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The Unsung Trapdoor Rifle

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In terms of American military long arms very little attention is given to a predecessor of the much heralded M1903 and M1 Garand, the Springfield Trapdoor. The Springfield Trapdoor was produced for over 20 years and would experience many changes throughout its life. The rifle would take its place in history just after the Civil War, despite the justifiable hesitation of many military personnel who were all too aware about the superiority of repeaters and magazine fed rifles. It would kill buffalo by the thousands as America expanded westward and would also play a role in the wars against the Native Americans. Militarily it represents the watershed transition for U.S. forces from the musket to the rifle. Today we find out a little bit more of this rifle, its origins, the question of its performance, and its role in history.



Lot 3507: Rare Early Springfield Armory Model 1873 Trapdoor Rifle with Rare Metcalfe Device

Origins

After the Civil War, the War Department wanted a breech-loading rifle. To be specific, they wanted a breech-loading rifle that would chamber a self-primed, metallic cartridge. This led to the formation of an Army Board who, in 1865, would host trials of different rifles by makers both foreign and domestic. The idea of the Master Armorer at the U.S. Armory at Springfield, Mr. Erskine S. Allin, was to take the existing Civil War muzzle-loaders, of which there were thousands, and convert them by adding the now well known "trap door" to the receiver.



Lot 3512: U.S. Springfield Model 1879 Trapdoor Rifle

This appealed to the Board for a number of reasons:

1. It used existing materials, thereby saving money and manufacturing time.
2. Money was even more important with the War Department's newly slashed budget.
3. Single shots were viewed as more reliable and rugged than repeaters or magazine rifles.
4. It looked like proven guns of the past, especially with its pronounced hammer.
5. Their priority on long range accuracy over rate of fire.
6. Single shot rifles were thought to force a more efficient use of ammunition



*Lot 3101: Civil War U.S. Springfield Model 1861 Percussion Rifle-Musket with Bayonet
The Springfield Model 1861 percussion rifled musket was the most used rifle by the Union in the Civil War. It is not difficult to see its relation to the Model 1873.*

The Board adopted the National Armory's (a.k.a. the U.S. Armory at Springfield, later just "Springfield") design, now referred to as the "First Allin." However, this "adoption" was more of a test drive than a final acceptance. As reports came in from the field in subsequent years, the rifle would be adapted, redesigned, replaced in the field in small numbers. This went on for about 5 years from National Armory's Model 1865 to their Model 1870, until on September 3, 1872, the Board of Army Officers held another

trial. This trial was designed to find a rifle with more in line with their preference toward range and power than the Model 1870 being "test driven" by soldiers in the field. The Board, now known as the "Terry Board," was headed by Brigadier General A.H. Terry and requested roughly 100 different breech-loading rifles from various makers to put through trials. They again received both foreign and domestic submissions from some of the most prominent firearms manufacturers of the day such as: Winchester, Remington, Springfield, Sharps, Spencer, Whitney, and others. All but 21 were rejected almost immediately and only two of those were modifications of the current .50 caliber trap door



Lot 1476: Rare U.S. Springfield Armory Model 1875 Officer's Model Trapdoor Rifle, Late Type II



Breech from above of the Officer's Model 1875

At this point, a "sidebar" study was held by the Terry Board. It was a separate, yet related, study to determine which combination of caliber, powder charge, and bullet weight would provide the best performance. They tested .40, .42, and .45 caliber bullets, powder amounts from 65-80 grains, several rifling variations, and bullet weights from 350-450 grains. Each variation had its own barrel and was tested with 20 shots at 6 targets 500 yards away. The winner would be barrel #16 with the #58 ammunition, which would be the 45-70-405 cartridge. We know it better as the .45-70 Government. The round was deemed so effective that Colt would be making Gatling guns to utilize that round later that same year. It is surprising that both government and private manufacturers took so long to realize that by increasing powder and lessening bullet weight, they could produce rifles with much greater range. The development of this

round and its subsequent rifle, literally made for each other, would mark the American shift from muskets to longer range rifles.

By the time the .45-70 was decided upon, the Terry Board had further narrowed the field of long arms to six possible candidates. Each was altered to use this new cartridge and tested further. In the end, their bias to an older style of warfare and rifle won out and the trap door action was selected. The preference for a powerful rifle that would be accurate at long distances also implies interesting things about the state of American conflict at that time. The Civil War having ended a short 7 years earlier, the thought was to again select a weapon that would perform nobly in a similar type of conflict. The thought of fast-moving battles against Native Americans may have been a secondary priority at that time, hence the lack of urgency to adopt repeating and magazine based rifles.



*Lot 1482: Extremely Rare Martially Inspected U.S. Springfield 1892 Dated
.30 Calibre Experimental Trapdoor Rifle Number "I"*



Same rifle in full

Use

It is known that trapdoor rifles were not developed until after the Civil War and through Springfield's manufacturing records one will find that the first 1,940 Model 1873 carbines and 2 rifles were not made until the final months of 1873 with an additional 6,521 weapons ready by March 31, 1874. The Model 1873 was the fifth improvement of the Allin design.

The Spanish-American War would not start for another 24 years. Until that time the Allin System longarms would be used in the American plains for two purposes: killing buffalo and fighting American Indians. As a buffalo killer, the weapon was apt. Its muzzle velocity of 1,350 feet/second would allow it to penetrate 17 inches of white pine at 100 yards, certainly enough to kill a buffalo. This power when combined with its long range accuracy also made it an excellent hunting rifle for other large game of the prairie and coyotes. The classic cowboy song "Home On the Range," was first published in 1873 with its now well-known lyrics of buffalo roaming while deer and antelope play. Little could author Brewster M. Higley have known how much the Springfield, developed that same year, would affect those animals.



Lot 3515: Desirable Custer Era U.S. Springfield Model 1873 Trapdoor Carbine with Indian Markings

The Allin System's performance in the Indian Wars is much debated. Often cited are the "large number" of empty cartridges found at the Battle of Little Big Horn which exhibited signs of malfunction. Such examples were found, however, they are a small percentage (2.7 - 3.4% by some counts) of the thousands rounds that were fired in that conflict. The concern over jamming weapons in the Indian Wars is not a modern one. Even at the time, it was a known concern among soldiers. This was due in large part to the use of a copper alloy ("Bloomfield Gilding Metal") in the manufacture of the ammunition's case. Copper was prone to expanding in the breech upon firing and could also prevent the extractor from properly functioning. This often required the user to pry the cartridge from the breech or to push it out by using the ramrod. Such a remedy was not an option on the carbine version which did not include that valuable tool. This brought about the use of brass cases to reduce expansion, a material still in use to this day.

The Springfield Model 1873 carbine was the standard issue longarm of all U.S. Cavalry units from 1874 to 1896, but the rifle would be switched out in 1886 for the improved Springfield Model 1884. The Allin system would not be replaced as the standard U.S. rifle until the adoption of the Krag-Jørgensen (a.k.a. Springfield Model 1892-99) which would also be produced by the Springfield Armory from 1894 to 1904. For those paying close attention to dates, this means that the Krag, using its smokeless ammunition, was the primary rifle used in both the Spanish-American War as well as the Philippine-American War, though the sheer number of available trap doors inevitably meant that the outdated black powder guns would still see use.



Lot 1488: Excellent U.S. Springfield Model 1884 Trapdoor Rifle



Previous gun's breech as seen from above

Variations

It's hard to see how any troops could complain about the Springfield trap door. With a new variation out almost every year of its production, any issues could be dealt with rapidly and remedied in subsequent variations. The only issues that could not be fixed were those of its relatively low rate of fire, a quality inherent to its loading method, and its black powder propellant. I will not cover the vast number of variations here. For an exhaustive list of the changes and varieties in all their minutia, please consult what many consider to be the Bible of Springfield Trapdoors, Robert Frasca's The .45-70 Springfield. With his list of all the parts that were altered from 1873-1894, it is difficult to imagine one piece remaining throughout all 20 years of production.

Not only did the Model 1873 miss the major conflicts of the 17th and 18th centuries, it was also vastly overshadowed by the iconic Winchester repeater and Colt revolver released that same year. It was a rifle languishing in the past by a population in the throes of the Industrial Revolution and hungry to adopt the new technologies that accompanied it. The Model 1873 was relegated to ill-chosen government contracts, slaughtering buffalo, and killing Native Americans. Racks full of the model even inspired a less than flattering poem from poet Henry Wadsworth Longfellow entitled, "The Arsenal at Springfield." Outdated in both propellant and loading system even before it was adopted by the government and lacking the celebrity of a military conflict, the Springfield Trapdoor plays a quiet role in the story of U.S. military arms, yet remains a highly desirable collector's piece with its unique loading system, endless varieties to collect, and aesthetically pleasing components like the lockplate, hammer, and sweeping breech block. Even a highly dedicated collector would stay busy for decades happily collecting this long arm of the American plains.

If early American militaria and rifles are your passion, the Springfield Trapdoors alone will be enough to get you champin' at the bit

*"This is the Arsenal. From floor to ceiling,
Like a huge organ, rise the burnished arms;
But from their silent pipes no anthem pealing
Startles the villages with strange alarms."*

-Henry Wadsworth Longfellow

SOURCES:

Frasca, Albert J., and Charles R. Suydam. *The .45-70 Springfield: Springfield Caliber .58, .50, .45 and .30 Breech Loaders in the U.S. Service, 1865-1893*. Springfield, OH: Frasca Pub., 1997. Print.