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MAKE A MINI-ROUTER FOR INSTALLING SWIVEL BASES

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ORIGINAL METHODS. MODERN ACCESS.

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SAFETY & COMPLIANCE

Firearm Industry Granted Consultative Role to United Nations

BY AMERICAN GUNSMITH EDITORS DECEMBER 2005

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The firearm and ammunition industry now has a seat at the world table of the United Nations. The 191-country international-relations body has granted official consultative status to the Sporting Arms and Ammunition Manufacturers Institute (SAAMI). SAAMI, founded in 1926, publishes voluntary industry quality and safety standards, coordinates technical manufacturing data, and promotes safe and responsible firearms use. With its new U.

N. designation, SAAMI is now a global resource for scientific facts on guns and ammunition. In securing the official designation, SAAMI Managing Director Rick Patterson delivered a presentation to the U. N. Committee on Non-Governmental Organizations, then for nearly an hour answered questions and responded to concerns regarding firearm industry involvement in U. N. issues. Final approval was handed down late last summer.

SAAMI has now become only the fourth firearms-related, non-government organization to be officially recognized by the United Nations. "The U. N. creates treaties and model regulations. It's important for our industry to have a voice in both of these arenas," said Patterson. "First, international treaties are critical because a treaty actually supersedes the U. S.

Constitution, so SAAMI can now speak up during deliberations over any treaties that could ultimately render America's 2nd Amendment null and void. "Second, the United Nations is very active in developing international regulations. There are thousands upon thousands of model regulations for countries to adopt, and SAAMI now has an official opportunity to provide input in the creation of these models.

We can't prevent politicians from deliberately making bad decisions, but we can make sure they don't unintentionally make bad decisions from a lack of knowledge," said Patterson. For more information on SAAMI, visit or call

HISTORY

Disassembly and Reassembly Of the Remington Model 51

Once related to a “secret weapon” by the U. S. military, the Model 51 was the only self-loader originated by Remington.

BY AMERICAN GUNSMITH EDITORS DECEMBER 2005

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Have you ever heard of the Automatic Pistol, Caliber 30, Model 1918, Mark I or Mark II? Unless you're an active member of the Remington Society, have read Roy Marcot's History of Remington Firearms, or are really deeply into un covering once-upon-a-time military secrets, the answer is probably "no." What I'm guessing you have heard of, though, is the Pedersen Device. In 1915, an independent inventor named John D.

Pedersen informed Remington he'd developed a means of converting the bolt-action Springfield '03 to an autoloader. After witnessing a demonstration, American ordnance officers instantly stamped the device "Top Secret." To throw off any German intelligence source regarding the true nature of their new beast, it was identified as a "Mark I Pistol." The invention replaced the standard Springfield bolt.

A soldier would remove and store it in a pouch on his belt, extract the device from a metal container similarly carried, insert it

in the open breech of his rifle, and lock it in place with the magazine cutoff. A pistol-style magazine carrying 40 .30-caliber rounds of ball ammo would then be snapped into place extending out from the receiver at 45 degrees. Every time the trigger was pulled, one of those rounds would exit the barrel at 1300 feet per second.

Removing the invention and reinstalling the Springfield bolt returned the rifle to a single-shot .30-'06. Late in 1917, Pedersen's "Mark I Pistol" was tested by the French Ordnance Board which immediately ordered 100,000 of them. This prompted U. S.

Army Ordnance to instruct Pedersen to adapt his device for service in the Model 1917 Enfield, and still keeping the ever-snooping Kaiser in the dark, tagged the conversion the "Model 1918 Pistol, Mark II." As such, it was carried by thousands of doughboys who led the offensive against an entrenched enemy in the spring of 1919. John Pedersen was no stranger to self-load-

ing firearms. He had begun work on anew pocket pistol in 1913, filed for a patent in 1915, was interrupted by the war and re-filed in 1919.

By the time the patent was approved in 1920, the pistol had already been in full production in Ilion, New York, and introduced as the Model 51. Chambered for the .380 Remington, it sold for \$36.30. A .32 ACP version came along in 1921, selling for \$25.00. By the time the Model 51 was discontinued in 1926, almost 65,000 had been produced. Let's see, subtracting 1926 from 2006 means the Remington Model 51 has been out of production for 80 years.

Yet, with the possible exception of the Ballester Molina and a few foreign-made relics that would better serve their present owners as fishing weights, I receive more questions on the Technical Hotline about the Model 51 than any other pistol.

DISASSEMBLY AND REASSEMBLY OF THE REMINGTON MODEL 51 CONTINUED

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Before I get to the answers to the questions you have been asking, I want to extend our thanks to the folks at the Remington Museum who lent us photos of this long out-of-production gun and without whom this article would be incomplete. General Anatomy The Model 51 has a magazine capacity of seven. It was available in .380 or .32 ACP, hammerless with side ejection, and equipped with grip and thumb safeties.

The grip safety prevents any possible discharge of a chambered round unless the pistol is firmly in hand and the trigger pulled. When the grip safety extends out from the frame, it indicates the hammer is cocked. When the hammer is uncocked, the grip safety blends in with the frame. When raised, the thumb safety locks up the hammer hard and fast in the cocked position and can't be raised when the hammer is in its fired (forward) position.

A third safety completely locks the sear when the magazine is removed to prohibit firing a cartridge that might have remained chambered. When the Model 51 was first introduced, a magazine disconnect—or safety—was not to be found on other pistols. A fourth safety feature is the gun's solid breech in combination with the enclosed hammer. It prevents the hammer being moved to a cocked position, or anywhere near it, by dropping or striking the pistol against anything.

Cocking can only be accomplished by racking the slide to the rear. Also receiving special attention in the design were ergonomics. Multiple wax impressions were taken of human hands grasping the grip frame Figure 1. Figure 2. Figure 3. to determine the optimum angle in relation to the line of the bore. Lower felt recoil and more room to secure a better grip were enhanced by encircling the barrel with the action spring instead of locating the spring underneath.

Contributing to accuracy are the flat sighting rib, low sights, as well as the overall balance of a handgun that is 6-5/8 inches long, 9/10 inch wide, and weighing 21 ounces empty. The Model 51 Owners Manual All owner's manuals should be so good and so complete. I realize they can't be in these days populated by litigiously eager anti-gunners, all-too-often careless shooters, and the justifiable concerns they both raise in the legal offices of firearm manufacturers.

Evidently, the private right to self-defense or to sporting-gun ownership didn't face many court challenges in the early 1920s. The Model 51 manual supports my supposition in that it is a factory-prepared guide to complete disassembly and reassembly. In fact, all the drawings included here have been reproduced from that 80-yearold booklet. Score one for the good old days. Field Stripping This isn't quite as simple as it is with some current semi-autos. The



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Remington Model 51 Semi-Automatic Pistol 1 Action Spring 12 Barrel Lock Pin 18 Cocking Roll 19 Cocking Roll Pin 24 Disconnecter Lever 25 Disconnecter Pin 26 Disconnecter Spring 27 Disconnecter Spring Plunger 28 Disconnecter 29 Ejector 30 Ejector Pin magazine has to be removed or it will be impossible to take down the gun and, of course, you've already made certain that both the magazine and chamber are empty. Move the thumb safety down, depress the grip safety, and control the slide as it may move forward slightly.

Invert the pistol. Place the grip safety up against the web between your thumb and index finger, wrap 64 31 Ejector Spring 32 Extractor 36 Firing Pin 37 Firing Pin Spring 42 Grip Safety Pin 46 Hammer 55 Magazine Lock 56 Magazine Lock Follower 57 Magazine Lock Spring 61 Mainspring 62 Mainspring Plug your other fingers around the slide, then squeeze the grip safety (Figure 1).

With your other hand, grasp the muzzle end of the slide and move it to the rear until the semi-circular notch on its left edge is aligned with the barrel-lock pin (#12).

Hold the slide in this position with your grip-safety hand. Pick up the magazine. Use its base to press inward on the lock from the right.

This will start the 63 Mainspring Plunger 64 Mainspring Rod 65 Mainspring Rod Pin 66 Mainspring Plug Retaining Pin 70 Receiver 75 Safety Lever 76 Sear 77 Sear Pin 78 Slide 80 Action Spring Bushing 81 Sear Lock 82 Sear Lock Lever 83 Sear Lock Lever Pin 84 Sear Lock Pin 85 Sear Lock Spring 91 Trigger 92 Trigger Lever 93 Trigger Pin 94 Trigger Spring 95 Trigger Spring Plunger 99 Cleaning Rod 281 Right Grip 306 Barrel 309 Breechblock 341 Grip Safety 352 Magazine (assembled) 381 Left Grip lock out of the frame.

The magazine base extension and your thumb will combine to lift out the lock pin. Still maintaining your hold with your grip-safety hand, move the slide half an inch rearward to expose the grooves cut near the barrel muzzle (#306). Hold onto the slide and turn the pistol as shown in Figure 2. With a thumb pressing against the slide, grasp the grooves between that thumb

DISASSEMBLY AND REASSEMBLY OF THE REMINGTON MODEL 51 CONTINUED

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Figure 4. Figure 5. and its associated forefinger. Depress the grip safety. Slip the slide/barrel assembly off the front of the frame, and don't let go of the barrel (Figure 3). Now refer to Figure 4 and place the slide upside down in your free hand with the muzzle facing you. Pull on the barrel a little. Turn it counterclockwise until its lug stops and is held by the action spring (#1) against the shoulder in the slide. Push the barrel inward to raise the back end of the breechblock (#309) slightly.

Insert a fingernail between the cocking roll (#18) and the rear of the breechblock. (Lacking a long enough fingernail, you can substitute a very thin, small tool like a piece of hacksaw blade or credit card.) Push the breechblock farther to the rear and lift its back end over the slide lug. Now allow the breechblock to be pushed toward you under the pressure of the firing-pin spring (#37).

Lower the rear of the block so the firing pin (#36) and its spring will allow clearance for the block to be lifted free to the rear (Figure 5). By tilting the muzzle, the firing-pin assembly will drop out of the barrel. The extractor (#32) never has to be removed from the breechblock except for replacement. If that appears to be necessary, insert the blade of a small screwdriver under the extractor claw, push outward and forward, then remove the part from the block with your fingers.

To release the barrel from the slide, regrip them as shown in Figure 4 and turn the barrel to the right (clockwise). This will disengage the barrel from the slide shoulder and allow it to be moved gently into the slide. Now reverse the position of the slide in your palm, placing its rear upward with the muzzle to the right. Push the barrel inward until it stops.

With thumb and forefinger of your free hand, with a finger inserted through the ejection port, pull the action-spring bushing (#80) forward and jerk it repeatedly against the pressure of the action spring to partially jar the bushing out of its slide mortise. Using the barrel as a lever (Figure 6), clear the bushing from the mortise, but be aware the action spring and bushing will snap backward on the barrel.

Assuming you will find a means to prevent those two potential travelers from exiting your premises, you can finally free them and the barrel from the slide. The pistol is now field stripped. Most modern firearm manuals come to a screeching halt at this point. Not so with the Model 51. The Total Dismount It's possible to detail strip this pistol using its components.

I would and do recommend having a basic assortment of punches, a suitable drifting hammer, and other small tools on hand, but I'll rely on the manual's instructions pretty much as written, making changes for

clarity only. The hammer (#46) is to be in its fired position with the magazine out. Holding the receiver as shown in Figure 7, lay the barrel on a firm surface and position the mainspring plug (#62) over the side of the barrel breech. Press down to push in the Figure 6. Figure 7. plug. Hard.

Push the grip-safety pin (#42) out with the firing pin. Remove the grip-safety assembly (#341). If you need to remove or replace the mainspring (#61), press down on the mainspring plug as before—hard—and push out the mainspring-plunger retaining pin. The mainspring assembly composed of spring, plunger (#63), and plug can now be removed from the grip frame and separated. Examine the grip frame. It's a bit unusual in that it houses no grip bushings.

To remove the grips on a Model 51, you hold the receiver in one hand and push the grip downward until it stops. Then, raising the rear edge first, use the thumb and forefinger of the free hand to lift it clear. The firing pin can be used again to push out the sear-lock pin (#84) and set up the sear-lock assembly (#81) for removal. Now cock the hammer. Move the safety lever (#75) forward to uncover the sear-pin hole, then use the firing pin yet again to push the safety lever and sear pin (#77) out right to left.

Like an M1911, the trigger bow of the Model 51 passes around the magazine. Squeeze the long arms

DISASSEMBLY AND REASSEMBLY OF THE REMINGTON MODEL 51 CONTINUED

ORIGINAL PAGE 7

of the bow together and shake out the sear (#76), the hammer with mainspring rod attached (#46), and the disconnecter assembly (#28). Further disassembly of the hammer and disconnecter assemblies isn't recommended except for replacement of parts, in which case both assemblies can be taken down by pushing out the disconnecter pin (#25) and mainspring-rod pin (#64), after memorizing the relationships of such parts as the disconnecter lever (#24), plunger (#27) and spring (#26). Hold the receiver left-side upward.

Place a thumb over the grooved end of the magazine lock (#56). Here comes the firing pin one more time. Insert its point in the frame cut adjacent to the end directly opposite the end with your thumb on it. Push the lock out. Disregard opposition from the trigger-lever spring (#94), pull the trigger (#91) straight back, and it will exit the receiver. The trigger lever (#92), plunger (#95), and spring can be separated after drifting out the trigger pin (#93).

This dismantling shouldn't be needed unless replacement parts are required. This completes the total disassembly of the pistol. Remington, however, didn't stop there. They go on to tell how to reassemble a Model 51 in 15 steps, which I'll detail below. Reassembly 1. Start in the trigger from the rear of the receiver with the trigger lever up. Depress the lever so it will pass through its pocket at the upper rear of the trigger guard. 2. Assemble the magazine-lock follower to its spring.

Hold the pistol as you did when removing the magazine lock. Insert the lock and hold it in place with a finger. Drop the follower into position from the opposite side of the lock, positioning the collar of the follower on the end of the lock. Use the handy-dandy firing pin or a properly sized punch to push the follower subassembly down as you apply upward pressure to the lock.

When the two parts click together, you can let up on all pressure and the lock will come to its installed position. 3.

Drop the disconnecter into place with the sloping surface of its upper end facing rearward. Squeeze the long arms of the trigger bow together, and engage the lower end of the disconnecter with the notched bar affixed to the back of the bow. You may want to tip the receiver forward, making this step easier. Reinstall the trigger pin. 4. Insert the hammer with the bend of its mainspring rod facing forward. Secure with the safety-lever pin and place the hammer in its fired position. 5.

If you've taken the sear-lock spring off, put it back in. Do the same with the sear-lock lever, retaining it in place with a slave pin. Reinstall the sear from the rear with its hammer-engagement surface upwards, as shown in the cutaway photo. Align the searpin hole with the matching one in the frame and insert the sear pin. 6. Use the hammer-mainspring rod to raise the hammer to a fired position and hold it with a finger.

Insert the sear lock, spring installed, and press the lock down to compress the spring and force the rod through the hole in the receiver's lug. After aligning, install the sear-lock pin right to left in the upper hole while pushing out the slave pin. Now align the large hole in the bottom of the sear-lock lever with the unoccupied sear-lock pin hole in the frame and install that pin. 7. Replace the grips by reversing the disassembly process. 8.

Being certain to have the end of the hammer's mainspring rod (strut) properly seated against the mainspring plunger, re-install the mainspring-assembly components and, yes, you will have to press inward again—hard—on the mainspring plug to install the retaining pin. 9. Place

the grip safety in position and secure it with its pin after pressing the mainspring plug inward one more time—hard. So much for the receiver. 10. Put the action spring back in the slide and fit the bushing on the spring's back end.

Compress the spring in order to start the bushing into its slide mortise. 11. Insert the barrel. Press it and the bushing completely into the mortise. Push the barrel toward the muzzle, and lock it in position by turning it to the right. 12. Preassemble the firing pin and its spring. Hold the slide with its muzzle end toward you. Insert the front end of the firing-pin subassembly in the barrel breech, then lower the assembly's back end to slide down the sloping surface of the breechblock lug in the slide.

As the firing pin comes into alignment with its lug hole, raise the muzzle and the pin assembly will slide home. 13. Drop the front of the breechblock into place, then lower its rear and push it aft with finger pressure applied to the front of the block. The breechblock will snap into position. The slide is now assembled. 14. Hold the receiver and slide as in Figure 3, except with the hammer forward and the ejector down. Fit the two main components together, then push the slide back until it contacts the hammer.

Turn the barrel so the lug aligns with its receiver slot. Release the barrel. Cock the hammer. While depressing the grip safety, push the slide back to alignment with the receiver. 15. Replace the barrel-lock pin and insert the magazine. Conclusions If the pistol is to be stored for an extended length of time, make certain it is empty. Also, the magazine should remain empty with the hammer in the fired position. The latter two measures will avoid any possibility of the related springs taking a set during storage. ■

PEOPLE & COMPANIES

Make a Mini-Router For Installing Swivel Bases

While two-screw swivel bases can certainly be installed by chiseling a mortise into the stock and forearm, there is an easier, more accurate way to get this task accomplished.

BY DENNIS A. WOOD DECEMBER 2005

ORIGINAL PP. 8-13

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'm I sure you've seen those twoscrew swivel bases in the Brownells catalog—the ones that are reminiscent of those used on pre-'64 Winchester lever and bolt-action rifles. If they are installed properly, these swivel bases add a nice touch to the appearance of a custom stock. But it's no easy task to get the socket for each base on top dead center and then keep everything in line with the bore while trying not to chip the sides of the mortise away.

Although I've installed dozens of these two-screw base sets by laying out a position for the front and rear base and then cutting in a mortise that would accept each, I felt there had to be a more accurate, less time-consuming method.

An Adapted Concept The method I used to use for installing these swivel bases involved scribing a line around the base, once the base was positioned on top-dead-center of either the forearm or bottom of the stock, while striving to keep both bases in line with the bore and one another. Once the position looked correct, I used radiused and straight-end chisels to cut a mortise that would accept the bases.

The swivel base was then painted with inletting black and the final fit was then scraped until the swivel base fit properly. This tedious process took an hour or more per swivel base—not an efficient process if the intention is to make a couple of bucks on the job. While watching a woodworker on TV make a whole kitchen full of cabinets during his half-hour show, I noticed this guy had several routers at his disposal, each on, it seemed, set up for one specific purpose.

As I was watching him speedily route out a mortise for door hinges with one of his routers, the thought occurred to me that these swivel bases could be installed in a more expedient manner than the process I'd been using. Obviously, a full-size router would be quite cumbersome and would only get very limited use in my shop. Nevertheless, this is how I began the thought process, and then I began sketching various concepts on paper in an effort to attack this time-consuming task.

The Concept Takes Shape My rotary tool is a hand-piece on a three-foot flexible shaft that ends at the motor, which is plugged into a variable speed-control. It has always served me well on the many projects where I need its help. This tool would become the heart and soul of my "mini-router," once a few

MAKE A MINI-ROUTER FOR INSTALLING SWIVEL BASES CONTINUED

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components were made that would bring the concept to fruition. The mini-router body was made from a short length of one-inch hexagonal aluminum stock that was left over from another project. The hand-piece on my rotary tool measures .718 inch on the outside diameter, so that made it easy to simply drill a 23/32-inch hole into one end of the hex-stock, 1-3/4 inches deep, to accept the hand-piece.

Ahead of this hole, another hole, 1/2 inch in diameter was drilled to a depth of 5/8 inch beyond the 23/32 diameter hole, so that the nut used to tighten the collet that holds the cutting tool would freely spin when the tool is under power. At the working end of the aluminum hex-stock, a throughhole was drilled with a #30 (.1285) diameter drill so that the cutting tool, which is 1/8 (.125) inch in diameter will clear the sides.

A piece of 2-inch-diameter aluminum bar stock was then set up in the lathe where a center hole was drilled at 15/16-inch diameter and then tapped with a 1"-12 tap. This piece will act as the up/down adjustable base for the mini-router. The aluminum round stock was left at 2 inches at the front end for a width of 1/4 inch and turned to 1.300 inches in diameter. Behind the front flange, a #10-32 set-screw hole was drilled

and tapped into this diameter to lock the collar in place until further adjustment is necessary.

The outside diameter of the 1/4-inch flange was knurled to provide a non-slip surface when adjusting this collar either up or down. The hex-stock was then chucked in the lathe and the working end was turned to a diameter of .998 inch, 3/4 inch long, with an undercut diameter of .900 inch at the hex shoulder. The next step involved threading this end at 1"-12 TPI to accept the adjusting collar. The thread cutting was not done in the conventional manner, however.

It's very difficult to cut threads from right to left when a shoulder is close to where the threads should end. The method I use when threading barrel shanks involves using the thread-cutting tool upside down in the tool-post holder, and then running the lathe in reverse. This way I can start at the shoulder, in the undercut, and cut the threads from left to right without any danger of banging the threading tool into the shoulder because I didn't react quickly enough.

The threading tool cuts until it reaches open space on the right end of the work, and I don't need to hold my breath until the job is done. As the threads get close to final form, try the collar that was tapped at

1"-12 TPI to see if it starts to fit on the threads being cut into the .998 diameter. We want these threads to fit rather snugly together, with slight turning resistance, but not so much the collar will not turn.

The reason I chose 12 threads per inch is that one full revolution of the collar will achieve movement, up or down, of .083 inch or around .013 inch per each side of the hex body. Two full turns of the collar will move the cutter, once installed in the rotary-tool collet, up or down .166 inch which is just about the height of these swivel base bottoms. I marked the hex faces with #1 through #6 to act as points of reference in the progress of reaching the necessary depth of cut for these bases.

Every other one of the hex faces were drilled and tapped to receive a socket set-screw that keeps the hand-piece in place, preventing it from moving up or down in the holder during use. Determining Pilot Diameter Like all routers that follow a template, this one will need to have a pilot. The pilot is critical because it's the only dimension that's easily modified. As we go through the mathematical gymnastics a bit later, it will become obvious as to why.

Common cutter diameters are used throughout the making and the use of this mini-router, so most of the compensation necessary for the cutter to

MAKE A MINI-ROUTER FOR INSTALLING SWIVEL BASES CONTINUED

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create a receptacle for these swivel bases is applied to the pilot diameter. The two-screw swivel bases I use most are made by Dakota Arms Inc. These are very nice looking bases and are very well made. Dave Talley also makes this style of base and they work equally well for the purpose. The bases shown here are from some of my older stock and have a width and length dimension that varies slightly from those that are currently available.

Most all of these bases have a 2-degree draft angle along the sides, so the bottom of the base is around .006 inch smaller than the top, exposed surface, once they are installed. Depending on which base you use, measure the width and length with a caliper as close to the bottom as you can and record these dimensions. The front end of the 1"-12 threaded adjusting collar was set up in the lathe and a recess was cut 1-1/8 inch in diameter, .100 inch deep from where the threads are, out toward the outside diameter.

Because each manufacturer of these two-screw bases has their own idea on the sizes involved and because I wanted to have a replaceable pilot in case this one became damaged, the ability to replace this pilot would be

a handy option. To create the pilot, the 1-1/8-inch-diameter round stock was chucked in the lathe and a #30 hole was drilled completely through the center.

A pilot diameter of .263 inch was calculated to be optimal, using the nominal dimension of a .500-inch slot width, cut with an end mill of that diameter. End mills rarely cut to exact size so a rough diameter was determined for the pilot diameter to temporarily be turned to .275 inch diameter for a length of .375 inch. The pilot diameter was then chucked and the back side of the 1-1/8-inch stock faced until it reached a thickness of .100 inch.

A small 45-degree angle was cut into the back face inner edge to clear the radius from the turning tool used to cut the recess in the 2-inch diameter adjusting collar. The flanged pilot needs to slip fit into the collar recess. To keep the pilot from falling out of place, two #6-32 flat-head set screws were installed 180 degrees apart and set slightly below the surface in 82-degree chamfers. We'll need one more dimension before arriving at the final pilot diameter—the actual width of our template slot.

Making the Template To be able to route an accurate receptacle in place for these two-screw swivel bases, we'll need a template to guide the cutter in the mini-router. For this base, I used 1-1/2- by 1-1/2inch aluminum angle stock with a 1/8-inch wall thickness purchased from our local farm-supply store. This angle stock came in an 18-inch section for under \$6. I cut a 7-inchlong piece and then squared up each end.

This section was then set up in the mill vise and a 1/8-inch flat was milled along the top edge where the two top ends intersect. A 1/2-inchthick aluminum block, 1-1/2 inches wide by 2-1/4 inches long was then set up in the vise. A 90-degree angle was then milled into the bottom surface of this block so that it will sit on top of the aluminum angle stock.

Once this block was fit to the top of the aluminum angle stock, the angle plate was drilled, tapped, and chamfered from the underside for two #5-40 flat-head screws on each side to anchor it in place. All four screws go through the angle plate and up into the aluminum block. The angle plate was then tightened up in the mill vise and the top of the aluminum block was milled so that the top of the block blends with the 1/8-inch wide cut previously made on the top of the angle plate.

From my previous calculations, a 1/2-inch-wide slot would work best for this template as 1/2-inch end mills are common cutting tools and a reasonably strong wall for our cutter guiding pilot will result. The aluminum angle was then held in the mill vise upside down, clamping on the sides of the block screwed into the top, side faces of the angles. This makes it much easier to locate the exact center where the two inside faces of the angle stock intersect.

The length of these two-screw bases measure around 1.094 inch. For calculation purposes, we need to subtract our theoretical pilot diameter of .263 inch and then the cutter diameter to be used in the mini-router of .125 inch diameter. The result, .706 inch, is the length we need to make the slot in the top plate. A dial indicator with at least one-inch of travel will be a big help in recording when this length is reached.

Once the end mill has cut the slot completely through the top plate, remove the template from the vise and deburr all the edges. We now need to measure the actual inside width of the slot with the inside recording jaws of a caliper. Most likely, it will not be the same diameter as the end mill (.500 inch). Run-out and size discrepancy of the cutter will cause the cutter to cut oversize somewhat.

Whatever the dimensional difference above .500 inch we end up with, half of that amount needs to be added to the diameter of our theoretical pilot diameter (.263). For example, if the

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MAKE A MINI-ROUTER FOR INSTALLING SWIVEL BASES CONTINUED

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template slot width ends up at .508 inch wide, we would need to add half the amount over .500 inch, or .004 to the diameter of the pilot. With the pilot mounted in the hex-stock holder, chuck the hex end in the lathe and then turn the pilot diameter to a diameter of .267 inch. Mounting Hole Drill Guide Try as I may, it's difficult for me to drill a hole perfectly perpendicular to a surface using a hand drill.

If the hole is crooked, the screw will surely go in crooked, and then the screw head will not fit the counter-bored holes correctly. I made up a spring-loaded 1/8" Drill .312" Diameter Spring Housing Conclusions If you invest the time up front to make this mini-router, it will save you time later when installing these two-screw swivel bases.

Without altering the pilot diameter, I have used the router and template to install the latest version of the Dakota Arms bases, though a bit of final scraping is usually Figure 1. required to achieve a perfect fit. ■ .218" Diameter Drill Guide guiding tool that has the front end of the tool fitting into the counterbore of the screw holes in these bases while a hand drill powers the drill bit (see Figure 1).

The counterbore holes in these bases that accept the screw heads are .219 to .220 inch as measured with gauge pins. Starting with 1/4-inch round stock 7/8 inch long, I turned one end down to .218-inch diameter for a length of 5/8 inch. A #30 hole was then drilled through this piece. The back end of this part was turned and then polished to .248 inch.

A 1-inch length of .312-diameter stock was then chucked up in the lathe and a .250-inch-diameter hole was drilled to a depth of 7/8 inch, and then a .218 hole was drilled through. There should now be a shoulder around 1/8 inch long in one end of this piece. The front end was then faced off until the shoulder reached 1/16 inch in length. If all goes well, the first piece should slide inside this last piece until the .248 diameter hits the shoulder in the front end with the .218 diameter protruding out the front end.

Another short piece of .312-inch stock was then chucked in the lathe, drilled through the center with a 1/8-inch drill, and the outside diameter turned until the rear section of the drill guide, with the .250 hole, would just slip on. Once this was accomplished, the short piece of .312 stock was

sawed off just behind the rear section of the drill guide. A hole was then drilled and tapped for #3-56 through the outside wall of the rear section and through the plug into the 1/8-inch hole.

The rear face was then faced flush in the lathe, and the 1/8-inch through-hole edge chamfered along with the outside edge of the rear section of the drill guide. Remove the screw holding the plug in place and then remove the plug. We now need to insert a coil spring that will slip into the rear end of the drill guide with the .250-diameter hole. A spring of the appropriate diameter came out of one of Wolff's service packs.

Once the spring is installed, the plug can be slipped back in place and kept there with the #3-56 screw. A 1/8-inch drill should now be installed through the hole in the plug until you can just see the tip of the drill protruding out the front end of the drill guide. Turn the #3-56 screw until it hits the drill shank and tighten it up. Test the action by holding the rear of the guide while pushing the front end of the guide backward. The front end should move back with some resistance and spring freely forward.

SHOTGUNS

Tech Topics

In this feature, we examine new tools and tooling, tips and techniques, and news items of interest to the gunsmithing community.

BY AMERICAN GUNSMITH EDITORS DECEMBER 2005

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Original caption: top and bottom: These are before and after views of the damaged rib. No evidence of the damage could be seen after the repair was completed. electric motor, take the motor out of its housing, and rewind the armature to gain more rpms. There was a tool appropriately called a "gear puller" to make that particular part of the task a snap. It was basically a thumb screw threaded through a crescent-shaped casting.

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A Cure for Dented Shotgun Ribs Are you old enough to remember the slot-car craze? At its height, there was at least one emporium with a big, fancy race track catering to fans of the mini-speedsters in almost everyone's home town. Rabid racing fans would purchase anew slot racer and proceed immediately to dismantle it in the process of making it perform better—just like so many gun owners do with anew handgun, rifle, or shotgun right out of the box.

Then, of course, they bring it to you in a plastic bag for reassembly. (May the gods of gunsmithing bless them.) When souping up slot cars, it was considered mandatory to pull the gear from the shaft of the tiny That area is raised slightly, the dent raiser moved to the opposite side of the damage and that area raised. When the jaws will fit directly under the dent, it is raised a little above the top line of the rib and allowed to flex back to alignment when the tool is removed.

BELOW RIGHT,

Prongs on the bottom of the casting fit under the gear, the thumb screw was turned in against the motor shaft, and the gear came off without damage. Recently, someone named Murray has taken the gear-puller concept and applied it to removing dents in shotgun ribs. We saw Murray's Vent Rib Tool in Brownells latest catalog and ordered one to try out on a dented rib on a Remington trap gun.

Instead of a thumb screw and crescent jaws, the tool uses along set screw and two parallel jaws tensioned at the top with an E-ring and a brass bar. The jaws are spread open by applying finger pressure at their upper end. If the rib is dented severely, there may not be enough room to insert the jaws between it and the barrel. That's the way things were with the Remington. In this or any similar

case, the jaws must be initially positioned under the rib to the right or left of the depression.

The set screw is turned out until the brass bar will slide between the topmost parts of the jaws. Both pads of the bar must rest evenly on the rib with the area to be raised located between them. The set screw is then turned down just enough to hold the bar and jaws in place. After being sure the jaws aren't angled in or out under the rib, the set screw is turned down to raise the adjacent area just a little. The tool is repositioned to the opposite side of the dent, and that area is also raised only a little.

The purpose of this initial raising is to provide enough clearance for the jaws to go directly under the dent. Once that's possible, the dent is raised to a position very slightly above the rib line. (Most ribs

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will flex back down after the tool is removed, leaving the rib straight.) As you can see from the before and after photos, the result shows no sign of the dent or any damage from the tool itself. Get the Lead Out. There comes a time in the life of every handgun barrel when it's time to set aside harsh chemicals and reach for a Lewis Lead Remover. We believe the tool has long been unequalled for removing lead buildup and restoring the accuracy of the bore.

Evidently, the Lewis clan came to the conclusion that what has worked so well in pistol barrels for over 50 years could work just as well in shotgun barrels, so they've gone and made one for scatterguns. As it turns out, it not only gets rid of lead fouling but also removes plastic-wad residue. Like the handgun model, the shotgun version of the Lewis Lead Remover uses specially woven brass patches.

They're much larger than the pistol patches with which it uses larger bronze screens than the handgun model, is available in all popular gauges, and works equally well in removing lead buildup as well as plastic-wad residue. you're acquainted, and accomplish the same task of cleaning out a bore without damaging it. The new system threads into shotgun cleaning rods with a 5/16-27 female thread.

It features a proprietary cone and rubber tip that correctly tensions the patch against the bore for maximum cleaning efficiency. Models are available from Brownells for all common gauges. Something Old and Something New for Bolt Beauty Purists call it "damascening." Not being so pure, we

choose to call it "bolt jewelers." Reduced to a crude definition, it is the practice of mildly abrading the surface of a bolt body with a series of overlapping concentric circles. Why?

To enhance the bolt's appearance and slick up its movement somewhat in the receiver. For years, the means of working the jewelers' paste into the bolt has varied from one smith to another. Some use erasers from common lead pencils. Some use short lengths of wooden dowel or nylon rod. Most, perhaps, use small, circular wire brushes.

All use some sort of jewelers' fixture on a drill press or drilling/milling machine to ensure their work is aligned and therefore attractive in finished form. (A bolt body with unevenly matched and overlapping circles wandering all over its surface looks very amateurish.) But there's a problem with the use of wire brushes. Unless their bristles are restricted, it's difficult to apply the same amount of downward pressure when forming each circle. The more pressure, the more the bristles will spread.

The result is often a mechanically straight line that appears to be anything but straight due to the differences in circle circumference. Therefore, for forming perfect circles, a milling/drilling machine with precise vertical control is better than a standard drill press with a hand-operated lever for lowering the jewelers' tool. But not every gunsmith owns a drilling/milling machine.

If you don't, an old reliable fixture and a newly discovered jewelers' tool, in combination, can deliver the same quality work on a

drill press. The fixture we use in our shop was made by Wilcox All-Pro Tools & Supply. It's currently out of production, but is expected to be available again by the time you read this. In the photos here, the fixture has been set up with a phony bolt body of cold-rolled steel, because we had no bolts in need of glamorizing as this was written.

The fixture comes with clear and complete instructions for its use which will not be repeated here, but it works something like a lathe. You clamp it to the drill-press table where it stays during the entire jewelers' operation. All lateral and rotational movement of the workpiece is accomplished in precision increments with the fixture. What about the previously mentioned downward pressure and irregular circles? Avoiding those is where the new jewelers' tool from New England Custom Gun Service enters the picture.

We spotted it last year at the company's booth at the NRA show in Houston. Actually, it was called to our attention by Detrich Apel, a world-famous master gunmaker, who, in our opinion, is unequalled in his skills among the artisans who have earned that lofty title. The \$22 tool resembles a centerfire cartridge case with an extremely long neck. The head of the "case" is threaded to accept a machined brass rod wearing 1/4-20 threads at its slotted end.

The purpose of the rod is to feed out the jewelers' tip housed in the case neck. And the tip itself is where the greatest advantage of the tool lies. The tip looks like a pencil eraser, made of a material called Polycord.

PISTOLS

Chamfer Revolver Chamber Edges Without Disassembling the Cylinder

Chamfering the cylinder's chamber edges allows for faster and easier loading—especially when using a speedloader. In many cases, this technique can be used with the cylinder still in the revolver.

BY RUSSELL CORBITT DECEMBER 2005

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The never-say-die revolver is still going strong—especially those compact numbers for defensive purposes. You'll probably be asked to chamfer the chamber edges to allow easier cartridge alignment. Here's a simple method I use that usually does not require removing the cylinder from the revolver. This technique resulted from some careful consideration and a good deal of Navy language while I was trying to reassemble the cylinder assembly from a Charter Arms Undercover.

The owner was having trouble reloading the revolver with his semi-wadcutter loads, and asked me to chamfer those sharp edges on the chambers. If you're not familiar with revolver work, the first thing you need to know is that you never chamfer the extractor. Even minor "smoothing" on an extractor can cause any number of problems, and extractors can be a real pain to obtain, fit, and time. So my advice is leave them alone.

With my technique, only the outside half of the chamber is beveled, which is almost always enough to greatly ease cartridge alignment and allow faster reloading. This usually means that it's necessary to remove the ex-

tractor. This is not a big deal on some revolvers, but others—Colt, Charter Arms, and Ruger, for example—require special tooling (and/or language) to take apart or reassemble.

If you have a beveled chamfering tool (such as one used for muzzle crowning), it's simple to modify it to operate on revolver cylinders without removing the extractor—usually without removing the cylinder. (See the illustration below.) When altering the chamfering tool, I used a right-hand facing tool in the lathe. The chamfering cutter is chucked in the lathe with the threads wrapped in a lead shim, and the hole in the pointed end supported on alive center in the tailstock.

You'll need a cylinder-chamber pilot for the cutter. (The bore pilot will not work.) You can buy one or make one from scrap steel, brass, or aluminum like I do. It needs to be an easy but not sloppy fit in the chambers. Remove all oil and other substances from the exposed areas of the cylinder which would trap shavings, insert the piloted tool with the extractor extended, release the (continued on page 21)

CHAMFER REVOLVER CHAMBER EDGES WITHOUT DISASSEMBLING THE CYLINDER CONTINUED

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extractor, and cut away. Note: On some revolvers with short extractor strokes, it may be necessary to slip the pilot into the chamber, move the tool into position, and then insert the pilot's stem into the tool. With the cylinder assembly dry, the shavings should not stick—

any that do are easily removed. When finished, touch-up blue (if necessary), work some lube back into the cylinder's moving parts, and it's good to go.

This nifty modification will allow you to chamfer a revolver in less than 10 minutes—with no disassembly and very little cleanup. From the standpoint of income versus labor, you have to like that! ■

PEOPLE & COMPANIES

Breaking Down the L. C. Smith Double-Barreled Shotgun

These side-lock doubles, manufactured for more than 60 years, differ in a few significant ways from other double guns of the period.

BY DAVID R. CHICOINE DECEMBER 2005

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In 1877, Lyman C. Smith, his brother Leroy, and an inventor named W. H.

Baker formed a company to manufacture shotguns and a three-barreled combination rifle/shotgun of Baker's design. In 1880, Leroy Smith and Baker left the partnership to move on to another venture, leaving Lyman Smith in charge of the company that continued to manufacture the Baker gun. The famous name L. C. Smith of Syracuse, New York, was first applied to a line of outside-hammer shotguns in 1884, while the hammerless L. C.

Smith model was introduced about 1886. Beginning in 1888 or 89, Smith sold the company to John Hunter, and from then on the L. C. Smith shotgun was manufactured by the Hunter Arms Co., Inc., of Fulton, New York. In addition to the L. C. Smith line, Hunter Arms also manufactured the Fulton, the Hunter, and other brands of shotguns, including private-label shotguns.

Hunter went bankrupt in 1917, was bought by a group of investors in 1920, and slugged along in bankruptcy until the company was purchased in 1945 by Marlin

Firearms. Due to their side-lock construction, L. C. Smith double-barrel shotguns are unique among American doubles. Aside-lock means the lock parts are contained on removable side plates that are partially inletted into the steel of the action and partially inletted into the buttstock. Hunter Arms adopted the Baker top-bolt for holding the barrels closed.

Baker's top-bolt consisted of a rotating cylinder that was slotted to engage an extension of the top rib between the barrels. The bolt used a sloped locking surface which tightened automatically. This system was later used by both Fox and Ithaca. Although L. C. Smith shotguns were manufactured in a wide variety of grades, all made use of the same basic mechanical design. They were offered with different accessory features and with varying qualities of wood, finish, checkering, and engraving.

After the Marlin Firearms Co. bought Hunter Arms in 1945, Marlin retained the L. C. Smith Gun Co. name, and continued to manufacture the L. C. Smith shotgun on a limited basis until about 1949, when pro-

duction finally ended after the manufacturing building collapsed. After this disaster, Marlin moved the L. C. Smith manufacturing equipment and parts to their New Haven factory, and resumed production for a brief time from 1967 to 1971. C.

Smith hammerless double is a simple, rugged design that remained nearly unchanged from 1886 to 1949. Author photos. Disassembly Instructions 1. Always begin by making sure the gun is not loaded. Start by grasping the gun around the buttstock at the wrist, all the while being careful to keep your fingers away from the triggers (#75). Be sure also to keep those muzzles pointed in a safe direction. Open the action by pushing the top-lever (#9) to the right and allowing the barrels (#1) to fall open.

If any shells are present, remove them now and take any live ammunition to a separate location. 2. To remove the barrels, forend, and trigger guard, close the barrels. You can remove the forend by pulling the front end of the wood down, away

BREAKING DOWN THE L. C. SMITH DOUBLE-BARRELED SHOTGUN CONTINUED

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from barrels, or by pushing the forend latch (if so equipped) and pulling the forend away from the barrels. Next, press the top-lever to the right, reopen the barrels, and lift the barrels off the action. Be careful not to pull the triggers; for now you will want to leave the hammers cocked. Next, unscrew and remove the trigger-guard screw (#49) and unscrew the trigger guard itself (#48) in a counter-clockwise direction. 3.

To remove the locks, unscrew and remove the lock-plate retaining screws (#38) from both the right and left sides of the gun, and unscrew the lock-plate connector screw (#39)

from the right side of the gun. Both of the Smith's locks can now be removed, swinging them out to the rear by lightly tapping the frame (#10) with a hardwood or plastic mallet to loosen them. Be careful while you do this that you do not trip the sears (#44 and #51.) 4. Removal of the the buttstock is fairly straightforward.

With the top-lever (#9) still to right, unscrew. Once they are removed and the trigger plate dropped out, the stock can be lifted down and away from the frame. Be careful of the trip (top, far left). When you push the bolt out to the rear, be sure to hold your hand

over the top of the action; the trip is spring loaded and it may pop up out of the frame. and remove the trigger-plate screw (#27).

Now turn the action over so you can unscrew and remove the trigger-plate retaining screws (#55 and #61.) Unscrew and remove the top-lever screw (#56). The trigger plate (#54) containing the trigger mechanism can now be lifted off the frame. During reassembly of the trigger plate to the stock and frame, it may be necessary to insert a strong, tapered punch into the bottom of the top-lever to move it back into alignment with the screw hole so it can go into the hole in the trigger plate.

BREAKING DOWN THE L. C. SMITH DOUBLE-BARRELED SHOTGUN CONTINUED

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L. C.

Smith Side-by-Side Shotgun 1 Barrels 2 Front Sight 3
Extractor 4 Extractor Screw 5 Trip 6 Bolt 7 Coupler 8
Coupler Screw 9 Top-Lever 10 Frame 11 Cocking Rod
(2) 12 Forend Iron 13 Forend Spring Pin 14 Extractor
Actuator Bar 15 Extractor Actuator 16 Extractor
Actuator Pin 17 Extractor Actuator Spring 18 Rear
Forend Screw (2) 19 Forend Spring 20 Forend Spring
Retracting Spring 21 Forend Screw (2) 22 Forend 23
Trip Spring 24 Bolt Spring 25 Right Lifter 26 Firing Pin
(2) 27 Trigger Plate Screw 28 Left Lifter 29 Safety
Button and Pin 30 Safety Spring 31 Safety Spring Screw
32 Trigger Plate Screw Bushing 33 Grip Cap 34 Grip
Cap Screw 35 Buttplate 36 Buttplate Screw (2) 37

Lockplate, right 38 Lockplate Retaining Screw (2) 39
Lockplate Connector Screw 40 Mainspring Retaining
Screw (2) 41 Sear Pin 42 Mainspring (2) 43 Hammer,
right 44 Sear, right 45 Bridle, right 46 Bridle Screw (4)
47 Hammer Pin (2) 48 Triggerguard 49 Triggerguard
Screw 50 Lockplate, left 51 Sear, left 52 Bridle, left 53
Hammer, left 54 Trigger Plate 55 Trigger Plate Retaining
Screw, front 56 Top-lever Screw 57 Trigger Pin 58
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BREAKING DOWN THE L. C. SMITH DOUBLE-BARRELED SHOTGUN CONTINUED

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Extractor guns are less complicated, since they don't have the spring-loaded hammers (at the left of the forend iron) and they don't use a latch to lock the forend to the barrels like this one does. C. Smith side lock, shown disassembled, is simple and effective. 5. If necessary, the action can be disassembled further. The firing pins (#26) are pulled straight out the rear of the frame.

Place a punch against the long end of the bolt spring (#24) and a padded steel bar against frame on the opposite side of the spring, and use a C-clamp to take up the tension on the bolt spring. With the clamp still in place, remove the coupler screw (#8) and the coupler (#7), then pull the top-lever (#9) out the top of the receiver. Release the tension on the bolt spring. It is not necessary or even desirable to remove the bolt spring unless it is broken.

The bolt (#6) can be pushed out to the rear of the action, and the trip (#5) and trip spring (#23) can now be lifted out through the top of the action. 6. When disassembling the sidelock assembly, be sure to keep the left

and right side locks and their parts separate from each other. Use a mainspring vise to compress the mainspring (#42). This will take the tension off the hammer (#43 or #53). Unscrew and remove the bridle screws (#46).

Finally, lift off the bridle (#45 or #52), the mainspring and vise, the sear (#44 or #51), and the hammer together. 7. To disassemble the barrels and forend, unscrew the extractor screw (#4) and withdraw the extractor(s) to the rear. Remove the two rear forend screws (#18) and the front forend screws (#21) or the lower forend screw on automatic-ejector guns. Further disassembly is not normally required for routine maintenance.

Conclusions It's a good idea when disassembling any double gun to use three small parts containers. One should be marked "left," the other marked "right," and the third container should be used for parts that are not unique to either side. And, as always, you simply reverse the disassembly procedure for reassembly. ■

PEOPLE & COMPANIES

Reader Forum

BY AMERICAN GUNSMITH EDITORS DECEMBER 2005

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Forum Feedback I have a few comments to add on letters in the September issue: Regarding Stu Grell's problem with the Remington 742 not recocking, the disconnecter is mis-positioned on the wrong side of the trigger bar. This is a common problem with Remington autos. Regarding Ernie's inquiry about a schematic for the Mauser 96 straightpull, Mauser did make a "Model 96 American" straight-pull that was imported for a few years after 1996.

The bolt handle pivoted on a horizontal axis to unlock, and then pulled straight back. I had a few of these come through with missing extractors. Parts were impossible to find, and I ended up machining replacements. One of the rifles had an owner's manual with it, which I foolishly failed to copy; perhaps some other reader could help Ernie with this. My recollection is that the gun was miserable to work on.

Lawrence Dullum Anoka, Minnesota Thanks, Lawrence, to you and those readers whose letters follow, for your tips on part sources. Nylon 66 Part Source I have some additional information for Allen, regarding his inquiry on parts for the Remington Nylon 66 in the October 2005 Readers Forum. He should contact Gunpatch Parts Depot Douglas, KS 67039; I have replaced parts in several Remington 66s and have found that Gunpatch has a large variety of Nylon 66 parts, including the outer magazine tube, which others do not stock.

Dan Hewin Holts Summit, Missouri More Forum Feedback In the October 2005 issue, Mike wrote in, having difficulty with a Stoeger Condor. It would not cycle unless

the safety was engaged, and then disengaged. We had one in recently that would cycle with heavy loads but not with light loads—unless one gave it a sharp rap on the buttplate. We too replaced springs, honed engagement surfaces, and so on. Finally, adding just a bit of weight to the inertia block (with silver solder) solved the problem.

In the September issue, Preston was looking for a Marlin Model 39A carrier rocker. These are very scarce, but as of two weeks ago, Valley Gun Shop West Falls, NY 14170; had a couple of them. L. W. Loveland Warren Center, Pennsylvania Inactive Remington Action I have a Remington Model 141 with an action that won't open. The unlocking lever in the bolt appears to be free floating, sliding back and forth as the rifle is turned. What do I do to remove the bolt? Frank The 141 was replaced by the 760 in 1952.

It is possible the ejector may be riding on top of a shell head and preventing the breechblock from unlocking. The same unlocking condition could occur if there are any broken parts related to the action-bar lock. Try separating the stock from the receiver and using a wooden dowel to push the front end of the breechblock upward to clear the ejector. Then jar the ejector rod off the shell by holding the muzzle of the barrel perpendicular and striking the receiver with a wooden block.

If there are broken parts associated with the action-bar lock, they may be difficult to find, but try Pennsylvania Gun Parts Note that if the breechblock is damaged in any way, the job of fitting anew one will have to be han-

dled by an authorized Remington Service Center—assuming they have a replacement for your old-timer. L. C. Smith Queries I have an L. C. Smith double 12 gauge (S/N RE952xx) that I received "in a basket." The sears were missing, but I located some through Numrich Arms. The "Elsie" has the Hunter One single trigger mechanism.

In assembling the locks to the action, it appears the "legs" on the sears may be too long, and will need grinding to fit. I need some info on how the sears are supposed to interface with the toggles that go from side to side when a barrel is selected. I've looked through all my reference and takedown material, but can't find the info I need. (I obviously don't want to ruin the sears!) Also, the shotgun has what appears to be an "automatic" safety feature, which I've heard of, but have no info on.

There is a flat rod that extends from the safety-select slide to the lever, but I can't determine how they should be interconnected. Are there any drawings available that could help me? Possibly I have something still missing from the parts. I can find nothing at all on this. This "Elsie" is engraved, and was a desirable shotgun at one time. I'd like to restore it back to original, if I can. Thank you for any help you can give me. Gary L.

Spears Hendersonville, Tennessee Dave Chicoine's article in this issue should prove to be helpful. The serial number prefix suggests the model was a "regular" with automatic ejectors. This supposition can be affirmed

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(continued from previous page) by writing to the Marlin Firearms Historian North Haven, CT 06473). Marlin took over the old L. C. Smith company in 1946 and produced the shotguns until a disaster struck down the Smith factory in 1949. They made no more L. C. Smith doubles until 1967. From then until 1971, Marlin manufactured over 2,000. Then, offshore-made doubles made production unprofitable, and Marlin ceased production. (We noted at the 2005 SHOT Show that Marlin is reentering the doubles market with anew L. C.

Smith made in North Haven, Connecticut.) During the manufacture of L. C. Smith doubles, a large amount of handwork was done on individual parts to ensure they functioned. As a result of this practice, few parts are interchangeable. Nor can they be fabricated by following drawing dimensions and "dropped in." This is unfortunate. A book (now long out of print) by William S. Brophy on L. C. Smiths carried page after page of blueprint-style drawings.

Beyond that frustration, any alteration made to an original or Marlin-made L. C. Smith will lessen its collector value. In addition to the aforementioned article, two disassembly/reassembly sources are open to you: The NRA Guide to Firearms Assembly for Shoulder Arms and Gun Digest's Book of Assembly/Reassembly for Shotguns, Second Edition. Jack First lists parts in their catalog, but remember what we said about all the hand fitting.

Clean Firearms Produce Emotional Response I have a customer who inherited two antique firearms from her grandfather. The handguns were really dirty. One handgun was a .22-caliber, single-shot break-top pistol; the other was a .38-caliber Smith & Wesson revolver. Both guns were nickel finished. I carefully disassembled both handguns and cleaned all parts of dirt, lead, and powder debris, without removing any of the original nickel finish.

After the cleaning was completed, I reassembled both handguns and called the customer to tell her the guns were ready to be picked up. When she arrived at my shop and saw the handguns, she sat down and cried. I asked her what was wrong, and she said she wished her grandfather could see them because they looked so good. Bradley C. Hively, Sr. Yadkinville, North Carolina It's not often that the gunsmith's art produces this kind of a response. Thanks for sharing your story with us.

Colt 1883 Reassembly I read the article in the February 2005 issue of American Gunsmith regarding working on the 1883 Colt shotgun. It told members how to disassemble the shotgun, but mentioned nothing about reassembly, other than to say that everything is done in reverse. Having just worked on this shotgun, I can attest to the fact that reassembling can be very difficult.

In fact, not having any literature about the gun, I was unable to replace the hammers, mainsprings, and drawbars without the assistance of another gunsmith. Colt does not even have any literature on this weapon.

The only way I found to reassemble the hammer assemblies was as follows: You will notice a small hole in the bottom of the drawbar. Careful examination will reveal that it is a threaded hole. The size is 6-44. A corresponding detent is found on the bottom side of the mainspring.

I used a 6-44 bolt approximately 1.5 inches in length. The end was shaped to fit into the detent in the mainspring, and hardened in order to keep its shape when pressed against the mainspring. The hinge pin is put into place and one drawbar placed in proper order with the hinge pin. The mainspring is then pressed into its place over the drawbar. The bolt is then threaded into the drawbar and against the mainspring.

Tightening the bolt compresses the mainspring and allows the hammer to easily be placed into position. The hammer pin is inserted halfway to hold the first hammer in place and the bolt is removed. The procedure is repeated for the other hammer assembly. I must thank Bob Chavez of Lassen College (the other gunsmith), who helped figure out this procedure. We believe this to be the proper method for reassembly, as no other reason for the threaded hole can be determined.

We could find no other method to install the hammer assembly. I hope this helps those who are tasked with reassembling the 1883 Colt shotgun. Should any member have any questions, they can contact me at the address below. Doug Thanks for the input, Doug. ■

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