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PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

07

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INSIDE THE ARCHIVE

AFTERMARKET TRIGGER OVERVIEW

NOT DOING AS THEY SAY • WORKING THE WEBLEY MK III • RUSTY GUN BLUING • MOUNTING A CROSSBOW SIGHT, CAN...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 091

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IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from July 2011.

2 Not Doing As They Say
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2

3 Working The Webley MK III
ROBERT K. CAMPBELL • ORIGINAL PAGES 3-7

8 Rusty Gun Bluing
THEO LYROPOULOS • ORIGINAL PAGES 8-9

10 Mounting A Crossbow Sight,
Cantilever Style
NORMAN E. JOHNSON • ORIGINAL PAGES 10-12

14 Making A Single Shot Rifle Pattern,
Part 2
DOMINIC PISANO • ORIGINAL PAGES 14-17

18 Aftermarket Trigger Overview
CHICK BLOOD • ORIGINAL PAGES 18-22

23 Reader Forum
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 23-24

FROM THE ARCHIVE

Not Doing As They Say

BY AMERICAN GUNSMITH EDITORS JULY 2011

ORIGINAL PP. 2

The Du Pont corporation has conducted numerous studies of consumer buying habits over the decades. Typically, this type of research aims at tracking products purchased and attempts to correlate that to advertising and marketing efforts, customer demographics and other factors. The idea was to help retailers make better decisions on how to better address customer needs.

In one study Du Pont employees, dressed in distinctive but non-descript clothing were placed out front of a variety of retail and grocery stores and approached customers with a quick survey as they entered the store. Receptive consumers were asked a brief series of questions about their favorite brands and the sorts of goods they came to purchase. Unbeknownst to these survey respondents, the Du Pont crew marked each survey with the consumer's description.

Once these folks completed their shopping a different survey was attempted to ascertain what the consumer actually bought. Statistically-valid sample data from 5,000 people was collected and it found that seven times out of ten consumers will answer a survey with claims different from what they actually do! No, this does not mean that random people deliberately lie seventy percent of the time.

Sometimes it means that an otherwise polite and honest respondent, busy and harried with other life issues, flippantly answers questions in quick attempt to help the person conducting the survey. Other times the survey reveals what the respondent believes is the right answer or correct response, even though it might not ac-

tually represent his/her true habits. In other words, the respondent is answering with what he feels he should be doing as opposed to what he really does.

While volunteering as a hunter education instructor in Wisconsin, I read a National Shooting Sports Foundation-generated survey claiming that nearly three out of four hunters engaged in target shooting between hunting seasons. With over 700,000 licensed deer hunters alone, this indicated some half million folks attending shoots at least once every year. During this same period I was on the Wisconsin Rifle and Pistol Association board as the director of field marksmanship events.

Despite forming as a state-level branch of the National Rifle Association, WRPA embraced all forms of target shooting, including those not recognized by the NRA. Yet, membership hovered around 3,500 total and not all of them attended shoots. Meetings primarily revolved around boosting participation. In fact, "Field Marksmanship Director" was a position invented by the WRPA for me because I was running Hunter Shooter events and they hoped I would attract more hunters.

I did, to a small degree, but we were about 495,000 people short of that NSSF survey and still have no idea where or what those folks did to constitute "target shooting." I will present survey data as collected by organizations such as NSSF and NRA here on occasion. As an indicator of overall general public feeling such surveys can be useful.

However, if the goal is to track something tangible like actual participation surveys are likely useless unless the results can be verified with a measure of real participation as opposed to respondent claims.

PISTOLS

Working The Webley MK III

The Webley MK III is among the most robust and reliable revolvers of all time. Previously quite a rare, a new wave of Webleys has found their way into shooter's hands and are now more likely to cross your bench.

BY ROBERT K. CAMPBELL JULY 2011

ORIGINAL PP. 3-7

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The Webley MK III revolver is among the last revolvers used by any military force as standard issue. Developed as an alternative to the previous Webley .455 caliber revolvers, the MK III is basically of the same pattern and operating on the same principles but incorporates several detail changes. After the development of the MK III prior to World War Two, the British ended up adopting a modified Webley design developed at Enfield Lock.

Although the Enfield revolver has features that differ from the Webley the design is similar enough that Webley was awarded damages in a legal claim. Just the same, during World War Two revolvers were in such a shortage that the Webley MK III .38 caliber revolver was used in great numbers. It was a rare thing to see a Webley MK III .38 in the shop. I have replaced a few extractor springs and performed ad hoc peening of the bolt and little else.

Customers do not like to spend much on a revolver when they were only worth a hundred dollars or so. Today, however, Webley revolvers in unmodified condition are worth much more. The older .455 revolvers are occasionally brought in needing various

parts replaced. A common ailment that shortens the life of the .455 is the firing of overpressure ammunition. .455 Webley ammunition was once nearly impossible to come by.

Today, Hornady Custom offers excellent quality ammunition loaded to the original 265 grains at 650 fps specification. The expedient for those who wished to fire their 38/200 used by British forces in World War II. Webley .455 revolvers was to face off the rear of the cylinder to allow the firing of .45 ACP cartridges with moon clipped rounds. This was OK as far as it goes but there were problems. Many of the revolvers were not properly modified, leading to headspace problems.

The .45 ACP is far more powerful than the .455 Webley and battering is an issue. The Webley line of revolvers use short, low pressure cartridges such as the .455 Webley and the .38 Smith and Wesson by necessity and, like most breaktop revolvers, do not generally have enough leverage for anything longer. I imagine someone may try to hot rod the .38 Smith and Wesson and batter a MK III as well. Not too long ago anew

supply of Webley revolvers has entered the country and we may be seeing more in the shop.

Some appear as new and, as is inevitable with past experience as a guide, the rougher revolvers will surface later. The Webley MK III is a break top design, or more properly, a hinged frame revolver with a double action trigger. Unlike the Enfield MK III, which is a double action only design, the Webley also has a single action option. There are production variations from 1874 forward but in general operation the Webley is very consistent from one version to the other. First things first.

We will break the action open to be certain the revolver is not loaded. First, depress the cylinder latch and open the action. The barrel is pressed downward. The ejector star, if operating properly, should reach the end of its travel. The ejector star will run through the same action as ejecting cartridges even if the revolver is not loaded, springing to full extension and then dropping back into place. The revolver is now unloaded. The first step in disassembly is to remove the cam lever lock screw.

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Hot water works just fine. It quite likely has never been fi red. This is easily accomplished with a coin according to popular literature. Don't believe it! Our cam lever screw was very tight and required considerable effort to remove with a Chapman professional gunsmith screwdriver kit. I think that we had best dispatch with coins and nails and knife blade edges as gunsmithing tools and use the proper tools for the job. Next, rotate the cam lever upward and push the cam lever toward the muzzle.

You will now be able to lift the cylinder off of the axle or spindle. Again, there was considerable effort required in lifting the cylinder off of the spindle, however, our test case is an as-new Webley that appears to be unfired al-

though it was manufactured well over fifty years ago. A neat trick in disassembling the cylinder is to insert two empty cartridge cases in the cylinder.

Place them at opposite directions in the chambers of the revolver cylinder and angle them inwards to keep the ejector star at full extension. To remove the ejector rod, you must insert some type of tool (I used a tempered Allen wrench) into the hole in the extractor nut. You will now be able to remove the extractor and extractor spring. Be careful with the small extractor spring! Simply twist the extractor rod counter clockwise and you will be able to remove the ejector rod and extractor spring.

The cylinder of the Webley is quite short, just long enough to contain a stubby .38 Smith and Wesson cartridge. For normal cleaning and inspection this is fine for disassembly. If you need anew extractor spring replacement may be done at this point. This spring is under a lot of pressure and it stands to reason that it will need replacement from time to time. With the cylinder removed we will move on to the next step by unscrewing the hinge pin screw and push the hinge pin out to the left.

**THE BARREL AND EXTRACTOR LEVER
MAY NOW BE REMOVED AND
SEPARATED. UN-**

WORKING THE WEBLEY MK III CONTINUED

ORIGINAL PAGE 5

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screw the two cylinder cam screws and remove the cylinder retaining cam. This is all that is required for most maintenance and parts replacement steps. Next, we will remove the one and only grip screw. Interestingly the Webley was never, to the best of my knowledge, fitted with wooden grips, placing it ahead of its time when adopted in 1874. Modern revolvers such as the MK III .38 illustrated in this article carry this tradition on.

I have been able to obtain a very nice set of reproduction grips from Gun Parts Corporation for the Webley .455, circa 1900. This is just one resource for the Webley and among the better stocked dealers. Once the grips are removed, cock the hammer and loop

a paper clip around the mainspring. You may secure the wire paper clip by bending or wrapping it with a pair of pliers. This keeps the mainspring depressed during disassembly. The mainspring is quite strong and this expedient works well.

Carefully place your thumb on the hammer and lower the hammer by pressing the trigger, allowing the hammer to ease down. If you have properly secured the mainspring you may now unhook the upper hammer foot hook or limb (as it is variously called) portion of the mainspring. This part is hooked into the hammer swivel. You may now lift the mainspring out of the frame. The Webley MK III trigger guard is among the few removable types encountered in revolvers.

Simply remove the two retaining screws and the trigger guard pulls away from the frame. It is a robust unit but be careful not to warp it if it sticks a bit. Ours was stuck, possibly due to varnished oil or Cosmoline, but with a bit of gentle rocking it was removed. At this point the mainspring lever may be lifted out from the notches in the frame. You will slide it to the rear out of these notches. The hand and the trigger are removed by unscrewing the trigger screw and pulling the parts downward out of the frame.

Unscrew the hammer screw and lift the hammer out of the frame. Next, compress the barrel catch spring against the recoil shield with those handy-dandy padded pliers we all keep on hand. Unscrew the barrel

WORKING THE WEBLEY MK III CONTINUED

ORIGINAL PAGE 6

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It is easily removed once compressed. Note the hammer stud fitting into the mainspring. The design is simple and meant to last a century. The hammer does not fall far enough to crack the primer when the safety is in this position. catch screw. You will now be able to slide the barrel catch and spring to the rear. This spring may occasionally need replacement.

You should note that the rear sights are integral to the cylinder release, which is fine as far as it goes but proper re-alignment may be necessary for an accurate point of impact. The recoil shield is actually fully removable although it is seldom necessary unless some type of repair to the bolt and the spring are required. You must unscrew the recoil shield

retaining screw and move the recoil shield by tapping it off of the frame to the left. The bolt and bolt spring will now fall free.

A removable recoil plate or recoil shield is a feature of a revolver with no sideplate. It should be noted that the Webley is a very strong revolver with large robust parts but it is not finely fitted in the manner that the Smith and Wesson revolvers typically are. As a note of interest, I have found in many examples that the Webley cylinder will rotate freely under finger pressure when the hammer is at rest in the safe or rebound position. I find this quite interesting.

Yet, when you fire a cylinder of ammunition, the Cosmoline is not the chore to remove from a revolver that is may be from a rifle. Hot water works well. 38, top, is less similar to the MK III .455, bottom, than it is to the MK IV .455. Although the designs are separated by fifty years these two revolvers are quite similar in operation. cartridges always rotate as intended and the piece indexes properly. This a peculiarity of the Webley design.

As far as ammunition, the proper cartridge for the Webley is the .38 Smith and Wesson. This cartridge uses a 146 grain bullet at 650 feet per second or so. Winchester still loads this round but it is sometimes difficult to obtain. The British used a

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In practice most are too tight and require considerable effort to turn. special load with a 200 grain bullet at about 750 fps. They felt that this heavy bullet would have the same stopping power as the .455 Webley. I have heard stranger theories and there may be something to it. I have loaded the Webley with a special load using the Magnus 196 grain RNL bullet at 700 fps with excellent results. However, atop break hinged frame revolver like this definitely should not be used with anything heavier.

Revolver Safety The Webley illustrated is among a very few revolvers fitted with a safety. On occasion you will see European revolvers fitted with some type of safety lever with various degrees of utility. Much of the Belgian ironmongery produced at the turn of the previous century featured such levers. With the locking lever pressed to the right, the Webley seems to operate normally but the hammer-mounted firing pin is prevented from fully contacting the cartridge primer.

Webley revolvers fitted with this safety also feature a large cut in the hammer unique to the Webley revolvers with the safety fitted. This allows proper function and clearance for the safety lever. When the bolt is pressed fully to the left the revolver will fi

re. The safety bolt seems positive enough and unlikely to be inadvertently operated, at least in the as new example illustrated.

A peculiarity of the type is that when the safety is fully to the left in the off position the revolver fi res but the cylinder latch is blocked and the revolver may not be opened. The safety must always be applied when the revolver is open and being loaded. If the safety is taken off while the revolver is open it will not close. As you may imagine, some who regard the Webley as afine combat revolver do not appreciate this complication.

My research indicates that the safety lever was ordered by various police forces, particularly the Singapore police. This brings us to another question. There is always the shooter who wishes the gunsmith to remove a safety device. On the face of it, this seems harmless to remove a gawky safety from a recreational shooter, however, I would never remove a safety from any handgun.

The next owner may not be as familiar with the handgun and, in any case, if the piece is a recreational shooter the safety is a small hindrance. If the revolver is used for personal protection there is all the more reason to leave it original. There is nothing wrong with the Webley MKIII for this purpose, other than its rather anemic caliber.

Just my opinion, but I would never remove the safety bolt. It cannot be modified to stay in the off position as the barrel latch cannot be operated.

A Catch 22 of sorts that is best left untouched. Removing Cosmoline Removing Cosmoline from a rifle is a chore, particularly if the material has permeated the stock. The handgun is a different story. All that was needed to degrease the Webley was hot water. Hot boiling water is often recommended but in this case we did not have to boil a pot of water. Tap water allowed to run until good and steaming hot quickly ate the Cosmoline up.

We used a bore brush to clean out the cylinder and bore for certain and for safety, but the hot water did the business. Parts Sources APEX Gun Parts (apexgunparts.com) offers a wide range of hard-to-obtain parts for the Webley MK III revolver, among others. They are a good place to start when looking to repair a Webley. Numrich Gun Parts Corporation (gunpartscorp.com) is another good source. It is sometimes catch as catch can but there companies are well stocked.

The Webley MK III is an interesting revolver, and with the newest crop coming into our country we will doubtless be seeing them in the shop in the near future. AG

FINISHING

Rusty Gun Bluing

Properly done, a good bluing job will make your customer's gun look brand new. Here's an overview of the stages to get you started.

BY THEO LYROPOULOS JULY 2011

ORIGINAL PP. 8-9

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Can you fix this old rusty gun? This is a question many customers have asked me. "Of course I can. The gun will look like new again," I reply, because it's true. There are many types of refinishing possible and bluing is always popular. The method most professionals use is called "hot rust blue" and in the lines below I will show you how it is done in stages.

The first step is to examine and inspect the firearm to be blued for damages, like a loose rib, dents and bulges in the barrel or cracks and splits in the stock, at the forearm and the like. Then we check for general function to make sure the gun works. The trigger, safety and workings of the action are tested, ideally with live rounds in our range or in a specially designed firing pit that are available to the trade for those who don't have the luxury of a range behind their gunsmith shop.

If there are there any problems in either of these initial stages of inspection and function, then we will not proceed with the bluing unless we have afix for the discovered problems. Of course, we will have advised the customer about the extra cost of the repairs which in most instances must be done before the bluing. Now we are going to proceed with the disassembly of the firearm. Do I need to remind you to wear your safety glasses? They should be on before you even have touched that gun.

If we know the particular firearm, well then it only takes a few minutes to disassemble it after properly clearing it. If not then we look to our assembly/disassembly publications (books, manufacturer manuals, American Gunsmith, etc.) as they are very handy. If the firearm to be blued is not addressed in something available and we are not familiar with it then we use a digital camera to keep an on-going record. Take several pictures of every step Any needed repair work must be addressed before bluing.

Once inspected, clean the parts thoroughly. More importantly, good bluing depends on good polishing and sparkly-clean parts. This prep work is critical! as you go along with the disassembly to have a reference when ready to reassemble. All right, we now have completed the disassembly and we have all the pieces on our bench. The next step is called preparation. Our objective with this phase is to prepare the metal for the bluing. This step is very important.

We must do our best because any mistakes here will show later as flaws on the blued gun. First thing is to clean all parts from dirt, crust, grease, oil and whatever else has been collected on them over the years. Not everyone keeps his gun nice a clean as he or she should and, obviously, any firearm needing to be refinished has seen much use and will have the attendant wear and tear. We can use kerosene for this initial cleaning

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Polished bluing requires buffing, typically done with a buffer like the Baldor (right). Lacking this equipment the only other option is to polish by hand. However it gets done, polishing is key to a good bluing job. along with a bristle brush or mild steel wool suitable for gun work. Follow this up with Simple Green or a similar cleaner. If the customer wants a matte blue finish, then the pieces to be blued go to the bi-blast cabinet. If he wants a polished blue then we have to use our buffer and belt sander.

If we don't have any of the above power tools to do what is called "power polishing", our only option is to polish by hand. If there is any pitting on the freshly cleaned and polished surfaces it must be removed with a file via draw filing, removing just enough metal to erase traces of the corrosion. Of course, this will leave filing marks that need to be removed. Using a polishing cloth, start with the closest grit that will give an even surface finish, such as 180 or 240 aluminum oxide grit.

The goal here is very simple. We must remove all of the previous marks done by the coarser cloth. This is done much better and easier by changing (rotating) the direction we polish every time we change grit. For example, we start with #180 cloth to polish

the length of the metal piece to remove marks from draw filing. When we switch to the #240 cloth we polish at we can see as we precede. The metal will "speak" to us.

For even better results and to extend the life of the oxide cloth it should be lubricated with a light weight oil. Regular gun oil is good for this. I'll say it again. Good polishing is very important! All edges, corners, and flat areas must be kept clean and sharp and all previous sanding marks must be removed. Good bluing can never cover a poor polishing job! Now that we have all the pieces polished to a high luster, it is time to fire up our bluing tanks. While waiting, we start to clean the parts to be blued.

I mean really, sparkly clean. The parts must be degreased thoroughly with acetone, with great emphasis in the ribs, tight areas, screw holes and every tiny nook and cranny, externally and internally. When completed, we cannot touch the parts any more with our bare hands. Any oil from our skin or finger prints left on the parts will show later as "shades", will be just plain white as they will not blue. Use hangers for all handling after completing degreasing.

When the thermometers in the bluing tank show the right temperature, somewhere between 275 and 290 degrees Fahrenheit,

we have a nice boiling solution to put the well prepared parts in. Some guns will blue in as little as 5 minutes, some in 20 minutes, and others will take a little longer. This depends on the type of steel.

When the parts are blued we take them out of the bluing tank and put them in the hot boiling water tank for two minutes and then transfer immediately to cold water tank to cool the parts for one minute. From there we immerse them in to the water-displacing oil tank and hang them to drip off the excess oil. Once the excess oil has dripped away, we clean the parts from the rust preservative oil and we give them a liberal coat of RIG grease. Set the parts aside for two or three days in a dry clean area.

The next step is to reassemble the gun. We must take great care not to mar the surface in any way and avoid making marks or scratches on the bluing. After the gun has put together it is time to test it for functioning again. After a successful test firing, clean the bore again, lubricate all moving parts and lightly coat the metal surface with gun oil. The last thing we do is pick up the phone and tell our customer his "new" gun is ready! If we did our best, he will be a very happy shooter. Good luck to all. AG

FROM THE ARCHIVE

Mounting A Crossbow Sight, Cantilever Style

Sometimes an imaginative effort is the only solution to getting a job done. Turned down by three others, a hunter came to me for help in mounting a scope on his crossbow.

BY NORMAN E. JOHNSON JULY 2011

ORIGINAL PP. 10-12

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When an elderly hunter showed up at my shop with an older PSE 150-pound crossbow, he wanted to know if it was possible to have a scope mounted on it. He had an older Weaver V-4.5 scope with tipoff mount purchased at a garage sale and this must have given him the idea to have it mounted on his crossbow. Before contacting me, he had approached three other gunsmiths and they all refused the job. As we ex-

amined the older, very well made, PSE crossbow together, I could see why the others turned the job down.

The old crossbow had integral open sights with no place for a scope base. Yet, with eager expression he beckoned, "Do you think you could do it?" I did see a ray of hope in mounting a scope when I realized that I could cut off the open sights and mill the top of the very rigid cocking mechanism parallel to the main beam of the bow.

I would need to fabricate a double angled bracket that would The customer's older Weaver V-4.5 scope is shown here with Redfield scope base and rings. bridge this surface and be anchored downward to a flat, rigid surface on the rear of the receiver. I cut a narrow piece of stiff paper to show him approximately what such apart would look like as it would serve as an interface where the open sight would be cut off and anew scope There was no place for a scope mount on this older crossbow.

MOUNTING A CROSSBOW SIGHT, CANTILEVER STYLE CONTINUED

ORIGINAL PAGE 11

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base attached to it. There would be no turning back once I started and his open sights would be history. He said, "If you think you can do it, go for it." Whereupon the job was in my hands. Cantilever Scope Bracket As mentioned, making a precisionfit cantilever bracket would be the key to attaching a scope base on this crossbow. I used a length of 1/4 x 1 inch hot-rolled steel for the job. With a template of formable, stiff fabric, the proper bend points were marked.

The angles were formed by making a deep "V" in the metal and heat bending them. Silver solder was used to fill the cracks to retain the stiffness of the part. The attachment holes at the receiver base were marked first with the cantilever in place over the fl at surface of the cocking mechanism. This shelf-like projection is very solid as an integral part

of the trigger and sear assembly. At the rear receiver base I drilled and tapped for two 10-24 countersunk screws. At the top I countersunk two 8-40 screws.

Checking the parallel of the top of the cantilever with the main crossbow beam showed good alignment. The next step was fitting a one-piece scope base to the top surface of the cantilever bracket. I chose a Redfield Jr. dovetail base because it fit the hole pattern of the cantilever surface. The Redfield base required milling to achieve proper parallel alignment with the main beam. The scope base was then attached to the cantilever bracket using four of Brownells 8-40 screws from their Tactical Scope Mounting Kit.

I installed one additional screw at the junction of the windage screws for a most solid application. A check of the parallels proved

out perfectly. It appeared to be all systems go. The sear is shown in the slot used to anchor the drawn bowstring. At this stage there was a short interruption. This involved making and fitting a lug at the rear vertical leg of the cantilever bracket. This lug would form the anchor for the Rope Cocking Aid, which I anticipated a need for in cocking the bow.

While the 74-year old hunter who owns this bow could cock it, he found the procedure increasingly difficult and I couldn't foresee him doing it for very long at his age. I also made a special rope cocking aid which reduces pull weight by 50%. I will cover this project in a separate article. Mounting and Sighting As a package, the customer wanted his older Weaver V-4.5 scope used

MOUNTING A CROSSBOW SIGHT, CANTILEVER STYLE CONTINUED

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Two additional screws were used in this application. on this job. It turned out to be a good choice being short and compact with a small objective lens that wouldn't interfere with the bowstring or arrow fl etching in any way. I chose to use Redfield Jr. low rings, which worked out perfectly in viewing through the scope. Eye relief was perfect as the cheek makes contact with the stock. The old scope was equipped with a Perma-Center reticle, which was also quite appropriate.

Some of the older Weavers didn't have this feature. Test Firing and Sighting-in If you've done your homework, sighting-in with an optic is an easy task. One of the worst case scenarios is to discover a scope runs out of

windage or elevation adjustment. The Weaver scope was near perfect in this area and almost center of adjustment with the new cantilever system. I sight my crossbows for 25-yard zero and make allowance for shots greater or lesser than this range.

All too many hunters using a crossbow believe the arrow shoots with a flatter trajectory than it does. For example, the 150-lb. peak weight PSE crossbow trajectory as zeroed with a 488 grain broadhead-tipped bolt at 25-yards is as follows: 14 yards/+ 4 1/2"; 25 yards/0"; 30 yards/-6"; 35 yards/-12"; 40 yards/-21". Taking shots beyond 40 yards by the lesser experienced crossbow hunter is not

be recommended. The PSE crossbow shot very well with the simple plastic V-shaped front arrow rest and a nocked bolt.

Most modern-day crossbows have a channel to guide the bolt/arrow as it moves down the beam. Bolts are not nocked on the string as they are pushed straight down the channel. Conclusion All the thought and effort put into this very different scope mounting system worked out well. In some circumstances, making money is not the entire issue.

I knew, as I made a tentative quote, that more time would be involved in mounting the crossbow scope but seeing a happy customer and a job turn out better than expected has always been rewarding to me. AG

MACHINING

Making A Single Shot Rifle Pattern, Part 2

The pleasing, classic lines of the Remington Rolling Block No. 2 are worth a hand-built stock. We complete the project in this final segment.

BY DOMINIC PISANO JULY 2011

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In Part One we started building our Remington Rolling Block No.2 stock by creating the pattern. The pattern is now ready for machining. Depending on the skill of the person doing the pantograph work, the final product will be close to a slip fit. Final fitting is a matter of carefully scraping away high spots. Now is the time for precision work to get that hairline fit between metal and wood. The forestock is next. I make these from scratch as they are fairly straightforward.

The forend on most original single shot rifles was typically just a splinter of a thing. Not much there. I have found that my customers want a bit more hand filling forend, but not a god awful thing such as a beaver tail forearm or anything of that ilk. If you know exactly what you want, go to work. If not, look at as many photos of the original forends on the particular rifle you are stocking and imagine what it would look like if it were just a little more hand filling and comfortable.

To begin, I square up the forend blank to 10 inches long, $\frac{3}{4}$ inches wide and $1\frac{3}{4}$ inches deep. To be on the safe side, measure the depth of the front of the receiver

to be certain the wood is deep enough to accommodate with slightly more if you want a bit of perch belly. A good example of this can be found on the CPA Stevens 44 $\frac{1}{2}$. Note how the bottom of the forend is a tad below the lowest point of the receiver face.

I determine which end of the forend blank will be the rear (i.e., next to the receiver) and which will be the top. This is important as a lot of wood will eventually be removed and I want to be certain that I take advantage of the best figure and color configuration in the blank. I then mark the blank so I don't get mixed up later. With that accomplished, I find the center line of the top of the blank and trace it on using a straight edge.

Then I carefully measure the barrel where it joins the receiver and divide the number in half. In other words, if the barrel measures one inch across the flats, mark the rear of the blank $\frac{1}{2}$ inch on each side of the center line. Repeat this step ten inches from

MAKING A SINGLE SHOT RIFLE PATTERN, PART 2 CONTINUED

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the receiver, marking the blank and carefully noting whether the barrel is tapered or not. I connect the lines and now have the barrel dimensions on the blank. Using a square I mark the front and rear of the blank so I can see the barrel width from each end. This is important as I use a router table to hog out the majority of the wood in the barrel channel and the wood is machined with the top down which obstructs the lines previously drawn on the top of the blank.

If you do not have access to a router you can then carefully chisel out the barrel channel by hand. Be careful to keep the inside straight and square to fit the side flats of the octagon barrel. Sharp chisels are a must for this work. It's a bit more labor intensive but you can do a better job this way if you take your time. The Rolling Block #2 has an octagonal barrel with a slight taper. Routing the barrel channel requires a 45 degree bit and a straight-sided bit with a flat bottom.

I carefully set up the fences on the router table, taking into account the barrel taper. I set the 45 degree bit in the router and line it up visually from each end, confirming

that I correctly set the infeed and outfeed fences. I make no effort to cut to the line previously drawn on the top of the stock because I want to end up with a barrel channel that is 1/16 inch smaller than the barrel. That gives me 1/32 inch on each side of the barrel channel for the final fitting to be done by hand.

Smaller is better in this case. It's too easy to make a mistake and wind up with a too wide barrel channel. Yes, I have done it. That's how I know! Now I lower the bit to make a test cut and allow a small amount of wood to be removed. Walnut is very hard and it's easy to burn the bit if you try to take too much off all at once. If I am satisfied all is well I run the wood through several times slowly, raising the bit a little for each pass until I am about 1/16 inch above the mid line of the side flat.

Repeat this procedure for the other side of the channel. All that is left to do is to make the bottom flat in the barrel channel. For this I use a flat-bottomed straight bit of appropriate diameter. When I'm done with the router I have what appears to be a perfect barrel channel, except that it won't fit since I left a bit of excess wood that has to

be removed for the final fitting. To do this I first remove the sights, forend lugs, etc., from the barrel.

This makes for a clean barrel except for the dovetail cuts. I then place the routed forend on the top of the barrel, well forward of the receiver. By use of marking agent, begin the removal of excess wood from the barrel channel, slowly moving the forend rearwards towards the receiver. I use files and rasps as well as abrasive paper backed by a small flat at back of wood and slowly work away the excess wood. Try and fit, try and fit until the rear of the forend abuts the top front of the receiver.

Now the forend is perfectly fitted to the barrel, but not to the receiver. While it may seem strange, I prefer to work on the top of the barrel because if I fit the forend in two separate and distinct steps. The first step is to get a perfect fit on the barrel and the second step is to get a perfect fit against the receiver. I do better work that way. This is more evident with the RB #2 because the front of the receiver is curved forward toward

MAKING A SINGLE SHOT RIFLE PATTERN, PART 2 CONTINUED

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the lower edge and not fl at (i.e., perpendicular to the bore) as is the case in most other single shot rifles. The fit of the forend to the receiver is all important if you want a professional looking job with a hair line fit. Remove the forend from the top of the barrel, place it in the vise right side up and fit the forend to the front of the receiver. The front of the receiver gracefully curves forward from the top to the bottom, giving the action a very attractive look.

The bottom of the forend is the only place that is touching the receiver. To make fitting easier I now measure and then remove excess wood from both sides of the rear of the forend in a slight concave fl air from a line drawn roughly three inches—an arbitrary measurement that works for me—in front of the receiver with fi les and rasps. I do this on both sides of the stock until the wood is about 1/16-inch strong on the sides of the forend where it meets the receiver.

I take some effort to make these side fl airs identical. I do the same thing on the bottom of the forend, except this time the fl air is convex. I work to fit the forend to the receiver using a variety of diamond and carbide rotary rasps in a Dremel tool making use of the spotting-in technique to identify and rasp away the high spots. If you are not adept at using the Dremel be careful and work slowly as it can get away from you.

Since the barrel is already just about a perfect fit, this operation will go faster than you think. You may need to remove wood from the inside of the channel as the forend is being moved further and further to the rear and the widening barrel taper must be taken into account. Gently rap the front of the forend back against the receiver to be sure to get good impressions but don't overdo this as you don't want to split the forend.

Once I'm satisfied that I have as good a fit as I can get, based on a clear outline made by the marking agent of the front of the receiver to indicate this, I replace the forend lug and inlet the lug into the forend. Then I deliberately and thoroughly mar the inside of the barrel channel just below the top of the forend to provide more surface area for epoxy. I use both small diameter rotary rasps and chisels to do this. The epoxy provides strength and waterproofs the interior of the barrel channel.

Done properly, the epoxy will not be visible on the completed forend. I wax the barrel and the receiver where there is the slightest possibility the epoxy will flow so that the forend may be removed when the time comes. Apply the epoxy generously to the barrel channel and set the forend in place using a couple of C-clamps to hold the forend tightly against the barrel. Use a longer clamp to pull the forend back tightly against the receiver to ensure a tight fit and let the epoxy set overnight.

Now comes the fun part of shaping the forend. Except for the rear end against the receiver the forend is basically a block of wood. Do not remove the forend from the barrel as the barrel makes a good handle for the work (fun) to come. I start by roughly drawing the shape of the schnoble at the tip, then I reduce the wood as close to final dimension just back of the schnoble area using half round and round rasps.

If you are not familiar with making schnoble tips, keep a photo of the style you prefer and refer to it often. This gives two reference points to work from. The reduced area behind the schnoble and the shaped area in front of the receiver. Draw the shape of the belly of the forend on to the forend and begin removing wood until you have achieved a gentle smooth curve from the receiver to the area behind the schnoble using the previously drawn line as a reference.

It's also a good idea to draw a center line on the bottom of the forend to ensure the forend is symmetrical. This line must be redrawn from time to time as wood is removed. Step back occasionally to be certain that everything looks right. I can not overemphasize this! Now I do the same thing on both sides of the forend, first working down one side then the other. I make every effort to keep things symmetrical.

Continuously drawing a center line on the bottom of the forend helps particularly if the wood is well figured. Figure of the wood can create an optical illusion

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This one has the pistol grip. and throw one off. There's a lot of wood to be removed and I use any and everything to do that, such as course rasps, shurplanes, etc. Remember to step back form time to time to be certain everything looks right. When this step is complete you'll have what sort of looks like a forend but has what appears to be a box on the front end. We are saving the shaping of the schnoble for last.

Before starting on the schnoble I fit the forend to the barrel using an appropriate sized screw and escutcheon. I set the escutcheon deliberately about 1/16 inch below the surface of the wood so that I can clean up scratches and gouges during the final shaping and sanding. This attachment will further aid in controlling the forend during the shaping of the schnoble as I will be working my tools every which way. The final operation to shaping the forend is the shaping of the schnoble.

First I determine the shape of the schnoble that I feel is most appropriate to the rifle, in this case the RB #2. Since the action is smallish as single shots go, my desire is to shape a forend that flows smoothly from the receiver to the forend tip and looks like apart of the whole, rather than some appendage hung on the bottom of the barrel. The schnoble I have in mind will be small and refined looking.

It is difficult for me to describe exactly how I do this because this comes as close to wood sculpture as any other wood shaping job. Having previously drawn the schnoble shape on the forend, I now begin carefully removing wood using small half round rasp, rat tail files and any other tool to make this work go smoothly. I repeat, step back and look at your progress from time to time and from all angles to be certain you are creating the shape you want.

Although I have done literally dozens and dozens of these I always discover that I wind up with the schnoble larger that I want it to be. This is especially evident if I set the job aside and come back to it the next day. I often discover the entire forend is too large, So I carefully remove more wood making certain that all the lines flow together creating an eye-pleasing effect. Once I'm comfortable that the forend is perfectly shaped, I carefully sand it using progressively finer abrasive paper up to 220 grit.

Preserve the sharp edges at the top of the forend as you sand it down until it's at the barrel fl at half way mark. Also preserve the carefully delineated lines that make up the schnoble. Sand the bottom down to the escutcheon until it's flush with the surrounding wood. Remember we set it about 1/16 inches below the wood surface. Relieve any sharp comers resulting from this operation until the forend is comfortable to the hand.

MAINTENANCE & REPAIR

Aftermarket Trigger Overview

Options abound in the replacement trigger market. Here's the scoop on installing exactly what your customers want and need.

BY CHICK BLOOD JULY 2011

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In case you missed it the first five times, this will be your sixth warning about aftermarket triggers. Hang on to the original factory parts you remove! Nothing against the makers of custom replacement triggers here, just a prudent warning. Before these manufacturers have a hissy fit, work that fit up into a purple rage and put out a contract on me, there is absolutely nothing wrong with their units. However, the caution I am about to announce to our readers applies universally to any trigger replacement.

Now hear this. Never install a trigger in any firearm that has a worn safety or sear. Add a worn cocking piece to that short list when the gun is a bolt action rifle. A few more words should be read about the specific triggers shown here. When it comes to quality, all the triggers featured here are way above being merely "well made." All are adjustable and fit bolt actions. Some are rifle specific. At least one will fill the custom trigger requirement for a number of rifles.

The most economical among them retails for \$49.95. The most expensive lists for \$124.95. All, and many more like them, can be found in the Brownells catalog. All will

arrive in your hands with more than adequate instructions. None can rightfully be considered tough or overly complicated to install.

None should ever be reduced to a pull weight that fails a drop test and allowing the firing pin to fall with the safety "ON." As with all gun work you do, be certain the firearm contains no ammunition, wear eye protection and, since they are designed for include Remington, Mauser, Winchester, Springfield, Enfield, Arisaka, SMLE and Mosin-Nagant rifles. I'm dealing exclusively with bolt action rifles here, remove the bolt from the receiver and the action from the stock.

I'll begin the "how to" part of this batch of words with trigger number one. L-1 Rifle Basix Custom Trigger You have to go a little beyond the take-down just described above with a Model 700 by also removing its safety components and bolt stop release. After memorizing how they were originally fit to the rifle, remove all parts involved and set them aside. Obviously, you also have to remove the original trigger. It is retained in the receiver by two pins that have been staked in by the factory.

You should be able to spot the indents from the staking on the receiver under each pin hole. The very act of staking creates a problem by lessening the interior diameter of the pin holes. You have to restore the original interior dimensions of the retaining pin holes on the Model 700, or any other similarly staked Remington bolt-action, before installing an L-1 or other replacement trigger.

The restoration calls for a 0.125 (1/8th inch) drill bit twirled between your fingertips and involves both left and right-hand pin holes. A precision reamer is better for this. The two retaining pins supplied with this trigger have been ground to a tolerance of 0.1235 inches. They will both slip fit nicely into a true 0.125 inch diameter hole. Before the new pins have been inserted, straighten out one leg of a paper clip and keep it handy for later.

Push out the retainers seated in the upper opposite ends of the housing toward their large ends. Might be a good idea to keep a finger on the top lever. Under the lever lurks its reset spring seated in a blind hole. Don't lose it. I refer to the spring. The hole

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isn't going anywhere. Insert the L-1 in the receiver, align the receiver, housing and top lever holes and push the shorter of the two provided retainer pins through with your fingers. The pin should end up flush on both sides of the receiver. All this moving around of the L-1 unit may allow the reset spring to escape. If that happens to you, either locate the spring or contact Rifle Basix (RifleBasix.com) for a replacement.

I opted to avoid any possibility of delay waiting for a new spring to arrive by securing the top lever in its downward position with a small strip of Scotch tape. Once you have the spring back in hand, impale it on the straightened leg of the modified paper clip and guide it back into its blind hole. Never let a hammer or drift punch anywhere near the spring to seat it. Fingers work just fine

but it wouldn't be a bad idea to keep a little down pressure on the lever while doing what you have to do next.

Rotate the L-1 assembly upward to align its rear hole with the matching hole at the rear of the housing. Then install the longer retainer pin that has been supplied with your fingers. Bold OP 98 Optima Trigger This unit is dedicated to military Mausers, commercial Mausers, Spanish Mausers and any other as long as it's a Model 98. This unit's instructions include a neat little set of drawings, reproduced here. You'll find them a big help in fitting up an OP 98 to a Model 98.

I'll give you an example of how helpful they can be and why you'll want to keep the drawings and the paper they're printed on in your files. You'll never regret it. As for the promised example, I quote: "Mauser receivers have a support lip which can cause

trigger misalignment; Area A. During installation, trigger must be installed level to achieve correct engagement between the bolt cocking sear and the trigger sear. File Area A as necessary.

Worn receivers may require a building up at Area D to permit engagement between the bolt cocking sear and trigger sear; Area B." So it goes. And on the flip side there are eight solid tips, count 'em, Aon trouble shooting. You know what? Besides providing secondary and tertiary causes, the primary troublemaker in all eight malfunctions is a trigger housing that isn't securely attached. Think of the bucks you might harvest resolving problems just by tightening up mounting screws.

Sweet. #110 Sportsmen Trigger Number three in my little trigger collection can be married to either the Springfield or Enfield rifle and

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takes a page from the OP 98 book. Or maybe the folks who wrote the OP 98 instructions took a page from Timney, who make the 110. Either way, smart pills and a real concern for the gunsmith are evident. I've reproduced the drawings that arrived with the 110 to back up my compliment. After the usual regarding stock and barreled action removal the instructions continue with a caution. If you're working with an Enfield wearing other than a standard—meaning factory—stock you may need a special length trigger.

Things become more specific thereafter, "Remove the factory trigger by tapping out its retaining pin at (6). The trigger installation screw (1) must be backed out sufficiently to allow easy reinstallation of the retaining pin. Place the trigger in the action, insert the retaining pin and tighten the installation screw." As I said, very specific. Most of the Springfield dope is printed on the other side but the drawing has been executed so skillfully it applies to both rifles. More smart pills for Timney!

It is only appropriate, then, that one Timney trigger follows another. #416 Winchester Plated Trigger This one works with the iconic Model 70 as well as the Model 54. The newer installation instructions are much easier to use. The instructions arriving with this trigger have been updated significantly but the new information does not include a very important item I've picked up from the older version.

The drawings, by the way, have been lifted from that older sheet and remain highly useful, especially when it comes to adjusting trigger pull. I'll be getting to that later. First things first. The earlier instructions state that before you remove the original trigger, cock the rifle and measure the distance the cocking piece protrudes from the back of the bolt. In other words, measure from the back of the firing pin to the bolt shroud. Write this number down.

If after you've installed the #416 you can't put the rifle on "safe" after cocking it, cock it again and take a second reading exactly as you did with the first. Write the second

measurement down. Subtract the second measurement from the first. This yields the amount to file from the safety engagement surface inside the bolt. You have to remove material a little at a time, then check safety function again.

There's a tool available from Brownells and Timney that makes disassembly of the Model 70 bolt both simpler and quicker. It will save you beaucoup time in correcting the problem of a nonworking safety. Two other safety concerns are addressed in the same set of instructions.

If the safety fails, meaning you can move it to its "safe" position, pull the trigger and the firing pin is released, a small amount of material at time must be removed from the cam area of the cocking piece, which is point 6 on both the Winchester Model 70 and 54 drawing. In this case, you must remove material from the cocking piece sear, labeled number 5, until the sear is lifted off the trigger when the safety is applied. In cases where the safety still cannot be applied, remove small amounts of addition-



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Thanks, Timney. al material from point 6 without changing any original angles. Here again, the bolt disassembly tool will find steady work. Note: While the #416 will work for the Model 54 as well as the Model 70, the Cocking Piece sear (5) has to be modified first to match the same component in the Model 70. As long as you've noted and retained the Model 70 dimensions, this can be done two ways. First, silver solder a piece of steel to the Model 54 and file it to conform.

The second option is to employ a TIG welder to build up the sear then file to conformation. I want to stick with the earlier instructions a little while longer. They include trigger pull adjustment of the #416 and the newer version doesn't. Refer to the profile drawing of the complete trigger housing as I go through this. Number 1 is the installation screw. It gets tightened after the retaining pin is inserted so the housing can be snugged up securely to the action. Number 3 is the trigger pull adjustment.

IT HAS BEEN PRE-SET AT

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three pounds. Turn the screw counterclockwise to lighten the pull but I recommend never taking it below two pounds. Risk of slam fires, you know. Number 2 adjusts backlash or overtravel. Turning it in too tightly will slow or prevent firing pin fall or prevent the rifle from being cocked. The unit comes pre-adjusted by the factory for optimum overtravel. Number 4 is the sear engagement screw. Engagement has also been factory pre-set when the trigger was tested. You have to be very careful with this one.

Too much engagement will only lead to an inconsistent trigger pull. Too little could transform a once perfectly safe rifle into a thing too dangerous to tote around in the woods or anywhere else. So much for the old instructions. The new ones are loaded with the photos reproduced and identified here. Clear off your work table. Remove the barreled action, the stock and set them aside. Next, remove the bolt and factory trigger. Drive out the really small rear trigger pin with a punch and hammer (A).

The bolt stop spring is under tension and it can be lost very easily. Insert the trigger into the action (B) and drive in the front, large, retaining pin (C). Install the rear retaining pin, small but not really small, followed by the bolt stop spring and bolt stop. The spring has two ends. One end is long with a ninety degree angle at its tip. The other end is short with a hook (D).

When re-installing the spring, the long end should be under the bolt stop and the hook end should slip into the slot in the action at the rear of the trigger (E). If necessary, you

can pull the spring into the slot with needle nose pliers. With both pins in place, tighten the hex screw at the front of the trigger then tighten the lock nut (F). Note the caption, as it sums up this whole exercise.

Huber Anti-Friction Ball Trigger Move along to number five, the last trigger to be mentioned in this often repeated warning. It's not the least expensive or the most expensive of the group but it is available for the Arisaka 99, Enfield P1917, Mauser 98K, M48 Moisin-Nagant, SMLE and Springfield 03A3. OK, stock off, barreled action solo, trigger pin and sear screw removed. Install the Huber trigger by reinserting the trigger pin. Try joining the action to the stock.

Some minor inletting of the wood might be necessary to make this happen. Start in but don't completely close the bolt. You're going to adjust the Huber by inserting the supplied Allen wrench into the modified set screw at the top of the trigger as shown in the main photo. By modified, what I mean is the normally flat end of the set screw has been machined and polished into a very smooth, rounded head and then coated with a polymer. I presume it's the same coating as the one applied to the rest of the trigger.

The reworked screw is the only area on the Huber to make contact with the sear, hence, the anti-friction ball moniker in relation to sear engagement. To adjust that engagement, leave the bolt open, insert the Allen wrench. Rotate it clockwise to lighten the pull and counterclockwise to increase it. You'll have to cycle the bolt and pull the trigger after every adjustment until you feel

you have arrived at the desired pull weight. Now close the bolt but don't pull the trigger.

Hold the rifle by its barrel with the butt twelve inches off the floor and the safety in the "off" position. Release the rifle. If the firing pin doesn't release you're probably good to go with a minimum sear engagement of at least 0.015 inches. If a release occurs, partially open the bolt, reinsert the Allen wrench, make an adjustment to the pull, move the safety to "off", close the bolt, try a drop test, and the usual testing procedures. Repeat as many times as necessary until the firing pin fails to fall.

Finally comes the basic warning for the sixth—and hopefully the last – time. Instead of being shoehorned into an article on another subject and possibly overlooked, please clip out what you'll be reading next, have a large photocopy made of it, laminate said copy and post it permanently in your working area. The odds are against the freshout-of-its-package pull weight of an aftermarket trigger being pre-set to a rifle manufacturer's factory specification.

Never discard a factory trigger or any of its closely related components. If the rifle ever has to be returned for OEM service it will come back without the custom trigger purchased and for which you received payment to install. In its place will be a new, factory-made, factory-installed trigger. Never permanently toss an OEM trigger. Store it. Remove the custom job, reinstall the original you didn't throw away and then ship the rifle to the factory. This is your final warning, if I'm lucky. AG

MAINTENANCE & REPAIR

Reader Forum

BY AMERICAN GUNSMITH EDITORS JULY 2011

ORIGINAL PP. 23-24

Parker Brothers Double Barrel Shotgun I own and operate a small firearms repair shop and a customer recently brought in a Parker Brothers Side-by-Side Double Barrel Shotgun chambered in 12 gauge with exposed hammers for restoration. The serial number indicates it was manufactured in 1882. I am in need of a left hand hammer and hammer screw, as well as a right hand stirrup. Does anyone know of a source where I might acquire these parts? Any assistance would be greatly appreciated.

Dale Hankins Powderhorn Gun Works LLC We are assuming the owner may want the gun returned to firing condition. Maybe not, but for what immediately follows here the assumption stands. Check the barrels by removing the forend and lightly scrubbing off the finish from a small area on the barrels beneath it with the mildest of Emery cloth. What you're checking for are any signs of the barrels being of the Damascus type, thereby showing "twist" marks.

If they are Damascus barrels the gun should not be fired with modern loads as there is too much risk of the barrels unwinding with catastrophic results. To be modified for modern loads by inserting full-length Briley tubes would markedly lower any collector value of the gun and would, of necessity, reduce its gauge. Now let's suppose the Parker is purely intended to be a very attractive wall hanger but still has Damascus barrels.

Can you be absolutely certain and assured the owner will never fire it with a modern load? If any doubt exists whatsoever, omit the stirrup and hammer spring. They won't show anyway. With the possibility of omitting at least the stirrup in mind, check with the Remington Custom Shop in Ilion, NY. They were making Parker reproductions and might be able to provide some spare parts.

If not, call Brownells for a free copy of their Parts Source List for out of production firearms and be prepared to let your fingers do a lot of walking making phone calls around the after market. Don't forget to mention to your customer he or she will be charged for the calls. Your bringing up the subject of Parker shotguns reminds one of our staff of a day long past when a customer of his brought in a Parker double. The gent wanted screw-in chokes installed.

He was immediately told such an addition would ruin the \$6000.00 value of the piece and it was handed back to him. The customer then told the gunsmith he had a gross of Parker shotguns still in their boxes in his attic. After recovering from the shock, the gunsmith asked him to open one box and check their condition. Next day the Parker owner came back with additional breathtaking facts. The shotguns were perfectly preserved and bore consecutive serial numbers and the owner wanted to know their total value.

The gunsmith did considerable digging, going so far as to speak personally with the Curator of Arms and Armor at the Smithsonian and National Firearms Museums. The answer from both curators was, "I can't put a fixed price on them. They're worth millions." It seems the grandfather of this customer had been a purchasing agent for the Union Pacific during the period they were laying track westward in a race to complete the transcontinental railroad.

Among the agent's orders-to-fire were shotguns for the track-laying crews which were used for game-getting and personal defense against "hostile savages." Soon before his retirement, the agent placed his final order for shotguns. That order now resides in the attic of his grandson, the gunsmith's customer.

After being informed of the perceived total value of this 144 Parker collection, the gunsmith advised his customer to parse out and donate chunks of the collection to differing museums, take a tax write off on the contributions and concluded his advice by politely requesting one of the shotguns for himself. As this response is written, the customer's family is still writing off those donations and the gunsmith never received a Parker. Great customer relations, but not so great for business.

Kessler Arms Shotgun I have an old Kessler Arms Corp. 12 gauge shotgun Model 128 FR for 2 3/4 inch shells but I'm missing the magazine for it. Do you guys know where I could buy one or if anyone in our fraternity could tell me? The gun has no value, but it means a lot to me and my family. Louis The gun and its manufacturer have been out of production since 1953 but Numrich Gun Parts Corporation will be your best bet for parts.

Iver Johnson TP-22 What is the recommended take down procedure for the Iver Johnson TP-22 Pocket Pistol? I am having problems with mine consistently stripping rounds from the magazine. When I load seven rounds the first three work without a hiccup but the rest are hit and miss or jam when ejecting. Sometimes the pistol will fail to grab the cartridge completely. I can load single shot without the magazine and the pistols fires every time.

I attempted to open the trigger like a CZ or Berreta and the slide will travel all the way back but will not lift off. Is there another trick to remove the slide or is this not possible with this model? Richard We have seen reports that this pistol doesn't care for high or hypervelocity .22 ammunition. It tends to cycle the pistol too rapidly. Restricting your ammo to standard velocity may lessen or eliminate your jamming problem. As for field stripping, we noted on the

READER FORUM CONTINUED

ORIGINAL PAGE 24

net after punching up the name of the pistol that an owner's manual is available from gunshowbooks.com. No price is shown but we assume there must be a modest charge for securing a copy. Ruger M77 Hawkeye Trigger Job Has American Gunsmith done an article on trigger jobs for the Ruger M77 Hawkeye series of rifles? If so, which issue? If not how, about doing one or giving me some pointers. The rifle on my bench has a monster heavy trigger and I'd like to lighten it up a bit.

The Ruger Hawkeye is the platform for the company's Alaskan and African models. The Ruger 77 MK II is the godfather of the Hawkeye. We did indeed do an article on the Alaskan in the March 2008 issue but did not address trigger work specifically. The mechanism on the rifle provided for the article broke smoothly and clean at 4.5 pounds on NRA weights and we firmly believe no less a trigger/sear engagement should be considered for a hunting rifle chambered in .375 Ruger or .375 H&H.

However, if you find the trigger on your Hawkeye to be simply unbearable and are convinced that polishing all its related components will not improve the trigger enough, proceed to scan Brownells catalog for an aftermarket trigger suitable for the Model 77 MK II. Install that on your rifle but do not strive to adjust it to a "target" pull. Be certain to set the factory trigger system safely aside. Should the rifle ever

have to be returned to Ruger for service, reinstall the original trigger before shipping it.

If you fail to do so, the aftermarket trigger will not be seen again and you will be informed that you have violated, ergo voided, the factory warranty. Leonard Hardening and Stock Restore I have a couple of questions for you. First, is there any way that color case hardening can be done safely at home? What is the easiest way to blue or brown over a color case hardened receiver that has lost its colors? Second, is there any way, short of cutting and splicing, that a fire scorched gun stock can be rescued?

I have an old Stevens bolt action shotgun chambered in 12 gauge that has about the last four or five inches of the left side of the foreend scorched and I'm wondering how it can be refinished without either sanding too much off or splicing in a new piece. I've always gotten good advice and directions from you in the past, and I'm certain I will now Jim Nice to hear we haven't steered you wrong, Jim. Hope we never do.

Yes, case hardening can be safely done at home assuming you have an outer area in which to house your case hardening materials and equipment. We wish someone had written a book on the subject but traditionally those involved in and making a living with the procedure have been most

possessive of their specific formulae. Some of these, we've heard, have been and are pretty esoteric.

We do know that high temperatures over carefully monitored times are universally employed and that materials can vary far beyond charcoal, bone grindings and leather. Suffice it to say, and to caution you, keep any activity out of the lady's kitchen if you want to maintain a happy home. Brownells has been showing a color case hardening kit of late. As we recall, it is not inexpensive but it wouldn't hurt to discuss your intentions and goals with them anyway.

As for removal of the case coloring, much depends on its depth. The color can be ground off or eaten away with acid and the exposed raw metal polished up for refinishing. You must be extremely careful when a receiver is involved though. Too thin and it will lose the structural integrity it once had to withstand discharge of a cartridge or maintain support of internal components. On to your second inquiry. It's too bad bleaching cannot be effective with case coloring, but it can be with your scorched forend.

There, a light sanding could remove the scorched area, the area treated as you would in finishing a stock—bleaching, fine sanding, feathering, fine sanding, filling, etc.—and then the final refinish. AG

SEARCHABLE ISSUE RECORD

Archive index

Not Doing As They Say American Gunsmith Editors	2	Making A Single Shot Rifle Pattern, Part 2 Dominic Pisano	14-17
Working The Webley MK III Robert K. Campbell	3-7	Aftermarket Trigger Overview Chick Blood	18-22
Rusty Gun Bluing Theo Lyropoulos	8-9	Reader Forum American Gunsmith Editors	23-24
Mounting A Crossbow Sight, Cantilever Style Norman E. Johnson	10-12		

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