Making and Remodeling Pistols Part II

By Fred Stutzenberger

These are some of the pistols that got started, but are now languishing in the rafters. If I live long enough . . .

Part I of this series presented alternatives for solving one of the most vexing problems in the making of a muzzle-loading pistol": *"There is little difference between making a rifle and making a pistol-except: how does a smith hang onto a pistol stock while working on it?"* (Chuck Dixon 61). The modification of vises and the construction of bench-mounted supports were described. Here, the use of simple and rapid machining methods for the mating of barrel and stock will be described. Then you can begin shaping the stock in relationship to the barre.

Before you start any of that, you have to ask yourself, *"What am I going to use it for?"* If all you want is a target pistol and do not care for traditional aesthetics, consider Master Pistol Champion Pete Allan's perspective: *"The way I see my target pistols, they are just tools and not things of beauty, so don't worry about what they look like—just get them to shoot straight and practice a lot. You can always build some traditional looking pistols later to keep around to show people who probably aren't interested anyway."* (Allan 60)

Ronnie Sauls gave me a .45 caliber inline pistol built on a Benjamin air pistol frame. It had a heavy, fairly fast twist (1:28) barrel with adjustable sights **(Fig. 1)**. Forty years ago, our local Blue Ridge Mountain Men NMLRA Club allowed any type of pistol and ignition in matches, as long as it loaded from the muzzle. That inline came to hand

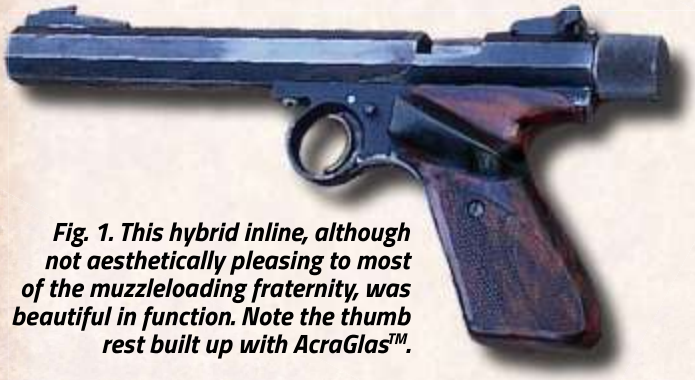

Fig. 1. This hybrid inline, although not aesthetically pleasing to most of the muzzleloading fraternity, was beautiful in function. Note the thumb rest built up with AcraGlas™.

and hung there like it was a part of my genome. It had one quirk that I finally accepted as part of its personality: it took three or four shots to settle the bore into shooting five-shot groups that averaged 1/2 - 3/4" from the bench at 25 yards. I threw together a pistol stand from scrap wood **(Fig. 2)** and started taking it to the matches. It took a lot of first place ribbons, but eventually I tired of it and moved back into traditional flintlock pistols. If a pistol didn't have an aura of intrigue about it, I soon lost interest.

Fig. 2. This pistol stand made from scrap wood was very handy for loading at the range.

For those who are repulsed by an inline zip gun, Pete Allan has some advice born of much experience: "*if you intend to amount to anything on the scoreboard, you better get used to the fact that saw handled grips give you a better hold than the old pirate pistol shapes.*" Long before I read this sage advice, I flirted with the idea of a saw handle target pistol. Looking back forty years, I should have named that flirtation *Fred's Fanciful Folly* **(Fig. 3)** because I bedded the barrel too far back for a right-handed lock and too far forward for a reversed, left-handed lock. So I will have to extend the barrel channel rearward. That can wait for a while until I get my head on straight as to lock placement. Perhaps readers can offer help (sfred@clemson.edu)

Fig. 3. Fred's Folly continues to evolve.

The making of a good pistol starts with a good barrel properly breeched. Tom Harbin showed me how to make patent breeches custom milled to each barrel. Many of my pistol barrels have patent breeches. I have been very satisfied with the results. The machining protocol for machining patent breeches has been published (Stutzenberger 22) and will not be repeated here. For the pistol maker who might consider the advantages of a patent breech, a visual comparison of barrels breeched in the conventional way versus those with patent breech has been included **(Fig. 4)**.

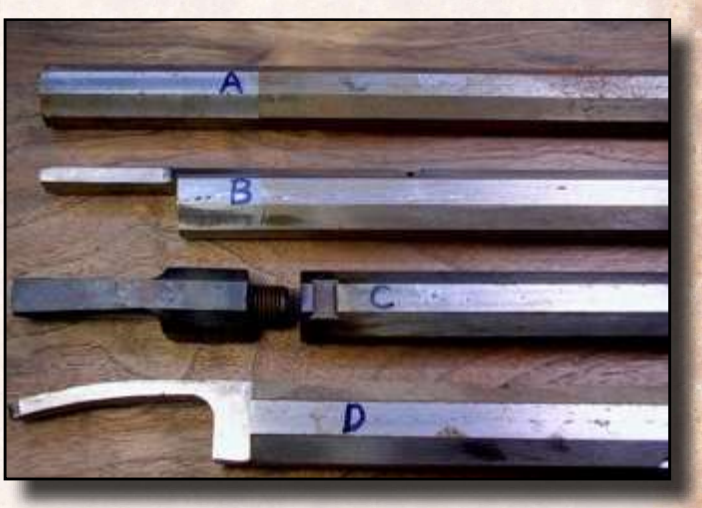

Fig. 4. A custom breech begins with round stock threaded to mate tightly against the inside shoulder of the barrel and also against its exterior. The blank is then milled to match the barrel (a). The excess metal is then removed from the tang area. (b). The tang is heated red-hot and hammer forged to its rough dimensions. (c). Note that the custom breech does not have a lug. (d) that will interfere with the placing of the rear lock bolt.

Most pistol builders will start with a pre-shaped barrel with a conventional breech plug already installed. Before you touch tool to wood or metal, take a look at what has gone before. American riflesmiths of the 18th and 19th centuries didn't make as many pistols as rifles, perhaps only one pistol for every 250 rifles (Kley 3). However, the two types of firearms shared many functional and aesthetic features in common: the position of the barrel in the stock, the spatial relationship of the lock to the barrel, the trigger to the lock and the guard to the trigger. Those are physical, functional necessities. Then consider some aesthetics: the shape of the lock panel surrounding the lock, the shape of the fore end flowing forward along the barrel and the grace of curvature from barrel tang to butt cap.

To my mind, the best way to get your head around those issues in a productive way is to go to the literature. Three sources come to mind: *The Samuel E. Dyke Collection of Kentucky Pistols*, by Frank Kley, T*he Kentucky Pistol* by Roy Chandler and James Whisker, and *Kentucky Rifles and Pistols 1750-1850* by James Johnston. Beg, borrow or

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buy any one of these three and you will be making a good start on your pistol. Another great alternative is to visit the Contemporary Longrifle Association (CLA) Annual Meeting in August, at Lexington, Kentucky. CLA members are very gracious in allowing visitors, with all due caution, to handle their originals and reproductions of both rifles and pistols. Take pictures, get the feel and remember the balance. Those visual and tactile memories will hold you in good stead as you evaluate the progress on your own creation.

Starting with a barrel and a stock blank may seem daunting, but if you take it one cautious and studied step after another, you will do well. If your stock blank is rough cut without a smooth planed side, plane or sand down until you have the surface smooth enough to mark on with a pencil. A large cast iron angle plate serves as a clamping platform on my drill press with milling vise combination **(Fig. 5)**. If you do not have a milling attachment, not to worry. You can make overlapping plunge cuts by moving and clamping the stock to the plate. Just make sure you have a firm, horizontal base support to keep the stock movement oriented.

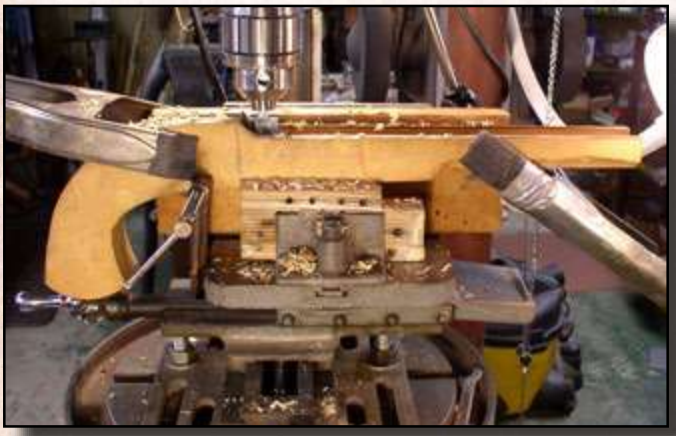

Fig. 5. This barrel channel of this stock blank has been milled with a half-octagon cutter ground from a Craftsman V-groove router bit.

I inlet barrels using cutters I have custom shaped from commercial router bits. The cutters cut cleanly when run at the top speed on my drill press (3,650 RPM). To get proper alignment of the channel to the stock, put a center point in the drill chuck and adjust the direction of travel so that it remains consistently on the centerline from end to end of the intended channel. The cutter is centered on a line drawn at a distance from the lock side calculated as: half the barrel diameter + the thickness of the lock bolster. The back of the breech should be marked on the side and top of the stock. To locate that line, lay out the barrel on the side of the stock to see how much the tang will have to be bent to match the curvature of the butt. Clamp the barrel in its initial position and lay the lock on its position relative to the barrel. Inexperienced builders often make the mistake of locating the barrel and lock too far back, giving the pistol a "cramped" rather than "flowing" silhouette. Again, refer back to the old originals in the books above to get a visual sense on the placement of the barrel in the blank.

Resist the urge to "pre-shape" the stock blank. Keep everything "in the square" for as long as possible; that will aid you in the placement of the barrel. Using an inclinometer will tell you if your barrel channel is off as little as 1/2°

Fig. 6. An inclinometer can be purchased from any building supply store. It can measure deviation from level down to ½°.

(Fig. 6). Tapered or swamped barrels can be confusing because they do not have parallel sides. Ideally, you want to indicate on the bore instead of the side of the barrel. You can get a good approximation of "average level" along the whole channel of a swamped or tapered barrel by placing a strip of steel on the bottom channel flat from breech to muzzle, then shimming it up half the difference between breech and muzzle diameters at the muzzle end of the channel. The upper surface of the metal strip should then be parallel to the axis of the bore.

Getting a good wood-to-metal fit for a tapered or swamped barrel will require some careful chisel work. After I take out all the wood I can remove with the half-octagon cutter, I use a 1-1/2" wide chisel with edge ground to a 20° included angle to remove the rest of the wood at the breech and/or muzzle **(Fig. 7)**. Tom Harbin gave me a set of channel scrapers with offset handles that are good for taking out the last few thousands

Fig. 7. Inletting a tapered or swamped barrel can be tedious, but what is worse is leaving a wood-to-metal gap. Go slowly, working back and forth on both sides of the channel.

After the barrel channel is cut complete with tang mortise, it is a good time to install the barrel-pinning underlug(s), which are also called *tenons*. On short barrels eight inches or less, I use only one pin or key (also called wedges). For longer barrels, I use two. Place the front pin behind the fore end recess that is usually shaped at the muzzle for ramrod access. Place the rear pin an inch or two forward of the lock panel.

The placement of every other item in the construction of a pistol relates to the barrel. That includes the lock. I have published the details of lock inletting in a two-part series in *Muzzle Blasts* (Stutzenberger 4, 40). If you do not have access to those articles, go online and look for flintlock pistol kits. Some websites will show the topology of a lock inlet. Mark Silver inlets his locks assembled. I have never seen this process, but visit American Longrifles.com for information on that approach. For us mere mortals, it has been suggested to press the innards of the assembled lock into a block of Styrofoam to get a negative of what the inlet should look like. I would appreciate feedback from readers as to efficacy of inletting a lock as an assembled unit (sfred@clemson.edu).

Sixty years ago, the selection of locks was very sparse in terms of style, and sometimes also in terms of quality. Not so today. There are several lock manufacturers who offer a wide range of flint and percussion locks ranging from early Jäger to late halfstock. There is not a lot that you can do (or that needs to be done) on commercial percussion locks except polishing the innards. On flinters, there is a lot of tweaking that warrants description far beyond the limitations of this article. I learned that when I assisted Larry Pletcher in his computerized measurement of flint lock ignition timing (Pletcher & Stutzenberger 50). The old original locks were very quick with relatively low standard deviation between tries compared to a whole range of modern locks from a variety of makers. A good lock, whether old or new will throw an astounding cascade of sparks **(Fig. 8)**. A lock with good geometry and metallurgy can be modified into a great lock by making many little changes that have a cumulative beneficial effect. One of my favorite modifications is to make the inner surfaces of the cock jaws "slip-proof" by kicking up rows of sharp little teeth with a graver **(Fig. 9)**. This enables the jaws to hold the flint securely even after the flint & leather "sandwich" has been advanced a couple of times to compensate for flint shortening during use.

Fig. 8. A lock that throws a shower of sparks like this has no perceptible lag time between hammer fall and ignition.

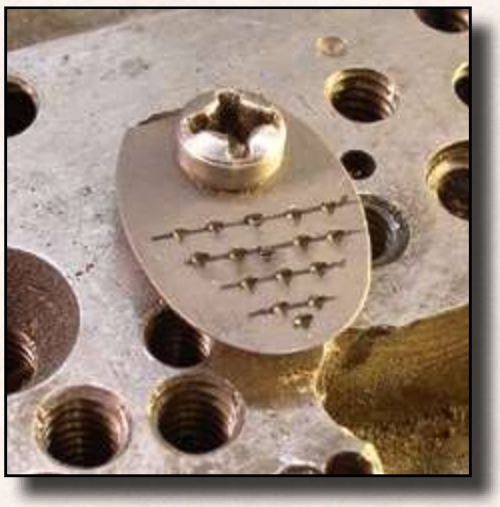

Fig. 9. Kicking up little teeth on the opposing inner surfaces of the cock jaws will help to hold the flint securely.

There are few modifications that speed ignition like a well-designed touchhole (vent) insert. Jim Chambers makes good (White Lightning) inserts that have become very popular and are easy to install (see suppliers). I make my own on the lathe and slot them for easy removal to clean and dry the breech plug face **(Fig. 10)**.

After the lock is inlet, the shaping of the butt can commence in a chisel-file-try sequence repeated over and over again depending on the style of the pistol you want to build. Many of the PA/KY pistols had what I call a "hawkbill" butt with somewhat flattened sides **(Fig. 11)**. I'm sure

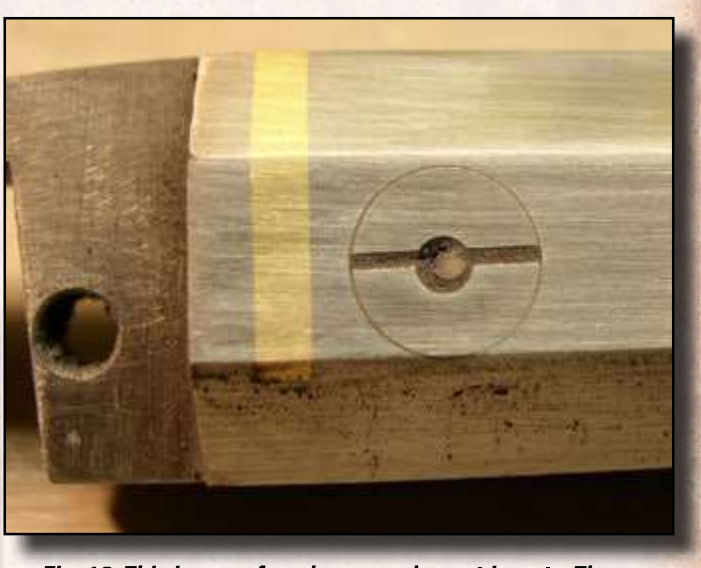

Fig. 10. This is one of my homemade vent inserts. These are tapered both from the inside and outside, leaving a very short passage of 0.070" diameter. Note that this barrel has a traditional breech plug, so a hole has to be drilled through the lug to allow passage of the rear lock bolt. Remember to always blow down the muzzle to blow the abrasive out after smoothing the insert to the vertical flat. Also remember to take out the bolt before trying to remove the barrel. Note the NuGold band; it really stands out after bluing or browning.

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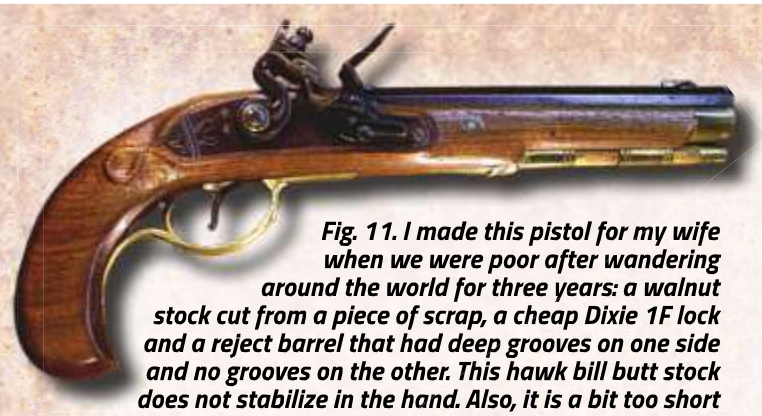

Fig. 11. I made this pistol for my wife when we were poor after wandering around the world for three years: a walnut stock cut from a piece of scrap, a cheap Dixie 1F lock and a reject barrel that had deep grooves on one side and no grooves on the other. This hawk bill butt stock does not stabilize in the hand. Also, it is a bit too short for a large hand.

some readers will disagree in this regard, but I consider the hawk-bill the poorest possible butt shape for any pistol destined for match competition. That's just my personal opinion because it never settles in my hand to the same position. To approximate that difficulty before you choose the hawk-bill butt configuration, attach a two-pound weight to the mid-point of a walking cane and hold it out with the shaft horizontal. Gravity will continue pulling the bow of the cane around in the hand. "Nuff" said on that.

The bag-shaped butt **(Fig. 12)** is better but not much. If shaped of generous proportions, it will settle in the hand, but only if a large portion of the gripping effort is dedicated to keeping the bag butt in the same position. As an analogy, consider squeezing a wet watermelon seed

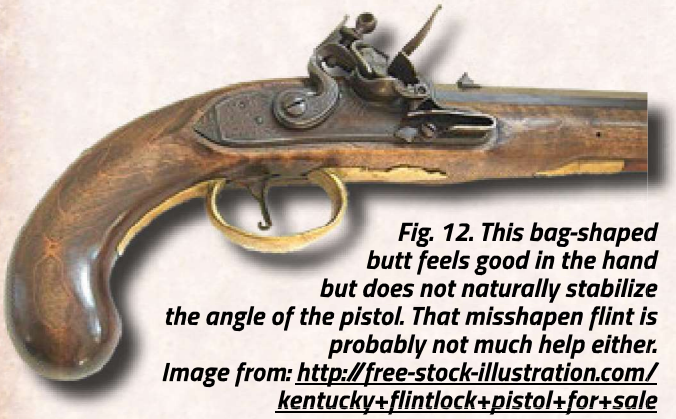

Fig. 12. This bag-shaped butt feels good in the hand but does not naturally stabilize the angle of the pistol. That misshapen flint is probably not much help either. Image from: http://free-stock-illustration.com/kentucky+flintlock+pistol+for+sale

between thumb and forefinger. The harder you squeeze, the more likely the seed will be propelled from your grip. Straining to hold the bag butt stable in the hand wastes energy that would be better spent on trigger control. Preferences here are a matter of personal taste and experiences.

To promote the stability of the pistol in the hand, there has to be some inherent feature of resistance built into the butt to counter the force of gravity pulling the barrel down. Nicholas-Nöel Boutet made some of the most beautiful and functional pistols (usually as braces or paired braces) for European aristocracy. He was gunsmith under King Louis XVI in the late 1700s and early 1800s as well as the chief gunsmith to Emperor Napoléon.

That was good enough for me. I built a .45 caliber convertible pistol with the Boutet style flared butt **(Fig. 13)**. When I pick it up, it just nestles in my hand like a satisfied kitten. The curvature of my pistol's butt is not quite as abrupt as those of the classic Boutet configuration, but close enough for comfort.

Fig. 13. The butt of this pistol terminates in a pronounced flare that resists muzzle droop as it comes up against the heel of the hand

Apparently, the flair at the terminus of the butt is more important ergonomically than its angle. About twenty years ago, David Decker gave me a little pistol barrel that I turned octagon-to-round into a cannon muzzle. I stocked it in a piece of figured walnut and put much less curvature to the butt than I had in previous projects **(Fig. 14)**. Of course, the light weight of the .45 caliber barrel (9" x 0.8") does not put much strain on the hand of the holder.

Fig. 14. This little pistol seems ergonomically suited to me even though its butt stock has less curvature than most traditional American pistols. That makes it feel good to me. Currently, I am working on modification to lighten trigger pull to ~3 pounds.

Speaking of strain, highly figured wood generally can take less strain/shock than straight grained wood. In a rifle, the most fragile area of the stock is the wrist; in a pistol, the most fragile area is the cross-grain of the wrist. This potential weakness becomes more acute in a butt configuration that curves approaching a right angle to the forestock. With highly figured wood, you cannot depend on the rear trigger guard extension to do much reinforcement. A much sturdier modification is a half-inch section of hickory ramrod epoxied from the butt up through the wrist **(Fig. 15)**. This will be covered by the butt cap should you choose to install one.

Finally, it seems probable from my observations of American-made pistols that most were made by rifle makers who

Fig. 15. Highly figured wood usually has flawed areas that weaken the stock. Note the voids in the upper left corner of this blank and what could be a separation starting at the right. A sturdy ½" hickory dowel or a piece of all-thread rod can provide a lot of reinforcement.

made few pistols as modified copies of their more sophisticated European uncles. Of course, they did not have access to the abundant images of European pistols that we have today. If judging from the ratio of surviving pistols to rifles that Frank Kley calculated (1:250), it would seem likely that many relatively prolific rifle smiths never made even a single pistol. Perhaps that is just as well, for the American rifle smiths could not compete with the cheap labor London pistols that seemed to satisfy the thin, affluent market on this side of the Atlantic.

Part III will concentrate on pistol remodeling. Most rifle and pistol builders, particularly those who were privileged to train under masters, don't usually come back years later and want to change things around. However, the subconscious mind is a wonderful organ that keeps on suggesting improvements long after the initial project was finalized. Years later, we may look at the pistol in light of further observation, instruction and use to realize there is considerable room for improvement.

Acknowledgments

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Jim Chambers Flintlocks, Ltd., flintlocks@worldnet.att.net, 828-667-8361.

Rice Muzzleloading Barrel Company, Mocksville, NC 27028 (336) 492-2614.

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