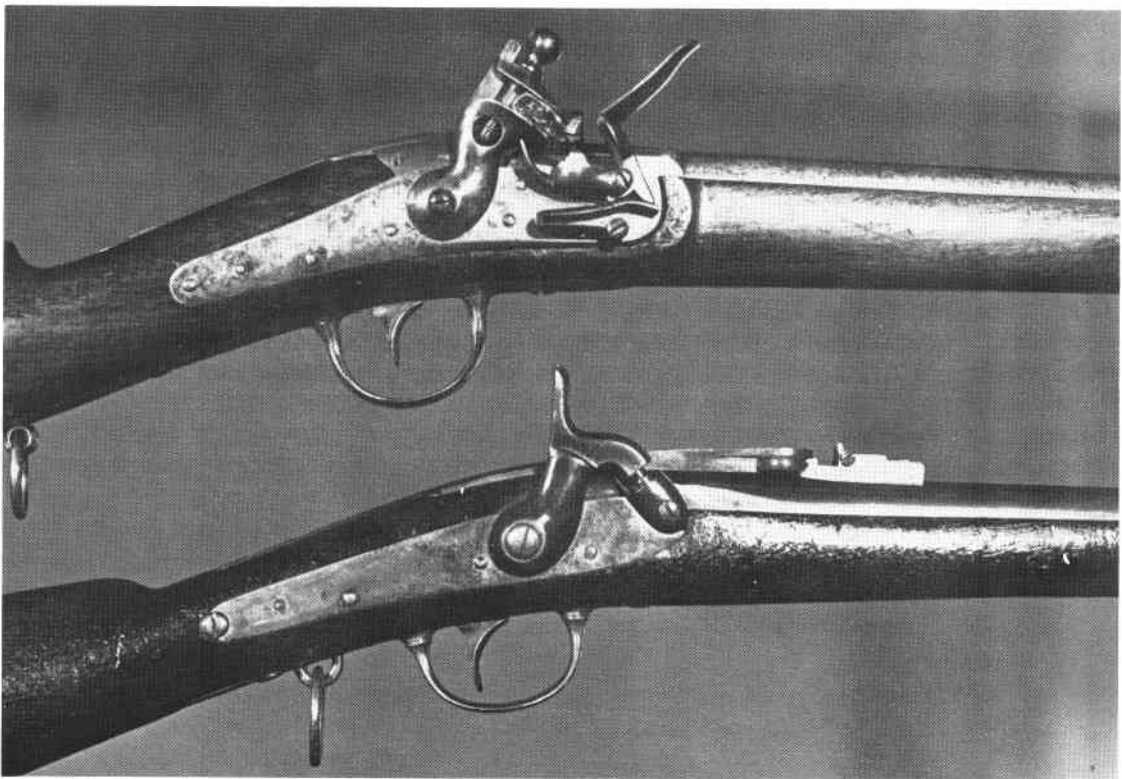


**PLATE 1**

Remarkably, William Jenks secured a government contract for his flintlock carbine, shown above, nearly three years after the Ordnance Department had ordered the Hall Model 1833 percussion carbines. The second arm illustrated here was originally manufactured by the famed N.P. Ames Company of Springfield, Massachusetts, and later altered to James H. Merrill's 1858 patent breech action. (See next page.)



**PLATE 2**

Note the reversed fizzle spring, peculiar to the Jenks flintlock musketoons. The pan is brass with a high slender fence, and a plate of solid brass forms the tip of the stock directly over the lock behind the hammer. The accompanying Merrill-Jenks uses a step-notch cut in the base of the rear sight as a catch for the lever. (See next page.)

# RARE PAIRS: "Gentlemen of invention, we salute you!"

by Gerald Denning

The complex and continuing story of the breechloader in America starts, most significantly, with the issuance of a patent to John Hancock Hall, on May 21, 1811, for a flintlock shoulder arm featuring a tip-up breechblock containing the chamber. By 1833 the Ordnance Department contracted with Simeon North to devise a carbine for use by "The Regiment of Dragoons" based upon Hall's expired patent, but using the more modern percussion ignition. Thus began the chapter on military breechloading carbines, a subject which has captivated my interest for well over two decades of collecting.

In 1836, Hall, supervising the construction of his patent arms for the government, suggested that completion of the first contract for one thousand carbines might be expedited by granting permission to deliver at least a portion of the carbines ordered with readily available flintlock receivers. To his dismay, Colonel George Bomford of the Ordnance Department categorically rejected the idea, stating in a letter to Hall dated September 3, 1836, ". . . It is now directed that you will take the most energetic measures for the speediest manufacture and completion of one thousand Hall's carbines . . . to be constructed with percussion locks, and to be, in every other respect, finished in the manner as before indicated."

"Rare Pairs" thus begins with a curious contradiction. Keeping in mind the Ordnance Department's seemingly unshakable commitment to the percussion system of firearms ignition, as just cited, William Jenks of Columbia, South Carolina, now enters the picture. Less than three months after he was issued U.S. Patent No. 747 on May 25, 1838, Jenks succeeded in having the government consent to test his *flintlock* breechloading rifle at Watervliet Arsenal in New York. Then, in early 1839, he arranged for the Chicopee Falls Company, in Chicopee Falls, Massachusetts, to manufacture the initial one hundred flintlock carbines of his patent design ordered by the Ordnance Department for examination and testing in the hands of troops. Twenty-five were sent to the First Dragoon Regiment School at Carlisle Barracks in Pennsylvania, under the command of Captain E.V. Sumner. The same number was provided for field trials by the Second Dragoons, stationed in Florida, then actively engaging the Seminole Indians.

In his report on the performance of these handsome carbines at Carlisle Barracks, Captain Sumner advised that they would be ideally suited to military service if equipped with swivel ramrods and used as muzzleloaders. Lt. Colonel Talcott, of the Ordnance Department, in reviewing this report, observed that it had been this same Dragoon regiment which had reported so favorably on the performance of Hall's breechloading carbines some time previously. How could it now be, he wondered, that Sumner was now reverting to a preference for a muzzle-loading arm?

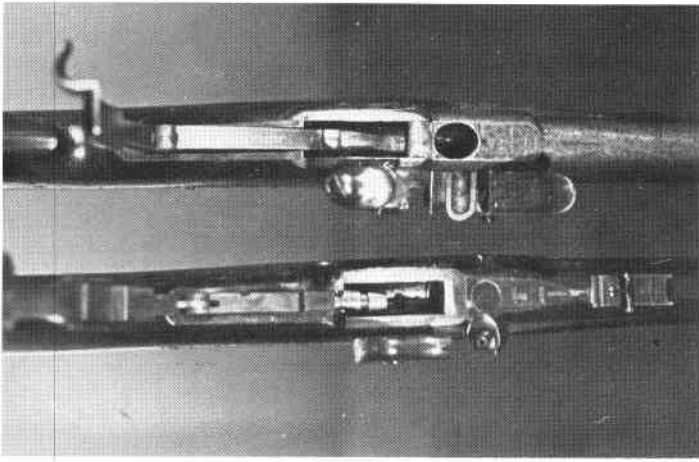
In Florida, meanwhile, the Jenks carbines were suffering an even worse fate. Major Fauntleroy, commanding the Second



Dragoons, refused even to issue them, asserting that their military effectiveness was as yet untried, and that he would not risk the safety of the men in his command by placing in their hands a weapon with which they were totally inexperienced. By 1841 most of the Jenks flintlock carbines were placed in storage at the Springfield Armory in Massachusetts.

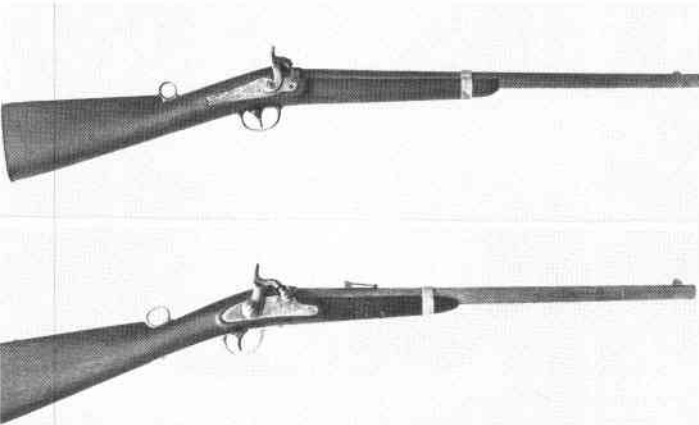
*Plate 1* illustrates one of the eight flintlock Jenks carbines known to exist, surely one of the ultimate rarities in American breechloading arms. More importantly, the Jenks represents the only U.S. martial flintlock carbine, loading at the breech, to be used in the service. The wood is clearly impressed atop the stock forward of the butt tang with the cartouche of sub-inspector M. Paige Lomax, and opposite the lock with the initials of inspector Nahum W. Patch.

Whereas the carbine just described typifies the first generation of Jenks' patent arms, the sleek model accompanying it in the photo represents, in effect, the last. By late 1841 the Navy had ordered a number of percussion Jenks carbines which were fitted with unique locks featuring hammers that cocked outward. The specimen shown here illustrates a later attempt by James H. Merrill of Baltimore, Maryland, to modernize these obsolete "mule ear" carbines by the relatively simple installation of his patented breech action of July, 1858. In addition, the unconventional locks were to be replaced with more familiar back-action types compatible with the breech alteration. The purpose was twofold: first, the application of the new breech converted the Jenks from a weapon requiring the use of loose powder and ball to one employing a more convenient combustible paper cartridge; and secondly, inasmuch as the Navy had a surplus of these early model carbines standing idly in storage, it afforded an opportunity to update them and press them back into service. And so, the small round loading aperture atop the barrel was sealed, the new enlarged breech with its larger lever installed, and the rear sight changed to one which also acted as a lever catch. After examining a few experi-



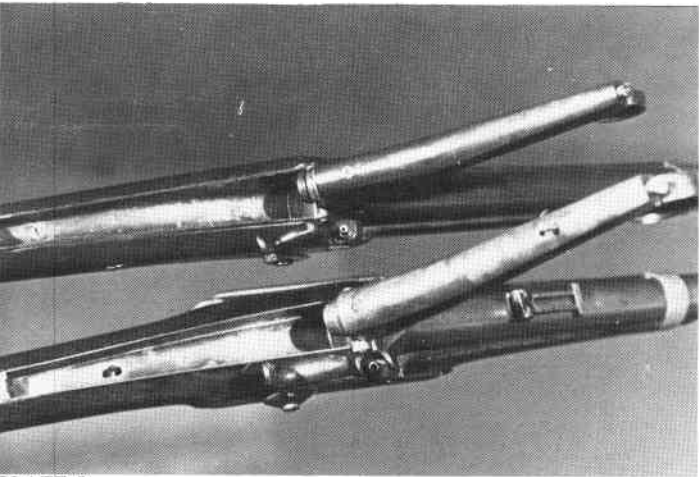
**PLATE 3**

All Jenks carbines, starting with the flintlock model, used loose ball and powder. Although the flintlock specimens featured a fairly large oval loading port, the earliest percussion models had a small round loading aperture. The Merrill alteration called for the sealing of this small opening, and a substantially larger loading port was provided thus covering the arm for the use of combustible paper cartridges.



**PLATE 4**

Only two prototype Joslyn 1855 patent "monkey tail lever" carbines are known, each featuring the unique round lever ring as seen on the upper carbine. The companion carbine typifies the normal configuration of the Model 1855 except for its heavier barrel and the absence of a step in the brass barrel band.



**PLATE 5**

A forward tug on the lever ring unlatches the lever and allows it to hinge upward and forward revealing a long metal loading trough concealed in the wrist and leading to the chamber. The small pin protruding from the underside of the lever on the lower specimen activates a sliding safety bar fastened to the underside of the channel. Upon opening the lever, this device freezes movement to the trigger to prevent discharge of the weapon until the lever is closed and secured.

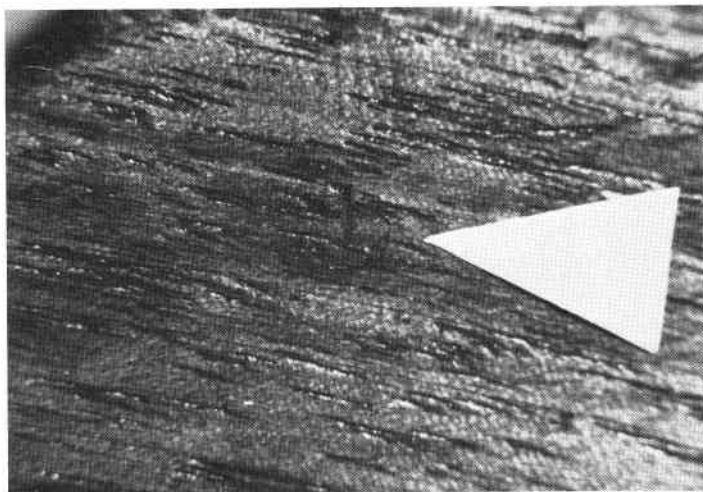
mental conversions, the Navy ordered three hundred Merrill altered Jenks carbines for further testing. A strengthening of the lever spring, requested by the Navy, was effected, and Merrill finally delivered a total of two hundred forty carbines, as shown here, to the Washington Navy Yard. Unfortunately the re-working of the carbines proved to be a costly proposition, and no further orders ensued. *Plate 2* shows both Jenks carbines close up. The flintlock model was provided with a high fence to the rear of the pan, and a brass plate over the lock behind the hammer to inhibit scorching of the stock by the ignition of powder in the pan. The percussion model still bears the marking of N.P. Ames on the lockplate, the firm which made the early model Jenks percussion carbines. *Plate 3* shows both carbines side by side, showing the levers open exposing the breeches.

It might be wise at this point to underscore a few of the important factors which influenced the advent and progress of the breechloader. A more controlled harnessing of water and steam power made it possible to operate complex machinery at consistent speeds. With the advances in this technology came improvements in precision tooling, and the capacity to manufacture uniform parts with a greater degree of consistency. In some instances, inventors of breechloading firearms designed the tools and machinery they required to efficiently produce their patent arms. Additionally, numerous experiments with paper cartridges resulted in significant forward steps, making the concept of loading at the breech even more practicable. While the race to perfect a breechloading arm suitable for use by the military hardly needed a starting shot, certainly the huge appropriation of \$90,000 by Congress on August 5, 1854, to test and procure such a weapon, helped to spark the enthusiasm of many inventors of the time. By the early 1840's the percussion system was officially adopted, and progress in firearms technology became the rule of the day. As the rift between North and South widened, leading to opening hostilities in April of 1861, the urgent need for any workable firearm that promised a greater risk to the shootee than to the shooter resulted in a deluge of patent breechloaders.

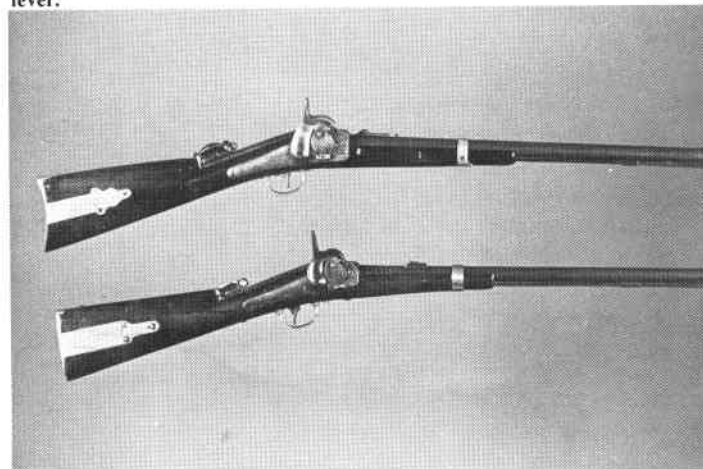
One of the arms inventors preceding this national crisis was Benjamin Franklin Joslyn. His initial patent, issued August 28th, 1855, led to what is now popularly known among collectors as the Model 1855 "Monkey Tail" carbine, of which two generations are illustrated in *Plate 4*. So-called because of the long lever terminating in a ring, this unusual breech design required that a finger be hooked through the loop of the lever near the comb, and pulled forward. This disengaged the latch in the shoulder of the comb of the stock, and allowed the lever to be raised and hinged forward. The lever is concealed in a recess which forms the loading channel, extending from the comb and running the length of the wrist to the rear of the barrel, as seen in *Plate 5*. The first of the two specimens shown here is one of the two known initial applications of this lifting lever breech design, this being a slight improvement over the other. Except for a number stamped on the underside of the lever, the piece is unmarked. This very early prototype model is the only type to use a small round ring on the lever. All subsequent arms of this patent employed a larger oval finger loop release, as seen in the companion piece. In fact, the second specimen illustrated

closely follows a more familiar configuration, and is representative of the model ordered for trials by the Navy. Usually marked on the lockplate with the maker's name, "A.H. WATERS & CO./MILBURY, MASS.," and on the top of the lever, "PATd by B.F. JOSLYN/AUG. 28, 1855," this specimen bears no markings at all except for an assembly number under the lever and a tiny naval anchor impressed in the wood opposite the lock, as seen in *Plate 6*. Carbines of this general type were entered in the trials of 1857 conducted at West Point, New York. They were .54 calibre and utilized a combustible paper cartridge. In spite of a lack of interest in the arm by the trials board, an additional order for fifty carbines was successfully negotiated through the office of the Secretary of War, with delivery completed by November of 1858. A final order for 1,000 carbines was placed in 1860, by which time Joslyn had designed an entirely new breech system which we shall examine a bit later.

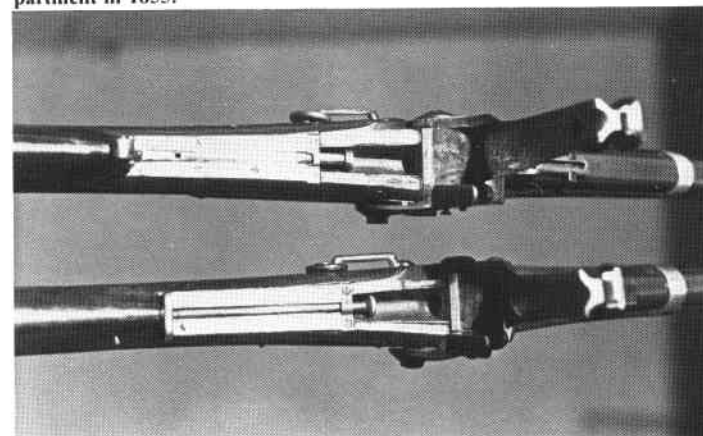
And now, for the benefit of anyone following my story who is not all that acquainted with American breechloading carbines, let me assure you there are very special palpitations of the heart reserved for the exciting, rare, and totally intriguing carbines presented in *Plate 7*. Sharing honors with the flintlock Jenks, mentioned previously, as numbering among the rarest of the rare, is the Merrill, Latrobe & Thomas. I take delight in sharing this remarkable pair of American carbines with you, the first of the two being a unique experimental prototype to its companion piece. Both pre-date the patent assigned to James H. Merrill, whom we earlier met in connection with the Jenks carbine. In this instance, we now refer to U.S. Patent No. 14,077, issued January 8, 1856. Of the six related configurations of this patented breech design known to me, the first of the two specimens shown here appears to be the earliest. This prototype generated a short series of experimental models, eventually culminating in a small government order for one hundred seventy carbines for field trials placed on July 26, 1855. Although cosmetically similar to the Joslyn previously described, the breech of this carbine is, in fact, entirely different. Attached at a right angle to the lever at its forward end, adjacent to the chamber, is a large drum. As the lever is raised, this drum turns in a corresponding recess in the receiver, and in so doing, a loading channel, drilled through the drum, aligns with the chamber. Thereupon, a combustible paper cartridge is dropped into the exposed loading trough in the wrist of the stock, and introduced into the chamber just forward of the drum by means of a spring-retractable push-rod concealed beneath guide plates to the rear of the loading channel. This rod, when released, jumps backward into its recess in the buttstock to the rear of the comb. When the lever is closed, the drum channel pivots to a vertical axis, thus forming the base of the chamber, and at the same time shearing off the rear tip of the paper cartridge. *Plate 8* gives us a view of the loading channel with the lever in the raised, open position. The residue from the cartridge is guided to a small round vent situated just forward of the trigger guard bow, on the underside, as seen in *Plate 9*. Both specimens illustrated are equipped with an automatic priming device utilizing Dr. Edward Maynard's patented tape primers. The tape is fed to the nipple by a small pawl activated by the motion of the hammer being



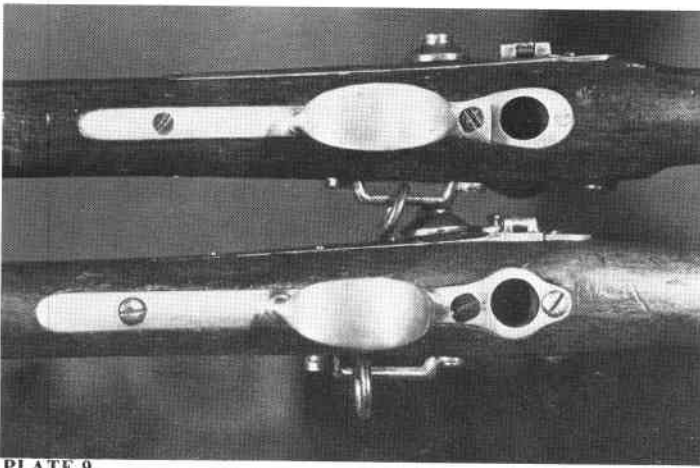
**PLATE 6**  
The arrow points to a tiny naval anchor impressed in the wood opposite the lock of the later Joslyn 1855 carbine. The inventor's markings and patent dates usually present on the top surface of the lever, and the maker's name normally seen on the lockplate, are missing. This unique specimen is devoid of markings except for the unusual anchor cartouche and an assembly number under the lever.



**PLATE 7**  
The exotic carbines illustrated above were designed by James H. Merrill of Baltimore, Maryland, who formed a partnership with two local businessmen, Ferdinand C. Latrobe and Phillip E. Thomas, to produce them under contract to the government. The first example is an experimental prototype equipped with a rear sight and brass furniture of Sharps' manufacture. The second specimen is one of the one-hundred-seventy ordered for trials by the Ordnance Department in 1855.



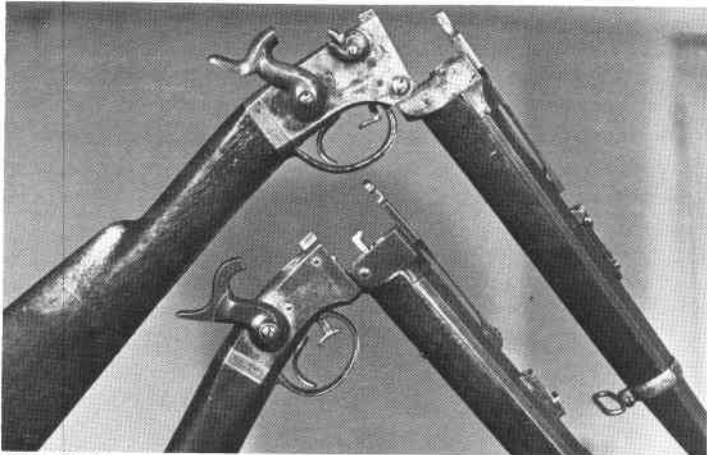
**PLATE 8**  
This photograph provides a close-up study of the maze of tiny screws and metal plates which secure and guide the spring-retractable loading rod. Even the "charging channel" is a contoured metal insert fastened by small screws, rendering the entire wrist area of the Merrill, Latrobe and Thomas carbines quite fragile.



**PLATE 9**  
As the lever of the Merrill, Latrobe and Thomas is closed, the drum attached to it, forming its base, revolves in the receiver and shears off the rear tip of the combustible paper cartridge. Presumably the fragments drop out through these large holes located on the underside of the stock just forward of the trigger guard bow. In the prototype model, this was a separate piece dovetailed into the guard tang, whereas in the contract model the vent was integrally cast.



**PLATE 10**  
Numerous features of the extremely early percussion Smith carbine shown above were changed as production began, such as the buttstock and forearm, the length and contour of the frame, the bolster and hammer, and the trigger guard. The swivels, common to early production Smiths, were eliminated in favor of a bar and ring on the reverse side of the receiver. The second specimen shown was originally made in .50 calibre rimfire after a short series of experimental percussion-to-cartridge conversions.



**PLATE 11**  
With half the chamber in the face of the receiver, the other in the barrel section, the cartridge case of the Smith percussion carbine provided the required gas seal. In the rimfire model, however, a large extractor crept out of the chamber on large gear teeth formed on the upper edge of the barrel hinge lug. Note the firing pin protruding slightly above the face of the receiver.

drawn to full cock. Whereas the prototype carbine unmarked, the military trials model is stamped on top of the receiver, "MERRILL, LATROBE & THOMAS/BALTIMORE, MD/PATENT APPLIED FOR." The marked name, "S. REMINGTON/ILION, N Y" appears to the rear of the hammer on the lockplate.

The two carbines by Gilbert Smith of Buttermilk Falls, New York, pictured in *Plate 10*, originated with his initial patent of August 1856. The upper specimen is one of the first three hundred carbines submitted under government contract for military testing in 1860. Of approximately twenty such carbines first delivered, all were initially equipped with a breech release on top of the wrist, apparently similar to that type depicted in the patent. However, the carbine was subject to accidental opening when carried by the wrist, and they were returned for modification. The release was eliminated and its slot, milled into the upper rear section of the receiver, was carefully filled in and the insert disguised with scroll engraving. A redesigned "L" shaped lifter bar was installed forward of the trigger, protected within the guard bow. This brass lifter, when pushed upward, disengaged the spring steel strap affixed to the forward top section of the frame which held adjoining lugs protruding from each side of the split in the receiver locked tightly together, allowing the forward section of the carbine to drop open as seen in *Plate 11*. The successful and more familiar Civil War model Smith displayed considerable changes in the shape of the hammer, frame, buttstock, forearm, butt plate, and barrel band. Even the lifter was redesigned in the shape of a sturdy "T," as seen in the second carbine. This arm was a post-Civil War experimental effort to keep in the running with more advanced weapons of the period using self-contained rimfire and centerfire cartridges. In this unique .50 calibre rimfire model, a huge extractor creeps out of the lower rim of the chamber. In the percussion carbine, half the chamber was contained in the breech side of the receiver, the other in the barrel section. The India rubber cased cartridge, itself, formed the gas seal spanning the gap in the breech. However, in the later metallic cartridge model, the entire chamber was located in the barrel side. One very ingenious feature consisted of a thin projection of hardened steel mounted on the right edge of the topstrap. A similar piece stuck out very slightly from a recess on the inside, or left, side of the hammer. Upon closing the breech after loading, the topstrap piece would strike its counterpart on the inside face of the hammer, and lift the hammer to a safety cock position, allowing a slight clearance above the floating firing pin in the frame. This carbine is the final generation of Smiths, and is completely unmarked. Apparently no effort was made to patent any of the features incorporated in this most unusual model.

It's no wonder that in his 1859 "Annual Report of the Secretary of War," the Honorable Secretary John B. Floyd commented on the plethora of breechloading arms being submitted. "The ingenuity and invention displayed upon the subject are truly surprising." And in 1860 he observed, "Very frequent and numerous experiments have been made, under my direction, of breechloading arms, and inventions for this purpose are wonderfully numerous." Perhaps we might fault Mr. Floyd for taking the credit so richly accruing to the times

...t what he lacked in humility he more than compensated for understatement.

Another excellent example which enriched the heritage of American inventive genius is illustrated in *Plate 12*, subject of U.S. Patent No. 26,475, dated December 20, 1859. Bethel Burton of Brooklyn, New York, not only helped to develop the concept of a bolt-operated breech mechanism: the carbine he designed, as shown here, eventually led to his imprisonment. Unsuccessful in his attempts to interest the U.S. Ordnance Department in his patent breechloader, Burton welcomed with enthusiasm offers from agents representing the Confederacy in Richmond to purchase a staggering 50,000 of his carbines. There was, alas, one small hitch. He would have to recruit the skilled workers, secure the raw materials, and establish a manufactory in Virginia for the production of the arms. Undaunted, and lured by the beckoning of imminent success, Burton returned north determined to meet the terms of his contract. Unfortunately for him, his plans had been discovered, and in 1861 he was taken into custody by federal marshals and incarcerated at Fort Warren, Boston Harbor, under President Lincoln's emergency suspension of habeas corpus. It was about six months later that he and his Confederate confederates were released, having signed oaths of loyalty to the Union.

In 1868 Burton formed a partnership with a former U.S. Ordnance officer, General William G. Ward, and together they set about to promote, on a worldwide basis, Burton's remarkably advanced bolt action design covered by U.S. Patent No. 26,059 issued August 11, 1868. Essentially, the so-called U.S. Model 1871 Ward-Burton carbine, the second specimen shown, embodies the innovations of this patent. Ward used his influence to have this arm considered by the Trials Board of 1872, which in turn led to an order for three hundred sixteen carbines, to be produced at the Springfield Armory, for testing with troops in the field. *Plate 13* illustrates both of these widely separated generations of breechloaders with their bolts drawn open.

The .50 calibre centerfire Ward-Burton fared well in the trials, winning the acclaim of the board in spite of some mixed and varied opinions as to its durability in military service. But Congress had already passed an act requiring that only one breechloading arm would be adopted as the official service weapon. The Allin trapdoor design was already in production at Springfield, principally due to the fact that this system allowed for tens of thousands of outdated arms in storage to be converted to breechloaders and re-issued. Furthermore, the Allin system belonged to the government, and no royalty payments for use of a patent arm were required. Had it not been for these conditions, it is quite possible the Ward-Burton would have been adopted. As it was, the trapdoor remained the official arm of the service right up until adoption of the Craig-Jorgensen magazine rifle in 1892.

Realizing the limited suitability to military usage of his "monkey tail" design, Benjamin F. Joslyn set about to devise an entirely new breech action. As with all breechloaders, the requirements remained constant; ruggedness, simplicity, ease of manufacture, and reliability of function. Thus emerged the basic effective "swinging breechblock" design outlined in U.S. Patent No. 33,435 issued October 8, 1861. Two outstanding



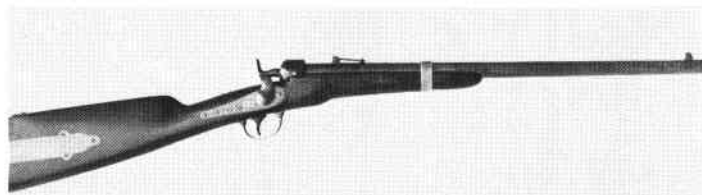
**PLATE 12**

The upper specimen is apparently the last and most sophisticated of a short series of experimental percussion bolt action carbines by Bethel Burton. Less than five years later he had devised an entirely new, in fact revolutionary hammerless bolt action metallic cartridge model, represented here by the Model 1871 Ward-Burton carbine tested by the government but not adopted.



**PLATE 13**

The use of "interrupted screw threads," visible just forward of the bolt handle, common to all of Burton's arms, though not a patent feature. These correspond with similar threads in the receiver to secure the breech upon closing the bolt. Burton is also credited with designing heavy ordnance employing this same principle.



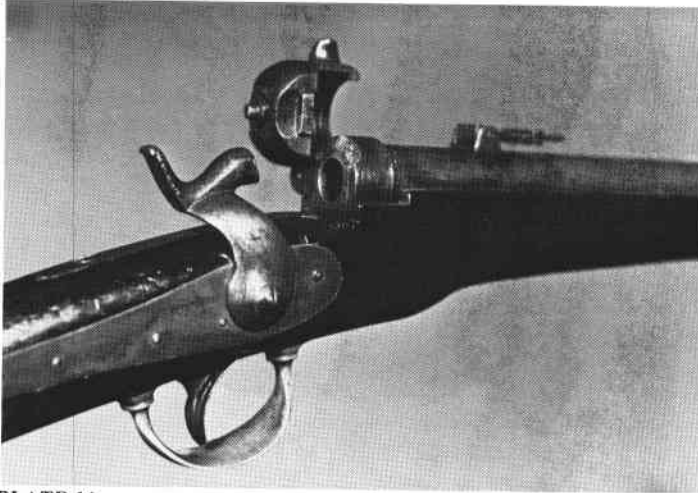
**PLATE 14**

Joslyn's breech design of 1862, depicted here in one of the earliest known specimens of its type, superseded the "monkey tail" carbines of 1855. The very first arms constructed on this patent were percussion, with a mere handful known today. Only the rear sight of the earlier model was retained, and apparently only on this unique example. The lower carbine is about identical to the familiar Civil War contract model except for the checkered wrist and forestock.



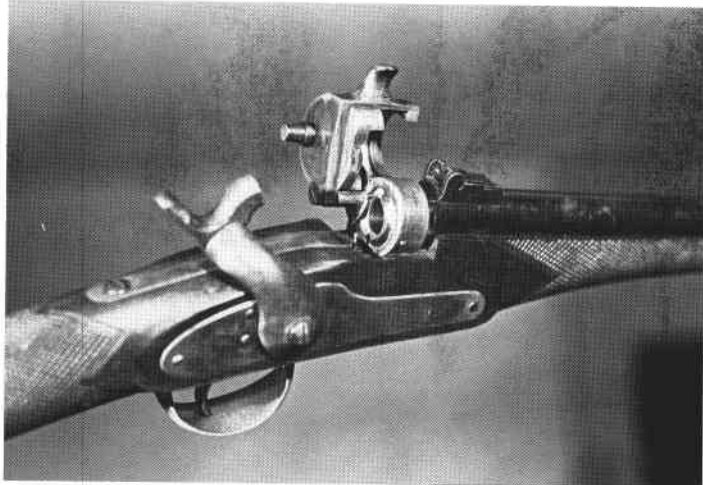
**PLATE 15**

This extraordinary one-of-a-kind item was a rare find indeed. It is Joslyn's original wooden patent model for the 1862 swinging breech, shown with the experimental reloadable cartridge protruding from the chamber which he designed for use in these arms. The original U.S. Patent Office identification tag is shown affixed to the inventor's model.



**PLATE 16**

The unmarked swinging breech percussion Joslyn carbine illustrated above very likely preceded the wooden model, and the patent, itself. Unlike the model, no extractor cam is present for removing the cartridge case, nor is any provision made for securing the breechlock upon closing, beyond the stiffness in the hinge.



**PLATE 17**

Clearly visible at the base of the chamber just forward of the rim is the patent feature unique to this specimen, the 1863 "spring ejector." The carbine is marked "1" and is the only known application of this feature as contained in the patent.

examples of this carbine are presented in *Plate 14*. A very few of the earliest experimental versions of this design were percussion arms, as illustrated in the first of this pair. Joslyn had also designed a metallic cartridge casing having at its base a large perforated wafer of pasteboard. Early tests with this cartridge produced a number of misfires, and the wafer was replaced with a thinner disc of vulcanized India rubber which performed flawlessly. The inventor's original wooden patent model for the breech action, with its reloadable cartridge case, are illustrated in *Plate 15*, both developed in 1861. It appears that the percussion carbine shown here was made prior to the issuance of the patent inasmuch as it lacks a few of the features claimed therein. A close-up of this unique specimen is shown in *Plate 16* with the breech open. The second carbine is also quite special. While it duplicates the appearance of the standard Model 1862 military carbine of the Civil War contracts, it possesses a hidden feature which makes it one-of-a-kind. In *Plate 17* you can see, upon close examination, the very small tip of a steel spring projecting upward just to the rear of the mouth of the chamber. Bearing the number "1," this carbine embodies Joslyn's "spring ejector," the subject of yet another patent issued to him, this one No. 39,407, dated August 4, 1863. Special attention was given to this model: the barrel was finished with a high lustre blue, the wrist and forestock were finely checkered, and the patent markings on the barrel atypically stamped. It is interesting to note that no mention is even made of the 1863 patent for the ejector.

The particular pair of carbines in *Plate 18* had an element of mystery attached to them which had fascinated me for some time. In studying the U.S. patents relating to breechloading arms, I discovered three which so closely resembled one another I felt there had to be some connection. The first was No. 35,241, dated May 13, 1862, and was assigned to a William Johnston. The second, issued nearly two years later, was No. 42,227, dated April 5, 1864, but assigned to A.H. Rowe. Eight months later the third patent appeared, No. 44,868, and although nearly identical to its immediate predecessor, it was



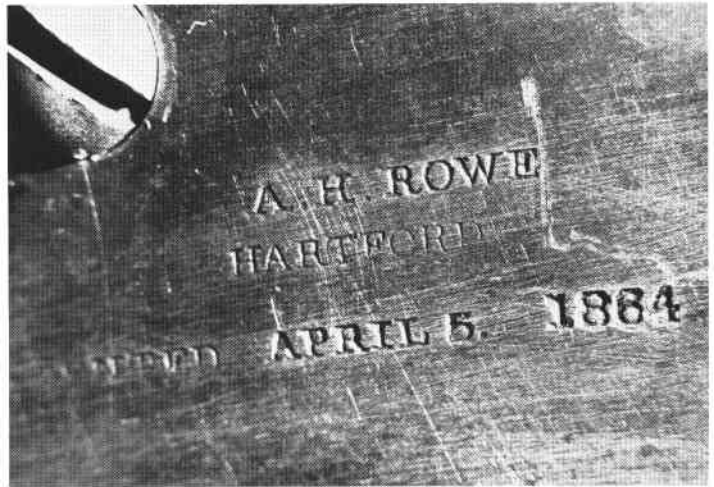
**PLATE 18**

In both examples shown the second "trigger" is actually a cocking lever, the forward one fires the piece. The upper carbine is an earlier model, made in .50 calibre rimfire, and manufactured without a forearm. The lower specimen, in .44 calibre rimfire, is the model submitted to the Military Trials Board of 1865. Supposedly Richard S. Lawrence of the Sharps Company sued Rowe for infringing on his patent of 1852, but nothing has ever been found to substantiate this claim Lawrence made, as an old man, in his autobiography.

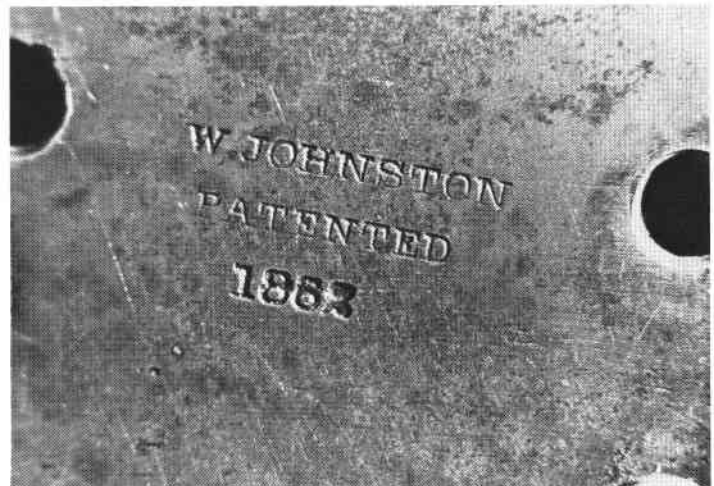
issued to Johnston. To compound the confusion, my copies of the original photographs taken of most of the carbines submitted to the Trials Board of 1865 showed a similar arm with a more conventional outside hammer, attributed to William Johnston. But also included was a photograph of the second carbine shown here, and written in the margin is the name "A.H. Rowe." And indeed, the carbine is marked "A.H. Rowe" with the April 5, 1864, patent date, but clearly it is the carbine illustrated in Johnston's patent of November of that year! The outside hammer model Johnston submitted to the board doesn't even appear in the patents. I have shown you a close-up of the markings on the right side of the frame of the upper carbine, see *Plate 19*, and in the next illustration, *Plate 20*, the left side of the frame with its tiny sling bar and ring removed. Surprise! Hidden under the bar is Johnston's name and a reference to the first patent of 1862. Both carbines feature a small button release on the top of the receiver which unlocks the barrel, permitting it to be swung sideways for loading, as you can see in *Plate 21*. The swinging of the barrel activates a tiny extractor at the bottom of the mouth of the chamber. Neither the Johnston nor the Rowe carbines were selected for further testing, and I estimate that probably fewer than a dozen in any of a small variety of configurations were ever produced.

The close of the Civil War by no means ended the quest for improvements in breechloading arms. If anything, the ranks of hopeful inventors were swelling, and the patent office was swamped with applications rendering old ideas new, or which were, in fact, novel. Some of them must have made the patent examiners roar with laughter or shake their heads in disbelief. A few of the inventors I have already discussed, such as Joslyn, Smith, and Burton, made significant contributions to the state of the art, and although unsuccessful, still their efforts were important and influential. But most of the inventors remain unfamiliar, unrecognized. Their hopes, for the most part, started and ended with a single idea.

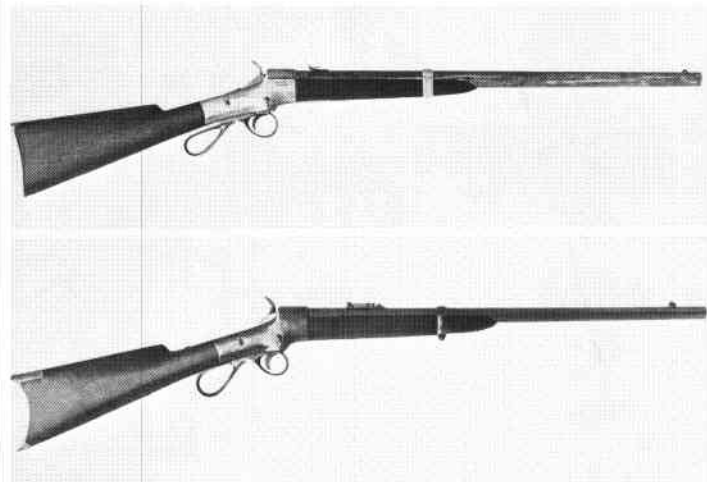
An excellent example is Loughlin Conroy of New York City. *Plate 22* introduces two beautiful carbines by this virtually



**PLATE 19**  
This specimen resolves the mystery surrounding a possible connection between two inventors, A.H. Rowe and William Johnston. The close-up shows the markings which appear on the right side of the frame of the early carbine, and reads: "A.H. ROWE/HARTFORD CT/PATENTED APRIL 5. 1864."



**PLATE 20**  
On this same carbine, illustrated in the preceding plate, and concealed beneath the sling bar and ring, herein removed, is the marking on the left side of the frame: "W. JOHNSTON/PATENTED/1862." Obviously these carbines represent a joint effort.

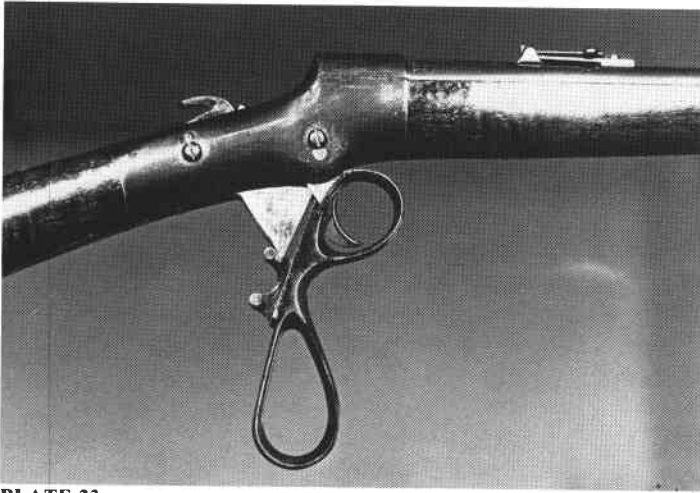


**PLATE 22**  
While only a few of Loughlin Conroy's patent arms are known to exist, the first example presented here is surely one of the earliest. It has a brass frame neatly engraved "New Model 1869." The second example is a finely crafted carbine with a steel frame, the only such carbine yet discovered.



**PLATE 21**  
The application of pressure to the finger release on the see-saw atop the receiver allows the barrel to unlock and drop to the right exposing the chamber for loading. This swinging motion at the same time activates a tiny extractor, visible in both carbines riding out over the face of the frame.





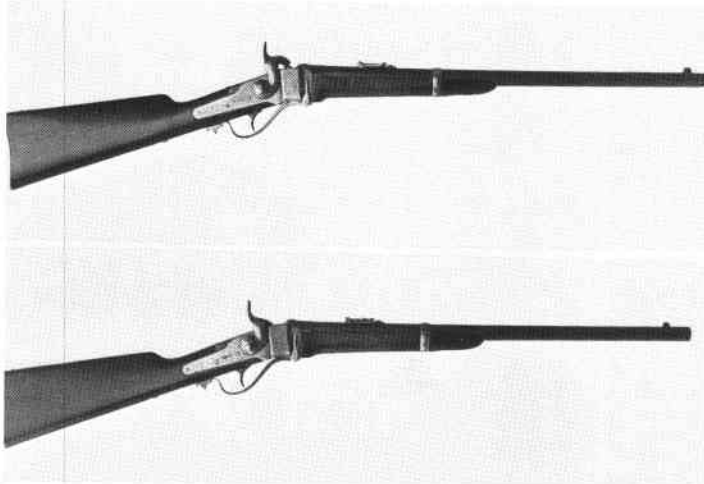
**PLATE 23**

A downward motion of the guard lever first raised a locking lug in the receiver holding the breechblock secure, allowed the block to move rearward, extracted the expended cartridge case, and cocked the hammer. Closing the lever chambered the new round, closed and locked the breech, leaving the hammer at full cock. Note the Lawrence patent rear sight, common to Sharps' rifles and carbines.



**PLATE 24**

This was Loughlin Conroy's workshop model, intended by the inventor to keep from going into production with unresolved problems. Not a working firearm, nor ever intended as one, the model shows numerous design changes worked in as the basic idea took real form.

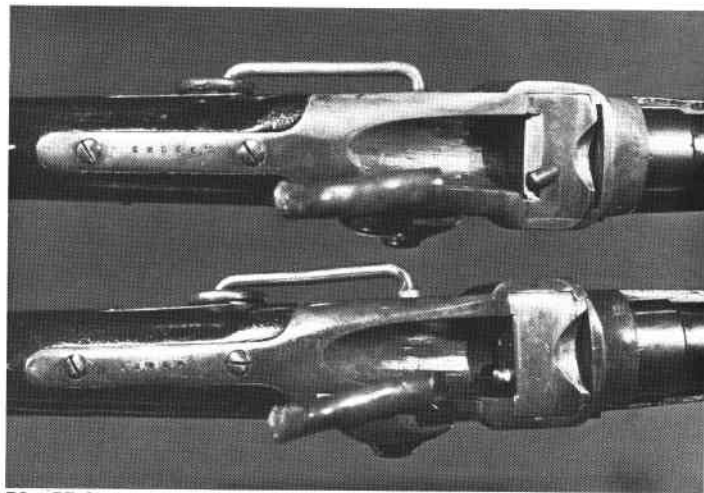


**PLATE 25**

Here we see two generations of one unknown inventor's effort to update the Civil War Sharps' percussion carbines which flooded the civilian market after the war. The alterations focused specifically and economically on only those parts requiring change to adapt the arm for use of the metallic cartridge.

unknown inventor. Protected by U.S. Patents 72,803 dated December 31, 1867, and No. 91,421 dated June 15, 1869, the Conroys were twice submitted to small arms boards for consideration, first at the New York State trials in 1868, then before the U.S. Army Board meeting in St. Louis, Missouri, in 1870. Apparently the guns generated little enthusiasm, as I have only been able to identify five examples of Conroy weapons. The first carbine illustrated here is typically fitted with a brass frame and trimmed with furniture of brass, as well. The left side of the frame is neatly engraved "New Model 1869" with flourishes, apparently executed by the famed arms engraver, Nimschke, whose shop was located a few doors from Conroy's in New York. As the guard lever is lowered, a locking lug just to the rear of the hammer shoulder pops up, allowing the downward movement of the hammer to full cock. This motion operates the blade extractor and opens the breech. The magnificent companion piece displays many sophisticated design improvements, and with the exception of the earlier trails rifle, is the only iron-framed model known to me. *Plate 23* provides a view of this carbine in the open position. The "carbine" pictured in *Plate 24* affords a rare opportunity to examine an inventor's workshop model. This inoperative conglomeration of plugged-up holes, misplaced bolts and screws, and jangling bits and pieces, shows clearly the numerous changes of mind which occurred during the development of a finished product. A number of parts, including the manual extractor shown in the patent drawings, plus a variety of springs and the like, are missing, possibly pirated for use in a completed model. When you see this model, it's truly a wonder that anything came of it!

The next pair of carbines remain enigma. Pictured in *Plate 25*, both appear at first to be standard New Model 1863 Sharps carbines, which indeed they were. Now, however, they represent an ingenious post-Civil War conversion to center-fire, in this instance chambered for the formidable .58 calibre Berdan cartridge. The method of alteration was not patented, and while both are obviously two generations of the same

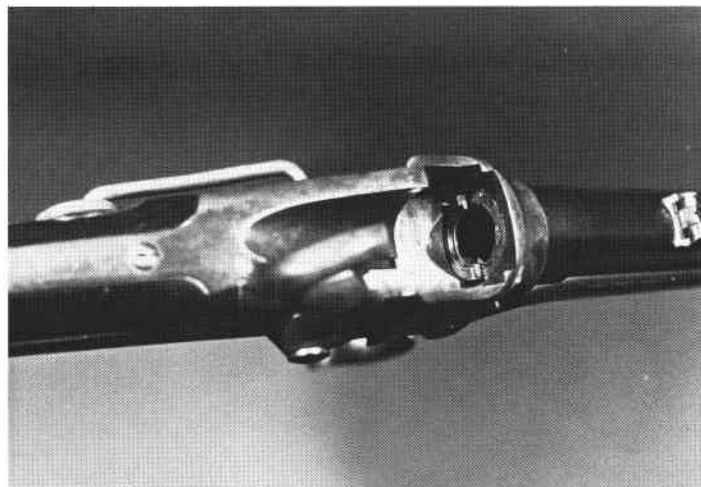


**PLATE 26**

Viewed from the top we observe that the percussion nipples were removed and the vents filled. In the earlier specimen a spring-loaded firing pin has been inserted into a new vent drilled through the top of the block, whereas in the later model, the firing pin is introduced into the rear face of the block and a slot milled in the receiver permitting the pin to clear the frame as the block is lowered.

inventor's handiwork, it cannot be said with certainty that they were done by the Sharps factory. Although the workmanship undoubtedly would meet with factory standards for an experimental arm, the fact remains the method of conversion used in the two carbines is superior to the design employed by the company itself. The original percussion hammer in the first specimen has had a nose job, altered to strike the spring-loaded firing pin mounted in a channel drilled through the top of the breechblock into the face of the block. On both carbines, the percussion nipple was removed, and its vent plugged. Each is fitted with a powerful half-moon extractor operated by a downward and forward thrust of the guard lever. The original primer mechanisms, which normally form the high profile of the lockplate behind the hammer, have been ground off flush with the receiver, and the loading channels to the rear of the breechblocks enlarged to accommodate the huge Berdan cartridge. The second carbine features a new, shortened hammer, and strikes a firing pin mounted through the upper rear section of the breechblock. *Plate 26* shows a top view of these intriguing carbines, placed side by side, with the hammers drawn to full cock. The open breech and extractor in the second, later model, is shown in *Plate 27*. I would hate to speculate on what it was like to fire either of these arms, as both display a ring or bulge in their rifling.

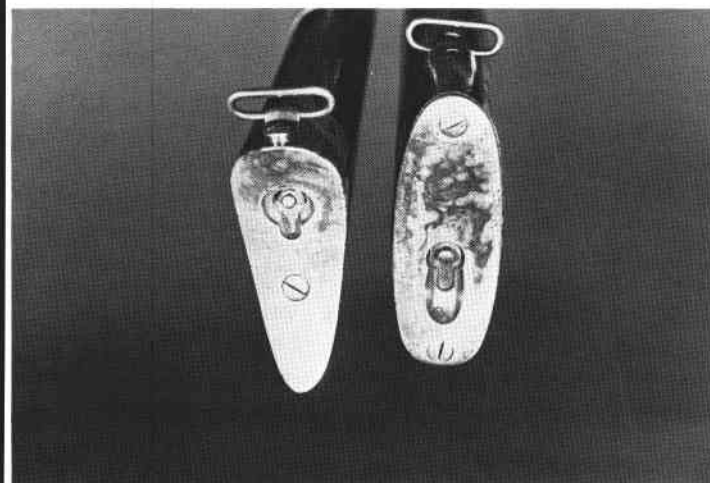
Finally we examine the wondrous creations of two brothers from Maine, Warren R. Evans, of Thomaston, and George F. Evans of Norway. Warren obtained U.S. Patent No. 84,685, dated December 8, 1868, for an amazing thirty-eight shot repeater. Nearly three years later he obtained a second patent, No. 119,020, incorporating several improvements. He submitted an example of this arm to the U.S. Army Trials Board of 1872, although the exact model and calibre have not been ascertained. However, the extremely rare thirty-four shot "Old Model 1871" .44 calibre centerfire carbine shown first in *Plate 28* is surely closely akin. The trials board, which convened at the Army Building in New York City, noted this submission with interest, and selected it for further testing. Un-



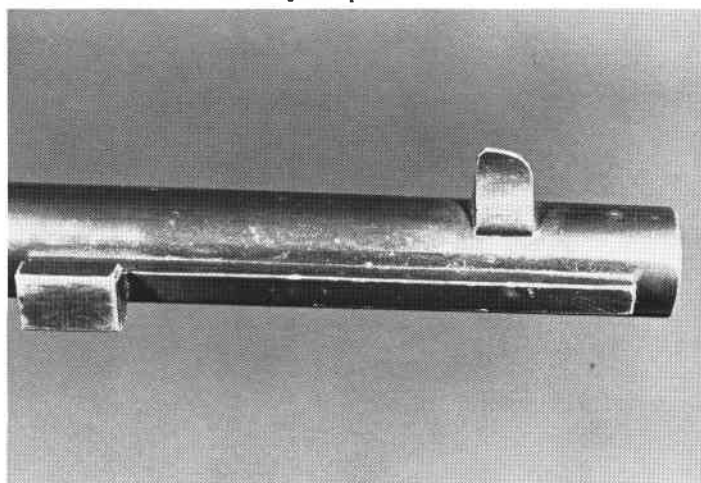
**PLATE 27**  
Chambered to accommodate the .58 calibre Berdan rifle cartridge, both carbines are fitted with powerful "half-moon" extractors, activated by a forward thrust of the guard lever upon opening the breech. This illustration shows the later of the two carbines with the recess cut in the receiver for the rear-mounted firing pin.



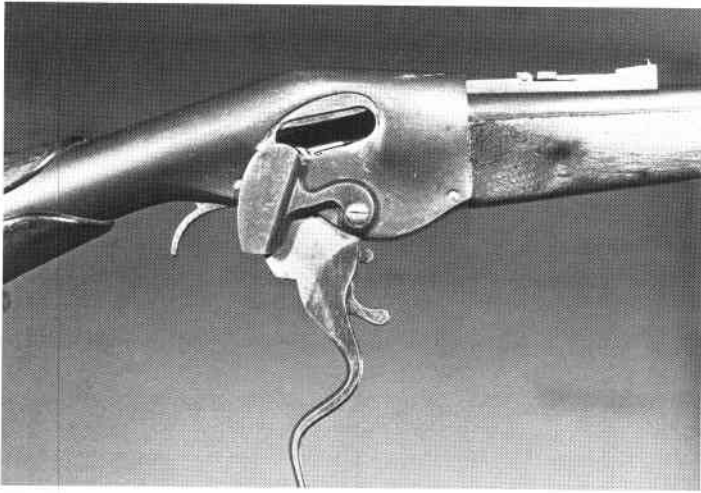
**PLATE 28**  
The very rarely encountered "Old Model 1871" Evans carbine featured an exposed ejector port in the frame and a one-piece wooden section forming the upper part of the stock. The "New Model 1877" carbine presented with it shows numerous design improvements, including the addition of a second piece to the buttstock and a cover on the ejector port.



**PLATE 30**  
In re-vamping the original designs by his brother Warren, George Evans made numerous improvements in this fascinating repeating arm, one of which was a new buttplate in which the loading port, for charging the magazine, was moved upward from its former location at the toe just above the lower swivel.



**PLATE 29**  
A few specimens of the Model 1877 military carbine have been encountered with a three-and-three-quarter inch sabre bayonet lug mounted near the muzzle, though as yet no specific bayonet has been positively identified as "issue."



**PLATE 31**

The redesigned New Model 1877 carbine eliminated the forestock recess in the frame characteristic of the early model. The ejector port cover opened to allow expulsion of the expended casing by a lowering of the guard lever, which also cocked the hammer. Closing the lever chambered a new round from the magazine in the buttstock.

fortunately some mechanical difficulties were encountered which necessitated withdrawing the piece. Warren returned to his home state, and shortly afterward joined with his brother and several associates to form "The Evans Rifle Manufacturing Company." On April 24, 1877, with Warren essentially out of the picture, brother George obtained his first patent. He had redesigned the breech mechanism, devising a number of important changes, resulting in the second carbine pictured here, the "New Model 1877," a twenty-eight shot carbine. The frame was modified, a cover provided for the ejecting port on the side of the receiver, the location of the loading port in the buttplate changed and a second wooden section added to the lower part of the buttstock. This was a limited production military carbine, and in this instance, equipped with the rarely observed sabre bayonet lug near the muzzle, illustrated in *Plate 29*. Loading the arm was accomplished by opening the sliding trap covering the port in the buttplate, as pictured in *Plate 30*. With the insertion of each cartridge it was necessary to operate the guard lever, thereby advancing the cartridges in the magazine concealed within the butt. *Plate 31* shows a close-up of the later carbine with the breech open. The motion of the lever extracted the expended cartridge casing, opened the ejector door and spit the casing out, revolved the magazine spindle in its helical coil shaft, thus advancing a fresh round to the chamber, and at the same time closing the door on the port in the receiver and cocking the hammer. In spite of its seeming complexity, the Evans rifles and carbines functioned reliably. They only enjoyed limited success, basically in sporting configurations, on the civilian market, though not sufficient to prevent bankruptcy of the firm in December of 1879.

It's only reasonable to assume that many of the inventors of early breechloaders, having met with little or no success in their efforts to perfect and market their designs, wondered that with their passing, who would be left to care or to remember? In some instances, designs were outmoded even prior to issuance of the patent. In others, a lack of political allies or friends in high places played a significant role in consigning many inventions, and their inventors, to dusty oblivion. Even foes or

powerful competitors often exerted a devastating influence. Yet, with each novel invention, a gift was made to all posterity, a material legacy manifesting the wit and genius, the dreams and determinations, the energies and creativity of each of these men of ability and vision. *Rare Pairs* is a tribute to these bold men, who represent, in the truest of American tradition, the pioneering spirit. If you are remembered by but one living person, you have gained a measure of immortality.

Gentlemen of invention, we salute you!

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Saturday afternoon in Santa Barbara.