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ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

WORKING THE HENRY RIFLE AND ITS UBERTI REPLICA

WHAT WORKS IN THIS COUNTRY? US! • DISASSEMBLY AND REASSEMBLY OF THE LITTLE SHARPS RIFLE • TECH TOPICS •...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 067

DIGITAL ARCHIVE EDITION

Preserved for the bench.

This edition presents the original American Gunsmith editorial work in a modern, searchable layout while preserving its issue, author, and source-page history.

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FROM THE ARCHIVE

What Works in this Country? Us!

BY AMERICAN GUNSMITH EDITORS JULY 2009

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As everyone in our industry knows, the big news of the last seven or eight months has been the phenomenal surge in sales of both guns and ammunition—oddly enough, coming at a time when the economy is in a serious slump. We’ve also heard about the 20- or 30-percent increase in background checks processed through NICS. But we had no way to determine how much money these sales have been pumping into our economy or the volume of tax dollars flowing into the federal coffers as a result of this business.

At least we had no way until the most recent Firearms and Ammunition Excise Tax Collection Report was released by the Department of the Treasury just before this issue went to press. During a time when whole industries are collapsing, firearm and ammo manufacturers paid almost \$100 million in federal excise taxes during the fourth quarter of 2008, up more than 30 percent from the same period in 2007.

Manufacturers of firearms and ammunition pay a federal excise tax on all firearms and ammunition manufactured, which is a major source of wildlife conservation funding. The Treasury’s report shows that in the

fourth quarter \$27.6 million was collected from the sale of pistols and revolvers, \$35.0 million from long guns, and \$35.5 million from ammunition sales. Compared to the same quarter in 2007, collections were up 70.1 percent for handguns, 11.4 percent for long guns, and 31.1 percent for ammunition.

The figures for the entire year of 2008 show a total of \$345.2 million was collected in excise taxes on guns and ammo, up from the \$303.2 million collected in 2007. Although excise taxes are one of the best indicators of industry performance, it’s difficult to translate these number into actual sales or total economic impact. Excise taxes don’t reflect the retail markup or the final retail sales, and these figures are based solely on U. S. civilian sales.

Excise taxes don’t tell us anything about sales to military and lawenforcement agencies. Nevertheless, based on the excise-tax numbers, NSSF has estimated that sales in calendar year 2007 totaled approximately \$907 million for handguns, \$1.15 billion for long guns, and \$1.16 billion for ammunition. That’s a total of over \$3.2 billion in U. S. civilian sales alone.

I’m no economist, but I know you can easily add another couple of billion dollars to that 3.2 billion for parts and accessories, holsters and gun cases, cleaning supplies, and so forth. Then, just try to imagine how much money gun manufacturers and gun dealers (and gunsmiths) pay in federal, state, and local taxes on the profits on those sales. Then add the state and local sales taxes the consumers pay on those sales.

And then, for good measure, throw in the federal and state income taxes paid by the employees who make those products and those employed in selling (and servicing) those products. It doesn’t take a genius to realize that our industry is staggeringly successful and the total impact of our industry on the U. S. economy is mind-bogglingly huge. I just hope our legislators think about our contribution the next time they write a bailout check for the ailing banking, insurance, and automobile industries.

EDITOR KEITH LAWRENCE TECHNICAL

HISTORY

Disassembly and Reassembly Of the Little Sharps Rifle

With this 80-percentscale replica, Charles Daly has brought the old buffalo gun down to deer-hunter size.

BY CHICK BLOOD JULY 2009

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For the history buffs, the first of many patents issued to Christian Sharps was U. S. No. 5763, dated September 12, 1848. In that patent, you'll find five distinct claims. The fifth one of those claims might sound a bit odd to modern-day gunsmiths, for it refers to the "slide." The slide Mr. Sharps was referring to is what we would call a "breechblock" today.

In the patent, he says that the slide "is furnished with a knife edge to sheer off the projecting butt of the cartridge." This, of course, refers to a paper or linen cartridge that contains a measured charge of powder and a bullet or ball.

Prior to the appearance of breechloading rifles, a soldier was obliged to bite off the end of the paper or linen, dump the powder down the barrel, withdraw his ramrod, start the bullet into the bore, push it down into contact with the powder, prime the nipple, and full-cock the hammer. Then he could shoot one shot. He needed to have at least a few front teeth, which'd entail care being what it was in those days'was not exactly a forgone conclusion, and it helped if he didn't object to the taste of gunpowder.

Even still, his rate of fire was lousy. In fact, the best of the Civil War reenactors I've seen manage to get off a maximum of five

shots in 60 seconds, which is pretty respectable, all things considered. But they rarely hit what they were shooting at, because there was no time to aim their rifles. The earliest Sharps was a breechloader. The breech didn't close very tightly, however, and the fire and fury from the paper or linen cartridge leaked out all around the breech.

Breech loading helped to reduce reloading time over the older muzzleloaders, but they did little to improve accuracy. The arrival and acceptance of metallic cartridges improved both reloading speed and accuracy for Sharp's rifles. One result of this was the nickname given to the Sharps rifle by Confederate forces. They called it "Beecher's Bible," referring to the Brooklyn, New York, preacher, Henry Ward Beecher, who was an extremely vocal opponent of slavery.

A few years after gaining high praise from Union soldiers, particularly distinguishing itself with Colonel Berdan's Sharpshooters, the Sharps Rifle Company moved to Hartford, Connecticut, and began advertising. Top of page: The Little Sharps, made for Charles Daly by Armi Sport of Italy, is a scaled-down replica of Christian Sharps' Model 1874.

It weighs less than 6 pounds and is chambered for a wide variety of modern cartridges. tising that it was prepared to supply its rifles "in all of the latest improvements and metallic cartridges." This ad appeared about 1872, and Sharps wasn't just blowing smoke. In 1873, they introduced the Creedmore rifle in .44 caliber with a choice of three powder loads. The Creedmore was outstanding in 1,000-yard competition, taking dozens of national and international championships.

The achievements of this rifle are still commemorated with long-range matches bearing its name. Though the Sharps Rifle Company closed its doors in 1881, the popularity of Christian Sharps' rifle never faded, and whether fairly or unfairly't he Sharps was blamed in some quarters for the near extinction of the American bison. I'm pretty sure that there are almost as many Sharps being made today as there ever were.

A lot of that credit goes to cowboy-action shooters, but the rifle has also become popular with big-game hunters as well. Hunters understandably lean toward the .44/70 or .45/70, the

DISASSEMBLY AND REASSEMBLY OF THE LITTLE SHARPS RIFLE CONTINUED

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The lever-plunger pin is located at “A,” and the receiverlever pin was removed at “B.” The ejector (C) can be lifted from the receiver if it doesn’t fall free when the breechblock (D) is removed. .44/90, and the .44/105 cartridges. The Sharps built for those loads have very long barrels and weigh as much as 12 pounds. That’s a lot to lug around on an extended search for a trophy-size animal, and a rifle of that size is no good at all for smaller game.

The Little Sharps I’m focusing on here has transformed those negatives into a positive. This scaled-down replica of the 1874 Sharps, imported from Italy by Charles Daly is chambered for the round credited with taking more Cdeer than any other—the .30-30 along with a wide variety of others.

This version lacks a safety device found almost universally on modern firearms—a hammer block—but the hammer does have a strong half-cock and the trigger is a crisp double set. (I believe I had barely 3 pounds of NRA weights on the forward trigger when the sear released.) Its octagonal barrel measures 26 inches in length—quite short when compared to the length of the original 1874, and the weight is under 6 pounds, which is a lot more reasonable for lugging through the woods in search of white tails.

So, with the historical facts out of the way, let’s get down to business. Field Stripping After making certain that the chamber is empty, all live ammo is elsewhere, and with the barrel pointed in a safe direction, close the action, pull the hammer back to half cock, and open the lever. The lever-plunger pin (#27) and the receiver-lever pin (#28) are

located on the right side of the receiver. Take a 1/16- or 3/32-inch punch to depress the plunger pin so you can rotate the lever past it about 180 degrees.

Then turn the rifle upside down. Wiggle the lever pin a few degrees back and forth while pulling it from the receiver. Slide the lever (#26) and breechblock assembly (#17) up and out. The extractor (#18) usually falls free when the block is lifted. If fouling prevents this, the part is easily separated from its receiver slot. Detailed Disassembly The place to start is with the tangsight assembly by undoing its screws (#57). This assembly can be further taken down easily to replace a damaged component.

The parts most likely to take a serious hit are the rear leaf (#54) and slide (#56) if they’re left upright and the rifle is dropped on them. Don’t attempt to straighten them

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1 Stock 2 Forend 3 Barrel 4 Buttplate 5 Buttplate Screws 6 Barrel Lug 7 Lever Spring 8 Spring or Plate Screws 9 Forend Screws 10 Forend Screw Washers 11 Sideplate Screws 12 Rear Tang Screw 13 Front Tang Screw 14 Firing Pin Pusher unless you have plenty of time on your hands. Instead, order in replacement parts, remove the side screw (#59), install the new parts, and reinstall the side screw. There are two sideplate screws (#11) on the left side of the action.

Back them both out a little (about 1/16 inch to clear the receiver). Use a plastic or rawhide mallet to tap on the screw heads a few times and loosen the sideplate (#31) on the action's right side.

Undo the screws complete- 15 Firing Pin 16 Firing Pin Spring 17 Breech Lock 18 Extractor 19 Link-to-Breech Block Screw 20 Link-to-Lever Screw 21 Firing Pin Cover Plate 22 Link 23 Lever Pin Plunger Screw

24 Lever Pin Plunger Spring 25 Receiver 26 Lever 27 Lever Pin Plunger 28 Receiver Lever Pin ly, pull trigger #41 to the rear to ease the sear tension, and remove the plate to the right. The firing mechanism will remain attached to it.

It's held in place by three screws (#40) in addition to a stirrup screw (#34), a mainspring (#33), and a mainspring-retaining screw (#32). Study it closely before going to work on it. Begin with the mainspring. It's heavy't oo heavy to be compressed with fingers. Two alternate means of compressing it are practical.

One is 29 Hammer Screw 30 Hammer 31 Lock Plate 32 Main Spring Retainer Screw 33 Main Spring 34 Stirrup Screw 35 Fly 36 Stirrup 37 Tumbler 38 Sear 39 Bridle 40 Bridle Screws 41 Rear Trigger 42 Front Trigger 43 Trigger Pin Charles Daly Little Sharps Rifle (Specifications subject to change without notice) 44 Rear Trigger

Regulating Screw 45 Regulating Screw 46 Trigger Plate 47 Rear Trigger Spring 48 Front Trigger Spring 49 Front Trigger Spring Screw 50 Front Sight Screw 51 Front Sight Leaf 52 Front Sight Base 53 Rear Sight Base 54 Rear Sight Leaf 55 Rear Sight Eye Piece 56 Rear Sight Slide 57 Rear Sight Base Screws 59 Rear Sight Side Screw 60 Rear Sight Spring 61 Rear Trigger Plate Screw 62 Plug Screw 63 Firing Pin Cover Plate Screw with a mainspring vise (from Brownells), which you should own if you do much work on sidelock smoke poles.

The other is with a pair of needle-nose locking pliers with padded jaws. The closed end of the mainspring wears an integral pin that seats in the sideplate. Once you've squeezed the arms of the spring enough to remove the tension on it, insert a small screwdriver blade under its closed end and carefully pry the spring away from the plate. "

DISASSEMBLY AND REASSEMBLY OF THE LITTLE SHARPS RIFLE CONTINUED

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Original caption: Right top: This bottom view of the trigger plate identifies the rear trigger adjusting screw (A) and the regulating screw (B). Right center: This is the trigger assembly as it appears from the right and left sides. Right bottom: This photo shows the trigger assembly as it appears after being removed from the stock. After you've memorized the relationships between the stirrup, the bridle, the tumbler, and the sear, back out all three screws (#40) to remove the sear and bridle.

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After the sear and bridle comes the tumbler. Remove the hammer screw (#29), the hammer (#30), and open your vise jaws wide enough to serve as a lengthwise support for the plate. Besides holding the hammer in the plate, the hammer screw does the same with the tumbler. As a result, the tumbler may be on the stubborn side and choose to remain in the plate. You don't have to put up with this attitude. Use a 3/32inch punch and give said tumbler a nudge.

There's a little something you have to be concerned about when nudging. A very little something. It's a very important part known as the fly (#35). Its function is to keep the hammer off half cock when the gun is being fired. Lose it now or omit it later on and you might be giving a nice 10-pointer a second chance at life, which will not make your customer very happy. Now turn out the firing-pin coverplate screw (#63) and remove the cover plate (#21).

It also serves as a gas seal and is present on all current production Little Sharps rifles. With the plate out of the way, pull the firing-

pin pusher (#14) from the block along with the firing pin (#15) and its spring (#16). Locate and undo the barrelblock link screw (#19) and the lever screw (#20) and you will free the lever (#26) and its link (#22). The tang screws (#12 and 13) retain the stock to the action. Remove them and the plate screw (#8) and pull the stock off to the rear.

The trigger plate (#46) will come with it, along with all the elements of the trigger assembly. The plate, in turn, can be removed from the stock by backing out the rear plate screw (#61). I'd move cautiously from here on, and only loosen a screw enough to detach it from an associated part. And only do so after memorizing the original relationships of the parts. The accompanying photo will help. It pictures the trigger group as it comes from the factory after it has been separated from the stock.

Two screws require special mention. These are the rear trigger-regulating screw (#44) and the regulating screw (#45). The rear screw works with the rear trigger spring to ensure the rifle will not discharge when fully

cocked. The regulating screw adjusts the sear. Though all these screw/spring functions are closely related, there is no set formula for adjusting them. That's primarily because no two rifles B A are exactly the same.

You have to keep going back and forth, tweaking the spring position and screw pressures until any danger of an accidental discharge has been eliminated. I'll add my own rules here: No hunting rifle should have less than a 3- or 4pound trigger pull (preferably 4). The forend is dismantled by removing its screws (#9). The lever spring (#7) is retained by its own screw (#8). You won't need any further advice for taking apart the forend assembly, and so I will offer none. It's simple.

There is also no need for me to add additional paragraphs on reassembly; the Little Sharps really does go back together in reverse order. I'll only add one reminder: When reassembling the lock mechanism, do as you did when disassembling it, and take pressure off the sear by pulling back slightly on the rear trigger. I

RIFLES

Tech Topics

In this feature, we examine new tools and tooling, tips and techniques and other items of interest to the gunsmithing community. How to Convert a Double Shotgun to a Double Rifle

BY AMERICAN GUNSMITH EDITORS JULY 2009

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No, we're not actually going to tell you how to do it here. Instead, we're going to tell you about a book titled *Building Double Rifles on Shotgun Actions*, by W. Ellis Brown. The book was brought to our attention by a reader who wants to undertake the challenge. Our th) and sent usa copy for review. A hardcover, the \$54.95 book is profusely illustrated with over 300 photographs and technical drawings, accompanied with step-by-step instructions.

Combined, these will walk you through the transformation of a shotgun action into a double rifle. Your guide, W. Ellis Brown, has been a working gunsmith for over 25 years, and is dedicated to sharing his hardearned knowledge, heretofore unavailable, with those less experienced. In this, his first book, he details the entire process of the conversion, from defining the scope of the project, to fitting the barrels to the action, to proofing, regulating, and finishing the barrels.

All of these secrets have been closely guarded by the manufacturers of Britain's great (and terribly expensive) double guns, but you'll find them here presented in away that brings these processes within the range of a skilled craftsman. Really, really good Ellis Brown's book is required reading. stuff here. We commend the author and recommend the book. The Vulcanite File: Not Square Anywhere The special shape of the Vulcanite file (Brownells #360-313-841AB; \$37.65) is immediately obvious.

Not so obvious is the fact that it's really four files in one—a half-round bastard, a flat bastard, a half-round second cut, and a flat second cut.

We wouldn't advise using this file to recut S&W revolver ratchets, which approaches brain surgery in the degree of precision required (for that, a Swiss pattern is best), but the Vulcanite file is great for shadowline

cheekpieces, shaping combs or schnables, inletting bolt knobs, and is great for shaping materials ranging from hard rubber to soft metals, plastics, and wood.

Not Just Another 1911/.22 Conversion Kit We wish we could provide ahead-to-head comparison between the Tactical Solutions 2211 Conversion Kit and the one once made by Kart. But we can't. For one reason, the Kart .22 conversions are as scarce as hen's teeth, and for another, we wouldn't be able afford to buy a Kart if we found one. The last one we saw, several years ago, wore a \$1,500 price tag. At \$425.95, the Tactical Solutions 2211 Kit (Brownells #100-003-848DE) sells for nowhere near that.

In away, "Kit" is somewhat misleading in describing the 2211. Unlike the many items we buy with "some assembly required," the 2211 leaves its box ready to install

TECH TOPICS CONTINUED

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22caliber conversion for the M1911 is similar to Fred Kart's brilliant, but regrettably no longer made, transformation. on a single-stack Government or Commander model or a clone chambered for .45 ACP, .40 S&W, .38 Super, or 9mm. The kit has only two primary elements—a steel slide/barrel assembly and a 10-round aluminum magaa serrated front sight to reduce glare and a rear sight adjustable windage and elevation with a generous .110inch-wide square notch for quick target acquisition.

Get a Grip: Accu Grip Vise Pads Hang On Tight Accu Grip vise pads are “elastomeric.” We didn't ask a chemist to define the term for us, but we know that means they don't scratch, mar, or diszine. Remove the slide from a 1911, replace it with the 2211 assembly, reinstall the original slide-stop lever, load up the magazine, and you're good to plink. One thing we particularly liked about the 2211 is the fact that the slide assembly remains open after the last round is away.

Other niceties include color what they're holding on to, and they don't like to let go. And that's about all you've ever want a vise

pad to do. Or not do. The red Accu Grip pads (Brownells #080-000-364AB) are for securing wood or plastic. The blue pads (#080-000-365AB) are for metal and other hard materials. They arrive boxed in pairs, of course. They must be fitted to your vise according to the accompanying instructions so they fit it snugly.

This requires making several cuts in the aluminum bases to which the pads are permanently mounted. Unless you're good with a hack saw, we suggest using a band saw for the purpose. They're not exactly cheap (\$48 a pair), so the last thing you want to do is cut the bases cockeyed or cutoff too much and have to reorder anew pair. New Accessories Added To Magna-Tip Lineup Brownells has expanded their line of Magna-Tip screwdrivers to include three new accessories and two allinclusive kits.

The Magna-Tip line is an industry standard for quality and found on the benches of professional gunsmiths and hobbyists around the globe. The new ratchet handle (#080-000- 513;), adjustable torque handle (#080-000-515), and master storage block (#080-

000-514) allow gunsmiths to maximize the performance from their Magna-Tip screwdrivers.

The new accessories can be purchased individually, and are also included in the new Magna-Tip Professional Super Sets with 120 unique bits and seven different handles (#080-000-532 and #080-000-531). Adjustable in 1 inch-pound increments, the torque handle lets users apply the exact amount of torque necessary for any gun screw, from scope rings to trigger-guard screws. The handle has a locking adapter that fits all Magna-Tip bits and a rubber-coated body for a positive grip.

To protect the precision tool from bumps and help maintain its accuracy, a hard-sided case is included with each torque handle. With a comfortable T-shaped grip, the ratchet handle transfers maximum torque to tighten or loosen fasteners. It features a large, positive-locking control knob positioned to prevent accidental direction changes. The new master storage block is

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machined from one solid piece of Delrin. The durable material is resistant to most solvents, and won't crack, chip, or split. The block organizes and stores up to 120 Magna-Tip bits and seven handles enough for an entire Master Super Set and more than 60 specialty bits. All Magna-Tip components, bits, and handles carry Brownells' 100-percent satisfaction guarantee.

Caspian Releases New Version of the Pocketsmith When the Colt 1911 automatic pistol was first introduced, the pistol could be completely field stripped by hand. Not with hand tools, but completely by hand. The only tool needed was something to unscrew the grip screws, and for that a cartridge case would suffice. Today, the situation is different; we've tightened and tweaked old loudmouth to the point that a variety of tools are needed for disassembly.

Recently Caspian Arms introduced a new version of a multi-tool that's one of the great 1911 accessories. The Caspian M1911 Pocketsmith III houses three different screwdrivers, an Allen wrench, and a knife blade on one side. The opposite side features a blunt punch and another pair of Allen wrenches. The handles are crafted of checkered aluminum, and the end of the tool is an ingeniously designed plier. The neatest part, we feel, is the bushing wrench.

The wrench will marry perfectly to a tightly fitted bushing with little chance of marring. The Allen wrenches are sized for the various types of full-length guide rods, grip screw bushings, and adjustable sights. This \$35 tool is probably the only one you'll

ever need for field adjustments or field stripping of the M1911. It's available from most of the "usual Learn Everything You Ever Wanted to Know About Working as a Gunsmith..."

Gunsmithing school graduates, working gunsmiths, and potential employers all gathered at the Prairie Meadows Conference Center in Altoona, Iowa, last April 17th and 18th for Brownells Third Annual Gunsmiths Career Fair. This year, Brownells added a number of seminars on three different career tracks to expand the attendee's knowledge of the business and the regulatory pitfalls awaiting the new gunsmith or gunshop owner. This was a truly practical event for everyone involved.

After some brief opening remarks by Frank Brownell and Laurie Lee Dovey, the attendees were treated to a panel discussion by several potential employers including Jerry Fisher and Ron Power on what they expect from a new gunsmith in their operation. Other seminars included one on recent BATF rulings affecting gunsmiths and the most common violations cited by BATF.

There I was a question-and-answer session on tax preparation for gunsmiths, one on internet marketing, and another seminar on how to add value to your gunshop by offering gunsmithing services. Attendees had plenty of time with the potential employers to fill out job applications and schedule interviews between seminars and many took advantage of the opportunity. Potential employers commented that they were pleased to find so many well-qualified candidates to choose from.

The keynote speaker at dinner on Friday night was Roy Huntington who is the publisher of some of the industry's most recognized magazines including Guns, Handgunner, Shooting Industry, and American Cop. Mr. Huntington gave an inspiring talk on our passion for the firearms industry and left everyone feeling good and ready to tackle the next challenge.

On Saturday morning, buses took the attendees to the Brownells facility, where we were given a tour and the opportunity to attend additional seminars on UPS shipping, credit-card processing, working with law-enforcement agencies, creating a business plan, reloading, and relationship management. Later in the day, the buses took everyone to the Big Springs Shooting Complex for a chance to do a little shooting before being returned to Prairie Meadows.

Brownells provided the guns and ammunition, including a .50-caliber rifle on the 500yard range, and Joe Bowman dazzled everyone with his single-action pistol-shooting demonstration. Brownells is to be commended for a world-class event that has quickly become indispensable, not just for gunsmiths, but for anyone involved in the retail end of the firearms industry. And the most incredible part of the two-day seminar was the price. Nothing! Nada! Free!

Seminars, job fair, meals, buses, firearms, ammunition—all provided at no cost by Brownells. Next year's dates have not yet been set, but watch Brownells' site for info

METALWORKING

Relining the .22 Rifle Barrel: An Alternate Procedure

With a little ingenuity and a homemade drill, it's possible to reline a rifle barrel for little more than the cost of the liner.

BY K.C. ERICKSON JULY 2009

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Original caption: Right top: Made from 5/16-inch drill rod, this homemade drill was used to bore the barrel for the Redman relining tube.

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Original caption: Right bottom: With a custom pilot made by the author, this drill from Travers Tool Co. could also be used to bore a barrel for a relining tube. and with a breechblock that was loose and rattling around. The stock wasn't in any better shape. It was covered with scratches and dents, and the wrist was cracked in four places. The through-bolt for the stock was badly bent, and the buttplate was bent and dangling by one screw.

“Ve I read a great many books and articles in the past describing the process of relining a shot-out or rusted-out .22-caliber rifle barrel. The first one I remember reading was James V. Howes’ impressive two-volume set *The Modern Gunsmith*, wherein he mentions the use of Parker Hale relining tubes. At the time, the relining tubes were soft-soldered into the bored-out .22 barrel, which called for an elaborate set-up of gas jets playing on the barrel.

If a gunsmith found a great demand for this type of work, it might be worth building a special setup for the purpose. Many gunsmiths today, however, use the more modern method of epoxying the tubes into the old barrel. This greatly simplifies the equipment needed and epoxy seems to be as durable as softsolder.

I’ve often thought this would be an interesting project to try, and recently I had the opportunity when I was given the wreck of an old Remington Model 6 “boy’s” rifle which had been in my son-in-law’s family for generations. The little Remington was in deplorable condition, covered with rust,

Keeping in mind that restorations should not be done to make a rifle look like new, but rather to preserve it, I set out to try to put some life back into it. I cleaned up

the metal by polishing with stones and abrasive cloth, and made some new pins for the hammer and breechblock to tighten them up. Next, I made anew stock bolt and straightened out the badly bent buttplate. The stock was quite a problem, since someone had attempted to repair it by driving nails through the wrist.

I repaired the cracks one at a time by gluing and clamping with rubber tubing stretched and wrapped tightly around the wrist. The nail holes were repaired with little walnut plugs dipped in glue and tapped into the holes and then trimmed flush. I steamed the many dents out, but made no attempt to sand out all the many nicks and scratches. After the metal was rust blued and the stock was refinished, the little rifle looked quite presentable and I was pleased with it.

I fired it a few times just to make sure it functioned properly, but the inside of the barrel was hopeless, filled with rust and what appeared to be lead. I tried scouring it out with wire brushes and various solvents, but it persisted in producing all kinds of filth and corruption after every session. There were only some faint traces of the rifling still visible. I realized that, if it was to be made usable, I would have to reline the barrel.

Researching the supplies required

RELINING THE .22 RIFLE BARREL: AN ALTERNATE PROCEDURE CONTINUED

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Original caption: Above top: This collar, made from a piece of scrap steel, slipped over the breech end of the barrel, and was locked in place with a setscrew. The collar allowed the barrel to be mounted on center in the lathe. Above bottom: The homemade counterbore drill fouled quickly and had to be removed often and cleared of chips.

to do such a job, I found everything I needed in the Brownells catalog, but I balked at the cost of the piloted drill. The Redman relining tubes, however, were quite reasonable in price and I ordered one. I thought of buying a 5/16-inch drill and grinding a pilot on the end, but without the proper equipment, I gave up on that idea. In the past, I've made a lot of counterbores for screw heads and have used oilhardening drill rod for the purpose.

These have been very satisfactory and I thought perhaps something like this might work. I made a trial counterbore out of a piece of 5/16-inch drill rod with a long pilot and tried it on a piece of scrap steel. It worked perfectly, except that I had to withdraw it from the hole after about every 1/8 inch to clear the chips. So I made another 5/16-inch counterbore with four extra-long flutes and a pilot about a 1/2 inch long. The reliefs for the cutting edges were carefully filed with a sharp triangular needle file.

Checking the bore of the rifle, I made the pilot a close fit at .218 inch and threaded the back end of the counterbore for an 11-inch extension. I then heat-treated it, leaving it plenty hard. I wasn't entirely confident that this cutter would be durable

enough to do the job so, for a backup, I bought a 5/16-inch from Travers Tool Co. This counterbore accepts pilots, so I made one about an inch long with a diameter of .217 inch. I also tried this one on a scrap piece of steel and it too worked just perfectly.

To use it, I would have to weld on an extension to make it about 11 inches long, but as it turned out, the homemade drill worked just fine, so I didn't use the one I bought from Travers. Nevertheless, if you don't want to go to the trouble of making one, the drill from Travers would be a good option. The breech end of the barrel had some milling cuts on the underside for mating with the receiver, and this interfered with holding the barrel in the lathe chuck or steady rest.

I made a close-fitting collar out of a piece of scrap steel, slipped it over the breech end of the barrel, and locked it onto the breech with a setscrew. I then mounted the barrel in the lathe between centers and turned the collar to be concentric. With everything ready to go, I mounted the barrel in the lathe by the muzzle, trued it up with a dial indicator, and put the breech end in the tailstock center.

I then adjusted the steady rest on the trued surface of the collar, pulled the tailstock center away, and replaced the center with a drill chuck. Installing the counterbore, I started up the lathe at 266 rpm, and with some trepidation, I entered the pilot into the barrel and started the drilling. Using a lot of cutting oil, the tool cut very well and I quickly learned that I could advance the cutter about 1/8 inch or slightly more each time before having to clear the chips.

I used an oil can with a pump and long nozzle to squirt oil into the working area each time I withdrew the drill. This was a slow process, but I was in a hurry and I consoled myself with

This slowed the boring process somewhat. I thought that the counterbore/drill cost me very little time to make. After drilling for about 10 minutes, the barrel would heat up and the pilot would begin to bind, so I would work on another project for awhile until it cooled down. I suppose I could have made the pilot a few thousandths smaller in diameter, but the .218-inch-diameter pilot turned out to have a significant advantage in keeping the drill aligned.

Later on, when I completed the drilling from the other end, the two drillings met perfectly with

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no visible overlap where they met in the middle. I should mention that the Brownells drill has a pilot of .215inch diameter, so it would probably be easier to use without producing any binding. When I had drilled a little more than halfway through (the barrel was 20 inches long), I reversed the barrel in the lathe and finished the drilling. I was more than pleased with the results, and was surprised to find that the counterbore/drill was still sharp.

I had hardly expected that, and had planned to have to sharpen it at least once or twice during the drilling. At the same time, I suppose I should have realized that these old barrels were made of a soft steel and would present no problem. This procedure made a huge mess on my lathe, of course, with oil dripping out of the headstock chuck and gobs of oily chips all over everything. The tradeoff for having to clean up the mess was the satisfaction of knowing that the worst part of the job had been completed.

After cleaning the hole out well, I tried inserting the liner and found that it was a nice tight sliding fit. I had been almost sure that that there would be a problem with binding somewhere along the length of the barrel and that I would need to do some adjusting to the diameter of the liner, but my homemade counterbore/drill cut a very I uniform and straight hole. Now it was time to glue the liner in with the epoxy.

I turned some tapered plugs to seal the barrel ends and degreased both the barrel and the liner with lacquer thinner. I used an old cleaning rod with a slotted tip and a loose patch to coat the inside of the barrel with epoxy and then I used a disposable acid brush to apply the epoxy to the liner. The barrel slid in nicely, leaving gobs of excess on the newspapers placed to catch it. I then cleaned up the excess epoxy around the muzzle and breech with rags dampened with lacquer thinner.

After allowing the epoxy to cure for a few days, I cut the extra length off the muzzle and breech ends of the liner. The only thing left to do was to crown the muzzle, ream the chamber, and cut the extractor slot with a small file. The little rifle now has a new lease on life and will surely get better treatment than it had in the past. **Conclusions/Recommendations** Looking back on this project, the only part that might present a problem for some gunsmiths is the making of the counterbore/drill.

It's necessary to have access to a milling machine (or a lathe milling attachment) in order to mill the four flutes, for which I use a sharp 5/16-inch end mill. I've made many of these counterbores for various projects in the past, and I've found that, for one-time use, it's not necessary to space the flutes very accurately. When I first began to make these, I spaced the flutes very carefully, using a spin index, but I soon found that just eyeballing the spacing works just as well.

Keep in mind that it's only necessary to sharpen the ends of the counterbore flutes, since the sides of the flutes do no cuffing at all. I use oilhardening tool steel for these counterbores, because I have a lot of it on hand, but water-hardening steel works just about as well. I've never used one of these drills long enough to notice any wear, but wouldn't recommend these for production use. I have a small electric furnace with a pyrometer for the heat treating, but this is probably not really necessary.

The heat treating can be done accurately enough by using a magnet. To use a magnet, the part is heated with a propane torch and tested with the magnet as the part heats up to a red color. When the magnet is no longer attracted to the part, it's reached the critical temperature and should be quenched immediately. To be certain, test the hardened part with a file; the file should skid right off. Next you'll want to polish off some of the discoloration and re-heat the part to a light straw color, and then quench again.

I have never had one of these drills chip or break after using this method of heat treating. As it turned out, my misgivings about using the counterbore type of drill were not justified and I was certainly pleased with the result. Of course, if I were to do this often, I would use a commercial drill made specifically for this purpose, since the time required to do the drilling would be much less. But, being an amateur gunsmith, I don't have to watch the clock or worry about interruptions.

METALWORKING

Mounting the Holland Adjustable Picatinny Scope Rail

When the ultimate in accuracy and durability is required, the combination of the Picatinny rail and precision scope rings fills the bill.

BY NORMAN E. JOHNSON JULY 2009

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Every scope sight performs best when the reticle is optically centered in the viewing field. The adjustable-rail mount system's Shooters Supply makes this simple, either to solidly mount an in-line scope with the reticle perfectly centered. The Holland Picatinny rail mount has two solid-steel bases as a rigid component attached to the rifle receiver beneath the slotted, adjustable rail. The Holland rail has a unique feature allowing it to be adjusted right or left, making it possible to center the scope reticle.

The system comes with detailed instructions on how this is accomplished. For a perfectly centered scope, some minor fitting is necessary on one of the two rails offered. This will be covered in more detail below. Attaching the Rail Mount System First, the two bases are attached to the receiver with four 6-48 screws provided. In cases where the bases are not in true alignment, they can be milled. This procedure is outlined in the instructions.

Such milling could also be performed to alter the angled plane formed by the two bases to change vertical reticle adjustment. Holland offers two different rail mounts for the Remington Model 700- Series rifles, one of which requires drilling and tapping a screw hole. The rail can now be attached to the bases with two of the three 10-32 screws provided. The rear base screw is a flathead screw, which is not fully tightened at this time.

The other front screw is a 10-32 button-head screw that goes in the slotted front hole. This feature allows the base to be moved from side-to-side at the front for exact reticle centering with the bore. Before mounting the scope on the rifle, the scope reticle should be centered in the scope. This is accomplished by turning the reticle adjusting-knob until it reaches one end "R" or "L. Then count the clicks all the way to the opposite side.

Divide the total clicks in half, and set the reticle in this position to center it. Mount the scope on the rifle and align the reticle to the bore. This is also This system is one of the most rigid scope mounts available. done for vertical reticle position at this time, to see if any base adjustment is required. At this point, with the scope temporarily mounted and with the reticle coinciding with the bore, remove the scope (with the rings attached) from the rail.

This is where the final railattaching screw comes into use. A hole is drilled and tapped in the extreme forward end of the front base for the final 10-32 flat-head screw. This hole must be carefully centered, drilled, and tapped through the front hole in the rail into the base, and requires attention to detail for exact centering. The screw provided is a flat-head 82-degree 10-32, requiring a number 22 drill. If you lack the ability

MOUNTING THE HOLLAND ADJUSTABLE PICATINNY SCOPE RAIL CONTINUED

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Both provide for perfect reticle centering prior to permanently attaching the rail. to accomplish this task, seek help. This final screw, along with the other two screws holding the rail base, locks things solidly in position, providing what is essentially a custom-fitted Picatinny rail mount.

Holland's does recommend using a drop of Loctite on each screw thread, after the surfaces. The difference between this rail and the other offered by Holland is in the front part of the rail and the screws used to attach it. have been thoroughly cleaned. Holland's other rail mount is much the same as the first one I have described, with one difference.

This rail mount has two slotted holes at the front, along with a 10-32 button-head screw for each slot permitting full adjustment and solid attachment of the rail mount to the front base. No drilling and tapping for this rail is required. The bases are machined at a 20- MOA slope as received, which should be good out to 1,000 yards. Available with the Holland Picatinny mounting system is a machinist's sine-bar

to hold the action for precise milling of the bases, if needed to center the reticle vertically.

This was not required in my cases, as I mounted the scope on one of my Model 40X Remington rifles and a Model 700. Follow the instructions that come with the mount for this procedure. Scope Rings Equally Important In conjunction with the Holland Picatinny Rail Mounting System, I chose to use Badger Ordnance scope rings. These rings come in 30mm with precision sleeves for one-inch scope tubes. The Badger Ordnance scope rings are available in standard, medium, medium-high, high, and ultra-high. I have mounted and tested many hundreds of scope-mounting systems with none that beat the solidness and coaxial congruity of the Picatinny railmounting systems when used with precision-made rings.

The mediumheight scope rings are made of steel, and range in weight from 6.6 to 10.4 ounces. They have a Weaver-style clamp with a 1/2-inch nut to secure the rings solidly to the rail. The Badger scope rings are available in standard, medium, medium-high, high, and ultra-high. I have mounted and tested many hundreds of scope-mounting systems with none that beat the solidness and coaxial congruity of the Picatinny railmounting systems when used with precision-made rings.

I installed Brownells' Sleeved Scope Alignment Rods between the rings. These rods serve to prove the true coaxial alignment of the scope rings, whether the rings are 30 mm or 1 inch. Proof positive for absolute precision in ring alignment is shown when the longer of the two alignment rods passes easily through both mounted sleeves, as it did with the Holland/Badger Ordnance combination. Attaining this level of precision requires a great deal of well-thought-out machining by the manufacturers.

Conclusions The Picatinny scope-mounting system is not ideal for all rifles. A mountain rifle or other carry rifle might be served with one of the other scopemount systems. I have used and tested many of these with excellent success. However, where the ultimate in precision and overall rigidity is required, few mounts equal the performance of a well-made Picatinny rail along with high-quality scope rings.

The Holland/Badger Ordnance combination easily meets these demands as well as providing for optimal reticle adjustability. I

PISTOLS

Working the Henry Rifle And its Uberti Replica

B. T. Henry's repeating rifle was based on a Smith & Wesson pistol design, and later became the basis for a line of Winchester rifles designs.

BY DAVID R. CHICOINE JULY 2009

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Benjamin Tyler Henry was a brilliant gunsmith, inventor, and firearms designer. The Henry repeating rifle bears his name, after he altered and improved the design of a rifle originally developed by his former employers, Daniel Smith and Horace Wesson. The Henry Rifle's direct ancestor was the Smith & Wesson Magazine Pistol or the "Volcanic," as it is commonly known. This was a radical weapon at the time, firing a case-less cartridge.

If you're not familiar with the term, a case-less cartridge is essentially a bullet with a hollow base that contains both the priming and propellant charges. The S&W Magazine Pistol was a financial failure, but not because the concept or workmanship were at fault as

we'll see in a moment. I purposely used the word "radical" in the last paragraph to describe the S&W Magazine Pistol. This pistol used an ingenious lever-operated toggle action, equipped with a tubular magazine under the barrel that held its cartridges.

The cartridges were fed upward into the action by a moving carrier. Quick use of the finger lever cocked the hammer, raised up anew cartridge, and fed it into the barrel chamber with two short swipes. This was exciting stuff for 1854, when most weapons were muzzleloading singleshots that had to be loaded in several slow and deliberate steps.

The financial backing for the S&W venture came from a consortium of local businessmen; not coincidentally, one of the officers of

this consortium was a man named Oliver Winchester. B. T. Henry originally worked as S&W's shop foreman on the Magazine Top of page: This modern copy of the Model 1860 Henry in .44-40 caliber is manufactured in Italy by A. Uberti Firearms. Author photos. Pistol project.

After the financial buyout of his friends at S&Win 1855, Henry moved from Norwich to New Haven, Connecticut, along with the new owners, who formed a company called Volcanic Repeating Arms Co. Volcanic continued to produce the Magazine Pistol until early 1857, when anew company called New Haven Arms Co. was formed, and Oliver Winchester played an even larger role in this firm. New Haven Arms ex-

WORKING THE HENRY RIFLE AND ITS UBERTI REPLICA CONTINUED

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panded on the Volcanic line to include long arms' rifles to be exact. The Smith & Wesson Volcanic cartridge, as innovative as it was in its day, was terribly underpowered. What's more, that volatile mixture of fulminate it used as a powder charge proved to be highly corrosive. B. T. Henry set out to alter the design so its action could be made to handle and fire a more powerful, self-contained metallic cartridge. Henry's final cartridge would become famous as the .44 Henry Flat Rimfire.

The cartridge was so-named because of its flat-nosed bullet, which was designed to prevent one bullet's nose from setting off the cartridge in front of it in the magazine. The .44 Henry was basically a scaled-up version of Smith & Wesson's .22 Rimfire No. 1 cartridge, a successful cartridge that S&W had been using in their seven-shot revolvers since 1857.

When it was reintroduced in 1860 under Henry's name, the rifle used the same basic mechanical components that had worked so flawlessly in S&W's Magazine Pistol, with an elongated action to hold the new metallic cartridge. Other additions to the S&W action included a redesigned firing pin or striker to dent the hollow cartridge rim and explode the priming compound, as well as an extractor mounted on the bolt to remove fired cartridge cases from the chamber. Henry's repeating rifle became an instant success.

The Henry rifle provided the equivalent firepower of 15 single-shot rifles, except that the Henry was a good deal easier and faster to reload. Small numbers were even used in the American Civil War, where this 15-shot repeater was referred to as "that damned Yankee rifle you could load on Sunday and shoot all week." Like the S&W before it, the Henry rifle's magazine tube was machined as part of the barrel.

The magazine was loaded by pivoting a barrel extension, then literally pouring the cartridges, base down, into the front of the magazine. Inside, a spring-loaded brass cartridge follower with a handle that stuck out through a slot in the bottom of the tube served to push the cartridges back into the action. One flaw in this was this follower handle, which could run into the shooter's hand and stop the cartridges from feeding.

Another was the lack of forearm wood; when the barrel heated up after a few shots, the Henry became too hot to handle. Despite its flaws, Henry's invention was a brilliant accomplishment, and it became the first in along line of toggle-action repeaters. Winchester took over the company from Henry in 1866, and that old Smith & Wesson design formed the foundation of the highly successful Winchester Repeating Arms Company.

Takedown Instructions These basic steps can be used with Uberti-made replicas and original Henry rifles. The original rifles differ slightly, primarily in the firing pin and main-spring areas. Unless otherwise noted, I'll be using Uberti's parts nomenclature in these instructions. 1. As always, start by making certain the rifle is unloaded.

Grasp the rifle around the barrel with your left hand, point the muzzle in a safe direction, and turn the lever hook's ome times called a "lever lock" (#542) until it points sideways. This unlocks the lever (#89). (On the original Henry, this is called a "finger lever.") Open the action by pulling the lever all the way down with your right hand. Check to see if there is a cartridge in the barrel's chamber, and look down into the open action to be sure there is not a cartridge in the cartridge carrier (#7).

If there is a cartridge in the carrier, the rifle will be loaded when you close the lever. To safely unload a Henry rifle with a loaded magazine, make sure the muzzle stays pointed in a safe direction, and with the lever still in the open position, push the magazine follower (#113) all the way forward and hold it there. Now twist the sleeve (#223) as far as it will turn in a clockwise direction (viewed from the muzzle). Hold the rifle over a wooden bench or table top and tip it so the muzzle is facing down.

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WORKING THE HENRY RIFLE AND ITS UBERTI REPLICA CONTINUED

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tridges in the magazine should be free to slide forward and out of the magazine. You can now twist the sleeve back into its original position and ease the magazine follower rearward and back into place. Make one last check after unloading to be sure that no cartridges remain in the magazine. Keeping your fingers away from the trigger, operate the lever all the way closed and then back all the way open, and ensure there is no cartridge in the cartridge carrier. 2. Removal of the buttstock and mainspring come next.

Unscrew and remove both screws located behind the hammer. One is the upper tang screw (#63) and the other is a wood screw (#62) from the upper tang't he rearmost of the two screws. Then remove the lower tang wood screw (#62). The buttstock (#57) can be removed from the action (#1) by pulling it off toward the rear. On the Uberti, open the lever slightly and remove the mainspring screw (#36) from the lower tang. The mainspring (#20) can now be removed out through the back of the action.

Make Then push down on the carrier block and remove it through the opening in the bottom of the receiver. On the original Henry, with the hammer sitting in the forward position, use a pair of spreader-type pliers to compress the top of the mainspring just far enough to disengage the spring from the stirrup. Then release the tension on the spring, and use a small drift punch and hammer to drive the mainspring sideways and out of its seat in the lower tang. 3.

BEGIN REMOVING THE SIDEPLATES AND THE LEVER SPRING BY LOOSENING THE TWO

WORKING THE HENRY RIFLE AND ITS UBERTI REPLICA CONTINUED

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Henry (Uberti) Model 1860 Toggle-Action Rifle (Specifications subject to change without notice) 1 Receiver 2 Hammer 3 Barrel 7 Carrier Block 15 Sight 19 Trigger Spring 20 Mainspring 36 Mainspring Screw 55 Rear Sight 57 Buttstock 58 Buttplate 62 Buttplate Screw 63 Tang Screw lever-spring screws (#124) about two full turns each. These are located just in front of the lever on the bottom of the receiver. Unscrew and remove the lever screw (#101).

The sideplates (#73-Rand #74-L) are dovetailed into the receiver sides and are meant to slide out from bottom to top.

By using a small block of hardwood approximately 1/2 x 1/4 x 4 inches as a drift punch, you can carefully hammer the sideplates down from the top, using alternating blows 67 Firing Pin Extension 69 Rear Base 72 Cam Lever 73 Sideplate, Right 74 Sideplate, Left 76 Rear Running 79 Extractor 80 Front Band 83 Rear Link,

Right 84 Rear Link, Left 85 Front Link, Right 86 Front Link, Left 89 Lever front and rear until both plates are freed from the receiver.

Remove the two lever-spring screws (#124) along with the left and right lever springs (#92 and 93). Be sure you make note of their positions for later reassembly. 4.

To disassemble the action, lift out the left (#84 and 86) and right (#83 and 85) link assemblies from their respective sides of the frame, then drive out and remove the lever pin (#107) from the top of the lever (#89).

90 Lifter Arm 92 Right Lever Spring 93 Left Lever Spring 95 Firing Pin Spring 96 Magazine Spring 97 Breech Block 98 Firing Pin 99 Trigger Pin 100 Hammer Pin Screw 101 Lever Screw 104 Firing Pin Stop 105 Rear Link Pin 106 Link Pin 107 Lever Pin 108 Extractor Pin 109 Cam Lever Pin 112 Hammer Link Pin 113 Magazine Follower

115 Hammer Link 121 Band Screw 124 Lever Spring Screw 217 Buttplate Gate 223 Sleeve 233 Protection Running Screw 234 Protection Running Spring 237 Lever Hook Spring 263 Trigger Spring Screw 458 Buttplate Gate Pin 536 Sleeve Latch 538 Sleeve Latch Rod Spring 542 Lever Hook 544 Rear Sight Pin 546 Sleeve Latch Rod 550 Magazine Follower Screw 552 Lever Hook Spring Screw 600 Rear Sight Spring 609 Rear Running Stop Screw Lift up just slightly on the lifter arm (#90) and pull the lever straight out through the bottom of the receiver.

You can now push up on the carrier block (#7) and withdraw the lifter arm down and rearward, until it can be removed out through the lever opening in the receiver bottom. Unscrew and remove the trigger-spring screw (#263) and the trigger spring (#19) from the front of the trigger (#10). After unscrewing and removing the hammer-pin screw (#100), the ham-

WORKING THE HENRY RIFLE AND ITS UBERTI REPLICA CONTINUED

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mer (#2) can be withdrawn up and out through its opening in the receiver top. Push down on the carrier block and it can be removed through its opening in the bottom of the receiver. 5. Remove the firing pin, trigger, and lever hook on the Uberti by using a small pin punch and hammer to drive the firing-pin stop (#104) out through the side of the breech block (#97). The firing-pin extension (#67), firing pin (#98), and firing-pin spring are now loose and can be withdrawn out through the rear of the receiver.

The breech block itself can now be removed by tilting it all the way down while withdrawing it toward the rear. This allows the sleeve-latch assembly to be taken apart. Use a cup-tipped pin punch and hammer to drift the trigger pin (#99) out from either side of the receiver. The trigger can now be pulled out from the bottom. The lever hook (#542) is removed by unscrewing it out through its hole in the lower frame tang.

The lever-hook spring (#237) is removed by removing the lever-hook spring screw (#552) located on the inside of the lower frame tang. On the original Henry rifle,

move the breech-bolt assembly to the rear until the extractor pin in the bolt is aligned with the notch in the receiver. Then drive out the extractor pin using a hammer and along pin punch. The firing-pin extension is then unscrewed from the rear, and then the firing pin can be pulled out through the back of the receiver.

The firing pin (or boltface) can be lifted off the front of the breech block. As the bolt is moved forward, the extractor will be free to be lifted off from the top. Remove the breech block by tilting it all the way down as it is withdrawn to the rear. 6. Disassemble the magazine by unscrewing and removing the magazine-follower screw (#550) from the right barrel side.

I Using your thumb, push the magazine follower (#113) all the way forward, then hold it forward while you twist the sleeve (#223) clockwise (viewed from the front) as far as it will turn. The magazine follower is now free to be carefully eased back and out of the sleeve. Use caution, along with both hands to control and contain the magazine spring (#96), which is rather long and

under tension. Next, unscrew and remove the band screw (#121) from the left side of the barrel muzzle.

The front band (#80) and the sleeve assembly (#223) are now free to slide forward and off the barrel. If necessary for repair or parts replacement, the sleeve can be further disassembled by unscrewing the sleeve-latch rod and removing it and the sleeve-latch rod spring (#538) from the inside rear of the magazine portion of the sleeve. The sleeve latch (#536) is now free on the front of the sleeve. Take note of the positions of these parts for later reassembly. 7.

Disassembly of the buttstock begins with unscrewing and removing the two buttplate screws (#62) "one at the top and one at the rear of the buttplate" and then removing the buttplate (#58). The buttplate-gate spring (#231) is removed by removing the buttplate-gate spring screw (#232). Take note of the positions of these parts for later assembly. That completes the disassembly of the Henry rifle and the near-clone made by Uberti. Reassembly of the rifle proceeds in the reverse order of the above.

MAINTENANCE & REPAIR

Reader Forum

BY AMERICAN GUNSMITH EDITORS JULY 2009

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Richland Shotgun Parts? I have a Richland side-by-side in 20 gauge. Looking at the right firing pin, it appears that the spring is broken. I need to know where I can get a tool to remove the housing as well as a replacement spring or other parts if needed. Thank you in advance. Until 1985, Richland was a Blissfield, Michigan, importer of shotguns from Italy and Spain. From your brief description, yours is either a Model 707 or Model 200. The 707 went out of production in 1972; the 200 in 1985.

Both were box-lock doubles similar to the Savage-Stevens 311 and the L. C. Smith double. The Gun Digest book on disassembly/reassembly of shotguns will show you the tools and techniques you need. As for parts, we can only suggest you fire up your computer and be prepared to spend some time searching the internet. Remington M700 Trigger Adjustment: Save This Info! I remember reading an article in one of my American Gunsmith journals on tuning the factory trigger on the Remington Model 700.

I thought I had put this particular issue aside, as I am often asked to "tune" the factory triggers on various rifles. You guessed it; now that I have a Remington in the shop with a 6-1/2-pound trigger, I can't find that issue.

Can I purchase this issue? Can I purchase this article and have it sent to my e-mail? Allen Cooper Cañon City, Colorado We believe what you read was a response to a letter here in the "Readers Forum," since we've explained the adjustment of this trigger many times.

We'll repeat those instructions, and hope that you (and others) will file the answer away for future reference. (Please note that the following instructions do not apply to Remington's new X-Mark trigger, which we'll cover in a future article.) The trigger housing of the Model 700, as well as that of the Model 600, 660, 720, and 721, has two screws at its front and a third at its rear. The lower front screw we'll call it "A" reduces the pull when rotated counterclockwise.

The upper front screw, call it "B," adjusts the travel to stop when the sear releases. This is accomplished by turning screw B clockwise to the point where the striker or firing pin fails to move when the trigger is pulled. The trigger is then held to the rear and B is turned counter-clockwise until the sear releases. (To be cautious, you can then give screw B another quarter turn to help maintain this positive sear clearance.) Now we come to screw "C" at the rear of the housing.

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This screw is epoxy sealed by the factory. Tampering with it provides an instant tip-off to the factory service personnel that the screw has been tampered with and immediately voids any existing warranty on the rifle. Screw "C" controls and sets the sear engagement. If the seal has been broken, you can reset the engagement as follows: Back out screw Cup to four turns. Then cock the action. Keep your finger off the trigger and turn in screw C until the sear releases.

Then recock the action and back off the screw a tiny bit. What you're doing is making a strategic retreat from the release point just achieved. After this you'll be working with both A and C. After adjusting A to your desired pull, the gun may not fire. If so, turn in C to be just short of its sear-release point. If the rifle still fails to fire after this adjustment, you have to turn C counter-clockwise to gain additional sear contact or increase the pull weight with screw A.

If the seal on screw C shows no signs of tampering, we suggest you remain innocent of any warranty violation and/or liability issue by replacing the entire factory-trigger assembly with an adjustable aftermarket substitute made for the Model 700. (See Brownells catalog for several reliable choices.) If that's the way your cus-

tomers decides to go, tell him not to discard the original trigger. The day might come when the rifle will have to be returned for repairs that only the manufacturer can perform.

If you ship it out with anything but the OEM trigger installed, it will be returned minus the aftermarket substitute with a factory trigger system installed. Interchange Taurus Parts? I'm having trouble locating an extractor, pin, and spring for a Taurus Model PT-945. I called Taurus and the parts are out of stock. I looked in Numrich's catalog and they don't list this model. They do list a PT-908 that looks just like it (same construction and shape of parts) but it's a .45 rather than a 9mm like mine.

I was thinking about trying the parts from the PT-908 to see if they would fit. Do you have any suggestions as to where I can locate the parts I need? Any help would be greatly appreciated. You should check with Taurus to determine interchangeability of the parts. The 908 came out in 1993, the 945 in 1995, and the 940 (.40 S&W) in 1997. Parts from the 940 might be the better bet. However, Jack First lists parts for all three of these pistols and could have them available.

Rechambering the Arisaka I recently bought a Type 38 Arisaka Rifle in 6.5x50 that's in very good condition except that someone had chopped about 5 inches off the stock at the muzzle end. The rifling looked good, so I decided to clean it up and finish "sporterizing" the stock with the idea of eventually adding a scope and anew bolt handle and giving it to one of my granddaughters when she's old enough. I suspected that the 6.5x50 would be a light recoiling rifle suitable for a youngster.

I ordered brass and bullets and began reloading to test it out before proceeding further. I loaded

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five rounds in the medium-power range (33 grains of IMR 4895 with a 140-grain bullet) and fired the first round remotely. (I tied the rifle to a stump and pulled a string from about 20 yards.) No problems were noticed, so I fired the next two from the shoulder. I was very pleased with the light recoil and felt that the round would be good for game up to whitetail deer out to 200 yards. I examined the first three rounds fired and found the case bulged near the base.

The bulge is about .008 inch larger than the case diameter, so I suspected an oversized chamber, though I have no Cerrosafe and have not made a chamber casting. I resized and reloaded one of those cases and fired it again. Again, the case was bulged. I suspected that a third or fourth firing would result in base separation, so I am exploring my options.

In reviewing reloading manuals, Cartridges of the World, and The Handloaders Manual of Cartridge Conversions, I believe that I can rechamber this rifle to .260 Remington with just a rechambering job. I have read that the Arisaka is a very strong action, but I'm certain that .260 Remington pressures are much greater than the original 6.5x50 pressures. Can this be done by hand with just a chambering reamer or would it require a lathe, a roughing reamer, and a finish reamer? What's your opinion of this conversion?

I really appreciate the fine articles in American Gunsmith, but always read the "Reader Forum" first for problem-solving insight. Thanks for your help. We suspect you're right about the enlarged or damaged chamber, but a chamber cast would be necessary to confirm this. We would not consider rechambering to the .260 Remington without checking with SAAMI on the pressure aspect. We further suggest you check in Cartridges of the World to ensure there are no conflicts with bullet/bore diameters.

Seeking accuracy from a bullet too small for the bore it travels through is futile, and excessive pressure created by a bullet too large for the bore is dangerous. Two Questions On the barrel for a Remington Model 760 pump rifle, how is the barrel extension and mounting lug attached? What process would you recommend to remove them? Also, on a Colt Police Positive Special (32-20 caliber), how far from the frame should the latch pin protrude? Thanks.

The barrel extension on the Model 760 is screwed on the barrel and held in place with a permanent threadlocking compound. Though not threaded, the same is true of the mounting lug. Modest heat applied to the extension may defeat the threadlocker and allow the extension to be detached. An action wrench with inserts molded or machined to fit the extension is advised for the undoing. Since it isn't threaded on, after heating, the lug can be carefully worked free with smooth-jaw pliers.

The latch pin on the revolver should only extend far enough from the frame to allow free movement of the latch main body when it is activated. The pin should not enter the latch recess where it would create drag. Browning M12 Synthetic Stock I have a Browning Model 12 12-gauge pump. The stock is in real bad shape. I know I can get another wooden stock, but I would like to get a synthetic stock. I have been looking for sometime now and can't seem to find a synthetic stock for that model.

Before I give up, I thought that you or some of your friends would know if there is a synthetic stock that might fit my Browning Model 12. That's odd. According to the Blue Book, Browning's Limited Edition Model 12 was never chambered for 12 gauge, but only 20, 28, and .410 with 2-3/4-inch shells only. As you know, the gun was close in design to the Winchester

Model 12. The Browning went out of production in 1990, and since it was "limited," we doubt that a synthetic stock was ever offered.

We suggest you call Browning/Winchester and ask if a polymer stock for the BPS shotgun could be adapted. Then check with stock makers such as Boyd's and Fajen for a synthetic or laminated wood stock for the Winchester M12. (You can always apply a solid coating of polyurethane to a laminated stock to "plasticize" it.) If you strike out with these sources, call Mc Millan (Ask if they will mold a stock to your shotgun. They'll need the gun to do it, and it won't be cheap.

But if you go this route, you'll have atop-notch, fiberglass-reinforced nearly indestructible replacement for your battered original stock. Golden/Yellow Boy Assembly In my February 04 issue, I found an article on the Henry Yellow Boy .22. On the one I have (can't find a model number, but serial number is 008535), it looks like the action comes out the bottom after the four side screws come out after removing the rear stock (no sideplates).

I just need to remove the barrel as the fired cases show a bulge on one side. I could replace the chamber, but need to see what the cause is first. Can I just remove the fore stock and punch out the two pins to remove the barrel? (I'll probably have to remove the magazine tube as well.) Thanks for your help. The article in the February 04 issue covered the Henry Golden Boy .22. We believe the Yellow Boy is either the same or very similar.

To be certain of this, check with The Henry Repeating Arms in Brooklyn, New York. The two upper pins on the receiver secure the barrel to it. The pin beneath them is a roll pin and retains

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(continued from previous page) the outer magazine tube. The action indeed comes out via the bottom of the receiver, but there's more to removing it than the four screws and stock, as noted in the 2004 article. Turkish Mauser Barrel I'm building a rifle on a Turkish Mauser action. The action is a large-ring. Upon removing the barrel, I discovered that the barrel-thread diameter is of the small-ring dimension. The receiver has a primary torquing shoulder below the threads, the same as the M98.

The thread shank, from the rear of the barrel to the shoulder, measures .715 inch. The thread diameter is .985 inch. My question is whether a smallring Mauser barrel will work on this action. Also, what modifications, if any, will have to be made for chambering, headspacing, and so forth? I know there will be machining involved, but I've been unable to find any information specific to rebarreling this Turkish Mauser model. I would like to use a good-quality pre-threaded barrel.

Any information you can provide will be greatly appreciated. As long as the threads are the same, the barrel will marry up to the action. (Be sure that all dimensions you provided in your question are shared with your barrel maker.) If you supply the action to the barrel manufacturer, you, personally, won't have to concern yourself with

headspacing. If yours is a small-ring action, you'll be somewhat limited in your choice of caliber.

If that's not the case, the choices expand considerably as long as the action is in sound condition. Regardless of the caliber you choose, you'll want to have a good working relationship with the barrel maker. One you might want to talk to is Mc Millan Heat-Treating the M1911 Slide What heat treatment, if any, is required to complete a 1911 slide from a raw piece of steel? Thanks for any help you can provide. Robin Miller Theodore, Alabama If you're starting from scratch, we wish you success.

The type of steel you begin with determines the amount of heat required to harden and temper it. The steel will have to be heated uniformly throughout and that calls for a furnace. You also want to avoid over-hardening, which can cause the slide to be brittle. After you've finished machining the slide to Colt specifications (a set of drawings for those specs are available from Brownells), contact the nearest college with a metallurgical department.

Tell them what type of steel you used and ask for the needed temperature information. If you don't have a furnace, the college might allow you to use one in their lab. Glock 21 Modifications I want to get a grip

reduction on my Glock 21 for better comfort in shooting in its original chambering, but also, I want to get a .50 GI conversion kit for it. Are there any negative consequences to having such a procedure done on my Glock? Also, is there anybody in the Newport News, Virginia, area that does this procedure?

One more question: Are there any good-quality, but affordable "beginners" gunsmithing tool kits out there for sale? I would appreciate any assistance. We'll assume your Glock is either 10mm or .45 ACP. By converting a lesser caliber to the .50 GI, you might be stepping up too far in slide velocity, tear up the frame rails, and have to say "goodbye" to the warranty. You could reduce the length of the grips by installing a set from the Glock Model 21SF, but don't attempt to narrow them.

A distinctly negative effect on magazine function could be the result. If thinner grips are what you want, shop around in the aftermarket with manufacturers such as Hogue to see what's available. We don't have a localized list of gunsmiths but Brownells might know of one or more in your area. If not, contact the maker of the conversion (Tactical-Life.com) for any leads they can provide. ican Gunsmith, address your email ta letter to American Gunsmith Merritt Island, FL 32954.

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