

EUREKA!

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Cover photo: salesman’s samples and miniature acetylene torch model owned by Alexander F. Jenkins, manufacturer of the Milburn “A” miners’ carbide lamps. The company (Alexander Milburn Co.) was located in Baltimore, MD. These samples were passed down to Jenkins’ only son “Alec” who died in April, 2015. They were mailed to Dave Thorpe by Alec’s widow Carroll in appreciation for his interest and publications about her husband’s family.

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The Elusive Truax Ore Car Tags

by Hal Post and Steve Rush

The Truax Manufacturing Co. of Denver was a well-known supplier of ore cars and other ore handling equipment from the late 1800s into the early 20th century. Incorporated on May 15, 1892, by George E. Truax, the Truax Manufacturing Co. was the sole manufacturer of the Silver State Automatic Ore Car (the patented Truax Automatic Ore Car) from a plant building at 1717, 1719 Wazee Street.

An early 1893 ad notes that the plant at time employed 8 full time workers with O. P. Grove as company secretary and treasurer and George E. Truax, originally from Michigan, as works superintendent. The Truax Automatic Ore Car is one of the better known ore cars in the history of western mining. As stated in the 1893 ad, “this is the best car of the kind and is made of the best quality of steel and malleable iron with cast chilled wheels which give strength and durability.” Invented by George E. Truax of Denver, CO and patented (No. 466,717) on January 5, 1892, the Truax ore car solved a major problem experienced with earlier ore cars. Unlike other cars whose door may not properly open as the car is tipped resulting in a shift in the load that carried the car and load over and down the dump, the Truax car automatically opens the door as the car is tipped and then relocks the door when the car is returned to the vertical position. An 1895 patent (#545,433) was for an improvement in the door hinge and an 1898 patent (#607,785) was for an improvement in the door locking mechanism, both also awarded to George Truax.



Built by Truax Tag 1117 Wazee Address



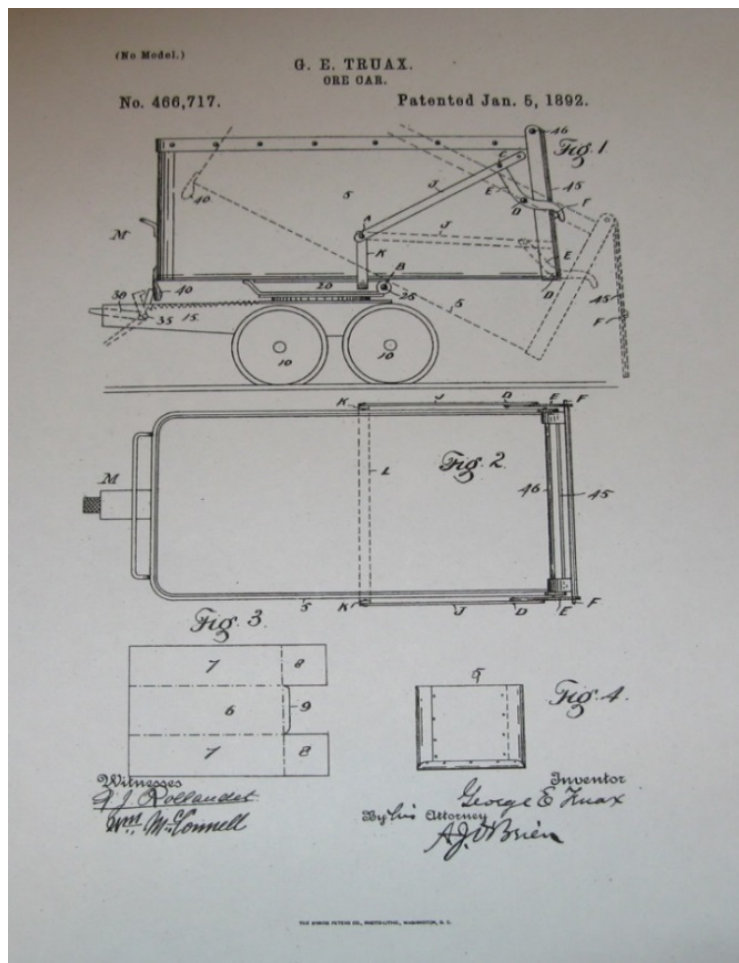
Globe Iron Works Ad from May 1902 Engineering and Mining Journal



Globe Iron Works Marking

The brass ore car tags on these cars are coveted by collectors as an easily displayed piece of vintage heavy mining equipment. At least nine Truax brass tag stampings are known, some with flat backs and some with concave shaped backs. Tags with a concave shaped back include one that is stamped by the Globe Iron Works of Stockton, CA and manufactured under rights purchased from the Truax Mfg. Co. Two other concave back tags stamped Silver State Ore Cars were marked as manufactured by Truax in Denver as well as Truax in San Francisco, an additional manufacturing location opened prior to 1900 at 69 Stevenson St. These two plus the Globe marking all incorporate stampings of the three patent dates noted above as well as a Canadian patent dated June 21, 1898. A third concave back Silver State ore car marking with only the June 21, 1898, patent stamping was made by the Vancouver Engineering Works Ltd. Vancouver, B.C. with the addition of "Sole Makers in Canada." And if these multiple manufacturing locations for Truax cars weren't confusing enough, another ad in the April 1898 issue of The Mining and Metallurgical Journal lists Chas. B. Boothe & Co. at 126-128 South Los Angeles St. in Los Angeles, CA as a manufacturer of the Truax Improved Patented Automatic Ore Car. No Tags have been identified as listing this address or manufacturer.

The rarest tag is a smaller oval shape with a flat back, undoubtedly the earliest of the group. It is marked The Truax Ore Car Works 1717/1719 Wazee St. Denver, Colo and likely was used prior to The Truax Manufacturing Company incorporation date in 1892. Two Truax ore cars at the Silverton Museum in Colorado both display this oval tag.



Above: Truax Ore Car at Silverton Museum, Silverton, Colorado

Left: George Truax's 1892 patent.

The next earliest tag begins the concave back circular pattern, although slightly smaller diameter than the later tags, and is marked Geo. E. Truax's Silver State Ore Car with just the 1892 patent date. The next concave back tag marking adds the 1895 patent date and includes the first marking of The Truax Mfg. Co. Two other tag configurations, both with flat backs, have ears at both the top and bottom but differ in the company address. One lists the address as 1117 Wazee while the other is marked with an address at 1723-1729 Wazee. Complicating the dating of the various tags is the changing address of the company on Wazee St. The earliest tag shows 1717/1719 Wazee St., while others show 1723-1729 Wazee St. and yet others show 1711 Wazee St. Using a variety of sources including ads, Denver Business Directories, and mining publications, some correlation of street address and dates can be established. By 1898, the company was still located at its original address at 1717/1719 Wazee St. Sometime around 1898, John T. Plummer became the manager of the Truax Manufacturing Company taking over from George Truax with J. J. Kearney as the company designer.

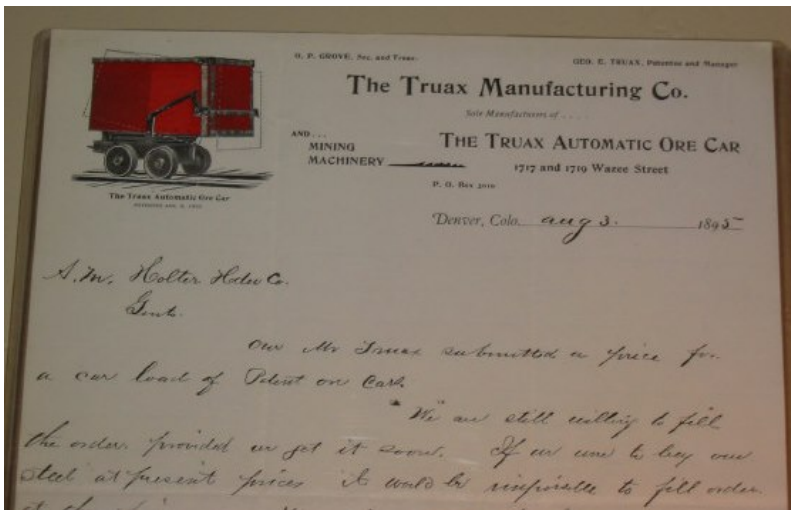


Truax Ore Car Works Tag

By 1903, the Directory of Iron and Steel Works lists the company address as 1723-1725 Wazee St and notes that the company had a capacity of 1000 to 1500 ore cars annually. The 1911 Denver Business Directory still shows the address as 1723 Wazee St. but by Sept. 1913, the company is listed at 1723-1729 Wazee. A 1915 Truax advertising brochure as well as the 1916 Mining and Engineering World lists the address as 1117 Wazee and later publications continue to list that address. Whether these address changes reflect actual moves by the company or some reassignment of street numbers by the city of Denver is unknown. Collecting these tags provides an interesting perspective as to the business of supplying the turn-of-the-century mining world. As a word of caution, reproductions of these original brass tags are known. Buyer beware! (Many thanks are given to Tony Moon for sharing his photos of the Silverton Museum.)



Truax 1 date and 2 date patent tags.



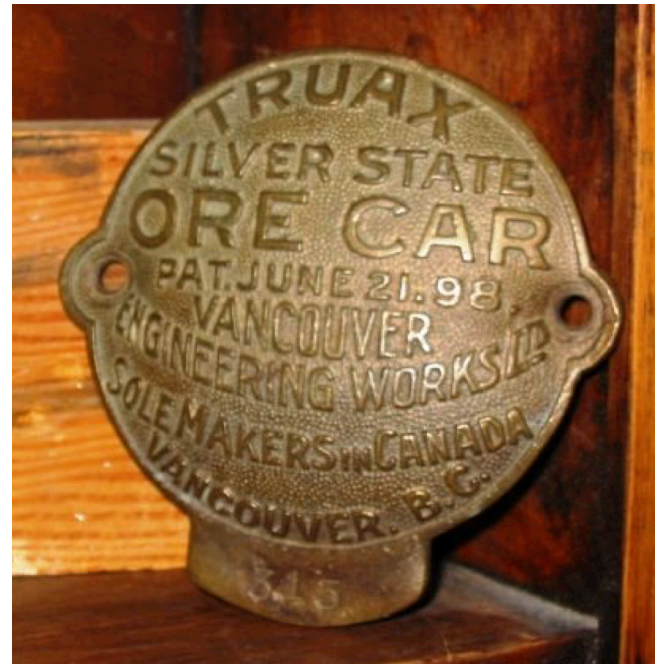
Truax Billhead, August 3, 1895



Truax Silver State Ore Car, Denver



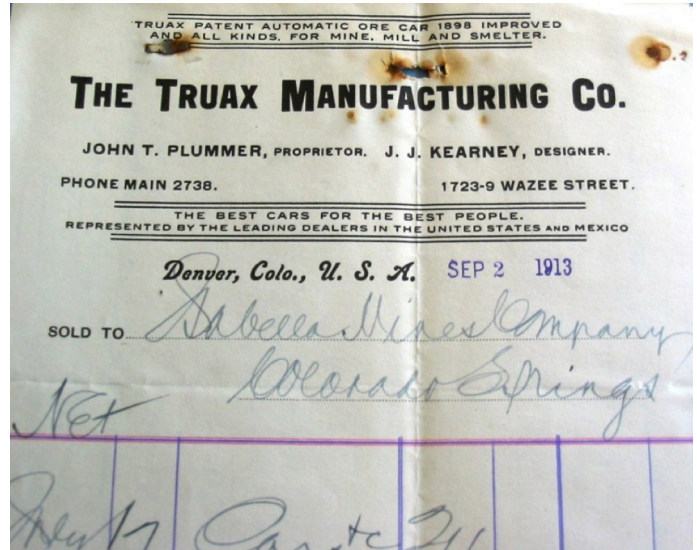
Truax Silver State Ore Car San Francisco



Truax Silver State Ore Car Vancouver



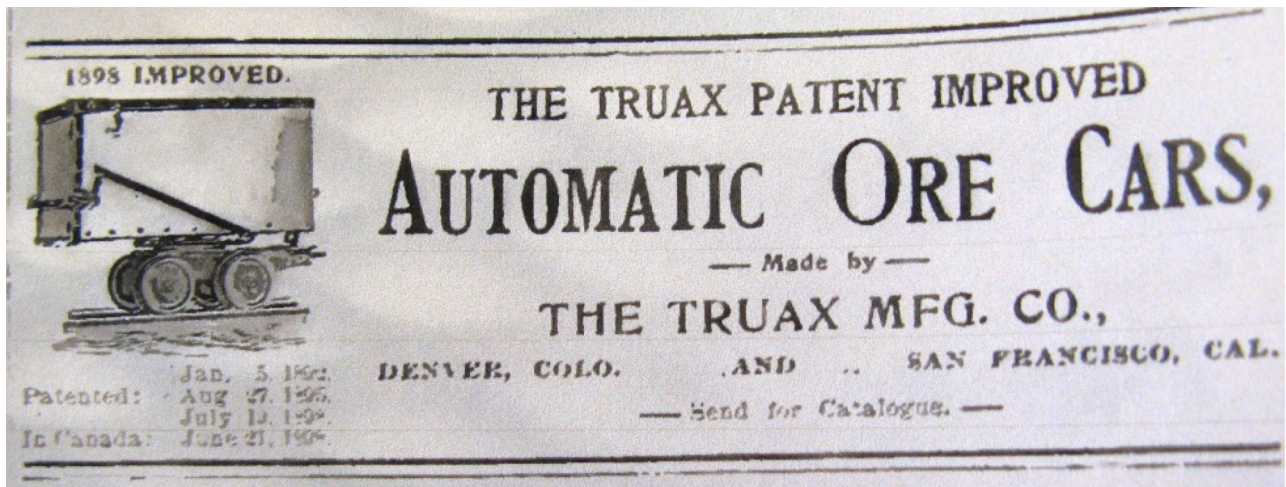
Built By Truax Tag 1723-1729 Wazee Address



Sept 2, 1913 Truax Billhead

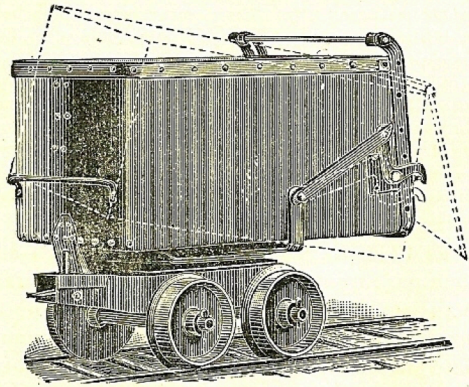


July 1900 Mining and Engineering Press Ad for Truax San Francisco



Jan 1899 Mining and Engineering Press Ad Listing Both Denver and San Francisco Locations

THE TRUAX AUTOMATIC ORE CAR, 1717, 1719 Wazee Street.—The Truax Manufacturing Company was incorporated May 15, 1892, and from its inception has been characterized by a rapid growth. In its present status, the business occupies a large structure at 1717, 1719 Wazee Street. The company are sole manufacturers



of the Silver State Automatic Ore Car (the Truax Automatic Ore Car). Patent rail catch and specialties in machinery. This is the best car of the kind, and was patented 5th January, 1892, by Mr. Geo. E. Truax, of Denver. The Truax Automatic Ore Cars are made of the best quality of steel and malleable iron, with cast chilled wheels, which give strength and durability. Our readers should not fail to write for the pamphlet, with explanation of its special features. Eight hands are constantly employed at the factory. The officers of the company are: O. P. Grove, secretary and treasurer, 205 Boston Building; G. E. Truax, superintendent of works, 1515 Eighteenth Street. Mr. Truax, the superintendent, a native of Michigan, calls for special attention, owing to his inventive genius. Besides the above-mentioned, he has gotten out many useful patents, conspicuous among which is the Truax Automatic Boiler Scraper. This is the only Boiler Scraper that will not push the mud to the back head. This Scraper is closed when being pushed in the boiler, and will open automatically when pulled out. This Scraper leaves no mud in the boiler to burn the boiler like the old ones do. You can clean a boiler in one-half the time, and better. This Scraper reaches up about eight inches on each side, thus making it about sixteen inches long when open. They are made of malleable iron, and have steel blades to fit the diameter of the boiler. Price, \$3.00.

1893 Truax Ad



1915 Truax Advertising Brochure Showing Range of Equipment Manufactured by Truax

**THE TRUAX PATENT IMPROVED
AUTOMATIC ORE CARS**

Manufactured by
CHAS. B. BOOTHE & Co.

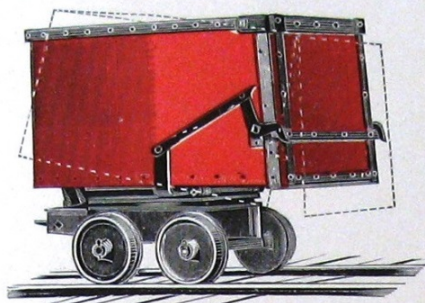
126-128
SOUTH LOS ANGELES ST.
LOS ANGELES, CAL.

Pat. Jan. 2, 1892, Pat. Aug. 27, 1895.

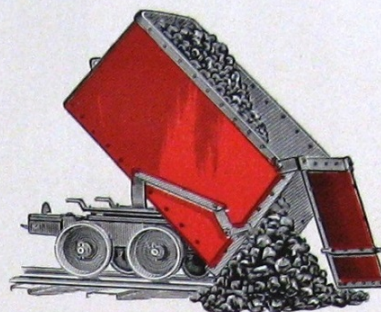
Send for our Catalogue and Prices

April 1898 Truax Ad Listing Chas. B. Boothe & Co. as Manufacturer in Los Angeles (Has Anyone Seen One of these Tags?)

TRUAX IMPROVED AUTOMATIC ORE CARS



Pat. Jan. 5th, 1892, and Aug. 27th, 1895.



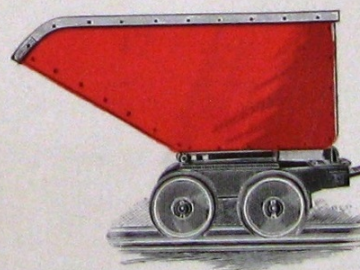
Pat. Jan. 5th, 1892, and Aug. 27th, 1895.

PRICE LIST AND DIMENSIONS.

No.	Width of body inches	Length of body inches	Height of body inches	Capacity cubic ft	Shipping weight lbs.	Diam. of wheels inches	Gauge of track inches	Thickness of steel sides	Thickness of steel bottoms	Price
No. 14 A	24	44	21	13	430	10	18	No. 12	No. 8	\$35 00
" 14 B	24	44	21	13	450	10	18	12	$\frac{3}{16}$	36 50
" 14 C	24	44	21	13	490	10	18	10	$\frac{1}{4}$	39 00
" 14 D	24	44	21	13	522	10	18	$\frac{3}{8}$	$\frac{1}{4}$	41 00
" 17 A	24	48	24	16	495	10	18	12	$\frac{3}{16}$	40 00
" 17 B	24	48	24	16	555	10	18	10	$\frac{1}{4}$	48 00
" 17 C	24	48	24	16	650	10	18	$\frac{3}{16}$	$\frac{1}{4}$	50 00
" 20 A	24	44	24	$14\frac{1}{2}$	500	10	18	10	$\frac{3}{16}$	45 00
" 20 B	24	44	24	$14\frac{1}{2}$	525	10	18	10	$\frac{1}{4}$	47 00
" 20 C	24	44	24	$14\frac{1}{2}$	565	10	18	$\frac{3}{16}$	$\frac{1}{4}$	50 00
" 20 D	24	44	24	$14\frac{1}{2}$	637	10	18	$\frac{1}{4}$	$\frac{1}{4}$	58 00
" 19 A	30	54	24	$22\frac{1}{2}$	630	heavy 12	18	10	$\frac{3}{16}$	55 00
" 19 B	30	54	24	$22\frac{1}{2}$	685	12	18	10	$\frac{1}{4}$	58 00
" 19 C	30	54	24	$22\frac{1}{2}$	765	12	18	$\frac{3}{16}$	$\frac{1}{4}$	60 00
" 19 D	30	54	24	$22\frac{1}{2}$	835	12	18	$\frac{1}{4}$	$\frac{1}{4}$	66 00
" 21 A	30	54	30	27	745	12	18	10	$\frac{1}{4}$	60 00
" 21 B	30	54	30	27	825	12	18	$\frac{3}{16}$	$\frac{1}{4}$	66 00

SCOOP CARS.

	Scoop 23
Width of body	24 inches
Length of body	48 inches
Height of body	21 inches
Shipping weight	360 lbs.
Price	\$35 00 each



NOTE—In ordering cars for cages it would be well to give us exact measures of the length and width of the cage. We usually place the step under the body of the car.

C. Cleaves - Still Another Variation Appears

By Bill Collins

The recent Holabird-Kagin Americana Western Tribes & Treasures Auction turned up a new variety of C. Cleaves candlesticks. This particular candlestick is not described or pictured in the articles by Dave Thorpe in *Eureka!* Issues 37 (Summer 2001) and 38 (Spring 2002). It appears to have many of the attributes of those sticks along with several previously unseen features.



Fig. 1 - C. Cleaves fuse-cutter candlestick. The thimble side of the closed candlestick.



Fig. 2 - C. Cleaves, a view of the hook side of the closed candlestick.



Fig. 3 - C. Cleaves fuse-cutter thimble: very plain without castellations.

The basic candlestick (figures 1 and 2) is a fuse-cutter somewhat similar to the two folding bar models shown on pages 9 and 10 in *Eureka!* 37. The basic stick has a tear-drop-shaped handle with a short ($3/32$ "") step up from the spike to the cutting platform which can be seen in figure 2. The major differences are: (1) a short, plain thimble with only "C. Cleaves" for ornamentation as shown in figures 1 and 3, (2) a hook that is offset to the left of the spike and beveled at approximately $1/2$ " above the top of the platform to form a flattened octagonal bar extending to just before the bend in the hook as seen in figure 4, (3) a fuse-cutter that is a rounded knife blade with a forward, protective rectangular $1/8$ " long protuberance, as seen in figures 5 and 6, and (4) a thumb tab seen in figures 1 and 4 that is of a standard design (i.e., not located forward of the hook), or not 'Cleavesian' to coin a new term. This thumb tab is somewhat similar to the ones found on the more simple sticks shown on page 12 of *Eureka!* 37 and pages 2 and 3 of *Eureka!* 38. Figures 7 and 8 show the relationships of the two styles of Cleaves thumb tabs to the hooks. The standard C. Cleaves stick was obtained from Dave Thorpe at the 5th Annual MAC hosted by Tony Moon in June 1990 at Concord, CA.

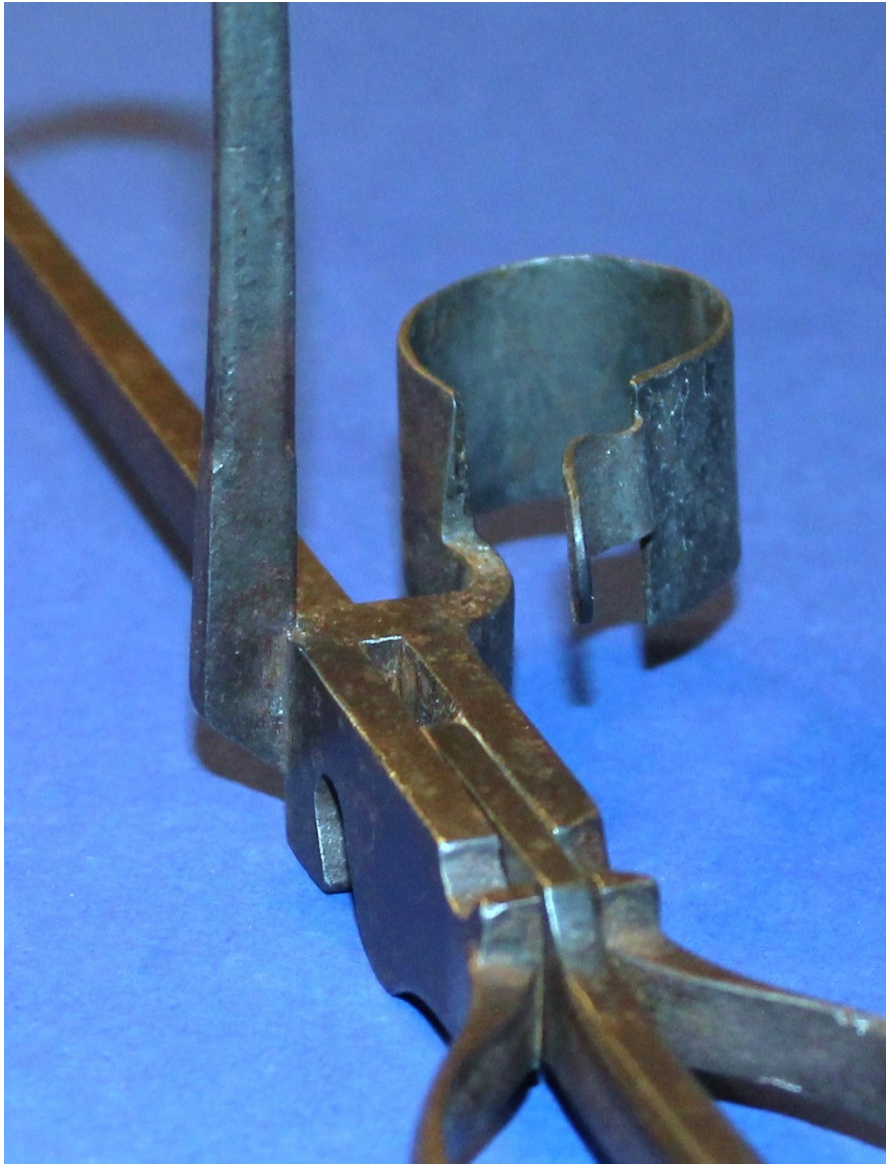


Fig. 4 - C. Cleaves fuse-cutter offset hook.

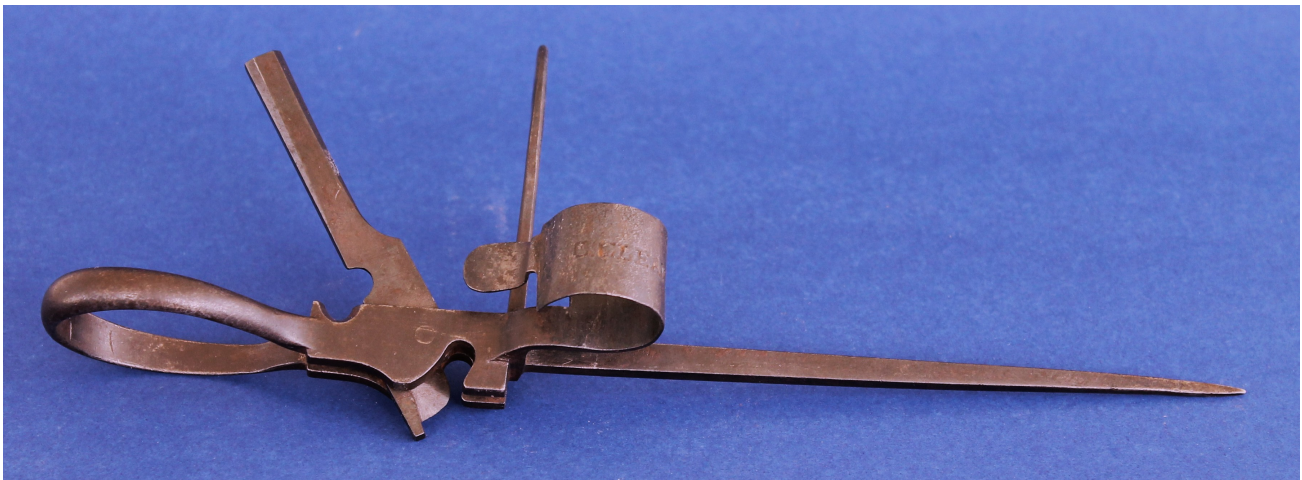


Fig. 5 - C. Cleaves fuse-cutter cutting blade from the thimble side. The curved blade fuse-cutter from the thimble side.

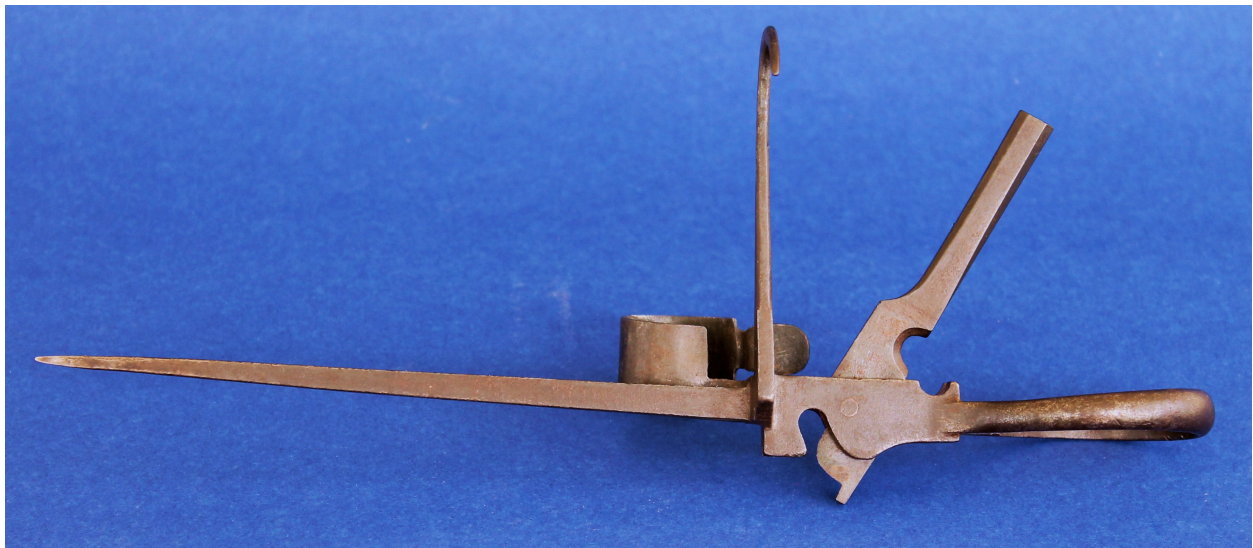


Fig. 6 - C. Cleaves fuse-cutter cutting blade from the hook side. The curved blade fuse-cutter from hook side.

The fuse-cutter itself is a one-sided blade that begins and finishes its cut on the hook side of the stick. The cut-out for the fuse-cutter is more prominent in that it is deeper (1/2" on centerline) and more vertical (45°) than what is shown on the sticks in *Eureka!* 37. The fuse-cutter handle becomes a tapered and flattened octagonal bar once it passes the fuse-crimper. The fuse-crimper begins and finishes the crimp on the thimble side of the stick. The cutting and crimping platform is flat with squared edges at the sides. A conversation with Hal Post confirmed that the stick shown on his website: <http://www.halslamppost.com> has these platform edges rounded. Hal's variation of the stick has the pear-shaped handle and an ornate thimble.



Fig. 7 - C. Cleaves fuse-cutter & standard stick. A view showing the relationships of the thumb tabs to the hooks as seen from the handles.

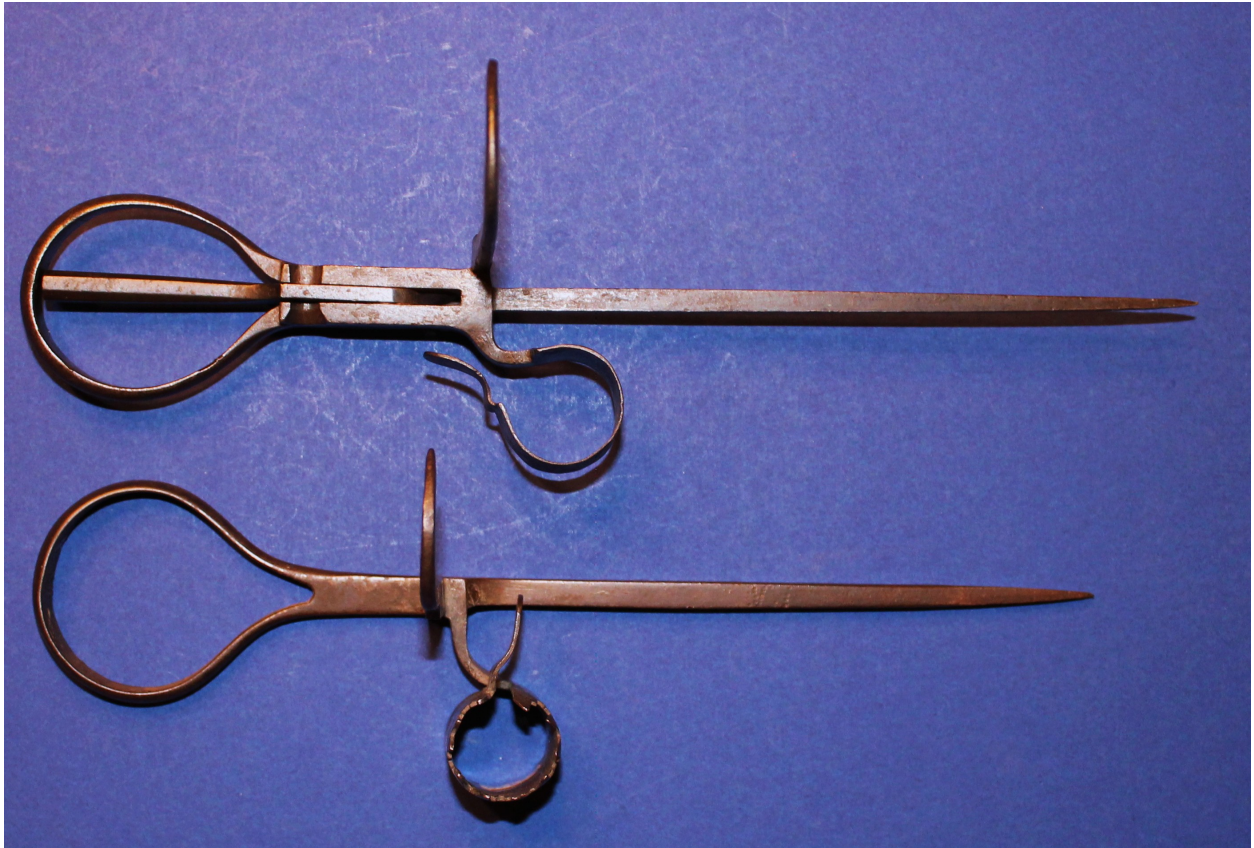


Fig. 8 - C. Cleaves fuse-cutter & standard stick. A view showing the relationships of the thumb tabs to the hooks as seen from above.

From looking at all the variations of candlesticks that Charles Cleaves produced it is abundantly clear that he was just as much an artist as he was a blacksmith. Creativity was probably only controlled by how much you were willing to pay for one of his candlesticks and the amount of time you allowed him to craft it. Each stick seems to be an object of creativity unleashed from the ho-hum job of ordinary day-to-day blacksmithing.

Stick dimensions:

Length: 10 3/8 inches (261 mm)
Thimble height: 0.81 inch (21 mm)
Thimble arm: 0.32 inch (8 mm)
Hook height: 3 3/8 inches (84.7 mm)

1902 Globe, A. T. Candlestick

by Bill Collins

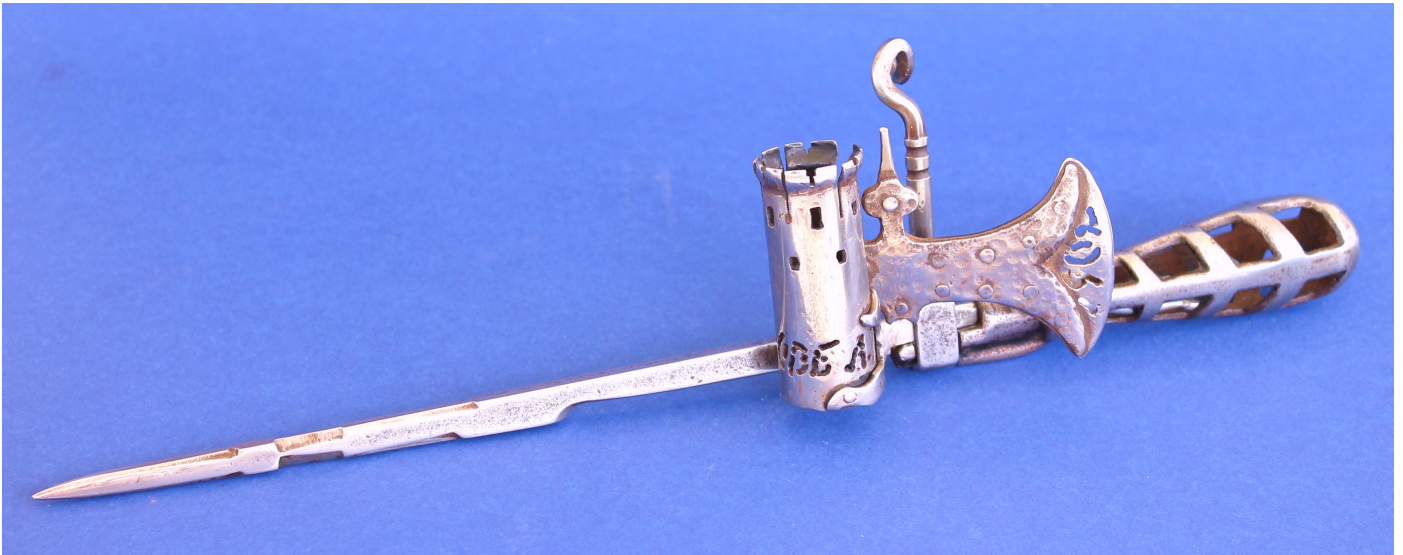


Fig. 1 – Globe, A.T. 1902 Fancy Candlestick, thimble side

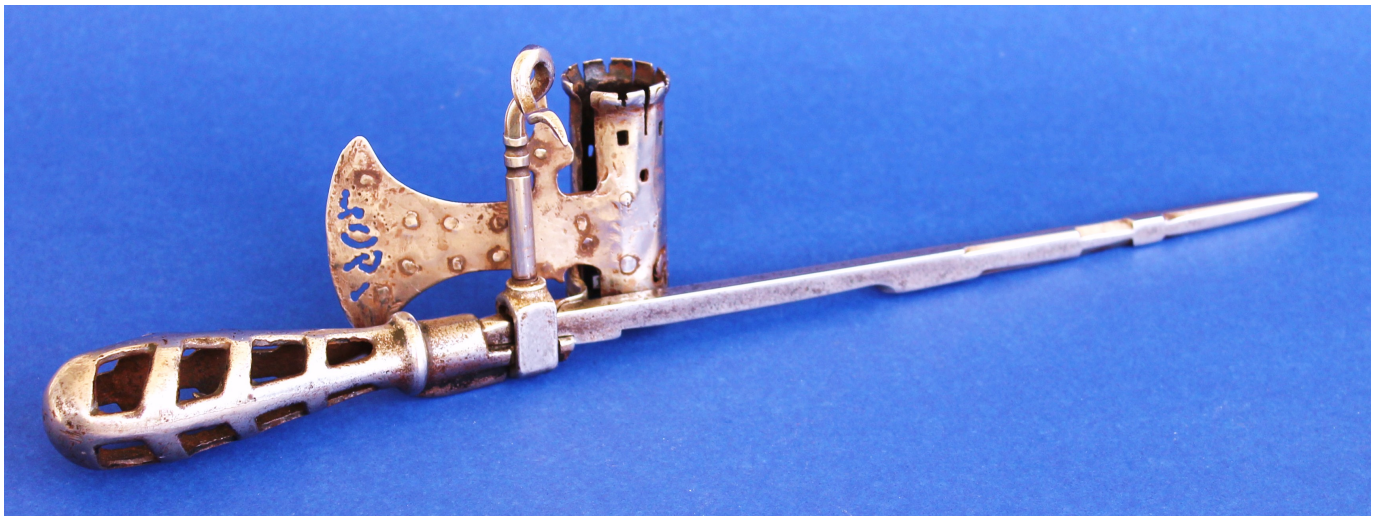


Fig. 2 – As seen from the hook side

The annual Tucson Gem & Mineral Show of 2013 brought thousands of people to town for a chance to buy something new for their collections whether it was mineral, fossil or mining related. I traveled early from The Villages with the car loaded down with mining stuff. I just hoped it would sell well enough to cover the new stuff I knew I wanted. The week before our annual mining show left me with more than enough time to buy lapidary material for a member of our local gem & mineral club and then set out looking for family Christmas presents and treasures for myself. At one of the bigger hotel/motel operations I spotted the Dick Campodonico candlestick auctioned off last November by Paige Auction in Portland, OR. The winning bid had been made by Dave Lewis, a retired Salt Lake mineral and mining artifact collector and dealer now living in St. George, UT. His son, James, was working for one of high-end mineral dealers and the candlestick was in the bottom of one of their cases. Things were a little slow at the moment so we talked about his dad and the shop in the old

Trolley Barn in downtown Salt Lake City and the annual appearance of Dave at the Executive Inn in Tucson every February. James said he could do better on the posted asking price of \$7400 net. I left my card. Over the next 3 days I gave it a more inquisitive look. By the 5th day, while kneeling down on the concrete floor I spotted the small mining tool (driller's spoon) tucked away in the handle. I asked to see the stick in my hands and we carefully took it apart. James had spoken to his dad and I was offered the stick at an even greater discount and sworn to secrecy. I decided there was no way I could pass it up and made arrangements to buy it that day.



Fig. 3 The "stove lid" handle



Fig. 4 The spike with driller's spoon ornamentation



Fig. 5 The thimble and thumb tab from the thimble side



Fig. 6 The thimble and thumb tab from hook side

It was advertised as a Superb Reciprocating Miners Candlestick but it really is a Superb Disassembling Candlestick. The candlestick consists of four major pieces. Fig. 1 shows the assembled candlestick from the thimble side and fig. 2 shows the stick from the hook side.

The hollow handle has an old “stove handle” appearance and the spike is only moderately fancy for the first 5 inches and then rather plain with short trapezoidal cut out area for the thimble attachment. The most interesting part is the driller’s spoon, shown in fig. 4, formed at the rear end of the spike.

The fanciest parts of the candlestick are the thimble and thumb tab (Figs. 5 and 6). The thimble is in the form a castle tower complete with a notched parapet, 10 windows staggered on two levels of five for defense, and the cutout inscription GLOBE A. T. at the bottom. An end view of the castle thimble is shown in fig. 7. The thumb tab is in the form of a modified halberd, a 15th to 18th century weapon of war, complete with ax blade and pike, the hook portion of the halberd has been eliminated as it would have been wrapped into the thimble itself. The ax blade has been formed from two pieces of steel. The second piece was added starting inside the thimble to give support to the tab. It also allowed the blacksmith to make the thumb tab fancy since it was the custom of halberd blacksmiths to spice up their work. The steel extending from the thimble to form the tab has been joined to this second piece with 14 rivets. The reinforcing portion of the tab is truncated like a split fish tail leaving only the first section of metal to form the curved end of the blade. This portion has been inscribed by cutting out the date 1902. The thimble is attached to the thimble arm by a fancy, squiggly backward C-shaped contrivance with four rivets. The thimble arm ends in a short (Greek capital Pi) Π-shaped trapezoidal section which fits into the slot cut into the spike. A small rectangular sleeve with a threaded hook having a very unusual combination of bends tightens down to lock everything in place; this is shown in fig. 8.



Fig. 7 (left) – An end view of the thimble



Fig. 8 (right) – The sleeve & hook

To assemble the stick the sleeve is first placed on the lower platform extension of the handle, pushed up and oriented vertically. The spike is then inserted spoon first until it reaches its stop. The thimble/thumb tab is placed on the top side of the stick and slid toward the handle until it drops into the trapezoidal slot. The hook is then tightened down to lock it all in place. The assembled stick with the spoon end of the spike visible is shown in fig. 9. Unfortunately there are no records to indicate which Globe area blacksmith made the stick and there are no records of ownership before Dick Campodonico. Placing the sleeve on backwards and attaching the hook leaves the hook in a useless backward position. The stick is then quite difficult to disassemble to correct the mistake. I know this first hand. This candlestick was certainly constructed for presentation purposes only as it is totally impractical to use.

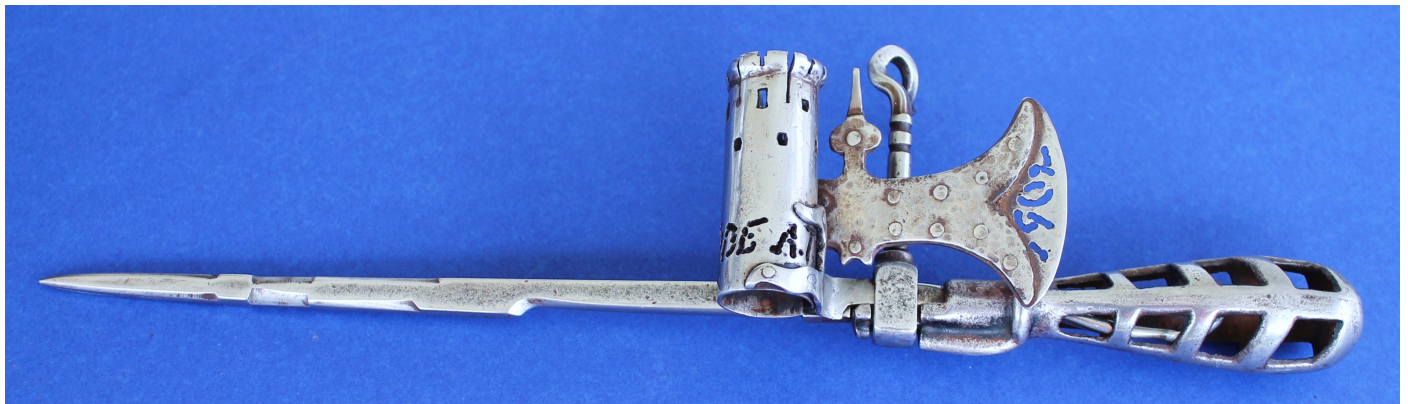


Fig. 9 – Candlestick with the driller's spoon visible inside the handle

An example of a halberd head is shown in fig. 10. This weapon is from the period 1770-1780 and was standard British issue. Its usefulness was probably limited to pulling cavalry men from their horses rather than its original intent for piercing armor since the world had moved into the era of firearms. The halberd head is approximately 10.4 inches long was mounted on a pole approximately 7 feet long. It can be viewed at the Morristown National Historic Park in Morristown, NJ.



Fig. 10 – A British halberd from the late 1700s (photo: NPS.gov)

The castle and halberd figure into the design of the stick remains a mystery. Perhaps the blacksmith was from Cornwall, England, where medieval castles are common and battles were fought. Perhaps the blacksmith was a bit more educated than the rest of the crowd and was able to read Mark Twain's *A Connecticut Yankee in King Arthur's Court* which was first published in 1889. Perhaps he was just a dreamer.

Candlestick dimensions:
Overall Length: 13 ³/₄ inches (345.13 mm)
Spike length: 12 ⁷/₁₆ inches (312.18 mm)
Thimble height: 2 ⁷/₁₆ inches (62 mm)
Thimble arm: 1 ¹/₈ inches (28.24 mm)
Hook height (including sleeve): 3 ¹/₂ inches (87.85 mm)

Unfinished Pieces

by Dave Thorpe

Those who travel to Florence, Italy are generally drawn to a statue that is considered by many to be perfection in marble: Michelangelo's David. The building where it is housed could be mistaken for an old cathedral — but Italians know it as the Galleria dell'Accademia. At the far end of a dimly lit hallway his form stands out from the light of overhead windows.



Walking towards the David, a visitor is aware of other eerie stone figures arranged along the sides of the corridor. They are a group of Michelangelo's unfinished pieces known as Slaves. Each is a tall block of white marble partially carved into the form of a man. A shoulder and arm emerge from one section; a head and partial torso appear in another. The impression is that of humans frozen in a struggle to break free. In fact, Michelangelo is famous for saying that he worked to liberate forms imprisoned in the marble.

On occasion I have found miner's carbide lamps that were incompletely assembled at the factory. Perhaps they sat on a parts shelf awaiting an assembly that never came. Like Michelangelo's Slaves, they want to tell a sad story. While complete lamps knew a life in the coalmines, these juveniles never left their creator's home. With no further anthropomorphisms or comparison to Italian art, I will introduce unfinished carbide lamps I have collected over the years.

It was the late 1980s when I first met collector Stephen Loftin in his Nashville home. He has a penchant for the eclectic. After playing with his electric-arc plasma ball and doodling graphics on his state of the art Amiga computer, we went to the lamp room. Here, I was shown a few pieces of Ashmead lamps obtained from a former employee of the company. What a treasure! The pieces gave a glimpse of what it was like in the small factory. The most complete piece was a base where the screw cap was not yet crimped and the bottom seam still not fully rolled. Over twenty years later I bought these same parts via an internet auction.



Recently an antique dealer from Ironton, Ohio contacted me about four Ashmead lamps he had come across. Ironton lies directly across the Ohio River from Ashland where the lamps were manufactured throughout the 1920s. Of the four, two were Elkhorn lamps and two Buddys. All were unused, but none had reflectors or reflector braces. They had never been completed for duty and their different styles represent different periods of manufacture. One may only speculate as to the background of these four faceless soldiers. The two Buddy lamps are gilt painted, a finish I have not seen before on Ashmead lamps.



Finally, I have come by two steel bases for late model Justrite hand lamps. At first glance they appear to have brass lids. But these "lids" have uncrimped edges and predrilled holes — they are in fact the unassembled lower portions of water tanks.

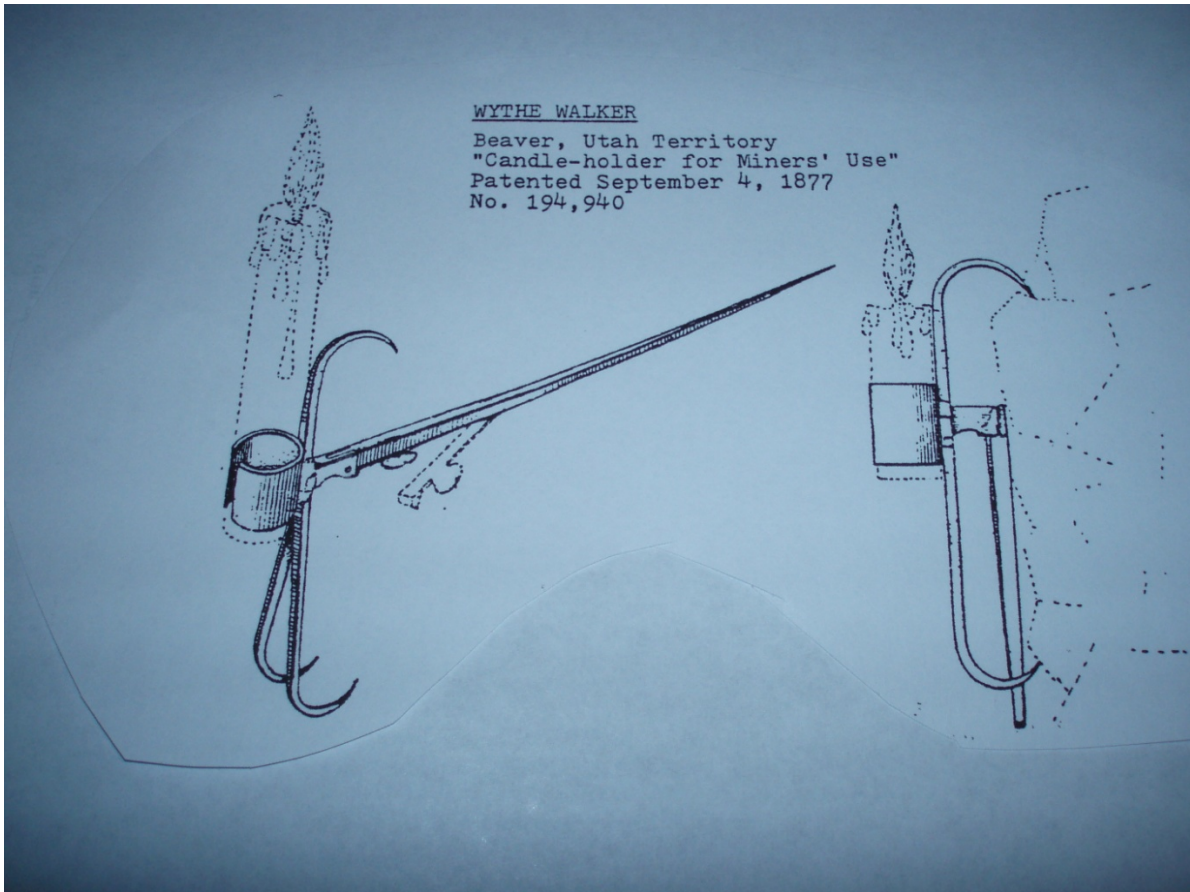


I am a longtime collector who needs something a little offbeat to entertain. These unfinished masterpieces do just that!

Walker Candlestick

by Al Winters

Wythe Walker patented his miners' candlestick in Beaver, Utah Territory on September 4th, 1877. His candlestick patent # 194,940 is the 4th oldest known and the neat design incorporates a folding spike and claw.



From W. Wilson's Patent book

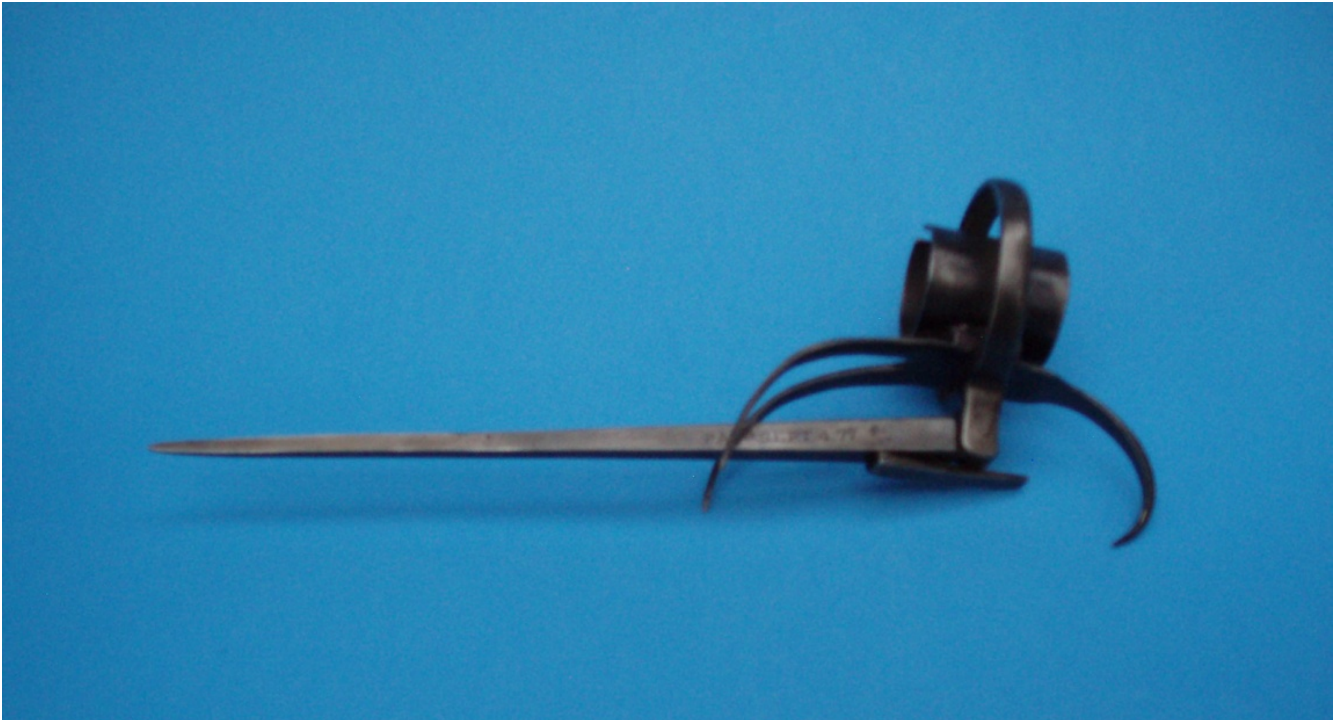
The Walker stick is an oddball and very rare. Only 2 examples were known prior to the new discovery. Roger Peterson of Amador City, CA and the Smithsonian Museum had the only known examples. The third example was purchased on e-bay and was in very poor condition. It was missing the thimble, had a broken claw point, unreadable patent date, missing locking lever and was pitted.

Roger agreed to try and restore the stick and was able to use his own example to duplicate the missing parts. The manufactured stick varies from the patent drawing in that it incorporates a handle which makes sense in that a miner could more effectively push on the handle verses the thimble to insert the spike into the wall of the mine opening.



Restored Walker Candlestick. (7 inches long—6 ½ inches folded)





Walker candlestick folded



Patent date

As can be seen from the photographs, Roger has done an excellent job in this restoration project and has brought back to life a rare artifact. The Walker stick is unusual and not very practical for severe mine use. As such few were likely made and sold and those that were used probably did not survive, hence the rarity. Other Walker examples will most likely turn up over time but it is suspected new discoveries will be few and far between.

The D-cell Battery in Mine Lighting

by Dave Thorpe

Carbide lighting was introduced to the mining industry in 1900 with the Baldwin Full Moon lamp — a time when portable electric lamps were already in general use.

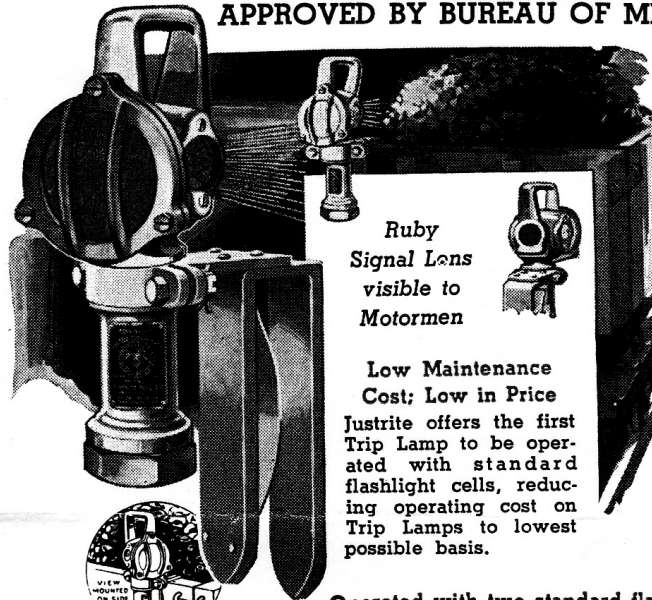
Dry cell batteries were immensely popular for flashlights but never predominated in the mining world. There were disadvantages when compared to acetylene. The batteries were heavy enough that a set of four could not be worn comfortably on the helmet and two batteries would not last an entire shift. The alternative was to carry a battery pack on the waist with electric cords running up the body to the headlamp. These were and still are a nuisance in the confines of a tight and dark work area. The dry cell could not be recharged repeatedly and was therefore costly for full-time work use. When concerns for explosive mine gases led to a phase out of flame lighting over the 1920s, miners compromised by using an electric headlamp with a heavy rechargeable wet cell carried on the waist. Although cumbersome, the wet cell electric lamps were indefinitely rechargeable. Limestone cave explorers on the other hand do not encounter explosive gases and the carbide lamp remained their choice until the late 1990s when powerful LED lamps with rechargeable lightweight helmet-mounted lithium batteries reached a satisfactory level of development.



The D-cell battery (commonly known as the flashlight battery) was invented by The National Carbon Company of Cleveland, Ohio in 1898. The company was founded in 1886 W. H. Lawrence along with Webb Hayes, son of U.S. President Rutherford B. Hayes. A coincidental association in the history of mine lighting is that Regina Hayes, another descendant of the president, was married to Alexander Jenkins of Baltimore and helped manage his Alexander Milburn Company, a major manufacturer of acetylene lamps. National Carbon had produced their first dry cell battery in 1896: a sealed 6-inch cylinder trademarked as the “Columbia.” The D cell soon followed and business prospered. The company merged with The American Ever Ready Company and in 1914 became simply Eveready. Today the same company makes Eveready and Energizer brand batteries.

Justrite SAFETY ELECTRIC MINE CAR TRIP LAMP

APPROVED BY BUREAU OF MINES



Ruby
Signal Lens
visible to
Motormen

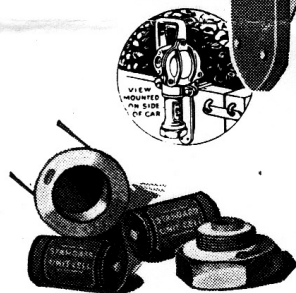


Low Maintenance
Cost; Low in Price
Justrite offers the first
Trip Lamp to be oper-
ated with standard
flashlight cells, reduc-
ing operating cost on
Trip Lamps to lowest
possible basis.

APPROVAL



No. 1013



Operated with two standard flashlight cells, giving a powerful light for a 35 or 40-hour week.

Easy loading—insert two cells just like a flashlight. High grade Railway Signal Lens 3½ inches diameter and 3 Ruby Signal Lenses, one on each side of trip lamp, giving visibility to motorman permitting him to see light on end of trip or train of cars.

Bulb—long life 250-hour Bulb sets on spring cushion to absorb all shocks. Positive bulb and battery contacts—giving a steady, non-flickering light at all times.

Practically indestructible—least number of parts—recharging eliminated.

Very little attention required for maintenance.

A Trip Lamp of sturdy construction built to stand the abuse required of a lamp of this kind. Lamp body constructed of malleable iron, cadmium plated—RUSTPROOF.

Hooks are made in three sizes. Specify size or order by catalog number, as follows:

- No. 340-A Lamp for car bodies ¾" to 1½" thick. Price.....
- No. 340-B Lamp for car bodies 1½" to 2¼" thick. Price.....
- No. 340-C Lamp for car bodies 2¼" to 3 " thick. Price.....

SUPPLY PARTS

No.		No.	
340-A-5	Large Front Lens	340-A-16	Seals, per 100
340-A-6	Small Rear and Side Lens	340-A-17	Lamp hook for car bodies ¾" to 1½" thick
340-A-7	Large Rubber Lens Gasket	340-A-18	Lamp hook for car bodies 1½" to 2¼" thick
340-A-8	Small Rubber Lens Gasket	340-A-19	Lamp hook for car bodies 2¼" to 3" thick
340-A-9	Key	340-A-20	Base Plug Complete
340-A-10	Bulb Retaining Wire	340-A-21	Bulb Socket Complete
340-A-11	Lens Guard		
340-A-12	Guard Screws		
340-A-14	Batteries		
340-A-15	Bulb (Packed 10 in Box)		

One lamp using dry cell batteries did see use in the mines. With weight not being an issue for mine car lights, Justrite Mfg. Co. produced a cast iron trip lamp powered by two D-cells. Ads have been seen as early as 1912 and it was listed in Justrite catalogs into the 1930s. In a manner similar to safety lamps used for testing gas, a special key (kept outside the mine) was needed to open the lamp since an electric spark could also ignite methane.



This unused Justrite trip lamp still lights its original bulb when loaded with two D-cell batteries. There is no on/off switch. A spring-loaded bracket was used to mount it to the mine car. The front “ruby” lens is three inches in diameter and three smaller lenses are mounted on the sides and back. All lenses are sealed with adhesive and gaskets. The lamp is extremely rugged. Advertisements state that it was cadmium plated and rustproof. Thanks to Neil Tysver for providing a copy of the advertisement.

Thomas Cox Miners' Candlesticks

by Al Winters

Thomas Cox, blacksmith and inventor working at the Gloster mine in Montana Territory, patented two miners' candlestick holders. The mine is located about three miles west of Marysville which is home to the famous Drumlummun gold mine located in Lewis and Clark County, 25 miles Northwest of Helena, Montana. In 1881 the Gloster mine was owned and operated by the Boston and Montana Company, which worked a 10 ft wide gold-silver vein. Milling was through a 10 stamp mill that was later expanded to 60 stamps. The ore averaged \$18/ton but recovery was very poor at just over 50%. The property was later combined with the Piegan and Shannon properties and operated through 1923.

Thomas Cox patented his first candlestick on July 7, 1885 and his second on August 17, 1886. Both candlesticks incorporated a snuffer in the patent papers but the actual models did not include the snuffer. The first patent describes a socket-piece (spring steel thimble) attached to a bar (spike). The patent then describes the snuffer and benefits of not having a candle heating up the socket and dropping out the bottom.

Cox Patent # 321,798



The spring steel (socket) portion of the thimble which secures the candle is separate from the spike in Cox's first patent and riveted above the candle opening in the spike as shown.

Following his first patent, Cox worked to improve his candlestick and focused on a positive mechanism for preventing the candle from slipping out of the holder (thimble). Rather than relying on a spring steel thimble as built into his first candlestick his patent papers for the improved candlestick describe the incorporation of a spring held candle locking pin or plunger designed to secure the candle in the holder.

Cox Patent #347,691



The second patent incorporates a spring held pin or plunger which secures the candle.



1886 Cox candlestick with original 1886 patent papers.

*After his second patent was granted Cox continued his pursuit to improve his candlestick. The exposed spring tensioning the candle locking pin probably proved impractical in a mine environment. Recognizing the design flaw (?), Cox kept the idea but modified the candlestick by concealing the spring and candle retaining plunger within the spike itself. This final (?) modification incorporated a spring release and plunger retraction lever located on the spike between the handle and thimble.

Improved Cox Candlestick



The spring and plunger are retained within the spike itself by means of a screw located in the handle. The improved version incorporates a release lever and is nickel-plated.



Tom Cox never patented his improved candlestick though the idea was very unique.

The Cox sticks shown are very rare and may be the only examples (?). The latter two were found in Montana and the first Cox patent and patent papers were acquired from Roger Peterson of Amador City, California. Peterson acquired them from Errol Christman of Grass Valley who secured them from the Cox family (?).

Cox Candlesticks Compared



*The Cox candlesticks were among the earliest patents and illustrate the development and improvement of an idea by an inventor having the desire to build a better widget. Other mechanical candlestick examples illustrate the same type of development as the blacksmith/inventor sought to improve his product. Because of the lack of known examples, the Cox candlesticks were probably (?) never produced commercially.

*Assumptions made by the author.
Al Winters 3/20/2014

Restoration of a C. Cleaves Candlestick

by Bill Collins

In early May 2013 Neil Tysver approached me via the *Forum* about possibly trading what he accurately termed a “beater C. Cleaves fuse cutter stick” for a National Carbide 2-pound tin from Bluefield, West Virginia. It wasn’t my can that caught his eye but a photo I had taken of one that Bob Schroth had for sale back at either the 1995 or 1996 Lead, South Dakota western mining shows. I had just happened to post a photo to the *Forum* adding to a string of comments on National Carbide tins. I didn’t really need an ugly candlestick, however, the thought of obtaining another C. Cleaves candlestick was tempting and we exchanged photos, thoughts and offers.

I contacted Tony Moon for his assessment of the stick. His opinion was: “I hate to say it but this is the worst example of a Cleaves stick that I have ever seen! At least the bar for the fuse cutter still moves!” I then contacted Roger Peterson to see if he thought he could restore the stick for a reasonable price. He thought it was worth a try.

Neil and I worked out a trade and away from my collection went a Twentieth Century hand lamp, missing a handle and the guts, to Alaska; I had recently bought the Twentieth Century at the 2012 Tucson show from Dave Thorpe. Back to me, and true to the photos, came this extremely ugly beater C. Cleaves candlestick. The best things about it were that the teardrop handle still had its shape and the bar cutter worked as shown in figures 1 through 3.



Fig. 1 - C. Cleaves fuse cutter candlestick in its closed position (thimble side) before restoration.

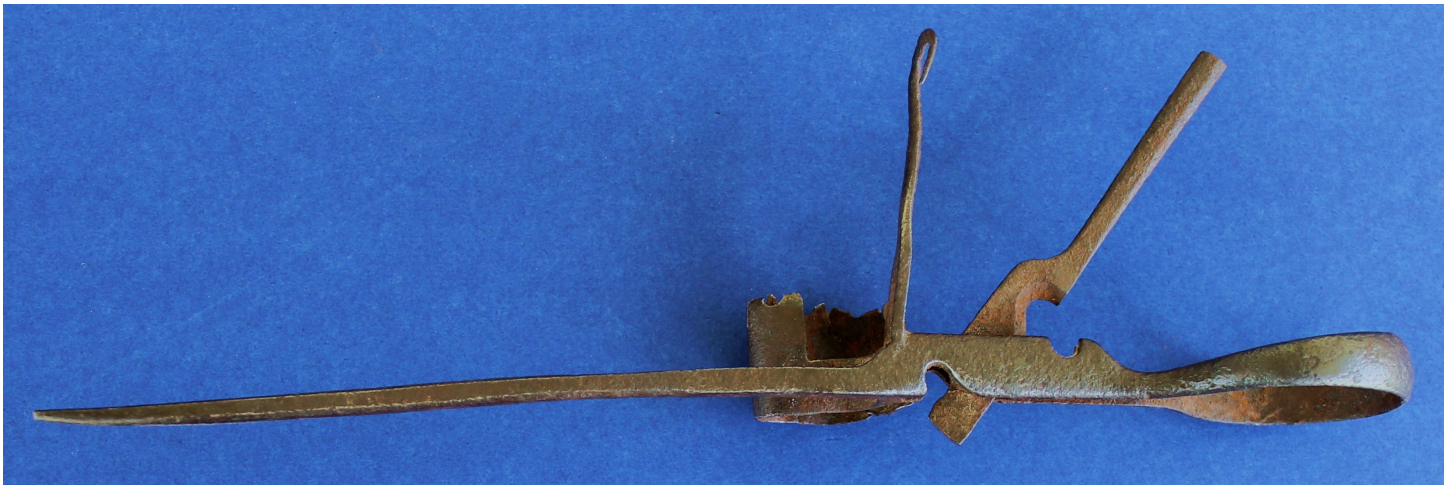


Fig. 2 - C. Cleaves fuse cutter candlestick in its open position (hook side) before restoration.



Fig. 3 - C. Cleaves fuse cutter candlestick in its open position (thimble side) before restoration.

The candlestick was bent and incomplete. Much of what remained was thin and pitted. The thimble was a crushed wreck and it was impossible to tell what kind of top decoration (castellations or flames) it might have had, but it wasn't flat. The standard stamping C. Cleaves was evident and the eyebrows were visible. If there ever were dots under each eyebrow they were now gone. The thumb lever had been broken off many years before this. The hook had been severely weathered and what remained was bent, quite thin and dinky. This damage can be seen in figures 4 thru 6. A topside view is presented in figure 7.



Fig. 4 - C. Cleaves fuse cutter candlestick in its closed position (hook side) before restoration.



Fig. 5 - C. Cleaves fuse cutter candlestick thimble before restoration.



Fig. 6 - C. Cleaves fuse cutter candlestick thimble without thumb lever before restoration.



Fig. 7 - C. Cleaves fuse cutter candlestick in its closed position before restoration.

It was Roger's opinion the thimble would be difficult to be even partially salvaged due to the severe pitting and getting a proper weld to hold it together but we could try. Also the hook was frail and should be replaced. So both items were removed. Templates for the thimble and hook

were constructed for each part. A proper flat thimble was fashioned and sent to an engraver for the addition of C. Cleaves and the eyebrows with dots. The initial “C,” which usually appears to be backwards, was purposefully engraved as a forward “C.” The steel was then formed into a properly sized thimble with an attachment arm. The replacement hook was fashioned by Roger. Roger straightened out the spike and was able to remove most of the rust and shallow pitting. Another party did the welding. After the removal of any signs of welding and some additional tweaking, the candlestick was finished March 2014.

Several delays were caused by time spent trying to save the thimble from total replacement by welding a new ornate top to the old pitted metal (it just wasn't going to happen), scheduling time with the engraver (it took a couple times to get it right), and lastly scheduling time with the welder. The restored stick, which can be viewed in figures 8-13, was not polished off to blacksmith newness. Considering that none of the C. Cleaves handmade sticks is exactly the same I think the restoration project turned out quite nice. Thanks to Tony Moon and Roger Peterson for reviewing the draft of this article.

Stick dimensions:

Length: 11 9/16 inches (290 mm) Thimble height: 1 3/16 inches (30 mm)
Thimble arm: .54 inch (14 mm) Hook height: 2 15/16 inches (74 mm)



Fig. 8 - C. Cleaves fuse cutter candlestick in its closed position (thimble side) after restoration.

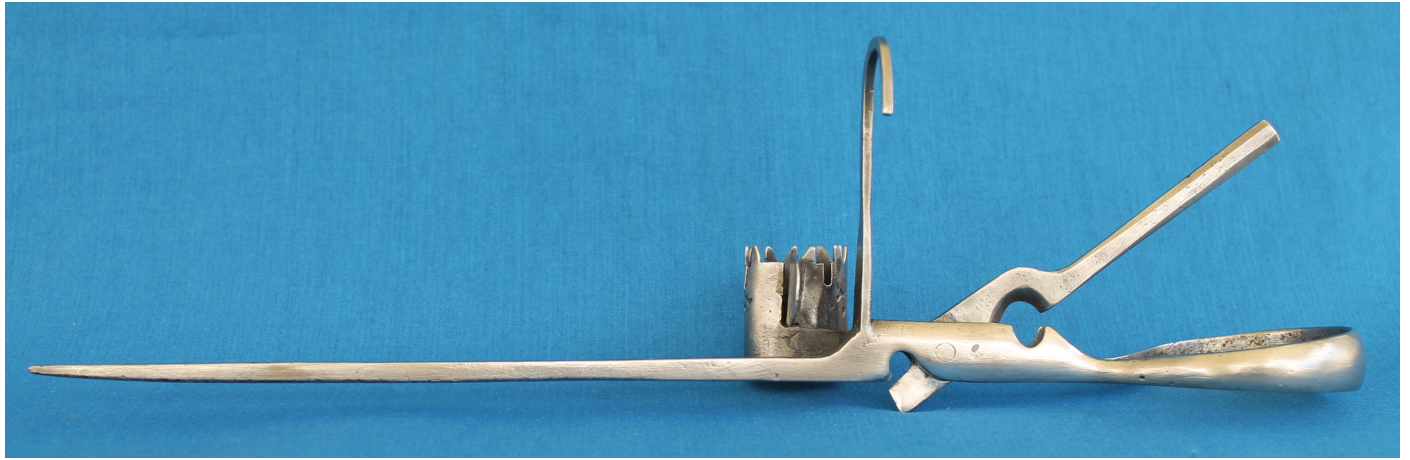


Fig. 9 - C. Cleaves fuse cutter candlestick in its open position (hook side) after restoration.

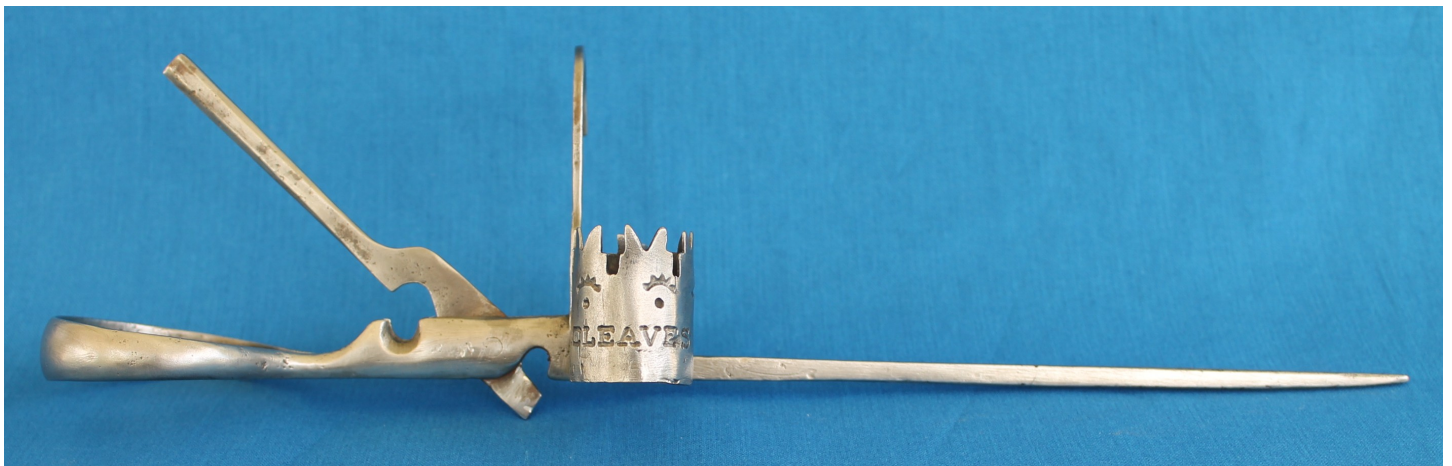


Fig. 10 - C. Cleaves fuse cutter candlestick in its open position (thimble side) after restoration.

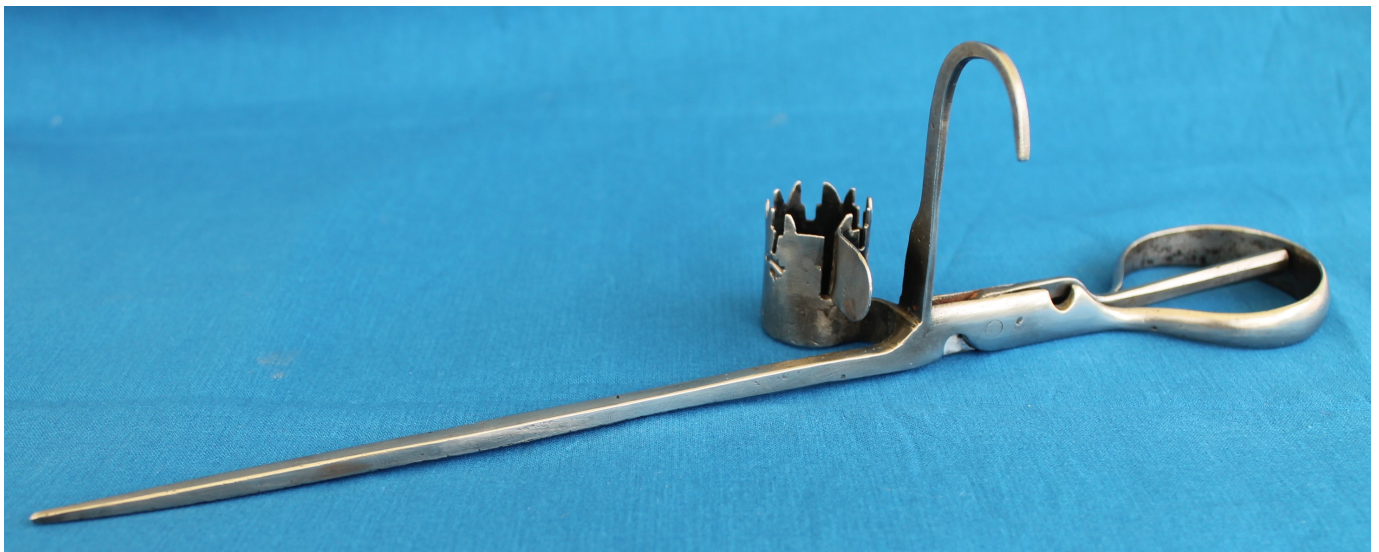


Fig. 11 - C. Cleaves fuse cutter candlestick in its closed position (hook side) after restoration.



Fig. 12 - C. Cleaves fuse cutter candlestick thumb lever and thimble with corrected "C" after restoration.

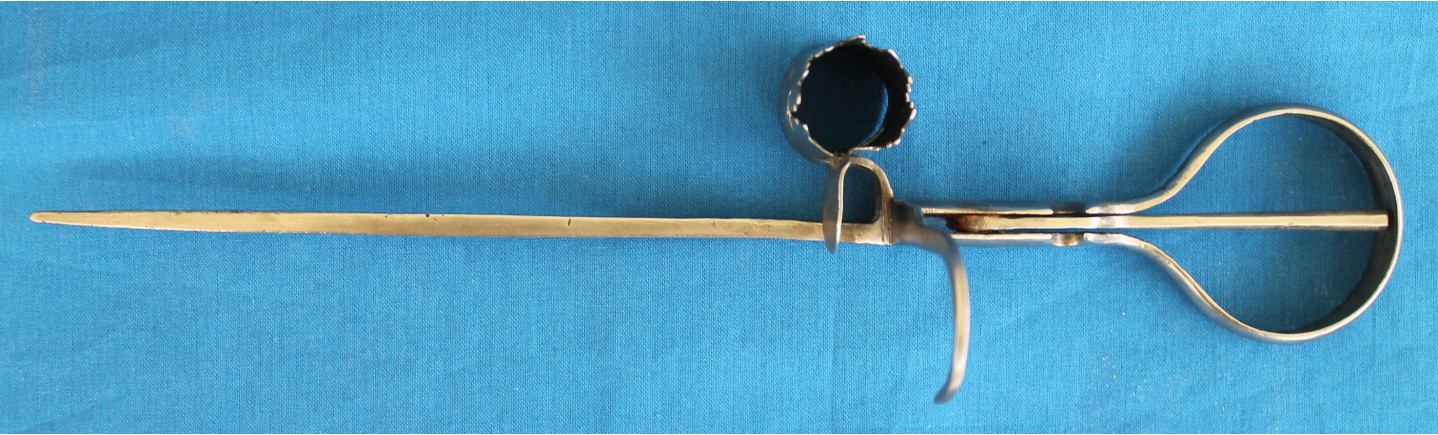


Fig. 13 - C. Cleaves fuse cutter candlestick in its closed position (top down view) after restoration.



AUSTIN POWDER COMPANY

A New Blasting Cap Tin

Douglas K. Miller

On October 29, 2013, I purchased a blasting cap tin that I was pretty sure I did not have in my collection. I say “pretty sure,” because much of my cap tin collection is still packed away, a result of our having done some extensive remodeling of our home and my needing to get my mining artifact collection out of harms way while the work was done. In many ways, the tin was quite similar to other Austin tins I’d seen on eBay and that I have in my collection. A photo of the top of the tin was prominently displayed in the listing. No. 6, 100-count Austin tins don’t come up very often; however, they come up often enough that I believe most bidders thought that this was one of the two more common 100-count Austin tins. But as I examined the tin more closely, I began to suspect that the tin was different from any other Austin tin I’d seen or read about before – and it is the differences between this tin and the other Austin tins in my collection (and its similarity to tins by other manufacturers) that tell the most interesting part of the story.

Five brothers from Vermont founded Austin Powder Company in 1833. They had travelled west to find a suitable site for a powder mill. They found ample raw materials in Kansas City, Missouri, but little market, so they turned back and eventually settled in Ohio, along the Cuyahoga River, just south of Cleveland, where they established the first powder mill in Ohio. In 1867, the brothers incorporated the Austin Powder Company, and the company has been in business ever since. Today, Austin Powder Company manufactures a full line of industrial explosives and provides blasting services to customers throughout the world.

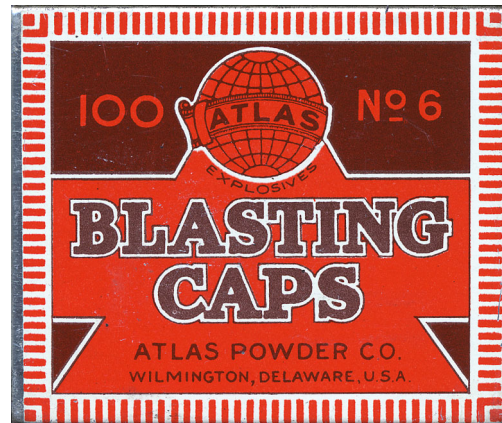
Knowledgeable collectors, most notably Andy Martin and John Kynor, Sr., have observed that the blasting caps sold by many companies were probably manufactured by a few large companies, like California Cap Company (Martin 1991, 20-23; Kynor 2008, 20-21). They were then packaged in tins made by large manufacturers of tin cans, such as American Can Company, which were imprinted with the individual company logos. The tins in my collection and the most recently discovered Austin tin seem to provide strong evidence in support of both of these observations.

Up until the discovery of the tin I’m writing about, it was believed that there were only three varieties of No. 6, 100-count Austin tins. All three of the previously known varieties are referred to in Andy Martin’s *Blasting Cap Tin Catalog* (at pp. 5-6) and John Kynor’s *Blasting Cap Workbook* (at pp. 110-12). Color pictures of the three tins are also shown in Plate 32 of John Kynor’s *Workbook*. I will use Andy Martin’s reference system throughout this article. The three previously known Austin 100-count, No. 6 tins are described below.

The first Austin tin is red with white letters (described in Andy Martin’s *Cap Tin Catalog* as **Austin, No. 6**, and dated as having been manufactured between 1920-1950) (Martin, 16). This tin is very similar to later versions of Du Pont No. 6 tins, particularly **Du Pont, No. 6, style “A”**. Pictured below are the lids from the Austin tin and from a Du Pont, No. 6, style “B” tin. The Du Pont, No. 6 style “B” tin differs from the style “A” tin only in having the words “REG. U.S. PAT. OFF” printed beneath the Du Pont logo.



The second Austin tin is painted white, orange and black, and has metallic or “gilt” edges. It is referred to by Andy Martin as **Austin N°6** and is dated by Andy as having been used between 1920 and 1950 (Martin, 16). As Andy notes, the tin is very similar to the **Atlas N°6, square, globe “B,” Var 2** tin (Martin, 16, 12-14).



The third No. 6, 100-count Austin tin is painted dark red with gold lettering and gold edges. It is referred to by Andy Martin as the **Austin No. 6, Var 2**, and is said to have been used between 1910 and 1930 (Martin, 16). It is very similar to the much more common **Illinois, St. Louis, Var 1** tin. I do not have an example of this Austin tin in my collection, but it is pictured at Plate 32 of John Kynor’s *Workbook*.

The newly discovered Austin tin, which is a fourth example of a 100-count, No. 6 Austin tin, is striking and beautiful.



It is nearly identical to the **Austin N° 6 tin** in my collection and described in both Andy Martin's *Catalogue* and John Kynor's *Workbook*, but it has white as opposed to gilt edges. In this regard, it is most like the **Atlas, No. 6, square, Globe "B", Var 1**, tin.

The messages on the sides of the newly discovered Austin tin are:

**BLASTING CAPS
DANGEROUS
HANDLE CAREFULLY**



**KEEP
DRY**

**KEEP
FIRE AWAY**

The messages on the ends of the new Austin tin are:

**AUSTIN POWDER
COMPANY
CLEVELAND, OHIO, U.S.A**



Other than the differences between the companies' trademark symbols, the messages on the Atlas and Austin tins are identical. Here is a side-by-side photo of the Austin tin and of the analogous Atlas tin.

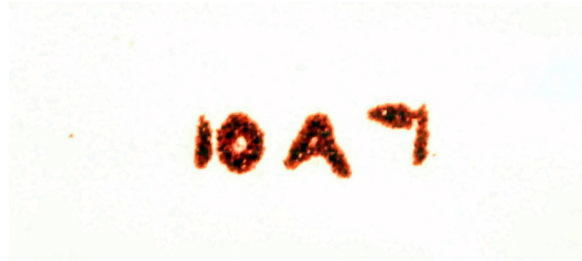


The Atlas and Austin tins are identical in size - 1 1/2" x 2 1/8" x 2 1/2". However, unlike the white edges on the Atlas tin, the "white" on the Austin tin is slightly "buff" in color - a nice contrast to the black and red lettering. As tin collectors, we might have suspected that an Austin tin like the one recently discovered also existed, given the strong similarity between the previously known varieties of Atlas and Austin tins and the fact that two Atlas tins in the same pattern, one with metallic or gilt edges and the other white edges were known to exist. But it is especially gratifying to find an example of such an Austin tin.

Both the Austin and Atlas tins appear to have been manufactured by American Can Co. If you look very closely at the photos of the newly discovered Austin tin, you can see the American Can Co. notation on the bottom front of the Austin tin. It reads "A.C.CO.10 A (x)."



A similar notation appears on the lip of the top of the Atlas tin. It reads "10 A [and a symbol that looks like a 7]." John Kynor has done a detailed study of such markings (Kynor, 150-51).



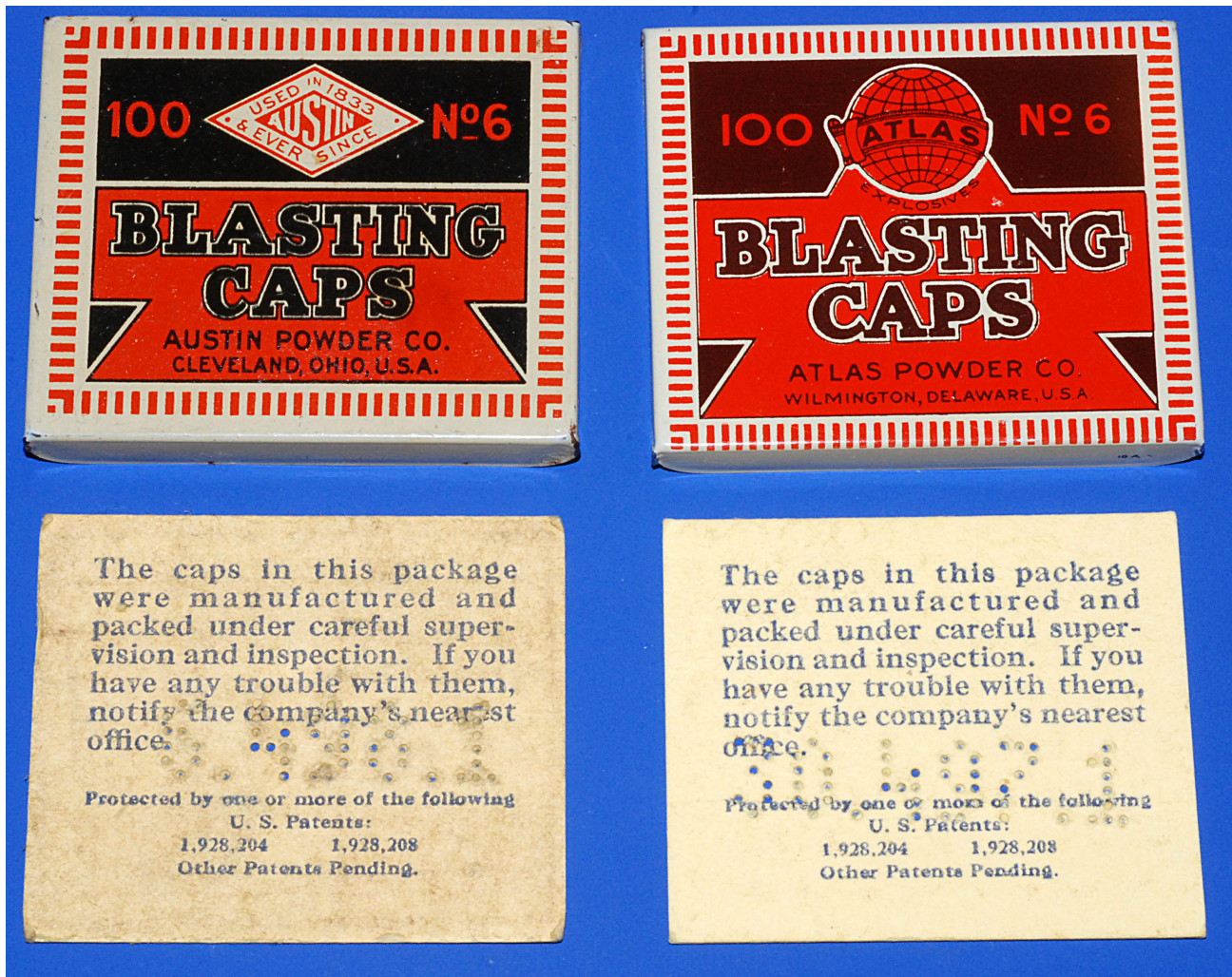
Similar American Can Co. markings appear on the lids of the red Austin and Du Pont tins pictured in this article.

The new Austin tin is in excellent condition and includes a "warranty card" with company patent numbers.

The caps in this package were manufactured and packed under careful supervision and inspection. If you have any trouble with them, notify the company's nearest office.

Protected by one or more of the following U. S. Patents:
1,928,204 1,928,208
Other Patents Pending.

I have another Atlas, No. 6, square, Globe "B", Var 1 tin that contains an identical "warranty card."



The patent numbers are for patents 1,928,204 and 1,928,208 issued in 1933 to Sylvester B. Large and assigned to Atlas Powder Company.

Patented Sept. 26, 1933

1,928,204

UNITED STATES PATENT OFFICE

1,928,204

**DETONATOR AND COMPOSITION FOR
THE SAME**

**Sylvester B. Large, Tamaqua, Pa., assignor to
Atlas Powder Company, Wilmington, Del., a
corporation of Delaware**

Patented Sept. 26, 1933

1,928,208

UNITED STATES PATENT OFFICE

1,928,208

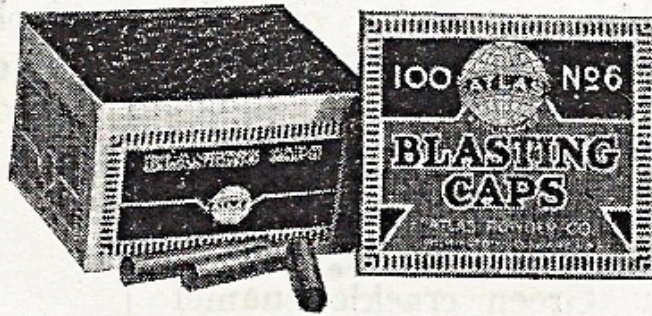
SAFETY DETONATOR

**Sylvester B. Large, Tamaqua, Pa., assignor to
Atlas Powder Company, Wilmington, Del., a
corporation of Delaware**

This strongly suggests that Atlas Powder Company in fact manufactured the blasting caps sold in those Austin tins that resemble the Atlas tins. Similarly, it is probably fair to conclude that Du Pont manufactured the caps that were sold in those Austin tins that mimic the Du Pont tins. John Kynor has reached the same conclusion, noting that the caps in Austin containers were secured either from Atlas or Du Pont (Kynor, 110). American Can Co. likely manufactured the containers for the Austin, Atlas and Du Pont tins pictured in this article.

The date of the newly discovered Austin tin is more difficult to determine, but presumably, it falls within the same date range as the similar **Atlas, No. 6, square, Globe "B", Var 1** tin. Andy Martin places the date range for this Atlas tin as between 1920 and 1945 (Martin, 14). For the **Austin N^o 6** tin, the one with the metallic or gilt edges, Andy places the date range as between 1920 and 1950 (Martin, 16). The "warranty cards" that I found in my analogous Atlas and newly discovered Austin tins with the white edges suggest that these two examples were manufactured and sold after 1933, the date of the patents. A picture of the **Atlas, No. 6, square, Globe "B"** tin appears in a page from a 1936 advertising catalogue of the Richards & Conover Hardware Co. that I have in my collection.

© DYNAMITE CAPS



No. G6DC—Sextuple force; 1½ ins. long; 15½ grains; net wt. per box ½ lb.....Per 1000, \$.....

One hundred in a box.

Note—Dynamite caps cannot be shipped with dynamite.

PRICES QUOTED ON APPLICATION

My best guess is that the newly discovered Austin tin and the analogous Atlas tin, as well as the caps they contained, were produced in the mid to late 1930's and in the 1940's.

References

1. Some of the best historical information about Austin Powder Company may be found on the company's website. The sources used for this article were: "Austin History," at <http://www.austinpowder.com/about/history.html>, last visited July 27, 2014; and "About Austin Powder," at <http://www.austinpowder.com/about/index.html>, last visited July 27, 2014.
2. The books on blasting cap tins written by Andy Martin and John Kynor, Sr., are my Bibles of tin collecting, and are themselves likely to become collector's items. Every collector of cap tins should own copies of both. They are the principal sources of information about the tins discussed in this article:
 - a. Martin, Andy. 1991. *Blasting Cap Tin Catalog*. Tucson, AZ: Old Adit Press.
 - b. Kynor, John C., Sr. 2008. *Blasting Cap Workbook, Tins and Boxes – A Photo History of 30 Years of Collecting With Some Comments, Facts, Suggestions, Opinions*. Belen, NM: B.B.B. Ltd.