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ENOC HIDDEN
AND HIS CANNON LOCKS

by Frederick C. Gaede

We do not know much about Enoch Hidden, and what little we do know centers around his development during the first half of the 19th century of a series of cannon locks, used primarily by United States armed forces.

He first appeared in the New York City Directory in 1813 and maintained a presence there until 1821 where he is listed as a gunsmith. He is recorded with the same occupation in the 1822 New Orleans Directory and turns up again in New York in the 1824 Directory. In 1842 his occupation is recorded as "Cannon Lock Maker" which continues until 1850-51 when he advertised "Brass & Bell Foundry." The brass foundry listing continues until 1855-56 when Hidden's name is no longer recorded.

Even with a paucity of personal information, he appears to typify the entrepreneurial spirit which was so prevalent in the early years of the Republic. This article will provide an overview of his work on locks, which were widely used in the years prior to the American Civil War.

By way of background on cannon ignition, prior to the end of the 18th century, a tube of tin, reed, or quill, usually about $\frac{1}{10}$ inch diameter, filled with mealed powder but having a small hole through the center to speed the ignition, was inserted into the vent. It would be fired by touching a glowing "slow match" to its mushroom shaped head. In the early years of that century, forward thinking artilleryists experimented with the application of a musket lock as the means of artillery ignition.

In 1755, changes to cannon ignition were initiated by the British Admiralty when it issued an order that cannon locks were to be gradually introduced to all guns of the British Navy. If they were introduced at all following this order, they must have been in such limited quantities that by 1778 their use had been forgotten. In the latter year Sir Charles Douglas, at his own expense, fitted all 98 of the cannon on his ship, the H.M.S. Duke, with common flint musket locks. The Admiralty finally took notice when the better reliability and faster ignition of the Douglas-improved locks resulted in both a better rate of fire and greater accuracy. An ancillary benefit was a reduction of accidental ignitions of the open casks, or "budge barrels," of black powder kept available for priming. The ultimate result was a general introduction in the 1790's of cannon locks in the Royal Navy by the Admiralty.

About the same time, the United States apparently produced some flintlocks for naval cannon ignition as there is record of an accidental discharge of a piece on the U.S.S. United States in 1814 due to the mishandling of a lock lanyard, and the guns of the U.S.S. Constitution were equipped with flintlocks when engaged against the Java on December 29, 1812.

Although we know the U.S.S. Vandalia was the first ship of the U.S. Navy completely equipped with percussion locks, patented by Joshua Shaw of Philadelphia in 1828, more research will be required to determine how general the application of locks to the cannon of the U.S. Navy was early in the 19th century. Clearly however, no field or garrison cannon were so equipped at that time.

In addition to Shaw, one of the pioneers of cannon lock development in North America was Enoch Hidden of New York City where he is recorded as a "gunsmith" as early as 1813. He obviously acquired manufacturing skills, but quite likely engaged himself primarily in the repair of firearms as no examples are known of small arms with his name on them.

According to Tucker, Hidden received the first contract for 500 flint naval cannon locks in 1814. He must have been able to deliver them quickly in order to have had them mounted on cannon of the U.S.S. United States that same year, and inexprience of the ship's crew with them could explain the accident noted above.

Because Hidden did not patent any of his flintlock designs and there have been no other illustrations found, their evolution remains somewhat of an enigma. Most of
This undated lock is identical in principal to the British Pattern designed by Henry Nock in 1796 although the lugs on the side suggest a date closer to 1820. It is signed only "E Hidden." Hampton P. Howell collection.

his flint designs were pretty basic and patterned after British locks of the same period. The undated lock in Fig. 1-2 is identical in principal to the British Pattern 1796 designed by Henry Nock, although the lugs on the side suggest a date closer to 1820 for this particular example. The flintlock illustrated in Fig. 4 is an as yet undated English design which is described as a carronade lock. It would have been mounted with the iron pin protruding from the front, slipped into a corresponding hole in the base ring as illustrated in a model of Lieut. Jerningham's pattern carronade lock in the Royal Armouries Artillery Museum at Fort Nelson, Portsdown, England.

The cannon lock illustrated in Fig. 5-6 is marked E. HIDDEN N-YORK. It is of a design not previously encountered and by its unsophisticated appearance, would seem to be early.

The earliest locks were clearly intended to be mounted over and to the side of the vent as a hole exits from the bottom of the pan to direct the flame. The late William Codd speculated that locks with a pronounced rib on the bottom of the lock would have been mounted with screws to a corresponding spot alongside the vent field.

In the mid-1820s, when the military establishment of the United States began considering the percussion ignition system as a replacement for the flintlock ignition system, it initially thought such systems held more promise for use on cannons than on small arms. Even an enthusiastic percussion promoter of the time, Joshua Shaw, devoted more time to develop his 1828 cannon lock patent than his earlier (1822) percussion small arm patent, so sure was he that the road to riches lay in that direction. Shaw's work to promote his cannon lock appeared to be justified when the U.S. Army's Ordnance Department purchased for trial a number of his locks (presumably for their garrison cannon) between 1828 and 1831.

Shaw obviously knew of Hidden's early work with flint cannon locks as he subcontracted the manufacture of his percussion locks to Hidden. At this point Hidden again appears in the military archival record, initially through a letter written to the Army's Chief of Ordnance, Colonel George Bomford, dated 29 June 1830. This was clearly not his first contact with Colonel Bomford as he begins the letter by referring to a recent visit to Bomford's office, and wants to report the results of "the experiments that I talked of when I saw you last." Interestingly he refers to the fact that "the Lock stands on a pedestal above the Gun, so that the touch hole is 10 inches in depth," but the remainder of the letter refers almost exclusively to tests with "plugs and tubes after [being] rivetted." Hidden concludes by noting "I have understood that Mr. Shaw is very much put out on account of my going to Washington to lay my Claim to the Lock. However, as I have observed before, falsehood has never checked him yet. I am informed by one of the most respectable Gunsmiths in Philadelphia, that as far as Mr. Shaw had got the Lock which he first brought to me, he had picked his information out of the different Gunsmiths. The Lock in the state he had it when he shewed it to me, was good for nothing — on one account [piece of page missing] merely binds other — it would have blown up. I am told by both English and Frenchmen, that there had been percussion Locks for the Cock to strike over the touch hole on the same principle as that claimed by Mr. Shaw, but the Cocks got blown off and the Locks were thrown by some Years ago.

Five weeks later, on 8 August 1830, Hidden again wrote Colonel Bomford. In this letter Hidden described "a new experiment by securing [by screws] a small piece of tin over the touch hole ... of a small gun ...." and enclosed a model made of wood for the Colonel's examination. The piece of tin "operates full as well as the tube" described in his previous letter. "... I can try both ways before any Officer whom you may appoint, if agreeable to you." Bomford waited until 15 October to reply, apparently indicating the department did not feel the improvements quite ready for testing at an arsenal.

Hidden was persistent, possibly to forestall Shaw from gaining any advantage in presenting lock improvements to either the Navy or Army's Ordnance Department. This view is reinforced by the fact that on 14 January 1831...
Hidden obtained his first patent for a cannon lock. Although we are unsure what the lock looked like because all of the documentation was lost in the Patent Office fire of 1836, it was described in the *Journal of the Franklin Institute* as having a hammer driven by a spring and made to rise vertically from the vent by a counter-spring. Although it was tried by the U.S. Navy, its use was very limited.

Despite the fact that he may once have had the advantage as the supplier of flint cannon locks, Hidden had clearly put the gauntlet in Shaw’s face through his visit to Colonel Bomford, and they were now competitors. Hidden wanted the legal protection of a patent in case Shaw later made any claims with regard to the improvements he was making on the lock. After all, having made Shaw’s locks he was privy to the former’s ideas, and it would have been difficult to sort out which ideas belonged to which individual without a patent to establish ownership at a specific point in time.

Only a month later, in February of 1831, Hidden wrote a longer letter to the Colonel, describing several improvements he had made to the lock. He indicated the improvements had been made:

> “as you preferred the head of the Cock solid instead of having a hole through it. I have invented a plan which, at the same instant the Cock ignites the Primer, sets off a spring that throws the Cock up two inches above the Vent field, which clears the explosion out of the touch hole one inch without racking the Lock in the least, and holds the Cock up until the Spring is shut down.”

There is no evidence the Colonel had made any suggestions about the lock, and we are not sure whether

Hidden was describing ideas from the patent received the previous month, or entirely new ideas that would be incorporated in his 1834 patent, with its “reacting-spring.”

More significantly, in this letter Hidden went to great lengths to persuade Colonel Bomford that Shaw had no claim to the improvements being made by himself. Hidden claimed Shaw, “as far as he went with the Lock himself,” had not developed a product that would withstand the discharge of a cannon. Upon the discharge of a piece, the backblast through the vent would throw the cock back so violently that the mainspring of the lock would often be broken. Besides, Hidden asserted that “Mr. Shaw has I think been already paid for his trouble as he had about $2500 profit out of what Locks I have made for him — I have [been paid] but $10, and as I have been informed he had [received] $22 or $23 per lock.”

By November 1831 the lock’s evolution in Hidden’s hands apparently had progressed sufficiently that Colonel Bomford changed his mind about a test. He notified Lieutenant John Symington, in charge of the Washington Arsenal, that “Mr. E. Hidden had exhibited at this office, a percussion cannon lock, differing in some respects from that formerly tried at the Arsenal. He is desirous of having this tested, for which purpose he will present it to you at the Arsenal. You will therefore cause a few trials of this lock to be made, and report the results to this office.”

Lieutenant Symington’s report has not been located; however, the lock must have required additional refinements as no substantial orders for them were obtained by Hidden at that point.

However, taking no chances, Hidden obtained his second percussion cannon lock patent a month after the
Fig. 5-6. This lock of quite unconventional form is stamped E. HIDDEN N-YORK on the right side, just above the frizzen United States Marine Corps Museum.

tests, on 16 December 1831. Interestingly, he immediately assigned it to S. Ringgold and John P. Moore. Samuel Ringgold appears to be none other than the same U.S. Army officer who, in the 1840's, would develop the U.S. Army Field Artillery into the arm that would be so effective in the Mexican-American War, a conflict in which he would lose his life. John Moore was listed as a gunsmith in the New York City directories as early as 1820 and as a military goods dealer after 1824 at 208 Broadway. From 1842 until his final listing in 1855 his occupations are listed variously as saddler, gunsmith and importer.

A three officer Army Board of Ordnance evaluated “Lieut. Ringgold’s Percussion Lock for Cannon” at the Artillery School of Practice at Fort Monroe, Virginia, and reported on 29 November 1831 that after having fired the lock (200 times attached to a 32-pounder, 150 times attached to a field 12-pounder and 154 times attached to a light field 6-pounder), they found that even with “the lateral motion of the hammer” the lock was “a most valuable and useful invention, ... quite sufficient for all the purposes of War.”

Ringgold’s and Moore’s direct association with Hidden in 1831 remains a mystery. However the close proximity of the November test date on Ringgold’s lock and the December patent date suggests Hidden may have made the lock tested at Fort Monroe for them, and merely handled the patent process on their behalf, since he had just been through it eleven months before. This supposition raises the interesting possibility that Hidden assisted a competitor while his own improved lock was being tested that same month at the Washington Arsenal.

Hidden continued to work on improvements to his lock, notably “to cause the hammer to rise with such rapidity after its stroke upon the percussion cap, that it shall be removed out of the way of the blast from the vent before it can be acted upon by the blast.” This was the main feature of his 20 August 1834 patent which incorporated a “reacting-spring” in several forms to effect the hammer’s removal at the instant of ignition of the powder charge. Apparently this was the first percussion lock for which Hidden received a substantial order. During the fiscal year ended 30 September 1835 a total of 330 percussion cannon locks were ordered, the first ones by the Ordnance Department, presumably for garrison cannon. This purchase just preceded both a general overhaul of the artillery system used by the Ordnance Department, and the beginning of the Second Seminole War in Florida (1836-1842).

In fiscal 1837 a total of 1,526 percussion cannon locks were procured by the Ordnance Department. There was a special appropriation of $15,000 for percussion cannon locks, which was filled completely by Hidden through a contract dated 1 March 1837 for 1,500 locks. He completed the contract through two deliveries of 500 locks on 30 December 1837 and an additional 1,000 locks on 5 May 1838. For both deliveries he was paid $10.00 per lock. The source of the other 26 locks is unknown but it was probably Hidden.

While completing this contract Hidden wrote Colonel Bomford that he had made up “also about fifty thousand primers of the best quality. I would respectfully recommend that each Lock be accompanied by one primer case, and two hundred and fifty primers, and would be happy to supply you.” Hidden was apparently working to obtain a Navy contract at this time, for he notes in the same letter that “I saw Commodore Chauncey a few days since, and was informed by him ... that my Locks had been tested at Fortress Monroe, and that they did not prove as well as he expected. He moreover informed me that there was a lock there, that had been taken from a French vessel of War, that was thought by the Ordnance Dept. to be much better than mine.” After deriding “the French lock” and
Fig. 7. Illustration from Lieutenant Edward Simpson's, A Treatise on Ordnance and Naval Gunnery, Compiled and Arranged as a Text Book for the U.S. Naval Academy, published in 1862. From top to bottom are shown: a "Navy Flint Lock" which is identical to many of British manufacture but which is probably of Hidden's make; Hidden's "Navy Rebounding Lock." Note the cover which held the wafer in place until fired; Hidden's "Navy Lock of 1840," which appears to be that patented in 1836, and Hidden's lock patented in 1842 which was described by Dahlgren as "In all the essentials for firing heavy ordnance it has no superior." That of course was before Dahlgren designed his own lock.

Discussing remedies for possible minor maladjustments that may have been present on the lock the commodore observed, Hidden goes on that "Commodore Chauncey made an observation that 'in cocking my lock, the hand might slip and the cock discharge the gun before they were ready.' I have never seen or heard of anything of the like having taken place. My locks have fired primers more than three or four thousand times. If the gun is to be fired immediately the lock is always cocked first; if it is to stand, the vent stopper is put over the primer and in which case it will keep dry for several weeks, although exposed to any weather. It would [sic] be cocked before the vent stopper could be removed and then the palm of the hand being placed under the Cock, would cock it as easy as if you were to take hold of the 'comb.'"33 It appears Hidden wanted to preempt the commodore's comments from jeopardizing his Ordnance Department contract, in the event they got back to Colonel Bomford. Apparently they did no harm if the colonel ever heard them.

Undoubtedly trials continued to be conducted on locks. An interesting, but unaccompanied, drawing of two percussion cannon locks that apparently were tested at Fort Monroe in 1839 are shown in Fig. 9. While Lieutenant Dahlgren of the Navy usually gets the credit for suggesting that the lock be dispensed with and lugs be cast directly on the cannon,33 both Lieutenant Peter Hagner and Hidden apparently alluded to very much the same thing to the Army's Ordnance Department some 20 years earlier. Indeed, Lieutenant Hagner's "Percussion Hammer" in his drawing34 looks very much like what the Navy adopted just before the American Civil War, with just lugs and a hammer.

While the drawing of Hidden's lock refers to it as a "Patent Percussion Lock," there is no evidence he patented this version. In Simpson's plate on locks reproduced here as Fig. 7, this lock is referred to as "Hiddens Navy Rebounding Lock," but it is undated. It does appear Hidden took Commodore Chauncey's comments about "the French lock" to heart, and adopted its cushion on the end of the hammer. The intent was to reduce the possibility of damage after the hammer was thrown back violently from the explosion of the primer and powder charge. According to Simpson, however, the ingenuity of this lock was a pivoting piece of metal which was moved to cover the percussion wafer when the cannon was readied for firing, and was moved out of the way by the hammer as it fell to detonate the wafer.35

Simpson also illustrated something he called "Hiddens Navy Lock of 1840." This was apparently an experimental piece, which incorporated for the first time, a hammer which would move horizontally after setting off the primer, thus avoiding the full blast from the vent of the main powder charge. However, it is unclear from Simpson's statement that "This lock was very successful and was provided to batteries in the U.S. Navy in 1842,"36 whether it was issued just for further field trials, or whether it may have gone beyond the experimental stage and been adopted for limited usage.

The idea for a slot in the hammer, which enabled the
hidden's "name and date patent" of August 20, 1834.

latter to slide along the bolt upon which the hammer rotated, was probably that of Samuel Sawyer, of Boston, Massachusetts. Sawyer would share in the next percussion cannon lock that was patented. Hidden and Sawyer obtained an "Improvement in Cannon-Locks," Patent No. 2,594, on April 29, 1842.37 This is the lock Simpson shows in his plate as "Fig. 104/Hiddens Navy Lock in use," and Captain Alfred Mordecai has drawn as the "Cannon Lock" in the Ordnance Department's drawings as part of Artillery for The United States Land Service. When the lanyard was pulled, the hammer rotated on its axis until it struck the primer. As the lanyard continued to be pulled, due to the slot in the hammer, it immediately withdrew the hammer from over the vent until the bolt came to the other end of the slot. Simpson said, "for simplicity and practical usefulness, [it] stands without a rival."38 The patent documents a "vent stopper" that was an integral part of the lock and could be rotated out of the way or to cover the vent, as the situation required. This was an improvement over the stopper described in the letter to Colonel Bomford in 1837, which was apparently a separate piece.

If he considered himself successful before with the production of flint or his earlier version of cannon locks, Hidden was about to go to a new level with the 1842 lock. Lieutenant (later Rear Admiral) John A. Dahlgren stated:

The name of Mr. Hidden is associated with many other device and contrivances to effect the discharge of cannon by percussion, but it is needless to enter into any particulars concerning them, with the exception of one, which will now be noticed at length.

From what has been stated, it is hardly to be denied that the proposition to withdraw the hammer from the vent, after striking upon it had not been accomplished satisfactorily by any of the preceding forms in this class; in 1842, however, the solution of the problem was struck out by the instincts of true mechanical genius. With all the merit of originality it was so simple in structure, and so effective in its operation, as to address itself without fail to the instant perception of even the casual observer. It was introduced at once into the United States navy, and has endured the tests of service successfully. In all the essential requisites for firing heavy ordnance it has no superior.

In general form the hammer is plain, and need in nowise differ from any other hammer that is made to strike directly on the vent; its distinctive feature consists in a slit made in the shank from the hole of the axial bolt towards the head, by means of which the revolving movement of the hammer is converted into a direct motion, and is thrown from the vent the instant it has performed its function.

It seems that the English naval lock is now adapted to the same principle.39

While only a partial assignee at the time the patent was received, Hidden likely bought out Sawyers' interest soon thereafter as the latter's name does not appear on any of the contracts or agreements that relate to this lock or
Fig. 9. Drawings of percussion cannon locks tested at Fort Monroe in 1839. The upper shows two versions of Lt. P. V. Hagner’s design, the lower is a design by Enoch Hidden.

It is also likely the 1,100 locks provided in fiscal 1841 (the year ended 30 September 1841) to the Ordnance Department were of the new pattern, although the patent had not yet been received. Another 1,100 locks were obtained by the Ordnance Department in fiscal 1842: 500 for fortifications; 200 for field guns; and 400 for the various state militias. In fiscal 1844 (the fiscal year had been changed to end 30 June) the Department purchased 30,000 “percussion primers for cannon” from an unnamed source, but likely Hidden.

Through the Bureau of Ordnance and Hydrography, the Navy also began purchasing large numbers of this lock. They began with an order for 1,500 under a contract dated 1 March 1843: “Twelve hundred Cannon locks for long guns, and three hundred cannon locks for Carnonades; all of the aforesaid cannon locks to be made with a vent stopper, and to have a pin through that part of the hammer connecting the steel with the brass part of it; the locks for the long guns with exception of the flap for holding down the friction primer, to conform in every respect with the pattern cannon lock ...; the locks for carronades, to be made upon the same plan or principle, and to be equal, in every respect, to those for long guns; and to be made to suit carronades.” For these Hidden was paid $5.00 each.

This was followed by another Navy contract for an additional 1,500 locks dated July 2, 1844. The specifications were identical to the 1843 contract, including the cost per lock, except 1,350 were for long guns and only 150 for carronades. On the 24th of March, 1845 the Navy purchased the rights to use Hidden’s patent for 1,000 locks for $1,000. Finally, by an agreement dated April 3, 1848, Hidden sold all of his rights in the patent to the Navy for $1,200.

The simplicity of the 1842 pattern lock attracted the attention of the British who conducted various trials of their own to see if it could be improved. The hammer of Hidden’s and Sawyer’s design was modified by Colonel William Dundas, and on October 2, 1846 the modified lock was adopted by both British ground and naval forces. “It is not clear how widely this percussion system was used, but shortly it became obsolete with the development of friction tubes in both the land and sea service.” Nor is it clear if Hidden was paid any royalties for the use of his invention by the British Government.

During this time the U.S. Army’s Ordnance Department kept Hidden busy as well with the Mexican-American War looming. In May 1845 he received a contract for 300 “percussion locks for field cannon, latest pattern, to be placed on the left side of the vent.” These were delivered in June and paid for at the rate of $5 each. In September 1845 he was contracted to repair 1,000 percussion cannon locks at $3.25 each; and again for another 2,186 in June 1846 at $2.50 each. Hidden received three separate orders for “Cannon percussion primers” in 1846 totalling 450,000 pieces, paid for at the rate of $20 per thousand. On 7 May 1847 Hidden received a contract for 600 “cannon locks, latest pattern, with heavy hammers, of which 1/3 to be made for guns without lock pieces,” at $5 each; and at the same time 1,000 “extra hammers (heavy) in same proportion” at $1.62 each. In 1849 he received 385 “perc. Locks to be altered from old to new pattern; see letters to Major Thornton [Inspector of Contract Arms] of 13th and 20 April 1849.” That year apparently saw a retrofit of the earlier locks as Hidden provided 4,000 “Heavy Hammers for Cannon locks” under three separate contracts, all paid for at $1.62 each. In 1850 Hidden received three small orders, delivering 385 percussion cannon locks April 8; 132 cannon locks with heavy hammers; and 320 heavy hammers for locks.

When he received payment in January 1851 of $949 for the 320 hammers, Enoch Hidden ended his relation-
ship with the armed forces of the United States. He had given them many years of service, and age was becoming a factor. He had been a mechanic for at least 35 years, and new ideas to improve the lock were slower in coming. In addition, beginning in 1851, the Navy went to a simple hammer with a slot in the shank.\textsuperscript{57} Thereafter he would confine himself to casting bells and other foundry work in the New York location.

The Army had a different reason to discontinue the purchases of Hidden's products. For one, the locks had not withstood the rigors of campaign service, as demonstrated by the late action in Mexico. On April 20, 1848 Captain Benjamin Huger, in charge of the Siege Train that accompanied General Winfield Scott's army from Vera Cruz to Mexico City, forwarded to Colonel Talcott (Colonel Bomford's successor as Chief of Ordnance) notes made by Lieutenant Hagner "relative to repairs to the Materiel in the service of troops," while he was still in Mexico City. Among Lieutenant Hagner's comments were several that pertained to percussion locks on artillery: "To Siege Guns, They have done well, with Lanyards of Raw Hide frequently greased; to field Guns, they are more exposed to the action of the recoil — breaking the [lock's mounting] screws — so that some officers think them too uncertain [even] for salute firing. For Field Guns, the lock piece should be cast on the guns, as recommended by me in 1839 — There is then nothing to break by the shock [of the recoil] — The Friction Tube has answered perfectly well with the Mountain Howitzer and may replace all other means of firing [cannon] ...\textsuperscript{58} Indeed, the simple but reliable friction primer soon became the standard mode of firing cannon in the land services, with hundreds of millions of them being produced during the American Civil War.

It is an interesting speculation that Hidden could foresee the imminent obsolescence of his lock when he sold the patent rights to the Navy in 1848. In any case, with their use being discontinued during the 1850's by the Regular Army, a number of locks were adapted by Watervliet Arsenal personnel to 6-pounder field cannon and issued to various state militias.\textsuperscript{59} This would make sense as that arsenal had established itself by the 1840's as the arsenal of fabrication for cannon carriages, implements and ammunition.

Watervliet Arsenal, located near Rome, New York, also manufactured a "gun lock cover," no doubt of the pattern Captain Alfred Mordecai had drawn as part of his documentation of the ordnance of the United States.\textsuperscript{60} The

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image.png}
\caption{Fig. 10-11. Sheet 1 and 2 of U.S. Patent No. 2,594 issued to Enoch Hidden and Samuel Sawyer. The mechanism was extremely simple and efficient: pulling the lanyard first unlocked the hammer, then tipped it to fire, and finally withdrew its head to be clear from the vent blast.}
\end{figure}
cover was made of four pieces of leather: a flat piece that lay flush with the tube; a box-like piece (sewn to the flat piece) that went over the lock itself, but was not form fitting; and two straps that went around the breech of the gun to secure the cover in place with buckles. All of the ones made at Watervliet appear in their production records between June 1849 and October 1852, a total of only 214 covers, for guns from 6-pounders to 32-pounders. 61

Although it is clear the topic of lock utilization by military forces, both here and abroad, to fire cannon warrants additional research, this article has presented the basic story of one man’s involvement with their development and use by United States’ forces. Enoch Hidden’s role as the primary innovator of cannon locks, particularly ones for percussion primers, during the 19th century was a reflection of the ingenuity and determination that characterized our early Republic. His story has no longer been completely forgotten.

ACKNOWLEDGMENTS

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NOTES

1. David Longworth, New York Directory. New York: the Author, 1813-1843 lists Hidden’s shop variously as 204 Water Street (1813); 304 Water Street (1816); 293 Cherry Street (1819); 670 Water Street (1829); 671 Water Street (1830); and 664 Water Street (1834). Starting in 1842, John Doggett, Jr.’s City Directory. New York: the Author, 1842-1853 continues to list Hidden at 664 Water Street as a “cannon lock maker” and “brass founder,” the latter title from 1850 until the last entry for Hidden in Wilson’s Directory, New York: Trow, 1852-1856. Rode’s Directory, New York: the Author, 1850-1855 also lists Hidden as a brass founder.
6. Ibid.
7. Ibid.
8. Ibid.
11. Lieutenant Edward Simpson, U.S. Navy, A Treatise on Ordnance and Naval Gunnery, Compiled and Arranged as a Text Book for the U.S. Naval Academy, New York: D. Van Nostrand, 1862, Plate 5, Fig. 100. Hereafter cited as Simpson, 1862.
12. Shaw’s percussion lock was apparently given its first test not by the Navy, but by the U.S. Army Ordnance Department during a series of lock trials conducted at the Frankford Arsenal by Lieutenant Baird in 1825. It appears Shaw employed a large percussion cap, perhaps made of pasteboard, one half inch in depth and diameter, which was placed on the end of the hammer. Although it was the regulation primer for a short while for the U.S. Navy, the system did not work well with large tubes where the flame had to travel quite a distance before it reached the powder charge. See Lieutenant J[ohn] Dahlgren, Naval Percussion Locks and Primers. Philadelphia: A. Hard, 1853; reprinted Alexandria Bay, NY: Museum Restoration Service, 1995, pp. 110-111, 115-116. Apparently another series of trials was conducted by Lieutenant William Bell in the Summer of 1828 at Fort Monroe, VA, with “percussion primers” and a “6-pdr. Gun, new pattern.” The source of the lock(s) was not mentioned. Lieutenant William Bell to Chief of Ordnance, Colonel George Bornford, dated November
13. Brigadier General Stephen Benet, A Collection of Annual Reports and Other Important Papers, Relating to the Ordnance Department. Washington: G.P.O., 4 Vols., 1878-1890, Vol. I, pp. 168-169, 189-190, 215-217, 228-229. Hereafter cited as Benet, Collection. Shaw next appears in the official record when he had a gun that fired nine times examined and tested, unsuccessfully, by a Board of Ordnance officers at the Navy Yard in Philadelphia in 1840. See Box 33, Experiments, Class VIII and IX, RG 156, OCO, NA. Shaw was to present a claim for the use of his inventions of the percussion gun lock, a cannon primer and (later) the percussion cap, for which he was ultimately paid $18,000 in 1847. See Lewis Winant, Early Percussion Firearms. New York: William Morrow & Company, Inc., 1959, pp. 46-47.

14. Enoch Hidden to Colonel Bomford dated 29 June 1830, Box 30, Experiments, EX-3-4, Special Files, RG 156, OCO, NA.

15. Enoch Hidden to Colonel Bomford dated 8 August 1830, Box 30, Experiments, EX-3-5, Special Files, RG 156, OCO, NA.

16. Ibid.

17. The details of this patent have been lost due to the fact that the patent was not renewed after the Patent Office fire of 15 December 1836. See Michael Woschner, “Researching United States Patents,” North South Trader's Civil War, Vol. XXV, No. 1, (Jan.-Feb. 1998), p. 44.

18. Enoch Hidden to Colonel Bomford dated 14 February 1831, IN-3-9, Special File, 1812-1912, Inventions, Class 3, RG 156, OCO, NA.

19. Ibid.

20. Colonel George Bomford to Lieutenant John Symington dated 3 November 1831, Letters sent, Book 19, 275, RG 156, OCO, NA.


24. Colonel Abraham Eustis, Lieutenant Colonel William Worth and Lieutenant Benjamin Huger to the Adjutant General of the U.S. Army dated November 29, 1831, Box 30, Experiments, EX-3-14, Special Files, RG 156, OCO, NA.

25. Enoch Hidden, of New York; N.Y., “Improvement in Percussion-Locks for Firing Cannon, Patented Aug. 20, 1834.” Fortunately, a drawing of the lock exists as this patent was renewed after the Patent Office fire in 1836.


30. Enoch Hidden to Colonel Bomford dated November 7, 1837, Box 30, Experiments, EX-3-32, Special Files, RG 156, OCO, NA.

31. Ibid.

32. Ibid.

33. Tucker, 1989, p. 34

34. Portfolio of Drawings of Guns and Ammunition, 1814-1870, Special Files, RG 156, OCO, NA.


36. Ibid., p. 294.

37. Enoch Hidden, of New York, N.Y. (In Part Assignee), and S. Sawyer, of Boston, Massachusetts, Improvements in Cannon-Weights and Other Important Papers, Relating to the Ordnance Department. Washington: G.P.O., 4 Vols., 1878-1890, Vol. I, pp. 168-169, 189-190, 215-217, 228-229. Hereafter cited as Benet, Collection. Simpson, 1862, p. 291, may be referring to this lock when he illustrated (Fig. 101) the lock introduced into the French service by Colonel June in 1832. Thirty years later it was still the regulation lock of the French Navy.

38. Ibid.

39. Ibid.

40. Ibid., pp. 453, 454, 455.

41. Ibid., p. 517.

42. Ibid.


44. Ibid.


46. Enoch Hidden, Agreement for the right to use his improved percussion lock for cannon, Second Comptroller's Office, RG 217, Treasury Department Records, NA.

47. Contract with Enoch Hidden dated 3d April 1848 for the right to make and use his Lock for cannon for $1200, Second Comptroller's Office, RG 217, Treasury Department Records, NA. Tucker states “William R. Ashard probably had a hand in this invention, because in 1848 the navy purchased the rights to an improved lock from the two men.” Tucker, 1989, p. 34. Ashard's name, however, does not appear in this document.


50. Ibid.

51. Ibid. Although the order dates are not noted in the archival record examined, the delivery dates were June 20, July 31, and October 12. The payments were all charged to the “Mexican Hostilities.”

52. Ibid.

53. Ibid.

54. Ibid. Although the contract dates are not noted in the archival record examined, the dates of delivery were January 20, March 16 and April 25, 1849.

55. Ibid.

56. Ibid.


58. Lieutenant Peter Hagner's notes enclosed in Captain Benjamin Huger to Colonel George Talcott dated 20 April 1848, Entry 21, Letters Received, RG 156, OCO, NA.

59. Monthly Statements of Articles Fabricated and Work Done at the Watervliet Arsenal, May & September 1852, Entry 1448, RG 156, OCO, NA, Northeast Region.


61. Monthly Statements of Articles Fabricated and Work Done at the Watervliet Arsenal, June 1849 to October 1852, Entry 1448, RG 156, OCO, NA, Northeast Region. The records are incomplete, but even with the gaps the number of covers fabricated was small.
A Further Note on Hidden’s Cannon Locks for the U.S. Army.

Fredrick Gaede, who wrote the seminal article on the cannon locks of Enoch Hidden in *Arms Collecting*, Vol. 36, No. 4 (Nov. 1998, pp. 111-120), has sent a note from the catalog of *The Ordnance Department, U.S. Army, at the International Exhibition, 1876* published at the Government Printing Office, Washington, in 1884.

The exhibit was in charge of First. Lieut. Henry Metcalfe, assisted by First. Lieut. C. W. Whipple, both of the Ordnance Department. Their description of the exhibits that follows records some additional information which may assist in the identification of Hidden percussion cannon locks.

No. 29. Hidden’s patent cannon lock, No. 1, mounted on section of gun.

The lock is set forward of the vent; the lanyard running directly to the rear. The hammer is kept off the percussion primer by the flat spring beneath the stem of the hammer. This spring is overcome by a jerk given to the lanyard, after which the spring throws up the hammer again into the firing position. The curved spring on the tail of the hammer rides stiffly over a curved surface on the hind and catches the hammer after it is thrown back by the blast from the vent. A side spring throws in an arm in front of the hammer and blocks it, when desired, to prevent an accidental discharge of a loaded piece.

No. 30. Hidden’s Cannon lock No. 2.

The hub of the hammer is grooved circumferentially for the lanyard, and is inclosed by a cap, which keeps the lanyard from slipping off. The lanyard passes through a guide directly to the rear, the hammer being in front of the vent.

No. 31. Hidden’s cannon lock, No. 3, with vent pad, mounted on section of gun. Left hand.

The joint hole in the hammer is considerably elongated, so that after the hammer has fallen and fired the primer, the pull on the lanyard draws it bodily away from the effect of the blast through the vent.

The vent pad is swung upon the hammer frame, and turned over the vent while sponging. It is kept down upon the vent by a flat spring, forming its connection with the pivot.

No. 32. Hidden’s cannon lock, No. 3, for vent pad (without pad). Right hand.

No description, but this was followed by:

No. 33. Perkins’s cannon lock, 1837 (2 specimens; 1 very heavy of iron).

The hammer plays in a plane at right angles to the axis of the gun. As it falls, a spur on its lower part moves back a slide in the frame, the forward part of which forms the vent cover. When the hammer is raised, the weight of the slide carries it forward over the vent, over which it may also be pushed by hand. The eye in the frame serves to lead the lanyard to the rear.