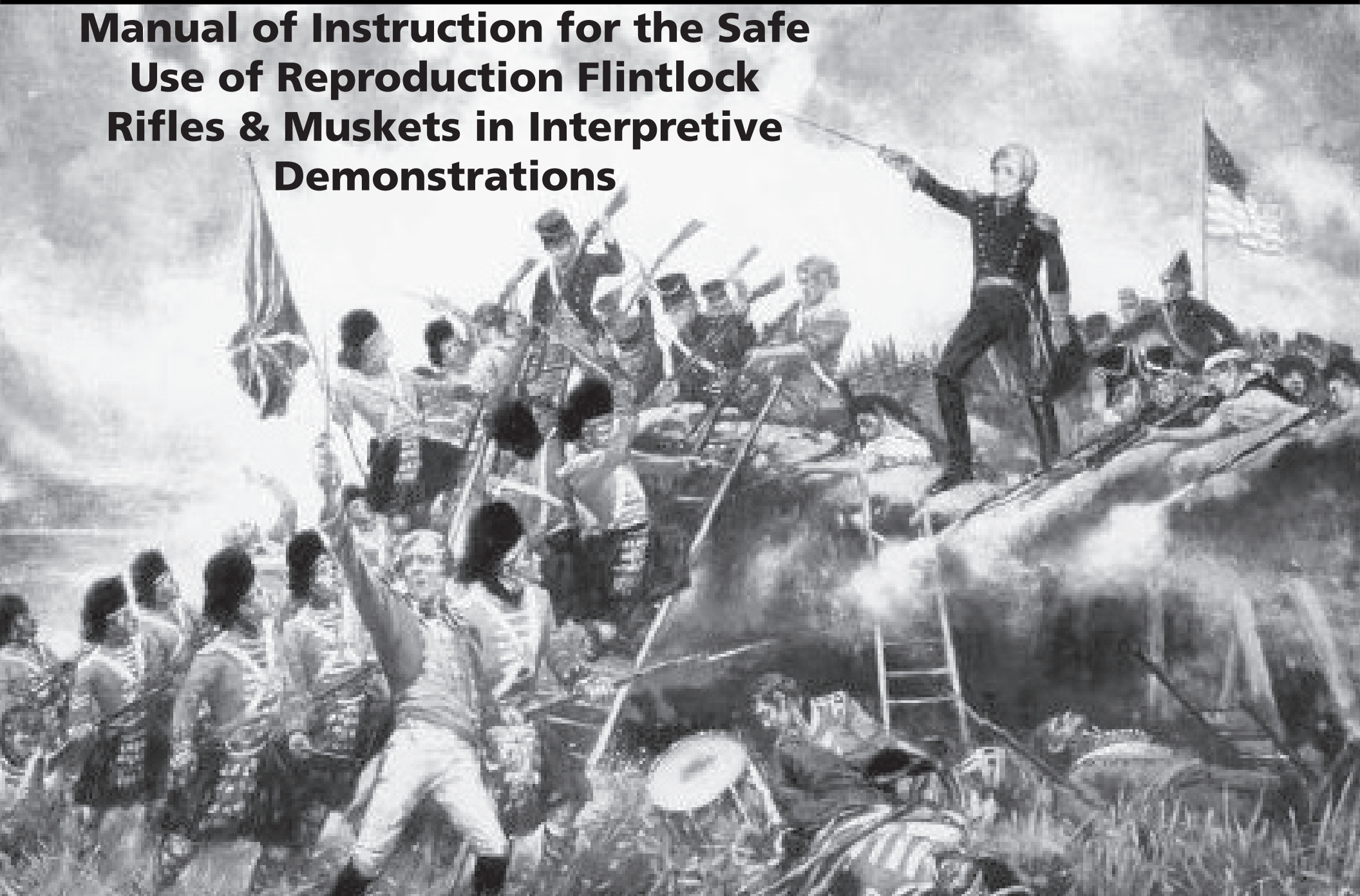
National Park Service

Manual of Instruction for the Safe Use of Reproduction Flintlock Rifles & Muskets in Interpretive Demonstrations



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PART I - INTRODUCTION

This manual sets forth procedures that must be followed by persons demonstrating flintlock muskets in areas administered by the National Park Service (NPS). Included are instructions on proper maintenance, inspection, and repair procedures. This manual must be used in conjunction with the service-wide standards for Historic Weapons Firing Demonstrations (NPS-6 Guidelines for Interpretation).

The information contained herein has been culled principally from primary sources of the period during which the original weapons were used. NPS historic weapons personnel have modified these original texts in order to improve demonstrator and visitor safety, make the original texts more comprehensible, and to incorporate knowledge gained from years of experience using these weapons in the field.

The park's Certified Historic Weapons Supervisor is responsible for the training and safety of demonstrators as well as the safety of the visitors.

The following criteria will help determine when a demonstrator has been adequately trained:

Demonstrators must be:

1. Competent to execute the required manual of exercise or applicable park manual without error.

2. Able to perform the appropriate misfire procedures without mistake.

3. Skilled in the proper manner of presenting demonstrations with maximum safety to themselves and park visitors.

4. Proficient in the methods of cleaning and storing historic weapons.

5. Aware of methods of storing and transporting black powder within the park.

6. Adept in the manufacture of cartridges, if applicable.

7. Versed in the nomenclature of the firearms they use.

Park staff and volunteers will **NOT** be allowed to demonstrate historic black powder weapons unless they can meet the above listed requirements.

PART II - NOMENCLATURE

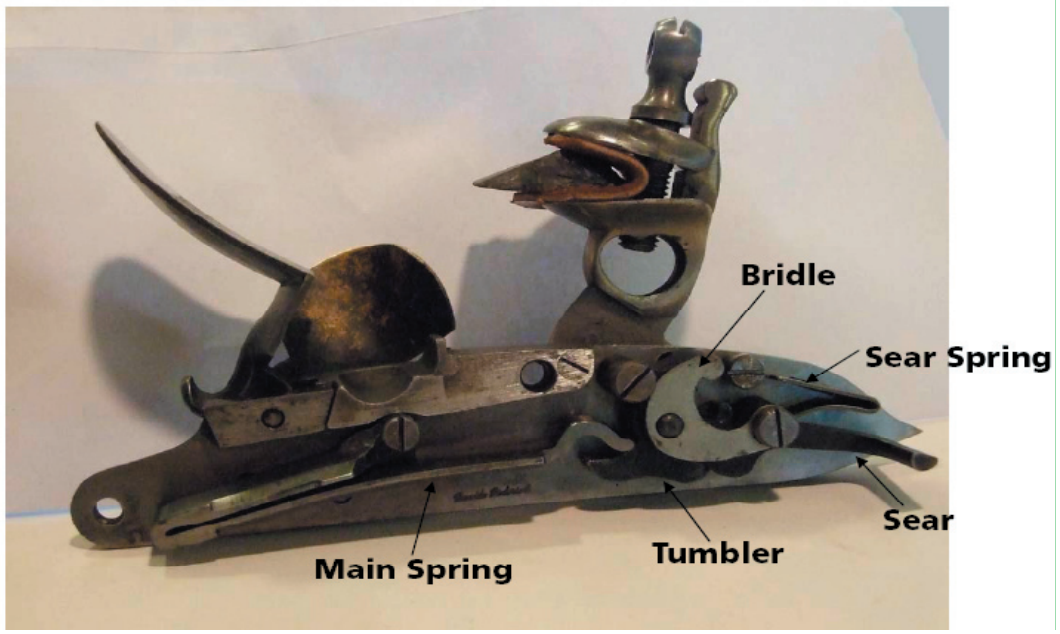
Muskets

1) butt plate
2) butt
3) stock
4) wrist / small of stock
5) escutcheon plate
6) lock
7) trigger and trigger guard
8) sling
9) swell of tail pipe
10) pipes / loops
11) barrel
12) bayonet lug
13) muzzle
14) barrel bands
15) sight
16) forearm
17) sling swivels
18) band retaining springs
19) sideplate
    19a) sideplate, Brown Bess
    19b) sideplate, Charleville

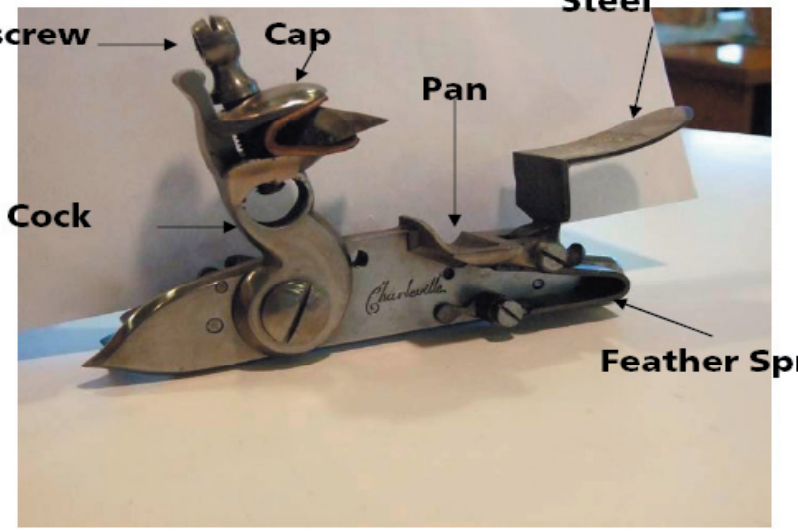
Bayonet

A) socket
B) bend of shank
C) point

Interior Lock Parts



Exterior Parts



LOCK PARTS (Illustrated of Next Page)

1. Lock Plate - Serves as the platform for all the lock parts.

2. Feather Spring and Screw - The feather spring supplies tension to the steel.

3. Steel (or Hammer) and Screw - The steel (or hammer) is the proper 18th century term for what was later known as the frizzen.

4. Bridle and Screw - Secures the sear and tumbler to the lock plate.

5. Cap (or top jaw) Screw - Adjustable portion of cock for securing the flint.

6. Cap (or top jaw). The cap and cap screw secure the flint and its leather or lead cap to the cock.

7. Cock and Cock Screw. The cock holds the flint, which strikes the steel.

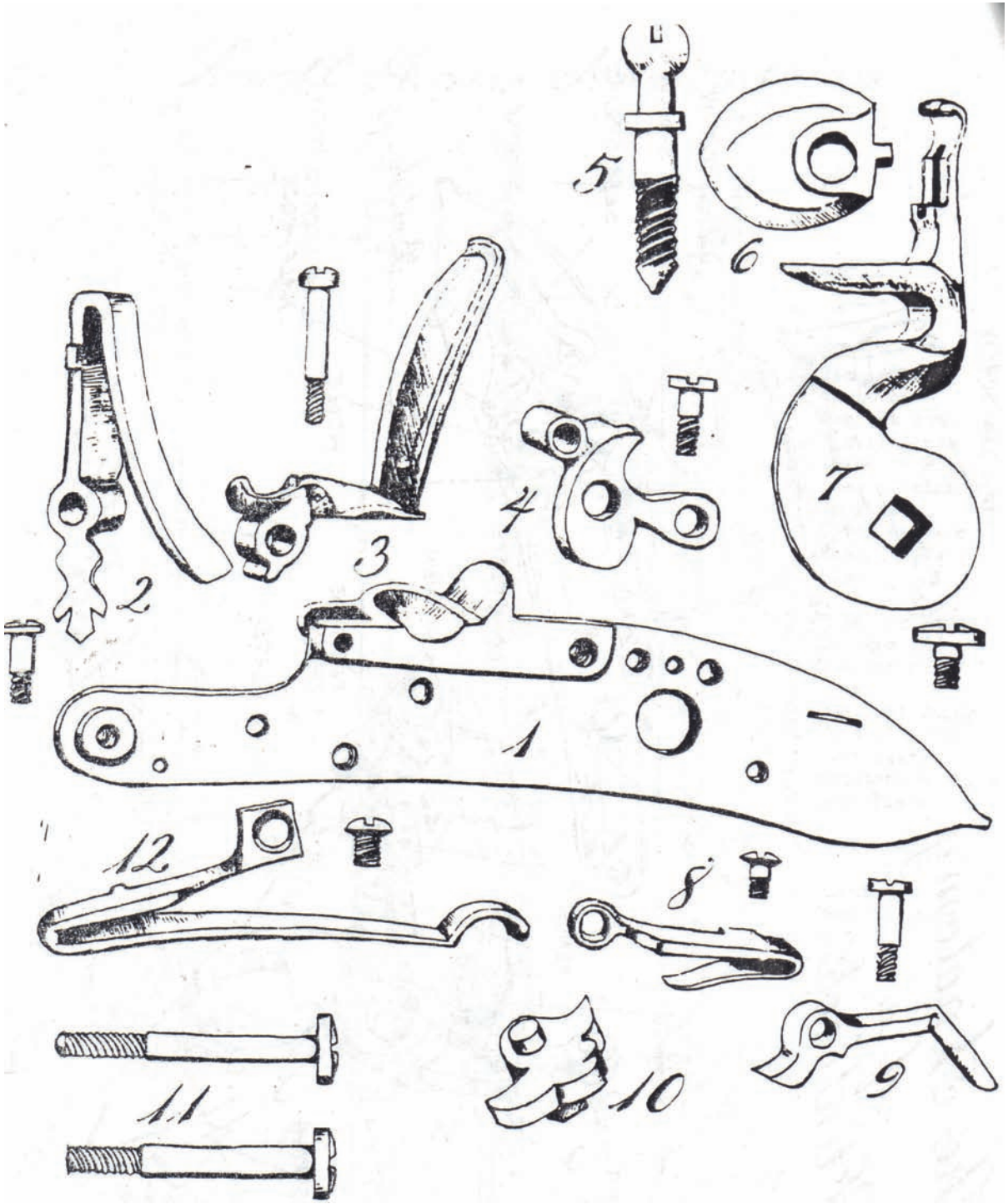
8. Sear Spring and Screw - The sear spring places tension on the sear.

9. Sear and Screw - The sear engages both the trigger and the tumbler.

10. Tumbler - The tumbler is attached to the cock and both rotate under tension of the mainspring. The tumbler is also engaged by the sear on one of two notches: half cock and full cock.

11. Side Plate (or Lock) Screws - These two screws secure the lock to the stock.

12. Mainspring and Screw - The mainspring rests against the tumbler and supplies all the energy to the cock for firing the weapon.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PART III - INSPECTION AND MAINTENANCE

INSPECTIONS

A. FREQUENCY OF INSPECTIONS

If a park has a seasonal program, each park weapon should be subjected to a complete inspection at the beginning and end of the season using the National Park Service inspection checklist appropriate to the weapon (see checklist below). If the program is year round, complete inspections should be conducted every six months. All weapons will receive a cursory inspection before and after every historic weapons demonstration; the after demonstration inspection will occur when the weapon has been cleaned and before it is stored for the day. Weapons in storage should be checked on a regularly scheduled basis (at least monthly) for rust or other moisture, storage, or cleaning related damage. All newly acquired weapons will be inspected using the appropriate checklist before firing.

If a weapon does not meet safety standards for any reason, that particular weapon will be tagged out in accordance with the park's documented tag-out system, with the tag specifically detailing the problem(s). The tagged weapon WILL NOT BE USED until repairs are affected. The park's historic weapons supervisor will be responsible for insuring that such repairs are made as soon as possible.

Common Problems Encountered During Inspections

1. Overall Poor Cleaning - Inadequate or improper cleaning can result in a variety of safety and operational issues: coke build-up in the bore, cleaning patches left in the bore, rust, corrosion, screws too tight (parts can bind), loose screws, damaged stocks, etc. The final step in most demonstrations is weapons cleaning, and quite often demonstrators rush through the process. Proper cleaning and oiling of a weapon is critical, and without doubt the most frequent problem confronted during weapons inspections is poor cleaning.

2. Missing Safety Devices. All weapons used at National Park Service sites are are required to have hammerstalls and flashguards. It is not uncommon for demonstrators to neglect replacement of these items after cleaning, and many re-enactors from outside groups simply do not have them. Spare hammerstalls and flashguards should always be available for both park weapons and for re-enactors from outside groups.

3. Weak Mainspring - A weak mainspring will increase the frequency of misfires. If a weapon appears to have a weak mainspring it should be replaced or taken to a competent gunsmith to be hardened.

4. Weapon Fires on the Half Cock - A weapon that does not hold on the half-cock position can have wear or damage to the half-cock notch on the tumbler, a weak or broken sear-spring, or wear or damage to the nose of the sear. Worn or damaged parts should be replaced.

5. Bent or Stuck Rammer. Bent ram rods are a frequent occurrence and can cause the rammer to bind in its channel, which can result in embarrassment when a rammer sticks, or in injury while attempting to forcibly remove a bent rammer from its channel. Bent rammers can be carefully straightened with little trouble, and parks should have a ram rod removal tool to deal with stuck rammers. Bent rammers often occur when a demonstrator tries to force down a cartridge that sticks part way down the barrel; short, sharp taps are not only safer, but work much better than fisting the ram rod and attempting to muscle the cartridge.

6. White or light spots on the stock. Certain parts of the stock will have adhered powder after firing and require cleaning with water. Heavy rubbing of the stock with wet patches will eventually leave lighter spots, usually above the lock plate. A very light oiling with linseed oil after cleaning can prevent this problem.

7. Cleaning Patch Lodged In Barrel - Attempt to remove a stuck patch by careful use of the worm. Always turn the worm in a clockwise direction or the worm may unscrew itself from the cleaning rod. A CO2 misfire kit or high pressure air from a maintenance shop can also be effective in removing a stuck patch. Pulling the breech-plug is the last resort and extreme care should be used.

8. Burrs or Sharp Points on Metal Parts. Careless handling or disassembly or assembly can result in damage to metal parts which can cause injury to demonstrators. Proper training can reduce this problem, but any burrs or sharps points should be filed or ground down.

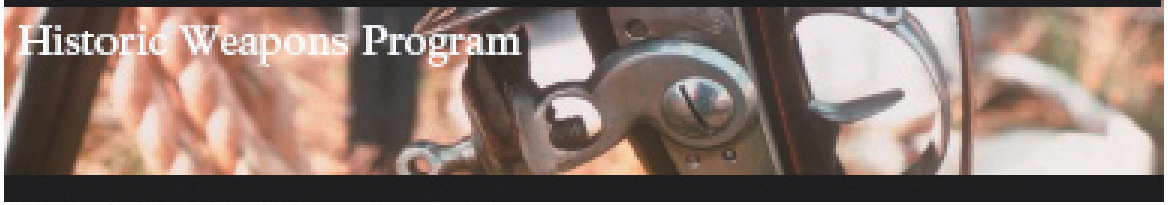
9. Broken parts. It goes without saying that parts break or will wear from heavy use. To reduce the necessity of tagging out a weapon for an extended period of time, parks should keep a supply of spare parts on hand, particularly parts that are prone to breaking

The following checklist should be used when inspecting individual firearms. Newly purchased firearms should be inspected using this checklist prior to placing into service.

B. INSPECTION CHECKLIST

National Park Service
U.S. Department of the Interior

Division of Interpretation and Education



Flintlock Musket & Rifle Inspection Checklist

Park:_____ Weapon:_____ S.N./Prop.#_____

Before Disassembly

( ) The weapon is confirmed to be unloaded by springing the rammer.
( ) Your overall first impression is favorable.

The Stock:

( ) No cracks or splits.
( ) Butt plate, trigger guard, etc. fit tightly.
( ) No burrs on butt plate, trigger guard or barrel band screw heads that would snag clothing or hands.
( ) No burrs around the top of the lock.
( ) No splinters or rough edges on the stock.
( ) Do any barrel band springs work smoothly.
( )** *If pin fastened* – all pins tight and in place.
( ) Any ramrod spring or spoon works freely.
( ) Two-piece stocks have sections secured.

The Lock:

( ) Lock works smoothly.
( ) The hammer fits tightly on the tumbler.
( ) The half-cock (safety) position works correctly.
( ) Smooth trigger pull with no catching of half-cock.
( ) Correct trigger pull – not too heavy, not "hair" trigger.
( ) Lock fits properly into the stock and snug against the barrel.
( )** *If a set trigger*, it is properly adjusted.
( ) The cock screw works smoothly, jaws grip flint securely.
( ) The frizzen spring is of the right tension.
( ) The frizzen is in goof condition and not gouged.
( ) The pan is clean and in proper relationship to the vent.
( ) The flint is in good condition and set at correct angle.
( ) There is a leather or lead flint cap.

The Barrel:

( ) The barrel fits the stock correctly.
( ) Free from visible dents or cracks.
( ) The muzzle is not dented or worn.
( ) No signs of heavy corrosion around the vent.
( )** The barrel bands hold the barrel securely.
( ) The ramrod is straight, fits the stock correctly.
( ) The ramrod head is tight on the ramrod.
( ) The ramrod threads are clean and free of burrs.

After Disassembly

The Stock:

( ) There are no shiny spots in the lock recess from rubbing by the metal parts of the lock assembly.
( ) Lock recess is clean and free of splinters and cracks.
( ) No splitting or cracking around the tang screw and tang recess.
( ) The barrel bed is clean.
( )** *Any nose cap* – is fastened to the stock.
( ) Recheck two-piece stock for firm secure joint.

The Lock:

( ) All internal screws are tight.
( ) No internal parts are broken or chipped.
( ) The nose of the sear and the tumbler notches are sharp and in good condition.
( ) No signs of metal rubbing on the inside of the lockplate.
( ) No signs of incorrect repairs or incorrect placement parts.
( ) With hammer fully forward, the mainspring does not disconnect from the tumbler nor does any part of the mainspring protrude below the lockplate.
( ) The frizzen fits snugly on top of the pan.

The Barrel:

( ) Any signs of flint striking or gouging the barrel.
( ) The vent is clear and of acceptable size.
( ) All parts are clean and lightly oiled.
( )** The breech plug is fully seated and correctly aligned.
( ) "Patent Breeches" – there is no indication of seam separation.
( ) Bore check with light or reflector – Clean and in good condition.
( ) Bore wiper check-patch comes out clean.
( )** *On pin fastened pieces* – all barrel lugs are complete and in good condition.
( ) Park Staff reports no problems in using the firearm.

** Special feature not found on all weapons

EXPERIENCE YOUR AMERICA

C. DISASSEMBLING AND ASSEMBLING THE MUSKET

Note: Prior to disassembling small arms, the piece must be confirmed to be unloaded by springing the rammer in the barrel.

Lock Removal

Place the lock at half-cock (this maintains tension on the mainspring so it will not disengage from the tumbler). Using a screwdriver of the proper size, loosen the two lock screws one or two turns. Using the butt of the screwdriver or a small mallet. Tap the heads of the lock screws to loosen the lock. Remove the two lock screws and the lock carefully. Do not get the two screws mixed up, as they are not interchangeable. Also, do not try to pry the lock out, or the wood will be damaged around the edges. If the lock plate sticks tightly to the wood, tap gently around its perimeter to loosen it.

Lock Disassembly

NOTE- Keep each screw with the part to which it belongs, so as not to get the screws mixed up or lose them.

Apply a spring vise to the feather spring, depressing it enough to loosen the steel. Remove the steel screw and steel. Loosen the spring vise and remove the feather spring screw and spring.

With the cock still at half-cock, apply the spring vise to the main spring. Give the thumbscrew a turn sufficient to liberate the spring from the tumbler notch. Loosen the main spring screw, and remove the spring. Loosen the sear spring screw. Before removing the screw, strike the elbow of the spring with a screwdriver to disengage the pivot from the mortise. (If the pivot is not disengaged, the spring, once the screw is removed, will come flying at you!) Remove the screw and spring.

Remove sear screw and sear.

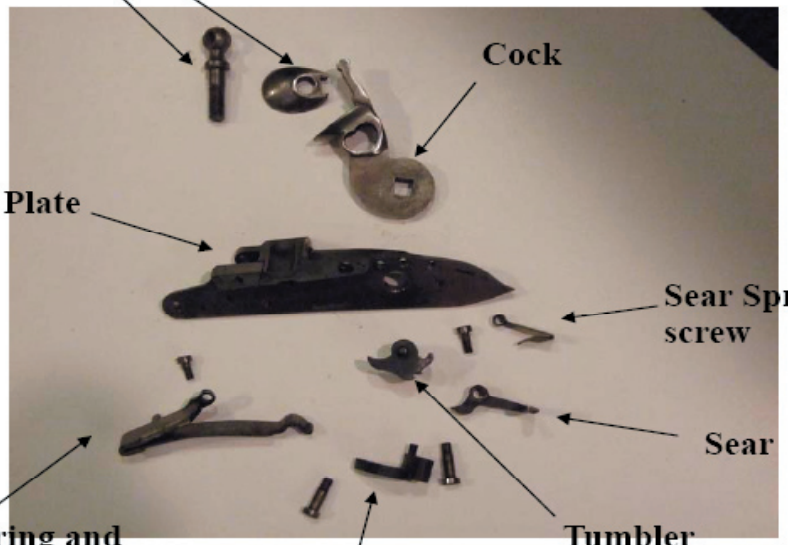
Remove bridle screw and bridle.

Remove tumbler screw (cock retaining screw), cap screw and cap.

Remove tumbler. This is driven out with a punch inserted in the screw hole.

On some locks (Charlevilles) the pan can be removed by removing the screw on the inside of the lock securing the pan.

Disassembled Lock: Interior Parts



Lock Assembly

The lock is assembled in the inverse order of the disassembly. Be sure that all parts are lightly oiled. Avoid turning the screws so hard as to bind any of the movable parts. You may want to test the part before and after its spring is mounted to see that it moves without friction.

Barrel Removal

Remove the tang screw at the breech. If the barrel is pin-fastened, remove the pins carefully using a punch and pliers. The pins are removed and replaced in only one direction. Do not mix the pins up, as they will not necessarily fit properly in different pin holes. Remove only pins fitted in barrel lugs unless you wish to remove ramrod pipes. If the barrel is banded, remove the bands.

The Stock

There is probably no reason to remove any of the brass or iron furniture (ram rod pipes, thimbles, butt plate, etc.) unless you suspect some type of damage to the wood beneath it. Constant loosening, removing and tightening wood screws or pins only causes further problems.

D. ACCOUTREMENT INSPECTION

1. Bayonet Scabbard

The bayonet should fit properly in the scabbard. The point of the bayonet should not protrude through the scabbard. All parts should be sewn and in good repair.

2. The Cartridge Box

Is not recommended to use a belly box. Because of its location on the demonstrator, he/she is subject to more injury if an accident occurs.

It is recommended to use a cartridge box having a double closing flap. This serves as more protection for the cartridges and the wearer. All parts should be sewn properly and in good repair.

When inspecting cartridge boxes, look for items that SHOULD NOT be there. (Cigarettes, lighters, matches, steel wool, extra cartridges, loose gunpowder, etc.) The only items that may be in the cartridge box are extra flints, flint caps, a musket tool and a gun worm. There is no need to carry any other things in the cartridge box. Some demonstrators carry dummy cartridges to show visitors. Be sure that they are plainly marked and easily distinguishable from blank cartridges, and that they contain no gunpowder.

3. Hunting Bags

Used primarily by riflemen. The same rules apply to the hunting bag that apply to the cartridge box. Only the tools necessary to get the job done should be in the bag. This might include a period screwdriver, lubricant, and patches. Ensure that if a patch knife is secured to the bag, it is properly sheathed.

4. Powder Horns

When not giving firing demonstrations, there should be no gunpowder in the horns.

When giving a firing demonstration, only enough powder should be carried in the large horn for one shot in a one shot demonstration; the smaller priming horn should only contain enough powder for one priming and three misfires.

A NOTE ON REPAIRS – If you have little or no knowledge of even simple gunsmithing repairs, there are books on the subject. If there are any doubts of your ability to make these repairs, seek out a competent gunsmith who can do the job properly and safely. Do not try to do it yourself if you do not know what you are doing. You may cause more damage than there was before you started. In most cases, broken or damaged parts should be replaced with new parts.

E. FIELD CLEANING AND CARE OF THE FLINT-LOCK

After firing, a weapon should be cleaned as soon as possible. In most cases, this means the end of the workday. If this is not done, you can still remove surface rust later on, but you cannot remove the pitting that will eventually occur.

1. Remove the lock. Make sure it is on half-cock to maintain tension on the mainspring. If the barrel is banded, it can be removed.

2. Plug the touchhole or vent with a plug. This could be a wooden matchstick or a round wooden toothpick.

3. Pour hot soapy water (the hotter the better) down the barrel, using a funnel at the muzzle. Tie a rag near the muzzle to catch any water that may overflow and run between the stock and barrel. Cover the muzzle and shake the barrel several times to loosen fouling. Pour the water out. Repeat until the water comes out clean.

4. Using the rammer with attached gun worm and cleaning patches, run the rammer down the muzzle to remove the fouling. This must be done several times.

5. Dry the barrel by running clean cloth patches down the bore.

6. Lightly oil the barrel by running an oily patch down the bore.

7. Clean the lock by using a damp cloth, paying especial attention to remove fouling from pan, steel, and around the cock. Wipe interiors off with a cloth and small brush. Oil lightly.

8. Clean brass furniture using a non-abrasive metal cleaner.

9. For iron and steel parts, fine emery paper and oil works well.

10. Devote attention to the stock. Wipe clean and occasionally apply a coat of an appropriate oil to prevent stock from drying or cracking.

11. Reassemble the weapon, applying a light coat of oil to all iron and steel parts.

12. The face of the breech can be polished after cleaning, by means of a cork fixed to a worm.

Habitual maintenance is necessary to keep a flintlock in good and serviceable condition.

F. SUGGESTED TOOLS NEEDED FOR REPAIR AND CLEANING OF SMALL ARMS

1. Musket tool or an assortment of screwdrivers of correct size.

2. Mainspring vise.

3. Cleaning rod (or rammer) with attachments for gun worm, bore brushes.

4. Bench vise with jaws wide enough to accommodate barrel with padding.

5. Small brass hammer or wooden head mallet.

6. A set of jewelers files.

7. Breech wrench.

8. Drift punch.

9. Funnel.

10. Penetrating oil, gun oil, linseed oil, non-abrasive metal polish (for brass furniture).

11. Cleaning patches.

12. Pliers.

13. Vent plugs (wooden matchsticks).

PART IV - FLINTLOCK MUSKET DRILL

A. INTRODUCTION TO THE MANUAL EXERCISE

The National Park Service drill for 18th century flintlock muskets is based upon *Regulations for the Order and Discipline of the Troops of the United States* by Baron Friedrich Von Stuben. This manual served as the official manual of the army from 1779 through the War of 1812. Because of its direct and simplified approach to the Exercise of the period, the National Park Service has pressed the Baron's Regulations into use again.

Modifications have been made to the original manual to enhance the safety of the demonstrator(s) and visitors as well as to make the drill understandable to someone who is not used to reading military manuals. Only the sections of the original pertaining to the firing of the musket have been used for this manual. Do not attempt to substitute this manual for the original except in those areas.

All demonstrators must be provided with proper hearing protection.

The demonstrator shall become familiar with the manual to understand the safe and proper handling of 18th century flintlock small arms and their interpretation to the visitor. The demonstrator should bear in mind proper military conduct while presenting programs before the public.

For training, demonstrators should use a piece of wood instead of a flint and carry three short wooden dowels to serve as cartridges. The wooden cartridges must be removed from the musket after training sessions and before blank firing or storage.

B. LIST OF REQUIRED MOTIONS

FIRING MOTIONS

RECOVER ARMS

HANDLE - - CARTRIDGE

PRIME

SHUT - - PAN

CHARGE WITH CARTRIDGE

DRAW - - RAMMER

RAM DOWN - - CARTRIDGE

RETURN - - RAMMER

SHOULDER - - FIRELOCK

POISE - - FIRELOCK

COCK--FIRELOCK

TAKE AIM

FIRE

HALFCOCK - - FIRELOCK

PRIME AND LOAD

HANDLING MOTIONS

ORDER - - FIRELOCK

GROUND - - FIRELOCK

TAKE UP - - FIRELOCK

SECURE - - FIRELOCK

FIX - - BAYONET

CHARGE BAYONET

UNFIX - - BAYONET

ADVANCE - - ARMS

SUPPORT - - ARMS

TRAIL - - ARMS

INSPECTION ARMS

C. OF THE INSTRUCTION OF RECRUITS

The Demonstration Supervisor in each park is charged with the instruction of his or her demonstrators. It is a service which requires not only experience but patience and a good disposition. The recruits must be taken singly, and first taught to put on their accoutrements, and carry themselves properly.

POSITION OF SOLDIER WITHOUT ARMS

He is to stand straight and firm upon his legs, with the head turned to the right so far as to bring the left eye over the waistcoat buttons; the heels two inches apart; the toes turned out; the belly drawn in a little, but without constraint; the breast a little projected; the shoulders square to the front, and kept back; and the hands hanging down the sides, with the palms close to the thighs.

Attention!
At this word the soldier must be silent, stand firm and steady, moving neither hand nor foot, (except as ordered) but attend carefully to the words of command. This attention of the soldier must be observed in the strictest manner, till he receives the word.

Rest!
At which he may refresh himself, by moving his hands or feet, but must not then sit down or quit his place unless permitted to do so.

To the left - - Dress!
At this word the soldier turns his head briskly to the left, so as to bring his right eye in the direction of his waistcoat buttons.

To the right - - Dress!
The soldier dresses again to the right, as before.

To the Right - - Face! (Two Motions)
1. Turn briskly on both heels to the right, lifting up the toes a little, and describing the quarter of a circle.
2. Bring back the right foot to its proper position, without stamping.

To the Left - - Face! (Two Motions)
1. Turn to the left as before to the right.
2. Bring up the right foot to its proper position.

To the Right About - - Face! (Three Motions)
1. Step back with the right foot, bringing the buckle opposite the left heel, at the same time seizing the cartridge box with the right hand.
2. Turn briskly on both heels and describe a half a circle.
3. Bring back the right foot, at the same time quitting the

cartridge box.

The Common Step
Is two feet, and about seventy-five in a minute.

To the Front - - March!
The soldier steps off with his left foot and marches a free, easy natural step without altering the position of his body or head, taking care to preserve a proper balance, and not to cross his legs, but to march without constraint in every sort of ground. The officer must march sometimes in his front and sometimes at his side, in order to join example to precept.

Halt!
At this word the soldier stops short on the foot then advanced, immediately bringing up the other without stamping.

Position of a Soldier *Under Arms*

Heels apart
one "hand's
breadth

Toes pointing
slightly outward

Inspection Arms

(Commands are Underlined, *movements are Italics*)

Open Pan!

Using the right thumb, flip open the pan.

Shut Pan!

Using thumb and forefinger of the right hand, snap pan shut.

Search Arms!

From the position of shoulder arms (1), the demonstrator grasps the wrist with the right hand (2), grasps the swell of the musket with the left hand (3).

Search Arms! (continued)

The butt of the musket in placed on the ground in front of the left foot and with the right hand the rammer is loosened. The rammer is drawn out fully (5), reversed and placed in the musket barrel (6).

The rammer is dropped into the barrel, when the inspecting officer passes (7), immediately withdrawn and reversed (8) and reinserted into the pipes (9).

Return Ranner!

The rammer is pushed fully into the pipes (10). The musket is raised up with the left hand and grasping the wrist with the right hand. (11)

Shoulder Firelock!

Place the left hand at the butt of the musket (12), place the right hand at the side (13).

HANDLING THE WEAPON

Besides firing the flintlock, there are various ways to carry and handle the weapon properly in a safe and military manner.

ORDER - - FIRELOCK! (One Motion)

1. Sink the firelock with the left hand as low as possible, without constraint, and at the same time bringing up the right hand, seize the firelock at the left shoulder.

2. Quit the firelock with the left hand, and with the right bring it down the right side (gently and carefully), the butt on the ground, even with the toes of the right foot, the thumb of the right hand lying along the barrel, and the muzzle being kept at a little distance from the body.

GROUND - - FIRELOCK! (Two Motions)

1. With the right hand turn the firelock, bringing the lock to the rear, and instantly stepping forward with the left foot a large pace, lay the piece on the ground, the lock facing up and the barrel in a direct line from front to rear. Place the left hand on the knee to support the body, the head held up, the right hand and left heel in a line, and the right knee brought almost to the ground.

2. Quitting the firelock, raise yourself up and bring back the left foot to its former position.

TAKE UP - - FIRELOCK! (Two Motions)

1. Step forward with the left foot, sink the body, and come to the position described in the first motion of grounding.

2. Raise up yourself and firelock, stepping back again with the left foot, and as soon as the piece is perpendicular, turn the barrel behind, thus coming to the order.

SHOULDER - - FIRELOCK! (Two Motions)

1. Bring the firelock to the left shoulder, throwing it up a little and catching it below the tail-pipe, and instantly seize it with the left hand at the butt.

2. With a quick motion bring the right hand down by your side.

Secure Firelock!

From the position of "Shoulder firelock" (1), the right hand grasps the wrist of the musket (2). The left hand is brought to the swell of the musket (3). The muzzle of the musket is lowered to the ground, pivoting on the left hand (4 & 5).

Shoulder Firelock!

From the position of "Secure firelock" (1) the muzzle of the musket is raised upward (2) until it is perpendicular at the shoulder (3). The left hand is brought to the butt (4); the right hand is brought to the side (5).

FIX - - BAYONET! (Three Motions)

1 & 2. The first and second motions are the same as the two first motions of the SECURE.

3. Quitting the piece with your right hand, sink it with your left down the left side as far as may be without constraint, the butt resting on the ground for added stability. At the same time seize the bayonet with the right hand, draw and fix it, immediately slipping the hand down to the stock and pressing the piece to the hollow of the shoulder.

SHOULDER - - FIRELOCK! (Three Motions)

1. Quitting the piece with the right hand, with the left bring it up to the shoulder, and seize it again as in the second motion of the SECURE.

2. Bring the left hand down strong upon the butt.

3. Bring the right hand down by your side.

CHARGE BAYONET! (Two Motions)

1. The same as the first motion of the Secure.

2. Bring the butt of the firelock under the right arm, letting the piece fall down strong on the palm of the left hand, which receives it at the swell, the muzzle pointing directly to the front, the butt pressed with the arm against the side. The front rank holds their pieces horizontally, and the rear rank holds the muzzle of theirs so high as to clear the heads of the front rank, both keeping their feet fast.

UNFIX - - BAYONET! (Three Motions)

1. The first and second motions are the same as the two first motions of the Secure.

2. Quitting the piece with your right hand, sink it with your left down the left side as far as possible without constraint. (The butt can be resting in the ground for added stability) At the same time, remove the bayonet with the right hand, replacing it in the scabbard, immediately pressing the musket into the hollow of the shoulder with the right hand.

Besides “Shoulder Firelock”, there are three other safe ways to carry the musket to and from demonstrations.

Support Arms!

From the position of “Shoulder firelock” (1) , the right hand grasps the wrist of the musket (2), and the left arm is brought across the body, the hand placed in the crook of the right arm (3).

Shoulder Firelock!

From the position of “Support Arms” (1) the left hand is brought to the butt of the musket (2), then the right hand is brought back to the side.

Advance Arms!

From the position of "Shoulder firelock" (1), the right hand grasps the wrist of the musket as it is turned with the lock outward (2). The musket is brought to the "poise"- the lock before the face, the left hand grasps the musket just above the lock with the pinkie touching the feather spring (3). The musket is brought across the body (4) and is grasped by the right hand, with thumb and forefinger about the lock (5). The left hand is brought to the side (6).

Shoulder Firelock!

From the position of "Advance arms" (1), the left arm is brought across the body and grasps the musket above the lock, the right hand shifts to grasp the musket at the wrist. The musket is brought to the "Poise" (3). The musket is brought to the left shoulder, the trigger guard in the arm pit (4); the left hand releases the swell and is brought to the butt of the musket (5) The right hand is placed at the side (6).

TRAIL - - ARMS! (Two Motions)*

1. Throwing up the right hand, seize the firelock just below the swell by the tail-pipe, the little finger touching, or being near, the left shoulder, and almost as high as the top of it.

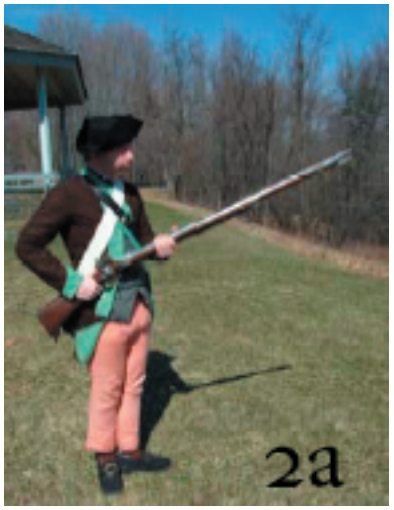
2. Quit the left hand and bring the firelock with the right hand down by your right side, holding it in a sloping position, the butt coming within a few inches of the ground, and the muzzle about a foot and a half before the right shoulder. When marching through woods and bushes, in Indian file, with the muzzle pointing so high upwards, the man before you would not be in danger, in case your piece should go off.

* From Timothy Pickering's An Easy Plan of Discipline for a Militia (1775)

NOTE – The Manual Exercise prescribes that the musket is already loaded; therefore, a command is needed to launch the loading sequence. The command, *RECOVER - - FIRELOCK*, has been chosen and should be executed as noted below starting from the position of *SHOULDER- - FIRELOCK*. Prior to executing the loading sequence, ensure the firelock is at half cock!

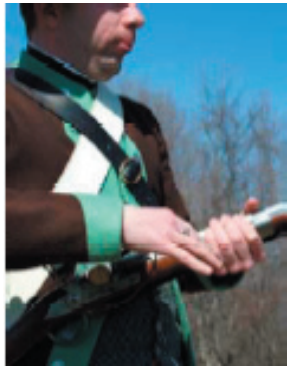
Recover Firelock!

The right hand grasps the wrist of the musket (1), bringing the musket across the body, catching the swell of the musket in the left hand. The muzzle is at hat or eye level and the lock is under the right breast. The right foot is placed behind the left, turning the body slightly to the right (2and 2a).



Open Pan!

The steel or hammer is pushed forward with the right thumb.



Handle Cartridge!

Reach back with the right hand and slap the cartridge box lid and open the flap (1). One cartridge is removed, and torn open with the teeth (2). The opened cartridge is pinched shut between thumb and forefinger and held under the chin (3).

Prime!

Powder is poured from the cartridge into the pan (1). The cartridge is pinched shut again between thumb and forefinger; the other three fingers are placed upon the front of the steel (2).

Shut Pan!

The pan is closed by moving the right arm backwards (1). The musket is 'cast about', the butt placed on the ground in front of the left foot (2). The right hand holding the cartridge is kept near the barrel, below the muzzle (3).

Charge with Cartridge!

The powder from the cartridge is poured down the barrel, using only thumb and forefinger (1 & 2). The paper is inserted into the barrel once the powder has been poured.

Draw Rammer!

Using thumb and forefinger of the right hand, the rammer is withdrawn from the pipes (1). The rammer is twirled to bring the head toward the muzzle.(2). The rammer is held with the head below the muzzle. (3)

Ram Down Cartridge!

Using thumb and forefinger only, the rammer head is inserted into the muzzle of the musket (1). The cartridge is pushed downward, minimizing exposure of the hand over the muzzle (2), ending with the hand clear of the muzzle.(3). Using thumb and forefinger, the rammer is withdrawn, reversed and started back into the pipes (4).

Return Rammer!

Using the pinkie of the right hand slide the rammer fully into the pipes (1 & 2). Grasping the musket at the swell, it is picked up with the left hand until the elbow is bent; the right hand grasps the musket at the wrist (3). The right foot is brought forward, in line with the left.

Shoulder Firelock!

The left hand is brought down to the butt (1); the right hand is brought back to the right side(2).

Poise Firelock!

The musket is turned so the lock faces away from the demonstrator, and the right hand clasps the wrist (1). The musket is brought upright before the face, the right hand grasps the musket just above the lock with the pinkie touching the feather spring (2 & 3).

Cock Firelock!

The musket is turned so the trigger guard faces away from the demonstrator (1), and the right thumb is used to pull the cock or hammer to full cock (2). The hammer stall is removed (3).

Take Aim!

The musket is leveled, the butt against the right shoulder, the right foot back a half pace(1), the finger is outside the trigger guard (2).

Fire!

The finger is placed upon the trigger (1). Pull trigger (2). When the musket has fired, it is brought down to the position of "recover firelock". (3).

Half Cock Firelock!

The top jaw screw hammer is grasped with the right hand by the thumb and forefinger-thumb forward. The right arm is moved backwards until the half cock is engaged. From this position, the loading and firing sequence may be resumed with "Handle cartridge", or the musket brought to the position of "Shoulder firelock".

PRIME AND LOAD! (Fifteen Motions)

1, 2 & 3.	Recover Firelock.
4.	Handle cartridge.
5.	Prime.
6.	Shut pan.
7.	Cast about.
8 & 9.	Load.
10 & 11.	Draw rammer.
12.	Ram down cartridge.
13.	Return rammer.
14 & 15.	Shoulder.

Note: The motion of recover, coming down to the priming position, and opening the pan, to be done in the usual time. The motions of handling the cartridge to shutting the pan to be done as quick as possible. When the pans are shut, make a small pause and cast about together. Then the loading and shouldering motions are to be done as quick as possible. This should not be attempted until you are competent in the exercise in normal time.

Position of Each Rank in the Firing

FRONT RANK! MAKE READY! (One Motion)

Spring the firelock briskly to a recover. As soon as the left hand seizes the firelock above the lock, the right elbow is to be nimbly raised a little, placing the thumb of that hand upon the cock, the fingers open by the plate of the lock, and as quick as possible cock the piece, by dropping the elbow, and forcing down the cock with the thumb, immediately seizing the firelock with the right hand, close under the lock. The piece is to be held in this manner perpendicular, the lock facing to the front, opposite the left side of the face (not held in close to the body), the body kept straight and as full to the front as possible, and the head held up, looking well to the right.

TAKE AIM! FIRE!

As before explained.

REAR RANK! MAKE READY! (One Motion)

Recover and cock as before directed, at the same time stepping about six inches to the right, so as to place yourself opposite the interval of the front rank.

TAKE AIM! FIRE!

As before explained.

F: THE FLINTLOCKRIFLE, PISTOL, AND CARBINE

THE FLINTLOCK RIFLE

Even though rifling and its advantages were known, it was not until the middle of the 19th century that a rifled firearm was widely accepted as a military weapon. In any case, the rifle did see action. It is also being used today in interpretive demonstrations. The same safety procedures that apply to the musket also apply to the rifle. The only difference in the loading process is whether you are using a cartridge or a powder horn.

1. Loading with Cartridge.

When loading with a cartridge, priming can be done prior to loading, just as a musket is loaded with a cartridge.

2. Loading with a Powder Horn.

If using a powder horn, to reduce the chance of injury, load first and then prime. Be aware that when using powder horns, only enough powder should be carried in the large horn for one shot in a one shot demonstration; the smaller priming horn should only contain enough powder for one priming and three misfires. One of the safest ways to load a rifle is to place the weapon (barrel side up) with the butt on the ground and held between your thighs, the muzzle angled away from your face at the proper loading height. This position will allow you to use two hands to fill the tip charger from the horn and then charge the muzzle. A crumpled ball of paper can be inserted into the barrel to serve as wadding. Lift the rifle with your left hand and slap the forestock with your right hand to settle the powder. Place the rifle back down into the loading position. The ramrod can be eased out of the pipes with the underside of your hand, using each hand alternately to safely withdraw it completely. Bring the rifle up to the priming position and prime from the smaller horn. The rifle is now ready to fire.

THE FLINTLOCK PISTOL AND CARBINE

Primarily these weapons were reserved for the mounted dragoon or officer. The pistol was fired while mounted and the carbine fired when dismounted. No one fired a pistol at a target more than a few feet away with any serious hope of hitting it. The carbine was not much better.

Apply the safety procedures of the musket and rifle in the case of the pistol and carbine. You should not attempt a pistol demonstration while on horseback. Keep in mind that these are short-barreled weapons, you are more likely to put your face over the muzzle when loading; therefore, pistols, and carbines should be primed after loading the main charge with the muzzle pointed downrange. EXERCISE EXTREME CAUTION WHEN USING SHORT BARRELED WEAPONS.

PART V - MISFIRE PROCEDURES

Each park shall develop a written Misfire Plan to address the action necessary to render a firearm safe in the event of a Level I or Level II Misfire.

TYPES OF MISFIRES

A “Level I Misfire” is defined as a misfire that can be cleared on the demonstration area and the demonstration can continue.

A “Level II Misfire” is defined as a misfire that cannot be cleared at the demonstration area without disrupting the demonstration. Specialized equipment is needed to render the firearm safe.

CAUSES OF MISFIRES

--Improperly cleaned firearm: If a firearm is not properly cleaned immediately after use, the residue in the barrel will harden, rust and corrosion will form. This buildup of fouling will likely obstruct the vent. Excessive oil may pool in the breech and obstruct the vent or neutralize the powder charge.

--Improperly sized flint: If the flint is to large it can keep the pan from closing tightly allowing powder to be spilled while handling the weapon.

--Improper flint position: The flint must be placed in the jaws so it will make good contact with the steel.

--Improper loading procedure: The powder charge is not properly seated under the vent. Once fire has been introduced to the bore, do not re-ram the charge!

LEVEL I MISFIRE PROCEDURES

A. Failure to Spark:

1. Remain at position of aim. Count to ten.
2. Interpreter explains the situation to the public.
3. Return to the priming position and half-cock the firelock.
4. Check priming and flint. If working with the flint (striking or knapping) attach hammer stall. Also dump priming when working with flint.
5. Reprime if necessary.
6. Repeat drill from "SHUT PAN!" command. This is done without reloading or ramming.
7. If the weapon fails to fire after three attempts, dismiss the visitors and move to a safe area to perform Level II Misfire procedures.

B. Flash in the Pan:

1. Remain at position of aim. Count to ten.
2. Interpreter explains the situation to the public.
3. Return to the priming position and half-cock the firelock.
4. Pick touch-hole and reprime.
5. Repeat drill from "SHUT PAN!" command. This is done without reloading or ramming.
6. If the weapon fails to fire after three attempts, dismiss the visitors and move to a safe area to perform Level II Misfire procedures.

In group-firing demonstrations where multiple rounds are fired, a demonstrator who has had a misfire should announce or signal to the demonstration supervisor that a misfire has occurred before applying the appropriate misfire procedure. Once the misfire has been attended to, the demonstrator will come to the position of Shoulder---Firelock! The demonstrator should remain at that position, and being sure not to reload and ram again, wait and fire on command with the rest of the unit. If the demonstration supervisor decides not to fire again, proceed with the Level II Misfire Procedure.

C. LEVEL II MISFIRE CLEARING PROCEDURES

LEVEL II MISFIRE—CO2 DISCHARGER

1. Keep the piece pointed in a safe direction.

2. Open the pan and dump out the priming.

3. Place the CO2 discharger with adapter in the vent. Press the discharger lever quickly and release.

4. Clean and inspect the piece before attempting to load it again.

LEVEL II MISFIRE—UNLOADING THROUGH THE MUZZLE

Should the CO2 discharger not be available or fail to remove the charge, the piece must be unloaded through the muzzle:

1. Keep the piece pointed in a safe direction.

2. Open the pan and dump out the priming.

3. Soak the powder charge with water poured down the muzzle.

4. When the powder charge is sufficiently wet, remove the obstruction with a wiper.

5. Clean and inspect the piece before attempting to load it again.

D. SAFETY NOTES

1. Weapons are to be kept down-range and away from visitors at all times.

2. DO NOT ram again after a misfire.

3. All weapons are required to have flash guards attached when firing in ranks.

4. Hammer stalls are required items on flintlock firearms.

PART VI - LABORATORY

A. BLANK CARTRIDGE MANUFACTURE BRITISH STYLE

MATERIALS NEEDED

1. Paper cut to specific dimensions (indicated in illustration). The paper should be light, strong, and able to be folded or twisted without being easily torn. 40 lb Kraft paper is fine, and can be obtained locally or from GSA.

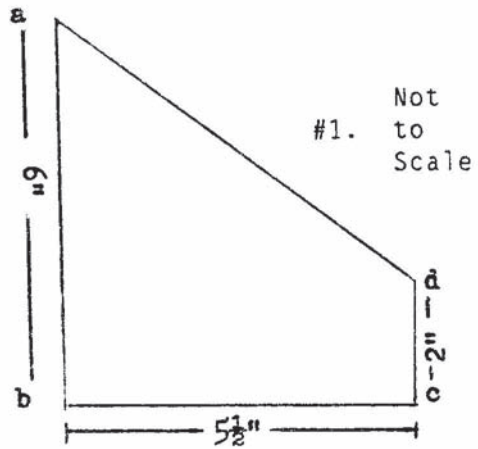
2. Scissors or paper cutter.

3. Former: A six-inch wooden dowel slightly smaller than the bore of the weapon. If you are going to make cartridges with a ball, one end of the former should be slightly concave to fit the ball.

4. Powder measure & FFg Black Powder

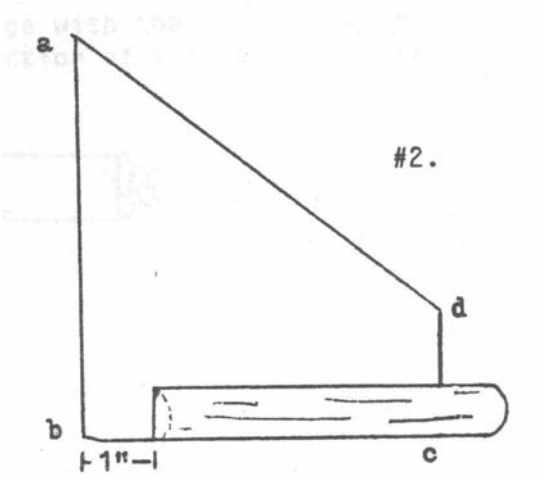
PROCEDURE

1. Using scissors or paper cutter, cut cartridge paper into proper shape, as indicated in illustration #1.

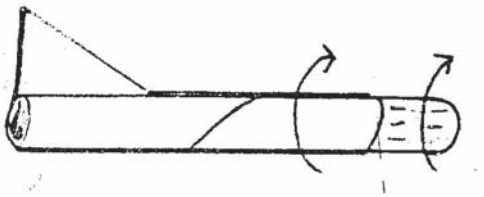


#1. Not to Scale

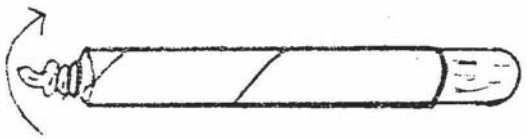
2. Keeping point “a” in the upper left hand corner, place former on “b-c” portion of cartridge, leaving at least one inch distance between the cupped end of the former and point “b”.



3. Roll the paper all the way around the former by rolling the former away from you, bringing the paper around with it.

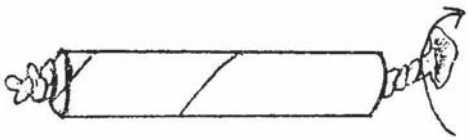


4. Twist the rolled cartridge end in the same direction as you rolled it. It must be twisted tight enough to form a seal without leaking any powder, but not so tight that the paper is torn.



5. Remove former and using powder measure, pour proper amount of powder in cartridge.

6. Twist the top of the cartridge in the same direction of the roll, again twisting tight enough to seal cartridge.



B. FIXING FLINTS

This is definitely an art, but one which can be easily learned with experience. Each particular flint requires its own particular method of fixing and there are many variables to take into account.

First, the flat side can be placed upwards or downwards, depending on the shape and size of the flint. The flint must be placed between a lead or leather cap to hold it between the jaws of the cock. Second, determine where the flint will fall. Let the cock down gently to observe where the flint strikes the steel. At the same time, look to make sure that the entire edge of the flint contacts the steel.

After firing a weapon, take the first opportunity to examine the flint and see whether it is fixed properly. If there is something wrong, fix it immediately.

Remember, there are no hard and fast rules to fixing flints. Each weapon is unique and requires experimentation in the placement of the flint. As long as you are aware of that, you should have no problems.

NATIONAL PARK SERVICE
TABLE OF MAXIMUM LOADS

SMALL ARMS

Weapon Type	Caliber	Maximum Blank Charge
18th Century Flintlock		
"Brown Bess" Musket	.75	125 grains ffg
Charleville Musket	.69	125 grains ffg
Kentucky Rifle	Variable	90 grains ffg
Pistols and Horse Pistols	Variable	90 grains ffg
19th Century Percussion		
U.S. Rifle, M1841	.54/.58	60 grains ffg
U.S. Musket, M1842	.69	75 grains ffg
U.S. Rifle Musket, M1855-1864	.58	60 grains ffg
British Enfield Rifle	.577/.58	60 grains ffg
U.S. Rifle, Musketoon	.58	60 grains ffg
Sharps Carbine/Rifle	.54	60 grains ffg
Revolver	.36	
Revolver	.44	28 grains fffg
19th Century Metallic Cartridge		
U.S. Rifle, M1866-70	.45	70 grains ffg
Sharps Carbine	.50	55 grains ffg
U.S. Rifle, M1873-84	.45	70 grains ffg
U.S. Carbine, M1873-84	.45	55 grains ffg
Henry Repeating Rifle	.44	28 grains ffg
Colt/S & W Schofield Revolver	.45	28 grains ffg

PART VII - SMALL ARMS DEMONSTRATION CHECKLIST

BEFORE

( ) The piece has been inspected, inside and out. Bore is clean of foreign material.

( ) The demonstrator approaches the demonstration area carrying the firearm in a safe and military fashion.

( ) He is not encumbered with superfluous equipment.

( ) Misfire equipment is in place at the demonstration area.

( ) Visitors have a good field of vision of the demonstration.

( ) The interpreter has a clear view of all the visitors and down range area.

( ) Physical barriers between the visitors and the demonstration area are in place.

( ) Conditions are not too dry or windy to risk a range fire from the muzzle blast.

( ) First aid kit and emergency communications are available.

DURING

( ) He is competent with the manual he is using.

( ) There is sufficient additional people for interpretation and crowd control.

( ) The demonstration area is safe for the size of the audience.

( ) The firearm is always pointed in a safe direction.

( ) At no time are there any parts of the demonstrator's body placed in a hazardous position in relation to the firearm.

( ) In the event of a misfire or other unscheduled event the demonstrator reacts properly.

AFTER

( ) The demonstrator maintains military bearing and leaves the area carrying the firearm safely and in a military fashion.

( ) The demonstration area is policed for dropped cartridges, cartridge papers, etc.

( ) Any remaining cartridges are returned to storage facility

( ) The piece is cleaned, dried and oiled. The piece is returned to the storage facility.

( ) Any accessories are accounted for and returned to the proper storage areas.

( ) Your overall impression is favorable.

PART VIII - FLINTLOCK MUSKET COMPETENCY EXAM

The student must perform the following motions according to the driections below in order to be deemed proficient.

FIRING MOTIONS

RECOVER ARMS

HANDLE - - CARTRIDGE

PRIME

SHUT - - PAN

CHARGE WITH CARTRIDGE

DRAW - - RAMMER

RAM DOWN - - CARTRIDGE

RETURN - - RAMMER

SHOULDER - - FIRELOCK

POISE - - FIRELOCK

COCK--FIRELOCK

TAKE AIM

FIRE

HALFCOCK - - FIRELOCK

PRIME AND LOAD

HANDLING MOTIONS

ORDER - - FIRELOCK

GROUND - - FIRELOCK

TAKE UP - - FIRELOCK

SECURE - - FIRELOCK

FIX - - BAYONET

CHARGE BAYONET

UNFIX - - BAYONET

ADVANCE - - ARMS

SUPPORT - - ARMS

TRAIL - - ARMS

INSPECTION ARMS

GLOSSARY

BARREL BAND

One of several metal bands holding the stock together, as on the Charleville musket. (A banded barrel)

BARREL PIN

One of several round metal pins holding the barrel and stock together as on the "Brown Bess". (A pin-fastened barrel)

BREECH

The closed end of the barrel. Includes the breech plug, the tang and the tang screw.

BRIDLE

A metal plate that provides more support for the inside screws on which the sear and tumbler pivot in the lock.

BUTT

That part of the stock which fits the shoulder when firing. Includes the wrist, swell, toe, and butt plate.

CALIBER

The diameter of the bore expressed in hundredths of an inch.

CASEHARDENING

A process by which heat and chemicals are used to harden a metal surface.

COCK

Located on the outside of the lock and attached to the squared tumbler shaft. Holds the flint between the jaws.

ESCUTCHEON

A metal plate inlaid to strengthen screwholes.

FEATHER SPRING

The outside spring on the lock which controls the steel's position. (Frizzen spring)

FLASH

Ignition of priming powder in pan.

FLASH GUARD

A metal plate attached around the outside of the pan to divert the flash. This protects the people next to you.

FLASH IN THE PAN

The priming powder is ignited in the pan, but fails to ignite the main charge in the barrel because of a plugged vent.

HANG FIRE

A condition on which an apparent misfire goes off after a short delay. This is the reason for the 10 second delay in the misfire procedures.

LOCK PLATE

Metal plate to which is attached the workings of the lock.

LUGS OR TENONS

Located on the bottom or underside of the barrel, through which a barrel pin passes to attach the barrel and the stock together.

MAIN SPRING

The heavy spring on the inside of the lock that moves the cock.

PAN

A receptacle that holds the priming charge.

PICK

A fine steel wire used to clean out the vent hole.

PIPES, LOOPS, OR THIMBLES

Short tubes under the small arm used to hold the rammer.

SEAR

The part of the lock that engages the tumbler and cock and is released by the trigger.

SEAR SPRING

The small spring that moves the sear.

STEEL, BATTERY, HAMMER, OR FRIZZEN

The steel part which is struck by the flint. Hot pieces of the steel fall into the pan causing ignition of the priming.

TUMBLER

Contains the half cock and full cock notches. It is attached to the cock by the tumbler shaft.

VENT OR TOUCHHOLE

The hole in the barrel near the breech through which the priming charge ignites the main charge in the barrel.

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