Making A Single Shot Rifle Pattern, Part One

Given the pleasing, classic lines of the Remington Rolling Block No. 2 action, along with a can't-pass gun show find, making a hand-built stock is well worth the effort!

by Dominick Pisano

James J. Grant's *Still More Single Shot Rifles* has a photo of a custom stocked Remington Rolling Block (RB) #2 that caught my eye many years ago. As a custom stock maker it was something I thought I'd like to do when the opportunity presented itself. I have been enamored of Rolling Blocks for a long time. The simplicity of design is clearly the work of genius. Of the many varieties of RB actions I'm in agreement with Frank de Haas who says in his book Single Shot Rifles and Actions, "Of the several different Remington rolling block actions, the No.2 action holds the most appeal to me." Yes!

At a Houston Gun Collectors Association show about two years ago, the opportunity I had long hoped for presented itself. I spotted an RB #2 in excellent condition, save for a missing breech block/trigger return spring. It was in .32 Rimfire, which seems to be the most typical cartridge for this rifle. Although they were also chambered in .22 Long Rifle, these are very difficult to find. The exterior of the action was in very good condition except for a very slight patina of rust on the upper right side of the frame. It was not, in my mind, a collectible so it would make an excellent subject for the custom stock I referred to earlier. I wanted the rifle, but was unable to come to terms with the seller.

Lo and behold I spotted the same rifle at the very next HGCA show and this time the price was to be more to my liking. After a brief negotiation the deal was concluded, and the rifle was mine. This event took place some months after my third grandson was born. Then and there I knew that this rifle was meant for him even though I realized it would be many years before he would be of age to use it—under proper supervision of course. Thus, the project I am about to describe was begun.

Careful assessment of the barreled action revealed that my initial impression of its condition was correct. The action was crisp and tight, except for the missing part that I previously described. It is always a wonder to me how a rifle can have a missing part. Probably someone took it apart and didn't know how to put it back together. Who knows? The exterior of the barreled action was in NRA VG condition except for the light rust spot on the upper right side of the receiver. Abrasive paper of 100 grit held against a small block of wood confirmed that it was essentially a minor surface blemish. The bore was rough, and therefore useless, but the exterior of the barrel was in superb condition retaining much of the original blue. This worked out well as the barrel was to be relined to accept the .22 Long Rifle cartridge anyway. The face of the breech block was a little rough and in need of restoration, but I'll leave that decision to my gunsmith when the time comes. The original wood was in good condition considering its age and the steel butt plate was in very good shape so I decided to keep them together for later resale. This would allow me to use a slightly larger steel butt plate as was the case in the photo of the custom rifle.

The first step to re-creating this custom stock was to take Grant's book to a local quick copy shop after first carefully measuring the depth of the rear receiver. This measurement would serve as a reference. Then I copied the photo using the enlargement provision of the copying machine until I had a copy that matched the measurement previously mentioned. The result was that I now had a stock profile that preserved the graceful lines of the custom stock pictured in Grant's book. From this I made a template which would be used later as a guide.

Next, I glued and screwed two pieces of poplar together from which I would make the stock pattern blank. The joint between the two pieces of wood would also serve as a handy center line for the work to come. Poplar is an excellent choice as a pattern wood. It is readily available, quite stable and inexpensive when purchased from the scrap barrel of your local home supply outlet. Additionally, the wood comes in 3/4" thickness which adds up to 1 1/2", just a bit larger than the width of the butt plate I planned to use.

After the glue set, I replaced the screws with dowels so I wouldn't inadvertently ruin any of my tools

Above left: Pattern for a DeHaas-Miller, just as the customer ordered.
Above right: Right side of DeHaas-Miller pattern.

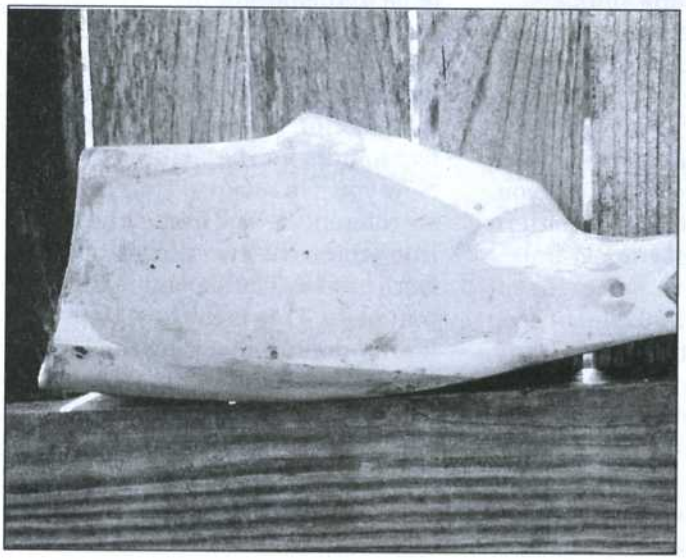
in the shaping process. The template from the photo copy was then traced unto the pattern blank and carefully cut out just a bit oversize (strong) with a band saw. This is to allow a bit of excess wood for the final shaping. I band sawed the rough shape of the cheek piece, again using the enlarged photo copy to make an outline.

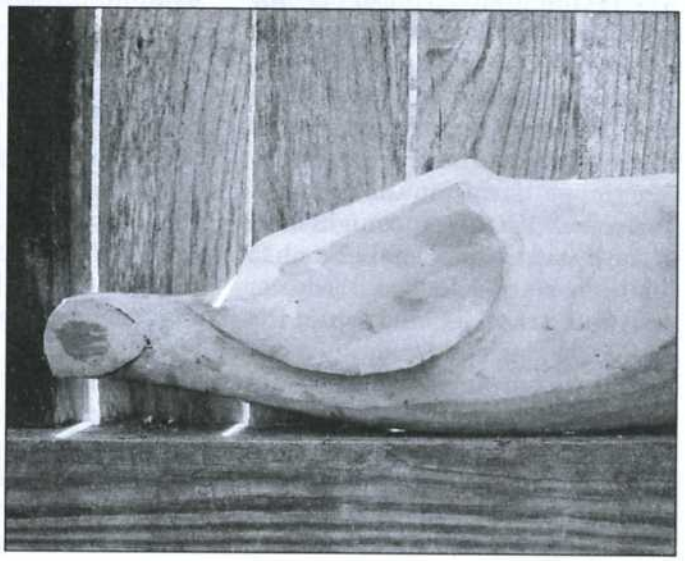
The cheek piece was also glued and screwed to the stock pattern blank at the appropriate position. Once the screws were removed, excess wood was cut from the cheek piece using a table saw with the blade tilted to the appropriate angle in order to get close to the correct bevel and to remove excess wood. I now had the basic stock from which the final pattern would be made using rasps, drills and a lot of elbow grease.

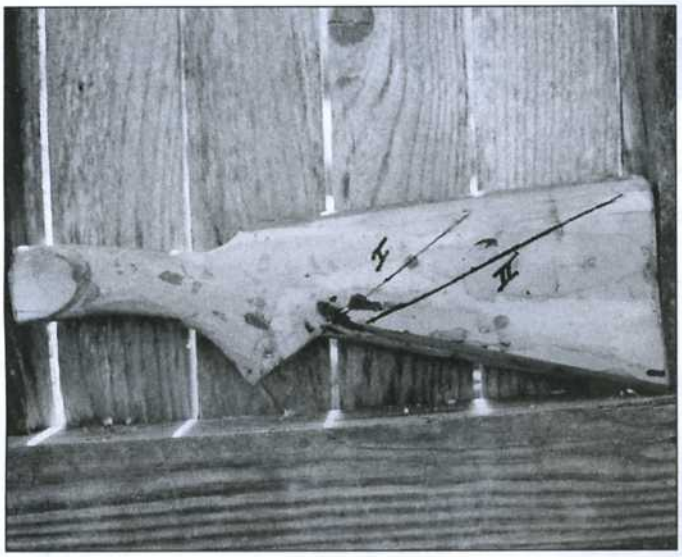
WARNING! The table saw (or band saw) is potentially a dangerous machine. This is especially so as the blade guard must be removed in order to run the irregular shape of the pattern through the blade. I strongly recommend that you attach a ¾ x 6 x 24-inch board to the pattern. This will give you control as you hold the board tightly against the table saw fence and will keep your hands a safe distance from the blade. Be absolutely certain the blade has come to a complete stop before removing the pattern from the table saw. I can not emphasize this safety procedure too much!

The process is begun by carefully measuring the upper tang of the receiver and transferring these dimensions to the rough pattern using the aforementioned center line of the wood joint as a reference. Using a brad point or Forstner drill of the approximate width of the tang, carefully drill a series of holes to the correct depth. Use a bit of masking tape to mark the depth of the

Below left: Stahl Martini pattern.
Below right: Left side of Stahl Martini pattern.







Above left: *Left side of Fraser pattern. The customer wanted an English style stock.*
Above right: *Right side of Fraser pattern.*

holes and hog out as much of the excess wood as possible. Then carefully chisel out the remaining wood where the drill holes overlap.

Next, remove the lower tang from the receiver and the main spring which is attached to the upper tang. Fit the upper tang to the pattern using the spotting-in technique. I find that my work goes faster and is more accurate if I fit one tang at a time. This is not possible with all single shots as the lower tang is not universally removable. Fit the tang so that the front of the of the pattern just butts up against the rear of the receiver. This fit need not be perfect because carefully-applied epoxy will make for a perfect fit. Use a wood screw to attach the upper tang to the pattern wood to hold things in place while the epoxy cures.

After the epoxy has cured, carefully clean up the excess, remove the screw from the tang and separate the pattern from the receiver. Take care with this. You might need to gently tap the nose of the comb to get things started. Replace the lower tang to the receiver, and repeat the drill and spotting-in technique, using the upper tang as guide to slip the pattern on and off as you work at inletting the lower tang. Epoxy the lower tang into place being careful not to get epoxy into the receiver. After the epoxy has cured, carefully remove the excess and again separate the pattern from the receiver.

The last step is to perfect the fit of the pattern against the rear of the receiver. The rear of the receiver is curved and this is part of the Rolling Block #2's charm. This is the only rolling block design that is curved, as described, instead of squared. Mortises are milled in the rear inside side walls of the receiver to accept the stock tenons at the forward end of the butt. The tenons also keeps the sides of the wrist from spreading apart with changes in humidity. Shape the pattern wood to roughly follow the curve of the rear of the receiver and rough out the tenons that will fit into the receiver.

This need not be a perfect fit as epoxy will take care of that for you. Remember we are making a pattern here and not the final stock. Butter the mortices in the receiver with epoxy, using enough thickener to keep the epoxy from getting too runny. Also, butter the tenons on the end of the pattern wood and fit the pattern to the receiver using the top tang screw to hold things together. Remember to use modeling clay inside the receiver to prevent epoxy from getting into places where you don't want it. And, it goes with out saying, use plenty of release agent.

Although it may seem like a lot of extra work to do the aforementioned in three steps instead of one, believe me, in the end it saves time and produces better results in that the resultant pattern is very accurate. This will allow for better and more accurate machining of your stock blank. Too, you absolutely avoid the possibility of permanently bonding your pattern to the receiver if you try to do it all at once. It happens to the best of us!

After trimming off excess epoxy the stock is removed and cleaned up. Re-attach it to the receiver. The barreled action now serves as the perfect handle for the shaping to come. Now you can relate to your three basic references. The first is the center line where the two pieces of wood were joined. The second is the steel butt plate. This is the best time to fit it after double checking the Length of Pull (LOP) and pitch. Once again this need not be perfectly fitted as you can fill in any voids with epoxy. The third reference is the rear of the receiver where the stock is abutted via mortice and tenon.

After the butt plate is fitted comes the real work of shaping the stock. Use the photo as a reference guide and refer to it often. Begin the process of removing excess wood. Go as fast or slow as your skill allows as a lot of excess wood must be removed. Use heavy duty rasps and planes to do this work. Be careful. If you have sharp tools, and you should, the wood removal can go faster than you think. Don't take too much away or you may find that you have to build low areas up with bondo and start over. Stock making (or, in this case, pattern making) is labor intensive. You don't want to make mistakes if you can help it by getting in too much of a hurry.

When most of the excess wood is removed from the cheek piece, draw an outline of both the cheek piece and the shadow line on it. Make the outline "strong", meaning you want to err on being oversized. You can always cut it down if the cheek piece looks too large. Carefully shape the cheek piece using round and half round rasps and chisels to cut the shadow line. Try to work both the shadow line and the profile of the cheek piece together until you have succeeded in getting the correct shape. I usually leave the outline a little strong to allow for final shaping and sanding.

The pistol grip is next. Cut it to the appropriate length using a hand saw. Remember if you traced your pattern template carefully, all you may need is a bit of trimming and squaring up. Next, screw a pistol grip cap on to the end of the grip to use as a guide and carefully file and rasp to shape using your assortment of round and half round tools. Be certain that all the lines flow together in an eye pleasing way. The more accurately this is done the better your final wood will look when machined—and a lot easier to complete the stock.

If your stock design calls for panels behind the sides of the receiver, now is the time to trace or draw them free hand on to the wood. Panels add a custom touch and sometimes add strength in an area which might be weak due to internal action parts. They can be either flat or slightly flared. It's a matter of taste. Once the panels are drawn on the sides of the wrist, begin carefully cutting away excess wood. If you have not yet thinned down the stock, it is probably the full thickness of the two pieces of wood which were glued and doweled together, about one-and-one-half-inches. This makes for a lot of wood to be removed, so do it in stages.

First, outline the panels. I use a number of different sized rat tail files, then thin down the panel so that it is almost flush with the side wall of the receiver. Stop, step back, and look. More work is probably necessary, so repeat the above steps until one side looks the way you want it to look. Again, leave the wood a bit strong so you can adjust as necessary with final shaping and sanding. Next, do the same thing on the other side. The trick here is to get both sides identical, which is easier said than done. This can separate the men from the boys, and the women from the girls. Also be certain the top and bottom of the panels flow into the rear of the receiver in gently flowing, eye pleasing curves.

When you think the panels are just about right, start to shape the wrist to form graceful flowing lines to the pistol grip and the comb. If the wrist feels and looks too wide, it probably is. Cut the rear of the panels deeper and reshape the wrist again until all the lines blend into a unified whole. The pattern should begin to take on its final shape and you may now cut the flutes on either side of the comb nose—or not, it's your preference.

The last major shaping now moves to the rear of the pattern. Using the steel butt plate as a guide, shape the stock behind the cheek piece so that it flows into the butt plate. Ditto on the off side. Sand out the stock using electric sanders and sanding blocks. When you are satisfied set the completed pattern, attached to the barreled action aside for a few days in a place where you can't help but see it. If something doesn't look right, chances are you will spot it, thus enabling any necessary reshaping. When finally satisfied, remove the pattern and clean it up. Remove all the modeling clay from the receiver and clean it up, too. Then reassemble the parts previously removed from the action, such as the main spring, breech block, hammer, etc., and inlet these by spotting in. Clean up the tenons while you're at it and remove excess epoxy.

In Part Two we will machine and finish the stock. AG