



JUL 2007

DIGITAL ARCHIVE
EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

07

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

ADD AN ADJUSTMENT SCREW TO THE RUGER MKII'S TRIGGER

ANTI-GUNNERS: SNEAKY, BUT NOT STUPID • DISASSEMBLY AND REASSEMBLY OF THE SAVAGE MILANO SHOTGUN • MA...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 044

DIGITAL ARCHIVE EDITION

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AMERICAN GUNSMITH

DIGITAL ARCHIVE EDITION • JULY 2007

ISSUE RECORD

ORIGINAL DATE	July 2007
VOLUME	Archive volume not stated
ISSUE NUMBER	07
SOURCE ID	ag-a820cc9dabf1c316c14b4c8c

DIGITAL EDITION

PUBLICATION	American Gunsmith
EDITION	Digital Archive Edition
ARCHIVE STEWARD	Innovation Network LLC
CONTACT	editor@gunsmithmag.com

Editorial fidelity. Article titles, author attribution, issue relationships, source-page references, and article text remain bound to the archive corpus. Layout, covers, navigation, and conversion notes are newly produced for this edition. Historical statements remain part of the original editorial record.

IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from July 2007.

2 Anti-Gunners: Sneaky, But Not Stupid

AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2

3 Disassembly and Reassembly Of the Savage Milano Shotgun

CHICK BLOOD • ORIGINAL PAGES 3-7

8 Make a Trigger-Assembly Tool For the Winchester Model 12

DENNIS A. WOOD • ORIGINAL PAGES 8-9

10 The Gunsmith's Shop: What Will It Cost?

ARTHUR J. HUNT • ORIGINAL PAGES 10-13

14 Add an Adjustment Screw To the Ruger MKII's Trigger

NORMAN E. JOHNSON • ORIGINAL PAGES 14-18

19 Working the Remington Double Derringer

DAVID R. CHICOINE • ORIGINAL PAGES 19-21

22 Reader Forum

AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 22-24

FROM THE ARCHIVE

Anti-Gunners: Sneaky, But Not Stupid

BY AMERICAN GUNSMITH EDITORS JULY 2007

ORIGINAL PP. 2

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Lately, the anti-gunners have been lining up behind “microstamping,” a process patented by New Hampshire-based ID Dynamics. Does the Brady Bunch like this technology because it would help to put criminals behind bars? No, they like it because it would drastically increase the price of a firearm and create havoc for firearms manufacturers. In case you’re not familiar with it, microstamping is a process that uses a laser to engrave the tip of a gun’s firing pin with the firearm’s make, model, and serial number.

In theory, this information is then imprinted onto fired cartridge cases. There’s currently a bill before the California legislature to require microstamped firing pins on a semi-autos sold in the state. On first consideration, microstamping doesn’t sound like a totally ridiculous idea. After all, microscopic laser-engraved serial numbers are preventing a lot of crime (as in fraud) in the gemstone and other industries.

At least, it doesn’t sound ridiculous for about two seconds, until you realize how easy it would be for a criminal to defeat the

technology. And when you think about it for another second or two, you realize it’s only going to work with semi-autos (where fired cases are left at a crime scene (and forensic science can already match fired cases to a specific firearm quite nicely). And what about the cost of this questionably useful technology and the problems it would create for gun manufacturers?

I have to admit, I hadn’t realized the myriad problems it would create until I read a National Shooting Sports Foundation’s website. According to NSSF, SAAMI estimates a price increase of 50 to \$100 per firearm. And think about this: Under federal law, the frame or receiver of the firearm is the part that must be serialized.

If microstamping were to become law, it would be necessary to serialize multiple parts (each manufactured at different times and locations) and coordinate the assembly to ensure that the parts all had the same serial number. How would an assembler know whether a component part had the correct serial number, since the number is microscopic in size?

Despite the best efforts of humans and machines, it would be impossible for a manufacturer to guarantee that only correctly corresponding, serialized parts were assembled into a firearm. Furthermore, all serialized parts would become worthless if any single part were rejected for quality-control reasons. Clearly, any attempt to comply with the requirements of microstamping would force a radical and complete redesign of manufacturing processes, costing firearms makers millions of dollars.

So there we have it, ladies and gentlemen. It’s easy to understand why ID Dynamics’ owner Todd Lizotte would lobby legislatures for mandatory microstamping; as the single-source supplier of the technology, he’d stand to become fabulously wealthy. But why would the anti-gunners push for laws that would do nothing to prevent crime? Because mandatory microstamping would do to firearm manufacturers what their ill-conceived product-liability lawsuits failed to do. Editor Keith Lawrence Technical

MEASUREMENT & INSPECTION

Disassembly and Reassembly Of the Savage Milano Shotgun

Before we could tell you the right way to take down this over/ under we had to wait months for "The Factory Guy" to figure it out and pass the process on to us.

BY CHICK BLOOD JULY 2007

ORIGINAL PP. 3-7

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This new Savage over/under is made in Brescia, Italy. This northern area of the country is known for the manufacture of fine quality shotguns, and this one is no exception. Produced to meet Savage's exacting specifications, the weight distribution of the Milano is perfect. Its 12-, 20-, 28-, and .410-gauge actions are precisely scaled to their gauge, and each one wears a handsome Turkish walnut stock finished off with satin lacquer.

Among its standard features are automatic ejectors, chrome-lined barrels, lengthened forcing cones, a fiber-optic front sight paired with a brass, mid-rib bead, and a single selective trigger. Screw-in chokes? Of course, except for the .410; its 28-inch barrels come in fixed, modified, or improved cylinder. The shotgun's single selective trigger is mechanical rather than recoiloperated.

I think you may agree with many shooters, especially those who kill hundreds of clay birds, that mechanical resetting is better than recoil. With recoil, the second barrel won't discharge if the first barrel fails to fire. The mechanical reset in the Milano eliminates this kind of frustration. If the first barrel holds a dud, you simply pull the trigger again to fire the second.

The moment I saw the Milano at the 2006 SHOT Show, I added it to my "articles-to-do" list, but it took nearly a year before one came my way.

The delay wasn't because Savage Arms was being uncooperative; the problem was that the guns were coming in from Brescia one day, given a test fire and a quality check, and then shipped out the next day to waiting distributors. (Gun writers always have this problem when a hot new shoulder arm or handgun comes on the scene.) There was yet another factor contributing to the long wait. Brescia was handling all the production.

Sure, they were following Savage specs, but no one from Savage Arms was on the scene looking over the shoulders of the technicians who assembled the Milano for final shipment. As a result, it took additional time for the Massachusetts-based technicians who'd be servicing the shotgun to get up to speed with its function, how it comes down, how it goes back together, et cetera, et cetera.

Top of page: The Milano, shown here in 12 gauge, combines the craftsmanship of Italian gun makers with the advantages of service from a U. S.-based gun maker. I

didn't mind waiting, however. That's because the rule I've followed in the 12 years I've been writing these disassembly/reassembly articles is this: There's only one right way to do it, and that's the way the factory does it. And it's a good rule. Adhering to this rule has kept me—and, hopefully, you—free from all manner of unpleasantness.

Moreover, it has saved manufacturers and their service personnel considerable time by not having to diagnose what might be wrong with a firearm taken apart by its owner, dropped into a plastic bag, and handed to an innocent gunsmith for reassembly. It was Carl Hildebrandt, one of Savage Arms' senior engineers—he answers the phone as "The Factory Guy"—who worked with me on this and all the other pieces I've written about the Savage products.

And it was Carl and his top gunsmith who combined to develop the instructions on the Milano that I'm about to pass on to you. Thanks, guys. Before moving further into those instructions, a suggestion is much in order: In detail stripping the shotgun, make a slave pin to substitute for

DISASSEMBLY AND REASSEMBLY OF THE SAVAGE MILANO SHOTGUN CONTINUED

ORIGINAL PAGE 4

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every pin you remove. You'll need them to retain parts in place during reassembly, and many of those parts will have been under pressure exerted by one spring or another. A second recommendation is equally important: Keep track of which firing pin, sear lever, and so forth is taken from the top side of the action, which is taken from the bottom, and which from the right or left side of anything. Don't get them mixed up.

Basic Field Stripping The shotgun is unloaded, the trigger has been pulled to lower the hammers, the safety is on, and you're wearing safety glasses. Okay? In the center of the underside of the forearm is a release lever located in an oval depression in the wood. Pull the lever toward the rear of the gun. At the same time or close to it pull the front end of the forend away from the barrels. Move the top lever to the right, open the action, and lift the barrels free.

Detailed Disassembly Once again, the only schematic drawing we've been able to get our hands on leaves a lot to be desired. So we're reproducing it a little larger than we usually do in the hopes you'll find it serviceable. The manual safety of the Milano disconnects the rocker arm from the sear levers. The safety switch on the tang has a dual function. In its center there's a movable button. When the button is moved to the right, a single black dot is shown and the bottom barrel will fire first.

When moved to the left, two black dots are shown and Single Selective Trigger 207 Safety Spring 208 Safety Spring Screw 258 Trigger Plate 262 Single Selective Trigger Safety 263 Rocker Arm 264 Rocker Arm Pin 265 Pin, Upper & Lower 266 Gold Plated Single Trigger 267 Single Trigger Return Spring 268 Sear Lever Return Spring, Single Trigger (2) 269 Sear Lever, Single Trigger (2) the top barrel fires first. The ejectors are controlled by the hammer position and cocking levers, and will only eject fired hulls.

Unfired rounds are partially extracted and easily taken from a barrel with the fingertips. So, besides a good assortment of drifts and other small tools, what do you need standing by to disassemble a Milano? You'll need a 7/16-inch socket, along extension for the socket wrench, a #2 Phillips-head screwdriver, and a large plastic bag. Remove the recoil-pad screws (#200) after dipping the #2 Phillips head into a jar of Vaseline. Separate the recoil pad (#201) from the stock (#202).

Check the socket in the stockbolt hole for clearance between the socket and the wood. If it's a tight fit, grind down the outside of the socket until there's enough room in there to get hold of the stock bolt (#250) without taking a chance of cracking the wood. Back out the bolt along with the stock washer (#251). Now pull the stock to the rear to disengage it from the frame. The hammers should still be in the fired position.

Remove the upper pin (#265) that retains the safety assembly, and remove the assembly from the upper tang. You've just exposed a screw (#206). Remove it and the trigger-plate pin (#235), and then tilt the rear of the trigger plate (#258) away from the frame. The mainspring assemblies (#248) can be removed by rotating the hammers forward and releasing the mainspring plungers from their seats in the rear of the hammers. They are removed from the frame to the rear. Don't disassemble them further.

When replacing, insert the rear of the assembly into its frame hole, move the sear lever up and the hammer as far forward as possible, and then pry the front end of the plunger onto the back of the hammer and into its hammer seat.

Note: An unlikely circumstance Ejector 281 Ejector Return Spring (2) 282 Ejector Return Spring Guide (2) 283 Ejector, Left 284 Ejector, Right 285 Ejector Retainer Plate, Left 286 Ejector Coupling Plate, Left 287 Ejector Retainer Plate Spg., Left (2) 288 Ejector Coupling Plate Pawl (2) 289 Ejector Retainer Plate, Right 290 Ejector Retainer Plate Screw (2) 291 Ejector Coupling Plate, Right 292 Ejector Cocking Lever, Right 293 Ejector Cocking Lever, Left

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Screw Cylinder Return Lever Locking 247 Cylinder
Return Lever Locking 246 Pin Lever Pin/Locking Firing
234 Plate Trigger for Pin Spring 235 Pin Guide Lever
Cocking 259 Spring Lever Cocking 260 Spring Lever
Locking 245 Screw Guard Trigger 254 Right Pin, Firing
239 Right Hammer, 242 Left Pin, Firing 238 Lever
Cocking 261 Piece Cocking 231 (2) Mainspring 248
Guard Trigger 255 Screw Forend 232 Spring Striker 237
Left Hammer, 241 (2) Pin Hinge 233 Pin Hammer 257
Bolt Locking 236 Bolt Stock 250 Washer 251 Pin Guide

Lever Snap Forend 228 Spring Lever Snap Forend 227
Screw Lever Snap Forend 225 Lever Snap Forend 226
Forend Wood 230 Iron Forend 229 Stake Spring Lever
Locking 209 Spring Pawl Lever Locking 210 (2) Screw
Pin Hinge 214 Pawl Lever Locking 211 Pin Lever
Locking 212 Body Action 213 Shotgun Over/Under to
subject (Specifications notice) without change Milano
Savage Lever Lever/Locking Top 203 Screw Plate
Trigger 206 (2) Screw Buttplate 200 Pin Lever Sear 205
Buttplate 201 Stock 202

DISASSEMBLY AND REASSEMBLY OF THE SAVAGE MILANO SHOTGUN CONTINUED

ORIGINAL PAGE 6

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could arise a broken plunger spring where just the mainspring assembly needs to be removed. This can be done without taking off the lower tang. With the hammer rotated forward, use a small tool to lever the plunger out of the hammer, and then move it upward and forward to separate it from the frame. Now for the lower tang. Remove the trigger-guard screw (#254) from the top to free the rear of the guard. The rocker arm (#263) pivots on a ball at its bottom that rides in a matching cup on top of the trigger.

It's held in position by the rocker-arm spring (#264). Being careful not to damage the spring, you can remove the rocker arm by rotating it forward and sliding it between the spring's arms. Unless the spring must be replaced, I advise you not to remove it; it's under tension as assembled. If replacement is required, however, position the spring against the tension provided when its tails are placed against the frame, and secure it there with its pin. Turn the trigger guard to the side.

Remove the trigger (#266) and spring (#267) by drifting out the pin numbered 258 on the selective trigger schematic. There is no number for this pin and #258 on the main schematic parts list is the lower tang. Note that there are two pivot-pin holes in the triggerplate to accommodate differing trigger

mechanisms. The single selective trigger in this Milano uses the front hole. Unscrew the guard by rotating it out clockwise. Remove the left hammer (#241) and the right hammer (#242) by drifting out their pin (#257).

Keep this in mind: The left hammer must be reinstalled in the trigger plate from whence it came. So must the right hammer. Otherwise, neither will fit or function. Though the firing pins can be removed and replaced while the triggerplate is in place, normally they are not. Begin by drifting out both pins (#234). This frees the firing pins (#238 and 239) plus their springs (#237). The firing pins differ slightly one from the other. Mix them up? Not! They go back in the same hole from which you took them.

After the firing pins and springs are removed, place the frame in a large plastic bag before going after the locking lever (#203). You're about to encounter parts that are under spring tension. Back out the locking-lever return cylinder screw (#247). This releases the locking lever cylinder (#246), lever spring (#245) and spring stake (#206) into the bag. Replacing these parts is a mean job even for factory gunsmiths.

Like the guys at Savage, you'll have to figure out away of getting them back together that works for you. (I advise you to do some ad-

vanced planning as you take the gun down.) After removing the locking-lever pin (#234) and trigger-plate pin (#235), note how the slot in #234, a roll pin, they partially extract unfired or dud rounds for removal by hand.

The Schnable forend adds a distinctive profile, and the slight radius at the heel of the recoil pad reduces the possibility of it snagging on clothing, orients to the bottom. It must be in the same position when reinstalled to retain freedom of movement for the locking lever. Now push the locking-lever pawl (#211) flush with the front of the lever and clear of the frame. Lift and turn the lever while retaining the pawl and its spring in the lever to disengage the locking bolt (#236).

Remove the locking bolt to the rear. The ejector cocking levers (#292 & 293) slide rearward and out of the frame through the opening for the trigger plate. Before going after the sear levers (#269) and sear-lever springs (#268), study how the springs are positioned under tension. Plan ahead. They have to be in the same position for reassembly; a slave pin will be the thing that holds them there. When you removed the barrels, you may have noticed two screws visible on the frame's pivoting surface.

THESE ARE THE HINGE-PIN SCREWS (#214). BACKING THEM OUT WILL NOT

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One black dot showing indicates the selection of the lower barrel, while two indicates the upper. surprisingly free the hinge pins (#233). The forend iron (#229) is attached to the forend by two more Phillips-head screws (#232). The forend-snap lever (#226) is attached to the forend by its screw (#225). The head of this screw is in a clearance on the top of the iron to allow lateral movement. The snap lever itself retains its spring (#227) and guide pin (#228). Beware of a flying spring when you remove the lever.

At the rear of the iron is the cocking piece (#231). It's been driven into a dovetail slot and staked there. Unless it is damaged, leave it alone. I want to expand some on the barrel assembly. The tubes are fitted in a monoblock and have a vented top rib. The light-gathering front site is screwed into the rib. The mid-site is driven in, and a strong adhesive used to secure it in place. In disassembly of this section, remember the "which is right and which is left" rule.

The ejector/extraction system is housed within the monoblock but activated by the frame and cocking levers. The left ejector (#283) and right ejector (#284) are retained in the block by a left retainer plate (#285) and ejector plate right (#289), both of which are secured by ejector plate screws (#290). As factory assembled, the ejectors are under pressure from the ejector springs (#281) and their guides (#282).

Their function as an extractor or as an ejector is determined by the ejector coupling plates (#286 and #291). These are set to catch the ejector when a barrel is fired by the ejector cocking levers. A cocking lever matching the fired barrel is moved forward by that barrel's hammer to raise that ejector's coupling plate. This holds the ejector in place as the action is opened. The ejector so held will remain held until the barrels are almost clear of the breechface.

Then a surface on the frame cams the retaining plate out of engagement with the ejector and out flies a spent hull. None of

this happens with a barrel containing alive or dud round. In that case, the coupling plate of the barrel's ejector is held in the lower position, allowing the ejector to move back under spring pressure and serve as an extractor. And that, my friend, is how the ejector/ extractor system of the Milano's single selective trigger works. But wait a minute, there's more.

To remove the ejectors, press them into the monoblock to catch them by the coupling plate. Unscrew part #290 until the plate can be lowered in its dovetail slot. Remember that an ejector is under spring pressure as you release it from the block. Once it's out, remove the ejector-guide pin and spring. As is often said and, in this case, is true're assemble in reverse order. And I hasten to add, don't forget to use those slave pins and that plastic bag. Otherwise, plan to waste an hour or more in fruitless searching.

PEOPLE & COMPANIES

Make a Trigger-Assembly Tool For the Winchester Model 12

This simple shop-made tool not only helps make a tricky job easier, it can ensure that the trigger parts don't get damaged when putting them back in place in the action.

BY DENNIS A. WOOD JULY 2007

ORIGINAL PP. 8-9

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“**m** I always interested in any tool that speeds up or simplifies the reinstallation of parts in a firearm. It's great when a specialty tool can be purchased inexpensively, but I'm even happier when I can fabricate the gizmo myself. The reason I like to make tools whenever I can is because some of them get used so infrequently it just doesn't make sense to tie up a lot of money in something that gets little use.

Then again, there are times when making a tool is our only option, such as in the case of tools that are no longer available. That's the case with this tool, which comes from a drawing done in 1957 by A. A. Arnold that was included in the takedown instructions for the Winchester Model 12 shotgun. That was back in the days when Olin owned Winchester. Here, I'll go over what's involved with making this simple gadget and how it works to help get the trigger back in place in the trigger guard for the Model 12.

The tool will cost only a few bucks and will take very little time to make. Basic Materials You'll need a piece of cold-rolled steel flat stock, 4-1/2 inches long by 7/8 inch wide and 3/16 inch thick. Cold-rolled steel (1018) is a mild steel that can easily be filed and drilled and comes, as rolled, in a very flat state. Once you have procured your steel stock and cut it to length, make sure at least one end is square to one side. If you have access to a milling machine, this is a piece of cake.

If not, the careful use of a file will bring the end into square. Next, paint one side of the flat stock with blue layout dye. (A black felt-tip pen will work if you have no layout dye available.) The end you squared up will be your starting point, so scribe a line 9/16 inch from this end and then scribe a line 3/16 inch from the squared-up bottom that crosses the previously scribed line (see Figure 1). Another line is then scribed 1-1/4 inches from the front end of your flat stock.

Now, scribe another line from the end of the first line to the point marked 1-1/4 inches back from the front face. This will complete the layout of the notch that will need to be cut on the bottom of the flat stock. Another line will need to be scribed 11/16 inch from the bottom edge of the flat stock, 1-7/8 inches from the front end.

The last two lines we need to scribe are from the other end of the flat stock and will be for a hole so that we can hang our masterpiece up on the wall for easy access and for the whole world to ask: “What's that thing for?” Scribe a line in the middle of the flat stock along the top side of the part and then an intersecting line 3/4 inch from the rear edge of the flat stock. Center punch the intersect point, giving it a fairly deep dimple so that a drill bit can start cutting without walking off target.

Shaping the Assembly Tool Now that we have all the basic lines scribed, it's time to get this thing shaped into a usable form. Clamp the

MAKE A TRIGGER-ASSEMBLY TOOL FOR THE WINCHESTER MODEL 12 CONTINUED

ORIGINAL PAGE 9

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part in your vise with the front end sticking out the right side of the jaws so you can work a hack saw freely. Cut a series of notches stopping just short of the scribed, angled line. The more notches you cut the less work you'll have to do with a file. Using a flat bastard-cut file, you'll be able to get the angled notch very close to shape in short order. When you get close to the bottom of the hack-saw notches, a second-cut triangular file can be used to give the surface a fairly smooth finish.

The top part of this tool can be treated the same as the angled notch by using the hack-saw to remove the bulk of material and then finishing up with a smooth-cut file. To transition the step that was just created at the top of the tool, a 45-degree angle or a radius will eliminate any sharp corners. One more cut that will need to be made is a 45-degree angle at the top, front of the tool. Measure 1/4 inch back from the top left corner of the tool and mark a small line.

Place another mark 1/4 inch down from the top, upper left corner of the tool. Using a straightedge, scribe a line connecting these two marks leaving a 45degree reference line. Here again, the hack-saw can be used to remove the bulk of material up to, but

not over, the line. Finish this area with a second-cut file. On the very front end of the tool, drill a hole to accept a 9/64-inch pin.

Dye up the front edge of the tool with whatever you're using, and scribe a line 1/4 inch up from the bottom of the tool along the side of the part that we previously dyed. Scribe another line along the front edge (3/16 wide area) at the 1/4 inch mark. Another line needs to be scribed dead center in the middle of the 3/16 inch thickness so that it intersects the other line. Dimple the intersect point with a sharp punch and then drill a 9/64 inch hole into the end of the tool, 3/8 inch deep.

We now need a pin to insert into the 9/64-inch hole that was just drilled in place. If you have access to a metal lathe, it's a simple matter to turn a pin to press fit into the drilled hole. If you don't have access to a lathe, 9/64-inch round stock is available that can be cut to 3/4 inch length and installed in the hole. Keep in mind that the drill most likely created a hole that is slightly larger than the 9/64-inch diameter pin we need to insert into this tool.

If you find that the pin drops into place with some looseness, use your punch to dimple the periphery on the end of the pin you will be inserting into the tool. This will

increase the outside diameter of the pin in that area, and when you insert the pin, add a coating of permanent thread locker to anchor the pin in place. Figure 1. Now is a good time to drill the hanger hole in the rear of the tool.

As you can see by the example shown here, I rounded the rear end of mine so that there would be no square corners digging into my palm when the tool is being used. Another nice touch is to slightly round all the edges and corners by smoothing these areas with a fine-cut file or apiece of emery paper.

Using the Tool When reassembling the Winchester Model 12 triggerguard assembly, it can be extremely difficult to hold the trigger in place while it's under tension from the spring that makes it work, and to then slip the retaining pin through the left wall of the trigger guard. With this tool, you insert the 9/64 inch pin into the hole for the hammerspring guide rod in the trigger guard, and then push the tool downward, compressing the tension of the trigger spring.

With a little wiggling, you can easily line up the hole in the trigger with the hole in the trigger guard and insert the pin. I

FROM THE ARCHIVE

The Gunsmith's Shop: What Will It Cost?

Owning a business is a dream for many Americans, but there are many things to be considered before opening your own gunsmithing shop.

BY ARTHUR J. HUNT JULY 2007

ORIGINAL PP. 10-13

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It makes little difference whether you become a gunsmith as a result of your hobby by growing into a profession, you graduate from one of the finer gunsmith schools, or if you serve an apprenticeship with an old established gunsmith; before you consider opening your own gunsmithing shop, you need to have a realistic idea of what it will take in terms of cash and commitment to get started. First off, let me offer some advice for the part-time gunsmith.

I've never liked the term "hobbyist" or "hobby gunsmith," for that implies that you're not trying to make money in this business, which, of course, makes you a thorn in the sides of the established full-time gunsmiths. And it implies that your work is not up to the quality of the professional gunsmith, which is clearly not the case in all instances. Many part-timers have collected the basic tools and basic skills, and do a fine job within their area of interest.

But before you start thinking about moving into the full-time for-profit gunsmithing world, you'd better be aware of the equipment you'll need to buy and the commitment you'll need to make in order to compete with the established businesses in your area. And you should carefully consider how good you are, what you want to accomplish, and what services you're qualified to offer before you consider giving up the day job.

If you're a recent graduate of one of the gunsmithing schools, you still have to ask yourself these same questions. Sure, you've graduated, but how far are you going to go with this thing? In school, you've had access

to machinery, books, and knowledgeable instructors. But that's all gone once you graduate. Are you ready to fly by the seat of your own pants?

Or do you need to find work in an established shop for a few years while you complete your education and save for the equipment you'll need to open your business? I'm often asked by beginners about the equipment that's needed to open a gunsmithing shop, and specifically about the cost of that equipment (which is only a portion of the cost of opening a shop). The first thing you need to ask yourself is what kind of repairs will I be doing? What do I want to do, and what am I able to do?

Then decide what you'll really need to cover most of those repairs, make a list, price it out, and add it up. It will probably scare you half to death, or at least, if you proceed, it will cause you to think about getting a second mortgage on the farm. The most important thing for a beginner (and even those who have been in business for awhile) to remember is: What does the tool or machinery cost, and how many jobs must I get in order to pay for it? Don't get carried away looking at the Brownells Wish Book.

Unnecessary buying of tools that are not used makes Bob Brownell richer and you poorer. Simply having all the tools doesn't make you a qualified gunsmith or an intelligent businessman. And buying a tool that you only use once a year doesn't make a whole lot of sense, either. You may have learned a lot about gunsmithing, but your overall education isn't complete until you

understood the cost effectiveness of buying tools. Let's go into that a little more to make my point clearer. Take a standard 6-inch mill file.

You can buy it fairly cheaply by today's standards. You won't, but you should, keep track of how many jobs you use it on and how long a period you use it before it has to be replaced. If you kept track of this expenditure, you'd agree that the cost of this tool was amortized over so many jobs and its original cost was paid for early on in the game. Now, let's look at something on the other end of the spectrum.

Because you were able to get that second mortgage, you buy a milling machine with a 48-inch bed, because you anticipate doing a lot of mill work. Okay, if you cut 24 dovetails and do 100 other hours of something or other, you'll found it real nice to have. But let's look at the numbers objectively. Let's say you do 300 hours of work on it per year. The mill cost you, new, \$5,000. If you charge \$30 an hour for this work, you took in \$9,000. Swell, I made money. Wrong!

Look at it this way: If you credited the \$30 an hour all to this machine, it would be \$9,000 less the \$5,000 that you paid for it, which gives you a profit of \$4,000. Not bad. Wrong again! If you figure it this way, you worked for nothing for the first \$5,000 worth, to say nothing of the electricity cost, the tool bit cost, wear factor, and so on. The \$4,000 you call profit, if divided by \$30 per hour, brings us to 133 hours of so-called profit. If you deduct your oper-

THE GUNSMITH'S SHOP: WHAT WILL IT COST? CONTINUED

ORIGINAL PAGE 11

ating costs from the \$4,000 you think is profit, you can cut that roughly in half and a \$2,000 figure is closer to the truth. Your argument is: "But I paid for the machine in 300 or less hours." Well, if that keeps you happy, fine, but you're not going to pay that second mortgage back with that kind of mathematics. Three hundred hours is approximately six weeks of 48-hour work weeks that you would be running that mill.

But the things you are not taking into consideration include the return of the cost of the machine, the interest on the borrowed money used to buy it, electricity, tool costs, and other costs like rent, lights, insurance, and wages. When this is all added up, you'll find out why your local machine shop charges \$50 per hour. They may not be better machinists, but they may have someone who is better at doing their books than you are.

If you want to charge \$30 an hour for your labor, which will net out to about \$15 after all your expenses are paid, then all of the extras mentioned above must be taken into consideration. If you don't, and you show a \$4,000 profit on \$9,000 worth of billed work, the IRS is going to love you. Tax-wise, you should be able to amortize the cost of any machinery over a three-year period, but get some advice from a CPA familiar with small businesses.

If you work 11 months a year at gunsmithing, using 48-hour weeks and four weeks to the month, you have 2,112 hours that you would like to bill out at \$30 per hour for or an annual income of \$63,360. Now, take that figure, add up your living costs, the cost of keeping your shop open and paying not only the second mortgage but the first, your new pick up truck and your month's vacation, and what is your balance?

You retort rather smartly: "Well, I've paid for my mill." Good, keep it up, but don't get sick so you can't work, break a \$25 tool bit, or wreck the truck and have to pay the deductible, etc., etc. When you sell work that involves expensive machinery like mills, lathes, and other power tools, you simply have to charge for it. The basic

labor rate does not include the cost of any machinery and you should take this into consideration when quoting any machinery-related work.

If you keep in mind the labor cost for your work is \$30 and you're happy with that, then give some careful consideration to what you have to add for the use of your machinery. This will probably put you in the \$50 per hour range. Getting back to start-up costs, be sure you have a clear idea of the work you're preparing to do. This is a simple controlling factor. You don't buy a lathe and a mill unless you know how to run them.

And, of course, you won't need a full set of chamber reamers unless and until you know how to use them. Build your tool and machinery inventory based on the type and amount (particularly the amount) of the type of work you can get and the type you can do well. Above all, be particularly careful about buying equipment just because it impresses you or your single-job customer. Use some not-so-common common sense.

In my opinion, the lathe is the single most important piece of equipment and is really a must for any good gunsmith. This is the instrument that makes all the different screws, pins, and other parts. It will be doing a lot of work for you. But don't get carried away and buy a lathe large enough to do rebarreling if you aren't going to do a lot of rebarreling. And keep in mind that a lathe capable of rebarreling work is going to be too big to easily make a 3x56 screw. Use your head.

A 12- or 13-inch by 36-inch lathe will do many, many jobs at a lower per-piece price than an 18- by 50-inch lathe, and look for good used equipment before buying anew one. Again (and again), buy the equipment you really need to do the work you can do, but don't buy tools to satisfy your ego. Once you've purchased your machine tools, then you must make them work profitably for you.

Watch your business carefully and grow with it, adding more machinery only as the demand for a particular type of work

grows, and then be sure your charges are right. If your start-up costs include the cost of going to a gunsmith school, you've already invested a sizable chunk of money even before you start looking for tools and a shop to work from. Will the fact that you graduated from a good gunsmithing program mean you're going to be swamped with business as soon as you hang out your shingle and open the doors?

Not hardly! You'll have to build your business the same way the old established competitors in your area had to. And think about this: You either have to get new customers (if there are any to get), or you have to take customers away from the established competitors in the area. Don't give up the day job until you figure out how you're going to do this. Here are some questions to ask yourself, and you'll want to be honest with yourself in answering them: How much cash will I need for start-up expenses?

How much more cash will I need to see me through until I start to show a profit? How competent am I as a gunsmith? What are my real skills? What's my market consist of? Who are my potential customers and what kind of work do they need? Who are my competitors? What do I have to offer that's different from my competition?

Now here's a tip for anyone considering going into business for himself: Rather than trying to find away to undercut your competitors on price, spend some time thinking about what you can do to make your work worth more than your competition rather than less. Generally speaking, the man who can do something better than the competition has a greater chance of success than the man who simply charges less for inferior work.

For many young men, opening a gunsmith shop is the "Great American Dream." But don't lose sight of the fact that the road to financial ruin is often paved with dreams. If you're not prepared, mentally as well as financially, for opening your own shop, there's still a lot of satisfaction to be had from working in someone else's well-run shop or remaining in the "hobby category." I

PEOPLE & COMPANIES

Add an Adjustment Screw To the Ruger MKII's Trigger

With some gunsmithing and a few pennies' worth of parts, this rifle can be modified to produce a lighter yet safe trigger, with a crisp let-off and a controlled pull weight.

BY NORMAN E. JOHNSON JULY 2007

ORIGINAL PP. 14-18

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From the factory, the Ruger MKII rifle has what is essentially a nonadjustable trigger. I examined six of these rifles at random, and found their triggers to have a pull weight ranging from 3.5 to 6.5 pounds, with an average of 4.4 pounds. The lighter end of this range is not so bad, but most hunters and shooters find the heavier pull weights excessive, particularly for target and varmint shooting.

The Mark II trigger and sear are incorporated together into the rear of the receiver, held in position by two floating pins. The trigger-pivot pin is positioned on an integral hanger extending below the receiver. Both pins are free-floating and easily pushed out, allowing the trigger, spring, and sear to be removed.

The basic principle of the added trigger/sear adjustment that I came up with involves the positioning of a stop located beneath the trig-

ger tab, which limits the forward travel of the trigger, thus controlling trigger/sear engagement. My method also combines the installation of a less forceful trigger/sear spring to further reduce the trigger pull. The trigger and sear spring are one and the same, positioned between the two parts.

The added adjusting screw is simply a small, adjustable threaded machine screw which extends downward from the bottom of the receiver (see photo). This screw enters a hole that's drilled and tapped into the underside of the receiver and retained with a lock nut against the receiver. The screw-head flange engages a wide, flat surface on the trigger tab that also serves as the safety tang. In this way, the sear/trigger engagement can easily be adjusted.

This is accomplished by the precise upward or downward adjustment of the threaded screw where it engages the lower margin of a tab extending rearward near the center of the Ruger's main trigger body. Installing the Adjusting Screw Pay close attention to depth and alignment while drilling and tapping the hole in the receiver. The edge of the tapped hole just clears the receiver wall by about .040 inches. I used a size 6-48 screw and a bottom tap. The receiver is not hardened.

A shallow half-moon groove is made in the trigger/safety tang to make room for the screw and allow somewhat more surface for the screw head below. I used a double nut at the lower end of the screw as a means of making the final trigger/sear adjustment, and used the upper nut at the threaded hole in the receiver to lock and align the screw to the receiver. Around-

ADD AN ADJUSTMENT SCREW TO THE RUGER MKII'S TRIGGER CONTINUED

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The trigger is in position with a portion of spring shown. Note the half-circle slot in the trigger tab to make room for the adjusting screw. The photo also shows the rotary safety disengaged from the trigger tab. As described in text, a double nut is used to make precise trigger/sear adjustments. head machine screw could serve the same purpose, and use the threaded screw in the receiver as a means of adjustment, and the nut to lock things in place. Either method will work as long as the screw is locked in place.

Adjusting the Trigger Pull And Sear Engagement First I substituted the original firm trigger/sear spring with a lighter one of the same diameter. I then installed the

threaded adjusting screw into the receiver with the double nut positioned immediately below the safety tang. The bolt handle is then raised and withdrawn to cock the trigger. A test is then made to see what the trigger pull is with the lighter spring in position before the sear/trigger engagement is adjusted.

On the rifle I worked with, the pull was at 2 pounds 11 ounces, as determined with a Lyman digital trigger-pull gauge. The Precise trigger/ sear adjusting nuts are in contact with the trigger tab. Total trigger/sear adjustment is accomplished in this way. The Lyman digital trigger-pull gauge shows a final trigger pull of 1 pound 8.1 ounces. original setup was at just over 5 pounds.

At this point, the double nuts are slowly turned upward to engage the safety tab, thus moving it upward and the trigger backward toward the fire position. This adjustment is made very slowly until the trigger releases the sear. The nuts are then backed off about one-eighth of a turn and the trigger mechanism is again cocked. Each one-eighth turn of the screw or double nut reduces or adds to trigger/ sear engagement by about 0.0025 inch. Trigger-pull weight is again tested as the sear/trigger engagement is reduced.

**I TESTED THE PULL WEIGHT
FRECONTINUED ON PAGE 18)**

ADD AN ADJUSTMENT SCREW TO THE RUGER MKII'S TRIGGER CONTINUED

ORIGINAL PAGE 16

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Tech Topics In this feature, we examine new tools and tooling, tips and techniques, and news items of interest to the gunsmithing community. Field Tests Say "Yes" To the Purple Stuff Oh wow, we sighed. Yet another synthetic gun oil? According to the press release we received, it was developed to provide exceptional wear and rust protection, prevent fouling, and defend against saltwater corrosion. (Not surprisingly, it promises equal performance on fishing tackle.) But okay, we'll bite, and we ordered a sample.

What we received in response was a dozen aerosol cans' and more claims, of course. This oil, Royal Purple, apparently holds up and works well under a considerable range of temperatures and won't thicken in cold weather. Reading on, we were informed that its performance We set up a four-month test to see if it could live up to its advertising hype. It did. advantages come from a proprietary chemical technology called Synerlec, and no other gun oil uses that technology.

The product sounded like a winner, but we didn't want to offer an opinion on the product without putting it through something approaching long-term evaluation. As it happened, luck was with us. The last weekend in October and the first in November

each year have been selected by a shooting club we work with as the dates for their annual "Open House & Family Fun Shoot." The club provides the guns and ammunition.

The public is invited to get acquainted with the shooting sports and win a frozen turkey by competing in a relay of shotgun, blackpowder, small-bore rifle, or pistol deadmark. No club members are allowed to shoot against the visitors, and there are plenty of just-for-fun events on the firing line for those who prefer unfrozen range-raised birds. The club charges a small fee per shot, makes some much needed maintenance money, and a good time is had by all.

The crowd grows from year to year, and, of course, every new shooter is supervised one-on-one by a range officer assigned to run the individual event. So we decided to hand out 11 cans of Royal Purple to the range officers, keep one for our own use, and asked the range officers to report back in three or four months with their individual opinions on the product's performance.

The chosen officers were all good to exceptionally good marksmen (and markswomen) who'd be checking out Royal Purple in every shooting discipline's onetimes under the added pressure of match

competition. We, on the other hand, having no time to shoot matches, did our part by using the oil to lubricate guns we worked on or worked over for customers during the same period of time.

We're pleased to note here that, by all reports received, Royal Purple performed royally, and all shooters believed the manufacturer's claims were supported. There were even a few "rave notices," and everyone involved in our little experiment wanted to know where they could get more when their aerosol cans went dry. So this is what we told them: Royal Purple Oil, One Re, Porter, Texas 77365; \$5.59.

Easily Cut Trigger Pull By 50 Percent The sign on the booth at the most recent SHOT Show in Orlando said "EZ Pull Trigger Assist." Our first reaction was pure curiosity. Now what could that be? A magic spring? A tooling fixture? Or maybe a guy with superb natural finger control who tags along to do your shooting for you? Our second reaction, after we saw what it was and how it worked was: Why didn't we think of that?

The EZ Pull is what you see pictured here, a bracket that attaches to the trigger guard of along gun and a wide trigger shoe that attaches to the bracket. Built into the shoe is a roller

ADD AN ADJUSTMENT SCREW TO THE RUGER MKII'S TRIGGER CONTINUED

ORIGINAL PAGE 17

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that contacts the factory trigger. The device uses leverage to cut the factory pull in half. To install the EZ Pull on a rifle or shotgun, lay the gun on its side with the muzzle to your left. Install the mounting block to the guard by tightening the four set screws just enough to seat into the mounting block. The faces of the angled "ears" on the block are positioned toward the muzzle end of the gun. Using the two small slotted-head screws, attach the trigger shoe/roller assembly to the block.

Unless you can completely remove the guard, this is not easy, since you're working with very tiny screws inside a trigger guard. You can use a straightened-out paper clip as a slave pin to help you get the holes in the shoe and those in the block lined up. And, yes, you will be using a jeweler's screwdriver. Once you have it installed, make sure the assembly moves freely.

Move the block forward or back to bring the roller into contact with the center of the factory trigger, and tighten the block screws against the guard edge to maintain the position of the roller. Only the roller should be touching the trigger. If it moves off center, adjust it by backing off the right or left setscrew and taking up the slack with the opposite screw. Now cock the action, rotate the shoe forward, and pull the trigger with your finger.

Now recock the gun, rotate the shoe back into roller contact, and pull the shoe. What the extra leverage provided by the EZ Pull has done is reduce a 6-pound trigger pull to 3 pounds. A 3-pound pull would be taken down to 1.5 pounds. What you haven't done or had to do is to completely tear down the

gun, rework its trigger system, reassemble it, and possibly void its warranty in the process.

The EZ Pull Trigger Assist (about \$40 retail) is sold in various sizes depending on the width of the trigger guard, in both black and clear anodized finishes. The one we received was made to fit the Browning A-Bolt and other bolt-action rifles with trigger guards of similar width.

It's not currently available to fit lever-actions or handguns, but we have a hunch the inventor, Robert Nehrt, has something in mind to resolve these limitations in the future. For more info, call EZ Pull The Worldwide Web Can Mean More Business for You According to the National Shooting Sports Foundation (NSSF), 40 million Americans enjoy hunting and other shooting sports every year. Another 48 million would like to give hunting or target shooting a try. That's a total of 88 million people.

At least some of them must live in your area. Those that do, could and should be your customers. Besides offering the repair of fire- Without disassembling a rifle or shotgun and reworking its trigger system, the EZ Pull Trigger Assist uses leverage to reduce trigger pull by 50 percent. at arms, what else can you do to promote your services? Start with your computer and the internet. On your browser, type in "huntandshoot.org." This is a one-stop resource for new and experienced hunters.

It provides a broad range of information from getting started to staying active. Another hunter-oriented site is "huntinfo.org." This one delivers one-click access to

the websites of all 50 state wildlife agencies. These sites carry state-specific information on hunter education classes, application deadlines, license fees, and more. For those who lean toward feathered game, "wingshootingUSA.org" will turn up a directory of over 1,000 bird-hunting preserves in America and make it easy to pinpoint them.

By absorbing at least some of the information on these sites, there's little doubt you can demonstrate you're as devoted to hunting as your hunting customers are. Your understanding and appreciation of the various aspects of the sport is certain to impress them. Also not to be overlooked or taken lightly in the mix are "wannabe" or brand-new shooters. By helping them along you'll be helping business to grow. If you're really fortunate, you have a working range as part of your operation.

A range and an NRA Certified Instructor Classification sets you up to give those new to the shooting sports their first experience. But if you don't have a range or classification, you're still not out of the game. Enter into an agreement with a combined gun shop and range or with a gun club in your area, preferably one well populated with NRA instructors. In the unlikely event you're not aware of any gun clubs, go to "wheretoshoot.org" on the web.

It locates shooting facilities offering quality instruction in the shooting disciplines, be it shotgun, rifle, or handgun. Then there's "firstshots.org," that provides information and opportunities for beginners, ranging from learning how to shoot a handgun to learning the requirements for handgun ownership.

ADD AN ADJUSTMENT SCREW TO THE RUGER MKII'S TRIGGER CONTINUED

ORIGINAL PAGE 18

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Experience has shown that, if you help a person to become interested in the shooting sports, guide them intelligently, and serve them well, you'll have a customer for as long as you're in business. Getting folks into target shooting is a good example. The best starting-out handgun for this is probably a .22 LR pistol. The Ruger Mark Series is not terribly expensive, more than reasonably accurate, and decent ammo for it is both abundant and reasonably priced.

For most new target shooters, once he (or she) becomes comfortable with a .22, he'll develop a yen for the larger calibers he sees on the firing line. Since you've been so helpful already, who has the inside track for providing additional guns and the maintenance, repair, and modifications that go with them? It's a bit different with hunters, but not much.

Most hunters favor one specific caliber for varmint hunting, another for deer-size game, another for larger prey, and still another for the pursuit of really big, really mean animals. The hardware can mount up nicely, so can keeping the hardware in working order or upgrading it. By now, you may be wondering who's the moving force is behind these websites? Mentioned in the opening paragraph, it's an outfit that's been around over 40 years called the National Shooting Sports Foundation.

Non-profit in its operations, its membership includes over 3,000 manufacturers, distributors, retailers, sportsman's organi-

zations, publishers, and individuals who support NSSF programs. Their mission is to benefit and ensure a positive future for the shooting sports and the firearm industry.

By the way, the SHOT Show is under the wing of the NSSF, as are such organizations as the National Association of Firearm Retailers, the National Association of Shooting Ranges, and the Hunting and Shooting Sports Heritage Fund. America's top producers of guns, ammunition, and components. Founded in 1926 at the request of the federal government, S. A. A. M.

I. was tasked with creating and publishing industry standards for safety, interchangeability, reliability, and quality, as well as coordinating technical data and promoting safe and responsible firearm use. In 1961, in order to focus more fully on their technical responsibilities, S. A. A. M. I. formed the NSSF. The charge: Concentrate on measurably advancing participation in and understanding of the shooting sports.

Though the two organizations are not joined at the commodiations Newtown, CT carries on its government-assigned responsibility, S. A. A. M. I. continues to address its task as the accredited standards developer for The American Standards Institute. As such, S. A. A. M. I. sets parameters for industry test methods, and defines proof loads and ammunition performance by uti-

lizing two product task forces. One is for ammunition, and the other is for firearms. Does S. A. A. M. I. have a website?

Indeed it does: "saami.org." There you will find a list of publications offered including five on chamber pressures and ammunition, plus velocities for ammo for centerfire pistol and revolver, centerfire rifle, rimfire, and shotshell. Official cartridge and chamber drawings are included. You'll find something else all gunsmiths should have on file along list of unsafe arms and ammunition combinations.

This list (it is downloadable) can spare you wearying discussion and great concern about a rifle blowing up when its owner wants his .30-06 rechambered for 7.61 x 39mm, 8mm Mauser, .32 Remington, or .38-55 Winchester. This list is but a sample of the data in the download that can settle arguments and, more importantly, keep you out of court. The cost of membership in either or both organizations is moderate. Worth it? Heck, the glossary and definition of technical terms on saami.org ought to convince you it is.

Oh, and lest we forget, the website that can be the most valuable to your ate for could there ility than to tell a prospective customer to "check out my website to see some of my work and the services I provide." I



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quently during this procedure. In this way, I was able to produce a controlled, safe trigger pull as low as 1.5 pounds. Cocking of the trigger was accomplished by simply lifting and lowering the bolt handle. Opening and closing the bolt several times in a slam-fire maneuver did not cause the gun to fire. At the final trigger setting, the safety was tested and functioned perfectly. Pull the trigger repeatedly When and how did the NSSF come to be? You've no doubt have heard of S. A. A. M.

I., The Shooting Arms and Ammunition Manufacturers Institute. This is an association made up of with the safety in the on position to be sure the safety is working properly. Conclusion The work described here on the Ruger MKII resulted in a positive trigger adjustment from a little over 5 pounds to a safe pull weight of about 1-1/2 pounds. This work can be performed by a competent gunsmith in a couple hours using common shop tools. Perhaps best of all, the cost of the materials is almost negligible. I

PEOPLE & COMPANIES

Working the Remington Double Derringer

With over 150,000 in circulation, one of these little pocket pistols is sure to find its way across your bench from time to time.

BY DAVID R. CHICOINE JULY 2007

ORIGINAL PP. 19-21

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This very popular and unique-looking superposed, two-shot derringer was manufactured by Remington Arms for many years, beginning in about 1866 and continuing until perhaps as late as 1935. An extraordinarily practical and simple design with a bare minimum of moving parts, this .41 Rimfire-caliber derringer was the brainchild of William H. Elliot. Contrary to what has been widely and erroneously reported, the Double Derringer did not fire both barrels at once.

Each barrel fires individually by means of a pivoting firing pin that is operated by a ratchet. Through the action of the ratchet, each time the hammer is cocked the firing pin is pivoted up or down, allowing it to contact the rim of a shell in either the upper or lower barrel. These pocket-sized spur-trigger derringers were produced in both blue and nickel finishes, with either hard rubber, rosewood, or walnut grips. In total, Remington manufactured something over 150,000 of this simple and reliable pistol.

Of course, .41 Rimfire caliber has never been known as a powerhouse round; in fact, there are stories of the little slugs being stopped cold by heavy leather gun belts. Nevertheless, this small and easily concealable package did (and does) provide two shots with reasonable stopping power. Before we get started with disassembly and reassembly instructions, let me warn you about a weak point in the Remington Derringer's design.

Before you agree to do any work on the Double Derringer, carefully examine the delicately sized frame hinge. These little guns will often be encountered with cracked or broken frame-hinge ears, especially if the gun has seen rough handling such as "flipping" the barrel open with a flick of the wrist. Because of the tightly machined fit of the barrel joints, small cracks in the frame hinges may not be readily apparent, so be sure to check these thin hinges closely.

Disassembly Instructions First, let me give credit where credit is due: Although I did some editing and renumbering on it, the original illustration of the Remington Double Derringer reproduced on page 21 is by James Triggs and appears in the NRA Illustrated Firearms Assembly Handbook, 6th printing. Now on with the disassembly. 1. As always, be sure the weapon is unloaded before handling or starting any work.

Hold the pistol around the grips (#22) while you point the muzzle in a safe direction, using caution to keep your fingers away from the trigger (#15). Slowly pull the hammer (#6) back just a little, until you hear one click. That click indicates that the hammer is in the half-cock or loading position. Look on the right-hand side This particular example of the gun has been given some gold touches along with a set of very tacky, modern plastic grips. Author photos.

WORKING THE REMINGTON DOUBLE DERRINGER CONTINUED

ORIGINAL PAGE 20

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The small lever on the right is the barrel lock, shown here in the open position. Here the extractor (below the barrels) is also shown removed. If you look closely, you might notice the tiny crack in the lower side of the hinge of the frame and you'll find the barrel lock (#14), which looks like (and is) a little lever. Push the barrel lock down with your thumb to rotate the barrel lock and unlock the barrels (#18). Now you can tilt the barrels all the way up.

At this point you can check the chambers at the rear of the barrels to be sure there are no cartridges in them. If cartridges are present,

remove them now and for safety's sake remove any live ammunition to a separate location before you begin the disassembly work. 2. Leaving the barrels in the open position, proceed with removing them by unscrewing and removing the barrel-hinge screw (#21). The Remington's barrels can now be lifted out of the frame joint.

You can now remove the ejector (#19) by unscrewing the ejector screw (#20). Once the screw is out, the ejector will slide toward the rear and out of its mortise in the left side of the barrel. 3. In order to disassemble the

frame, first unscrew and remove the grip screw (#24) from the center of the grips, and then lift both grip panels (#22) off the frame.

With the hammer placed in the half-cock position, use a small screwdriver blade to carefully pry the top of the mainspring (#4) forward, while at the same time shaking or tapping the frame lightly on a wooden bench top to disengage the top of the mainspring from the ears of

WORKING THE REMINGTON DOUBLE DERRINGER CONTINUED

ORIGINAL PAGE 21

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Remington Double Derringer .41 Rimfire Caliber 1 Frame 2 Main Spring Screw 3 Firing Pin Ratchet Spring Screw 4 Main Spring 5 Firing Pin Ratchet Spring 6 Hammer 7 Hammer Pin 8 Stirrup the hammer's stirrup (#8).

Once you have the stirrup disengaged from the main-spring, allow the hammer to fall 17 Trigger Spring 18 Barrels 19 Ejector 20 Ejector Screw 21 Barrel Hinge Screw 22 Grips (2) 23 Grip Escutcheon 24 Grip Screw 9 Stirrup Pin 10 Firing Pin Ratchet 11 Firing Pin 12 Firing Pin Spring 13 Barrel Lock Screw 14 Barrel Lock 15 Trigger 16 Trigger Pin forward of its own weight and then release the tension on the mainspring.

Next, unscrew and remove the Then, with the barrel lock and trigger removed, the frame is completely stripped. I Using an appropriately sized pin punch and hammer, drive out the hammer pin (#7). Once out, the hammer can be pulled out through the opening in the top of the frame, along with the firing-pin ratchet (#10), firing pin (#11), and firingpin spring (#12).

These three parts will remove as an assembly, and can be disassembled from the hammer by pulling them free with your fingers.

Be sure to take careful note of the positions of these parts for reassembly later. 4. Finally, you can disassemble the few parts that remain in the lower frame by unscrewing and removing the barrel-lock screw (#13) from the left side of the frame. Once out, the barrel lock (#14) can be pulled out of the frame from the right side. Using an appropriately sized pin punch, drift out the trigger pin (#16) after which the trigger (#15) and trigger spring (#17) can be taken out and up through the inside top of the frame.

That's all that's required to disassemble the little Remington Double Derringer. To reassemble, simply reverse the order above. mainspring screw (#2). This is the lower screw of the two screws in the front of the grip frame. Then unscrew the firingpin ratchet spring screw (#3). This screw is the upper screw of the two screws in the front grip frame. At this time you can remove the mainspring and the firing-pin ratchet spring (#5) from the frame.

PEOPLE & COMPANIES

Reader Forum

BY AMERICAN GUNSMITH EDITORS JULY 2007

ORIGINAL PP. 22-24

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Great Western Arms Revolver I have a single-action revolver in my shop that has "Great Western Arms" written across the top of the barrel and uses .45 Long Colt ammo. It's a single-action revolver. The problem is that when the hammer is pulled back, the cylinder will not rotate, and you can turn the cylinder with the hammer down. The customer noticed a rattling sound when he shook the gun, and took the grips off. When he did, a piece fell out that looked like part of a spring.

I suspect that what happened is the spring broke off of the hand assembly inside, thus causing the problem. I basically need to find parts for this revolver or information on any other revolver parts that would fit this model. Any help would be appreciated. The Great Western Arms Company was set up in 1953 and ceased operation in 1961. In 1953, Colt Manufacturing stopped production of first-generation Single Action Army revolvers, and Great Western received permission to revive the revolver.

The only design change made was to separate the firing pin from the hammer and install a rebounding version in the frame. We think you're right about the hand, either missing or badly beaten up, causing the problem. You should have no trouble locating a replacement, since the Single Action Army is alive and well these days. Remington M4 Disassembly How do I disassemble a Remington Model 4 to remove the bolt, replace the ejector-port cover, and give it a thorough cleaning?

One book said it's the same as the Model 74, but I can't find a disassembly procedure for that one, either. You were misinformed. The Remington Model 4 is kin to their Model 742. Instructions appear in Gun

Digest's book of assemble/disassembly for centerfire rifles. Ruger 10/22 Conversion Kit I'm interested in converting a Ruger 10/22 to .17 Mach 2. I've found conversion kits from various manufacturers, and I want to know if you would recommend any particular maker of these conversion kits. Thanks.

You have several choices, but we'd recommend parts from Clark Custom or Volquartsen Custom Both make excellent barrels for this conversion. Clark will sell you a barrel with or without a bolt. Volquartsen won't ship a barrel without a bolt. We strongly suggest you include a bolt with your order. The Mach 2 is a mighty little cartridge compared to the .22 LR. The bolt has to be heavier for the .17 to prevent timing problems.

We've been told this need for a beefed-up bolt is one reason Ruger doesn't offer 10/22 .17 Mach 2 factory conversions. Enfield Keyhole Puncher What will cause a bullet to keyhole the target from an Enfield Jungle Carbine? Nothing stands out as being damaged on the barrel. A keyhole impact on a target is caused when a bullet yaws in flight and "tumbles" due to insufficient spin or wear in the bore at the muzzle end of the barrel.

Severe lead or copper fouling in the barrel reduces contact between the projectile and bore to reduce the spin rate. This fouling may or may not be readily apparent to the naked eye. Using reliable lead and copper-fouling removal compounds, thoroughly clean the barrel including the chamber. Use magnification to inspect for bore damage at or near the muzzle (which may have to be recrowned). After cleaning, make a chamber cast with Cerro Safe (from Brownells). Then run a soft-lead slug from breech to muzzle.

Check both the casting and the slug against S. A. M. I. specifications for chamber dimension and bore diameter. In the worst-case scenario, the carbine could be "shot out" and require rebarreling. Help with Noble Model 80 I need assistance finding an assembly/disassembly manual, schematic, and parts for a Noble model 80 .410 shotgun. Any help will be much appreciated. Your shotgun hasn't been in production since the early to mid-1960s.

We have located parts drawings for Noble pump guns, but none for the autoloader. What we found when we did an internet search on Noble Shotguns was a link to Modern Gun School Training. Clicking on the link and scrolling down, we discovered that part of that training includes drawings, parts interchangeability, and instructions for working the Model 80. We suggest you contact the school to see if they're willing to provide the information and material you need without having to enroll as a student.

This is merely one of the hazards faced when a gun has been out of production as long as this one. Savagely Treated Savage First, allow me to say that your books and articles have served to advance my gunsmithing edification. Thanks. Now, my question: A client recently brought in a Savage 93R17 (without an Accu Trigger). His story is that a grandson, in an effort to remove the bolt, sheared off the bolt stop.

I can see the top of the trigger assembly though the bottom of the receiver, and there indeed appears to be a sheared part there. Savage does not show a detailed listing of components for their trigger assembly with this model. It would seem excessive to buy the entire trig-

READER FORUM CONTINUED

ORIGINAL PAGE 23

ger assembly for just one component. Do you have any sources of component parts, a trigger-assembly diagram, or any advice on how I should proceed? Any advice or guidance would be greatly appreciated. If the rifle is a current or reasonably current Model 9317R, it's like all Savage rimfires has an Accu Trigger. There is no diagram or list of component parts in existence for publication. The closest thing would be the description appearing in the December 04 issue. How old was this grandson?

He must be quite strong and equally ignorant of how to remove the bolt from the rifle (see the November 06 issue). Perhaps he failed to remove the magazine before pulling the trigger. What you see sheared off could be the ejector, magazine release, L-bar screw, or stock-assembly stud. We can't be sure without seeing the rifle, but these parts are available from Savage or Brownells.

We suggest you call Savage first, provide them with the serial number of the rifle, and determine: (1) it's equipped with an Accu Trigger; (2) whether or not it can be fitted with one; and if so, (3) how much they would charge for a complete replacement. (They will not sell individual parts for it.) Rem M700 Trigger Adjustment What's the correct adjusting sequence for the Remington Model 700 trigger adjusting screws? Poundage, creep, overtravel?

I was told years ago that adjustments made using the screws had to be performed in a specific sequence, but I have since lost the formula. Thanks for your help. There are two front screws and one rear screw on the trigger housing. Let's call the upper front "A," the lower front

"B," and the rear "C." Screws A and B govern pull and travel respectively. Screw C controls the sear engagement, and should not be moved unless the factory seal is broken. The adjusting sequence goes like this: 1.

Turn A counterclockwise to reduce pull, which is factory set at about 4-1/2 pounds. 2. Turn B clockwise with the gun cocked until there's no release of the firing pin when the trigger is pulled. Keep holding the trigger back and turn B counterclockwise until the sear releases the firing pin. 3. Reset the sear engagement by backing out C three or four turns. Cock the action (don't touch the trigger) and turn C back in until the sear releases. Recock the action, keep off the trigger, and back out C a little bit.

The object here is that the sear shouldn't release with the action cocked and no contact with the trigger. 4. After you've adjusted pull with A, if the gun fails to fire on closing, turn in C a small amount to reset the trigger. If the gun fires on closing once you've selected the pull weight, you must either turn in C to gain sear contact or increase the weight with A. There will probably be a considerable adjustment needed between A and C to secure the light but safe, creep-free pull you want.

Be patient and don't give up on it. S&W Grip Safety I have a Smith & Wesson Model 1911Sc and the grip does not reliably release the grip safety. Not wanting to grind on the factory grip safety, I've been trying to find an aftermarket part that fits so I can recontour it. This is giving me fits; I've tried three different ones and none work. The Olympic Arms and Baer don't match the frame contour.

The Wilson fits the frame contour, but the little tab that blocks the trigger has been reduced in width on the left side and just misses the lever that releases the firing-pin block on the S&W.

I'd guess this thinning is there to clear the Series-80 thingamajigs; but I don't know, never having worked on a Series-80. The gun has been back to the factory twice for this problem, and they say that the safety is "within spec." And, unfortunately, S&W won't sell me a replacement grip safety that I can grind on. Any ideas? First, we have to wonder: Are your hands large enough to firmly squeeze the grip safety? Assuming they are, we wouldn't "grind" on anything.

We'd try to lengthen the Wilson or S&W trigger-bow contact tab by carefully peening it on a steel bench block. We'd also check with Wilson to see if it's possible to build up the nose of the tab sufficiently for good contact and still maintain clearance for the mishmash present at the back end of a Series 80. Replacing Glock Sight I've just purchased a Glock 36 .45 caliber for use as a carry gun. Shooting off my bench, it shoots high about 1-1/2 inches at 10 yards.

The rear sight is fixed in a dovetail, but the front post looks like it is made with the slide. Is there away to change the front sight to a taller one, or is it best to find an adjustable rear sight that will adjust out the high shooting? Thanks for your help. We don't have the latest sight data from Glock, but what we do have states that they have a 6.1/.024-inch front available for the low-impact

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(continued from previous page) problem. High sights are also available (.029 and .027), and a click adjustable rear goes from 6.1 mm to 7.3 mm. There may have been engineering or design changes made that we're not aware of, whereby the front sight became a molded-in part of the slide.

We don't think that's the case, but you might want to check it out with Glock. Assuming there's been no change to a one-piece sight/slide, you can remove the front sight by locking the slide upside down in a protected vise and knocking the sight out with a punch and light hammer. After inserting a replacement blade, press it flush against the slide, invert the slide, and position the new sight downward against a smooth but solid surface. Insert a Glock-provided fixing pin into the front sight.

Use your punch and hammer to seat the pin and expand the sight tang. Light-Hitting Taurus Do you have any experience with the Taurus Millennium? Mine has developed a habit of light strikes on the primer, with no ignition. This happens with any ammo, maybe one time out of 10. It does this more often with reloads, but still happens with factory ammo. I got all new springs from Taurus/no help. It seems possible that the slide doesn't close completely, but it shouldn't function out of battery.

I was going to send it back to Taurus, but a buddy said that he had the same problem, sent it back, and when it was returned, it still did same thing. Therefore, I'm reluctant to return it. Do you think the chamber

could be too tight? We assume you're speaking of the PT111 which was the subject of a feature article in the February 01 issue. Your pistol is under a lifetime factory warranty.

And it's a good thing it is, too, because it can't be fully disassembled by anyone except a factory technician, due to the nature of its three main retaining pins. They are intentionally constructed to collapse if an attempt is made to drift them out. However, the slide can be removed from the frame, and your problem could be related to drag between those two components. We suggest you try this: Under magnification, look carefully for burrs or rough spots.

If you find any, smooth them up, lubricate the slide/frame rails, and reassemble the pistol. DA-Pistol Safety I have a question: I work out at the gym with a number of Sheriff's Department Investigators, and most of them say they carry their double-action pistols loaded and cocked. They feel that this is safe. But, if their pistols are cocked all of the time, won't that eventually weaken the hammer spring?

From a repair standpoint, I would think that, at some time when they need it most, they could have misfires due to low hammer-spring tension. I surely would appreciate your input. If your investigators have decocker-equipped pistols, the pressure on the mainspring is relieved when the ham-

mer is forward. The same would be true of DA-only pistols, as long as the hammer is forward.

Conversely, when a DA-only pistol is cocked, it does exert continuous pressure on the mainspring and could cause it to take a "set." This is also true of magazine-follower springs in a magazine left fully charged over an extended period of time, which could cause feeding problems. Beyond that, we question the safety of a DA-only pistol being carried cocked with around in the chamber. There is always the possibility that the weapon could be dropped, impacting the hammer, and resulting in an unintentional discharge.

BL-17 Mag Tubes Have you had a chance to check out the BL-17 from Browning? I would like to know how they get the .17 Mach 2 to feed through a tubular magazine without jamming. I've seen an older style .22 rifle somewhere where you pulled the magazine tube forward of the muzzle, loaded the tube, and then released the tube to go back into position. Are there any similarities between this and the Browning design? Thanks.

Not only have we checked it out, a feature article on the rifle appeared in the February 06 issue. Our interest in the gun evolved as a result of the .17 MK2 tubular magazine jamming solution arrived at by Browning engineers. All of your questions regarding the BL-17 are answered in that article except for the final one. To that we say: "No." You'll see why when you read the article.

SEARCHABLE ISSUE RECORD

Archive index

Anti-Gunners: Sneaky, But Not Stupid American Gunsmith Editors	2	Add an Adjustment Screw To the Ruger MKII's Trigger Norman E. Johnson	14-18
Disassembly and Reassembly Of the Savage Milano Shotgun Chick Blood	3-7	Working the Remington Double Derringer David R. Chicoine	19-21
Make a Trigger-Assembly Tool For the Winchester Model 12 Dennis A. Wood	8-9	Reader Forum American Gunsmith Editors	22-24
The Gunsmith's Shop: What Will It Cost? Arthur J. Hunt	10-13		

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