

## U.S. MILITARY 45-70 SPRINGFIELD BREECHLOADING RIFLES

By Robert G. Pins



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a selection of 65 ingenious mechanisms submitted to it.

Included were all breechloading contraptions that had been designed during the war, many of the standard patterns actually in use, as well as many last minute entries. Specifications were not strictly outlined until the final tests, which reduced the overall field to the following: Allen, Peabody, Laidley, Remington, Sharps, Roberts, Berdan and Joslyn. Instructions were given for 50 each of the aforementioned to be made up on existing musket frames in cal. 58 for final concluding tests. Meanwhile, back at Springfield Armory, master armorer, inventor, and tool maker E. S. Allen had the inside track with his semi-government sponsored geared breechloading mechanism.

So while the tests continued, the Armory inexplicably was turning out 5,005 of Allen's conversions for issue as a trial arm to the troops. To increase logical and statistical confusion, the government was simultaneously testing a later modification of the not-yet even adopted Allen system in cal. 50, which was (is) a standard M1863 2nd model improvement Springfield, retubed by brazing, to cal. 50, 70, 450 inside primed. All similar actions, especially the Richardson model, were duly paid off by the government for the various purloined ideas. In June, 1866, an initial order for 25,000 of these 2nd Allen improvement rifles was ordered post haste for the Western army and delivered one year later, resulting in a total production figure in excess of 52,000 pieces. Further trials and improvements brought a production order for the improved model of 1868, employing a strengthened and simplified breech mechanism containing a modified extractor and latch. Finally, in its finalized form adopted in December of 1870 the overall length of the rifle was shortened to 4'4". A grand total of production of these rifles came to excess of 51,000 pieces. Further improvements were tried in 1872 to new cartridge specifications, with a stronger, shortened receiver and brand new sights. Authorized at this time was the production of a small trial lot of Cavalry carbines, based on four samples which had been tested in the year 1869. Carbine models were finally authorized for trial production in the summer of 1871 and duly delivered that year. Meanwhile, the rest of the world, frightened out of their complacency by the German military might during the Franco-Prussian War, suddenly came up with many superior designs in small arms and caught up with the U. S. As a matter of fact, they even moved ahead. Great Britain adopted a modified Peabody Martini Martini called the Martini-Henry, in cal. 450 in 1871. France adopted a modification of the Chassepot-Gras system in cal 437 in 1873; Germany adopted a simplified cartridge Mauser rifle in cal. 437; Italy and Switzerland adopted a simplified bolt action rifle in cal. 437; Russia adopted the Colt-Berdan rifle, one of the most complicated competitors of the original 1865 trials in simplified and tried form, in cal. 437, and Turkey, the sick man of Europe, ironically adopted the Winchester repeater for Cavalry and the streamlined Peabody-Henry for Infantry. And so the call came again in January of 1872. A board of Ordnance held competitive trials once again. 99 models of arms were submitted, among them such splendid designs as the

One year ago in Chicago I made the rash promise of giving you all a most definitive lecture on the US Springfield Breechloading rifle, as a reaction to Archer Jackson's talk on the officer's model. When I first planned this, I was going to present you with a gigantic array of different models, bayonets and tools, but discovering my talk was limited to one hour, I reconsidered and decided to pin it down to fundamentals; that is to say, only basic models of the rifle that were produced in quantity. First, however, let me give you a brief background. In the spring of 1865 the United States was ending a four year long blood-bath entitled the Civil War, which although it unerringly proved the clear ascendancy and fire power of the metallic cartridge breechloading repeater, produced, (also unfortunately) in excess of 800,000 new muzzle loading rifles, cal. 58. As a matter of fact, the total quantity of 2nd model 1863 Springfields produced in the year 1865 before the last contract terminated were 98,277 muskets, cal. 58 Springfield. However, in the lingering mood of progress which often prevails for several months after the statistics are compiled, following such eras of conflict, a rather farsighted Secretary of War named Stanton, strongly opted for immediate and rapid design and adoption of a standard breechloading rifle, cal. 58, on the basis of the in use Springfield. As a historical footnote here, it may be recalled that the invasion of Mexico by Austro-French forces, with future expansion in mind may strongly have influenced Secretary Stanton's decision. In keeping with this decision, a board under General Dyre duly convened in the first month of 1865 to test

latest patterns of all the aforementioned weapons, as well as the following: Ward-Burton rifle, Remington locking breech, Lee Arms Co., Martini-Henry, Werndl, Vetterli repeating rifles and so on and so on. The Springfield Armory gang, however, once again entered their own dark horses, based on their latest Ordnance Board specifications which had bafflingly been kept from other competitors and entered the following: two models of the 1870 Springfield with a Metcalf quick loading system, four models of an 1873 patent Stillman Springfield system, and of course, the armory shoe-in was the improved model of the 1873 Springfield in cal. 450 on the 1870 frame. In June, 1873, the final decisions were announced. "You will make immediate provision for production of 25,000 new models of the improved model Springfield rifle pattern of 1873 to be in cal. 45 with a 70 grain powder charge and a 405 grain lubricated bullet, as well as a carbine for mounted troops on the trial pattern of 1870 but in cal. 45/70, as well as the rifle." Improvements were tried on all hardware as well as stocks. All rifles and carbines were to be made, at the beginning at least, of completely new parts. To show the spirit of the occasion, the following runners-up were ordered in trial quantities as well: The Lee Arms Co. single shot rifle in cal. 45/70 to be produced in quantity of 143 pieces; 1,000 Ward-Burton rifles to be produced in cal. 50; 300 Ward-Burton carbines to be produced in cal. 50; 100 Metcalf quick loaders for troop trials to be produced as well in cal. 45/70. Also carried in with the board were the advent of 10,000 of the combination Rice and Chillingworth entrenching bayonet tool. An era had been launched which was to endure through all adversity from 1873 well through the end of 1894. The ensuing confusion caused can be best summed up by the pathetic logistics data of the various arms in use three years later by the 7th Cavalry at the time of the Sioux uprising, better known as Custer's Last Stand. The arms inventory for the various company of the 7th Cavalry called for the following ammunition to be issued to arms in the hands of troops: Cal. 50 Spencer and Remington carbine, cal. 50/70 Springfield carbine, cal. 50 Sharps carbine, cal. 45 new model Springfield carbine, cal. 50 M68 Springfield rifle and cal. 45/70 1873 Springfield rifle. It would appear that the trial arms were not always immediately withdrawn from service after they had been sent to their posts for trial. These weapons represent trial arms from the tests of 1865, 66, 68 and 1873, in the hands of the troops at that period. Furthermore, a footnote states that certain experimental Ward-Burton carbines were still in the hands of the regiment, and they did not know what the further disposition was at this time, the arms not being suitable for service. However, they did mention that there was little choice between the rapidity of fire between that carbine and the Springfield, both of which, however, excelled over the Remington, which seemed to be a poor extracting arm. In summation, the trials of 1873 resulted in authorization for the following models of 1873 in their new format to be produced:

- A. Infantry rifle, cal. 45 firing a 405 grain bullet with a 70 grain powder charge
- B. Cavalry carbine, cal. 45, with a 405 grain bullet fired by a 56 grain powder charge
- C. Cadet rifle, having the bbl. shortened by 5" with no sling swivels, but utilizing same cartridge as the rifle, however, with the powder charge of the carbine, rear sight to be calibrated as for the carbine.

By summer of 1874 most arms, with the exception of the Cadet rifle were allotted to the troops, over 20,000 rifles and 12,000 carbines having been produced. They were widely enough in distribution to have the results of their competition with the earlier models brought out.

Reports stated that they were superior on all counts in handling, accuracy and drill, the last being a dirty term to many, but extremely important in the minds of the army soldier.

On one issue, however, continuous complaints were received . . . failure of the extractor to remove cases which separated due to badly tempered copper. Various expedients were tried, but none fulfilled the real need. In April, 1875, the special officers' model rifle, developed from the previously made sporting rifle, was offered for sale. (See for reference Archer Jackson's lecture of March 1966)

And so it went. On through the Indian campaigns and Custer's massacre until the month of November of 1877, at which time chief of Ord., General Benet announced another board of repeating rifle trials. Only 29 entries were submitted, most notable of which were the following: the Franklin gravity feed bolt action rifle made by Colt patent firearms, the Ward-Burton repeating rifle, Winchester repeating rifle in cal. 45, Remington's bolt action repeating rifle, Lee Arms Co. patented bolt action clip repeating rifle, Burgess lever action magazine rifle and Mr. Hotchkiss' French manufactured bolt action tubular repeating rifle. Of all entries, only the Hotchkiss was found acceptable for further production and 1,000 were duly ordered to be made for trials with the troops. Unfortunately, only 513 rifles were delivered, and a later order for 500 carbines was filled as well. During the same period, Lt. Metcalf, lately promoted to Capt., continued to experiment with his quick-loading device and succeeded in having the government produce 1,000 rifles which were submitted for troop trials. This accounts for the fact, perhaps, that so many Metcalf stocks and components have been around for so many years and no complete rifles have ever been seen. This would probably be best explained by the fact that the attachment was primarily a stock modification with the addition of a metal strip holder tongued into the middle band and attached to the back of the lock plate, the front screw, from the rear of the lockplate. If some of you would have the temerity at gun shows to take apart every model 1873 Springfield you see you would find sooner or later one with the wide tongued counter-bore behind the front lockplate screw showing where the Metcalf device was once attached. Since no other modifications to the rifle were necessary or desirable, when these rifles were reconverted they resume their original appearance. Meanwhile, back in the service the year 1873 wrought several important design changes in the standard Springfield rifle. Primarily, the bbl was reenforced at the breech by rounding the screw-thread tennon. Secondly, the breech

block arch was filled in for added strength. The rather weak extractor was widened and rehardened and the rather miserable spring loaded firing pin system was permanently abolished due to continuous complaints of rusting resulting from cleaning and firing. The receiver itself was enlarged at the breech 20/1000ths of an inch and the stocks were reinletted accordingly. This modification was incorporated for all arms as they came in for refit or repair and commenced in all newly manufactured arms in the calendar year of 1873. The year 1879 saw some further general changes authorized for all arms. The front sight was heightened and modified to accept an interchangeable blade insert. It had previously been a solid brazed unit also used as a bayonet stud. The rear sight on all rifles and carbines was modified to accept the new windage adjustable buckhorn style sight format. All carbines this date shed their stacking swivels from the band and adopted a butt trap to hold a 3 piece cleaning rod and an expanding headless shell extractor. The changes were to be applied to all arms as soon as feasible.

In May of 1880 an Ord. memorandum once again indicated that the stock of bayonets, angular types, were being used up very rapidly and it would be financially unfeasible to manufacture new ones. Thus, someone somewhere in the Ord. Dept. dug up the atrocious idea first dreamed up in 1833 for the Hall ramrod bayonet Dragoon carbine and modified one of the new 1879 rifles to use this lovely contraption. We may laugh at this change, as we have seen that it failed several times in the past, however, the reaction of the Chief of Ordnance was startling. Acting with immediate dispatch General Benet ordered 1000 of these new style rifles to be made and issued for instant troop trials. The year 1881, in fact, saw 1,014 of these jewels produced at Springfield and issued to the troops in the Western depots, Ft. Kearney, etc. These new style rod bayonet rifles not only incorporated the rod bayonets, but all major and minor design changes aforementioned including the butt trap which carried a headless shell extractor as well as a combination tool. Those of you who wish to read the horrible details see Ord. Memorandum and notes for the calendar year 1882 as to how these rifles fared. However, the Ord. Dept. did manage to produce one lovely thing to go with these new rod bayonet rifles, the 1880 hunting knife, which, although the first rod bayonet rifle was dumped continued to be produced over a period of 10 years, over 12,000 being produced in all.

In January 1881 the Pacific and Far West Dept. initiated a request for a forage shotgun which could simultaneously serve as a recreation skeet gun for officers and Enlisted men, to be made on the same frame as the std. service rifle. In Feb. 1881 the Chief of Ord. approved the request and authorized manufacture of 250 of these shotguns to follow the two samples which were submitted by the Pacific and Far West Dept. against the following specifications:

“. . . to be made of scrap components of .58 cal. Springfield muskets by shortening stocks, filling in the ramrod groove and boring the bbl out to .635" of the closest equivalent to 20 ga. and cutting the bbl. to a length of 26"-fitted to modified 45/70 Springfield receivers and utilizing standard lock parts, however, no ejectors or extractor springs in the receiver and ejector stud in the bottom of the frame, breechlocks and locks to be marked 1881 . . . etc."

First lot duly delivered as completed in Oct. 1882, and 375 more pieces were ordered to be delivered in the beginning of 1883. The reduction continued through the end of 1885 at which time the total of 1,376 of these shotguns had been completed. The locks of these shotguns are marked with the date of manufacture, however the breechblock bears the legend 1881 on every model. In the month of Feb. 1882 in response to an urgent request for more accurate carbines which would take the same service load as the rifle the Chief of Ord. authorized the manufacture of 50 special Springfield short rifles, with 28" bbls. having sights marked "28 in. B" and curved swivels so that these rifles could be tried by the Cavalry in saddleboots. These were issued in March of the very same year to the cavalry at Ft. Leavenworth for trial. Half of this lot had a special adaptation of the 1880 ramrod bayonet attachment. While trials proved extremely satisfactory, further manufacture was, however, temporarily shelved.

The spring of 1882 convened still another repeating rifle trial board which was at this time to prove the most successful so far. Over 53 different rifles were entered and the notables included the following: Remington Keene repeater, Spencer-Lee pump action repeater (by Francis Bannerman), Hotchkiss M1882 (by Winchester Repeating Arms), the Chaffee-Reece rifle, Marlin lever action repeating rifle, and the Lee-Remington rifle, etc. Those which survived the trials best and were authorized for troop manufacture trials were: the Remington-Lee, Winchester Hotchkiss, and the Chaffee-Reece rifle. Authorization for 750 of each of these to be manufactured at the National Armory was given, however, Colt and several other contractors unsuccessfully bid for manufacturing contracts on the Chaffee-Reece, but lost out to the National Armory due to exorbitant price ranges.

Test of the three trial arms in service, that is Remington-Lee, Winchester Hotchkiss, and Chaffee-Reece, caused all to be withdrawn due to unnecessary complication of action and repeated malfunction with ammunition.

The Navy, ironically, tested the Remington Keene carbine in quantity of 300 pieces as made by Remington, and found it unsuitable for service, however, these carbines were subsequently sold to Indian scout detachments on the frontier. They can be found displayed in the Wyoming State Museum, in the hands of Scouts in photographs, and the carbines in person marked US on the butt tang, with an inspectors mark on the side of the stock and a saddle ring attachment. I close, forever, the repeater section trials with a quotation from the late Chief of Ordnance Gen'l. Benet, "After careful consideration of these 'attached' reports I am satisfied that none of these magazine guns should be adopted or substituted for the Springfield rifle at this time as "THE" arm for the service.

I must say that I have always been and always will be a strong advocate for a magazine gun, but it would seem the part of wisdom to postpone for the present any further efforts for the adoption of a suitable magazine arm for the service. The Springfield (45/70) rifle has given such general satisfaction to the Army that we can safely await a reasonable time for further developments of suitable magazine systems."

Signed S. V. Benet, Brig. Gen'l., Chief of Ord. U.S. Army

Between 1884 and 1887 1,003 experimental carbines were fabricated testing denser stocks, different bbls. and tapering bbl. dimensions with various sight patterns. Perhaps the most fascinating and most numerous of these specimens occasionally encountered often shakes up the purist searching for early Officers model Springfields. This model is the heavy bbl. model rather cryptically referred to in Ord. Memorandums as the 24 in. bbl. carbine as compared to the std. carbine bbl. length of 22" and having an addition .060 in circumference. However, close examination of the stock inletting will usually allay the myth of the altered Officers model. These carbines were found, when tried with a regular rifle load to be as accurate as the regulation 33" service rifle, but final analysis proved that for mounted troop purposes the additional stock and bbl dimensions made the weapon much too heavy for use.

Spring of 1884 brought to final culmination the search for accuracy by adoption of superior cartridge and bullet designs. Further, all arms were modified to adapt the new Buffington (Pres. of the Bd. of adoption) windgauge vernier rear sight. This sight which consisted of a worm geared windage base and a geared windage compensated elevation leaf was standardized for all arms. It proved to be such a fine design (superior to all existing patterns) that it survived in use right through the M1903 Springfield rifle in modified form of course, and has continued to receive world-wide acclaim for its accurate potential, even today.

The summer of 1884 brought back the ingenious idea of the ramrod bayonet rifle once again and the shop produced a new model which incorporated all the latest improvements such as the Buffington sight, the length and comb stock, new front sights and improved breech mechanisms as well as a modified round ramrod bayonet. A sample delivered to the Chief of Ord. in Dec. of the year of 1884 incorporated an even newer, earthshattering improvement, to wit the Globe detachable front sight and cover. 1000 pieces were duly ordered for issue in trial to troops of the Western command. The first lot was delivered in 1885 and the Ord. Memo of 1886 contains 65 pages of mixed feelings about the arm, and a jewel of understatement from the CO at Ft. Kearney, ". . . while these rifles have proved highly accurate in many respects with the new cartridge issued for it. . . we hereby respectfully request that you provide us with the detachable front sights for the sample rifles which you submitted . . . etc." It would appear that the detachable Globe front sight had been omitted from the shipment of these arms to the western posts. The balance of the trial order of 1,003 pieces was completed in the year of 1886 but records are dim on the further progress. Apparently, with various changes in design the end of 1886 brought a modification which included a permanently attached front sight and an improved groove bayonet with ramrod channel, until, with further stalls and factory changes Dec. 1888 proved to be the finalized month of mass production, when the rifle was also standardized as general issue to all troops. It would seem that the parts to convert the CW angular bayonets to 45 cal. must have finally run out.

The final model designation of the rod bayonet rifle is officially adopted was the pattern of 1889 and as adopted, this rifle was a study in ruggedization, with simplified and streamlined parts in every respect and was undoubtedly the most accurate weapon of its type and of its time.

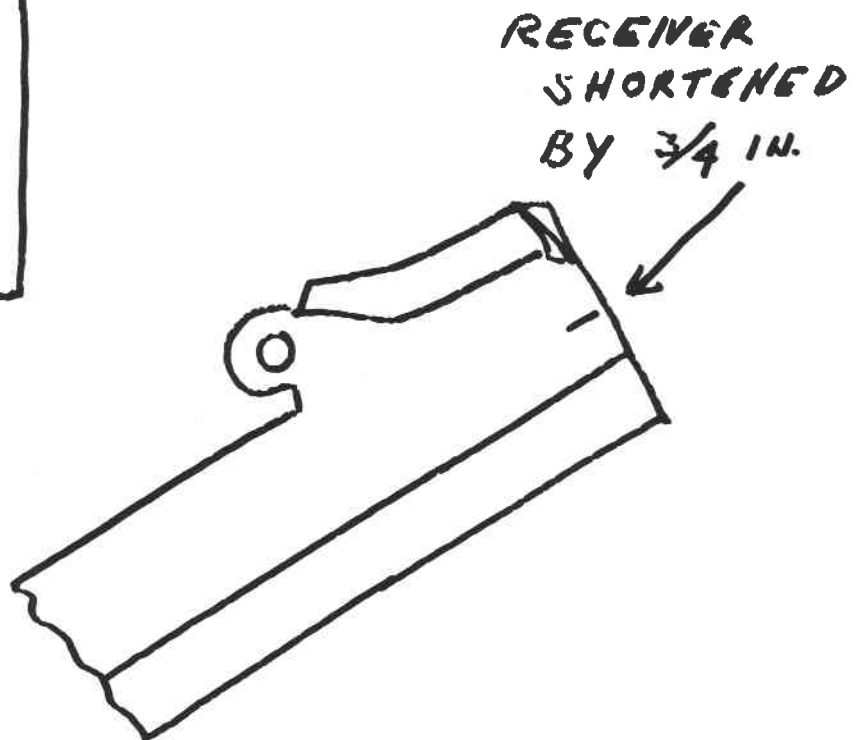
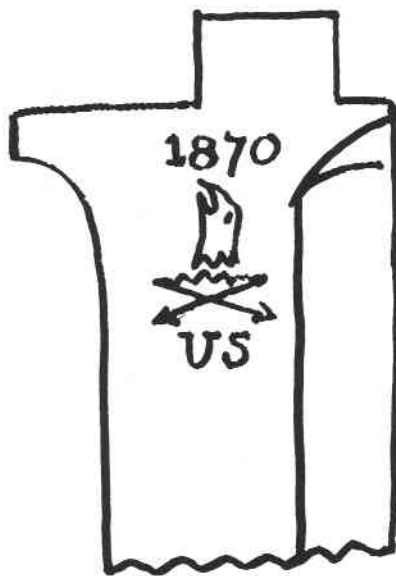
The only visible changes to the eye incorporated in the last model besides the improved bayonet catch and permanently attached front sight was the symmetrical smooth trigger guard. This trigger guard is very similar in appearance to the later 1903 and 1892 Krag trigger guards. Production continued until 1893, finally ceasing completely in Oct. of that year. The total quantities of M1889 rod bayonet Springfields produced exceeded 65,000.

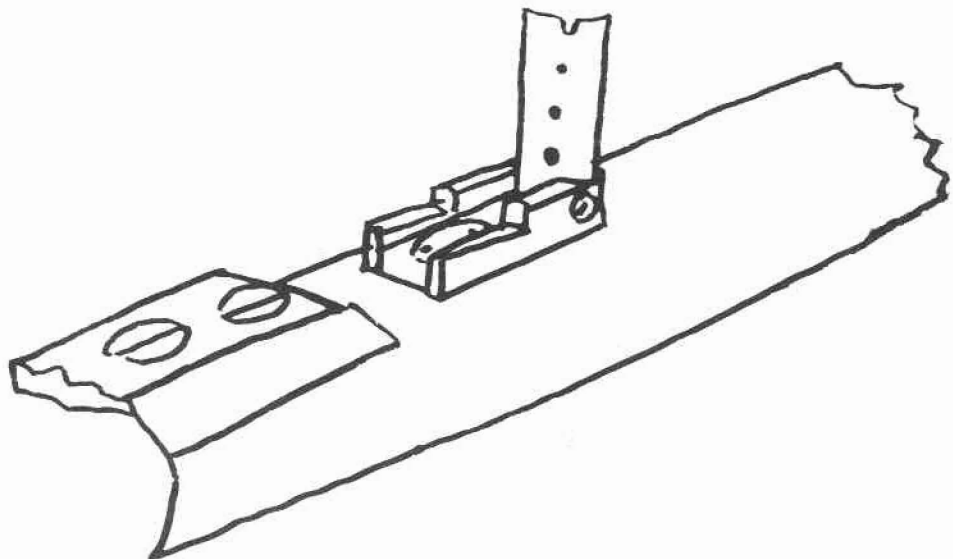
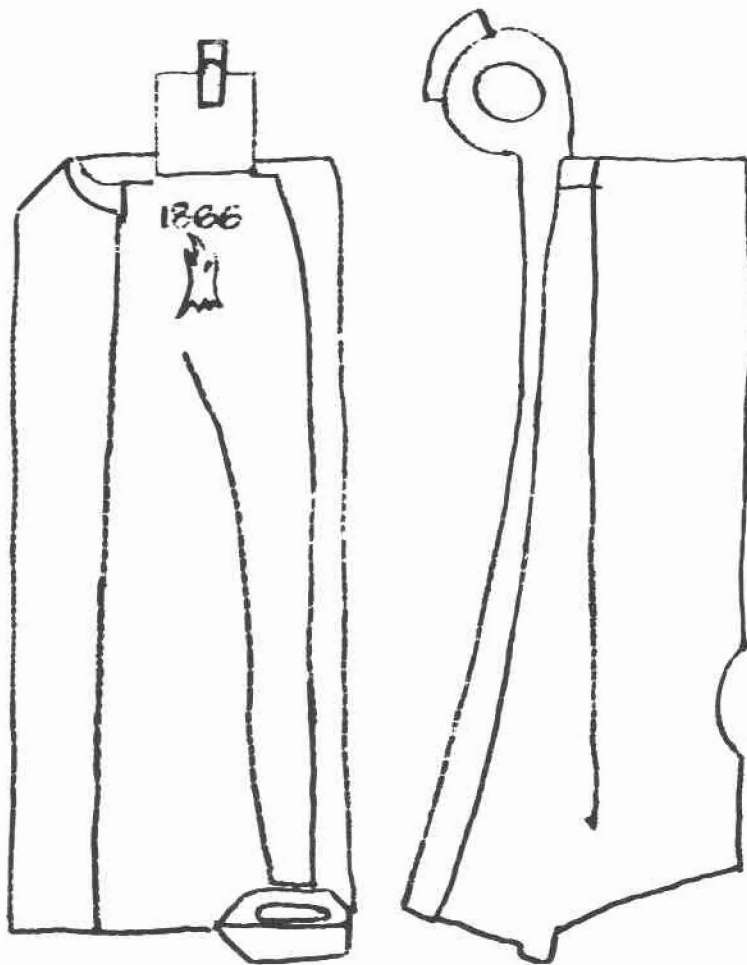
At the same time, back in 1889, plans were worked out for a new Springfield in 30 cal. of which several models were produced as pilots for an overall change on an improved 1889 rod bayonet frame without the rod bayonet. The idea was shelved, however, due to the fact that the smokeless powder designed by Msr. Veeille was a military secret of the French Government. Although many favored an immediate conversion to 30 cal. compressed black powder, such as used by the countries of Austria, Great Britain, Germany, Switzerland and Portugal in their new small bore repeaters cooler heads prevailed. Finally in 1892, at the big trials for the repeating rifle 14 of these new Springfields in cal. 30 nitro were finally tested and proved unsuccessful due to extraction difficulties. This ended a line of the US breechloading Springfield rifle, cal. 45/70 after 20 years of continuous production this tried and true soldier was finally officially discontinued.

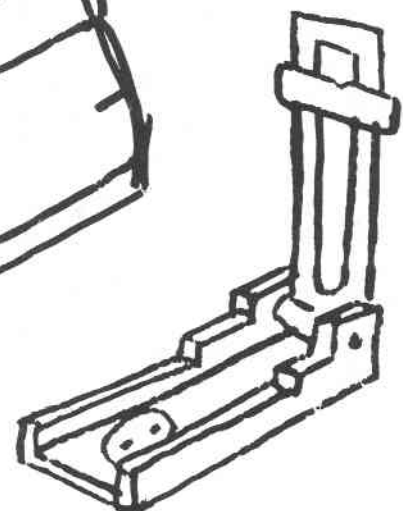
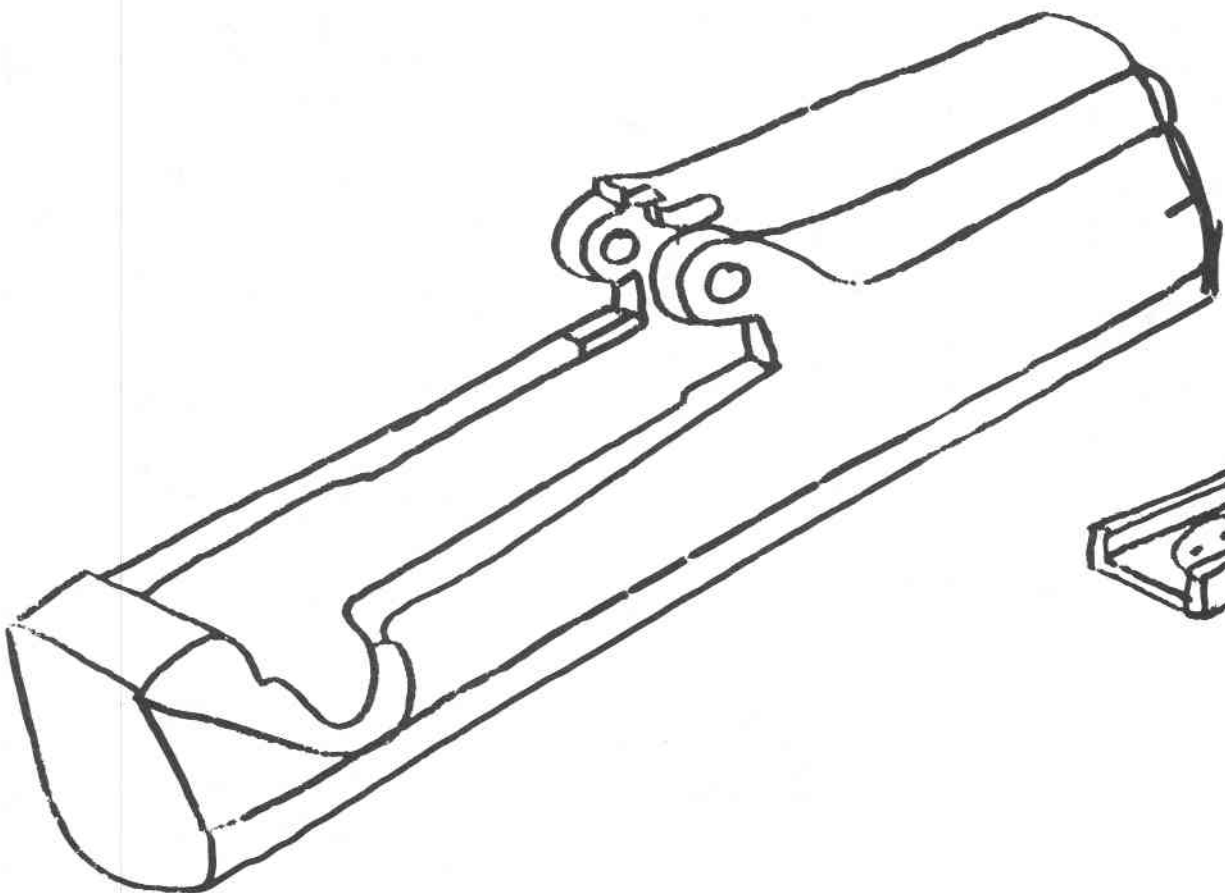
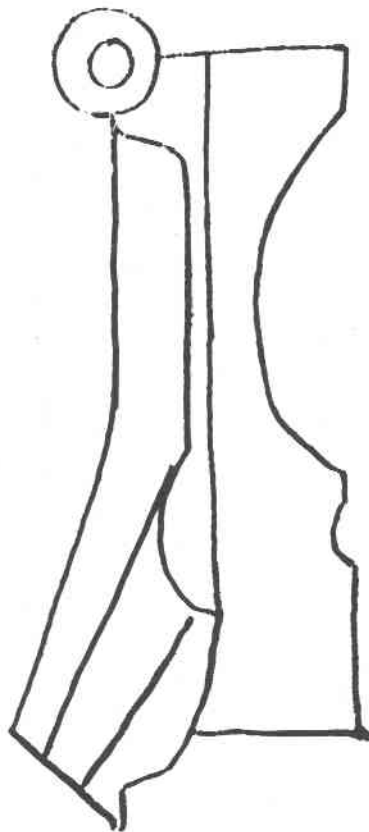
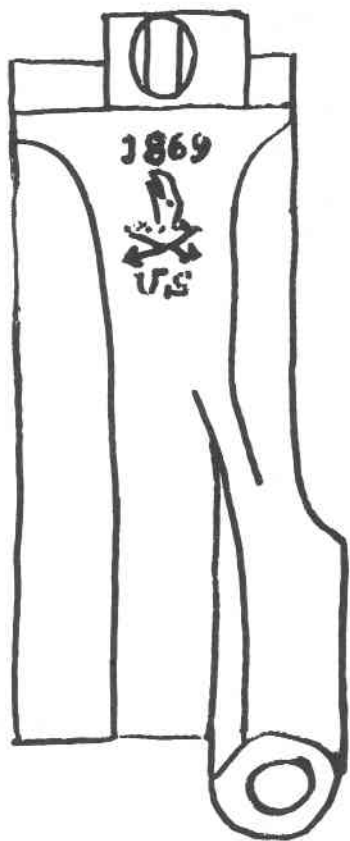
However, wait stay awhile friends, production at Rock Island Arsenal of refinished Arms continued well on to 1907. Many, many rifles were turned in and refinished, reblued and restocked during this period. Most of these weapons were modified to remove all previous inspector's marks and were generally brought up to the latest modification which would be the model of 1884. These rifles were generally marked with a bevy of inspector's stamps on the bbl., directly in front of the receiver. Primarily A's, B's and C's seemed to be the outstanding inspector's marks found and on the stock the former inspector's mark is nicely polished off, generally leaving only the front end of the cartouche with the manufacturing date. However, the 45/70 Springfield, after years of peaceful western frontier service did finally see combat in 1898 and stayed in combat well through 1905 in the Phillipine Insurrection. It had stopping power with the drug crazed Phillipine Moral Insurrectionists, second to none. Some men recorded instances of firing entire magazines of 30 cal. cartridges



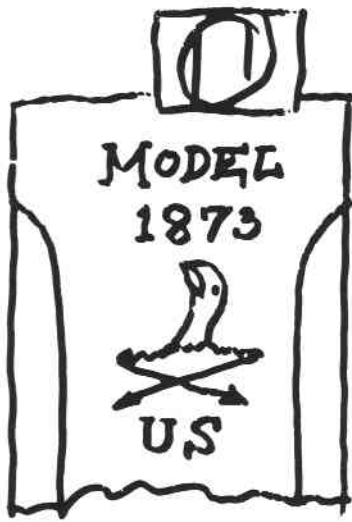
at these folks, and men armed with the old black powder, make your mark, 45/70 Springfield very often put these same fanatics down with one quick shot. It has remained dear to the hearts of many shooters, target shooters, converters, and other such collectors, however, we must say in passing that while it has remained dear, it has remained dear primarily as a Winchester single-shot or a M1886 repeater. In closing, I must add that there are many, many variations of this rifle and to cover these all in a lecture of this nature would take probably three weeks. I therefore attached to this lecture and have had printed for distribution to all the present members, 2 specification sheets which list all the models manufactured with their serial numbers and respective dates, and will call to your attention the fact that I do not know where some of the rare specimens are, outside of the samples in the Springfield Armory of the Smithsonian Institute.



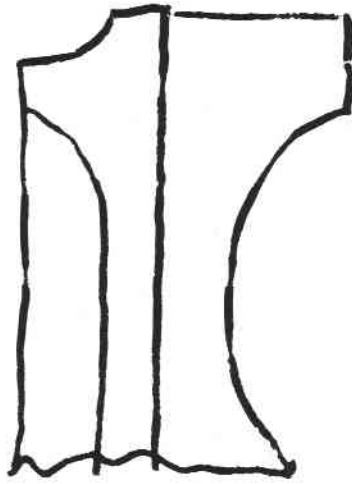




# BREECHBLOCK MARKINGS & CHARACTERISTICS



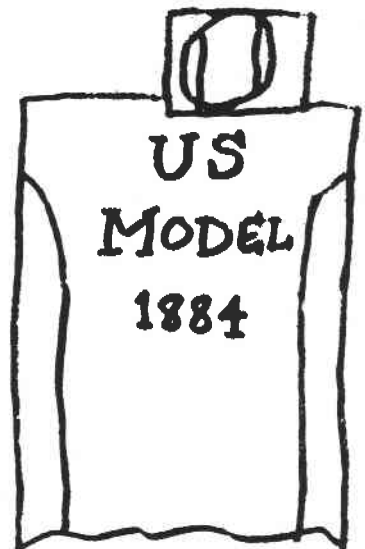
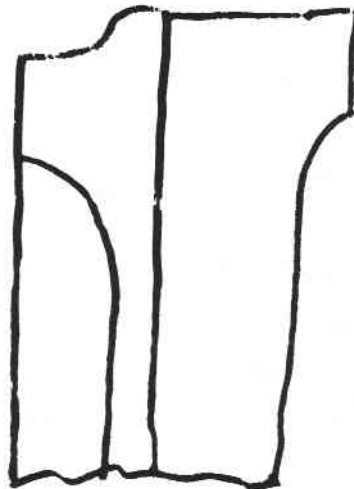
1873 - 1878



'SHOTGUN  
ONLY



1878 - 1884

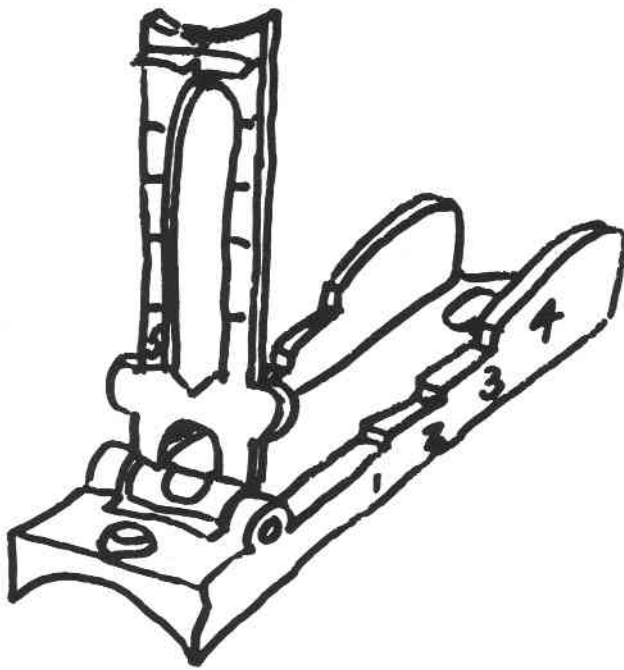


1884 - 1889

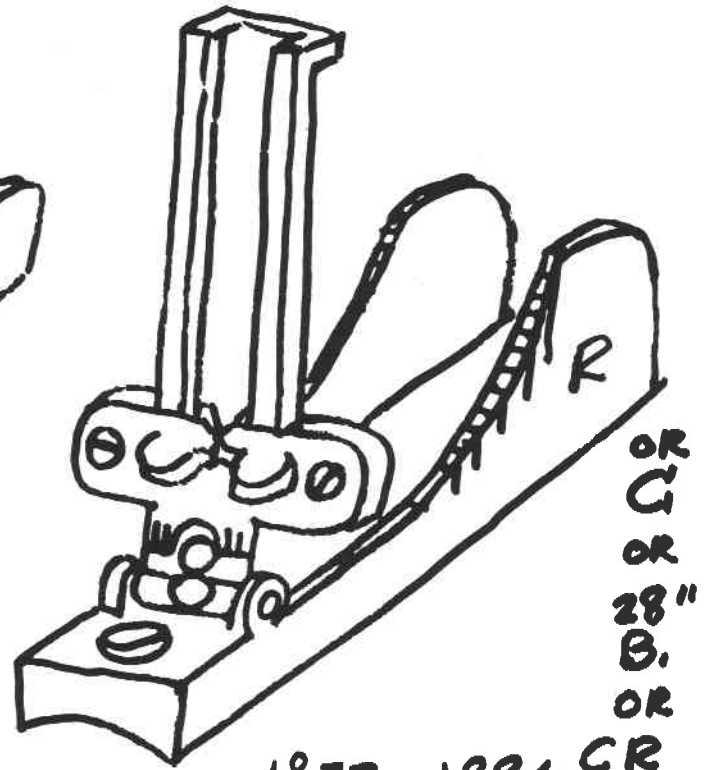
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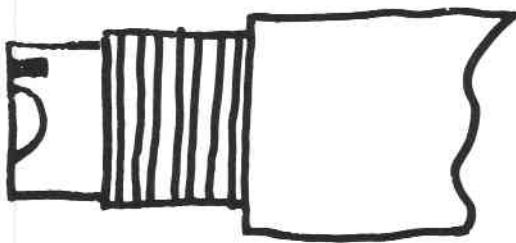


1873 - 1876

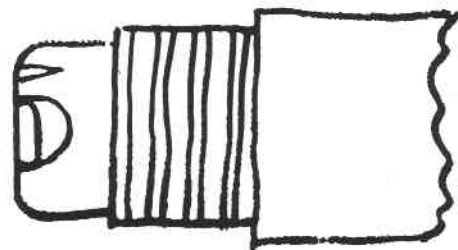


1877 - 1884

OR C  
OR  
28"  
B.  
OR  
CR



1873  
BARREL TENON



1878 - 1888

REGULAR PRODUCTION OF SPRINGFIELD ARMS CAL.45-70 1873 THROUGH 1893 (incl.)

YEAR	RIFLE	CARBINE	CADET RIFLE	ROD BAY RIFLE	OFFICER'S RIFLE	MARKS. RIFLE	XP ARMS	FINAL SN END OF CAL. YR
1873	5	1,942	2		2(cal.50)			1,949
1874	22,397	10,873	5					35,224
1875	17,385	7,211	499		10 + 7(cal.50)		1 Met.QL	60,327
1876	16,382	1	2,517		115		1,008 Met. QL rifles	
							1 Met.QL carb	
							1 cutaway	74,215
1877	16	2,496			100			76,727
1878	20,620	2,000	1,050		65			100,397
1879	18,359		500	1	37			119,257
1880	9,830	14,884	500					144,471
1881	18,711	501		1,014		2	151 Spec. sight rifles	164,848
1882	27,846		1,021		50	9	52 XP carb. "Inf & Cav"	193,767
1883	34,706							228,473
1884	34,775		2,500					265,748
1885	(A)39,814			444	100			306,006
1886	34,162	(B) 5,000		559			1,000-24" bbl carb	346,727
1887	34,869	5,000	1,000					387,596
1888	34,021	5,000	(C) 2,000	3			(E)100 Pos.Cam 3-24"bbl carb	428,723
1889	36,523	5,000						470,246
1890	22,266		2,500	(D) 7,480				502,492
1891			680	30,461				533,633
1892			2,320	22,121				558,074
1893			5,000	4,760				(F)567,834
<b>TOTALS:</b>	<b>422,687</b>	<b>59,908</b>	<b>22,094</b>	<b>66,843</b>	<b>486</b>	<b>11</b>	<b>2,317</b>	

16-18

- NOTES:**
- A. All rifles commencing at ser. no. 266,598 included improvements of 1884
  - B. All carbines commencing this date improved to M1884
  - C. All cadet rifles commencing this date picked up improvement of 1884
  - D. Commencement of 1888 Model production exclusively
  - E. All of these rifles marked "M1888" on breech block
  - F. Higher nos. may be occasionally encountered but are not to be judged as regular production run as RIA assembled and renovated 45-70's until 1907.....