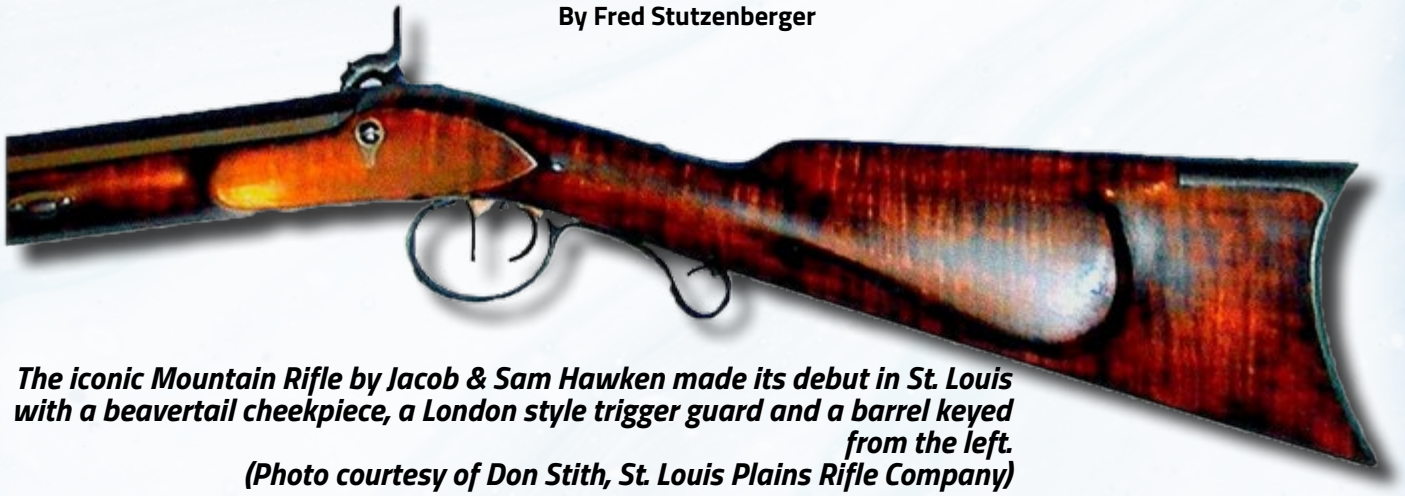
Hawken Halfstock

How-to Part I

By Fred Stutzenberger



The iconic Mountain Rifle by Jacob & Sam Hawken made its debut in St. Louis with a beavertail cheekpiece, a London style trigger guard and a barrel keyed from the left. (Photo courtesy of Don Stith, St. Louis Plains Rifle Company)

"More complex than our flint longrifle parts kits, a Hawken rifle is not recommended as a first gun-making project unless you have machinist's skills, or an experienced mentor to guide your work." (Catalog # 18, Track of the Wolf, Inc.)

"They're just too blessed complicated!" Dexter said.

Dexter Morris's reply to my question was about what I had expected: somewhere in his long-distant past before the time that we became friends, he had started building a Hawken style rifle and ran into difficulty that caused him to abandon the project. Perhaps a large part of his problem was that he did not have excellent books on building Hawkens like there were for building longrifles. Ironically, Dexter was one of the most innovative people I knew in muzzleloading. He could take a mundane commercial lock, reshape it by cutting and welding, and come up with a beautifully modified creation that no one would identify as to its source. But one bad experience had buffaloed him, and he was not about to make the same mistake twice.

Furthermore, I suspected that Dexter was not the only experienced rifle builder who had been caught up in the "Hawken Craze" when every disciple of the American Fur Trade Era had to have a Hawken Rocky Mountain Rifle built in the spirit of brothers, Jacob & Sam. Fortunately, Charlie Hanson, Director of the Fur Trade Museum, Chadron, Nebraska, tempered my illusion that the Hawken was the weapon *ne plus ultra* of the fur trade. Charlie and wife Marie were the most knowledgeable couple I knew regarding the fur trade. Through the years of personal communication until Charlie's death, they set me straight regarding the rightful place of the Hawken in history (see Hanson, references). While I did my best to pass the sobering benefit of their cumulative knowledge to others (Stutzenberger 8), I still liked building Hawken style rifles, whether for myself or for others. This article is a summation of selected experiences that I hope will help others avoid the frustration of pitfalls that builders might encounter along the "Hawken Path."

I must admit at the onset that I am neither a Hawken purist, documentarian nor expert. However, within the

limitations of that caveat, I can say with confidence that the recipients of my efforts in producing Hawken style rifles have been pleased to the point where two came back for seconds and one for thirds. During my Hawken "teething period", I ventured into the first commercial Hawken kits. After receiving four kits with sloppy inlets **(Fig. 1)** and badly fitting parts **(Fig. 2)** from two sources, I returned them for refunds and went back to starting from the board **(Fig. 3)**. Fortunately, those are bygone days that have now been superseded by well-fitting and historically correct parts assemblies. Yet, to this day, I continue to hack Hawken style rifles "from the board" with an eight-inch limb & trim chainsaw. (Stutzenberger 65)

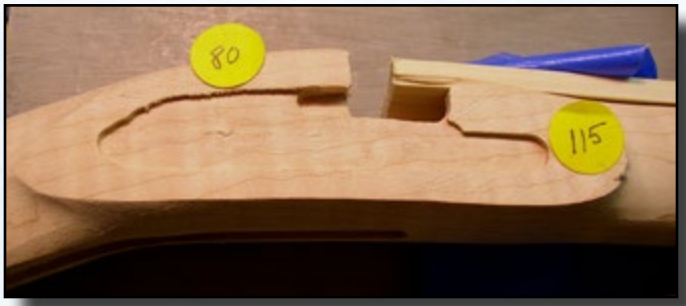


Fig. 1. A misshapen and incomplete lock inlet like this has no future in a kit destined for a nicely built rifle.

Fig. 2. Badly cast parts and mismatched plug/standing breech assembly are impossible for the first time builder to rectify.

<<< Fig. 3. Every one of my Hawken rifles starts with a blank. I usually trace the rough outline from a previous rifle, usually like this one in the finishing stage.

Previous experience in Pennsylvania/Kentucky longrifle building will hold the novice Hawken builder in good stead in at least two respects: inletting the barrel on a halfstock is much less laborious, and there is no carving. That said, as the header quote cautions, having built a longrifle will not ensure success in every stage of Hawken construction unless you have reconciled yourself to a kit (which is not stocking, but just assembly). Remember that Jake, Sam and employees were largely stockers, so after you do your due diligence by reading Baird's Chapter 13 (76) on Hawken variants, you can stock a Hawken very similar to their originals. Once you decide to build the way Jake and Sam did, and take pride in pursuing tradition, you can shape the stock to your physique and period preference. If you do, the major areas that may cause difficulty are:

1) mating the hooked breech plug to the standing breech
2) mating the hooked breech assembly to the lock plate
3) installation/alignment of the under-rib to the entry thimble,
4) fitting of the guard to the trigger plate.

This two-part series addresses each of these problem areas and offers alternative methods of construction via hand tools or machining.

When someone picks up a muzzleloader, the lock area draws immediate attention **(Fig.4)**. If the lock inletting has been badly done, if there are gaps between the hooked plug and standing breech or between plate and breech assembly, it casts a negative reflection on the general quality of the rifle. If you have received a mismatched breech **(Fig. 5)**, don't fool with it. Send it back. You

Fig. 4. As in every muzzleloading rifle, the wood-to-metal and metal-to metal fit proclaims the competence of the builder. Note the faucet washer to protect the nipple during dry-firing the rifle.

Fig. 5. Foreign made hardware like this mismatched mess is made by people who have never seen a Hawken rifle. Buy American products made by those who respect the tradition of good craftsmanship.

(Continued on page 20)

will spend wasted hours trying to remedy someone else's mistakes. Once you get good castings, all mold separation lines and casting flash should be removed from the mating surfaces of the plug and the standing portion. If you are unfamiliar with two-piece hooked breeches, go to the Track of the Wolf website (trackofthewolf.com) to view a wide range of breech castings. Careful fitting of the plug hook to its recess in the standing portion is a bit tedious, but with care and patience, they can be assembled and disassembled smoothly without play between the mating parts and only fine lines between mating surfaces **(Fig.6)**.

Fig. 6. A well fitted breech mates tightly in every dimension including the circumference of the nipple recess. The browning along the mating surfaces did not take well because of grease leaching from between the parts. Better degreasing before browning would have prevented this problem.

On first impression, it might seem that lock-to-breech fitting would be expedited by having a lock with a scallop already cut in the plate for the breech. That might not be the case, however, because that lock must have a hammer throw to match the size and conformation of the breech. Most Hawken style locks have a hammer throw of 1-5/8 – 1-3/4", but large Hawken breeches need a lock with a throw of ~1-7/8". The hammer must not only reach the nipple, it must come to rest squarely on it with the hammer cup concentric to it. The following quote from John Baird (25) in his description of an early J&S Hawken with breech/lock incompatibility problems should suffice here: *"The nipple sets at somewhat of a steep angle, and it will be seen in Plate 35 that some difficulty was experienced in getting this particular hammer to strike it correctly. . . The proper angle is very desirable, but this writer knows from experience that it is difficult to get the hammer to properly strike the nipple."* Apparently, ol' Jake and Sam had their problems with the new-fangled percussion system too. So purchase a lock/breech combination made for each other. 'Nuff said on that.

Even when the lock/breech combination is a compatible one, the breech plug/standing breech assembly is seldom evenly rounded. Some are quite lumpy and must be filed to fit the scallop of the lock plate. Coat the scallop with inletting black, or other contact indicator, and press it up against the breech. Remove the black spots **(Fig. 7)** until an even line (or at least multiple points) of breech-to-

Fig. 7. Seldom does the cast breech plug fit the scallop of the lock plate, so now it is file-and-fit time using inletting black. Note the #3-48 screw holding the parts tightly together.

plate contact is achieved. Since the barrel is held upside down in the vise during this process, the standing breech might just fall off the plug multiple times. It is far handier when final shaping & fitting to hold the parts together by threading in a tiny flat head machine screw as shown. It can be removed later, but I have found that keeping the breech parts locked together results in better grouping. It depends on your priority; if you prefer ease of cleaning to tack-driving precision grouping, remove the screw before final assembly. That is a worthy project for testing with multiple hooked breech rifles to determine if grouping precision is impaired by a detachable hooked breech. Either way, you will have a good fit between the plate and the breech **(Fig. 8)**. However, in this particular example,

Fig. 8. Good metal-to-metal fit is not only aesthetically pleasing, it is necessary to keep percussion cap flash from depositing corrosive chemicals in the lock mortise. Note the rust piling up on the side of the barrel just forward of the breech. As an after-thought, increasing the depth of the hammer cup reduced the blow-by and allowed the hammer to square with the nipple.

note that the contact angle between hammer and nipple is fully functional, but not perfectly aligned. That was before I devised the little set of Hawken-specific tools **(Fig. 9)**. They include a little section of center-drilled

Fig. 9. Hawken-specific tools left to right: a drill stop to prevent drilling into the bore when installing the underrib, a hammer cup insert (no, it's not a Cheerio!) to ensure accurate alignment between hammer and nipple and a lock-positioning pin to be inserted through the tumbler hole in the plate. The drill stop on the left will be absolutely essential for the under-rib installation in Part II.

dowel that you thought was a *Cheerio.* It can be inserted as a press fit into the hammer cup to center it on the nipple. With the insert in place, press the hammer onto the nipple, making sure that the rim of the hammer cup is in perfect alignment with the nipple shoulder. Clamp or use two-sided tape to temporarily secure the hammer to the lock panel. Insert a drill bit through the square hole in the hammer. A brad-pointed 15/64" bit is just a slide fit **(Fig.10)**. Mark the hammer's center of rotation on the lock panel. Drill a shallow hole for a press fit of the inner

Fig. 10. This 15/64" brad-pointed wood bit is just right to center-mark through the tumbler hole in the hammer. Just make sure that the hammer nose stays securely centered on the nipple.

tumbler axle and swing the hammer over until it lines up with that hole while the nose is squarely aligned on the nipple **(Fig. 11)**. Now the little tool on the right in Fig. 9 comes into play; it has been turned to fit the tumbler's inner axel hole in the panel and the tumbler axle hole in

Fig. 11. Here is a mock-up of the positioning of the hammer on the panel while its nose is centered on the nipple. I got so carried away with inletting the lock plate that I forgot to take this picture in a timely fashion, but Keith Lisle reminded me. It is good to have an editor who knows more than the author . . .

the plate. Pass the tool through the plate to align it with its tumbler hole centered on the hole in the panel **(Fig. 12)** and swing the plate up to the proper position snugly pressed up against the bottom of the breech. Now you can inlet the bolster just like you would do on any lock. To keep the plate from rocking on its bolster, slide an appropriate thickness of scrap wood or metal under the

Fig. 12. Here I am inserting the locator tool (shown in Fig. 9) through the lock plate's tumbler hole into the hole in the panel.

lower part of the plate to level it against the panel. If you coat the bolster with a good swabbing of inletting dye, clamp the plate on the panel and give the plate a couple good whacks with a hammer against a piece of dowel, you will leave a black imprint on the panel to make inletting easier. Remember during inletting to keep that plate pressed firmly against the underside of the breech and keep the barrel clamped in its channel through the whole process.

(Continued on page 22)

What if you have decided to use a lock that does not have a scallop cut into the bolster for the breech? Not to worry. There is an easy way to do that with this method too. When you inlet the breech into the barrel channel sidewall, do a reasonably close job of fitting, but don't fret if you have some wood-to-metal gaps even when the barrel is firmly in its channel. Mix up a small batch of a good quality barrel bedding epoxy such as *AcraGlas™* Gel (see suppliers), coat the breech with release agent in every nook and cranny then bed the breech. A large caliber rifle should have the whole tang/breech/plug bedded anyway to withstand the repeated shock of heavy recoil, but if you are a purist, remember you are going to remove the sinful, heretical material later. Once the bedding has set up, you will have a perfectly cast scallop in the barrel sidewall to use as a pattern later for cutting out the bolster scallop.

Coat the plate bolster with layout dye or blacken with a felt tip pen against the *AcraGlas™* bedded scallop in the barrel sidewall. With the plate positioned for proper alignment of the hammer with the nipple, scribe around the scallop. You will have a perfect outline of the scallop on the inner bolster, just where it needs to be. Remove that material by milling or grinding or sawing and filing (I cheat by milling). Once the bolster is scalloped, inlet the plate to allow tight bolster contact with the side of the barrel just like you would any other lock. Inlet the lock internals one at a time using the reverse template method as described by Fitzgerald (23). After the lock is inlet, I mark the position of the sear arm on the rough lock panel to facilitate trigger placement **(Fig. 13)**. I use that line to drill a 9/64" hole from the wrist up to the sear. That enables testing of lock function without triggers. Coat

Fig. 13. This line indicates the approximate angle of sear arm travel. A lot of wood still needs to be removed from the belly/wrist area before inletting the trigger plate.

the internals with inletting dye, clamp into place, remove and check for points of interference (most critical from the stand point of safety being the free movement of the sear). On the exterior, a well inlet lock will have a 1/32" of wood standing proud above the plate that will allow later removal of any dents or scratches incurred during the inletting. Note that the hammer is well aligned, centered by the cup insert, and the rim of the cup is square with the nipple **(Fig. 14)**.

Getting the hooked breech well fitted, the hammer aligned

Fig. 14. During inletting, the rough wood of the lock panel is left a bit proud of the plate to absorb any damage. This slight overage can be sanded flush with the plate during finishing to remove evidence of your boo-boos.

properly with the nipple and the lock inlet and functional is progress well made. The next item on the list is the installation of the double set triggers with their lo-o-o-ng trigger plate that is so hard to inlet in alignment way back under the wrist. Although the Hawken trigger plate & guard assembly underwent a series of changes from Jake's leadership (1830s-1849) to the Sam's leadership (1850 and beyond), the guards retained their integral threaded stud on the forward portion of the bow **(Fig. 15)**. Attaching the guard to the plate requires drilling and tapping for

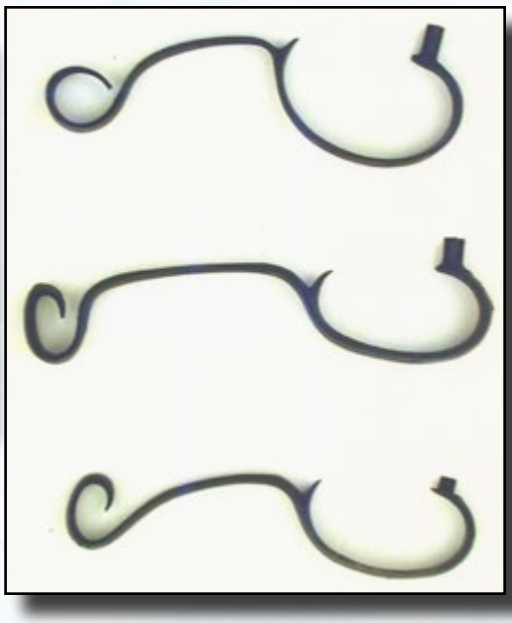


Fig. 15. These are just three of the trigger guard variations found along the path of Hawken evolution. The one at top is similar to the classic English fowler guard.

the threaded stud, an operation that can be done before inletting the plate. I prefer to inlet the plate and then install the guard. Of course, the installed guard can act as a handle. Your choice.

Years ago, after determining the centerline of the trigger plate, I mounted the assembly upside down on the milling table of the drill press and supported the barrel

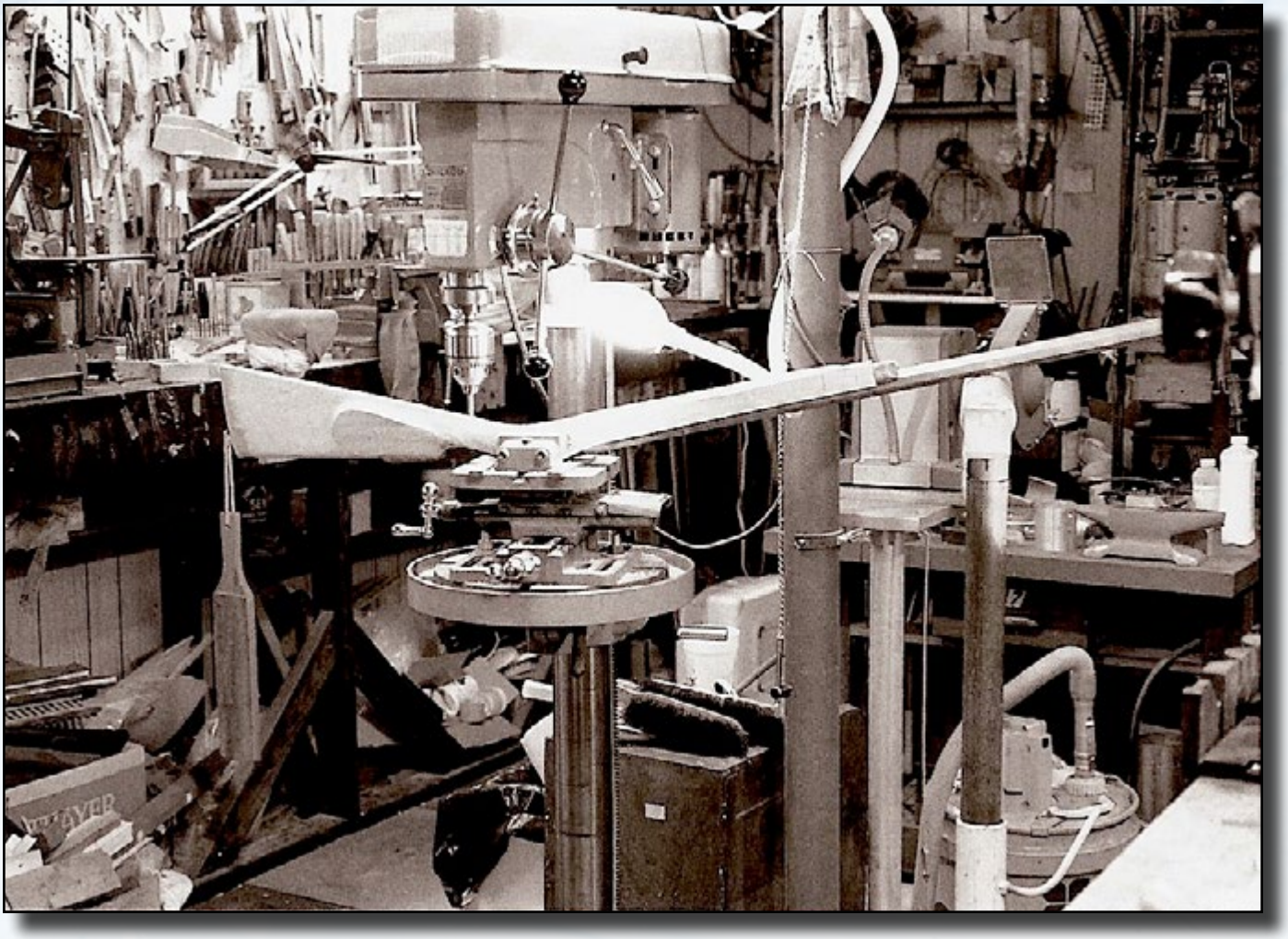


Fig. 16. This was my previous setup for milling the trigger plate mortise. It worked very well, but required keying the barrel in the stock.

end on my roller stand (**Fig. 16**). A nice asset of the roller stand method was that as I milled from fore to aft, it automatically lowered the wrist while it raised the barrel. While that arrangement worked well on a bunch of Hawkens, I have recently found a better way to skin that cat. You'll see that in Part II where we complete the Hawken trigger assembly (which is unlike that of the conventional longrifle) and then finish up with the under-rib assembly and installation.

Acknowledgments

Thanks to Don Stith, St. Louis Plains Rifle Company, for providing the image of the J&S Hawken rifle and trigger guards from his personal collection. Thanks to John Cummings, Keith Lisle and Bob Phillips for editing and suggestions.

Suppliers

Brownell's Inc., 800-741-0015, brownells.com, for *AcraGlas*™ gel and other materials and tools for the gunsmith trade

Don Stith, St. Louis Plains Rifle Company, http://www.donstith.com/muzzle_loading_rifles.html, for a wide range of components for the construction of Hawken, Dimick and other famous Plains Rifles

The Hawken Shop, www.thehawkenshop.com, for a complete range of Hawken rifle hardware

Track of the Wolf, trackofthewolf.com, for a variety of locks and cast breeches for Hawkens and other halfstock rifle construction MB