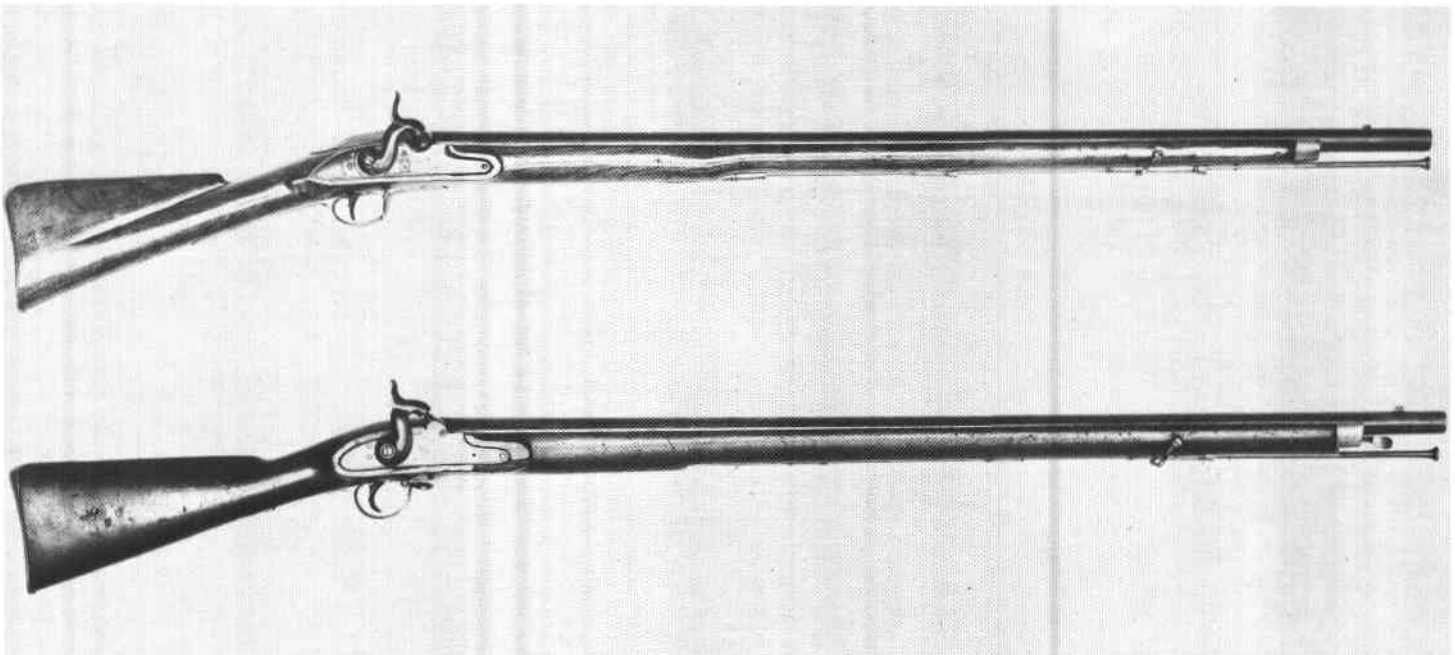


Hall Model 1833 carbine manufactured by Simeon North of Middletown, Conn. The lower gun is the Model 1836 Hall produced at Harpers Ferry. These breechloading carbines were initially setup to arm the First and Second Regiments of Dragoons respectively and were the first two arms made for the U.S. government in percussion.



The top gun is one of the British trial muskets altered in 1836. It is known as Manton's Plug lock and only 24 were made. The butt plates were numbered M-1 to M-24. This one is numbered M-18. The lower gun is a Pattern 1839 and though it looks like an alteration to percussion it was actually new made as percussion and is dated 1845.

# The Percussioning of U.S. Martial Longarms

By Peter A. Schmidt

## The Federal Story

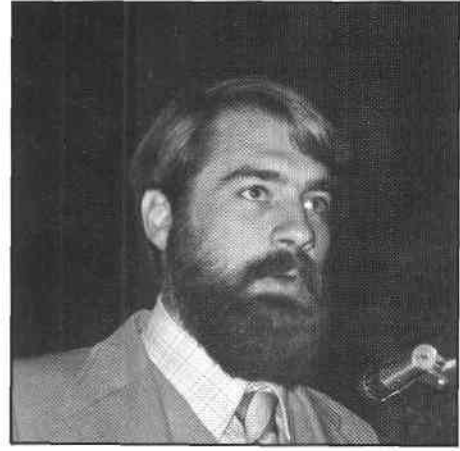
Almost nothing has been written in depth on the subject of percussioning United States flintlock muskets. Pioneer Arms researcher and collector Claude E. Fuller briefly covered developments on the percussioning of flintlock muskets in chapter 6 of his 1930 publication, *Springfield Muzzleloading Shoulder Arms*. Fuller relied heavily on the official reports of the Chief of Ordnance for this chapter and illustrated it with examples from his personal collection. By 1940, arms researcher James E. Hicks had added new information, based on his researches with the correspondence of the Ordnance Department. Colonel Arcadi Gluckman coalesced this information in his book, *Identifying Old U.S. Muskets, Rifles, and Carbines*. Robert M. Reilly synthesized all of this data in his 1970 publications, *United States Military Small Arms*. The percussioning of U.S. military long arms was also briefly treated in a paper delivered before the American Society of Arms Collectors and published in the Spring, 1972, *Bulletin*. The purpose of this paper will be to expand more fully upon the percussioning of U.S. military muskets by the *United States Government*, and to detail the markings applied to these arms in preparation for percussioning.

Alexander Forsyth is given credit for the invention of the percussion ignition system, and by 1805 he had perfected his detonating system for all types of small arms. Likewise, Joshua Shaw is given credit for patenting the percussion cap in 1822. Nevertheless, it took another ten years before any government became interested in it.

The United States appears to have been the first major country to adopt the percussion system.<sup>1</sup> On June 24, 1833 Simeon North proposed to manufacture one thousand Hall's Breechloading percussion carbines in .577 caliber for the newly raised Regiment of Dragoons. Deliveries under the resulting contracts began in late 1833. To equip the militia, another contract was let to North in November, 1835, for an additional 1,630 carbines in .52 caliber. The quantity was increased to 1,715 in early 1836, as arms were urgently needed at the scene of Indian hostilities in Florida. Hall's rifle works at Harpers Ferry was ordered to make 1,000 percussion breechloading carbines in .64 caliber for the newly raised Second Regiment of Dragoons. In December, 1836, the Second Regiment of Dragoons was ordered to Florida, but as no carbines had been delivered from Harpers Ferry, North-made carbines were substituted.<sup>2</sup>

At the same time, Great Britain was also experimenting with the percussion system: 32 India Pattern flintlocks were altered to percussion in 1833. In March, 1836, regimental trials were initiated using three systems of altered muskets and Lovell's cap musket with a back action lock. The regimental trials consisted

(Note: this is but the first part of Mr. Schmidt's extensive discourse on the percussioning of U.S. Martial Longarms. It is hoped the total work will appear in a future publication.)



of issuing 24 muskets of each type in groups of four to the 12th and 33rd Regiments in Dublin, the 52nd Regiment in Gibraltar, the 80th Regiment in Chatham, the 85th Regiment in Canada, and the Royal Marines on the north coast of Spain. Apparent shortcomings were found in each of the altered muskets; nevertheless, in March, 1838, a limited production of the Brunswick Rifle and the Pattern 1838 musket, which was actually Lovell's cap musket, was authorized. These arms were issued to the Rifle Brigade and the Foot Guards, respectively.<sup>3</sup> French developments were similar. The Model 1837 Rifle "Carbine" was followed by the Rampart Gun Model 1838, both newly manufactured in percussion.<sup>4</sup> In Prussia, the Model 1810 Jaeger rifle had been made into percussion beginning in 1835, also utilizing a patent breech.<sup>5</sup>

In all the above cases, percussion arms were manufactured for specialty services in small quantities and were newly made, not "conversions". The first decision to arm line infantry regiments with percussion arms came in 1839 when Britain began production of the Pattern 1839 Musket. These muskets were originally to have been flintlocks to alleviate a shortage of arms in store. The interim between authorization of these arms and the actual procurement of parts allowed George Lovell, newly appointed Master Furbisher, the time to convince the Board of Ordnance that these new arms should be made in percussion.<sup>6</sup>

On the continent, Prussia began production of a new percussion infantry musket in 1839. The Prussian musket appears to be an alteration having a new breech, but it is actually an entirely new arm with a screwed on patent breech. In 1840, France followed Prussia with the screw-in-breech method. These too, were new arms. France and Prussia took the initiative in 1840 and began to alter their flint muskets, the French altering Model 1822 Muskets and Prussia Model 1809's.<sup>7</sup>

The Prussian system of altering muskets was to remove all the exterior lock parts and add an exterior bolster with a clean

out screw. France, after removing the same exterior lock parts, added a new breech section. This method was improved in 1842. The new method was to plug the old vent and drill a hole in the top right barrel flat and insert a new cone seat. The cone (nipple) was threaded into the new seat. This system was simplified in Belgium by simply screwing the cone into the top of the barrel.

Returning to America: in 1841 a new model military rifle was adopted. In 1842, a musket that resembled the Model 1840 flintlock, except it, too, was made in percussion, was adopted. In comparing the Model 1840 flintlock with the Model 1842 percussion musket it is evident that only minor changes were made to put the new percussion arms into production. Model 1842 Muskets were first produced at Springfield and Harpers Ferry in 1844, but contracts for the Model 1840 flintlock muskets issued to Daniel Nippes and Lemuel Pomeroy permitted deliveries lasting to 1848 and 1846 respectively. When Daniel Nippes delivered the last 600 flintlock muskets in 1848, percussion muskets had been in production about five years at the two Public Armories.

With so many good and serviceable flintlocks in store, it was only good economy to inventory and classify those worth altering to percussion. The following letter from George Talcott to Major J.W. Ripley explains the instructions for the classification of flintlock muskets on hand.

Ordnance Office  
Washington 23rd June 1842

Sir:

The Secretary of War has directed a critical Inspection of all the Muskets manufactured prior to 1832, in deposit at the several Arsenals and Depots throughout the Country. This duty will be performed by two Inspectors from the National Armories, under the supervision of an Ordnance Officer, to whom every necessary assistance will be afforded by the several Commanding Officers and such measures adopted as will facilitate the labor;

The Classification will be made as follows: 1st Class — to include all good and serviceable arms made since 1831. These arms are not required to be examined. They will be kept in Store and not issued except on special orders. 2nd Class — to include all good and serviceable arms made from 1821 to 1831 inclusive. These are to be issued for all ordinary purposes and held as suitable to be altered to percussion. 3rd Class — to include all arms made from 1812 to 1820 inclusive. These are considered not suitable for ordinary issue nor for alteration to percussion, but still may be used in cases of emergency.

4th Class — to include all arms made prior to 1812, also the unserviceable arms made at later periods and all damaged arms not worthy of repair. They will be collected at Depots for sale under further orders.

The Ordnance Officer having charge of the inspection, on completing it at any Arsenal, shall give the Commanding Officer thereof, a certified copy of the same, setting forth in detail the number of muskets to each of the classes except the first.

The quarterly return of property made from any Arsenal or Depot after the said Inspection is completed will embrace the Muskets classified as herein directed under the several heads heretofore used in the return, Viz: National Armory Brown, National Armory Bright, Contract Brown, Contract Bright; specifying the number in each class.<sup>9</sup>

On June 4, 1842, Peter V. Hagner was "assigned to duty in charge of the inspection and classification of muskets stored at

the Arsenals made prior to 1832". On October 1, 1845, the inspections were completed and Peter V. Hagner turned in his final report.<sup>9</sup>

The inspection of muskets at the arsenals for the purpose of classifying them according to quality commenced in 1842.

1st Class — All good and serviceable arms made since 1831 — 299,023 muskets

2nd Class — All good and serviceable arms made from 1821-1831 — 76,185 muskets.

3rd Class — All good and serviceable arms made from 1812-1821. Also includes those made since 1812 which have been in use — 228,291.

4th Class — All those made prior to 1812 and all damaged or unserviceable arms are to be sold agreeable to Act of March 3, 1825. All 1st and 2nd Class arms are considered for alteration. Those of the 3rd Class are not suited for alteration.<sup>10</sup>

A recent examination of a representative selection of U.S. Model 1816 Muskets turned up some interesting marks in the wood opposite the lock. It is commonly held that one set of initials was applied by the Government Inspector at the Arsenal where the gun was made. The second set, towards the butt end of the gun is that of the receiving inspector. On some muskets, a third set appeared, usually between the previous two. They vary from one to three initials with a numeral "2" or "3" present underneath the initials. After charting these marks, two muskets marked with a "P.H." over a "3" were tentatively associated with Peter V. Hagner, who was in charge of inspection and classification of flintlock muskets.

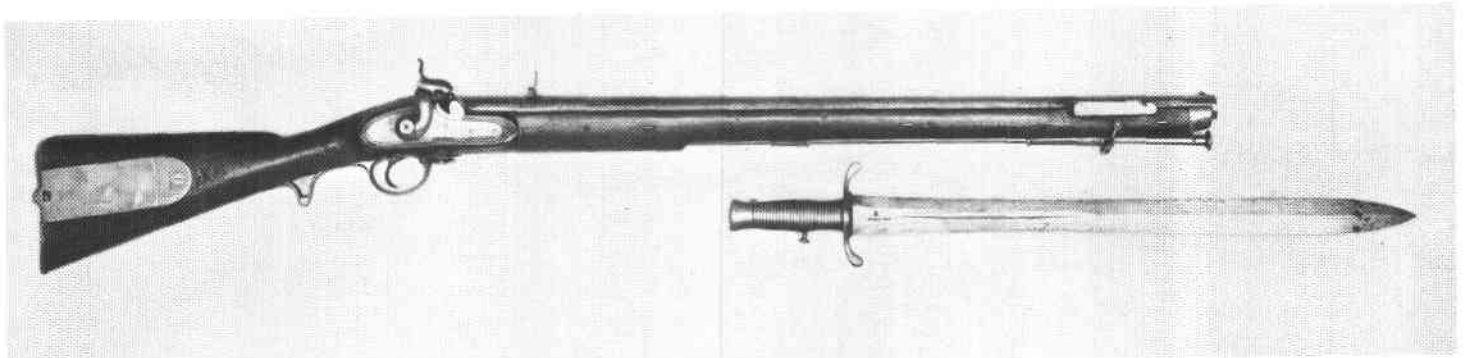
By charting all the U.S. muskets with the third inspection marks according to date of manufacture, it was found that they fit into classification by year of manufacture; First- post 1831; Second- 1821-1831; Third- 1812-1821. The only muskets that did not fit into the classification were manufactured after 1821 with a number "3". Those later dated arms with a "3" on them may have been considered "used" at the time of inspection classifying them for alteration to percussion.

No muskets were found with a number 1. It was stated in Talcott's letter of June 23rd, 1842: "1st Class — to include all good and serviceable arms made since 1831. These are not required to be examined." No muskets dated later than 1831 have come to light with any of the proposed classification marks.

Ten muskets dated from 1823-1831 were noted with a number "2". The initials included:

This second class was to include muskets made between 1821 and 1831.

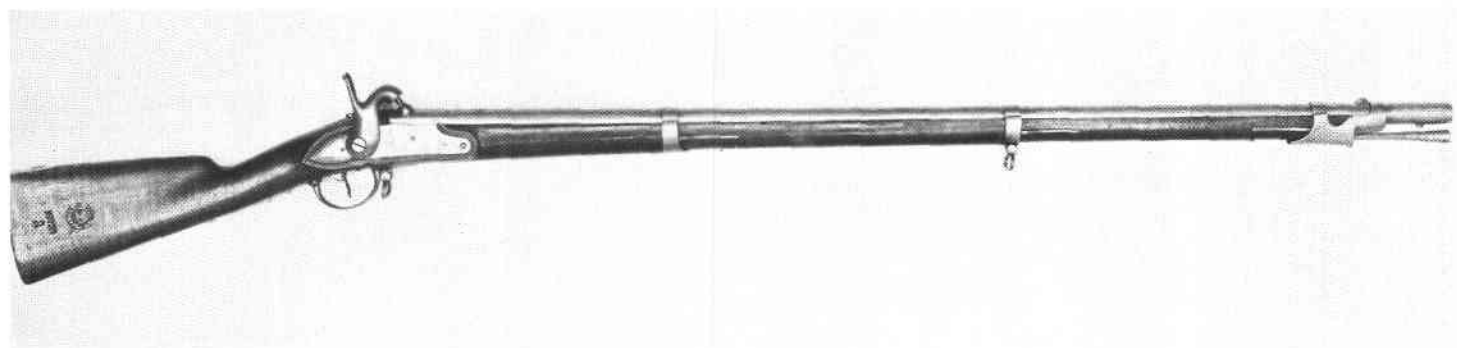
The third class was to include those arms made between 1812 and 1820. "These are considered not suitable for ordinary issue nor for alteration to percussion but still may be used in cases of emergency." In the survey four muskets dated 1819 had a number "3" under the inspection mark. Five with a "3" were found on Model 1816 Muskets altered to the Remington tape primer with new breeches, so dates of manufacture were lost at the time of alteration. As Remington lock alterations were done in the late 1850's it would appear that only class three flintlock arms were available since they were intended to be held for cases of emergency. Supporting this is the known loca-



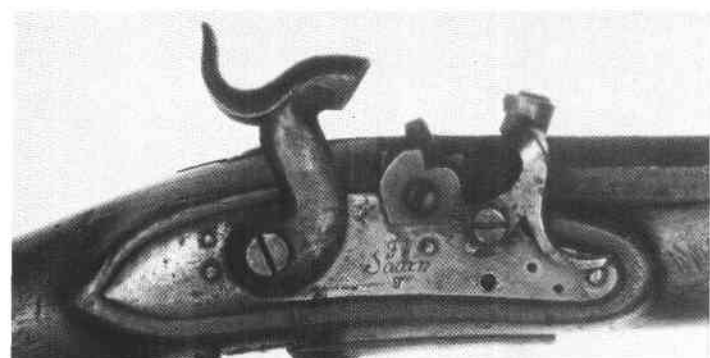
This is the English Brunswick Rifle which was issued to the Rifle Brigade and was new made in percussion beginning in 1837. It was in use until the Pattern 1851 replaced it.



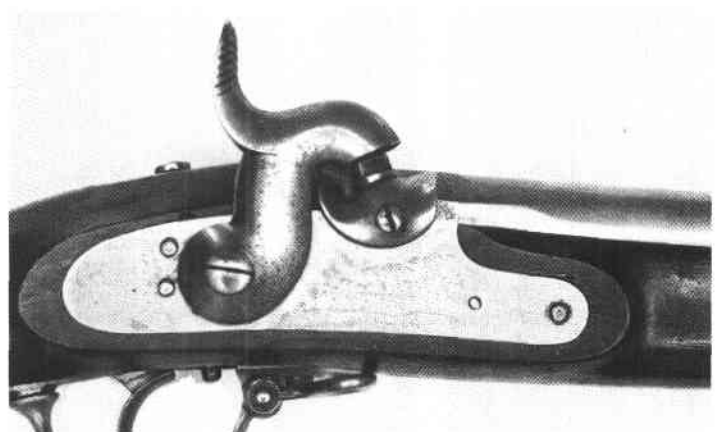
This musket was the only new made percussion musket submitted in the British trials of 1836. Short comings were found in each of the altered muskets and so in 1838 a limited quantity of Lovell's cap muskets were produced and these became known as the Pattern 1838.



The French Model 1822T which is the Model 1822 flintlock altered to percussion by inserting a cone seat into the top of the barrel and threading the nipple into a cone seat.



Shown here is the Prussian Model 1810 Jaeger Rifle as it was new made in percussion beginning in 1835.



Prussian Model 1839 is shown here as the first of that country's attempt at producing a new percussion musket.

tion of major stores of third class arms in 1848. Major J.W. Ripley's letter to Col. George Talcott on August 23, 1848, states: "The muskets thrown into the 3rd Class by Lt. Hagner (in number 25,300) were mostly distributed to Rome, Frankford, and Baton Rouge Arsenals in 1844."<sup>11</sup> It is known that nearly all of the Remington locks and breech pieces were set up at the Frankford Arsenal. Initials on arms of the third class are:



Two muskets were found dated 1822 and 1829 bearing third class inspection marks. These two muskets, as near as could be determined, were original flintlock and were probably placed in the third class because they had been issued previous to the classification. As stated in Hagner's report, "Also includes those made since 1812 which have been in use."

No arms have come to light with a numeral "4." This would seem logical. These arms were to be sold as not fit for service, so these would not have been inspected since their date marks indicated the disposition that had already been decided for them.<sup>12</sup>

Further evidence to support the theory that the third mark was for classification is the condition of the markings. Several of the muskets examined had very faint inspection marks while the classification marks are quite clear. The difference in the condition of the markings indicates that the set with the number underneath were put on at a later date than when the musket was originally manufactured and accepted.<sup>13</sup>

The decision on exactly how to alter the existing stores of flintlock muskets to percussion will be found in the abstract of the Board that convened between February 21, and March 12, 1845.

After considering the various plans of alterations adopted in Europe the Board are of the opinion that the Belgium plan of inserting the cone directly into the upper part of the barrel and altering the lock to correspond (as in the musket in the office) & the French modification of this plan which consists of screwing the cone into a steel bouche or seat first inserted in the barrel, offer advantages in point of simplicity, facility, economy and efficiency which recommend the adoption of one or the other; the choice between them may be determined by trials at the Armories to ascertain their relative advantages, in point of facility and accuracy in making the alteration. The Belgium plan has been tested at the Washington Arsenal by firing 1,000 rounds with the muskets above alluded to, and 1,000 rounds with another musket of the same

kind; the results of both the trials were perfectly satisfactory so much so as to induce the Board to give the preference at present, to this mode of alteration which will be attended with less cost than the French plan . . .<sup>14</sup>

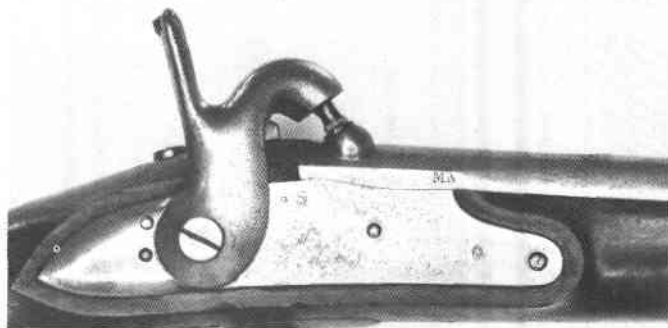
By 1847 there were six sets of gauges and machines reported being made at Harpers Ferry.<sup>15</sup> The machines were installed at the following Arsenals: Springfield, Washington, Watervliet, Allegheny, Watertown, and Harpers Ferry. Records indicate that a seventh set was completed in 1849. This set went to the North Carolina Arsenal.<sup>16</sup>

The alteration was performed in the following manner:

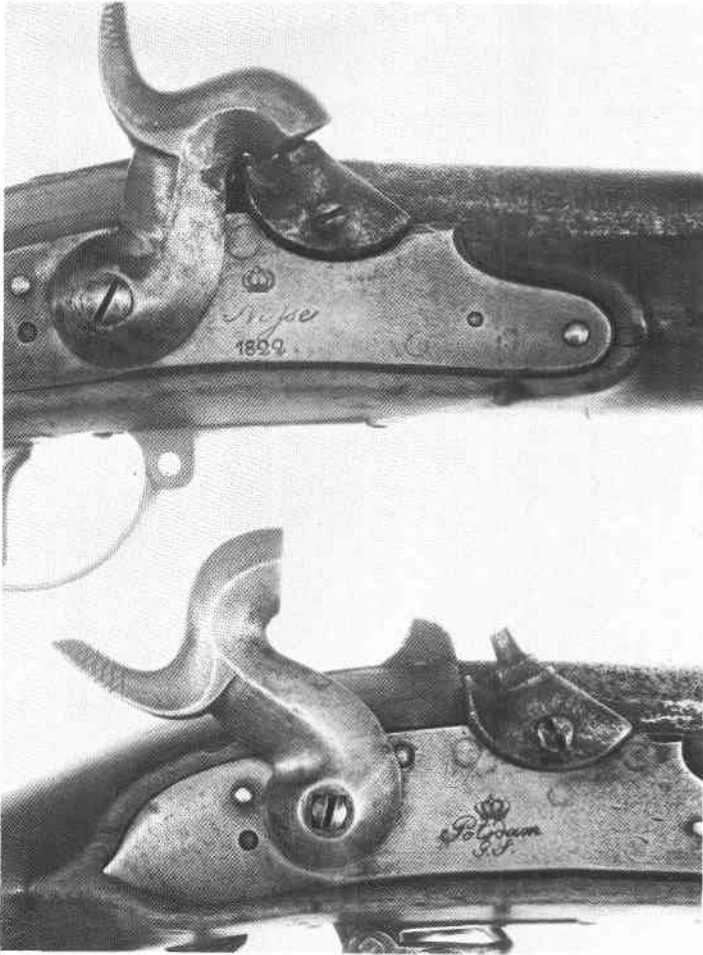
The barrel is altered: 1st, by closing the vent in the side, and boring a new vent on the upper part of the barrel; 2nd, by upsetting a cone seat in the metal of the barrel, and putting in a percussion cone. The screw thread of the cone for the altered muskets is a little shorter than for the new muskets, to that it may not project into the bore. The lock is altered: 1st, by removing the cock, the battery, battery screw, battery spring, and battery spring screw; 2nd, by cutting off the pan, near the face of the lock plate, filling up the hollow of the remaining part with brass, soldered in, and dressing off the upper surface even with the top of the lockplate; 3rd, replacing the cock by a percussion hammer; 4th, filling up the holes of the battery screw and the battery spring screw with pieces of those screws, rounded on the outer end, and filling the pivot hole of the battery spring with wire.<sup>17</sup>

When the percussioning machines were put into operation is difficult to say. From available information, production was going well in 1850. Annual reports for 1849-1850 state that 173,898 muskets "have been altered and furnished with the appropriate appendages."<sup>18</sup> All the hammers, cones, and screwdrivers were made at Harpers Ferry and Springfield Armories, with the actual alteration being done on the arms at the major arsenals.

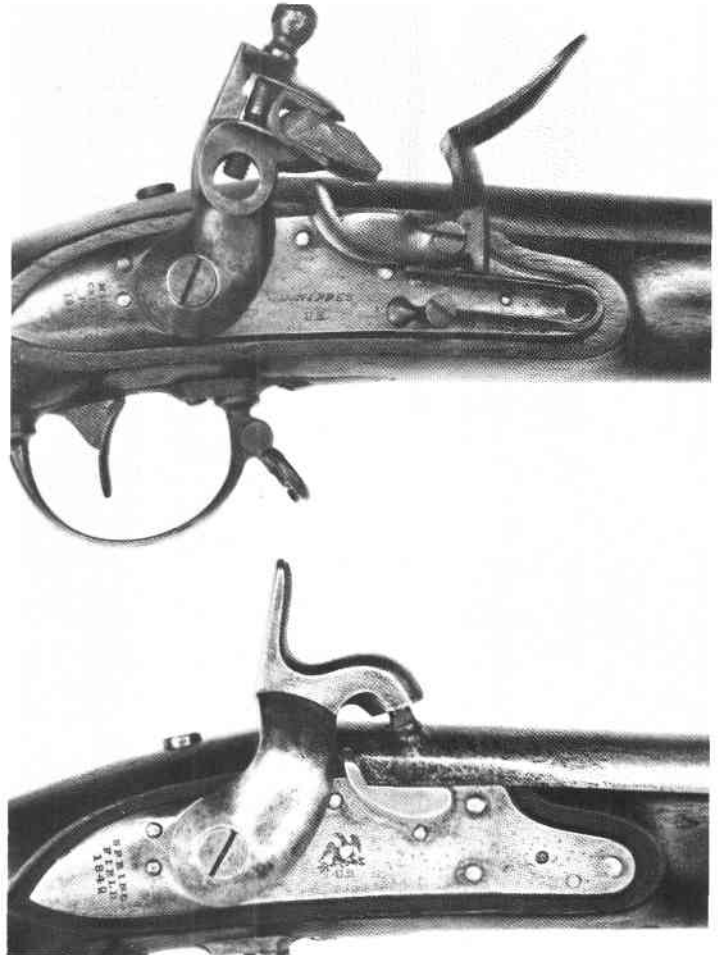
The annual report for 1850-1851 indicates the work done in an inventory of Armories: 160,000 new percussion muskets, 271,000 Muskets altered from flintlock, 87,000 muskets still in flintlock, 24,000 percussion rifles, 7,000 flintlock rifles, 8,700 new percussion pistols, 4,150 altered pistols, and 11,500 flintlock pistols.<sup>19</sup> The report also states that Springfield percussioned 30,431 Model 1822 Muskets, and 26,841 Model 1840 muskets.<sup>20</sup> In 1850, Springfield, Harpers Ferry, Watervliet, Washington, Allegheny, Watertown, and North Carolina percussioned 163,769 muskets.<sup>21</sup> The 1851 report states that percussioning was being done at Springfield, Watervliet, Allegheny, Washington, and St. Louis with a total of 113,319 arms.<sup>22</sup> Harpers Ferry's machinery was transferred to St. Louis, probably in late 1850 or early 1851. During the fiscal year 1852, Allegheny, Watertown, and St. Louis percussioned 25,105 small arms.<sup>23</sup> In March, 1853, Watertown's machinery was transferred to Frankford. The percussioning in that year was done at Allegheny, Watertown, St. Louis, and Frankford. The total for fiscal year 1853 is 24,164 muskets, rifles, and pistols.<sup>24</sup> Total arms percussioned for the fiscal year 1854, was 8,867. The work done that year was at Allegheny, St. Louis, Frankford, and Mount Vernon.<sup>25</sup> The only arsenal to continue percussioning with the Belgian method was Mount Vernon. The quantities were 1,920 muskets in 1855, 100 muskets in 1856, and 240 muskets in 1857.<sup>26</sup>



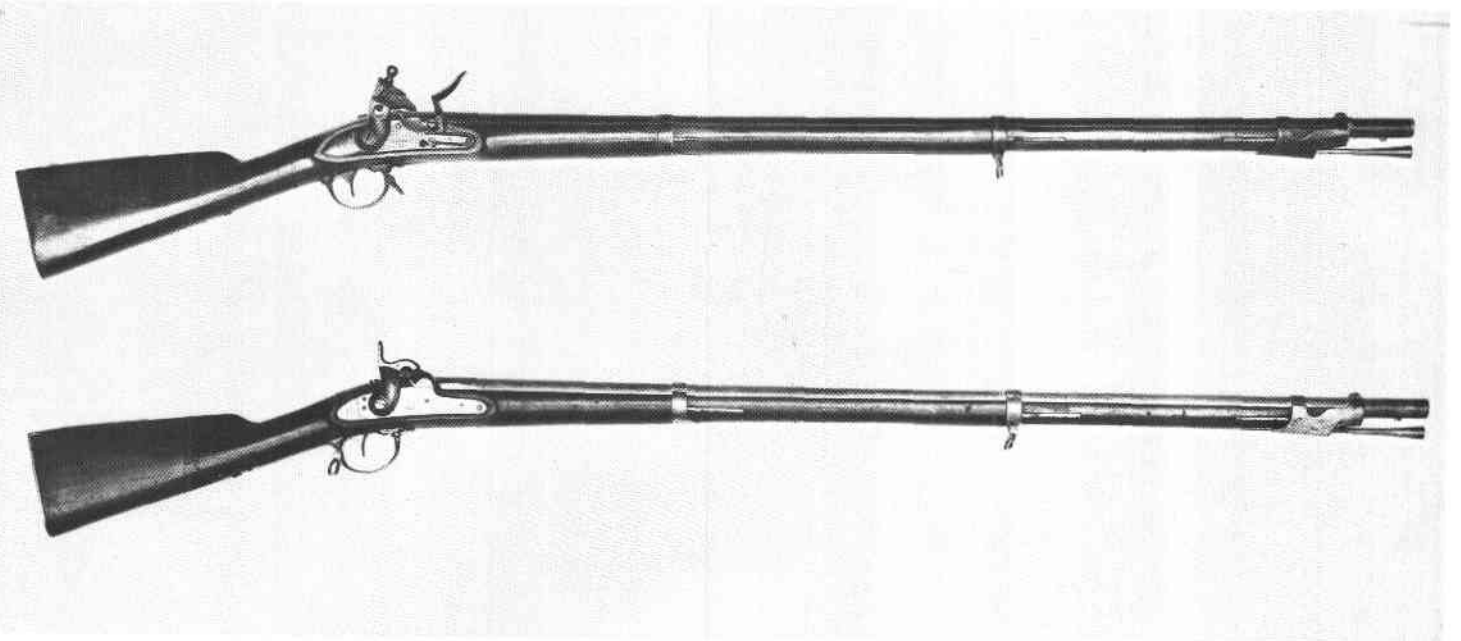
Lock area of the French model 1822T.



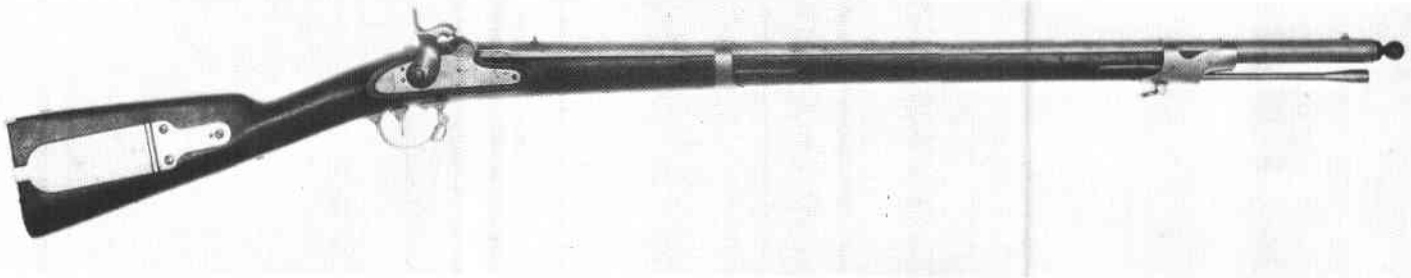
Here are two altered Prussian Model 1890s with bolsters added after the flintlock mechanism has been moved. These arms look very similar to the new made Prussian Model 1839s shown in Figure 6.



Close up of the lock area of the Model 1840 in flint and altered to percussion. This system was simply screwing the nipple directly into the top of the barrel.



The change from flintlock to percussion was effected by the U.S. Ordnance Department with as much simplification as possible as can be seen by this comparison of the Model 1840 and the Model 1842 percussion musket. Only the system of ignition was changed.



Shown here is the first U.S. made percussion Rifle known as the Model 1841. It was produced at Harper's Ferry and by five private contractors and was greatly admired by the troops during the Mexican War. During the Mexican War the U.S. infantry carried flintlock muskets while the specialty branches of the army were using percussion arms for the first time in combat.

The quantities of muskets percussioned total approximately 315,000. The total of the first and second class in 1845, when Hagner completed his inspection, was 375,000 muskets. The difference of 60,000 arms over a ten year period, including a war fought with Mexico, would indicate that by 1855, few of the first and second class arms remained for percussioning.

It is appropriate now to say that in only one instance in this paper has the term "converted" been used. The official correspondence termed these arms as "percussioned" or "alterations". The real conversion of these arms were performed by 20th century "Gun Collectors" who have re-converted these arms to flintlock which is contradictory to all common sense of trying to preserve history.

I would like to especially thank Mr. Jim Altemus for all the information and inspiration he gave me for this paper. I would also like to thank Mr. George Moller for information he supplied from his many hours of research in the National Archives. Thanks is also to be given for the information from the following people; Ralph Reid, Richard Kennedy, Ernst Von Frankenburg, Al Fredericks, Doc. Paul Allen, Doc. Harry Repman, Paul Wilson, Craddock Goins and Leo Johnson of the Milwaukee Public Museum for the excellent photos.

#### NOTES

<sup>1</sup>The following list gives dates when some other countries experimented with the percussion system. The second date is the actual year of official adoption. Austria 1835-1838, Bavaria—1842, Belgium 1838-1841, Britain 1831-1836, Denmark 1830-1841, France 1837-1840, Prussia 1831-1839, Piedmont 1833-1844, Russia 1839-1843, Saxony 1833-1835, Spain 1831-1839, and Sweden 1833-1840.

<sup>2</sup>R. T. Huntington, *Hall's Breechloaders* (York, Pa: George Shumway., 1972), pp. 123-129

<sup>3</sup>Howard L. Blackmore, *British Military Firearms 1650-1850*, (London, 1961), pp. 166-179.

<sup>4</sup>R. Marquiset and J. Boudriot, *Armes A Feu Francaises Modeles Reglementaires: 1833-1861 Chagement Bouche & Percussion Cahier No. 4 — Les Armes a Chambre Retrecie* (1967), pp 2-4, plates 1 & 2.

<sup>5</sup>D.W. Bailey, *Percussion Guns and Rifles*, (Harrisburg, Pa. Stackpole Books., 1972), p 60

<sup>6</sup>Blackmore, *loc. cit.*

<sup>7</sup>Bailey, *Ibid* pp 57 and 60

<sup>8</sup>James E. Hicks, *U.S. Military Firearms*, (La Canada, California: James E. Hicks & Son, 1962), p 79

<sup>9</sup>Unpublished service record of Peter V. Hagner, *Records of the Ordnance Officers, 1815-1860*, (National Archives, Old Army Navy Branch Military Archives Division), p104-105

<sup>10</sup>Report of the Chief of Ordnance, *Senate Document Vol. 1* (1845-1846, No. 470), p 404

<sup>11</sup>Hicks, *Ibid.*

<sup>12</sup>On August 23, 1848 Major James W. Ripley reported to Col. Talcott that a "large portion of muskets dated between 1828-1831 had been assigned to the 4th Class." This may indicate why many muskets are not marked with a classification mark. It appears that the instructions were not followed. This writer has seen a number of 1829 dated Springfields marked with a "3" on the stock and appear to be in almost new condition.

<sup>13</sup>The fact that Peter V. Hagner did not graduate from West Point until 1836 and that his marks are found on muskets dates as early 1819 also contributes to the theory that the proposed classification marks were put on much later than the year of manufacture.

<sup>14</sup>Hicks *Ibid.*

<sup>15</sup>Report of the Chief of Ordnance, 30 September, 1847, *Congressional Serial Set No. 503*, Volume 1, Document No. P 691

<sup>16</sup>Report of the Chief of Ordnance, 30 June, 1849, *Congressional Serial Set No. 549* p 364

<sup>17</sup>Claude E. Fuller *Springfield Shoulder Arms 1795-1865*, (Copyright 1969 Francis Bannerman Son and S&S Firearms.) p. 82

<sup>18</sup>Report of the Chief of Ordnance, 4 November, 1850, *Congressional Serial Set No. 587*, Document No. 1, p 465

<sup>19</sup>Report of the Chief of Ordnance, 28 October, 1851, *Congressional Set No. 643*, Document No. 2, p 643

<sup>20</sup>*Ibid.* p 455

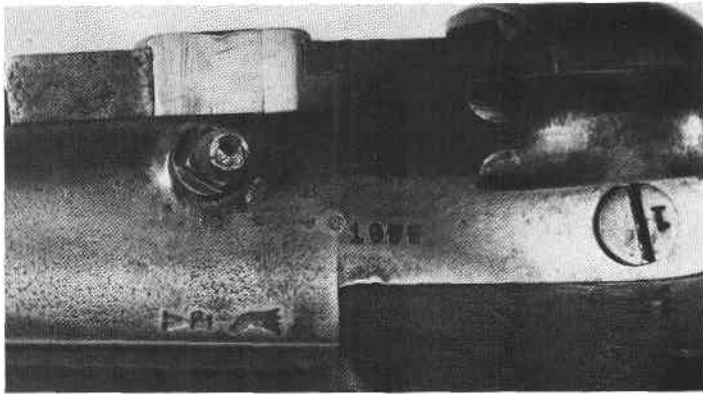
<sup>21</sup>Totals based on reports from the individual Arsenals appended to Serial Set No. 587 *Ibid.* pp 472, 474, 479, 480, 482, 485, and 488. The Chief of Ordnance reported 173,898 muskets altered to percussion.

<sup>22</sup>Totals based on reports from the individual Arsenals appended to Serial Set No. 643 *Ibid.* pp 455, 461, 462, 464, 465, and 466. The Chief of Ordnance reported only 96,871 muskets altered plus 4,166 pistols.

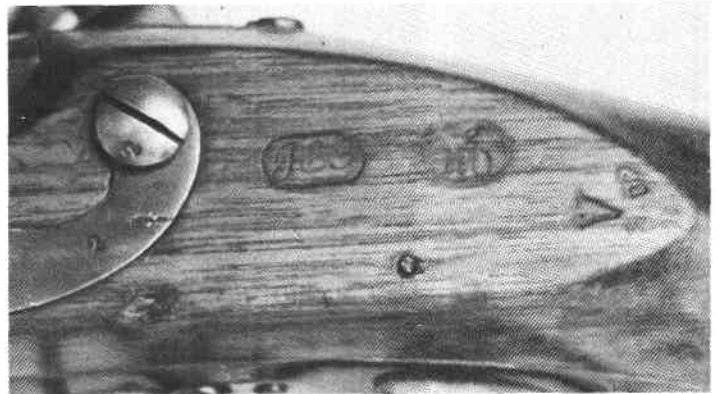
<sup>23</sup>Totals based on reports from the individual Arsenals appended to the Report of the Chief of Ordnance, 2 November, 1952, *Congressional Serial Set No. 674* Document No. 1, pp 258, 259, and 260. The Chief of Ordnance reported 25,274 arms altered during the fiscal year, viz: 20,545 muskets, 3,813 rifles, and 506 pistols.

<sup>24</sup>Totals based on reports from the individual Arsenals appended to the Report of the Chief of Ordnance, 11 November, 1853 *Congressional Serial Set No. 778*, Document No. 1, pp 368, 372, 376, and 380.

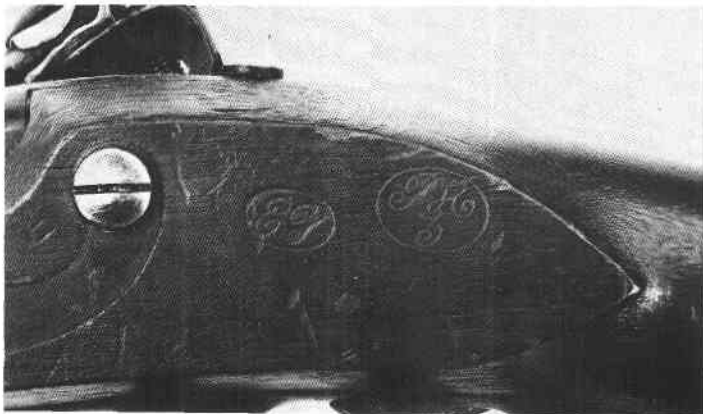
<sup>25</sup>*Congressional Serial Sets* No. 841, p 573; No. 894, p403; and No. 943, p 570.



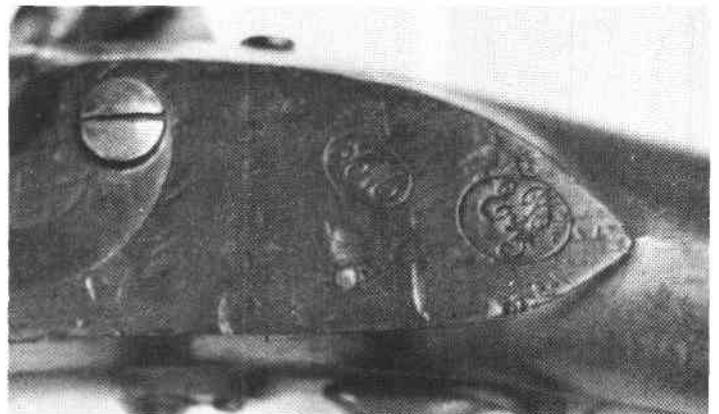
Top view of an altered musket showing where the cone is placed into the barrel. This is known as the cone in barrel method or the Belgian method.



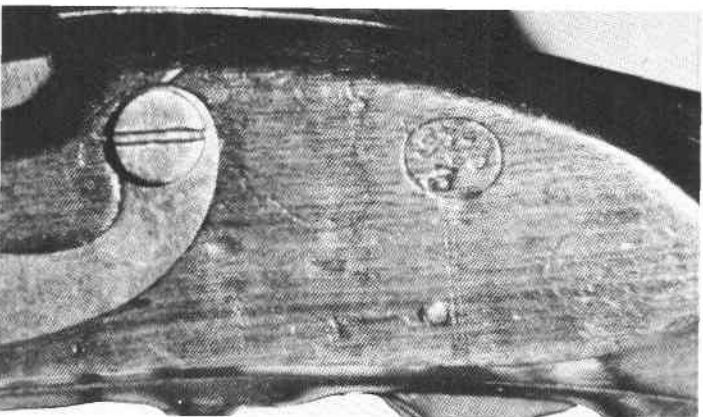
This Harpers Ferry musket was originally inspected by JEC with the class 2 inspection mark of a 2/W.



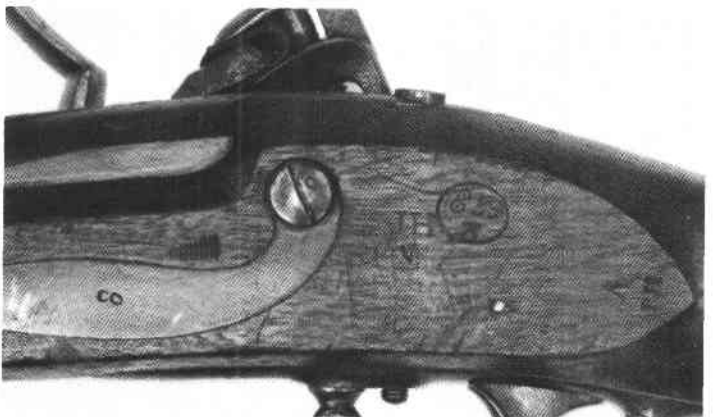
This is an 1829 dated Springfield marked with a P.H./3. The P.H. is for Peter Hagner. This musket should have been considered a second class arm however it was probably considered used at the time of inspection so it was marked with a 3.



This is another arm of the third class.



The original inspection marks are almost gone while the classification mark is very clear. This musket is a Springfield dated 1829 and since Hagner did not graduate from West Point until after 1831 it is proven that this is a re-inspection mark. The P.H./3 is seen on muskets dated as early as 1817.



Between the original inspection marks, (JH/V and V/PH) is the third class inspection mark of EB/3. The EB may be the mark of Elizur Bates who probably went with Peter V. Hagner from the Springfield Armory to classify the muskets for alteration to percussion.