FLINTLOCK CANNON IGNITORS

by Dick Salzer and Matt Sears

Figure 1. "Breaking the Line – The Battle of Trafalgar, by Patrick O'Brian

Naval warfare in the 18th and early 19th centuries was brutal. Huge wooden "Fighting Ships of Sail" would typically form a battle line and maneuver to pass one another or pull alongside, to bring cannon and small arms to bear, enabling them to unleash a broadside. Masts and rigging were high value targets because once de-masted, a ship would flounder out of control and could be burned, sunk or captured at will. Although randomly fired broadsides could be devastating, accurate fire was more important, especially when crossing the path or wake of an enemy ship. The ability to more precisely control the moment of discharge was a valuable asset. During this time period, ship's cannons, or guns as they are properly called, were referred to by the weight of the shot that they fired, and the guns usually weighed about 200 times the shot weight. For example, an "eight-pounder" gun would weigh about 1,600 pounds while firing an eight pound ball.

Starting about 1677, the prominent warships in the days of fighting sail were rated by their size, number of guns and amount of crew to sail them. The British Royal Navy also established a system of "Ship of the Line" classifications. The largest, were called a First Rate, which would have 3 decks, 100 guns and a crew of 1,000 seamen. Guns for these massive vessels, in order to improve stability, were distributed by size to each deck, 32-pounder guns on the lower or "gun deck", 24-pounder guns on the middle deck and 18-pounder or 12-pounder guns on the upper deck. Second Rate ships, usually about 90 guns, and Third Rate ships, about 74 guns, could also have three or two decks, respectively, but fewer guns and less crew.

Previously, the standard method of ignition involved priming the cannon's vent hole with loose powder or a powder-filled quill, then touching off the charge with a slow match attached to a port-fire. The process involved enough time that the target was often well away from the point of aim the gunner intended. The new system of cannon locks utilized a lanyard to discharge the lock. These locks allowed the Gun Captain to be farther away from ignition for safety (Figures 2 and 3) and increased the speed of reloading and firing of the gun. The locks were mounted on a raised cast section of the cannon barrel next to the vent hole and attached utilizing bolts or screws, either vertically or horizontally (Figures 4 and 5).

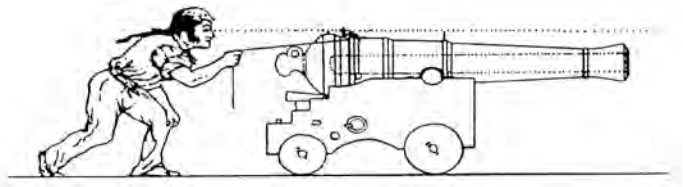

Figure 2. Detail from an early 19th Century advertisement for "the Lever Target".[1]

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Figure 3. The 1891 painting "*Hero of Trafalgar, 21 October 1805*" by William Heysham Overend. National Maritime Museum, Greenwich, London. Note the detail of the cannon lock in battle, about to be fired by the Gun Captain (right).

In 1755 the British Admiralty issued a directive that all "Men-O-War' would have their cannon gradually equipped with flint cannon locks. The decree was pretty much ignored until Sir Charles Douglas decided, at his own expense, to equip his own 98-gun frigate, *HMS Duke*, with cannon locks improvised from modified musket locks.[2] The resultant success of Sir Charles' action convinced the Admiralty that the improved accuracy and rate of fire from these devises was well worth the cost and, as a result, the refit program became a high priority. Apparently, there was no standard design as considerable variety has been noted on surviving cannon locks. Maker's marks show that they were notably manufactured by different contractors as well as by government arsenals.

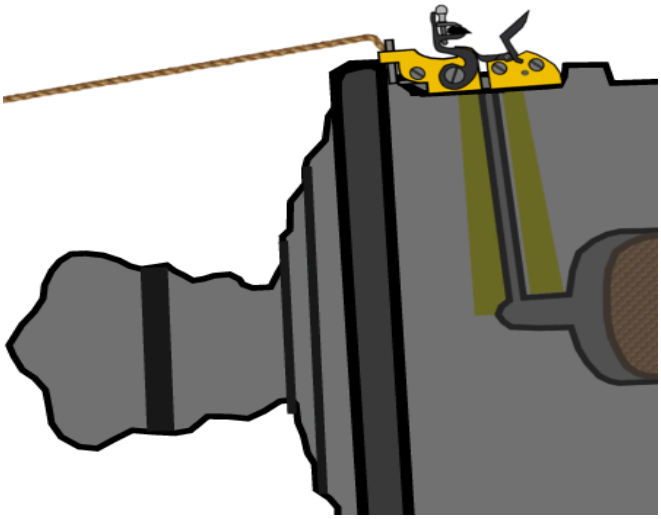


Figure 4. A diagram of a cannon ignitor fixed on top of a cannon's vent hole. Quora.com.

The success of the British cannon lock soon became obvious to other navies who quickly followed suit. Specimens have turned up from France, Holland and Russia (Figures 6-31). These locks were produced in large numbers, yet they are quite scarce on today's collector market. Apparently, their ultimate obsolescence and high brass content doomed most to the scrap furnace.

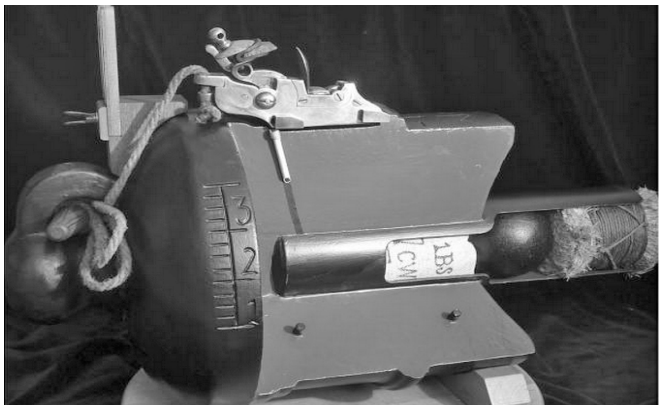


Figure 5. A cutaway view of a flintlock mounted on a Bloomfield cannon barrel, showing a quill or tin tube primer, the powder charge, round ball and wad. Thomas Bloomfield was Inspector of Artillery at Woolwich, England in 1780 and developed a new standardized system of gun design which was implemented in 1785. Note the long flame path from the lock to the charge. The pans of these flintlocks are significantly larger than conventional small arms locks, to ensure enough flash to reach the charge. Photo from Game-Labs forum.

Figure 6. A typical British pattern lock by C. Johnson & Son, London. It is unconfirmed what the "SD" mark signifies. This lock features holes at its base for mounting horizontally to a cast platform at the cannon's vent hole with the use of bolts. The cock is released by a lanyard attached to the bottom ring at the rear of the lock, which is then threaded up through the upper ring. Matt Sears collection.

Figures 7. A similar London made lock with “BO” Board of Ordinance markings and broad arrow. Matt Sears collection.

Figure 8. This lock by an unknown maker is also shown housed in its copper casing (right). The copper enclosure, as shown, is incomplete, missing a clip-on closure cover. It is assumed that the purpose was for weather protection to enable locks to remain fully charged while awaiting use. These were eventually abandoned due to ineffectiveness and added complexity. Notice that the mechanisms throughout this article vary with the method of connecting the lanyard to activate firing. This one uses a linear pull trigger. Dick Salzer Collection.

Figure 9. A wooden model of a ca. 1801 12-pounder partial cannon barrel with a lock attached. Note the wing nut attachment at the rear of the base ring on the cascabel. In the collection of the Rijksmuseum, Amsterdam, Netherlands.

Figure 10. A shipwreck salvaged lock in situ, from the *HMS Colossus*, which sank in January 1799 in the Isles of Scilly, on the very southern end of England. The *HMS Colossus* was a 74-gun Third Rate warship in the Royal Navy and was launched in April, 1787. She was carrying wounded home to England from the Battle of the Nile. Photo from Modelshipworld.com blog.

Figure 11. This closeup photo of a barrel casting, shows two bolt holes for mounting a lock and a recessed channel for powder. Powder Magazine Museum, Charleston, S.C. Photo by Matt Sears.

Figure 12. This Russian marked lock may have actually been supplied by Britain, since its pattern is typically English. It is dated 1838. The Tula Arsenal markings and probable ship’s name are inscribed in Cyrillic. Dick Salzer collection.

Figure 13. An unusual lever firing mechanism and extended mounting bars with pins. This lock also features an extended pan channel and cover mounted to the frizzen. Australian Arms Auctions.

Figure 14. A lightweight lock ca. 1800, unmarked, with a unique pull-cord lanyard attachment. The lock also features a stippled no. 23 on top, indicating which gun it belonged to. Possibly of French manufacture. Matt Sears collection.

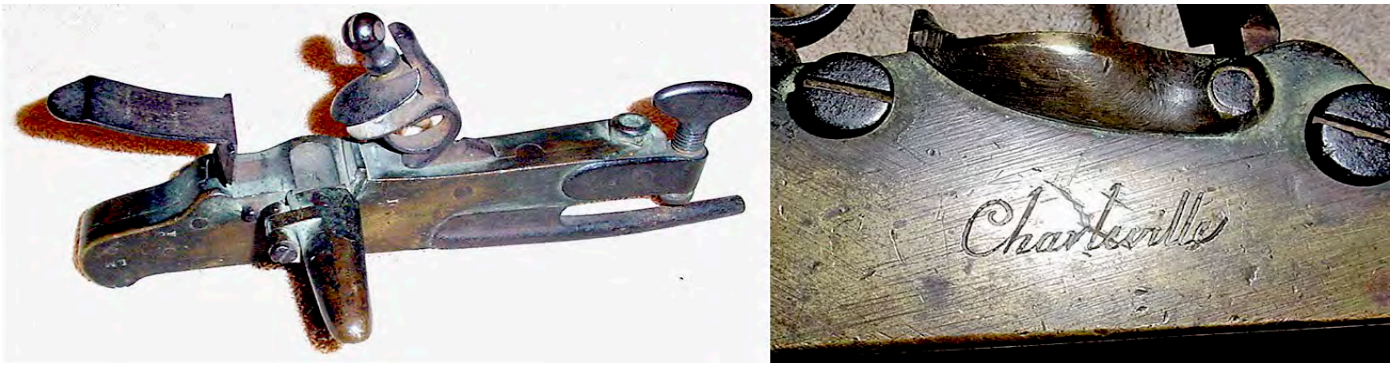


Figure 15. This unusual French lock was made at Charleville (engraving at right) ca. 1780. Note the extended pan and screw device to tighten down the lock. The pan extension cover is hinged separately from the frizzen. The French called this "Platine De Bec" as first suggested by Texier De Norbet in 1764.[3] Dick Salzer collection.

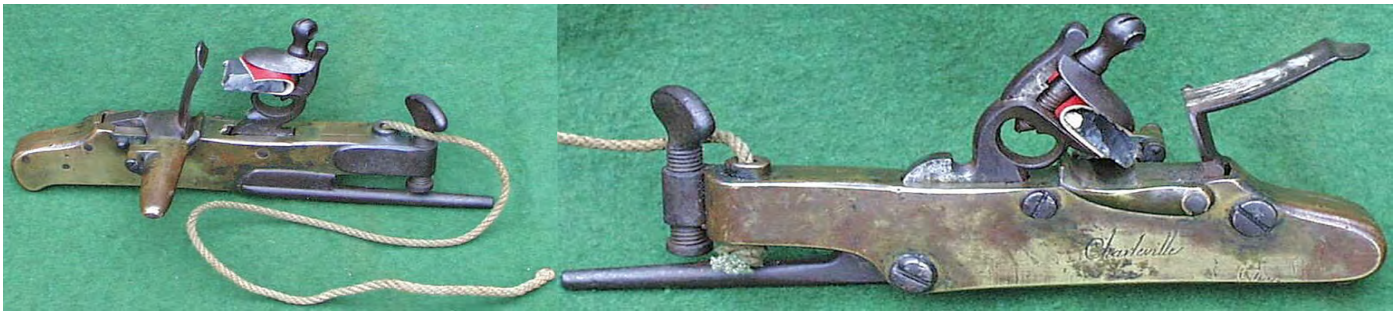


Figure 16. Another similar French Charleville lock showing the frizzen with its extended pan cover in a closed position. Note the long single pin for attachment to the gun and the enclosed lanyard hole at the rear of the lock. The Charleville marking is on the reverse side of the lock (right). Vikingsword.com., Ethnographic Arms & Armor Forum.

Figure 17. Maker unknown. Notice the circular forms on either side of the pan which allow vertical bolts to attach to the gun. Craig Ross collection.

Figures 18. An 1830 bronze cannon by North, with a lock attached by vertical screws. Although it is not apparent exactly how fire from the lock is reliably channeled to the chamber, in each case there is a hole in the side or bottom of the flash pan that aligns with the channel to that chamber. Ignition was achieved by possibly using a primer charge in a quill or tin tube. Tin tube primers were unpopular with seamen of the day, who worked barefoot and often cut up their feet on discarded tin tubes strewn around the deck.[4] Without in situ examples to view, we are left to our imaginations as to exactly how it was managed in each case. The cut-a-way views in Figures 4 and 5 are typical of the principle. Craig Ross collection.

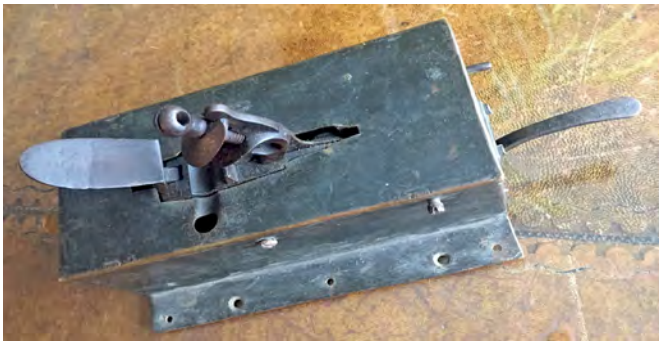


Figure 19. An unusual metal enclosure, presumably to provide some weather protection for the lock. Note that there is no lanyard and the cock is released by the use of a long lever at the rear of the enclosure. Craig Ross collection.

Figure 20. This ca. 1790 English lock features a Royal Cypher, Crown over GR and Crown over 3 with a broad arrow ordinance marking on a typical British pattern lock. There is also a D over a Royal Navy anchor mark. Having a Royal Cypher mark is very unusual to see on cannon flintlocks and may not be original. International Military Antiques, New Jersey.

Figure 21. This lock is from Denmark and dates to 1828. It is marked crown over FR and KGE. Notice the extended pan cover attached to the frizzen, which has a circular form at its end to cover the cannon's vent hole. Matt Sears collection.

Figure 22. A very rare Russian percussion lock dated 1839, only a year later than the Russian lock shown in Figure 12. It is unclear what precipitated the design and form of this unusual lock. Dick Salzer collection.

Figure 23. One of the problems with flintlock cannon ignitors was the difficulty of replacing worn out flints during the heat of battle. In 1817 Howard Douglas designed a double-headed version to remedy that concern.[5] It is doubtful that many were made because today they remain a rarity among rarities. Specimen from Rijksmuseum, Amsterdam.

Figure 24. A delicate lock, unmarked, possibly French. Note the circular form on the cock and the elongated form of the lanyard pull mechanism. Imago-images.de.

Figure 25. A ca. 1820 naval Carronade showing a mortise for mounting a cannon lock. Vallejo Gallery, Costa Mesa, California.

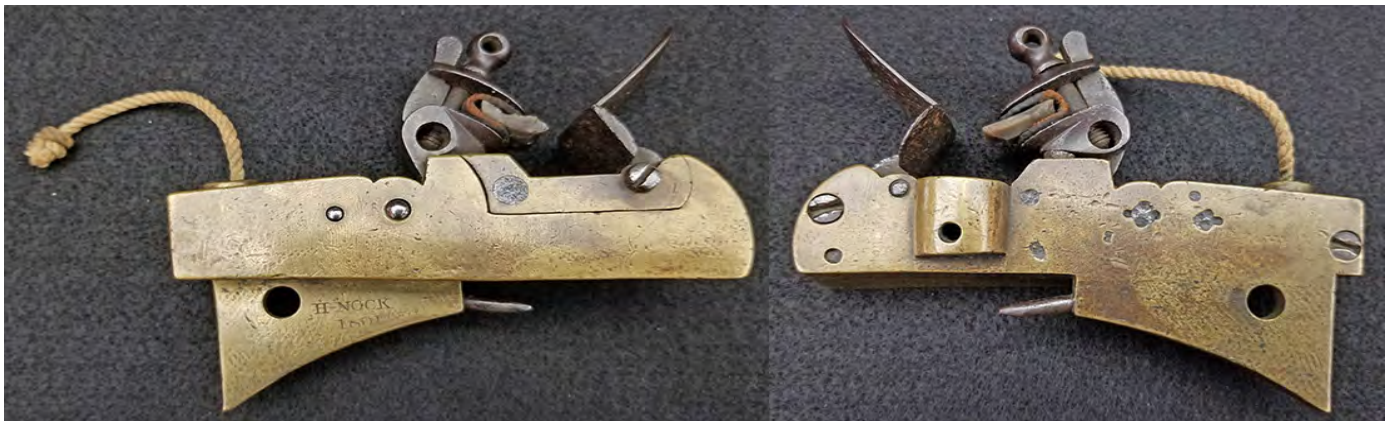


Figure 26. A Carronade lock made by H. Nock and dated 1801. Henry Nock (1741-1804) was an English gunmaker of great renown, becoming a Freeman of the Gunmakers Company in 1784 and was elevated to Master in 1802. Mike Edwards collection.

Carronades were first developed specifically for sea service in the 1770s and were shorter and lighter than conventional guns. They were mounted on the upper decks of warships and would fire solid ball or canister shot, called "grapeshot" at sea, for short ranges of 400 to 700 yards. They were deadly for close-quarters engagements.

Figure 27. The inside of a late 1700s lock showing the sear and mainspring. Pitt Rivers Museum, University of Oxford, Oxford, England.

Figure 28. Cannon locks were sometimes mounted on rail guns as in this image. International Military Antiques, New Jersey.

Figure 29. A French lock featuring a long tail bolt with a wing nut, extended pan cover and a tall lanyard pull lever. Vikingsword.com., Ethnographic Arms & Armor Forum.

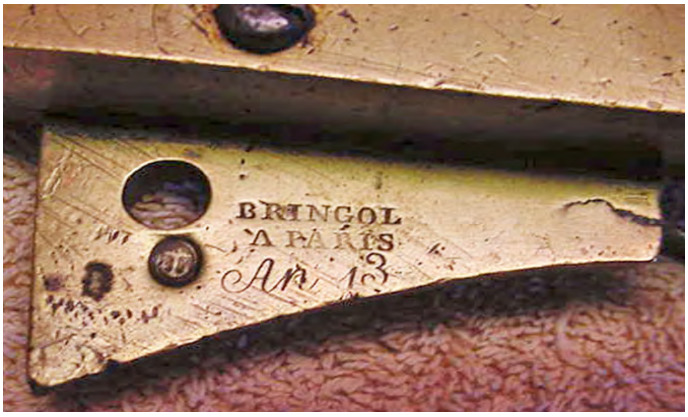


Figure 30. A French lock ca. 1800. The no. 29 indicates a particular gun this lock attached to. Notice the unusual triggering attachment. The reverse, with the maker “Brignol A Paris” stamped and the year AN13 (1806). Dick Salzer collection.

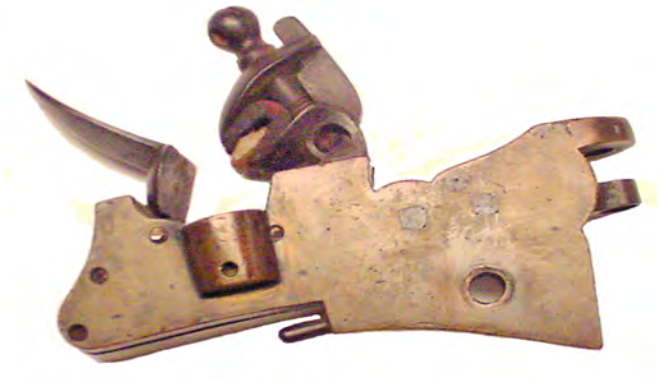


Figure 31. A variant British lock by “R. Hill”. Notice the peg on the base for attachment to cannon barrel, most likely a Carronade, and the deep pan configuration. Dick Salzer collection.

Figure 32. This early 1780s French hand-held flintlock ignitor functioned much like the slowmatch/portfire system. It features a belt clip, brass furniture and an enlarged pommel on the grip for wet weather use. Tennants Auctions, London, England.

Figure 33. Another hand-held flintlock ignitor. Bonhams Auctions, London, England.

The devices shown in Figures 32-35 are not technically cannon locks but are cannon ignitors in that they function more as mechanical portfires than lanyard-activated locks. In principle they would function like a portfire, but have the advantages of portability. These are very rare and seldom seen by collectors. Although they provide flexibility for use on standard cannons without flintlock ignitors, their survivability rate suggests they were not much in favor at the time. It is quite possible that these four examples were prototypes in the experimental stage.

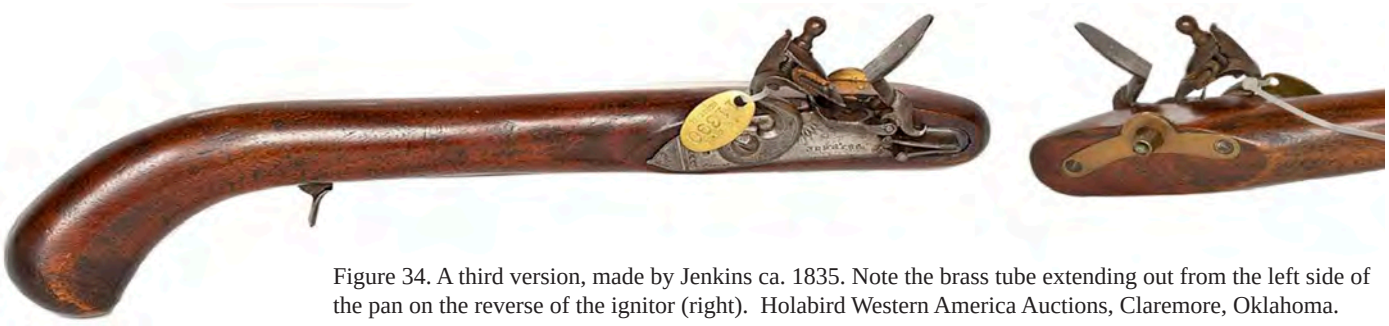


Figure 34. A third version, made by Jenkins ca. 1835. Note the brass tube extending out from the left side of the pan on the reverse of the ignitor (right). Holabird Western America Auctions, Claremore, Oklahoma.

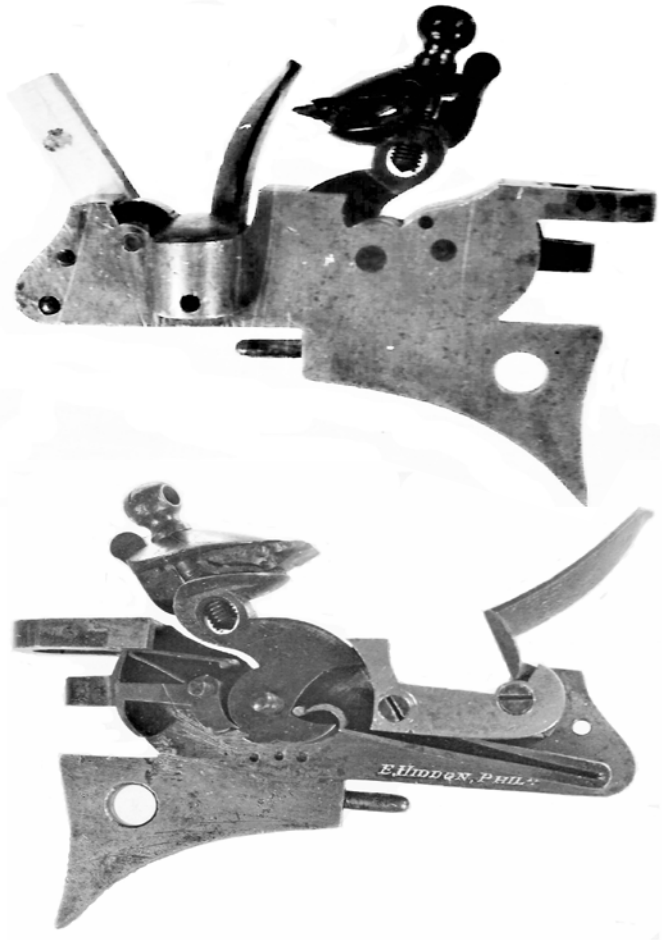
The United States Navy equipped several warships with locks of British manufacture. The iconic USS Constitution was thus equipped *(a single cannon, with lock in place, can be viewed at the Constitution museum in Boston Harbor)*. An obscure New York gunsmith by the name of Enoch Hidden became interested in the field of cannon and artillery ignition. He is known to have built a few flint cannon locks (Figures 36 and 37) and he later secured a patent on a spring-loaded percussion lock which could be used on both ships cannon and field artillery pieces (Figure 38).

50. Curiosa. *Left to right:* (1 and 2) Rocket launchers fired from the shoulder. (3 and 4) Cannon igniters with detachable tubes. (5 and 6) Another style of igniter, the last with a percussion-lock.

Figure 35. This is a page from Howard Blackmore's book *"British Military Firearms 1650-1850*". Entitled "Curiosa", it shows four ignitors. Two of these are flintlock pistols fitted with long extension tubes, one attached by a lug and the other by a threaded screw.[6]

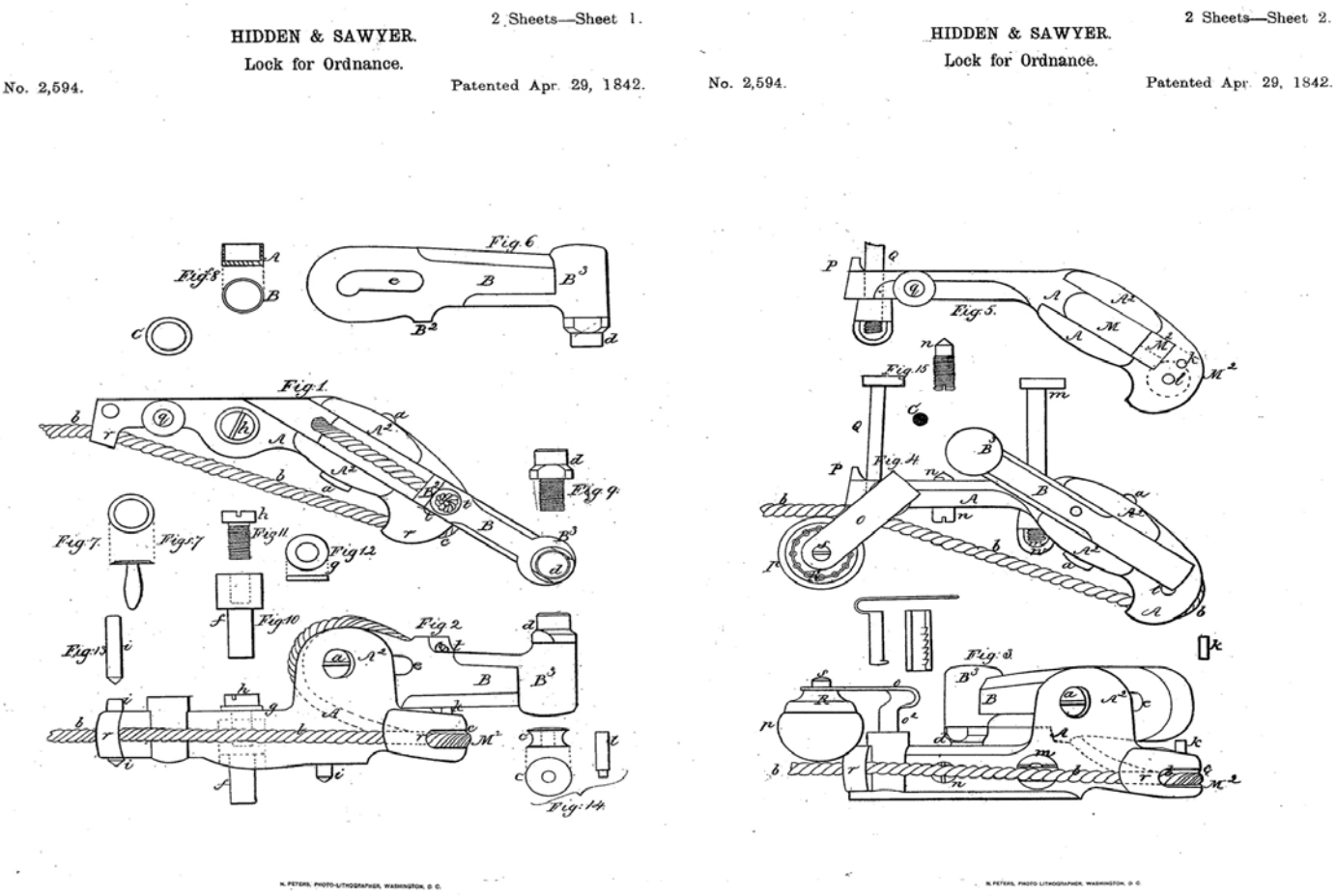
It will be apparent to the reader after viewing the examples shown in this article that little, if any, standardization existed in the design of mechanical cannon ignitors. Variations in triggering mechanisms, pan design and methods of attachment to cannon breeches were seemingly left to the maker. Figures 6, 7, 12 and 20 are all British, though produced by different gunmakers, suggesting that some design guidance was provided in Britain.

In England, starting in 1837, the Ordinance Factory at Enfield began converting cannon locks to percussion ignition. By 1835, it was ordered by Ordinance that the issue of flintlocks for cannon be discontinued.[7] Thereby essentially ending the flintlock cannon ignitor era.



Figures 36. Enoch Hidden's lock made in Philadelphia ca. 1824. The only one known to have United States origin. Formally in the James Gooding collection.

Figure 37. A close-up of a Hidden lock interior.



Figures 38. Hidden and Sawyer's patent number 2,594 for a percussion firing mechanism, 29 April 1842. It is not known whether this device was used in naval application or was strictly for field and siege usage. Research by Fred Gaede.

References

Dahlgren, Lt. J.A. – *Naval Percussion Locks and Primers* – (1853) Reprinted by Museum Restoration Service. 1995

Gaede. Frederick – "Enoch Hidden-His Locks for Field Artillery" – *Artillery Magazine* Vol. 42, No. 2, Spring 2021. Pages 18-28.

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Endnotes

1 Blackmore, Howard L. "Some Notes on the Introduction of Cannon Locks in the Royal Navy." *Arms Collecting* Vol. 30, No. 4, November 1992. Page 114.

2 Ibid Page 117.

3 Ibid Page 119.

4 Ibid Page 114.

5 Ibid Page 121.

6 Blackmore, Howard L. *British Military Firearms 1650-1850*. Arco Publishing Company, New York, 1962. Page 173.

7 Blackmore, Howard L. "Some Notes on the Introduction of Cannon Locks in the Royal Navy." *Arms Collecting* Vol. 30, No. 4, November 1992. Page 123.