

A Brief History & the Highlights of the Verbruggen 3 lb. Bronze Light Artillery Gun Of the 4th Battalion Company B British Royal Artillery



Artillery adds dignity, to what
would otherwise be an ugly brawl

- Frederick the Great -

Great battles are won with artillery.

- Napoleon Bonaparte -



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THE 4th BATTALION OF ROYAL ARTILLERY

The 4th Battalion of Royal Artillery (RA) was formed on 1 January 1771, consisting of eight companies, each commanded by a captain, with 3 subaltern officers, 2 sergeants, 2 corporals, 4 bombardiers, 8 gunners, 52 matross (private artillery soldiers) and 2 drummers. Everyone in a Battery has a specific appointment from the Battery Commander to the newest Gunner. Included would be those allocated to a specific gun detachment with a specific role.

SUBALTERN

A subaltern is a British military term for a junior officer. Literally meaning "subordinate", subaltern is used to describe commissioned officers below the rank of captain and generally comprises the *various grades of lieutenant*. Ensign [insignia] for standard-bearer were the ranks given to the junior officer who carried, or was responsible for, the flag in battle. Ensigns were generally the lowest ranking commissioned officer.

BOMBARDIER

A bombardier is a military title used in the British artillery. Acting bombardier is the first rank above gunner or driver, and bombardier the rank immediately higher [Corporal]. It is an appointment of the major commanding the battery, and, unlike the rank of sergeant, which can only be taken away by a regimental court-martial, may be canceled at any time by the commanding officer.

GUNNER

A Gunner is the lowest rank in the Artillery, equivalent to a Private. A Gunner could actually be a gunner on the guns, a signaller, a command post assistant, moving and preparing ammunition or a batman.

MATROSS

A Matross [gunner's mate] was a soldier of artillery, who ranked next below a gunner. The duty of a matross was to assist the gunners in loading, firing and sponging the guns. They were provided with firelocks, and marched with the store-wagons, acting as guards. In the United States Army, a matross ranked as a private of artillery.

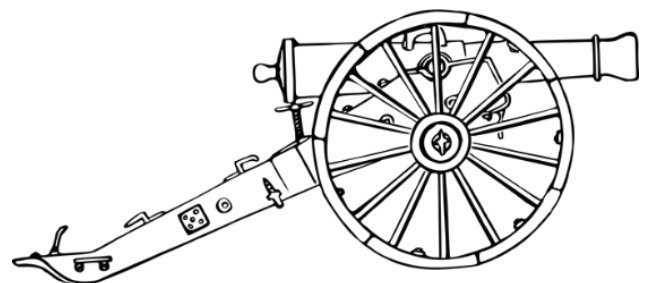
BATMAN

A batman or an orderly is a soldier assigned to a commissioned officer as a personal servant. Before the advent of motorized transport, an officer's batman was also in charge of the officer's "bat-horse" that carried the pack saddle with his officer's kit during a campaign. The British term is derived from the obsolete *bat*, meaning "pack saddle"

A batman's duties often include:

- acting as a "runner" to convey orders from the officer to subordinates
- maintaining the officer's uniform and personal equipment as a valet
- acting as the officer's bodyguard in combat

**THE 4th Battalion Company B
of the Royal Artillery was attached to
His Majesty's 43rd Regiment of Foot**



The Verbruggen's – Master Gun Makers

Jan Verbruggen was born in **1712** at **Enkhuizen** in West Friesland (a region in the province of North Holland, Netherlands, **Dutch Republic**). It is not known where or when or under what circumstances that Jan apprenticed as a master founder of cannon, the trade for which he would become famous.

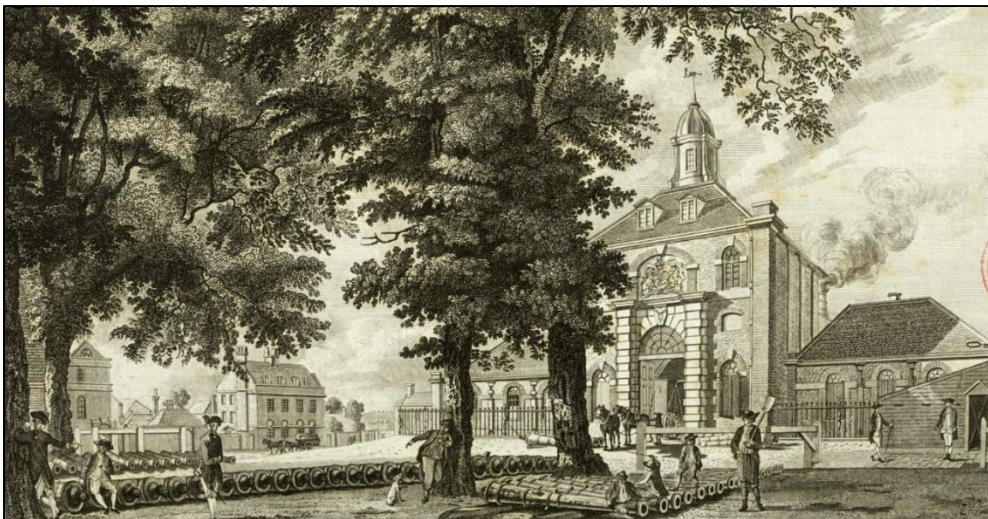
In **1746** Jan accepted the post of **master founder** at the **Dutch Admiralty's bell and cannon foundry** at Enkhuizen. As his son, **Pieter**, began to mature he followed in his father's footsteps, having developed the same skills and talents.

In **1769**, the English began to reappraise their military capabilities especially the **artillery**. One of the greatest deficiencies existing in England at this time was the ability of the government to be able to produce suitable quantities of **brass ordnance cannons**. The ability of the government's **Royal Brass Foundry at Woolwich** to produce ordnance in quantity and or of quality had deteriorated to an alarming point. In order to rectify this particular deficiency, the **British Board of Ordnance** took action. It negotiated for and secured the services of the famous Dutch father and son team of **Jan and Pieter Verbruggen, Master Gunfounders**, in **1770**.



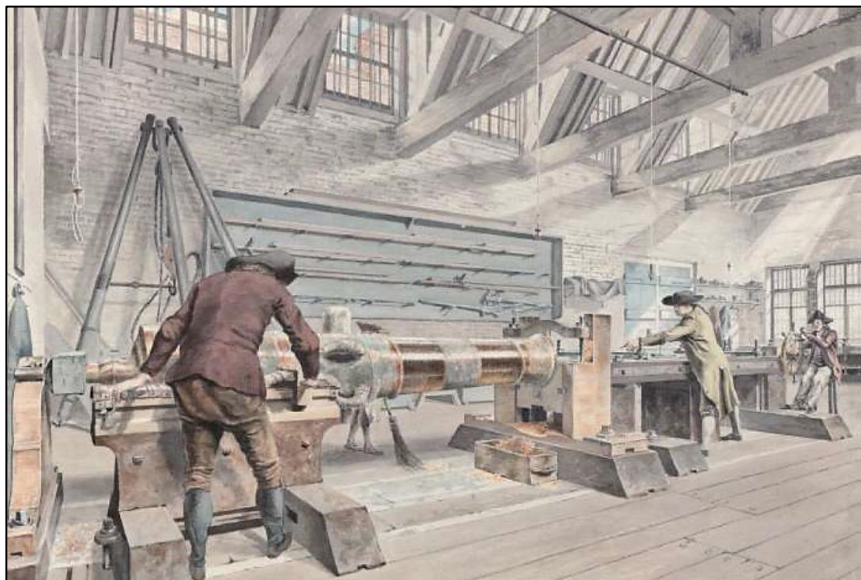
Jan Verbruggen

Arriving at **Woolwich** during the summer of **1770**, the Verbruggens were assigned a task of monumental proportions. The **Royal Brass Foundry** had deteriorated to such a point that little could be salvaged to begin the work of gunfounding. Foundry buildings had to be cleaned, altered, and built. New furnaces and machinery had to be built. All of this work and other related projects required **huge expenditures by the Board of Ordnance**. By early **1773** the **Royal Brass Foundry** had been almost completely revamped and was ready to **begin production of ordnance on a limited basis**.



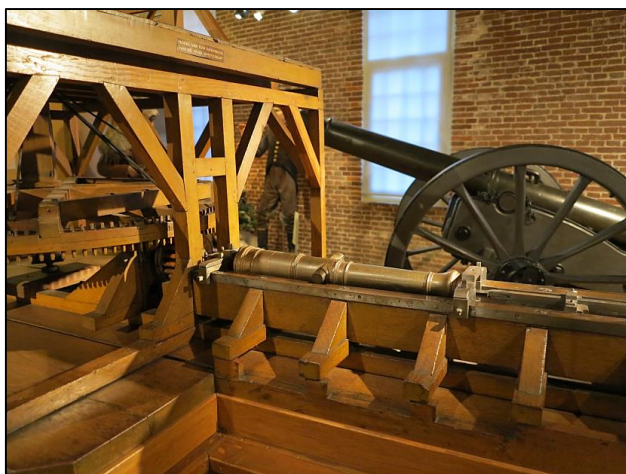
The Royal Brass Foundry at Woolwich; Verbruggen's House is on the left. Engraving by James Fittler.

During the same period in which the Foundry was being altered, another project of major importance was implemented by the Verbruggens. This was the construction of a horizontal boring machine for the production of cannon. The first ever to be constructed in England, the Verbruggen's design was an improvement over any such machine that they had had opportunity to work with thus far.



Drawing made of horizontal boring machine by Jan Verbruggen in Woolwich Royal Brass Foundry approx. 1773

The new model constructed contained modifications that made it the most advanced of its kind in the world. By 1773, two such machines were ready to operate at The Royal Brass Foundry: one for guns and one for mortars. Prior to this time England had depended upon the often inaccurate results of a vertical boring mill and producing castings around a core instead of solid. In July of 1773 the first guns began to be cast and bored at the Royal Foundry. It was felt by many that the new foundry could and would successfully produce all of the ordnance needs of the Royal Artillery.



Model of the horizontal boring machine the Verbruggens developed on display at the National Military Museum in Amersfoort, the Netherlands.

The ability of the **Verbruggens** to produce **brass cannon** in quantity during a war time crisis was soon put to the test as events began to **unfold in North America**. In early **1775** the routine production schedule for casting and finishing cannons was interrupted by the first of a series of **emergency production orders**.

Such orders would push the capabilities of the newly altered foundry and its workforce to the limits, causing an occasional lag in production. Such lapses, however, were not so numerous or lengthy that they were not viewed as serious. They had no impact on either current or forthcoming military operations. Principal among the ordnance pieces ordered during this period were several **new patterns of a Light 3-Pound Gun**.



"The Furnace Is Tapped"

The pouring was the most critical and most spectacular operation in the manufacture of bronze guns. Centuries of experience, years of training, months of planning, weeks of labor and anxiety went into the preparation. Within minutes, the molds were filled and the quality of the castings irrevocably decided.

Jan Verbruggen died in October 1781, and his son Pieter in February 1786

Development of the Light 3 Pounders

During the **Seven Years War (1756-1763)** in Europe, the **Prussian Army** under **Frederick the Great** introduced a series of new innovations in the area of **deployment of field artillery**. Prior to this time it was common practice for an army to establish a single stationary point in the line of battle for its artillery. From such a point the massed guns would fire as a battery for the duration of the battle. Frederick, however, decided to do away with this tactic. Instead, he developed an **artillery force of lighter weight guns** capable of being moved rapidly in the midst of a battle. The advantage gained allowed him to **deploy smaller batteries of guns at key points** in the battle line. They could open a fight, soften enemy positions, or most important of all protect and screen the deployment of infantry in the field. As events in the battle changed so could the position of the guns, giving Fredericks forces a decided advantage.

Since the **Seven Years War** guns had undergone much scrutiny by British Artillery officers many of whom had witnessed their successful use by the Prussian Artillery as an **infantry support gun**. In the forefront of the move to introduce such guns into the established line of British ordnance was **Colonel James Pattison, Royal Artillery**. As early as **1773** Pattison had introduced a model of a **Light 3-Pound Gun** that could be **mounted on a carriage** which could be **carried on men's shoulders** and moved hastily in case of emergency. Many officers and the members of the **British Board of Ordnance** felt that this type of gun **could best be used** over the rugged terrain in **North America**.

By early **1776** with the **American War** well underway, the Board submitted orders for the production of another **new type of Light 3- Pound Gun** that had been designed by **Captain William Congreve of the Royal Artillery** strictly **"...for the American Service..."** The initial order was for twenty pieces, all of which were slated to accompany the Canadian relief expedition then assembling under the command of **General John Burgoyne**.



Frederick the Great's Artillery
Canoneers and Bombardiers



Lieutenant General John Burgoyne

The majority of those ordered were ready on time and would be **used by Burgoyne's Army** during the **Campaigns of 1776-1777** in Canada and in northern New York. Other orders followed for the same model close behind those for **Burgoyne's Army**. Presumably most of these were also shipped to North America. In fact, by the end of **August 1776**, a total of **seventy-three of Congreves model** had been cast and finished.



Sir William Congreve, 1st Baronet

The **production** of the new **Light 3-Pound Gun** had proved to be a great success. They were the **first guns ever to be mass produced** in the industrial sense of today's production methods. The introduction of the newly **improved horizontal boring machine** had had much to do with the ultimate success of the Verbruggens in ordnance production.

The **Light 3-Pound Guns** produced by the Verbruggens also proved to be the first of a new establishment of **stream-lined cannon** devoid of the traditional embellishments and symbolic designs that had covered the exterior of **British ordnance pieces** up to this time. From this time forward guns produced were not cast so much to be the **symbols of war** but instead to be the **tools of war**. Ordnance production would never be the same again. One seed of the coming Industrial Revolution in England had been planted courtesy of the foresight and abilities of Jan and Pieter Verbruggen.

Thus, on **February 8th, 1775**, the Verbruggens received their first **high priority order** for six of **Colonel Pattison's Light 3-Pounders**. Even before these were finished another order was received from the Board of Ordnance to produce four more brass guns.

James Pattison was appointed the first lieutenant-governor of the Royal Military Academy in 1764.

In 1777 He became colonel commandant of the 4th Battalion, Royal Regiment of Artillery.

He arrived in New York to take command of the Royal Artillery in America with the rank of brigadier-general.

The Gun's Characteristics

During the **Seven Years War** the Prussian Army adopted the Light three and six-pound bronze guns and they became the backbone of the **new Prussian Artillery**. During the course of the war allied **English Artillery officers** had an opportunity to observe the actual use of these guns in action and noted the **advantages gained**. In the wake of the **unrest in North America** some English officers and innovators such as **Colonel James Pattison, R.A.** took steps toward an attempt to introduce similar "Light" guns into the British Army.

In **July of 1773 Colonel Pattison** devised and exhibited the use of a new Light 3-Pound Gun and carriage "...which on emergencies might be carried upon mans shoulders..." Likewise, it could be partially disassembled and transported by packsaddle on two or three horses. This was certainly something of an **innovation for its time** as the sole 3-Pound Gun on Great Britain's Artillery Establishment was a **gun weighing over three hundred pounds** and about **forty-two inches in length**.

According to several reports, **Pattison's Gun** met with the general approbation (praise and approval) of the King and of those in attendance at the exhibition. It is not surprising then that as the **war in America** began thought should be immediately given to producing a light gun capable of operating within the harsh geographical conditions of **North America**. What better model was there to produce than the Light 3-Pound Gun recently introduced by Colonel Pattison? With a newly remodeled foundry ready and a pair of innovative master gunfounders on hand, a crash program of production was initiated. First, a limited number of **Pattison's Gun** was produced. Then a small number of **Townshend's Model** followed by a large number of the improved design submitted by **Captain William Congreve**.

The Light 3-Pound Guns (all three models) produced by Jan and Pieter Verbruggen proved to be the **most maneuverable of all pieces of ordnance in service during the American War**. By one historian's reckoning "...it was designed for lightness, easy manufacture, and low cost,".

Due to its lightness (under 220 pounds) it could be carried by artillerymen or infantry and or disassembled and carried on packhorses or even mounted in boats. It could be used effectively in pairs or singly as needed in the field. A full detachment consisted of from eleven to twelve men, but the gun could be worked with only three, usually a combination of artillerymen and infantry or all infantrymen under the guidance of one artilleryman. Generally, the guns were attached and or assigned to service with a particular regiment, usually in pairs, when in the field. Because of this assignation, they were often referred to as "Battalion Guns." Since the Light 3-Pound Guns were developed and produced for use under North American conditions, it is certainly no surprise to find that about three quarters of all those produced between 1775-1782 were shipped to the American Colonies and Canada for use of British forces operating there.

The principal characteristic that distinguishes the Verbruggen 3- Pound Guns over all others manufactured prior to 1775 is their overall **streamlined design**. By the new methods of manufacture introduced by the Verbruggens, the guns were **cast solid** and then **lathe turned** by machinery. Because of this there was no longer any place for ornamentation or "High Relief" on cannon barrels. **From 1775 markings then had to be etched or stamped upon the gun.** In addition and as already noted above, the Verbruggen 3-Pounders were **extremely light** compared to their predecessors. Regardless of model, the tube weighed less than two hundred and twenty pounds. At less than two hundred and twenty pounds the new guns became portable. If mobility and versatility of use were the key elements expected of these guns then without question they measured-up to all that was expected of them.

Model One – The Pattison - 1775

Of a design originally submitted by **Colonel James Pattison, R.A.**, in **1773**. Only **six guns** were cast at the **Royal Brass Foundry at Woolwich, England** between February 8th, 1775 - August 1st, 1775 per order of the **British Board of Ordnance** February 1775.

All six cast were sent to North America for use in the war of 1775 - 1783.

Three of the original six have survived and can be seen at The National Museum of American History, Washington, D.C. (No.2); Valley Forge National Historical Park (No.4); and at the U.S. Military Academy, West Point.

Characteristics:

- Length: **37 inches** from muzzle to end of cascable.
- Bore: **3 1/8 inches**.
- **No lug** under the cascable.
- Base ring inscription: **" I & P VERBRUGGEN / FECERUNT A^o 1775 "**.
- **Production number** stamped on **right trunnion face**.
- **Foundry number** stamped on **left trunnion face**.
- Weight range: **207 - 213 pounds**.
- **British broad arrow** on second reinforce above and between trunnions.

The gun fired fixed ammunition using round shot and a case round of 36 shot, with a charge of six or eight ounces of powder, and had a recoil of 5 feet at 3 degrees of elevation.

Model Two – The Townshend - 1775

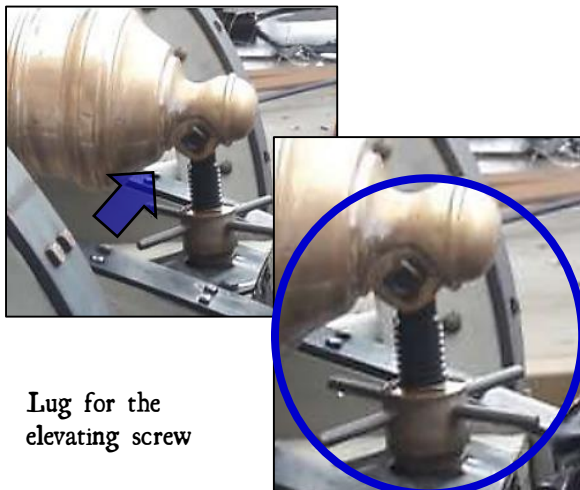
Of a design originally submitted or suggested by the Master General of the Ordnance **Lord Townshend** in **1775**. The actual designer appears to have been **Ralph Ward, Surveyor General of the Ordnance in Ireland**, who developed the design about the year **1772**. **Four guns were cast at the Royal Brass Foundry** at Woolwich between February 21st, 1775 - August 1st, 1775 per order of the British Board of Ordnance. All **four cast** were sent to **North America** for use in the war of **1775 - 1783**.

Only one of the four cast has survived. It can be seen on display in front of the Lanark County Court House at Perth, Ontario, Canada.

Characteristics:

- Length: **38 inches** from muzzle to end of cascable.
- Bore: **3 inches**.
- **Has a lug** under the cascable for an elevating screw.
- Base ring inscription: "**I. & P. VERBRUGGEN / FECERUNT A^o 1775**"
- **Production number** stamped on **right trunnion face**.
- **Foundry number** stamped on **left trunnion face**.
- Weight range: **under 200 pounds** - the one surviving example is **188 lb**.
- **British broad arrow** on second reinforce above and between trunnions.

Can be easily distinguished from the **Pattison** and **Congreve** Models by the different arrangement of its chase, reinforces, muzzle, astragal, fillets, ogee, and rings. **Only model with an elevating Lug.**



Lug for the elevating screw



No lug for the elevating screw

Model Three – The Congreve - 1776

Of a design originally submitted by **Captain William Congreve, R.A.**, in late 1775 or early 1776. As many as **eighty-four such guns may have been cast** at the Royal Brass Foundry at Woolwich between the period January 24th, 1776 and January 26th, 1782 according to notations and orders in the records of the British Board of Ordnance. **Of those guns cast, the first seventy-two prepared by late August of 1776 were sent to North America for use in the war of 1775 - 1783.** Where, when or how the remainder of those cast were used is uncertain.

Of those guns that were cast and sent to North America approximately **ten original guns** are still known to exist.

Characteristics:

- Length: **40 1/2 inches** from muzzle to end of cascable.
- Bore: 3 inches.
- **Production number** stamped on **right trunnion face.**
- **Foundry number** stamped on **left trunnion face.**
- Weight range: **204 – 206 pounds.**
- **British broad arrow** on second reinforce above and between trunnions.
- **No lug** under the cascable.
- Base ring inscription: **“I & P VERBRUGGEN / FECERUNT A^o J776”**



Weight 1:3:10 (206 lb.)



Left Trunnion



Right Trunnion



Broad Arrow

Photos of the Congreve 3 lb. Verbruggen on a Grasshopper carriage of the 4th Battalion Company B Royal Artillery attached to His Majesties 43rd Regiment of Foot

These guns could be used effectively **in pairs or singly** as needed in the field. **A full detachment (gun crew) consisted of twelve men**, but the gun could be worked with as little as **three**, usually a combination of artillerymen and infantry or all infantrymen under the guidance of one artilleryman.

Generally, the guns were attached and or **assigned to service with a particular regiment**, usually **in pairs**, when in the field. Because of this assignment, they were often referred to as **"Battalion Guns."**



Since the Light 3-Pound Guns were developed and produced for use under North American conditions, it is certainly no surprise to find that about **three quarters of all those produced between 1775-1782 were shipped to the American Colonies and Canada** for use of British forces operating there.

Reference has already been made to the fact that all three of the **3-Pound Verbruggen Gun models were made of bronze**. Bronze guns of this period were generally cast of an alloy which consisted of 90% copper and 10% tin. It is believed that the Verbruggen 3-Pound Guns were cast of this alloy and ratio. Some alloys and ratio of elements may vary slightly in particular castings due to the imperfect ratio of metals sometimes created in the smelting process.

Eighteenth century writings often refer to this combination of copper and tin as **"BRASS."**

Is it "Bronze" or "Brass" ?

The 3 lb. Verbruggen **"Bronze"** guns were manufactured at the Royal **"Brass"** Foundry at Woolwich London, England.

The Gun Crew

Firing field cannon during the American Revolutionary War required a crew, or 'cannon cocker' as they were commonly called during the war. A crew was comprised generally of no fewer than five men (Gun crew & Gun Captain) and occasionally ten or more. Pulled manually or limbered by horse, the cannon was positioned onto the battlefield and the crew took their positions.

Positions and Titles:

Gun Commander - An officer who had overall command of the gun and crew. He was solely responsible for matters pertaining to the usage and safety of the cannon, its positioning on and off the field, accuracy of shot, and defense against enemy capture. He did not assist in loading or firing the piece; however, if necessary due to casualties or lack of manpower, he would serve in the position of firer.



4th Battalion Royal Artillery

Firer - This position held the linstock and touched off the charge when ordered by the Gun Commander. A linstock, from the Dutch lintstok, meaning match stick, was a long wooden staff with a metal fork or serpentine jaw at the end to grip a slow match. A slow match was a very slow burning cord or hemp twine, chemically treated with potassium or sodium nitrates. The length of the linstock allowed the firer to safely discharge the gun at a safe distance from the recoil. The linstock also had a sharp point at the base to stick in the ground. If an enemy came upon them, the linstock's sharpened point could be used as a pike to ward off attack.

Vent Tender - The Vent Tender stops or 'tends' the vent hole (or touch hole) so no air escapes during the worming, sponging and loading of the cannon. He also picks open the charge with a priming wire and adds the powder to the vent either by horn or, more commonly, quill. This is called priming the piece. He usually had some type of protection from the heat of the barrel or chase while stopping the vent such as a leather glove or piece of hide.

Ram and Sponge - This position sponged or swabbed the piece after firing and worming to extinguish any lingering hot embers. After the cartridge of black powder was placed in the muzzle, he rammed it home (jamming the charge to the base positioned over the vent hole).

Worm and Load - After the cannon was fired, this position would 'search' the barrel with a worm to extract spent cartridge. The worm was a large, wrought iron, blacksmith-made cork screw-like piece that was attached to a long wooden pole. He dislodged stubborn charges and cleaned the bore of the chase. After sponging, he would place the next round (solid shot, shell, grape, etc.) into the muzzle and also add the powder cartridge. Some cartridge had shot and powder combined (a larger version of musket cartridge).

Powder Handler - The "Powder Monkey's" responsibility was to remove the powder box from the carriage upon positioning the piece. He also brought the round forward to the wormer and loader and would also man the trail for aiming the piece.

The Firing Procedure

The Gun Crew

The gun commander stands a short distance off so he can supervise the execution of all firing procedures. He also has a clear view of the field and can judge the cannon's accuracy, calling out orders for any adjustments. If the enemy is approaching, he can order a defense or abandon the position. The firer stands to the rear left of the trail. The vent tender stands to the rear right of the trail. The rammer and sponger stands to the front right of the wheel or chase. The wormer and loader stands to the front left of the wheel or chase. The powder handler stands behind the box.

Step 1 – Search the Piece. Before first use and after each firing, the barrel must be searched with a worm to be sure all old powder and materials (such as spent grape) were removed.



Step 2 – Swab the Piece. The bore of the chase (barrel) must be swabbed or sponged. A wet sheepskin covered sponge is rammed down the barrel. It extinguishes any hot embers and removes fowling left by spent powder. A bucket of water must be available at all times. The vent hole or touch hole must be stopped up during swabbing; usually with a thumb (protected from the heat by leather or piece of hide).



Step 3 – Charge with Cartridge. A new powder charge or cartridge is placed in the muzzle and rammed home. The cartridges were made before hand usually black powder sewn into a fabric bag.

Step 4 – Ram down ball. After the cartridge or powder is rammed home, paper or hay is shoved in the muzzle then the shot to be fired. Shot and powder were sometimes made in advance, like a larger version of a musket cartridge. This quickened the response time for each firing.



Step 5 – Prick. After the bore was loaded, the powder bag or cartridge needed to be pricked so the powder would be exposed to the touch or vent hole. The prick was a small wrought iron bar with a sharpened point at one end and a small handle at the other. It was wide enough to fit the touch or vent hole easily.



Step 6 – Prime. Powder was poured into the touchhole. Powder horn was occasionally used, although more common was the use of a quill (feather of a large bird, usually turkey). It was opened at both ends leaving a hollow tube. The quill tube was filled with powder (premade) and easily laid in the touchhole, making contact with the pricked powder bag.



Step 7 – Fire. As soon as the quill was laid in the touchhole, *'primed and ready'* was cried out to the entire gun crew. With the command of *'make ready'*, the crew members moved to their firing positions. At the command of *'give fire'* the linstock, with slow match, was laid to the touchhole and the cannon fired.

Positions of the Gun Crew

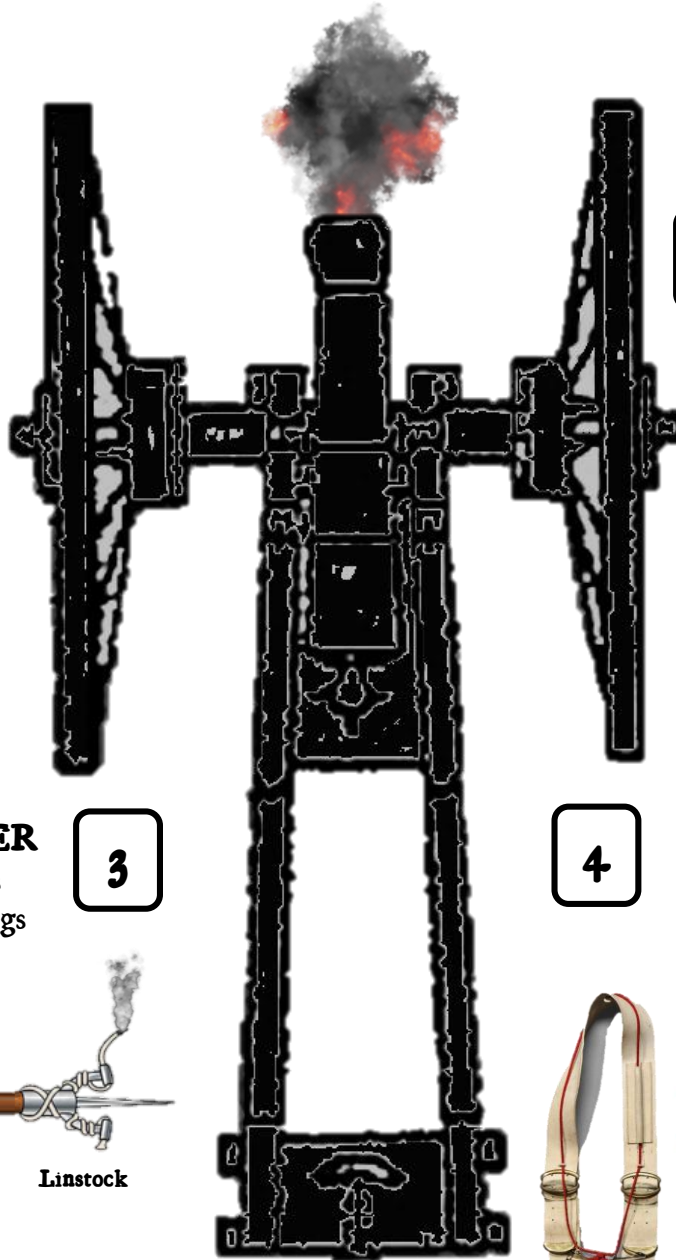


1

WORMER

Loads the cartridge into the gun and worms the piece after firing.

Worm



2



Water Bucket

RAMMER

Rams home the cartridge after loading and sponges the piece after firing.

Rammer & Sponge



FIRER / GUNNER

Fires the gun and secures the linstock between firings

3



Linstock



Slow Match

4

VENT TENDER

Serves the vent, primes the gun and covers the vent after firing



Fuse Pouch



Priming Wire



Thumb stall



Spike



Quill Fuse



Gimlet

6

POWDER HANDLER / POWDER MONKEY

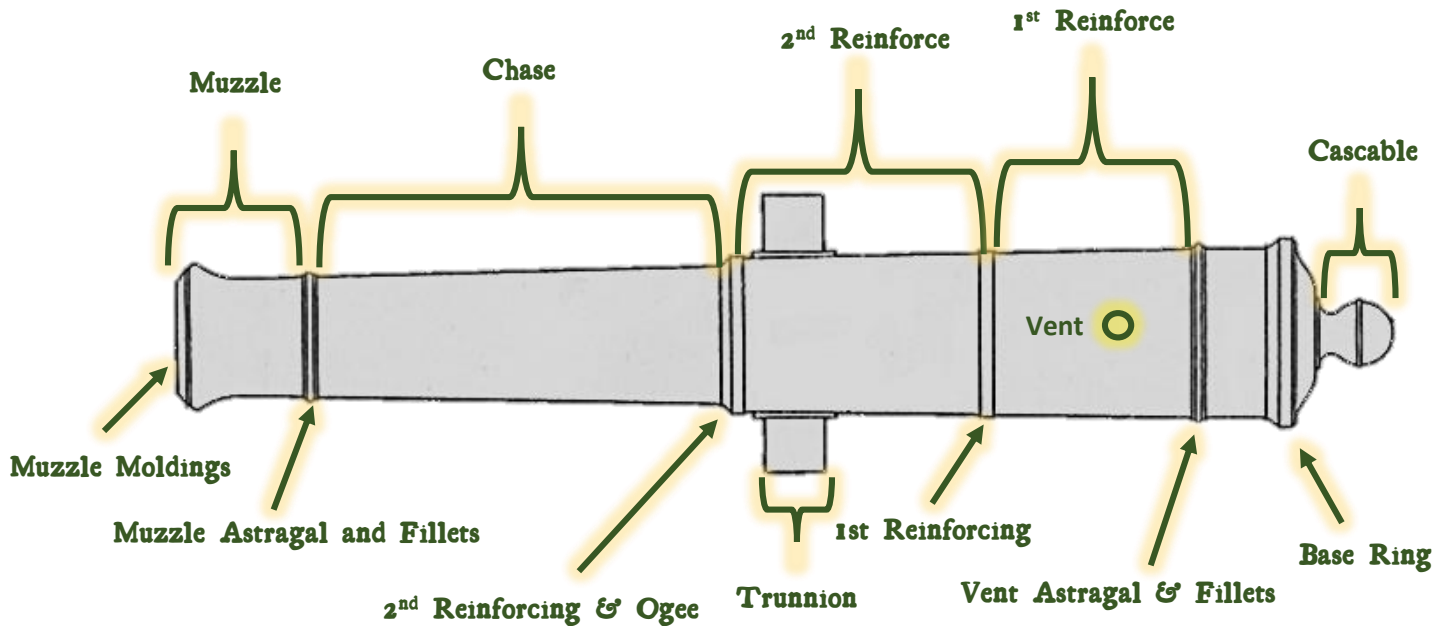
Supplies cartridges from the cartridge box to the Wormer for loading of the gun.

5

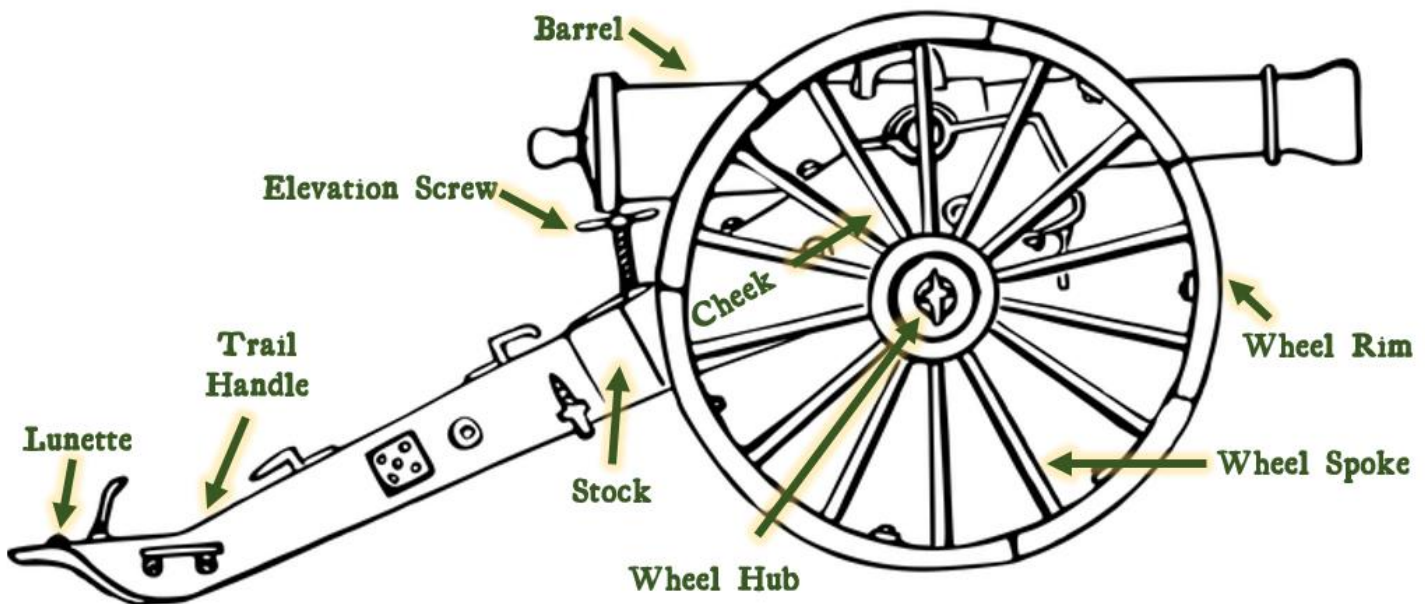
GUN COMMANDER

Directs the placement of the gun on the field with reference to the enemy position and directs the firing of the piece.

Parts of the Cannon & the Carriage

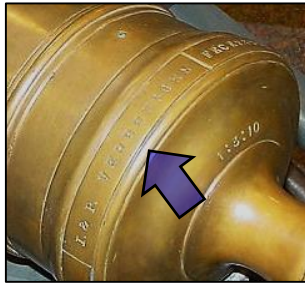
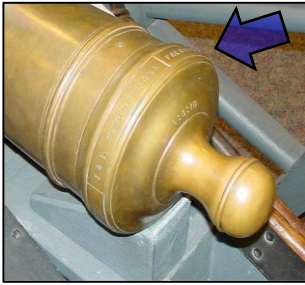


An ***Astragal*** is a molding profile composed of a half-round surface surrounded by two flat planes or ***Fillets***. A ***Cascable*** is a projection behind the breech of a muzzle-loading cannon. It is used to attach arresting ropes to deal with the recoil of firing the cannon. A ***Trunnion*** is a cylindrical protrusion used as a mounting or pivoting point. An ***Ogee*** is often used at the junction of two portions of a gun tube with differing diameters, or it may be used with a ring as a fillet is used with an astragal.



A ***Lunette*** is a towing ring in the trail plate of the carriage.

Markings on the Cannon



Manufacturer's mark:

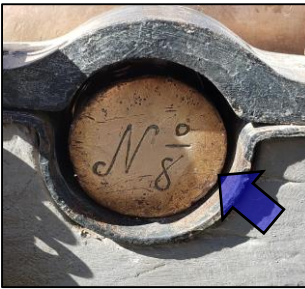
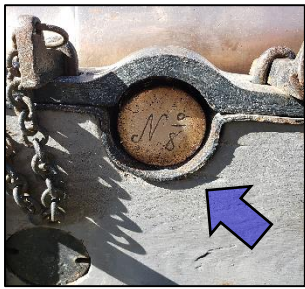
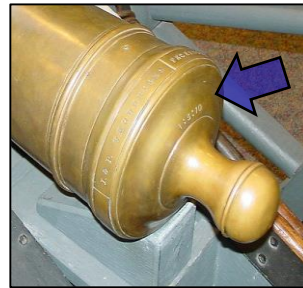
"I & P VERBRUGGEN / FECERUNT A° J776"

(I & P VERBRUGGEN) = Jan & Pieter Verbruggen

(Fecerunt) = Created or Made

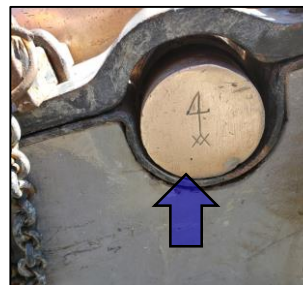
(A° J776) In the year 1776.

The three numbers shown indicate the cannon's weight. The first digit tells the "hundred weight" (112 lbs.), the second tells "quarter hundred weight" (28 lbs.), and the last digit is for single pounds. The numbers 1:3:10 tell us that this barrel weighs 206 pounds ($112 + (28 \times 3) + 10$).



The right Trunnion is marked No. 8. This number represents the sequence in which this barrel was cast from a pattern. The 8th casting from the mold.

The left Trunnion is marked 4XX. This number represents the Location of the Foundry. The Royal Brass Works, Woolrich London, England.



This is the "broad arrow" (a.k.a. "crow's foot") which was placed to indicate ownership by the British military and was used between 1717 – 1800.

Calculating the Weight of the Cannon

Numbers and marks on the back of the cannon's breech above the button (Casable) comprise the **code for the cannon's weight** - a very important piece of information to know for a variety of reasons. Guns were cast according to "patterns" specifying weight and dimensions.

Gunfounders were paid according to the mass of metal contained in each finished gun, so in order to get paid the gunfounder marked the weight of each piece at the foundry.

Additionally, knowing the exact weight of cannons destined for sea service was important in order to ballast and trim the vessels that carried them.

British cannons of this period were usually weighed and marked in "**hundredweights**" and fractions thereof.

Counter-intuitively, a **hundredweight equals 112 modern pounds**, not 100 pounds. This cannon is no exception, and its weight is represented by three numbers, separated by colon's **1:3:10**. As it was necessary to give the cannon's weight down to the nearest pound.

The **first digit** tells the number of **whole hundredweights** (in this case $1 \times 112 = 112$ pounds), the **second digit** tells the number of **quarter-hundredweights** ($3 \times 28 = 84$ pounds), and the **third digit** tells us that there were **10 individual pounds** left over. Therefore the weight of the cannon is $112 + 84 + 10$, or **206 pounds**.

$$1 : 3 : 10 = 1 (112 \text{ lb.} \times 1) + 3 (28 \text{ lb.} \times 3) + 10 (1 \text{ lb.} \times 1) \\ 112 \text{ lb.} \quad + \quad 84 \text{ lb.} \quad + \quad 10 \text{ lb.} \quad = \quad 206 \text{ lb.}$$

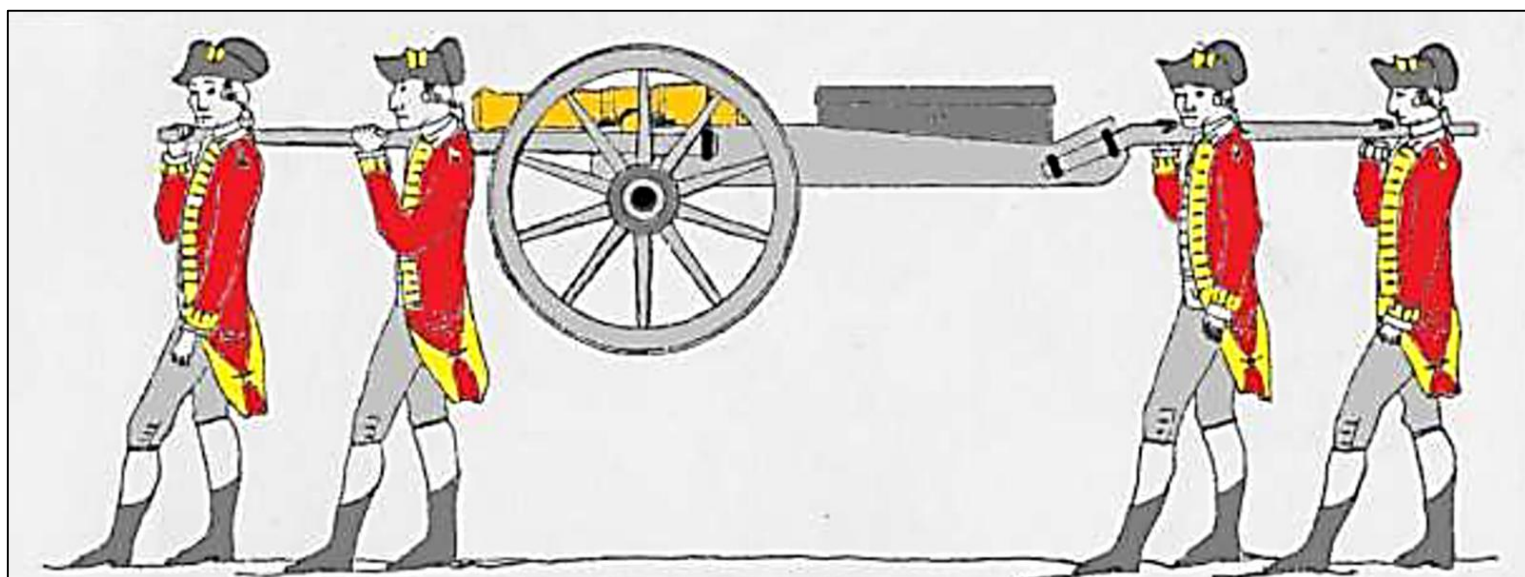


British Imperial Measure in 1775

Grain = $1/7000$ of a Pound
Drachm = $1/256$ of a pound
Ounce = $1/16$ of a pound
Pound = 16 ounces
Stone = 14 pounds
Quarter = 28 pounds
Hundredweight = 112 pounds

Transporting the Guns

During the period **1775-1776** when most of the new 3-Pound Guns were cast, **two basic ways to transport the guns were devised**. One way was to partially disassemble the gun and transport the pieces on two or three horses. When assembled the carriage and gun could then be handled even more particularly by inserting four shafts into special brackets mounted on the carriage. Shafts inserted, the gun could then be lifted by four to eight men and hastily moved if the need occurred.



Pattison 3 lb. gun mounted to a Grasshopper carriage.

This pre-1776 carriage was often referred to as the Pattison 3-Pound Gun. It is also distinguished by a single ammunition box being carried on the trail of the carriage.

Carriages for Light 3-Pound Verbruggen Guns were painted a shade of grey achieved by mixing lamp-black and white lead colors. Metalwork on the carriage was painted black or left unpainted.

The other means of transport was to once again move it by means of horse and packsaddles, but once reassembled, the gun if mounted upon a standard carriage without brackets and shafts, had to be man-handled rather than carried. The basic ammunition box for each was set inside the trail of the carriage.

Specific types of carriages are often noted in official correspondence as being associated with a specific gun model. Once, however, any gun reached North America it appears that it was subject to immediate change, depending upon the geographical condition or environment to which the gun was shipped.



Butterfly Carriage Design

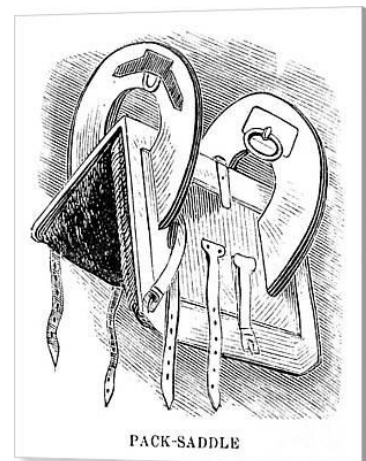
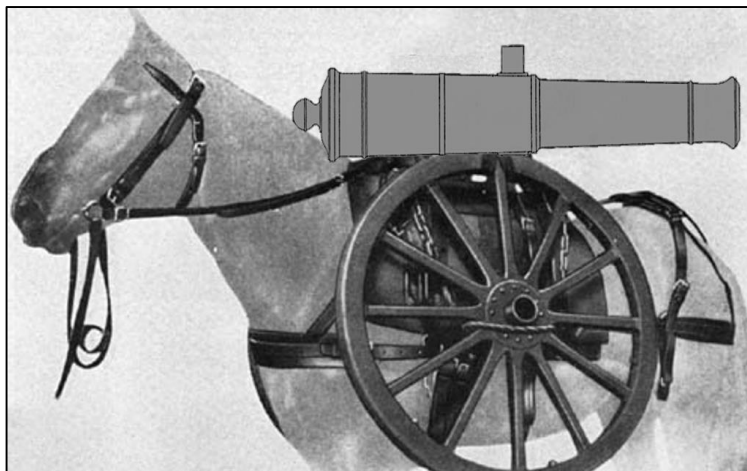


Grasshopper Carriage Design

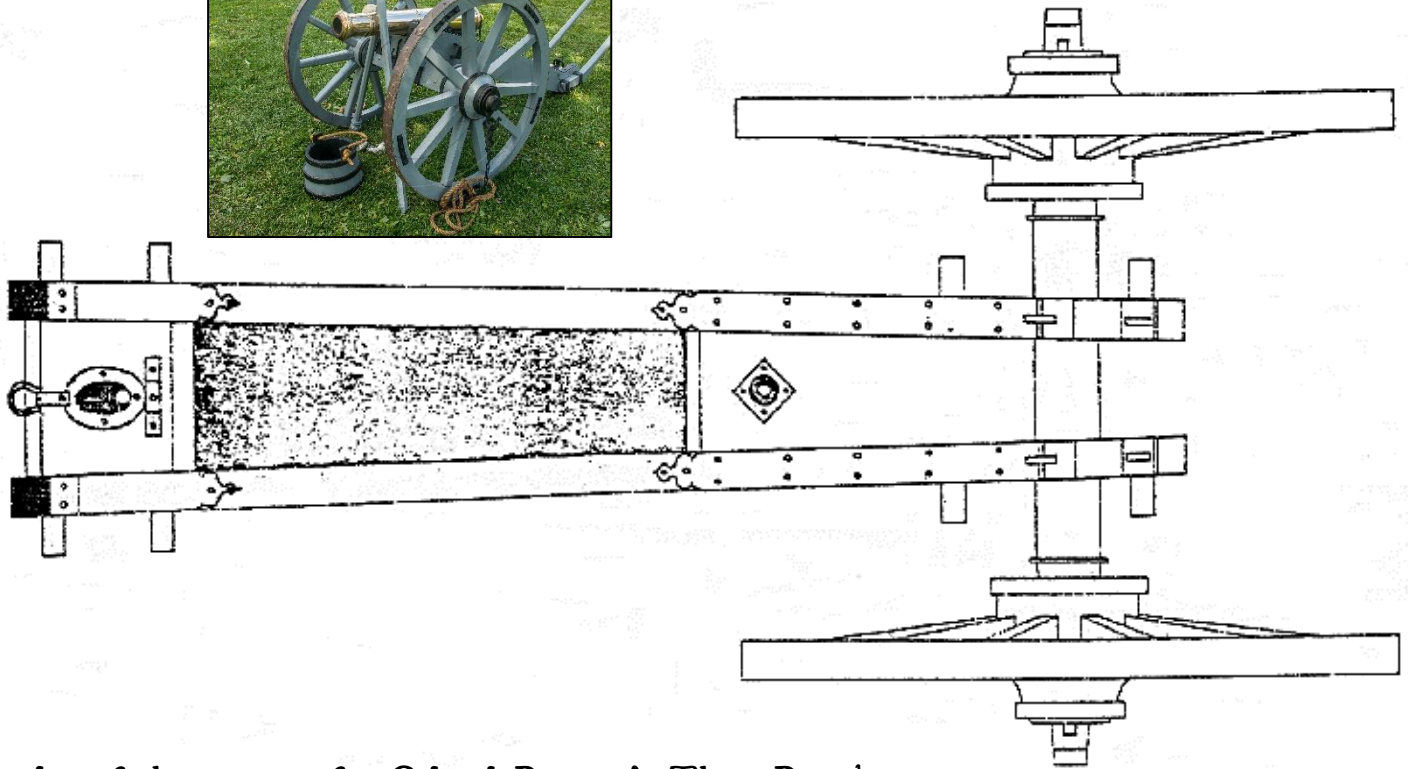


Galloper Carriage Design

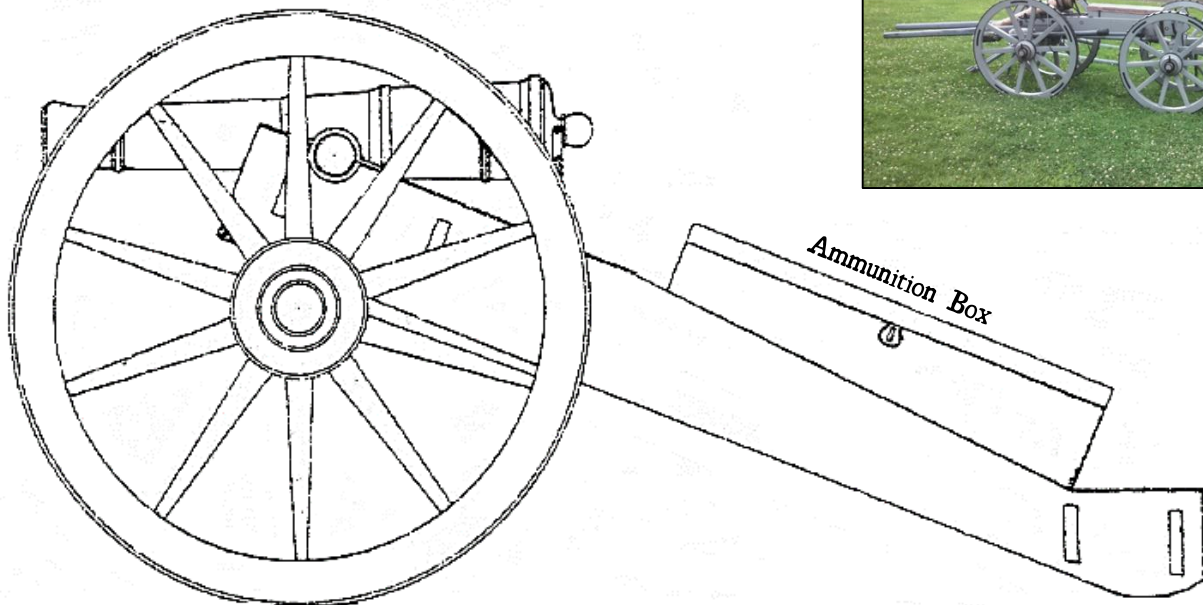
Each of the Verbruggen 3-Pounder patterns (Pattison, Townshend, and Congreve) had its own **unique pattern carriages**, but all three carriage designs could be hitched to a limber and any light 3-Pounder pulled by a limber was dubbed a 'Butterfly'. The **Congreve gun model was unique**, however, because its carriage design included shafts that could hitch directly to the carriage. When hitched to its shafts, rather than a limber, it was called a '**Grasshopper**'



Carriage Design – The Grasshopper

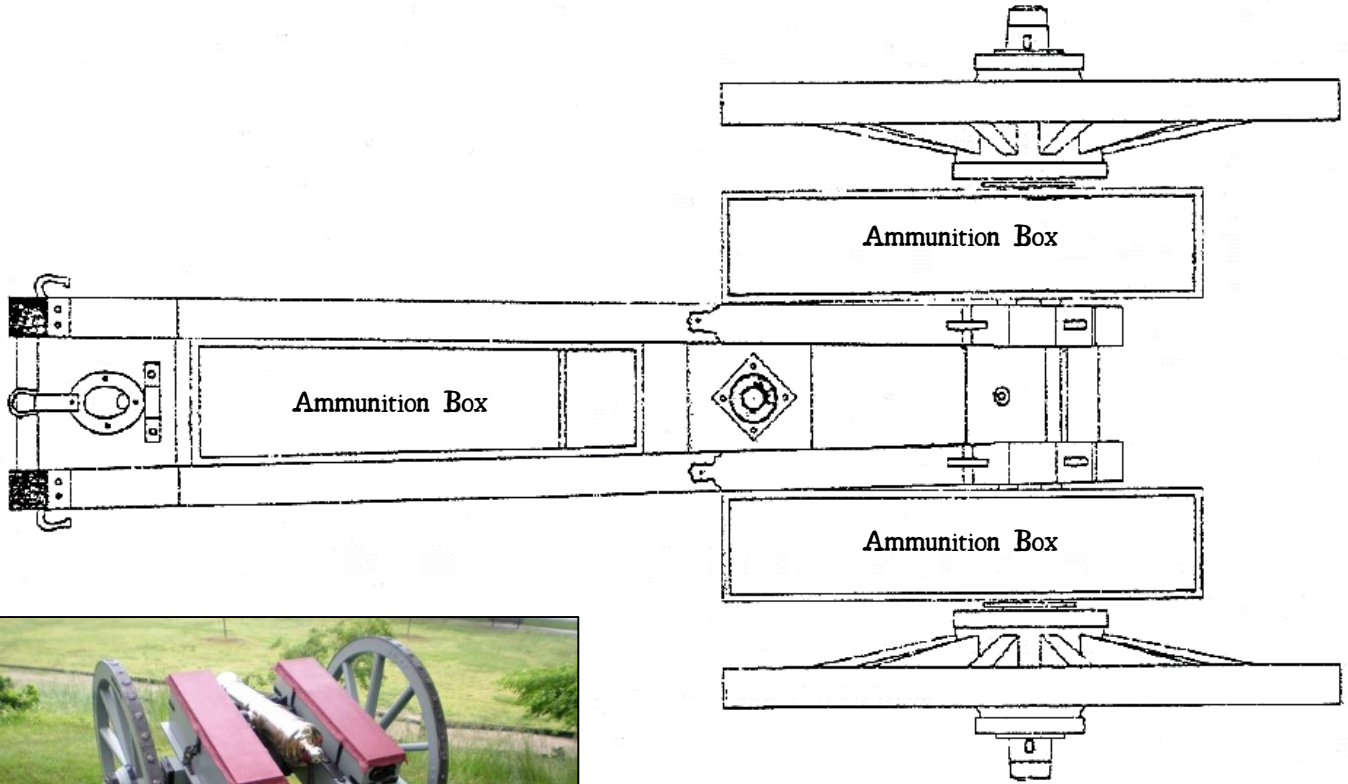


A plan of the carriage for Colonel Pattison's Three Pounder.

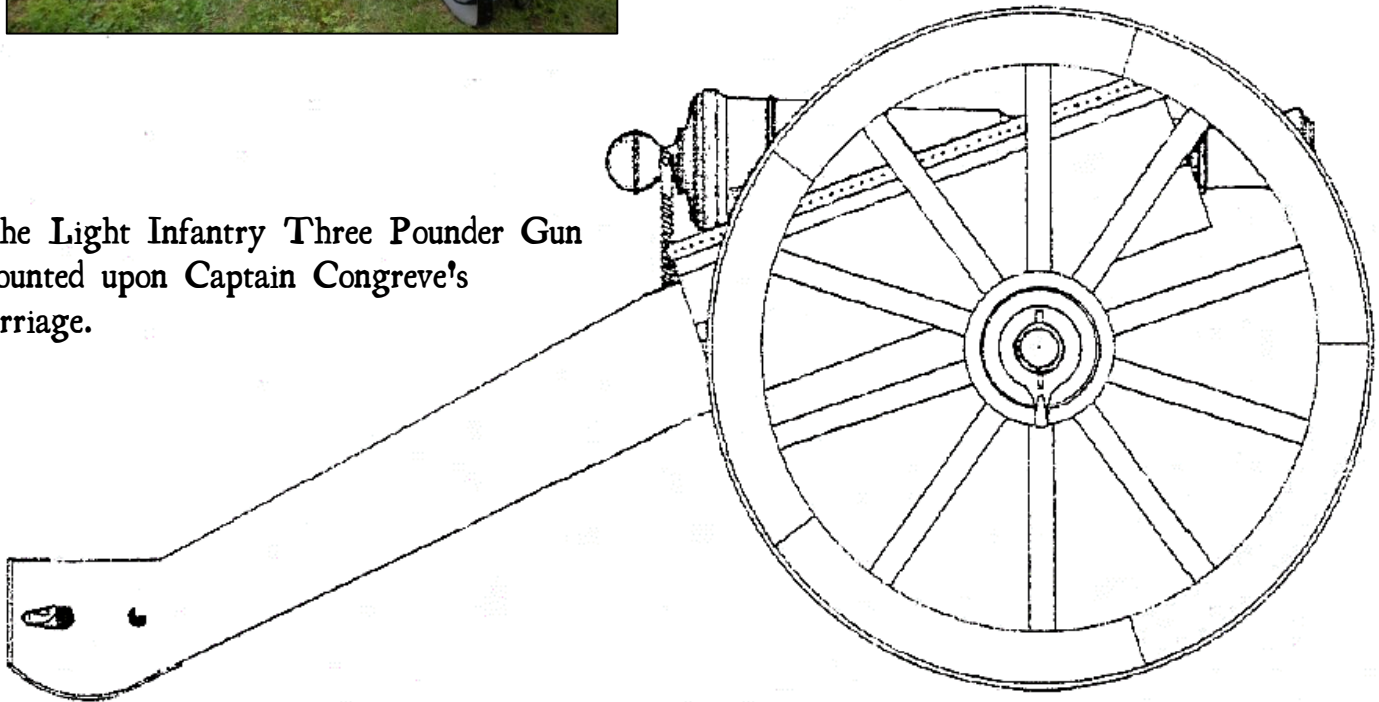


This carriage was also used for Townshend and Congreve Three Pounders.

Carriage Design – The Butterfly



The Light Infantry Three Pounder Gun mounted upon Captain Congreve's carriage.



Carriage Design – The Galloper

