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INSIDE THE ARCHIVE

AVOIDING MISTAKES WITH THE MARLIN MODEL 60

CHARITY WATCHDOG SAYS PRO-HUNTING NON-PROFITS OUTPERFORM ALL OTHER CHARITIES • REPAIRING HAMMER A...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 017

DIGITAL ARCHIVE EDITION

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FROM THE ARCHIVE

Charity Watchdog Says Pro-Hunting Non-Profits Outperform All Other Charities

BY AMERICAN GUNSMITH EDITORS APRIL 2005

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Conservation groups promoting the protection of wildlife and game lands for hunters and fisherman operate more efficiently than the average charitable group, according to a recent study conducted by Charity Navigator, America's largest charity evaluator. Of the nine hunting and fishing groups listed in Charity Navigator's database of more than 3,600 501(c)(3) organizations, seven are rated as 3- or 4-star charities, and the other two groups earned 2 stars each.

In general, conservation groups excelled in limiting administration expenses (6.1%) and maximizing the percentage of donations that are applied to intended causes (84.3%). The following are the nine conservation groups that Charity Navigator reviewed: U. S. Sportsmen's Alliance Foundation, Pheasants Forever, Quail Unlimited, National Wild Turkey Federation, Rocky Mountain Elk Foundation, Ducks Unlimited, Trout

Unlimited, International Game Fish Association, and the California Waterfowl Association.

Details revealed by the study include:

- Outdoor conservation charities are among the most efficient at using donors' money. The average conservation group spends more on programs and less on administration expenses than other charities examined by Charity Navigator.
- Hunting and fishing charities are growing. These groups are growing their revenues at a substantially faster rate than other charities.

The average hunting/fishing charity has grown by 17 percent over the last several years, whereas the average charity's revenue has only grown by 5.6 percent.

- Conservation charities have limited rainy-day funds. If income dried up tomorrow, the average outdoor conservation charity could sustain its programs and services for little more than 6 months. Comparatively the average charity evaluated by Charity

Navigator has enough liquid assets to maintain its level of spending more than a year and a half.

Charity Navigator is best known for its ratings, accessible at no charge at of the financial health of 3,600 of America's best-known charities. Using publicly available tax returns (forms 990) filed with the Internal Revenue Service, the Charity Navigator rating system evaluates a charity's financial health based on two broad areas, organizational efficiency and organizational capacity. Based on how the charity rates in each of the two areas, it is assigned an overall rating, ranging from zero to four stars.

The Charity Navigator website offers complementary tools and features to help donors make informed choices about where their contributions will be used most effectively. By accepting no advertising or donations from the organizations it evaluates, Charity Navigator ensures that its evaluations are unbiased. Editor Keith Lawrence Technical

FROM THE ARCHIVE

Avoiding Mistakes With the Marlin Model 60

There's one way to disassemble and reassemble this nifty little .22, and—despite what your customers may have heard—no practical way to change its caliber from .22 LR to .17 MK2.

BY CHICK BLOOD APRIL 2005

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This dandy little autoloader has been around as the Glenfield Model 60 from 1950 to 1982, and as the Marlin Model 60 since 1983. At one time not so long ago, it was classified as an “assault weapon” by hysterical gun-control advocates in New Jersey because of its magazine capacity.

Marlin's neat fix for this problem was to introduce what they referred to as the “Jersey tube.” What it amounted to was a shorter magazine carrying fewer rounds that would stifle the outcry, and every Model 60 shipped to the Garden State was equipped with it. As far as I know, this little Marlin is no longer considered an assault rifle anywhere within these United States. The Glenfield was mostly sold through chain stores.

It had thicker side plates housing its firing mechanism and a hammer of a different design than the Marlin Model 60s, so I can provide no assurance whatsoever that cur-

rent Model 60 parts will interchange with those of the Glenfield. Other than that tidbit, this article has a dual purpose: The first of those is to update an article on the M60 that appeared here several years ago, reprints of which are no longer available.

The second purpose—equally important—is to address at least one sporting magazine's report that the .22 LR Model 60 can be switched over to .17 MK2 by changing the barrel and recoil spring. To that I say: “No way, seekers of truth in gunsmithing.” The Model 60 has a magazine tube designed to house .22 LR round-nose bullets. The .17 MK2 features a sharply pointed ballistic tip and is shorter in overall length.

When the .22 tube is charged with .17 MK2 rounds, the ballistic tip can become lodged between the case rim ahead of it and the wall of the tube. Inside, conditions take on the aspects of a traffic jam in a fog on the Hollywood Freeway. Nothing can move. What can't move can't feed, and what can't

feed, you can't shoot in an autoloader. The .17 MK2 is a high-pressure little tyke that's not to be trifled with. Moreover, it's not going away anytime soon.

With its clean, fast-burning powder, it is capable of putting 200 to 300 rounds into a 3/4-inch group at 33 yards, but it will not feed back from a Model 60 tubular magazine. It also requires a higher bolt mass in combination with a slightly modified bolt, a larger receiver to house the bolt, different extractor springs, and a different stock to accommodate the larger receiver.

Marlin engineers, cognizant of the .17 MK2's increasing popularity, have resolved all these problems with the smaller cartridge by introducing the Marlin Model 717, which includes all the alterations just mentioned. The firing mechanism of the Model 717 reflects the Model 60. Being a .22 caliber, the rifle is often poorly maintained, leading to a multiplicity of minor problems.

AVOIDING MISTAKES WITH THE MARLIN MODEL 60 CONTINUED

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Original caption: Left top: In reassembling the bolt to the receiver, the rimmed or "studded" end of the recoil spring guide must meet up with the guide's housing in the receiver. Left bottom: The arrows indicate the locations of the three small E-clips that must be removed from the right-hand plate. The large E-clip remains where it is. zle end of the bolt. As you do, the charging handle will free up and you will have easy access to the recoil spring (#46) and its guide (#47).

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but the new model is clip fed. You see? No magazine tube means no feeding problems. I have great respect for those Marlin guys. They are true executors of the KISS principle (keep it simple, stupid). Field Stripping As usual, there are no rounds in the rifle, the safety is on, and you're wearing eye protection. A vise with padded jaws should be standing by. Unscrew the front and rear take-down screws (#58 and #59), and remove the inner magazine tube (#40).

Separate the stock and trigger assembly from the barreled action. The action is composed of two side plates (#51 and #52) plus everything trapped The clamps should also be used to secure the plates when reinstalling the clips during reassembly. Attaching self-adhering felt pads to both contact points of the clamps will prevent scuffing or scratching

of the action plates. between them. Remove the assembly post (#1) by squeezing its split end together, pushing in, and pulling it from the action by its opposite end.

The action then slides to the rear, then upward and out of the receiver. Secure the receiver upside-down in your vise. Remember that the recoil spring (#46) is compressed. If you move on to the next step regardless, the spring will bid you adieu after it ricochets sharply off your safety glasses. (You were wearing them, weren't you?) Pull the charging handle (#14) back slightly.

WITH THE FOREFINGER OF YOUR OTHER HAND, LIFT OUT THE MUZ

At this point, the barrel, action, and receiver can be thoroughly cleaned. The action should be flushed clear of any fouling with solvent,

dried with a hair dryer, and lightly lubricated before going back in the rifle. Detailed Disassembly As you go through the process, make a list of the parts you remove and the order in which you remove them. I suggest you use a digital or Polaroid camera to take photos of how a part fits in relation to its companion parts.

Or, if you're a great artist like I am (right!), you could simply make little sketches like I do. This rifle goes back together in an order that's the exact reverse of disassembly. The Bolt. The firing-pin retaining pin (#26) is grooved on one end and is driven out from right to left. I suggest you only drive it far enough to free the firing pin (#25) and cartridge-lifter

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1 Assembly Post 2 Barrel* 3 Barrel Retaining Pin 4 Bolt Release Lever 5 Breech Bolt 6 Buffer 7 Buffer Pin Ring 8 Bullseye 9 Butt Pad 10 Butt Pad Screw (2) 11 Butt Pad Spacer 12 Cartridge Lifter 13 Cartridge Lifter Roller 14 Charging Handle 15 Disconnect Spring 16 Ejector Lifter Spring 17 Extension Spring 18 Extractor, Left 19 Extractor, Right 20 Extractor Pin, Left 21 Extractor Pin, Right 22 Extractor Spring, Left 23 Extractor Spring, Right 24 Feedthroat 25 Firing Pin 26 Firing Pin Retaining Pin roller (#13).

Two extractors are involved here; don't get them mixed up. They are retained by two pins of different lengths. Don't get them mixed up, either. The shorter pin (#21) secures the right-hand extractor and spring (#23); The longer pin (#20) does the same with the left-hand extractor and spring (#22).

Clamp the 27 Front Sight Ramp Base 28 Front Sight Ramp Base Screw 29 Front Sight Ramp Hood 30 Front Sight Ramp Insert 31 Hammer 32 Hammer Spring 33 Hammer Strut 34 Hammer Strut Bridge 35 Hammer Strut Pin 36 Hammer Lifter Pin Ring bolt upside down

in your vise, use your thumb to hold an individual extractor tightly against the bolt, and drift out the pins one at a time. Magazine Tubes.

The inner tube (#40) doesn't come apart and is available as a complete replacement unit if anything ever goes wrong with it. 37 Lever Retaining Pin 38 Magazine Tube Band 39 Magazine Tube Band Pin 40 Magazine Tube Inside (complete) 41 Magazine Tube (outside) 42 Rear Sight Base 43 Rear Sight Elevator 44 Rear Sight Folding Leaf 45 Receiver* 46 Recoil Spring 47 Recoil Spring Guide 48 Sear 49 Sear Pin Ring 50 Sear Spring 51 Sideplate, Left 52 Sideplate, Right 53 Stock 54 Stock Reinforcement Screw 55 Swivel Stud, Rear 56 Swivel Stud, Front 57 Swivel Stud Nut 58 Takedown Screw, Front 59 Takedown Screw, Rear 60 Trigger Guard Nut, Front 61 Trigger Guard Screw, Front 62 Trigger Guard (complete) *Restricted to factory service only The outer tube (#41) is taken off by drifting its tube-support band (#38) from the dovetail in the barrel and pulling the tube, with band attached, from the receiver.

The Action. I assure you, this is not easy. The action mechanism is so touchy that a number of special

AVOIDING MISTAKES WITH THE MARLIN MODEL 60 CONTINUED

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fixtures are employed at the factory to assemble or disassemble it. What I said about making an item-by-item list and making drawings or taking photographs was good advice. Act accordingly. There are two straps or sideplates (#51 and 52). The left plate is festooned with welded-on pins and is held to the right plate with E-clips.

Because the last thing you want to happen is to have this action “take itself apart” before you get the opportunity to study it, clamp the plates together before you start popping off the three small E-clips from the right-hand side. Ignore this precaution and you might jar a spring loose and start a chain reaction involving other springs, the carriage lifter (#12), and probably the sear (#48). This will leave you with a huge mystery when it comes time to reassemble the Model 60’s action.

So take my advice and use the clamps. Remove the small clips and put them somewhere where you won’t lose them. Once

they’re off, you’ll be tempted to take off the large E-clip (#36). Don’t. It holds the bolt-release lever (#4) to the right-hand plate and should be set aside as an assembly with the plate once the sideplates are eventually separated. If it isn’t already cocked, cock the hammer. You’ll see the hole in the end of the hammer strut (#33).

Snip off a short length of paper clip and use long-nose pliers to “pin” the hole. This will capture the recoil spring and retain the hammer assembly intact. Reach into the assembly from the top with a pair of tweezers. Disconnect the extension spring (#17) from its groove in the pivot stud of the bolt-release lever. Loosen the clamps, get them out of your way, and secure just the left plate in your vise.

This is the critical moment: You have to separate the upper plate from the lower plate without disturbing any internal components.

Don’t attempt to drive the plates apart. Begin by forcing up the front end of the top plate to clear the studs in the feed throat (#24).

Work your way to the rear of the top plate very slowly until it is free of the bottom plate, then set it aside. (I used three wooden tongue depressors glued together and beveled at one end as a wedging/prying device.) I know it must be getting tiresome by now, but the reason I mention photos and drawings and notes so often is because there is no drawing available of the Model 60 action. If there were, it would be in this article.

Therefore, once the top plate is off, sketch or photograph what you see after every disassembly step you take. Lift out the buffer (#6). The cartridge lifter (#12) occupies the same stud (pin) as the hammer (#31), and getting ham-handed while removing the lifter could free up a spring or

AVOIDING MISTAKES WITH THE MARLIN MODEL 60 CONTINUED

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Original caption: Right top: The author's wedge, made of three tongue depressors, aids in the cautious separation of the right and left sideplates. Right bottom: Even a casual glance at the action of the Marlin Model 60 encourages the use of personally prepared reference materials to assist in reassembly. two. Now pick out the feed throat (#24) and ejector-lifter spring (#16). The hammer assembly (parts #31, 31, 33, 34, and 35) is removed as a unit.

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The other end of the extension spring (#17) is still attached to the sear, or should be. So is the sear spring (#50). One end of the sear spring is up against the heavier stud on the lower plate. The rest of part #50 is wrapped around the sear. Memorize this setup for reassembly purposes. The disconnecter itself is riveted to the left sideplate. The disconnecter spring (#15) is not. Depress the disconnecter so it is below the sear, then pull out the sear, sear spring, and extension spring.

The disconnecter spring can be popped out of its recess in the plate with a small screwdriver. It's all apart now. Unless you've kept the records I've been urging you to keep, there's little help I can offer on putting the action back together—except for one thing: Before you pull the pin from its hole in the recoil-spring guide, restrain the hammer and ease it back up to its fired position. Bolt Reassembly Here area few tips worth mentioning.

The firing-pin retaining pin #26 must be aligned with its slot in the firing pin prior to installation. If not, the firing pin will be jammed and prevented from moving for-

ward to impact the cartridge. After installation, both sides of the retaining pin must be flush with the sides of the bolt to avoid any drag between the bolt and receiver. (Dragging the bolt is a frequent cause of feeding/ejection problems in any kind of self-loader.) Install the extractors separately, springs first.

Hold the extractor against the spring pressure with your thumb, align the pin hole in the extractor with the pin hole in the bolt, place the pin in the hole, and push it in to be flush on both top and bottom. When replacing the spring and recoil guide, secure the receiver upside-down in your vise, and insert the guide into the spring with its "stud" end sticking out. Place that end of the guide into the housing in the receiver (see photo). Feed the spring into the bolt and then get ready for a little tussle.

You know how the magazine spring on a shotgun can fight you when you're putting it back into its tube? Well, the Model 60 recoil spring is the shotgun spring's demon baby brother. Hold the bolt between a thumb and forefinger and the spring between the other thumb and forefinger to

support it. What you're trying to do is prevent kinking of the spring as you compress it until the guide enters the bolt.

After awhile, you'll have the little devil trapped in the bolt and held there by the guide, also trapped in its receiver housing. Now you have a free thumb and forefinger; use them to install the charging handle through the ejection port into its bolt slot, and release the bolt to the spring pressure. Check for free movement of the bolt in the receiver by working the charging handle back and forth.

To replace the action, pull the charging handle all the way back to its locked-open position and reinstall the action by sliding it forward and pushing it down. When you remount the barreled action to the stock, the receiver must be seated as far back in the stock as it will go. If not, the rifle may not fire. Check all functions manually with dummy rounds and then test fire the gun.

If your customer hassles you because what he really wanted was for you to convert his Model 60 .22 LR to .17 MK2, tell him he should have bought a Marlin Model 717 in the first place. Then you can tell him why. ■

MAINTENANCE & REPAIR

Repairing Hammer Axles On Smith & Wesson Revolvers

The prescribed factory repair for this S&W Model 29 would have required refinishing the gun's surface, but this simpler technique eliminates the need for replating or rebluing.

BY RAY ORDORICA APRIL 2005

ORIGINAL PP. 8-13

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Back in 1973, I bought my first Smith & Wesson .44 Magnum Model 29. At that time, these guns were much in demand, so I placed my name on awaiting list, sat back, and waited. After what seemed like forever, the call finally came, and I went along and paid my \$203.50 for the gun—nickel-plated with a 6-1/2-inch barrel. Although I had wanted a blued gun, I took the first Model 29 that came along, and have never regretted purchasing the nickel-plated version.

Not, that is, until awhile back when the hammer-stud broke, and I was informed by Smith & Wesson they would have to strip the nickel plating to facilitate the repair. There was no way I was going to have that lovely old finish compromised by a repair job. I liked the way the gun looked, and appreciated all its little scratches and nicks—memories every one—and was not about to lose that “patina.” So I let the repair go for what eventually amounted to several years.

The gun still fired, broken stud and all, and I didn’t use the gun much, so what the heck. If it ain’t broke too bad, don’t fix it. Recently, I pulled the gun out and did some shooting with it, and also took some measurements, discovering things I had never known about that revolver in all the 30-odd years I owned it.

I wrote about the size of the chamber outlets (and the barrel swap to 4 inches) in a recent issue of American Gunsmith, but the discrepancies were not really serious issues, in the grand scheme of things. The dimensions were wrong, but there was nothing I could do about it. But I sure as heck could fix that broken axle. The old hammer studs, or axles—whatever you wish to call them—were pressed into the left side of the frame.

They didn’t have much of a protrusion past the hammer on the right side, which gave very little support there. The right-side

hole for the stud was, of course, in the cover plate. In fact, the studs had a very rounded and tapered point that probably didn’t get any support at all from the side-plate. The fillet where the axle portion met the larger-diameter head of the stud (pressed into the frame) was not very big.

Later versions of the gun have a much larger base radius on the hammer stud and a correspondingly larger relief in the side of the hammer. The tiny radius of the fillet on my old gun was essentially a stress riser, and I’m sure mine is not the only old Smith on which that stud has broken. To put things into perspective, I have documented the firing of 4,125. The gun still looks untouched, but it has a new axle within its original finish. The gun began life with a 6.5-inch barrel.

The grips are cut-down, factory-original wood.

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A factory repair would have required replating, something the author didn't want to do. Getting this hole in the right place was easy, because most of it was already there. rounds in that particular revolver. That's not a lot by some standards, but most of my shooting was done with full-power, Elmer-Keith-type handloads. Eventually the axle broke. I actually have no idea when the stud broke, but the gun functioned nearly perfectly after the stud broke.

The broken part stayed in place, and by luck was actually still very slightly inserted into the frame on the left side. The only indication I had of any kind of problem was that the double-action pull was occasionally sticky, and my tests indicated that stickiness might not have been from the broken stud. (More on that problem at another time.) Of course, when I pulled the side-plate one day to clean the gun, the broken stud and hammer fell out.

As I said, I contacted S&W and they would fix the problem, but wanted to strip the nickel. I'm sure they would have replaced the entire stud, base and all. It was their design, after all, and I'm sure they'd stick with it. As noted, the axle portion of the original stud was smaller than the head of the stud. The head had axial serrations to prevent turning, and the whole thing was pressed firmly into the frame, probably with the use of a dedicated press during manufacture.

But I didn't need or want the entire stud to come out. The base of the part was securely affixed into the frame, and I chose to leave it there. What I planned to do was to make anew axle out of drill rod, and make a hole as deep as I dared in the remaining stud and even into the frame behind it, to accept my new axle.

Then, if I could, I'd give the new axle better support on the right side by letting the full diameter of the axle stick out past the right side of the hammer and on into the cover plate, assuming the hole in the cover plate was not too big. As it turned out, I had to enlarge the hole in the cover plate slightly, which ended up giving excellent support to that side of the new axle as well. But I'm getting a bit ahead of myself. First, I had to make the axle.

I had a suitable piece of drill rod large enough that I could turn it to proper size. Please excuse my lack of memory or expertise here as to materials; I don't know if the drill rod was water or oil-hardening. I've always used water to harden it, and that's always worked for numerous firing pins I've made over the years. On the lathe, I turned the drill rod to a good fit within the hammer, so the hammer spun with no slop.

Clearly you want a superior finish on your last cut on this axle, so spin it fast and take your time (high speed and low feed). I made the new axle plenty long enough that

I could trim it to length once I had it fitted in the hole I was about to drill in the frame. Drilling the hole was the next job. You might think it would be necessary to use a mill, or at least a drill press and lots of jigs and fixtures to get the hole perfectly centered and perfectly vertical. Here I got lucky.

The broken piece of axle had left a slightly rounded depression—you guessed it—dead center in the base of the old stud. If you are not that lucky, you may have to resort to cutting or filing off the surface of the broken stud to make it perfectly flat against the left side of the frame, then find the center by some clever means, center punch it, and then go to work drilling. I found a number-size drill that was a bit smaller than needed and carefully drilled the hole with a hand-held cordless drill.

Of course, you must make sure the drill bit is held square to the frame, and if you don't have the skill or experience to do that reliably, by all means use whatever fixtures you may need, including the drill press. Then I opened the hole up with the appropriate number drill so my new axle would just slip into the hole. The only other trick was to make absolutely sure I didn't drill through the side of the gun. I forgot to mention that I stripped all the lockwork out of the frame completely, including

REPAIRING HAMMER AXLES ON SMITH & WESSON REVOLVERS CONTINUED

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This was done to make the new hole a bit tighter on the new axle, basically fixing a minor blunder. the latch mechanism. That let me clean up everything perfectly once the job was done. The other end of the axle support was essentially already begun. The hole in the cover plate formed an excellent guide for my final-dimension drill. Once again I made sure I didn't go all the way through the plate.

I left quite a lot of stock on both sides, partly because I'm chicken but also because you don't need that much to support the axle. Remember, the gun worked very well with just a loose piece of steel rattling around inside the hammer. Now I had support holes in both sides. Yes, I got the main hole too big, and staked the edge to give added support to the new axle. You can do better than that,

I'm sure. Now came the big question: What should I use to secure the axle into the frame?

While I knew it would work with absolutely nothing in there, I wanted to keep the axle in place whenever I disassembled the gun, and not have parts fall out and become lost. Accordingly, I turned two tiny grooves on the part of the axle that would be held within the frame, so that the grooves would give added grip to the bonding agent. I was almost ready to install it. Next, I cut the axle to length. That was easy.

I put the axle into the frame and installed the hammer over The rounded, tapered end of the original pin got essentially no support on the right side, which made it easier for it to

break. The author used a Dremel cutoff wheel to trim the new part. it. Then I marked the axle where I wanted the cut, about 1/8 inch (or a little more) past the hammer. Then I took it all apart and made the cut with a thin abrasive wheel in my Dremel tool.

A hack saw would work, especially if you can hold the new axle in a collet on your lathe. I don't have collets, so I held the axle carefully in the vise and used the Dremel. Then I slightly rounded the outer end of the axle, the portion that was to enter the side plate. I stuck the axle dry into the frame, put the hammer over it to hold it roughly in place, and tried to fit the cover plate over the parts. I kept on slowly rounding the end of the axle and trying the fit until I could get the cover plate

REPAIRING HAMMER AXLES ON SMITH & WESSON REVOLVERS CONTINUED

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This new system gives added support to the axle. The new axle worked perfectly, and preserved the external finish on this old revolver. to slip readily over the end of the new axle. The outer end of the axle was still well supported, despite the slight rounding I had just done, and it was easy to install or remove the cover plate. Then I gently polished the new axle so I could see what I was doing, and gave it a heat treatment.

I heated the axle red hot, quenched it in water, cleaned up the surface polish to be able to see the colors, then slowly reheated it until I got the desired straw color, and again I quenched it. This is how many parts of early Lugers were colored, including their triggers. I've used similar techniques for making firing pins in the past, and this system works for me. You may have a better system. I wanted a surface that would be hard enough that the axle would not wear out quickly, yet not be brittle.

Now it was time to secure the axle into the frame. I could have used any number of things. Solder might have worked, but I didn't want to risk discoloring the outer nickel-plated surface. That left epoxy or something similar. Brownells Acraglas or Steel Bed might have worked well, but I decided to use gap-filling superglue (cryanoacrylate).

You may wonder about my sanity, but I once super glued a front sight onto a 1911, and shot the dickens out of it. It held perfectly until I bumped the front sight blade and sheared it off. I have used superglue on radio-controlled model aircraft, and know a little about its usefulness and limitations. You have to degrease the surfaces thoroughly, and then degrease them again. With intelligent preparation, superglue does a remarkably good job.

Suffice it to say, as of this writing, the axle is still secure and has not rotated in the frame. I would bet I'd have a devil of a time

getting that new axle out if I had to remove it. After all, there isn't any axial strain on the part. As I noted, it would have worked with no glue whatsoever. Just be sure to clean up the joint so nothing binds the hammer when the glue sets. That's about it. To date, I've put several hundred more rounds through the old Smith & Wesson, and the new axle works perfectly. This repair would work on blued guns as well.

The beauty is that there is no indication on the outside of the gun that anything has been done. The new axle gives better support to the hammer than the old one, and I'm convinced this repair will last forever. If I got the heat treatment wrong and the wearing surface doesn't hold up, all I have to do is remove the old axle and stick in anew one. This system should work well for you, too, and could help preserve a beloved exterior finish that factory repairs would destroy.

MAINTENANCE & REPAIR

Smoothing the Air-Pistol Trigger Mechanism

The Gamo Compact Air Pistol used here provides a good example of what it takes—and it's not much—to do an action job on a targettype air gun.

BY ROGER B. HEIM APRIL 2005

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Some air pistols are cheap and are not worth fixing, while others—the high-dollar units in the \$800 to \$1,500 range—might require expertise that is beyond most gunsmiths' training and experience. In the case of the big-ticket air guns, you might want to suggest that the owner return it to the factory for repair or adjustment. On the medium-priced air pistols, however, the work can be relatively quick, and can help to create anew customer base.

When it came to fixing the Gamo Compact shown here, I decided it was worth the effort, even though I hadn't previously included work on air guns as apart of my gunsmithing repertoire. That's because this problem was a personal one. After firing approximately 40,000 pellets from my Gamo Compact air

pistol, the match-quality trigger began to fluctuate between a light let-off and an unbelievably hard one.

For a moderately priced, extremely accurate pistol that I'd grown quite fond of over the last decade, this was unacceptable. Of course, I could have returned the gun to Gamo, USA, but what fun would that have been? The first thing I did was document the problem, just to ensure it was the gun and not just my imagination. Using an RCBS trigger-pull gauge, I fired the pistol a total of five rounds.

The first pull tripped at 2.5 pounds, the second at 3.9, the third at 2.1, the fourth at a whopping 9.0 pounds, and the fifth was 2.5. It was not my imagination. Now, all I needed was a diagram and some time to work on it.

Finding the time wasn't as difficult as finding the diagram. I'm sure somewhere there is an honest engineering diagram; unfortunately, it isn't available to you or me. After repeated tries on the internet and attempts to cajole one from Gamo, USA, I gave up and made the diagram you see here.

It's not down to the internal valving, because my problem didn't go that far. So here's the procedure I came up with for doing a simple action job: First, open the breech enough to ensure there's no pellet loaded. After making sure it's uncocked and empty, carefully remove the target grips usually found on the gun. Be certain you use an appropriate Phillips head. (I used the smaller of the two in my

SMOOTHING THE AIR-PISTOL TRIGGER MECHANISM CONTINUED

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Chapman set.) And don't bugger up the screw heads. Remember, these seemingly crudely finished grips are currently running around \$60 to \$95 a set. You have to watch the tiny washers (two each, top and bottom), two in each panel. Lose those, and you'll wish you had 20/400 vision. Those washers are threaded, too. Carefully set the grip halves to one side of your workbench. Next, again using the proper-sized Phillips head, carefully remove the three action-cover screws from the grip frame.

Keep these screws ordered with their mating holes—they're not interchangeable. Pry the action cover off carefully, because there are action pins fitting into it from the opposite frame panel. It might be best here to replace the screws in their appropriate holes in the cover after you've removed it and set those aside with the grips. Again, a word of caution: The cover is a hard plastic, so be gentle, especially if it's become brittle with age.

After you've removed the cover, take a moment to familiarize yourself with the order of things. Check it against Figure 1. If it's different, it may be newer or old-

er than the model I have. You'll have to make sure you have an idea how it all works together. My gun was greased up with some lubricant of an unknown origin.

Before you use any solvent or lubricant on this or any other air gun, cut a small piece of the plastic from the inside of the frame (where it won't show), and place it in a little lubricant or solvent overnight. If, the next day, you see a plastic puddle, don't use it on the gun! A great many lubricants and solvents you can use on a firearm with impunity will quickly destroy a costly air gun. At the very least, it will destroy the seals and O-rings.

I first took a cotton swab, dipped it in isopropyl alcohol, shook off the excess, and gently cleaned the gook away from the working parts. This gave me a clear view of the working mechanism. The hammer, mainspring, trigger, sear, and sear-return spring were clearly visible. The pins holding it all in place were freed from the drag of hardened grease, too. Using a pair of jeweler's needle-nosed pliers, carefully unhook the mainspring and trigger-return springs from their posts/pins to which they're anchored.

Next, carefully unhinge them from their respective components. Place them in a bath of alcohol (or use your wife's ultrasonic jewelry cleaner) for a few minutes. Set them aside to dry; we'll get back to them later. Next, gently work the trigger and hammer pins loose from those pieces through the left side of the frame. Carefully remove them from the frame. Notice both the sear piece and the hammer are of a white metal, and several pieces are riveted together to form one working piece each.

I don't know why Gamo did this, unless it was to save money. If it were made by Umarex, the German parent of Wal-ther, it would probably be a onepiece steel unit. In any case, observe how the wear marks are worn in the sear and hammer. It's best to clean them gently with the same alcohol bath you used on the springs before going further. Stone those areas very lightly in the direction of wear with your hardest Arkansas stone. Since these pieces are probably aluminum or a zinc alloy, their softness is a given.

Be sure to use a light honing oil as you stone the surfaces, and make sure you clean the pieces as thoroughly as possible when you finish. The slightest amount of grit left will cause an inordinate amount of wear, and will possibly work its way up to a seal, ruining it, too. You can never clean a stoned piece too thoroughly. After you've stoned and cleaned the sear and hammer, lubricate the sear surfaces with either White Lightning (the lube, not the hooch) or dry, powdered graphite.

This way, the lubrication will not attract the grit and Figure 1. grime of normal oiling. Place a small dab of spring gel on the left side of the pinhole in the sear and hammer. When you replace the hammer and sear pins (from the left side of the frame where you removed them), you'll distribute the lubricant through the hole as the pin goes through. Now, let's return to those two springs we cleaned and set aside.

Using spring-dampening gel on a toothpick or dental tool, thinly coat the coils of both springs and apply a very small amount to the holes in which each spring is inserted into both the hammer and sear. Insert the sear spring first and attach it to its post on the frame. Next, insert the hammer spring and attach it to its frame post. Finally, replace the action cover, gently working the cover until the sear and hammer springs seat in their respective holes in the cover.

SMOOTHING THE AIR-PISTOL TRIGGER MECHANISM CONTINUED

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Replace the screws and grips, and you're ready to shoot what will feel like a brand new air gun! Checking with the trigger-pull gage, five shots were within .1 pounds of a 2.5-pound pull. You can't ask for more than that. The type of metal used means the process will probably have to be repeated in the future, and I don't guarantee it will last for years if you shoot a great deal. But you now know how to do the job, and it's not that difficult. Perhaps someone knows how to "harden" these surfaces.

IF YOU DO, PLEASE SHARE. ■

ORIGINAL SOURCE PAGE

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PEOPLE & COMPANIES

The Colt Government Model 1911: Thoughts on Parts Interchangeability

Colt's Government Model 1911 and its variations resemble each other and share many features. Nevertheless, some parts are interchangeable, and some are not.

BY KEN WINDELER APRIL 2005

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Everyone is familiar with Colt's Patented Firearms Manufacturing Company and their excellent products, and the Model 1911 pistol certainly needs no introduction, being the official sidearm of the U. S. Armed Forces for over 70 years. While it may not be everybody's favorite sidearm, the Government Model is easily the world's most popular handgun for both self-defense and target competition.

Ninety years young, the 1911 has been manufactured by over 30 different firms, and that number doesn't include all the clones and copies. The Model 1911 Government Model .45 ACP, designed by John Browning and produced by Colt, was adopted by our armed forces after an extensive trial and development period. It was chambered for the .45 Automatic Colt Pistol (ACP) cartridge. The original Colt automatic pistols—the Model 1900 and Model 1902—were chambered for the .38 Automatic Colt Pistol (ACP) Cartridge.

In 1929, the Colt's Patented Firearms Manufacturing Company introduced a modified Government Model, the Super .38, chambered for the .38 Super Auto cartridge. In addition to the .45 ACP, the Government Model would eventually be chambered by the factory for the 9mm Luger, the .38 Super, the .38 Special mid-range, the 9x23 Winchester cartridge, the .40 S&W, the 10mm, as well as in some European calibers for export.

This pistol would also be manufactured in a National Match version, a shortened version, a lightweight shortened version, and a compact version. These were known as the National Match, the Gold Cup, the Combat Commander, the Commander, and the Officer's ACP and Defender Models.

I've owned a Mark IV Series-70 Colt Government Model in .45 ACP and .38 Super Auto caliber for many years, and it was Bob Campbell's article on the .38 Super in the October 2003 issue of American Gunsmith that got me thinking about the minor but significant differences between these pistols. The Ejectors: Dimensions and Differences The slide assemblies are not interchangeable, because the ejectors are not the same.

The .38 Automatic case is smaller than the .45 Automatic, and the .38 ACP ejector is wider toward the center than the .45 ACP. The overall width of the .38 Super ejector is .179 inch, and the .45 Auto is .139. The rim diameter of the .38 ACP/Super case is .405 inch, while the .45 ACP case rim diameter is .476. As you can see, there's a difference of .071 inch between the two cartridge cases and .040 inch between the ejectors. Now we divide the .38 Super case-rim diameter in half, and we get .0355 inch.

The difference is pretty close to being equal (within .005), and the ejector dimensions probably vary. Remember, Mil Spec is plus or minus .002 inch. Some dimensions are fixed minus .002 to .005 inch. The step on the ejectors is also different. While the height of the step is the same at .135 inch,

the .38 Super is .114 inch deep and the .45 ACP is .084 inch deep, which gives us a difference of .030 inch. The width of the vertical projection of the two ejectors is also different.

The .38 Super is .065 inch wide, while the .45 ACP is .055. Add .030 inch and .010 inch, and we have .040-inch difference. The Super ejector is .020-inch higher than the .45 ejector, which is a height of .230 inch for the .45 ACP and .250 inch for the .38 Super. The Super ejector has a .035-inch-deep relief cut on the back end for hammer clearance. The overall length of the standard GM ejector is .968 inch. They do not have a forward leg extension.

My Mark IV Series-70 Government Model .38 Super Auto does not have the extended ejector. These ejectors were originally Commander/Combat Commander ejectors, and I think were used in the Colt Series-70 Government Model 9mm. My Ed Brown .45 GM extended ejector has an extended leg of .090 inch, an overall length of 1.055 inches, the other dimensions being the same as the stock .45 GM ejector. These are not Commander ejectors.

The Commander ejector is similar to the .38 Super Auto GM ejector, but has a leg extension of .185 inch and an overall length of 1.132 inches. The overall height is .242 inch, while the step dimensions are .135 inch high by .099 inch deep. The vertical projection of the Commander ejector is .080 inch wide with a .040-inch hammer-relief cut. The overall width

THE COLT GOVERNMENT MODEL 1911: THOUGHTS ON PARTS INTERCHANGEABILITY CONTINUED

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45 ACP GM ejector, the .38 Super Auto GM ejector, and right the .45ACP Commander ejector. 45 ACP GM ejector, the .38 Super Auto ejector, and the .45 ACP Commander ejector. of the Commander ejector is .179 inch—the same as the .38 Super. Slide Peculiarities The ejector channel in the slides is also different. The Super Auto's is wider toward the center of the pistol, but the offset that mates the step in the ejector is also closer to the center.

If you want to fit a .45 ACP slide onto the .38 Super frame, it can be done by milling the ejector channel wider and maybe a little deeper. At one time, I had an aftermarket M1911 aluminum frame, on which I installed a Springfield Armory 9mm conversion kit, and then fit a surplus GI slide to the same gun that way. Some GM .45 slides may fit the wider ejectors. After World War II, Colt introduced the Colt Commander Model in 1950.

This handgun had an aluminum frame, a shortened slide, and was offered in 9mm Luger, .38 Super Auto, and .45 ACP. This particular pistol uses the same type ejector and the slides may also be interchangeable. My model 1991-A1 Combat Commander .45 slide fits onto both the .38 Super GM

frame and the .45 GM frame, but can't be used there because the 1991-A1 is a Series-80 type. The Series-70 .38 Super slide fits the 1991-A1 Commander frame, but is too long for the frame.

The .45 ACP GM slide will not fit either the .38 Super Government Model frame or the Commander .45 frame. Early Colt GM .22 conversion units will not fit the .38 Super Auto. Conversion units made after WWII fit both Government Models (I think). Twenty-two conversion units made after 1970 will fit both GM pistols. My Series-70 Ace slide will fit onto both of my Government Models. The Service Model Ace uses a standard .45 ejector.

The Delta Elite uses a standard .38/9mm ejector, and the .40 S&W, 9mm, and the Compact use the Commander extended ejector. In 1970, Colt introduced the Combat Commander, a shortened, steel-frame 1911 similar to the Commander. Since then, this nomenclature has been changed to Commander and Lightweight Commander. The wider ejector was necessary for the .38 Auto case to function in the Government Model, because the diameter is smaller and would miss the .45 ACP ejector. The reverse is not true.

The Commander ejector is universal in some ways, because both the .38 Super GM slide (the 9mm slide), and the .45 ACP Commander slide both fit this type ejector. The Commander ejector has along forward extension because the slide on these pistols does not recoil as far to the rear as the GM due to the shorter slide length. Conclusions and Afterthoughts A couple of things are important to remember: First, the M1911 was designed the way Army Ordnance wanted it.

The pistol was designed as a .45 caliber, with the .38 ACP chambering being a modification of that. As long as the 1911 Government Model pistol was standard issue, the Colt factory was not going to redesign it or manufacture a pistol that was not compatible with the ones already in service. Criticized for not having a firing-pin block or safety feature, one was designed for the Government Model in the 1920s. The Ordnance Department was not interested in a different model pistol.

The firing-pin safety would not be adopted by Colt until after the Government adopted the Beretta 92/ M9. This modification created the Series-80 Colt. ■

RIFLES

Sporterizing the Mosin-Nagant

Who says you can't make a silk purse out of a sow's ear? With a few dollars and a few hours, you can work wonders with an inexpensive exmilitary rifle.

BY BRIAN E. CAPPS APRIL 2005

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This story actually began several years ago with the purchase of yet another inexpensive military rifle. A large number of Russian surplus Mosin-Nagants of various descriptions came ashore in the U. S. and were snapped up by tightwads such as myself who are addicted to cheap-to-buy, cheap-to-feed, big-bore plinkers.

It was acceptably accurate (shooting minute of 55 gallon drum) and fun for awhile, but I soon found myself wanting to try various aftermarket products to see if I couldn't turn this old rifle into something a little more useful and more pleasing to the eye. And with my typical optimistic naivete, I thought I might actually be able to improve on this century-old design.

And what a design it istiny little straight bolt handle; hard-to-see sights (at least for my eyes); a heavy, creepy trigger; a too-long barrel; and a safety that was anything but easy to manipulate. In addition, the stock was oil-soaked and heavily dented, the metal was rusty and pitted, and the bore was

what could be charitably described as "somewhat rough." The wood was first to go.

After a futile effort to remove the battle scars, it was time to invest in an Advanced Technology injection-molded stock (from Brownells). While it lacks the fine lines of a classic walnut stock, it had two advantagescheap and easy to install. Let the Games Begin Installation of the Advanced Technology stock is a breeze: After making sure the rifle is unloaded, remove the two screws that hold the action in the old stock, and lift the action and magazine assembly away from the wood.

Reverse the procedure on the new stock and you're done. If you so desire, this barreled receiver can be glass bedded using Brownells Acra-Glas gel. Most people who have had problems with bedding a plastic stock have not taken the time to do a proper prep job. As this stock is created in a mold, there is Top of page: On top is an original Mosin-Nagant; the rifle on the bot-

tom shows what can be accomplished with a little time and a few dollars. frequently mold release still clinging to the surface.

Merely take some fine sandpaper and rough up these areas to receive the bedding material, and then use denatured alcohol to remove any remaining release compound. For a very stable bedding job, use a small drill bit (1/16 to 1/8 inch is fine) to make numerous shallow holes throughout the area to receive the Acra-Glas mixture. Use masking tape to protect the areas where the gel doesn't belong.

And don't forget to put a coat of the release agent that comes with the kit over all the parts that will come in contact with the bedding compound. The finished product will be an unbreakable, solid bedding for your barreled receiver. More Challenges With the easy part completed, it was time to see what could be done to improve the metal. It was hard to believe, but if anything it was even worse than the wood! The rear sight might have been fine for its original military purpose, but wouldn't be

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needed when a scope was mounted. So out came the propane torch, and being careful to minimize heating of the barrel, I applied heat to the sight. The sight assembly is retained by what seems to be soft solder, and the gentle heat, aided by some firm taps with a brass mallet, soon had it driven forward off the barrel. Advanced Technology also produced the scope-mount kit I used to turn the old war club into a tack driver (also from Brownells).

All that's required is to cut off the old handle, drill and tap a hole, and install the new one. The scope mount is simplicity itself; drill and tap two holes and it's time to put on your favorite scope. While there's no need to go into the specifics of installing these items (the instructions that come with the kit are excellent), I will add one major caution: Installing the turned-down bolt handle that comes with the kit requires the bolt assembly be taken apart, and reveals something rather unique.

The firing-pin protrusion on this rifle is adjustable by the shooterno gunsmith necessary. But make a mistake and you either have lots of misfires or, if the pin protrudes too far, you run the very real risk of piercing a primer and getting a face full of high pressure gas. Many of the newly imported rifles come with a firing-pin gauge and it's simple to use. Remove the bolt from the receiver and turn the cocking piece approximately one-quarter turn counterclockwise.

This uncocks the mechanism and allows the pin to protrude through the face of the bolt. Two of the notches on the tool are numbered 75 and 95 respectively. The firing-pin

tip must drag on the bottom of the number 75 notch and must not contact the bottom of the notch labeled 95. If you plan on doing work on any of the Mosin-Nagant variants, pick up one of these little gauges the next time you're at a gun show; it's worth its weight in gold.

At almost 30 inches, the barrel is a bit long for my taste, though if you're dealing with the carbine version, you can skip to the next step. I shortened mine to 22 inches. Much shorter and it would have looked out of proportion to the stock; much longer and it wouldn't be nearly as handy in the woods. A properly crowned muzzle can add a lot to the accuracy equation, and can be done with common tools. While the muzzle-crowning kit from Brownells is a good investment, a fresh file and a brass screw work well also.

First, shorten the barrel with a hacksaw, ensuring that the muzzle face is perpendicular to the bore. A few strokes with a fine-cut file will smooth any saw marks and ready the surface for the "crowning touch." Take a brass screw, mount it in your variable-speed drill, and smear a small quantity of fine valve-grinding compound on the screw's head. While the screw is slowly turning, press it against the barrel, moving the drill side to side.

Pause frequently to check your work and add more grinding compound as needed. Within a short period of time you'll have completed the job. I also took this opportunity to add a "custom" touch. While visiting a fellow gunsmith, I spied an interesting piece on his work bench. He had just shortened a barrel and I snapped up the remnant.

After a few minutes on the lathe and with a bit of silver solder, I had an FN/FAL flash hider on my Mosin-Nagant.

It added a distinctive touch and excellent protection for the newly crowned muzzle. There were numerous scars on the exterior barrel surface, along with a number of light rust pits that needed to be addressed. Some fine filing will get things started and strips of abrasive cloth will smooth out the worst of the dings. Place the barreled action in your vise (with leather to pad the jaws) and use a back and forth motion (like shining your shoes) with the abrasive cloth to remove the worst of the blemishes.

By using progressively finer grades of emery cloth, you can achieve the finish desired. No need to get carried away as the next step is to bead blast the barrel and action in preparation for the new finish. I then took the barreled action outside and thoroughly cleaned the bead-blasted surface with aerosol brake cleaner. Traditional blue looks lovely, of course, and Parkerizing, while sturdy, is difficult to apply in a home-shop setting. I wanted to try a different type of surface finish.

What about painting the metal instead, I wondered? Brownells offers a baked-epoxy lacquer in a variety of colors, and I opted for the matte black. For best results, gently warm the metal (a hair dryer works well) and spray a thin, even coat. Warm it again to rapidly dry the paint and spray a second coat, repeating until the metal is well covered. Three coats will usually do

SPORTERIZING THE MOSIN-NAGANT CONTINUED

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Mosin-Nagant Bolt-Action Rifle

(Model 91/30, 1891, 1938 Carbine, Chinese Type 53, and Finnish Variants) 21 Magazine Follower 22 Follower Hinge Pin, Upper 10 Ejector Screw 23A Follower-Spring Assembly (incl.

11 Ejector Spring follower spring, follower lifter, and 11A Ejector upper mag follower spring)* 12 Ejector and Spring, One-Piece Style* 23B Follower Lifter (contains no spring) 1A Bolt Head with Extractor 13 Trigger 23C Magazine Follower Spring, Upper 1B Bolt Head without Extractor* 14 Trigger Pin 24 Follower Hinge Pin, Lower 2 Extractor 15 Trigger Spring and Bolt Stop 25

Magazine Floorplate 3 Bolt Connector and Guide Bar 16 Bolt Stop Screw 26 Magazine Follower Spring, Lower 4 Firing Pin 17 Screw (guard, front) 27 Spring Screw, Lower 5 Firing Pin Spring 18 Floorplate Latch Screw 28 Follower Assembly (incl. magazine 6A Bolt Body with Straight Handle 19 Floorplate Latch follower, upper follower hinge pin, 6B Bolt Body with Curved Handle* 20A Trigger Guard and Magazine, follower lifter spring, upper 7 Cocking Piece Stripped magazine follower spring) 8 Bolt Assembly 20B Trigger Guard and Magazine, 9 Guard Tang Screw, Rear Complete* *Not Shown

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the job. Let it dry for an hour and bake it for 30 minutes at 300 degrees, but be sure your wife and kids are away for the afternoon. The baking produces some fumes, but doesn't seem to leave any lingering odor. The rifle's new finish will be pretty tough and impervious to most cleaners and solvents. And if the surface is ever damaged, you merely clean the spot with sandpaper and alcohol, spray some lacquer on, bake, and you're done. The trigger, like most other parts on this rifle, needs attention.

By using a honing stone, the two rubbing surfaces can be smoothed enough to produce a much nicer trigger pull. Be sure to maintain the original sear and trigger angles and remove no more material than necessary to clean up the surfaces. Adding some molybdenum grease to the stoned spots will help a lot also. More can be done, and for that I turned to revolver technology.

If you've ever looked inside a medium or large-frame Smith & Wesson or a Colt Single Action Army (a.k.a., the Peacemaker), the main spring is easy to spot. If a lighter spring is not available for the Colt, many gunsmiths will remove material from its center section, leaving it with a wasp-wasted configuration (much like an old Coke bottle). This lightens the spring, but requires a deft touch to avoid taking away too much metal and making the spring too weak.

A simpler method is to adjust the tension on the strain screw on the Smith & Wesson. This allows a lighter trigger pull while still maintaining sufficient force to pop the primer. The same thing can be done on the

Mosin-Nagant rifle by loosening the sear screw in quarter-turn increments until the trigger is light enough. While a trigger gauge is nice, more important is how it feels to the shooter. It's possible to get a relatively consistent and safe 4-pound trigger pull.

After determining how far to back out the sear screw, secure it in place with some locking compound and test your work. With the rifle completely assembled, vigorously work the bolt back and forth to see if your settings are too light. If the cocking piece goes forward even once, the sear screw needs to be tightened. If your work passes the first exam, cycle the bolt forward and leave it in the cocked position.

Take a rubber mallet or any non-marring hammer and tap numerous times on a variety of spots on the bolt and action. You can also try dropping the butt of the rifle onto a padded hard surface. If all this jarring fails to cause it to go off, congratulations, the trigger should be safe. A simpler (although more costly) way to gain a smoother trigger pull is to install a Huber modified trigger assembly (available from Brownells or www.huberconcepts.com).

Huber's website details the modification, and it really makes a big improvement. To the Range I dug an inexpensive 6-power scope out of my stash of spares. After finding some 7.62x54R target ammo (there is really such a thing, this caliber has been used quite successfully in international 300 meter competition), I went to the range to see the results of my efforts. The old "toma-to stake" (as my Rhode Island friends call it) would shoot 1-1/8 inch groups all day long.

That sort of accuracy rivals a lot of off-the-shelf rifles being made with 21st-century technology. Conclusions Fast-forward several months to a cold November morning in Central Missouri. I had been assured by my hunting buddy that I'd at least see some deer and should have a good chance to take one. After lots of walking and dragging various parts of my anatomy over countless pieces of barbed wire, I was getting discouraged. We'd worked our way into a deep ravine and I wasn't looking forward to climbing out.

There was more of that blasted barbed wire to cross, but I spotted an even lower area where the wire only reached about five feet above the ground. I crossed under and saw a small pond and, just this side of the pond, was a buck! I'm not sure who was more surprised, me or the buck. It took what seemed to be an eternity for his image to register on my brain and for my arms to react and raise the rifle. He didn't move but I finally did, dropping him in his tracks.

He was a nice eight-pointer, one of the larger ones anyone in the hunting group had seen. The old Mosin-Nagant has since been retired to range-use-only, as I never liked the difficult-to-use safety. (When hunting, I carried it with an empty chamber.) While preparing for the hunt, I sighted the rifle to shoot 2 inches high at 100 yards, which should have enabled me to hit out to 150 to 200 yards. But my trophy buck was taken at 15 feet—that's right, 15 feet! I'd rather be lucky than good. ■

RIFLES

Reader Forum

BY AMERICAN GUNSMITH EDITORS APRIL 2005

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Stevens Favorite Drawings? I have a question regarding the Stevens Favorite 1915 .22 rifle. The extractor plunger works against the breach-block screw to hold the lever up in place when the gun is in battery. As the lever is lowered to open the action, it cams against the breach-block screw to force back the extractor. I cannot get the action to work properly. If the extractor works, the lever keeps falling down when the action is closed.

It would seem to me that there is a certain pair of angles that need to be incorporated on the end of the extractor plunger to make it work properly. Do you have a diagram of those angles? Or can you just tell me how in the heck to make them work right? I'm stumped—and I hate it when this happens. (I'm looking at the diagram on page 2176 of Jack First's catalog, volume II).

Also, since there are a bunch of these older rifles out there, do you know of anyone who is making replacement parts such as extractors for them? Stu The best sectional diagram of the Stevens action we've seen appears in *Single Shot Rifles and Actions* by Frank de Haas. It should be available from DBI books, a current imprint of Krause Publishing. Replacement parts sources could be provided by Rudi Prusok, who is the archivist for the American Single Shot Rifle Association.

You can contact Rudi at or at Part Sources I'm having difficulties finding parts for a Star, Model 31P in .40 S&W as well as for a Virginian Dragoon, in .44 Rem. Mag. Can you suggest places where these parts might be found? Thank you. Grant A. You should try Jack First and get a copy of Brownells Parts Source List for out-of-production firearms. The Dragoon would be easier to

chase down if we knew the importer, but Dixie Gun Works may be able to help you out.

Malfunctioning SAR-3 A client brought in a SAR-3 that jams with the bolt back about every third round. The bolt moves to the rear and is then rotated clockwise (looking toward the muzzle) until the left locking lug is fully exposed above the left receiver rail. The recoil spring then jams the piston/bolt carrier forward into the hammer. Any suggestions? J. R. The problem is due in part to the short bolt head of the SAR-3.

It has a tendency to be pushed up by the hammer, because it receives little or no support from the slide rail. A possible solution would be to tighten the slide rail by squeezing the receiver. The best solution would be to ship the gun to Fairfax Firearm Repairs (Fairfield, VT 05455). This shop has had a great deal of experience with this Rumanian rifle, and probably won't hit the pocketbook too hard for the fix. Browning Auto-5 Cycling I have a Browning A-5 that wouldn't eject after firing.

I replaced the wear rings and spring, and it now ejects properly, but it doesn't recock the hammer. The second round won't fire. I can eject by hand and reload another round out of the magazine and it will shoot, eject, and reload, but won't fire. Can you help? George First, are the friction rings properly installed for the loads being used? Even though they no longer make the gun, if you are unsure about the friction rings, Browning can provide an Auto-5 owner's manual describing the correct setup.

Second, is it possible the hammer is not releasing from the safety notch upon recoil? This can be caused by burrs in the safety

notches on the hammer or trigger, a weak or broken trigger spring, or a loose mainspring screw. Carry Colt I have a question: I own and love five Colt and clone M1911 .45 ACPs. I'm looking for a lighter, smaller version to carry, and want to stay as close as possible to the original in trigger/sear/hammer parts and basic strip-down and the simple safety that I'm familiar with.

What are your top three suggestions to buy, new or used? We know Springfield, Inc., makes a polymer-frame model called the XD, but we aren't certain it is offered in other than DA only.

Kimber might also make a polymer-frame M1911-style, but the Kimber isn't exactly the same mechanically as the customary Colt or Colt clone, nor are the Para Ordnance M1911-style pistols. (There will be articles on both variations in future issues.) If you want a dead ringer for the M1911, only smaller, we suggest you check out the Officer's Models. Colt Sharps Takedown I have a problem with a Colt Sharps single-shot rifle action that a customer brought me after having removed the lever pin.

Now there's no way to remove either the lever or the breechblock. It's as though something is broken or jammed inside where I can't get at it, or perhaps I'm not aware of some esoteric disassembly procedure that the Colt company shared only with initiated gunsmiths. Can you offer any suggestions? Rudi Our research, though not performed in great depth, turned up nothing on a Colt variation of "Old Reliable." An article on the Sharps appeared in the February 1997 issue, a reprint of

READER FORUM CONTINUED

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which may still be available. In any case, you can still get into the gun by partially backing out both sideplate screws and tapping their heads to dislodge the opposite sideplate. After that, remove the stock to expose the back end of the action. Still present on the gun should be a lever-spring screw. Backing it off relieves tension on the lever. Red Label Problem I have a Ruger Red Label in my shop. My customer has been having problems with it not firing.

I found that the inertia block and sear-selector assembly was hanging back and not engaging the sears. The spring is not broken. I noticed that the pin on the safety thumb-piece is dragging on the inside of the ears on the sear selector when it is pushed sideways to select a barrel. Is that normal? It seems to me that the dragging would impede the movement of the sear selector, but is that how it is meant to work? I'm not sure what purpose the inertia block serves on this gun.

Can you tell me how this assembly and all of the associated parts are intended to operate? Thank you. Steve Starting with the latter part of your query: The inertia block in O/U single-trigger shotguns is a major safety measure. It eliminates simultaneous discharge of both barrels when recoil causes an inadvertent second pull of the trigger. This unintentional "double tap" has to be either wasted or blocked in some manner.

In one well-known O/U, the trigger is blocked against the second, involuntary pull, then the block is swung out of the way by a spring. The next trigger pull, being a deliberate one, fires the second barrel. Due to its position in the Red Label action, we believe the block reacts with the sears rather than the trigger. In a phone

call we made, Ruger would neither confirm nor deny this or your diagnosis. "There are so many possibilities we will not advise corrective measures by phone.

Even here, there are few people qualified to work with the Red Label. The gun should be sent to us in Newport," we were told. You may have to end up doing just that, but first you might want to check out the inertia block for a weak or damaged part in its return system. If you discover something, a replacement might resolve the problem. That is, assuming the part isn't restricted. Doubling SKS I'm the owner of a Chinese-made SKS rifle with a 16-inch barrel. I bought it used, but have had no problems until now.

I have fired about 200 rounds through it. Recently, it began to double as it approached the last few rounds in the magazine. What can cause this, and is there a cure? I also read that the SKS is prone to slam fire.

I would also like to know what can cause a slam fire and if there is a correction. (I've not had this problem yet.) Lloyd McFarland Big Bear City, California Doubling with the SKS can be caused by excessive lubrication in the sear grooves or on the triggerguard guide lugs; dirt in the firing mechanism; or a damaged sear, hammer notches, or disconnect. Due to the questionable quality of the metal used by our "friends" on the far side of Taiwan, the latter parts have been known to wear easily.

Before replacing all of them, clean the gun of any excess lubrication. The slam fire can occur as a result of an overlength firing pin and a properly seated primer, or a normally protruding firing pin and a high primer. This is true of any rifle—not just the SKS—and high primers are present more frequently, as you would expect, with reloads.

MAS Slamfire I recently purchased a French MAS 45/56 rifle in 7.5x54 mm. I took the rifle to the range to try it out. Concerned about the minimum range the sights allowed, I posted a target at 50 yards. Using a bench rest and directing the muzzle down range, I inserted a single cartridge in the magazine and released the locked back bolt. The rifle fired on bolt closure.

Surprise would be an understatement. I searched for the fired cartridge case—I wanted very much to see that case—but could not find it among the many on the ground. Examining the rifle, I could find no evidence of damage; and as no gas had escaped to the rear, I felt reasonably safe to try again. The same thing happened again—with the exception of finding the fired cartridge case. The case was scarred by the bolt extractor but still usable.

The primer had a very light firing-pin mark surrounded by a circle that appeared slightly deeper. I took the rifle home and disassembled it. I could find nothing wrong. Thinking I might have a worn or broken sear, I released the bolt several times on an empty chamber. The rifle remained cocked on each occasion.

The circle mark around the firing pin appeared to match the size of the firing-pin hole in the bolt face, but the light firing-pin mark on the fired case's primer did not suggest the hammer had followed the bolt into the battery position. I therefore do not believe the fault rests with the sear or hammer. These same cartridges, made by Manacles De Arms Limeira, were fired the same day in a MAS 36/51 bolt-action rifle. They proved accurate, and the fired cases showed no sign of excessive pressure.

NOT BEING A GUNSMITH, THE ONLY THING I COULD THINK OF WAS AHEAD

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(continued from previous page) space problem. During cleaning, I discovered the bolt had a different serial number than the rest of the rifle. The rifle has obviously been reconditioned, and I suppose an error could have occurred. I am hoping your staff of experienced sages can either confirm my suspicion or enlighten me as to the real cause of this phenomenon. On a related matter: Do you have a list of competent gunsmiths that I could consult in my area (St. Louis, Missouri)?

Thank you for your kind attention to my problem. Gregory G. The firing-pin system of the 45/56 is free floating. Due to the high position of primer pockets on non-military ammunition, slam fires can and do occur. The problem can be resolved in some cases by adjusting firing-pin protrusion to .045 inch minimum and .055 max. If you're having problems after the adjustment and a switch to military ammo, we suggest you contact He's had a ton of experience with the MAS, among others. As far as a St.

Louis gunsmith is concerned, we suggest you call Brownells and see if they have a referral for you. Comanche Revolver I have a .357-caliber Comanche 111 revolver that the customer wants to have Parkerized. I've done several pistols in the past, but I can't figure out how to remove the cylinder from the yoke. Chris Conlon KRC The current importer faxed usa schematic of the revolver. It appears to be an S&W clone, with a few differences.

To remove the cylinder and yoke completely, back out the screw on the front right side of the frame. Swing out the cylinder, move it and the crane out toward the muzzle. Now use two pairs of pliers with padded jaws. Grip the ejector rod with one pair and the ejector knob with the other. Loosen by turning counterclockwise. Finish unscrewing the ejector rod and pull it from the cylinder. Depress the plunger at the end of the crane, then drift out its cross pin, and remove the crane from the front end of the cylinder.

We recommend you order in a complete set (five volumes) of Gun Digests' series on disassembly/reassembly of firearms. There's one each for rimfire rifles, center-fire rifles, shotguns, revolvers, and semi-autos. Remington Action I have a Remington Model 31 in my shop for repair. When cycling the action, the action-bar lock is not releasing from the slide after firing.

In other words, when I cycle the action (without ammo) the gun goes into battery just fine, but when I dry fire it I have to depress the action-bar lock to recycle the action. The same results occur when the gun is loaded and test fired; the action-bar lock has to be depressed to cycle the next round. Isn't the trigger supposed to cam the action-bar lock to allow recycling the action without depressing the action-bar lock? What are your suggestions for repair?

For whatever it's worth, the serial # is in the 550,000 range, meaning the gun was manufactured between 1941 and 1949, prior to replacement by the 870. I know that changes were made to the action-bar lock in this last production series of the Model 31, but I don't know what they were. Your thoughts would be appreciated. Jim Diagnosing problems with a 60-year-old gun can be pure guesswork without examining the gun.

In concert with our contacts at Remington, however, we suspect a weak or otherwise damaged action-bar lock spring. It may be very difficult to find one, but we suggest you start your search by calling Pennsylvania Gun Parts at Win Barrel Removal I would like to know how to remove the barrel on the Winchester Model 190 .22-caliber rifle. Thank you for your assistance. Winfield As you may know, this rifle has been out of production since 1980.

The barrel screws into the receiver and the detail-stripped receiver must be supported with a hardwood block to prevent deformation under the pressure to be exerted. The barrel is secured in a barrel vise and the receiver unscrewed from the barrel. Brownells offers a receiver wrench available with jaw blanks you can form to fit your receiver. Wrench jaws can also be fabricated from wood, brass, or lead. Whatever you use, support of the receiver is a high-priority concern in barrel removal.

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