St. Clair in 1854. An inventor, he owned and operated the foundry until his death in 1891. Two of his more popular inventions were the Quirin's Safety Lamp and a nonfreezing fire hydrant.

Figure 7 1875 photo of Quirin Brass Foundry

Figure 8 2016 photo of empty lot that was the Quirin Brass Foundry