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Friday, May 13th, 1859.

LIEUT.-COL. T. ST. LEGER ALCOCK, Vice-President, in the Chair.

GUN-LOCKS AND THEIR HISTORY.

By Mr. ROBERT T. PRITCHETT.

ALTHOUGH there are many to whom this subject would afford but little interest, yet all who have ever looked with pleasure on a gun must allow that no part is more worthy of our attention than the lock, or mode of ignition.

From the earliest periods up to the present, the lock has even given a distinctive name to the different arms, and in the present day they are alluded to as percussion guns, tube guns, or the flint, which is sometimes disrespectfully treated by the term "tinder box." The lock just now deserves our notice; the more so as likely to prove but a minor characteristic before the all-engrossing topic of muzzle-loader, or breach-loader. My chief endeavour will be to bring before you authentic specimens; I shall also endeavour to show when the different systems were used in the British army, and throughout to trace the various links that exist, particularly when, from want of confidence in a new system, the old one has been retained and used in the same lock.

We have four distinct systems, which may be thus described:—

Match-lock, or ignition by simple application.

Wheel-lock, " friction.

Flint-lock, " scintillation.

Percussion, " detonation.

These have all in their turn been used in our army in their simple forms, as described in the following table, the compounds having been made use of only for sporting purposes and "armes de luxe."

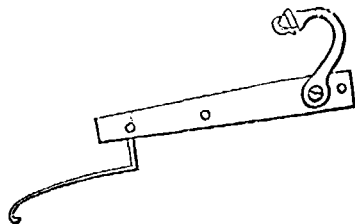
DESCRIPTION OF LOCKS USED IN THE BRITISH ARMY.

DATES OF LOCKS.				
Reign.	A.D.	Musket.	Carbine.	Pistol.
Edward IV. .	1461	Hand Gounes introduced into England.		
Henry VII. .	1485	Match . .	— —	
Henry VIII. .	1509	Match . .	— —	Wheel
Edward VI. .	1547	Match . .	— —	Wheel
Mary . .	1553	Match . .	— —	Wheel
Elizabeth . .	1553	Match . .	Wheel . .	Wheel
James I. .	1603	Match . .	Wheel . .	Wheel
Charles I. .	1625	Match . .	Snaphaunce .	Wheel
Charles II. .	1660	Match . .	Snaphaunce .	Wheel
James II. .	1685	Match . .	Flint . .	
William III. .	1689	Match . .	Flint . .	
Anne . .	1702	Flint . .	Flint . .	Flint
George I. .	1714	Flint . .	Flint . .	Flint
George II. .	1727	Flint . .	Flint . .	Flint
George III. .	1760	Flint . .	Flint . .	Flint
George IV. .	1820	Flint . .	Flint . .	Flint
William IV. .	1830	Flint . .	Flint . .	Flint
Victoria . .	1837	Percussion .	Percussion .	Percussion

I need hardly mention here that the first hand "gonnes" had no locks, but were fired as hand cannons, and only at the latter end of Henry VI.'s reign had they the addition of the side touch-hole, pan, and cover.

The MATCH-LOCK was long-lived in the service, from 1485, when Henry VII. first armed half his yeomen of the guard with them, to William III. in 1689. In Mary's reign it was left to the people to find themselves guns or bows as they preferred.

The first form of match-lock was very unsophisticated, as seen in some old specimens of about the time of Elizabeth or Henry VIII. Two very fine ones are now in the Tower, which were presented by Lord De Lisle from Penshurst.



In a work called "England's Training for a Private Soldier," by Davies, 1619, page 121, Grose, vol. ii., we find, that the "match be carried between the fingers." In Captain Cruso's work, in 1632, the dragoon is directed to carry "the match burning, and the bridle in the left hand;" and in Rushworth we learn that the musketeers, when surrendering at Reading, in 1644, were "to march out with the match lighted at both ends, and their bullets in their mouths." Later again, in 1670, General Monk still thinks match-locks so important as to recommend (see page 132), "that the governor of a fortress be careful to sow at a fit time of year a competent quantity of hempseed for the making of match." One peculiar form of match-lock, bearing the date 1562, is well worth our notice; I have therefore made a sketch of it, as being the first form of relieving the cock with a spring with which I am acquainted. (See plate, fig. 1.)*

In this early instance the serpentine is drawn back to full cock, and to fire the gun, the match, as soon as the cock is relieved, is dashed down into the pan; there is no doubt, however, that, instead of igniting the priming, it frequently pushed the powder out without igniting it, and extinguished the match as well. There is a marked difference between the Eastern and European match-locks; in the former the match comes down towards the muzzle, in the latter towards the butt. The match-lock, with all its simplicity, gave considerable trouble in its use, as the following words of command will show, thus:

* It is curious to observe that matchlocks from Borneo and Java have the same arrangement of spring.—R. T. P.

GUN LOCKS 1562 TO 1821

Fig. 1. Match Lock 1562..

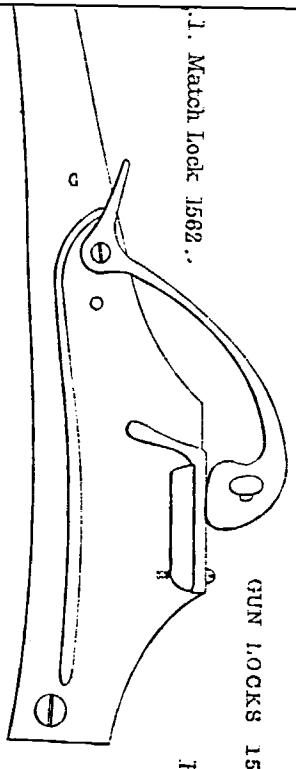


Fig. 4. Flint and Match Lock 1692

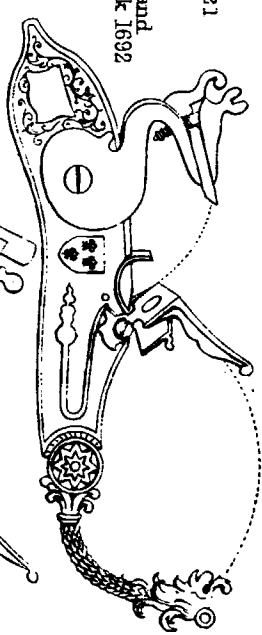


Fig. 5. Snaphaunce

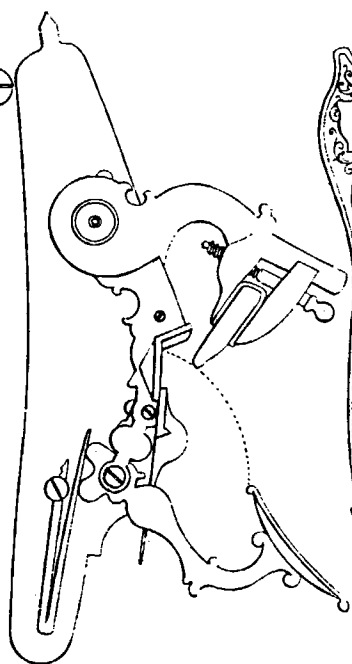


Fig. 6. French Flint lock 1705.

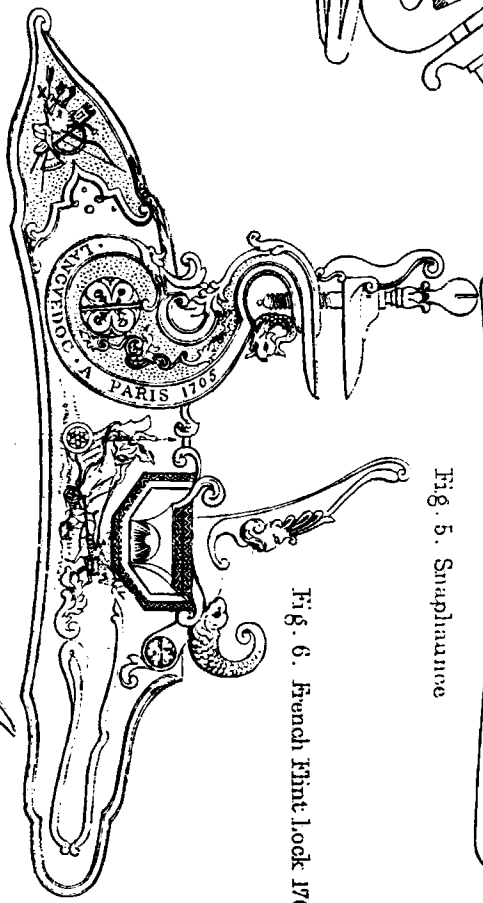


Fig. 2. Wheel Lock 1590

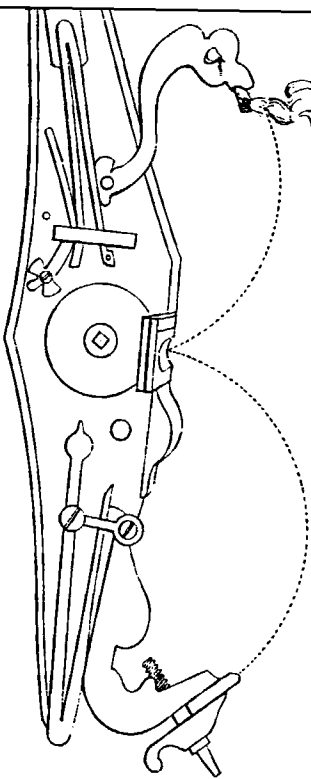


Fig. 3. German Wheel Lock 1605.

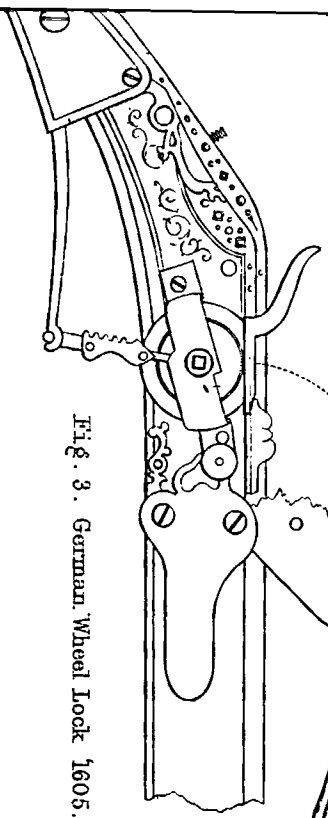
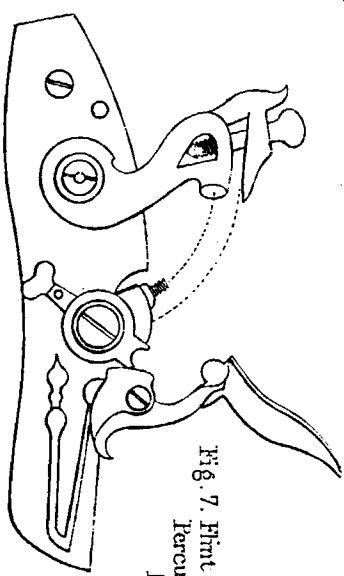
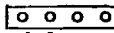


Fig. 7. Flint and Percussion Lock 1821



WORDS OF COMMAND.

WORDS OF COMMAND FOR				
MARCH, 1630.	WHEEL, 1632.	SNAPHAUNCE, 1632.	FLINT, 1745.	PERCUSSION, 1853.
<p>Take forth your match. Blow off your coal. Cock your match. Try your match. Guard, blow, and open your pan. Give fire. Uncock your match. Return your match. Clear your pan. Prime your pan. Shut your pan. Cast off your loose powder. Blow off your loose powder. Draw out your match.</p>	<p>Span your pistol. Prime your pistol. Shut your pan. Pull down your cock.</p>	<p>Bend your cock. Guard your cock. Prime your hammer. Fire your cock.</p>	<p>Half cock your fire-lock. Handle your primer. Prime, 1. Prime, 2. Shut your pan. Cock your firelock.</p>	<p>Half cock. Two, i.e. cap. Ready, i.e. full cock.</p>

The second word of command must have been rather inconvenient to any one in the immediate neighbourhood. A cigar ash is dangerous to the eye; but 100 musketeers, all "blowing their coal," must have been frightful for any one to leeward. The match, when lighted, was very objectionable, as being likely to betray the bearer; to avoid this, the match was carried in a pewter case with holes , and, to avoid the shot of the enemy, the infantry of the period were instructed to "fire going, and never standing;"—so advises Mr. William Garrard in 1587. The last guns of this sort used in the army are ably represented in many museums. There is a very good specimen of the time of William III. in the valuable collection of this Institution.

WHEEL-LOCKS were used as early as 1509, in the reign of Henry VIII. and were in origin Italian, as the Duke of Tuscany had a very splendid and elaborately-worked pair of pistols, dated 1530; and Benvenuto Cellini, about 1523, speaking of his gun and lock, leads us to suppose it to have been a wheel-lock.

The German reiters next attract our attention, by having, in 1545, wheel-lock pistols. In Mary's reign, in 1553, wheel-lock pistols were used for our cavalry; but I am not aware of any instance in which our soldiers had muskets on this principle. In 1558 Collado, in "A Treatise of Artillerie," published in Venice, mentions that they were in use before his time, and we find them continued in our cavalry until snaphaunces were gradually introduced in Charles I.'s reign. In France they were used until 1680; and in Germany sporting rifles were made on this principle until the end of the last century. The action of wheel-locks cannot be better described than by the following instruction for "Cavalrie" of the period:—"Span your pistol," which is, to turn the wheel with a spanner until it catches or stops. Then to prime, "Draw over the pan-cover," "Pull down the cock;" the pyrites resting upon the wheel, which comes through the pan. Directly the trigger is pulled the wheel flies round, and, drawing sparks from the pyrites, ignites the priming, the same action as "scissors to grind," but reversed in the wheel-lock. In the former the steel revolves, in the latter the steel is stationary. A very beautiful specimen of this work, of the time of Louis XIII. shows how art was encouraged in the manufacture of arms about this period, and to what a great extent it was carried; and only a short time since I saw a wheel-lock, equally beautiful, dated 1590, which had been altered from wheel-lock to match. In 1639 Ward speaks in praise of these locks in the following words:—"That they are not likely to get out of kilter, and will endure spanned twenty-four hours together without hurt." In Germany, about the year 1600, they were rather fond of making their locks with a huge mechanism outside, cumbersome in the extreme, and the spring sadly exposed, as shown in one of my specimens, which was in the Bernal Collection. (See plate, fig. 3.) Some cases are found where two cocks were used to one lock, in case the first missed; in others, again, we find the lock as shown in plate, fig. 2, where the match is retained, lest the wheel should ever fail: these date about 1590.

The term trigger-lock, about the time of Charles I. in 1633, is particularly mentioned in the gunmakers' rate. It means this—a hair-trigger, as now known to us.

We now arrive at the **FLINT-LOCK**, the lock of that gun, with which our great battles have been fought, with which Marlborough and Wellington gained their great victories, the days of which, added the names of Blenheim, Ramillies, Malplaquet, Peninsula, Assaye, and Waterloo, to the laurels of this country. Flint and steel (as connected with gun-locks) were known for a hundred years before they were adopted in the Service. This may seem a remarkable fact; but in the "*Norfolk Archæologia*,"* a blacksmith is mentioned as fitting a snaphaunce to a stock in 1588. Now the snaphaunce (see plate, fig. 5,) is really a flint-lock, although we do not accept it as such until the bottom of the hammer covers the pan. The earliest specimen bearing a date is a gun in the possession of the War Department, having the year 1614 on the lock and barrel. This belonged to Prince Charles. The stock is inlaid with silver thistles and Scottish designs, the barrel shows symptoms of being inlaid with gold, the whole forming a good historical relic. A notice of it was read last Friday at the meeting of the Archæological Society. In 1632 (time of Charles I.) snaphaunce carbines were the cavalry weapon. That period is to be particularly remembered as one at which match-lock muskets, wheel-lock pistols, and snaphaunce carbines, were all used at the same time in army.

In 1677, the Earl of Orrery gives five reasons why fire-locks were superior to match. "1st, more ready, the match being more roundabout; besides that, if not fired as soon as the match be blown, you must a second time blow your match, or the ashes it gathers hinders it from firing. 2nd, the match is very dangerous, either when bandeliers are used, or when soldiers run hastily in fight to the bridge barrel to refit their bandeliers. I have often seen instances thereof. 3rd, matches are seen at night. 4th, in rain, the pan being open for awhile, the rain often deads the powder and the match too, and in wind blows away the powder before the match can touch the pan, or else blows sparks into the pan, and fires the piece before the soldier is ready, who either thereby loses his shot, or wounds or kills some one before him, whereas the fire-lock [the term fire-lock is now given to the flint-lock] is so sudden, that what makes the cock fall upon the hammer strikes the fire and opens the pan at once. 5th, the store of match for an army adds so much to the baggage, and it is liable to get spoiled by the weather." In 1682, Charles II. (see *Abridgement of the English Military Discipline*, by his Majesty's command), the musketeer has a match-lock musket, the dragoon a flint-lock musket. In 1690 the musketeer has a match-lock, the grenadier a fire-lock. In 1685, at the coronation of James II., the guards are described by Sandford, in his elaborate description of the proceedings, as having "snaphaunce muskets."

The specimen in the Museum, bearing the initials J. R., shows that the reign of James II. may fairly be considered as the commencement of adopted flints, connected with which system is the doglock catch at the back of the cock. The reign of William and Mary, in 1690, brings us to the time when the last match-lock musket is made; and the battle of Steinkerque gives rise to a remarkable lock known as the *Vauban* lock,

* *Norfolk Archæologia*, p. 16, "1588 A.D. Payde to Henry Radoo, smythe, for making one of the old pistols with a new snaphaunce and new stock at Norwich."

and adopted in the French service. The drawing (see plate, fig. 4) I have taken from St. Remy, a most valuable authority for his period, about the year 1702. In this work the lock is described as the fusil-musket lock, because the flint was first applied to fusils; it was afterwards applied to the musket. In the Musée d'Artillerie at Paris, they describe the lock thus: "Fusil mousquet de Vauban qui au mécanisme ordinaire de a batterie reunit le serpentín pour la mèche. A la bataille de Steinkerque (1692) les François jetèrent spontanément leurs mousquets, pour se servir des fusils pris aux ennemis. Ce fut alors que Vauban imagina son fusil mousquet, dans lequel la mèche sert au défaut de la batterie." The flint had not gained much ground in France at this period, although in the Spanish army it had been long used and known as the *Platine à Miquelet*. I may mention that a photograph of the Vauban lock has been kindly sent to me by the Minister of War in Paris,—an attention which I esteem highly. Without paying too much attention to the affairs of our Gallic neighbours, I may mention that from 1693 to 1714, a series of experiments with flint-locks was being carried on in France. In 1703 many flint-locks were in service, and the exquisite specimen dated 1705, made from designs by La Collombe, (see plate, fig. 6,) in my own possession, shows that in Paris they were no mean proficient in flint-locks; yet no model was adopted in the French service until 1714. From that time the French Government has made a complete series of model arms and their transformations up to the present date. In Queen Anne's reign a change took place in flint-locks so as to strengthen their form of construction; it was to carry the pan further through, so that the hammer-pin might be better supported. From this time up to 1837 no change took place. About 1772 Thomas Wright and C. Byrne produced a flint-lock which was self-priming, and self-hammer-closed; the patent can be seen by referring to No. 1,003 in the Collections of Patents on Locks. Cock-and-hen locks are alluded to in the patent Nov. 28th, A.D. 1799. Flint-locks are mentioned as being made so that the flint, by the operation of cocking, presents a different angle to the hen or hammer every time the piece is fired.

The very name of PERCUSSION seems so identified with our own day, that in fact it is almost too well known to require explanation. Cock your gun, cap, and fire, explains all; a few words as to the origin of the principle are, however, desirable. For its invention, like that of gunpowder, we are indebted to an ecclesiastic, viz. to Schwartz, the monk, for the latter, and to the Rev. A. J. Forsyth for the former. In 1807 Forsyth took out a patent to explode the charge by a grain of detonating powder. In 1816 Joseph Manton took out a patent for tube guns, which are still used; and in 1821 Samson Davis took out another for using the same lock, either on the percussion principle or with gunpowder, without changing the cock or hammer. The original of this patent may be seen in the collection in the Museum, and I regret that, as a left-hand lock is there, I have not been able to obtain a right-hand one as a fellow, in order to complete the pair.*

It was not until 1837 that the percussion principle assumed such a form as to be worthy of adoption in Her Majesty's Service. At first some

- * A right-hand lock has since been placed in the Collection. (See plate, fig. 7.)

special arms were got up for the Foot Guards, with back-action locks, at the same time that some old arms were altered from flint to percussion. These being found satisfactory were continued in use for some time. A back-action carbine, known as the Victoria Carbine, the same as that now carried by the Horse Guards, was also adopted at that time. But, although the percussion principle was adopted in certain corps, and in the Brunswick Rifle for the Rifle Brigade, yet not until 1842 was a percussion model decided upon for the Army, or rather for the Line. This arm had not a back but a bar action. This remained the weapon of the Line and East India Company's Army until 1853. One great defect stamped the Line lock of 1842, viz. the shortness of the mainspring, which produced a very cramped action. There was also the radical fault of a hook-main-spring instead of a swivel. When the wheel-lock fell into disuse, the swivel that used to connect the mainspring with the tumbler was forgotten and ignored. So great is the difference of action between a swivel and hook-mainspring, that the former may be put together dry, and it will work easily and smoothly, whilst the hook-mainspring, unless put together with oil, will immediately grind; and so in fact it will always, unless kept constantly lubricated.

We have now reached a period when the experience of centuries has produced a satisfactory result in the lock of 1853, the pattern lock of our Service, which in simplicity deserves our praise, and in production our wonder. It will be superfluous to take up your time in detailing the processes of manufacture. I will only draw your attention to that most interesting collection in the Enfield rifle room in this Institution, where you may trace the gradual production of the different limbs and pieces from the raw material up to the highly-finished and perfect lock. The stages of fabrication, though numerous, are very interesting and very instructive.
