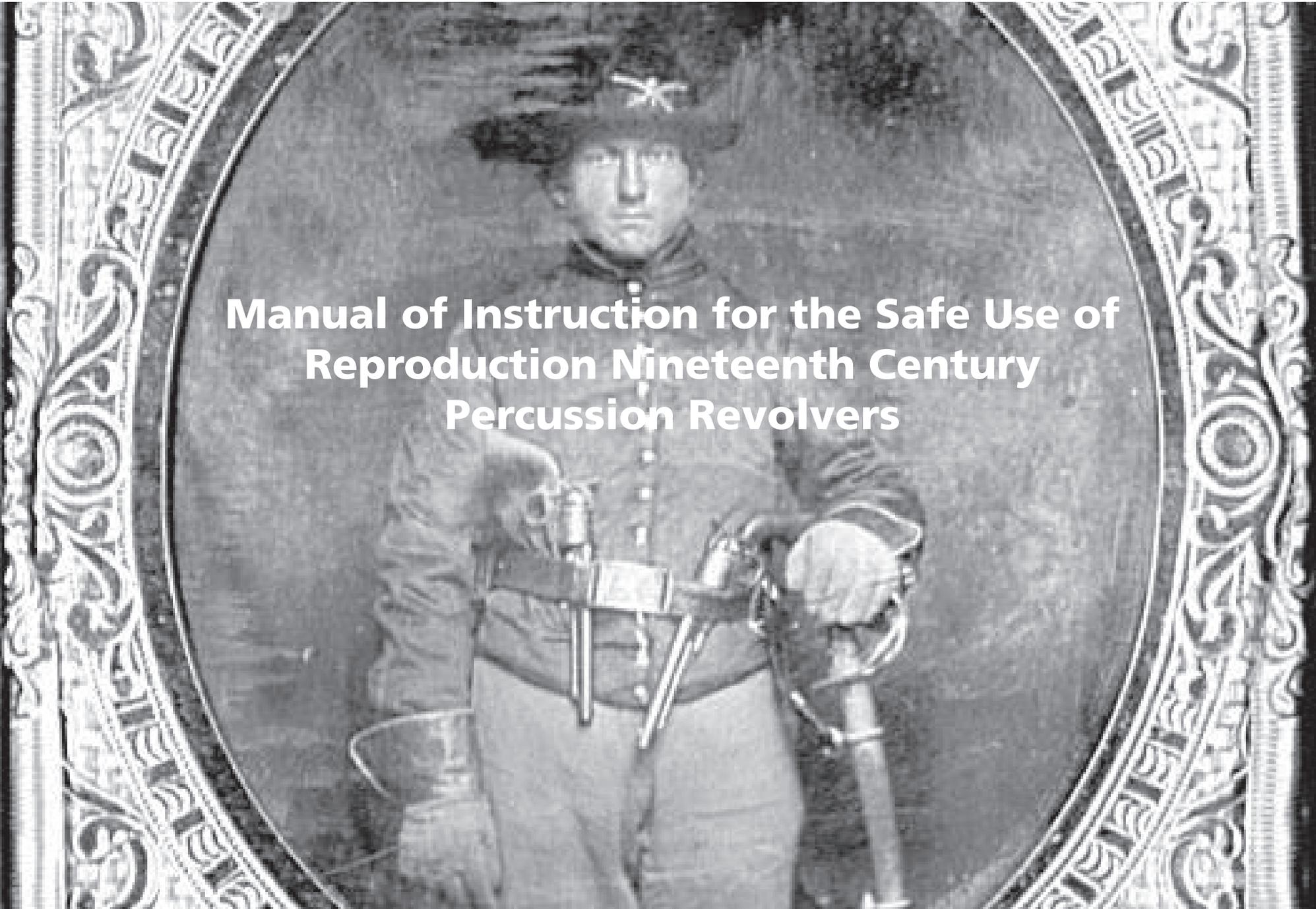




## Manual of Instruction for the Safe Use of Reproduction Nineteenth Century Percussion Revolvers





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## **PART I - INTRODUCTION**

This manual sets forth the procedures that must be followed by persons demonstrating 19th century percussion revolvers to the public in areas administered by the National Park Service (NPS). It also provides instruction 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 below largely comes from primary sources of the period during which the weapons described were used. Several generations of 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 actually using these weapons in the field.

The Park's Certified Historic Weapons Firing Demonstration Supervisor is responsible for the training and safety of the demonstrators, as well as the safety of the visitors. The following criteria will help determine when a demonstrator has been adequately trained.

## PART II - NOMENCLATURE



**Exploded View, Colt Revolver**



Barrel with front sight and loading lever catch.



Cylinder with two cones unscrewed.



Loading lever assembly with latch and plunger.



Loading lever screw; Barrel wedge and barrel wedge screw.



Frame with cylinder pin; Stop spring screw; Stop spring; Cylinder stop.



Hammer screw; Hammer with hand and spring attached.



Trigger guard with mainspring; trigger guard front screw; mainspring screw and trigger screw; trigger.



Grip with backstrap and backstrap screws

## **PART III - INSPECTION AND MAINTENANCE**

### **INSPECTIONS**

#### Frequency of Inspections

All weapons shall be inspected before demonstrations and after the final cleaning on that particular day. Weapons in storage should be periodically checked for rust or other types of damage due to moisture.

If a weapon does not meet safety standards for any reason, a large string tag should be tied to it detailing the specific problem. Repairs should be affected as soon as possible.

#### Problems Encountered During Inspections

1. Overall poor cleaning. If a revolver is not cleaned immediately after use, the residue in the barrel and cylinder will harden. Effective cleaning is made more difficult and there is a possibility of coke buildup in the bore. Even if the primers alone are fired, they leave a corrosive residue both around the cone and in the breech area of the barrel. If this is not removed, rust will occur in these areas. There is also the possibility of a buildup of solid material around the cone which could be dislodged in subsequent firings, with the possibility of injury to the demonstrator or a visitor.
2. Weak mainspring. When cocking the piece, if there

appears to be a weak mainspring, it should be replaced or taken to a competent gunsmith to be hardened. Complaints of blow-back through the vent of the cone may be the result of a weak mainspring. If the spring is weak, pressure from firing may cause gases and unfired powder to escape from the vent.

3. Weapon fires on half cock. This is probably due to wear of the half-cock notch on the tumbler. It may also be the fault of a weak or broken sear-spring. If the tumbler is at fault, it may be corrected or broken sear-spring. If the tumbler is at fault, it may be corrected by carefully deepening the half-cock notch. If the tumbler is badly worn, it should be replaced

4. Worn or damaged cone. When this occurs, the cone should be replaced. A common cause of blow-back is the vent of the cone being worn to a larger diameter, allowing excess gases to escape when the weapon is fired.

5. Bent or bulged barrel. This problem is fairly easy to see and should be noticed during any good inspection. If it is not badly bent, it can be straightened by any competent gunsmith; however, it is recommended that it be replaced.

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



## PERCUSSION REVOLVER MAINTENANCE

Confirm that piece is unprimed, checking cones for percussion caps. Half-cock the revolver and rotate the cylinder, checking each chamber to confirm piece is unloaded.

### **To dismount the revolver, Colt Models (open frame);**

Tools needed: screwdriver, mallet, small wood dowel (to fit barrel wedge mortise).

1. Unscrew the barrel wedge retaining screw and set aside.
2. Remove the barrel wedge and set aside. If stuck in mortise, the wedge can be driven out with mallet and wooden dowel shaped to fit the mortise.
3. Remove barrel, sliding it off of the cylinder pin, making sure pins detach easily from frame.
4. Remove cylinder, sliding it off the cylinder pin.

### **To dismount the revolver, Remington Models (solid frame):**

1. Lower loading lever, making sure plunger does not enter chamber of cylinder.
2. Grasp cylinder pin between thumb and forefinger and pull out to loosen cylinder.
3. Push the cylinder out of the frame to the right side. It may be necessary to slightly cock hammer to ease cylinder away from nose of hammer and detach from cylinder stop.

### **To reassemble the revolver, Colt Models:**

1. Apply light coating of oil to cylinder pin, and oil cylinder.
2. Replace cylinder on pin. Replace barrel on frame, making sure mortises on frame and cylinder pin align.
3. Replace the barrel wedge into the mortise. Wedge may be driven into mortise by tapping with mallet. Tightness of fit varies on wedges.
4. Replace barrel wedge screw with screwdriver.
5. Half-cock hammer and rotate cylinder to insure its free movement upon the cylinder pin. Draw hammer to full cock to check action, and release tension of mainspring, lowering hammer gently with thumb.

### **To reassemble the revolver, Remington Models:**

1. Lightly oil the cylinder and cylinder pin.
2. Replace cylinder by gently sliding the cylinder into the frame from the left side. Make sure that cylinder is engaged on cylinder stop, and that nose of hammer is properly seated in frame without misaligning the cylinder.
3. Replace the cylinder pin, securing the cylinder.
4. Secure the loading lever with its catch.
5. Half-cock the hammer, and rotate the cylinder to check its smooth operation. Draw the hammer to full cock, and gently release tension on the mainspring, lowering the hammer gently with the thumb.

## Cleaning the Revolver

Dismount piece utilizing above procedures.

1. Clean the bore with hot water, reaming and swabbing with cloth patches and a pistol cleaning rod of the proper size. A brass bore brush of proper caliber may be used to clean bore.
2. Clean chambers of the cylinder with hot water, swabbing with cloth patches and a pistol cleaning rod.
3. Clean the vents and swab the cones (it may be necessary to unscrew cones from cylinder), making sure the vents are clear of fouling.
4. Clean the frame, the plunger of the loading lever, and nose of the hammer with damp patches to remove fouling.
5. Dry the assemblies of the dismounted revolver to make sure no moisture persists to cause corrosion.
6. Oil the assemblies lightly, wiping with cloth dampened with oil to lubricate cylinder, frame, trigger, hammer, loading lever, and barrel.
7. Reassemble revolver as described above.

## **PART IV - REVOLVER DRILL (DISMOUNTED)**

Revolver can only be fired when dismounted. Firing from the saddle is prohibited.

At no time will more than one cartridge be loaded and fired at a time from the revolver. The revolver must be reloaded with the following drill to fire subsequent cartridges.

The movements and motions are as described in The Volunteer's Manual, No. 1, 1861 by T. Worthington and Captain R. W. Johnson, U.S. Army. The paragraph numbers correspond with those of the original manual. Please note that slight changes have been made from the original manual for safety considerations. The piece can be loaded with either a small paper cartridge (similar to those used in the musket), or combustible (nitrated) paper cartridges.

To demonstrate the pistol, the piece should be carried in a leather holster proper to the particular revolver, with the holster suspended from a pistol waist belt with cartridge box and cap pouch. A cone pick should be carried in the cap pouch. Proper appendages, like a cone wrench and screwdriver should also be available during the demonstration, preferably carried in the cartridge box. Boxes with drilled wooden inserts are preferable, as the cartridges for the revolver are small, and are difficult to grasp from a cartridge box with tins. The percussion caps are likewise minute in comparison with musket caps, and are difficult to grasp from the cap pouch. Care should be taken in placing and retrieving the caps from the pouch in priming the revolver because of their diminutive size.

The cavalry demonstrator shall be dressed in all natural fabric and equipped with a snugly fitting waist-belt, cap pouch (with cone pick) located on the right front of the belt, carbine cartridge box (with inserts) located on the rear of the belt, carbine sling, pistol holster on the belt at the right hip and pistol cartridge box located behind the holster on the belt. The saber, if worn, shall be hooked up on the left side of the belt.

Likewise, if an artillery impression is being portrayed, the light artillery saber or the foot artillery sword should be worn in their proper carriage, hooked up or positioned on the waist-belt so as not to complicate the movements of the revolver drill.

The MANUAL for the REVOLVER:  
To DRAW The PISTOL.

The instructor commands:

*Draw--PISTOL.*  
*Two times and two motions*

*First motion.* At the first command (“Draw”), unfasten the holster, seize the pistol by the handle with the right hand around the butt, holding it between the palm of the hand and the last three fingers, the forefinger resting on the guard, the thumb on the handle. To ease the drawing of the pistol, the left hand may hold open the flap of the holster.



*Second motion.* At the second command (“PISTOL”), draw out the pistol and elevate it, the muzzle up at a 85 degree angle (not quite vertical for safety), the guard to the front; the wrist at the height of, and six inches from, the right shoulder.



Load in six times.  
(Loading with plain paper cartridges.)

1. LOAD

*One time and one motion.*

Transfer the pistol to the left hand, holding it by the handle in front of the body, the hammer between the thumb and forefinger, and turned to the left, the muzzle pointing upwards. The last three fingers should curl around the guard and handle (butt). Carry the right hand to the cartridge box and open it.



2. *Handle--CARTRIDGE.*

*One time and one motion*

Seize the cartridge with the thumb and first two fingers of the right hand, and carry it to the mouth.



3. *Tear*-- CARTRIDGE.  
*One time and one motion*

Tear the paper flap with the teeth down to the powder. Spit out the paper. Hold the torn cartridge between thumb and forefinger of the right hand poised for charging the chamber.



4. *Charge*--CARTRIDGE.  
*One time and two motions*

*First motion.* Empty the powder into the chamber and insert the cartridge paper on top. The chamber loaded should be either of the two approximately lined up with the priming notch, and exposed to view on the side of the cylinder facing the body. Press the paper down with the thumb. To better see the loaded chamber, a dot of white-out or colored tape may be applied to the proper chamber of the cylinder prior to the demonstration. This chamber should be rotated, and not used exclusively, however, so that the pistol wears evenly. It is with some difficulty that blank cartridges are seen when loaded in the chamber after the cylinder is revolved for priming. To ensure proper ramming, a wad of paper can be placed atop the cartridge: a small square of wadded paper towel or a commercial pistol wad is useful to firmly seat the charge in the chamber. This is in addition to the cartridge paper.



*Second motion.* Turn the pistol with the left hand, bringing the hammer towards the body, and half-cock it with the thumb of the right hand, clapping the right hand over the left supporting the pistol. The loaded chamber should revolve towards the rammer. Position the loaded chamber under the rammer, so that the cartridge will be rammed at the next command.



5. Ram--CARTRIDGE.  
*One time and two motions*

*First motion.* Seize the lever at the catch with the thumb and forefinger of the right hand, release the lever, and ram down the cartridge and wadding, if used. It may be necessary to correctly position the chamber beneath the rammer. After ramming firmly, replace the lever and secure the catch.



*Second motion.* Uncock the hammer with the right hand, still grasping the pistol with the left. Make sure to cock the pistol full, and then release the hammer in uncocking the piece. With the right hand, again bring the pistol to half cock. Rotate the cylinder with the right hand until the loaded chamber is to the right of the barrel, its cone in line with the priming notch on the frame of the pistol. This should be four revolutions of the cylinder, with four distinct “clicks” of the mechanism. Drop the right hand to the side.



If combustible (nitrated) paper cartridges are used, the command is “Load in five times,” and #3 above, “Tear – CARTRIDGE” is omitted. Nevertheless, combustible paper cartridges can also be torn before charging the chamber. At “Charge – CARTRIDGE,” the cartridge is inserted with the flat base down, and the untorn flap or “tail” up. A wad or wadded square of paper towel as described above is recommended atop the cartridge to firmly seat the round in the chamber. Ramming is the same for plain paper or combustible paper cartridges.

Load in five times.

1. **LOAD.**
2. *Handle* – CARTRIDGE.
3. *Charge* – CARTRIDGE.
4. *Ram* – CARTRIDGE.

PRIME becomes # 5 with combustible paper cartridges.

## 6. PRIME.

### *One time and three motions*

*First motion.* Lower the muzzle towards the right side of the body by turning the left wrist, the muzzle should point downwards, with the hammer to the left, and the left wrist resting against the stomach; the cone of the loaded chamber should be facing upward, and still in line with the priming notch; with the right hand, take a cap from the pouch, and press it firmly on the cone of the loaded chamber with the right thumb. Make certain the cap is firmly seated on the cone.



*Second motion.* Seize the pistol at the handle with the right hand, releasing the grip of the left hand, and lowering that hand to the left side; bring the revolver to the position of draw pistol: the piece elevated on the right side, the muzzle pointed up at an 85 degree angle (not quite at a right angle or 90 degrees for safety), the guard to the front; the right wrist at the height of, and six inches from, the right shoulder.

*Third motion.* With the left hand, rotate the cylinder until the loaded chamber is just to the left of the barrel. This should again be four revolutions of the cylinder, with four distinct “clicks” of the mechanism. Drop the left hand to the left side.



Wishing to fire, the next command will be:

READY.

*One time and two motions.*

*First motion.* Incline the muzzle forward until the barrel is at a 45 degree angle from the vertical.

*Second motion.* With the right thumb, bring the pistol to full cock.



AIM.  
*One time*

Lower the pistol, the arm extended, and place the forefinger lightly on the trigger, the muzzle pointing slightly downwards.



FIRE.  
*One time*

Press the fore finger steadily on the trigger, fire, and retake the position of draw pistol.



Return--PISTOL.

Lower the muzzle of the pistol, check the cone of the fired chamber for fragments of percussion cap. If encountered, clear bits of copper from the cone, then return the pistol to the holster and button the flap. Drop the right hand to the right side.

Load at will.

LOAD.

*One time.*

Load the chamber as heretofore directed, prime the cone, and take the position of draw pistol.

READY.

AIM.

FIRE.

Return – PISTOL.

### **INSPECTION OF PISTOL**

Pistols must be drawn for the inspection of arms. First command must be, “Draw—PISTOL.”

To inspect the pistol, the instructor commands:

*Inspection--PISTOL.*

*One time and five motions.*

Pistols will already be drawn for inspection.

*First motion.* At the word of command “PISTOL,” transfer the pistol to the left hand from the “Draw – PISTOL” position, the revolver’s muzzle points up, the little finger under the handle or butt, the fore-finger over the guard, and at the same time place the thumb of the right hand on the hammer, the fingers of the right hand over those of the left.

*Second motion.* Half-cock the pistol. Drop the right hand by the side.

*Third motion.* When the inspector passes to the front, revolve the cylinder with the fore-finger of the right hand.

*Fourth motion.* After the inspector passes, place the right thumb on the hammer, the fingers of the right hand over those of the left.

*Fifth motion.* Let down the hammer, uncocking the piece, and return pistol to the holster, buttoning the flap.

## **PART V - MISFIRE PROCEDURES**

Each park shall develop a 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 at the demonstration area and the demonstration can continue. Level I misfires usually are attributed to failure of percussion caps or clogged vents.

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. The audience must be dismissed, and the piece cleared in a safe manner away from the public.

### **CAUSES OF MISFIRES:**

--Improperly cleaned firearm: If a firearm is not properly cleaned immediately after use, the residue in the barrel, breechblock, and the chambers will harden, causing rust and corrosion to form. This buildup of fouling will likely obstruct the vent, preventing the flare of the mercury fulminate in the exploding cap from igniting the cartridge powder.

--Obstruction of the vent: The vent may become obstructed by fouling, excessive oil, or particles from the percussion cap. New firearms with re-occurring misfires should be checked to see if the vent of the cone properly aligns with the vent in the breechblock.

--Poor quality percussion caps: The fulminate of mercury used in the percussion cap will deteriorate if stored a damp environment, making the caps ineffective.

--Improper loading procedure: The powder charge is not properly seated under the vent.

## LEVEL I MISFIRE PROCEDURES

Should a misfire occur:

1. Remain at position of aim for ten seconds.
2. Keep muzzle pointed downrange. Lower the piece to the position of Prime. Half-cock the pistol and rotate the cylinder so the cone is located at the priming notch in the frame. Remove the spent cap. Inspect the vent of the cone. Use the cone pick if necessary to remove obstructions of the vent. Re-prime the cone with a fresh percussion cap, and rotate the cylinder to the proper firing position.

Aim.

Fire.

3. If misfiring persists, repeat procedure two times. The public demonstration is now at an end. If the weapon still misfires after three tries at priming, it must be removed from the demonstration area, taken to a secure area away from the visitors, as designated in the Park Misfire plan, and the following procedure followed.

## LEVEL II MISFIRE PROCEDURES

1. Keep the piece pointed in a safe direction.
2. Half cock the piece and rotate the cylinder so the cone is located at the priming notch in the frame. Remove the spent cap. Place the CO2 discharger with adapter over the cone evenly for a good gas seal. Press the discharger trigger quickly and release. Unfired cartridge should be ejected from the chamber.

## PART VI - LABORATORY

### MANUFACTURE OF BLANK CARTRIDGES PERCUSSION REVOLVERS

Materials Needed:

Nitrated paper (cigarette rolling paper) or Coffee filter paper;

Glue stick;

3/8 inch wood dowel for .44 caliber cartridge (powder charge 28 grains FFg);

2/8 inch wood dowel for .36 caliber cartridge (powder charge 24 grains FFg).

Procedure:

Trapezoidal cartridge papers can be cut from coffee filter paper (un-nitrated). Dimensions of paper:

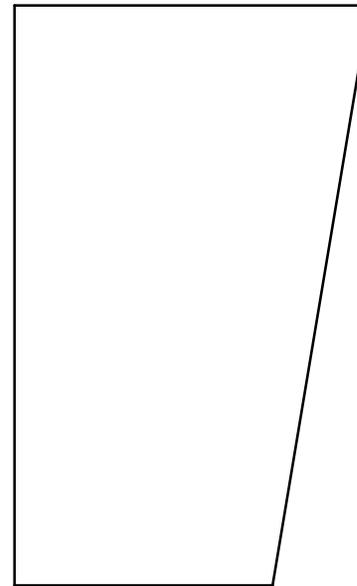
3 ½ inches on long base;

2 ¼ inches on short base (bottom);

1 ¾ inches on straight side (top);

3 ½ inches on angled side.

Cigarette (nitrated paper) is rectangular with slightly smaller dimensions. It is also gummed on one edge.



1. Rub line of glue along angled side of paper, or along gummed side of cigarette paper.
2. Roll the paper tightly on the former into a tube, allowing glue to adhere to the paper.
3. Fold the base closed, and flatten bottom with dowel former.
4. Gently remove the rolled tube from the former, and allow glue to dry.
5. Fill with proper measure of gunpowder.
6. Twist or fold the top of tube closed down to the powder.

In loading the revolver, the flat bottom of the cartridge should be inserted first, and seated firmly with the loading lever. The explosive force of the percussion cap should burn through the thin cartridge paper. With nitrated paper, this will occur, and is also likely with the coffee filter paper also. The paper is consumed in the discharge of the cartridge. Nonetheless, to insure ignition of the powder charge, the twisted or folded flap of un-nitrated coffee filter paper surmounting the cartridge can be torn with the teeth (as with a musket cartridge), and the powder poured loose into the chamber during loading. The paper should be inserted atop the powder charge as wadding, and firmly seated with the loading lever with this method of loading. A small paper wad (torn coffee filter paper) can also be seated in the loaded chamber to firmly seat the cartridge.

## 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.
- ( ) Your overall impression is favorable.

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