

15. Handling of the Firearms

Literature	Boeheim, Wendelin, Handbuch der Waffenkunde, Leipzig, 1890, BoWe Demmin, August, Die Kriegswaffen, Leipzig, 1886, DeAu Dürrenmatt, Peter, Schweizer Geschichte, Druck- und Verlaghaus AG, Zurich, 1963, DüPe Essenwein, August, Quelle zur Geschichte der Feuerwaffen, Leipzig, 1872, EsAu Hilber, Paul, Schweizer Wehrgeist in der Kunst, Basel, 1938, HiPa Hoff, Arne, Feuerwaffen, Bd. 1, Braunschweig, 1969, HoAr Lugs, Jaroslav, Handfeuerwaffen, Berlin, 1956, LuJa Schmidt, Rudolf, Die Entwicklung der Handfeuerwaffen, Schaffhausen, 1868, SmRu68 Thierbach, M., Geschichtl. Entwicklung der Handfeuerwaffen, Dresden, 1886, TiM
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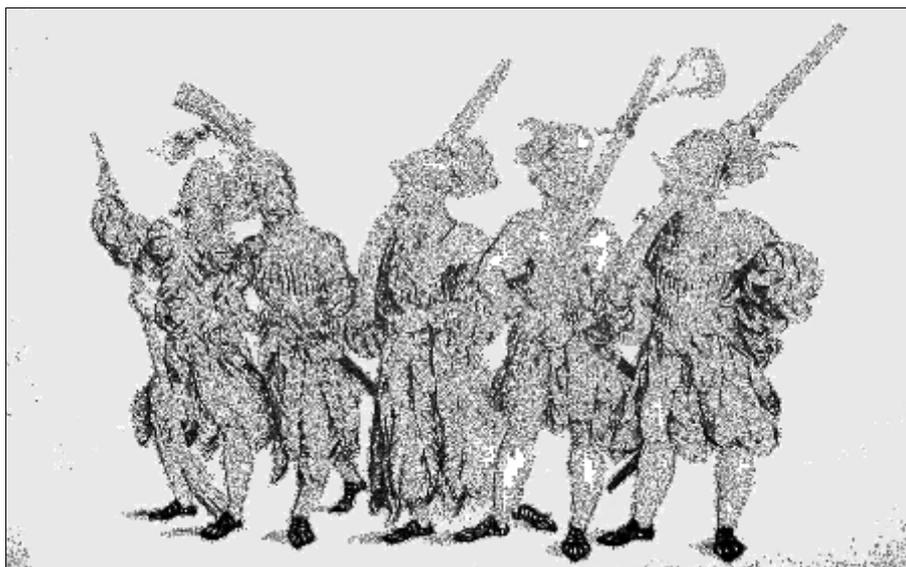
Introduction

There is relatively little information and few pictures available on the handling of early firearms. In the few pictures in chronicles, the available details can be studied and some information can be gained if one is willing to spend the time. Various specialty books can provide additional information. A further possibility is to rebuild a historic firearm and carry out shooting tests with it.

The following is an attempt to describe the handling, loading, aiming and shooting of a historic firearm. The author is aware that there are many ways to handle a firearm. Most information is based on contemporary copper engravings and edgings, as well as drawings and their interpretations. Other information was based on shooting trials which the author conducted.

There would certainly be more drawings and illustrations that would deserve to be depicted.

Fig. 15 – 1



Ca. 1560: Group of mercenaries according to a woodcut of Jost Amman
Photo: EsAu, Plate BXXI

Handling of Firearms in Pictures

Ca. 1290: Warrior with two Fire Flasks

Fig. 15 – 2

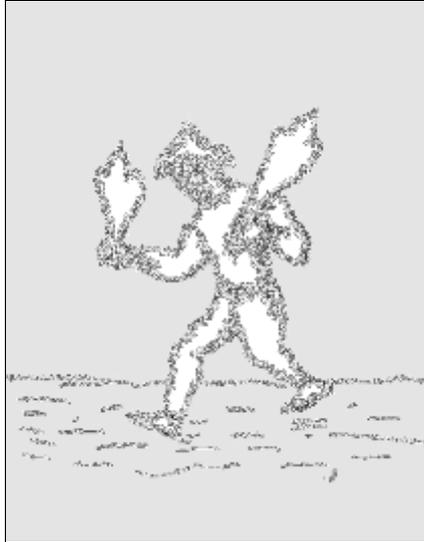


Photo: DeAu, page 58

A drawing of the Arabic Treaty 'Hejin-Eddin-Hassan-Alrammh' from ca. 1290 shows a warrior with fire flask. This is possibly the oldest representation of a warrior with two firearm resembling devices. The warrior holds two flame shaped fire flasks, upright in his hands. It is not known if they are missiles or weapons.

Ca. 1320: Warrior with Madfaa

Fig. 15 – 3



Photo: DeAu, page 913

The manuscript of Schem-Eddins-Mohammed of 1320, depicts a warrior holding a Madfaa ready to fire as well as a wooden gun with a barrel similar to a mortar. The barrel is attached to a wooden pole which is supported by a wooden carriage. A ball shaped object sticks out from the barrel. This could depict a small ball or the point of a missile. A missile is placed behind the warrior. According to this manuscript, a Madfaa had an impact similar to a mortar.

Ca. 1320: Four Knights ignite a Fire Barrel according Walter de Milemete

Fig. 15 – 4

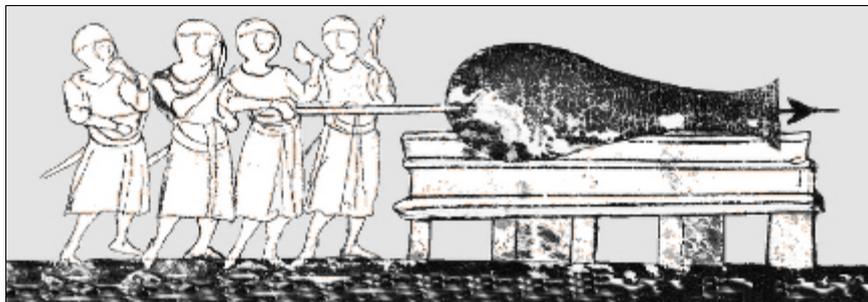


Photo: PeHa, page 32

As mentioned earlier in the two manuscripts by Chaplin Walter de Milemete, this is possibly the oldest European description of igniting a firearm. This manuscript he wrote around 1326 or earlier for the English King Edward III. The manuscript, which is possibly the older of the two, shows four knights igniting a vase-shaped barrel laying on a stone table at the touch hole on the side. Using a relatively long glowing ignition pole, it appears that they are igniting a piece of string sticking out from the touch hole. The drawing illustrates an arrow similar to the ones used in contemporary crossbows as the missile. The knights hold something in their left hands. This could be an object to protect themselves from flying sparks.

Ca. 1326: Knight igniting a Bronze Barrel according Walter de Milemete

Fig. 15 – 5

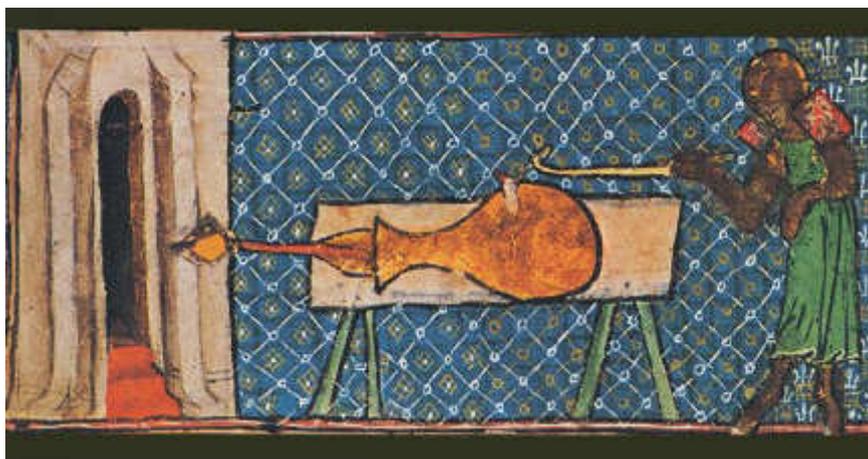


Photo: PoDu, page 92

The colour image shows a knight igniting the load with a long pole in which a burning wood sliver or a glowing piece of string is wedged. The touch hole is at the highest place on the barrel. The arrow definitely looks like a crossbow arrow. The knight no longer uses anything to protect himself from sparks. The picture suggests that we are looking at a shooting trial.

Ca. 1340: Shooter with Loshult Gun

Fig. 15 – 6



Photo: KuPe

The so-called Loshult gun from the year around 1340 that was found in 1861, in a place called Loshult in Sweden, has a length of only 30 centimeters. This is the reason it was portable and ideal to use in battles. It was however too heavy to shoot handheld, and most likely it had to be placed on the ground. It had a conical bore with a caliber of 31-36 mm. Most likely round stones or balls cast from bronze were used as missiles. For an approximate aim and to absorb the recoil, the gun was most likely embedded in a small depression in the ground. The ignition was accomplished in the same way as with the Milemete barrel.

Hypothetic description by the author

Ca. 1320: Shooter with Iron Barrel on Wooden Carriage

Fig. 15 – 7



Photo: KuPe

The first small forged iron barrels from the time around 1360 were most likely attached to a wooden carriage with iron bands or iron fittings. In the field, they were possibly placed into a depression in the ground, the same as the Loshult gun.

Hypothetic description by the author

Ca. 1375: Shooter with Fist Barrel

Fig. 15 – 8



Photo: KuPe

The barrel part between muzzle and powder chamber works ideally as a handle. Shooting trials with a fist barrel reconstructed to scale, have shown that the fist barrel is held with the left hand, so that it is supported by the horizontal lower arm. The shooter ignited the fist barrel with a glowing ignition rod held in the right hand. To aim, it was helpful to have a second person controlling the vertical alignment and to give instructions to the shooter. The recoil is small and absorbed by the large mass of the fist barrel.

Hypothetic description by the author

Ca. 1400: Shooter with short Pole Gun

Fig. 15 - 9



Photo: LuJa, page 11

When using the short pole gun from the time around 1400, the shooter pressed the wood or iron pole of the barrel under his left arm. Using an igniting rod with the right hand, he then ignited the load. Pole guns usually didn't have flash pans, or if they did, they were small. The shooter had to be careful not to spill the primer from the touch hole. To ignite and aim, the help of an additional person would be recommended.

Ca. 1400: Shooter with long Pole Gun

Fig. 15 – 10

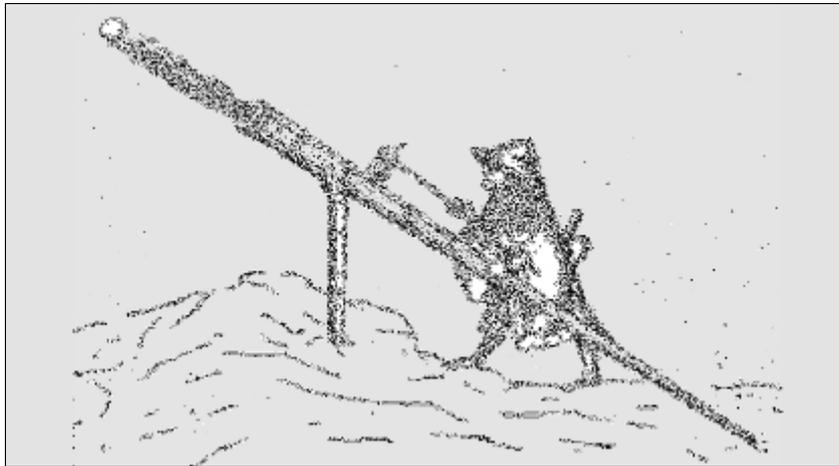


Photo: EsAu, plate A Xib

The long pole gun, also from around 1400, allowed a curved trajectory toward the enemy. Its long pole was supported by a fork. For a lighter version, just as with the handling of the pike, it was supported by the right foot and held with the left hand. Because the pole gun was held on an angle, a flash pan at the touch hole was necessary. Aiming accuracy was a matter of experience. Igniting could be done by the shooter.

Ca. 1414: 24 pounder "Tolle Grete" (Crazy Margaret)

Fig. 15 – 11

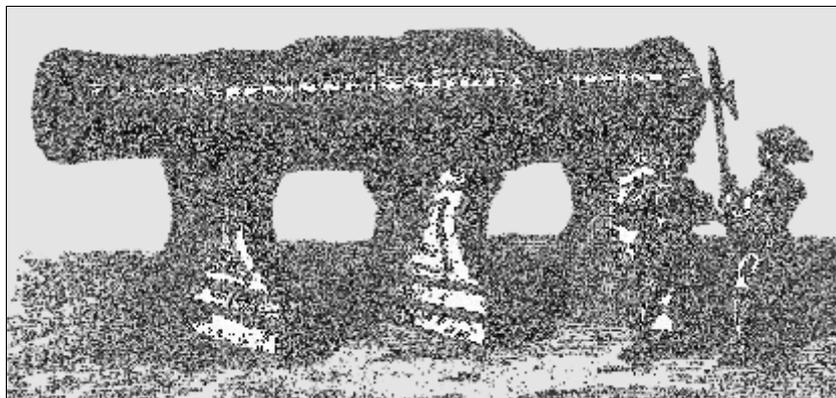


Photo: CvH, page 23

The so-called "Tolle Grete" was giant artillery from the time around 1414. It was built on orders from the Prince electorate of Brandenburg. Its iron forged barrel had a weight of 33,000 lbs. It was transported to the place of a siege and with the help of brick built supports aligned to the city walls that needed to be destroyed. The load consisted of 140 lbs. of black powder. Loading was done with a hoisting apparatus. This required several people and lots of time, which was usually available at sieges. On the 1866 copper etching, one cannot ignore the thought that the supports are too weak.

Ca. 1415: Siege of Aarau

Fig. 15 – 12

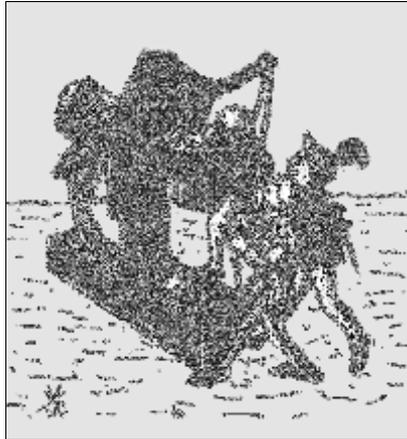


Photo: HiPa, page 58

According to the chronicles of Benedict Tschachtlan from 1470, the so-called Bliden catapults held the city of Aarau under siege in the year 1415. In this drawing, the Blide is in a right angle to the artillery. For a siege, this position does not make a lot of sense unless the outdated Blide was used as a crane to load the cannon standing beside it.

It can be reasoned that 55 years after the siege, the artist used freedom in his interpretation. Another possibility for this depiction could be the drawing technique and the artist's limited understanding of a siege.

Ca. 1430: Horsemen with Petrinel

Fig. 15 – 13

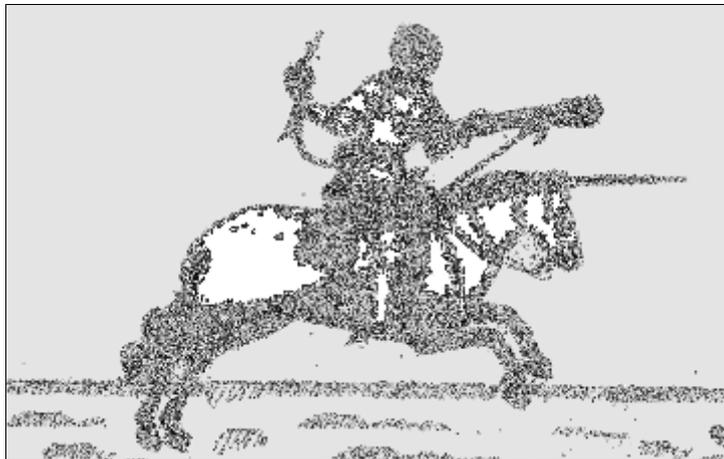


Photo: LuJa, page 10

In the Codex lat.197, from 1420 – 1450, a horseman on a galloping horse is depicted. He is about to fire a wall gun. To stabilize it and to carry the weight, it is supported with a forked rod hooked on the saddle. The rear end of the wall gun has a ring. With the help of a rope, the wall gun is pressed to the chest of the horseman. It is used similarly to the Petrinel. It is doubtful that wall guns were used successfully in this way. Priming powder was easily spilled, aiming was almost impossible, and the reaction of the horse to the explosion would not have been very advantageous.

Ca. 1430: Shooter with Stocked Pole Gun

Fig. 15 – 14

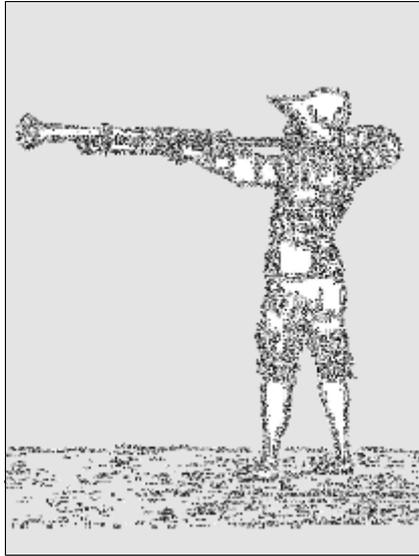


Photo: ElKa, page 39

According to a manuscript of Volturius in Italy at the beginning of the 15th century, pole guns with a stock were similarly held like a bow and arrow. The gun was held up with the left hand; the right hand directed the end of the pole so that the aim could be as accurate as possible. The ignition had to be carried out by a second person. This was possibly the first time a gun was held at eye level. This made it possible to aim with relative accuracy.

August 26, 1444: Firing onto the Walls of St. Jakob an der Birs

Fig. 15 – 15

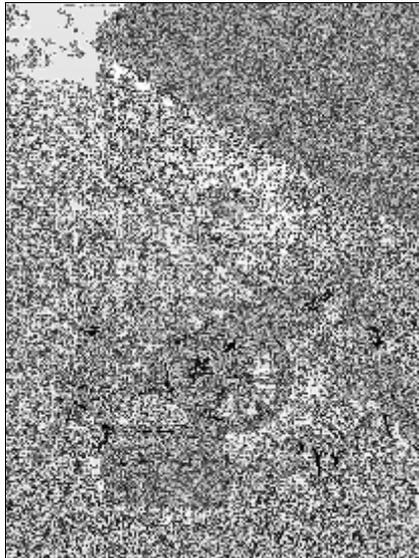


Photo: HiPa, page 60

In the official chronicle of Bern, the drawing segment of Diepold Schilling illustrates the attempt to break a wall by shooting at it with a cannon at close range in the Battle of St. Jakob an der Birs in 1444.

It appears that the helper collects the used balls, which were still intact, and carries them back to the cannon to be reused. Beside the cannon, prepared sacks of black powder in a box are visible.

Ca. 1450: Shooter with Stocked Hand Gun

Fig. 15 – 16

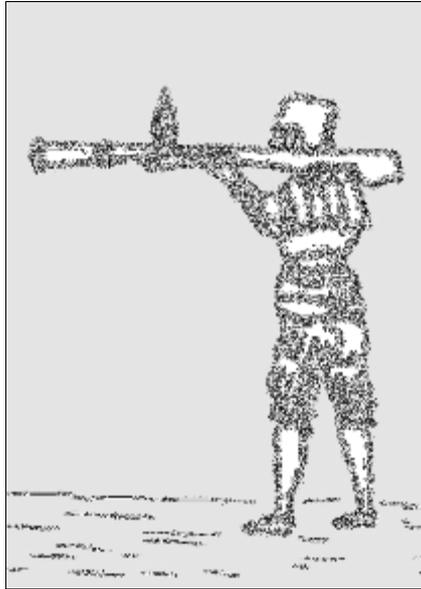


Photo: ElKa, page 39

According to a manuscript of Volturius, in the middle of the 15th century, a handheld weapon with stock was supported at the rear on the shooter's shoulder and was held up with his left hand in the front. This freed the right hand to ignite the gun. Supporting the gun on the shoulder relieves the weight on the left hand and the handling of the gun becomes relatively stable. The disadvantage of this gun is the close proximity of sparks from the burning priming powder in the flash pan to the face. The recoil is absorbed by the left hand.

1445: Siege of Laufenburg with Mortar

Fig. 15 – 17

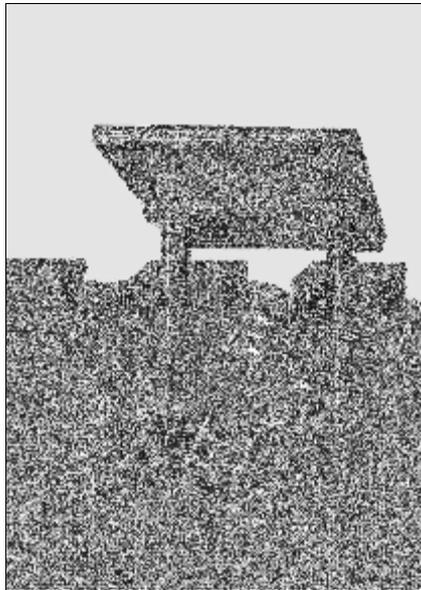


Photo: HiPa, page 82

According to a drawing of Diepold Schilling in the Lucern chronicle of 1513 at the Siege of Laufenburg in the year 1445, a mortar was used. This mortar was attached to a carriage made from wooden beams and had an adjustable wooden safety shield. The mortar was placed directly behind a wall. It is not clear how the balls were loaded. Was it possible that the mortar could be pulled back on wooden rails?

Ca. 1440: Shooter with Stocked Gun on Forked Support

Fig. 15 – 18



Photo: LuJa, page 8

From the 15th century on, a forked support was used while shooting heavy handheld guns. The picture shows a shooter with a heavy matchlock gun, holding a glowing match in his right hand. A forked support post is rammed into the ground. It has a pivot that is attached to the front of the stock. The stability of this set-up is rather questionable.

Ca. 1440: Shooter holding a Stoked Gun on Portable Carriage

Fig. 15 – 19

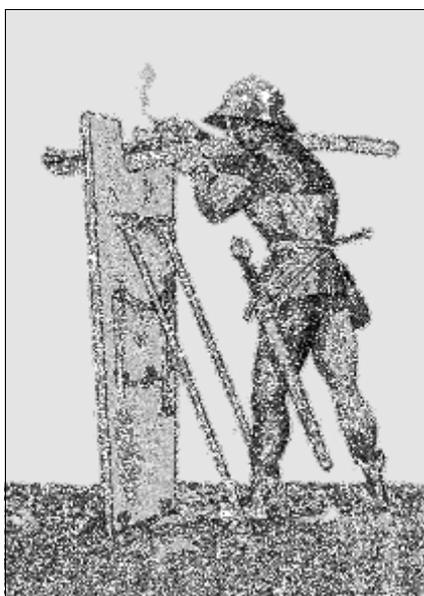


Photo: LuJa, page 9

A common method to use a heavy handheld gun in the field was to support it on a portable shield carriage. With a wall gun, the carriage absorbs the recoil. In this way, the shooter had a fairly stable support and at the same time, some protection against arrows and small caliber bullets. Ignition is done by hand. At the rear of the carriage, hangs the spare match for the shooter.

Ca. 1473: Shooter holding a Stocked Gun

Fig. 15 – 20



An early, originally colored picture from an English handwritten manuscript shows a shooter with a long, relatively light handheld stocked gun. Considering the position and no visible match, we can assume that it is a wheel lock gun. The earliest wheel lock guns were only known after about 1780. Interesting is the fact that the shooter presses the butt of his weapon against his shoulder the same way as is done today.

Photo: PoDu, page 19

Ca.1480: A Troupe of Shooters

Fig. 15 – 21

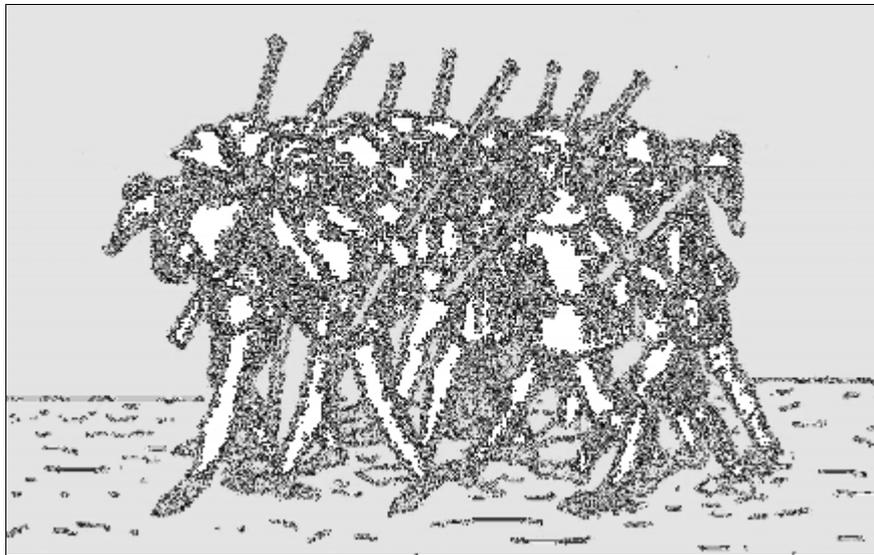


Photo: EsAu, plate B IVc

In a picture from the Wolfegg Bilder Handschrift of 1480-1490, a troupe of shooters is marching into action.

Two crossbow shooters can be seen amongst the shooters of pole guns.

Ca. 1480: German Right Angle Bombard

Fig. 15 – 22

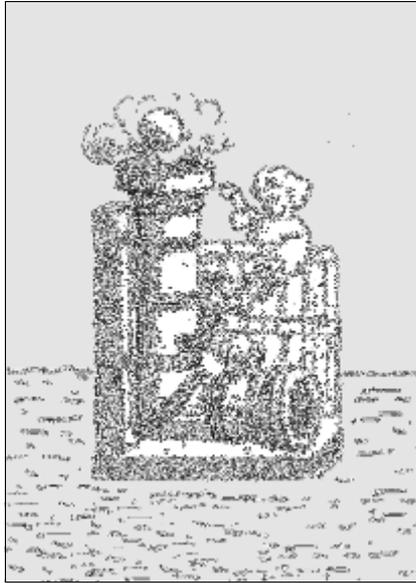


Photo: DeAu, page 927

The work 'Institutonum Republicae Militaris' of Nicolai Marescalei from the year 1515, has a copper edging that shows a right angle breech loading bombard, also called an elbow cannon. These bombards were apparently very popular in Germany and were used to shoot exploding balls. The reason for the horizontal pipe stump is not clear to the author. Since the ignition happens on a side flash pan above the horizontal pipe stump, the ball had to be above the touch hole of the loaded gun. This would also mean that the loading had to happen from the top.

Ca. 1502: Musketeers Advancing

Fig. 15 – 23



Photo: EsAu, plate B VIC.

In this dated picture from the Historical Museum of Berlin, four men with relatively small, easy to handle firearms are seen. There are no matchlocks visible on any of these firearms and the two men in the foreground hold glowing ignition rods in their right hand, as well as handheld stocked guns. It can be assumed, that the two men with handheld guns in the firing position are the actual shooters. The other two are probably helpers with the prepared guns and ignition rods. The loaded guns will be handed to the shooter by the helper and then ignited.

Ca. 1505: Wall Gun with Carriage, Emperor Maximilian I.

Fig. 15 – 24

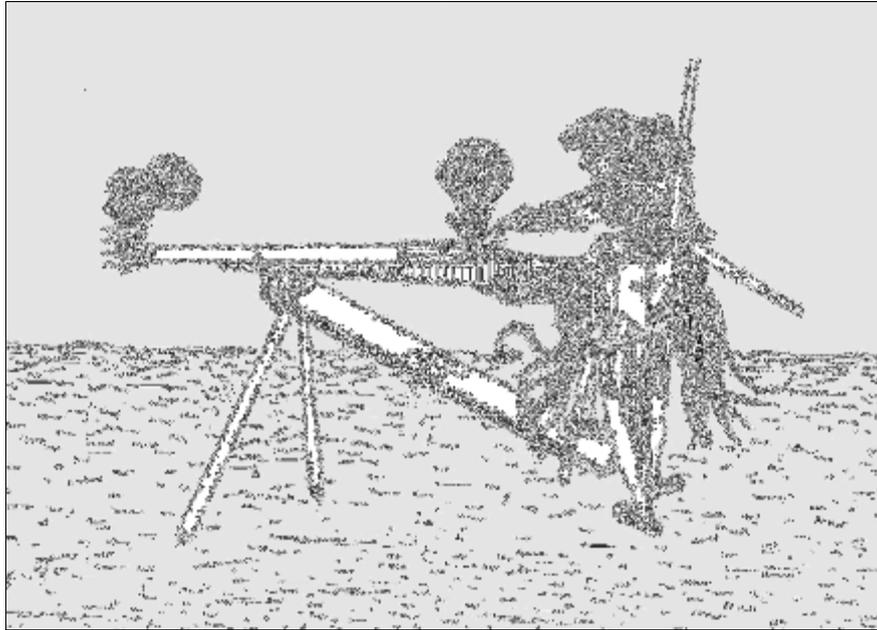


Photo: EsAu, plate B XII

When heavy wall guns, also called double wall guns were used in the field and not in a fortress, portable carriages were used. Some carriages from the time of Maximilian I, around 1505, consisted of a board with one end wedged into the ground and two leg supports that could be folded away. The board served to support the gun and directed the recoil into the ground. For added stability, the helper or the shooter pressed the board into the ground with his foot. The helper ignited the gun with a match.

Ca. 1505: Lansquenet with Matchlock Musket

Fig. 15 – 25



In the Codex icon. 222, a drawing from around 1500, depict a musketeer with a heavy matchlock gun. He is holding the gun in the firing position with the butt of the stock against his shoulder. By operating the trigger lever under the stock, he unlocks the spring-loaded serpentine of a matchlock. With a spring, the serpentine is turned against the flash pan and the priming powder is ignited.

Photo: HoAr, page 17

Ca. 1505: German Ribalde

Fig. 15 – 26



Photo: DeAu, page 932

The so-called Ribalde, was a terrifying war tool from around 1500. According to a water colour by Nicolaus Glockenthon, in essence the Ribalde consisted of a movable cannon with a shield and multiple spears attached to it. They were probably used to instill fear and also for close combat defense. With two poles, two or more men were able to maneuver the Ribalde around in the field. An artillerist was responsible for the handling of the cannon. Several musketeers were deployed as helpers and for protection. It is not known if or how successful this rather bizarre war instrument was.

Ca. 1533: Group of Shooters

Fig. 15 – 27



Photo: EsAu, plate B XVIe

In an etching by M. Feselen, the shooter on the left holds a wheel lock musket and the one on the right, a matchlock musket. Both hold it on the hip in the firing position. The shooter in the middle is loading his musket with the ramrod. The shooter on the left can hold his wheel lock musket with both hands and release the shot with the trigger. Looking at the shooter on the right, it appears that the wheel lock on this musket is no longer functioning. He attempts to release the shot with the match in his right hand and can therefore hold the musket only in his left hand. The result is most likely unsatisfactory and is possibly even painful.

Ca. 1570: Cannoneer with German Breech Loading Cannon

Fig. 15 – 28

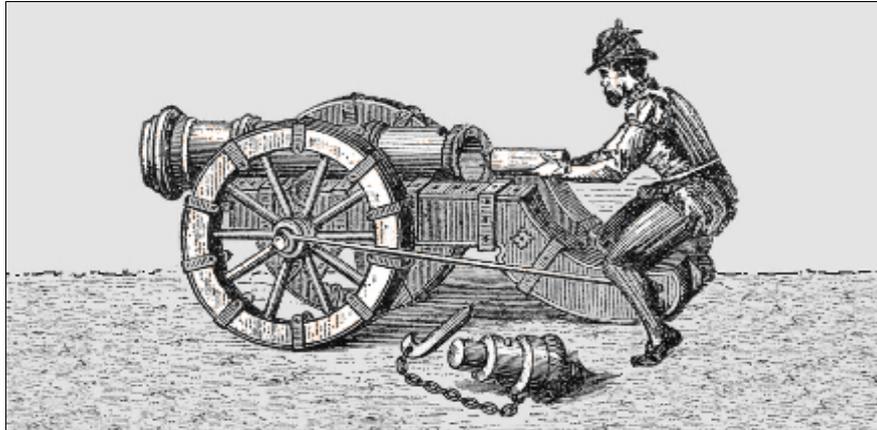


Photo: DeAu, page 935

The breech loading cannon had the advantage of no longer having to be loaded from the front, which was a dangerous area. Loading was considerably easier and quicker and could be done by one person. Early on, experiments with different lock systems were carried out. Around the middle of the 16th century, only a few breech loading cannons were used. Before the introduction of cartridges, the ball and then the powder bag had to be inserted into the barrel from the rear.

Ca. 1600: Officer on Horseback with Wheel Lock Pistol

Fig. 15 – 29



Around 1600, it was fashionable for a cavalry officer to carry a wheel lock pistol. A charging soldier with drawn pistol on a foaming horse was probably a very intimidating sight. Considering that aiming was almost impossible, the rider could only shoot once unless he had a second loaded pistol with him. Reloading of the pistol on the horse was almost impossible. Realizing this, the psychological shock to the approaching enemy, was probably short lived. After a brief time, Wallenstein forbade the use of wheel lock pistols in the cavalry, because it created more confusion by frightened horses than military success.

Photo: EsAu, plate B XXII

Ca. 1630: Kneeling Musketeer with Low Support Fork

Fig. 15 – 30

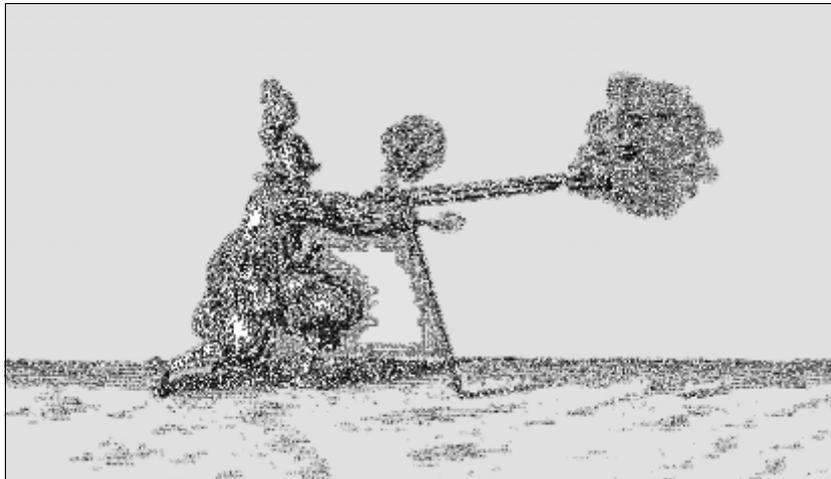


Photo: EsAu, B XXIX; HeRo, page 42

The copper edging by J.J. Wallhausen from around 1630, is a clear depiction of a kneeling musketeer. A good method to use a musket is for the musketeer to kneel down to fire his musket. He would hold the low supporting fork with his left hand and release the shot on the matchlock, with his right. The advantage of this method was that the musketeer presented a smaller target for the enemy and aiming was improved by the better stability of the gun.

Ca. 1620: Cavalry Soldier with Wheel Lock Musket

Fig. 15 – 31

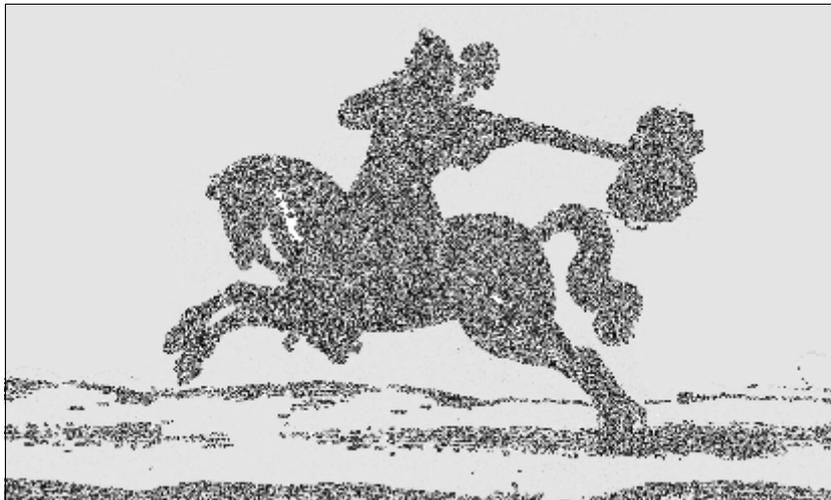


Photo: EsAu, plate B XXXVI

In the document 'Art Militaire Au Cheval' by J.J. Wallhausen from 1616, several copper edgings are preserved depicting the use of a musket on horseback. At the retreat, the soldier also had to be able to control the weapon when shooting backwards. However, this was only possible if the weapon was still loaded and not used earlier.

Ca. 1700: Cannoneers Firing Artillery

Fig. 15 – 32

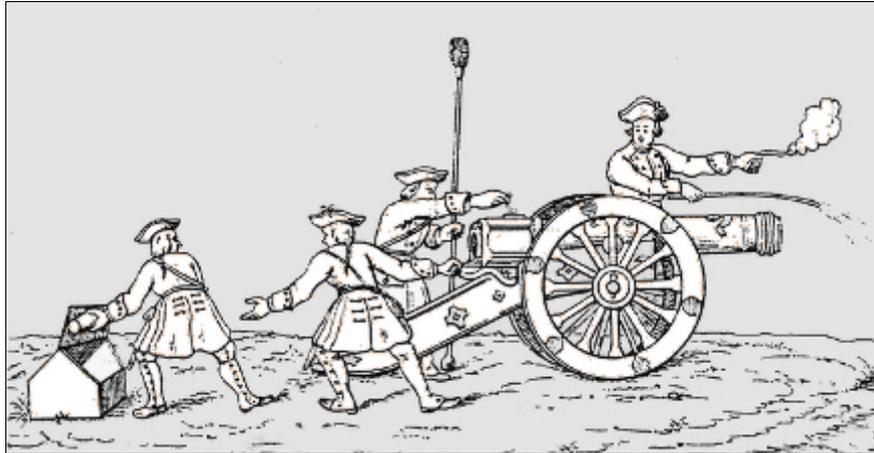


Photo: ScRu, plate XXXV

In the book, 'The Development of Firearms' by Rudolf Schmidt, Schaffhausen from 1868 shows a drawing of the handling of a breech loading cannon in action. A helper takes a powder sack from the powder trunk and hands it to the loader. He has already pushed the ball into the barrel and will then push the powder sack behind it and close the breech. Another helper puts priming powder onto the touch hole. He holds a brush in his hand that is later used to clean the barrel after the shot. The shooter with glowing match stands as far away as possible from the powder, ready for igniting.

Ca. 1794: Transport of Cannon Barrel for Repair

Fig. 15 – 33



Photo: NBCH, page 89

The maintenance of the artillery in the field was of great importance. One had to make do with the simplest means. In a copper edging by J.R. Schellenberg of the New Year's paper 'Die Artillerie Wissenschaften' (Science of Artillery) of 1794, depicts how the spare barrel of a cannon can be transported with a second cannon.

Ca. 1800: Lord Palmerston Monster Mortar

Fig. 15 – 34

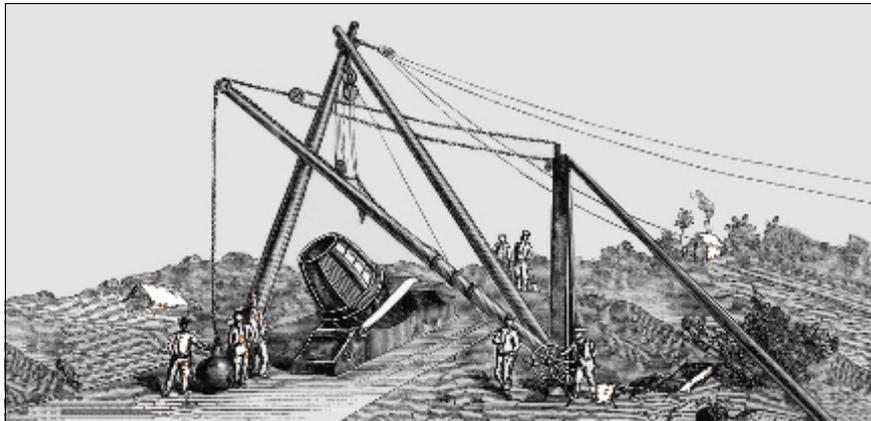


Photo: CvH, page 24

The larger the artillery, the more difficult and complicated it was to handle. During a power euphoria, the mortar built by Von Mallet under the patronage of Lord Palmerston, had a weight of 52 tons and a caliber of 914 mm. It could fire balls with a weight of one ton. It had a cast iron breech and a barrel from iron rods held together by rings. For loading, a special hoist was necessary and it took several hours to get the mortar ready to shoot. The transport of the mortar was almost impossible to manage. After only a few shots the barrel was damaged and the mortar was useless.

Ca. 1850: Infantry with Muzzle Loaders

Fig. 15 – 35



Photo: CvH, page 24

A drawing from around 1850 shows the procedure of loading and shooting with muzzle loaders by the infantry. Usually the advance happened in two rows. The front row shot the weapons while standing or kneeling, while the back row had to reload the muzzle loaders standing up. The loading of muzzle loaders required this sequence. The disadvantage of it was that the infantry became a very large target for the enemy.

Ca. 1860: Prussian Infantry Soldier with Needle Ignition Rifle

Fig. 15 – 36



Post Card; Photo: KuPe

With the introduction of the Prussian Needle Rifle from 1841 – 1879, the time consuming loading process and the unfortunate positioning was no longer necessary. Every infantryman could quickly shoot and reload his weapon at any time while standing, kneeling or prone, if he had enough cartridges and his ignition needle was not burned. This was tactical war progress which resulted in a frantic conversion of muzzle loaders to breech loaders.

Ca. 1871: Montigny-Mitrailleuse

Fig. 15 - 37

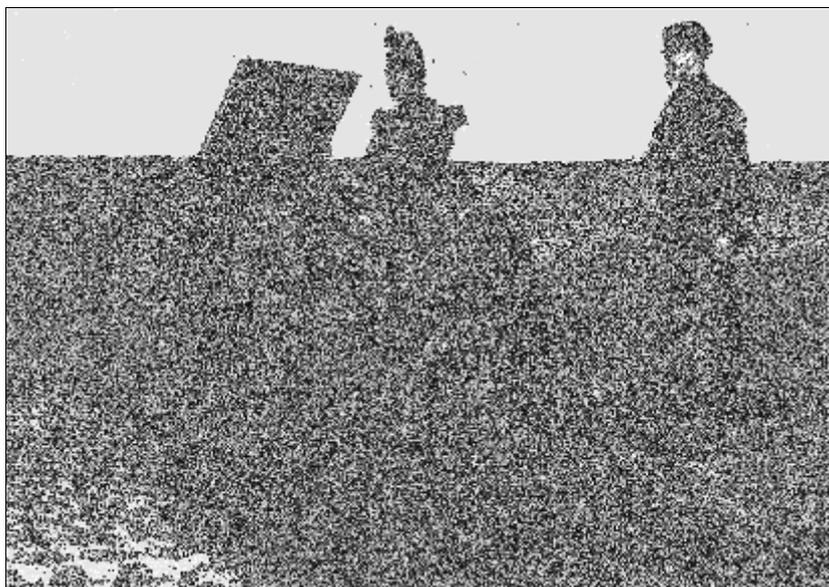


Photo: PoDu, page 207

France introduced the machine gun developed in Belgium shortly before the German-French war. It had a bundle of barrels attached to a moveable carriage and had a reach of up to 1000 meters. The cartridges were fed with a loading plate. The machine gun was cumbersome, but reliable. It could be handled by two people and had the effect of a group of breech loaders. Based on this new weapon, the offender's as well as the enemy's tactics had to be significantly changed.

Handling of a Musket

Ca. 1608: Loading of Musket according of Jakob de Gheyn, Den Haag, Netherlands

Fig. 15 – 38a

**Step 1:**

After he had shot, the musketeer puts the supporting fork and match into his left hand.

Photo: HeRo, page 40/41

Fig. 15 – 38b

**Step 2:**

The musketeer removes the match from the cock.

Photo: HeRo, page 40/41

Fig. 15 – 38c

**Step 3:**

The musketeer fills the flash pan with priming powder and closes the lid.

Photo: HeRo, page 40/41

Fig. 15 – 38d

**Step 4:**

The musketeer takes the musket into his left hand, takes a powder shell from his bandoleer and opens it up.

Photo: HeRo, page 40/41

Fig. 15 – 38e

**Step 5:**

He pours the required amount of powder into the barrel of the musket.

Photo: HeRo, page 40/41

Fig. 15 – 38f

**Step 6:**

The musketeer takes a bullet from the bullet pouch on his bandoleer, puts it into the barrel and pushes it down with the ramrod.

Photo: HeRo, page 40/41

Fig. 15 – 38g

**Step 7:**

According to custom, the musketeer reports, "loaded" and says a short prayer.

Photo: HeRo, page 40/41

Fig. 15 – 38h

**Step 8:**

The musketeer wedges the end of the match into the lock of the musket and sets it.

Photo: HeRo, page 40/41

Fig. 15 – 38i

**Step 9:**

The musketeer checks the length of the match and by blowing it, brings the ember of the match to a strong glow.

Photo: HeRo, page 40/41

Fig. 15 – 38j

**Step 10:**

The musketeer holds the trigger and is ready for a quick shot.

Photo: HeRo, page 40/41

Fig. 15 – 37k

**Step 11:**

The musketeer lays a musket onto the supporting fork, aims and shoots.

Photo: HeRo, page 40/41