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EDITION

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AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

07

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

WORKING HOPKINS & ALLEN REVOLVERS, PART 1

CMC TRIGGERS BARRELS • THE AR-7 • ONLINE GUN AUCTIONS • MARLIN 1895 MAGAZINE

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 199

DIGITAL ARCHIVE EDITION

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PEOPLE & COMPANIES

CMC Triggers Barrels

BY AMERICAN GUNSMITH EDITORS JULY 2020

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CMC Triggers Corp. has released a new line of AR-15 barrels. The company added Match Precision Glock barrels to their line in 2018. Since then, CMC had the objective of developing a series of high-quality AR Barrels that complement the rest of their AR after-market products.

With input received from military, law enforcement, and civilian shooters incorporated into their engineering, CMC barrels are made from 4150 Chrome Moly Vanadium and coated in H&M Blacknitride+ (Ferritic Nitrocarburizing) for increased wear resistance. Every CMC barrel is instrument-inspected for absolute straightness and air gauged for uniformity.

The button-rifled land and groove tolerance from breech to muzzle varies less than 0.0001" for best concentricity, chambered in .223 Wylde to feed both .223 Remington and 5.56 NATO, and a muzzle thread of 1/2-28 TPI. A choice of gas system lengths can be had along with M4 feed ramps for reliability in 7.5", 10.5", and 16.25" lengths with a SO-COM barrel profile, 0.750" gas block diameter, and 1.13" gas block journal length.

A standard 1:7" twist rate, 1/2"x28 thread pattern fits typical AR-15 muzzle devices, 11-degree match crown for accuracy, and a bottom dimple for easy install and alignment of gas blocks finishes the design. CMC's barrels are complimented by their Low Profile AR-15 0.750 Nitride Finish Gas Block, AR-15/10 Nitride Coated Gas Tubes, and Enhanced Bolt Carrier Groups. As the company name implies, CMC is known for their triggers.

The Single Stage AR-15 and AR-10 units are configured for Small Pin, Large Pin, and the M&P 15/22. Multiple pull weights can be set from 3.5 to 6.5 pounds with a Signature Flat or Curved Bow trigger. CMC's Two Stage units are match-grade with the same pin and trigger bow options and weight ranges of 1&3, 2&2, 2&3, 2&4, and 2&5 pounds of pull for each respective stage. Like all CMC Triggers Corp. products, CMC Barrels include the company's Satisfaction Guarantee and Lifetime Warranty.

For more information on the CMC Barrels or other products offered by CMC, contact CMCTriggers.com or call

PEOPLE & COMPANIES

Working Hopkins & Allen Revolvers, Part 1

A four-part series examining the once prolifically-produced Hopkins & Allen revolvers that are making a surprising comeback among collectors and cowboy action shooters.

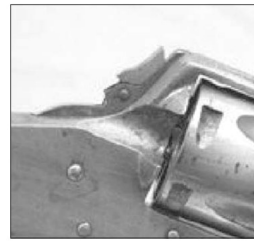
BY BRIAN R. SMITH JULY 2020

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Right: Spur trigger H&A models are represented here by the Dictator in .32 RF. It is a bare bones singleaction revolver with a nickelplated cast iron frame, walnut grips, and a five-shot cylinder.

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Below left: Example of the H&A folding hammer spur available as an option on some models to facilitate pocket carry and draw without the hammer spur catching on clothing. Below center: The paddle-shaped cylinder axis pin release is a telltale for H&A-made revolvers of the Forehand & Wadsworth design. Below right: Demounting the cylinder is easy. The cylinder axis pin is left-hand threaded and features a thin slot at its forward end. Remove the pin and the cylinder literally falls out to the right; there's no loading gate.

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The current level of interest among firearms collectors in old, nickel-plated pocket revolvers of the 1880s through post-WWI is amazing. Online auctions and sale listings show these .22s, .32s, and .38s with asking prices of as much as \$250 and higher, depending on the manufacturer. Hopkins & Allen was one of the most prolific manufacturers of inexpensive and often nickel plated pocket revolvers firing metallic black powder cartridges.

At their peak, H&A produced thousands of handguns annually under about 30 "house" trade names, in addition for other retailers

under their private labels. Below center: The paddle-shaped cylinder axis pin release is a telltale for H&A-made revolvers of the Forehand & Wadsworth design. The cylinder axis pin is left-hand threaded and features a thin slot at its forward end. Remove the pin and the cylinder literally falls out to the right; there's no loading gate. 32 RF.

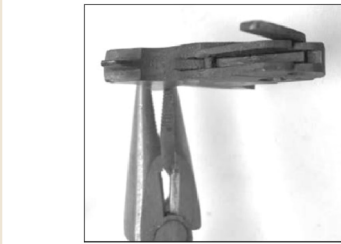
It is a bare bones singleaction revolver with a nickelplated cast iron frame, walnut grips, and a five-shot cylinder. This series of four articles outlines design features and disassembly procedures for four basic Hopkins & Allen revolvers types: the spur-trigger single-

action solid frame; double action solid frame; top break, hinged, self-extracting revolvers; and the top break, hinged, self-extracting Safety Police with its unique cam-operated hammer.

This first article will cover background on the H&A spur trigger models. Compound-named New England firearm manufacturers were once plentiful—Smith & Wesson, Harrington & Richardson, Merwin

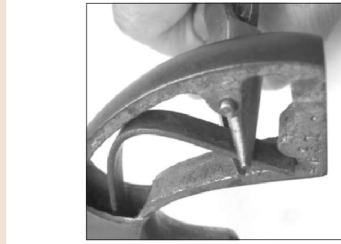
WORKING HOPKINS & ALLEN REVOLVERS, PART 1 CONTINUED

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Above left: The mainspring is removed by grasping with pliers, shifting the end to the front of the grip, then to one side and out of the frame. Make sure the hammer is fully forward. Above center: Remove the hammer by first unscrewing the hammer axis screw, then withdrawing the hammer upward and forward so that the hammer's "tail" clears the rear of the hammer slot in the frame. Above right: The business end of the hammer shows the firing pin at left, the hand's spring in the slot held fast by a cross pin, and the hand at the upper right. Disassembly is not recommended unless the hand spring requires replacement.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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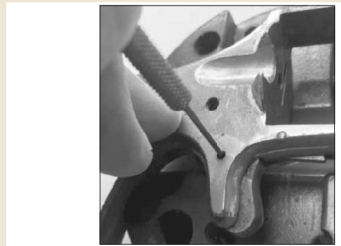
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Below left: Drive out the trigger axis pin to remove the trigger and trigger reset V-spring. Below right: Trigger and trigger reset spring shown in exploded view in proper relation. Note trigger axis pin remains in the left side of the frame for ease of reassembly.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

Make sure the hammer is fully forward. Above center: Remove the hammer by first unscrewing the hammer axis screw, then withdrawing the hammer upward and forward so that the hammer's "tail" clears the rear of the hammer slot in the frame. Disassembly is not recommended unless the hand spring requires replacement. & Hulbert, Hopkins & Allen, Forehand & Wadsworth, etc. In doing research for this article I discovered that three of those mentioned above were connected.

Merwin & Hulbert was a distributor of Hopkins & Allen firearms and H&A bought Merwin & Hulbert and made and marketed the handguns so named. These were of very high quality of materials and workmanship and were effective commercial rivals of contemporary Smith & Wesson and Colt revolvers. Current market prices reflect the quality and relative scarcity of examples of the Merwin & Hulbert brand.

The other business connection was that Hopkins & Allen purchased Forehand & Wadsworth and not only manufactured F&W revolvers after the purchase, but also incorporated F&W features into H&A handguns. Charles W. and Samuel S. Hopkins together with Charles Allen founded Hopkins & Allen Firearms Co. in 1867 in Norwich, Connecticut with the purchase of the Bacon Mfg. Co. building. In 1878 they relocated to anew, much larger facility at Willow and Franklin Streets in Norwich.

On February 4, 1900, a devastating fire completely consumed the factory. Hopkins & Allen purchased Forehand & Wadsworth immediately following the fire, with F&W revolvers being made in the F&W factory under both the F&W and H&A marques. Four years and considerable debt later, Hopkins & Allen was producing as many as 188 models of handguns, rifles, and shotguns.

Break top models dominated H&A production output between 1906 and 1914; models with solid hammers, folding hammers, and enclosed hammers (hammerless) were offered. By 1914, Hopkins & Allen was insolvent, taken over by majority shareholders, declared bankruptcy, and ceased production of new firearms. The company assembled what guns they could from parts on hand, with their dealer network selling the last such guns in 1917.

During its 50-year history, Hopkins & Allen was responsible for dozens of patents for firearm innovations, with 17 that are particularly noteworthy. These included several variations on swing-out cylinders, hinged hammer, hinged breech block, a Colt Single Action Army-style case extractor mounted on cylinder axis pin, adjustable set

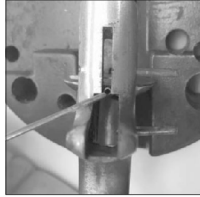
WORKING HOPKINS & ALLEN REVOLVERS, PART 1 CONTINUED

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Above left: The cylinder stop (bolt) is best removed from the frame using pliers or tweezers. Note that the cylinder stop coil spring is located in a blind recess in the frame above the cylinder stop. Above right: The punch points to the cylinder stop coil spring in its recess. Be aware of it lest it fall out after removal of the cylinder stop.

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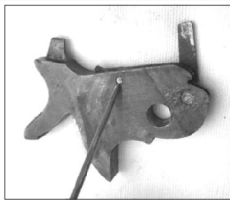
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ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



Below left: Exploded view, clockwise from 12 o'clock. Cylinder, hammer assembly, grips, mainspring, grip/frame, hammer axis screw, trigger and trigger reset V-spring, cylinder stop with spring fitted, and cylinder axis pin. About as simple as a revolver can get. Below center: Close up showing where the upper end of the mainspring seats against the hammer. Below right: Punch points to the leaf spring which applies force to the hand. It drives out fairly readily but locking tweezers are recommended to hold it for reinstallation. It's best not to remove the pin and hand spring unless absolutely necessary.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

Be aware of it lest it fall out after removal of the cylinder stop. trigger, hammerless safety catch, frame-mounted firing pin, and a cam-mounted hammer that withdrew the hammer into the recoil shield and away from contact with the frame mounted firing pin, similar to how a transfer bar blocks hammer impact until withdrawn by the lockwork during firing. Early Hopkins & Allen revolvers were solid framed, spur-triggered and single-action in design.

In appearance they're not unlike the Cylinder, hammer assembly, grips, mainspring, grip/frame, hammer axis screw, trigger and trigger reset V-spring, cylinder stop with spring fitted, and cylinder axis pin. About as simple as a revolver can get. Below center: Close up showing where the upper end of the mainspring seats against the hammer. It drives out fairly readily but locking tweezers are recommended to hold it for reinstallation.

It's best not to remove the pin and hand spring unless absolutely necessary. currently-produced small North American Arms .22 and .22 Magnum derringers but larger and usually nickel plated. Nickel plating was the standard finish and the preference of manufacturers of such handguns because the majority of the revolvers were made of cast iron and for black powder propellant cartridges.

Cast iron being porous did not lend itself to being chemically blued and the chemicals used in the bluing process would deteriorate blued finishes rapidly unless the cast iron surfaces were highly polished or porosity sealed using sodium silicate ("water glass"). The nickel plating process of the day was more amenable to being applied to unsealed cast iron without deterioration. H&A advertisements of the era showed an extra cost of \$0.50 for blued finish.

The early "birds head" gripped, spur trigger, single-action Hopkins & Allen revolvers were made in two basic frame sizes and chambered in .22

Rimfire, .32 Rimfire, .32 Centerfire, .38 Short Colt, .38 S&W, and even .38-40. Many of those chamberings carried over when H&A started producing solid-framed, double action revolvers with triggers protected by trigger guards.

Like their older spur-trigger relatives, the double action H&A revolvers initially did not offer extractors, requiring the empty cases to be pulled or pushed out manually. A later H&A patent described a spring-loaded extractor lever, similar to that on a Colt SAA, that was mounted off the cylinder axis pin and offered on large frame H&A revolvers.

H&A included on many models a spring-loaded lock lever that retained the cylinder axis pin, permitting quick removal of the cylinder full of empties, and facilitating their ejection using the cylinder axis pin. Pressing the cylinder axis pin retaining lever allowed quick removal of the cylinder axis pin/ extractor rod assembly as well as

WORKING HOPKINS & ALLEN REVOLVERS, PART 1 CONTINUED

ORIGINAL PAGE 6



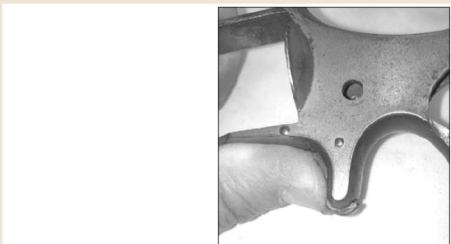
Above left: Note the sand texture on the inside surface of the rear grip strap and serial number stamped in the frame at the bottom. The seat for the lower end of the mainspring is above the first serial number digit. Above right: The sear edge on the upper end of the hammer. This is evidence of why these revolvers are not robust and should not be fired—the sear contact point is unevenly worn and has a fragile “wire edge”.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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Below left: Force being applied by the thumb to hold the trigger in its proper location and restraining the trigger reset V-spring for reinsertion of the trigger axis pin (shown driven in place). Below right: The hammer is reinserted from the top of the frame; the act of reinsertion pushes back the hand until it aligns with the hand slot, through which it then pops out as shown. Wiggling the hammer into place for reinsertion of the hammer axis pin withdraws the hand back into its resting position in the frame.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

The seat for the lower end of the mainspring is above the first serial number digit. This is evidence of why these revolvers are not robust and should not be fired—the sear contact point is unevenly worn and has a fragile “wire edge”. the cylinder itself on large frame models equipped with the optional extractor rod.

Many solid frame models featured a gateless loading groove in the right side of the receiver for purposes of loading cartridges and perhaps removing empties as an alternative to removal of the cylinder. The disadvantage of this loading groove is that unfired cartridge. Wiggling the hammer into place for reinsertion of the hammer axis pin withdraws the hand back into its resting position in the frame. tridges could fall out if the cylinder was rotated with the handgun held in a muzzle up orientation.

At some point, H&A began fitting loading gates to some of their small, medium, and large solid frame double action revolvers to ensure retention of cartridges. There are examples with loading gates machined with a

thumbnail groove not unlike that found on a pocketknife blade with later production models with loading gates exhibiting a small round or cylindrical knob as a pull point to facilitate opening.

With the advent of the later Webley-like hinge-framed top break Hopkins & Allen variants and the improved Triple-Action Safety Police top break revolvers, the loading gate issue became a moot point. Undoing a catch at the rear of the top strap on atop break revolver allowed the barrel to be rotated downward and the rear of the cylinder pointing up, with an extractor star operated by a cam lever in the frame/barrel hinge.

Rotating the barrel open and downward smartly resulted in simultaneous ejection of all five, six, or seven (in the case of a .22 revolver) cartridges or empty cases, permitting more rapid reloading. This was a huge improvement over the solid frame single and double action revolvers and the feature remained in production until H&A ceased operations in 1916.

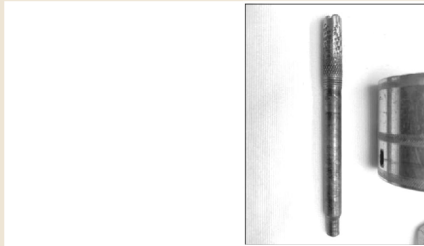
Hopkins & Allen was fond of the model designation XL for their solid frame revolvers, apparently a phonetic play on letters of the word “excel.” A number H&A-marked guns carried the XL imprint during H&A’s production history.

In addition to the H&A XL-marked revolvers, the following “house” trade/model names were just some used on spur trigger and solid frame revolvers: Czar, Tramp’s Terror, Excelsior, Range Model, Cap’n Jack, Essex, Scott, Ranger 22 Long, Ranger #2, Hinsdale, Mountain Eagle, The Challenge, Bull Dog, Life Guard, Old Hickory, Safety Police, Towers Police, Buckeye, Acme, Wolverine, Morley, and Dictator.

The last H&A revolvers were in the distributor pipeline and sold as late as 1917, a few years after the company’s bankruptcy and liquidation. This was well after the introduction of smokeless powder but black power cartridges were still manufactured and widely

WORKING HOPKINS & ALLEN REVOLVERS, PART 1 CONTINUED

ORIGINAL PAGE 7



Left: Cylinder axis pin threads are left-hand and quite shallow. They are visible just to the right of the serrations, directly under the left end of the cylinder.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

available when the sun set on H&A. Because of the cast iron frames of these revolvers it is strongly recommended that they NOT be fired, especially with smokeless powder cartridges. The reasons for this are that metallurgy and manufacturing process control 140 years ago was nothing near what it is today. Additionally, no one knows what use any of the existing H&A handguns have been put through.

Some may have been purchased and never fired, while others may have changed hands a number of times and have seen a steady diet of a few hundred rounds of smokeless .38 S&W cartridges. There's an old story told about Hopkins & Allen revolvers alluding to their superior strength.

According to their 1910 catalog, a Hopkins & Allen Triple Action Safety Police revolver was fired successfully 923 times in government testing. This sounds impressive but "923" is an odd number of cartridges to be fired. Did the 924th round blow up the gun? The takeaway: Collectors of H&A and other pre-WWI pocket pistols should enjoy them for the historical pieces they are, leaving them unfired.

It is recommended that one should instead shoot the more modern handguns in one's respective collection. For the reader inter-

ested in more about Hopkins & Allen, Cornell Publications has a number of reproduced catalogs and collector references with material about the founders, the company, and numerous models of revolvers, rifles, and shotguns. Visit [Cornell Pubs. com/old-guns/historic-hopkinsand-allen.php](http://CornellPubs.com/old-guns/historic-hopkinsand-allen.php).

The remainder of this series of articles describes the takedown of four Hopkins & Allen models that generally represent the basic configurations manufactured. These include the Dictator, representing spur trigger models; the XL, standing in for the solid frame extractorless variants; an unnamed H&A top break automatic extracting hinged frame example; and a top break automatic ejecting hinged frame Triple Action Safety Police revolver, the pinnacle of H&A revolver design, Merwin and Hulbert revolvers aside.

There were many sub-variants in terms of barrel length, markings, grip styles, external hammer and hammerless, grip materials, model names, etc., but for the most part the majority of H&A revolver production falls into these four categories. Everything else are variations on these themes. Excluded from this series are the revolvers made between 1900 and 1906 marked Hopkins & Allen but are essentially Forehand & Wadsworth designs.



Left: Lower end of mainspring being placed into its seat in the frame using pliers.

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These are all solid-frame extractor-less revolvers featuring a paddle-shaped cylinder axis pin release projecting out the front of the frame directly under the cylinder axis pin. Also excluded from these articles are the so-called hammerless Hopkins & Allen revolvers which incorporated an internal swinging hammer in a humpbacked closed frame. Examples of these two types of H&A revolvers were not readily available to this author for review. Note also that license has been taken with terminology of H&A handgun parts.

The parts drawings in reproduced literature utilize ambiguous factory terms such as "cam carry up" for the springloaded actuating catch inside the extractor cam of Triple Action Safety Police revolvers, or some terms being very generic, e.g., "lever" or "spring". More descriptive common revolver parts terms have been used instead. Many American Gunsmith articles incorporate exploded diagrams and parts legends.

This series of articles does not because of the scarcity of reproducible highfidelity images of H&A exploded views. Instead, photos are provided of exploded layouts of the parts of the four types of H&A revolvers examined with the photo captions listing the parts shown. Spur Trigger Dictator Starting with the earliest type of H&A revolver, the Dictator is an example of a nickel-plated, five-shot, spur trigger, solid frame single

WORKING HOPKINS & ALLEN REVOLVERS, PART 1 CONTINUED

ORIGINAL PAGE 8



Above left: This H&A Dictator example has the serial number stamped into the barrel underside, the rear face of the cylinder, and the bottom left of the grip strap. Above right: The Dictator was but one of several model names that H&A applied to its spur trigger models.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

action revolver chambered in .32 Rimfire and wearing walnut grips and featuring a cartridge loading groove in the right side of the frame and the ubiquitous nickel plating. To disassemble, first remove the cylinder axis pin using a properly-fitted slotted screwdriver in the end of the axis pin and turning clockwise as the pin is left threaded. Withdraw the cylinder from the right side of the frame. Remove the grip panels by removing the grip screw.

Hint: Back out the screw until you feel it click as the starts of the threads pass each other. Then, using the screwdriver, push in on the screw head to pop the right grip panel loose. Once the right grip panel is off, the left panel can be pushed off with a finger. Remove the mainspring using a pair of needle-nose pliers gripping the spring at the bottom where it seats in the frame. Pull the end of the spring away from its seat and sideways out of the frame.

The upper end of the spring is rounded and contacts a notch-like seat in the rear of the hammer. This seat is obvious in that it is shiny from contact with the spring tip. Remove the hammer by first unscrewing the hammer pivot screw and withdrawing it. The hammer position will be shifted slightly when the screw is removed due to spring force from the hand, which is attached to the lower left front of the hammer.

Move the hammer forward in its slot as if the firing pin would contact the case rim in order for the “tail” of the hammer to clear the frame. Pull upward and withdraw the

hammer from the frame. If the hand spring is intact, the hand will remain attached to the hammer; just be mindful of the hand’s position as the hammer is withdrawn from its slot and have a jeweler’s screwdriver ready to assist with repositioning the hammer as needed.

Next, drive out the trigger pin from right to left using an appropriately-sized punch and light hammer, supporting the frame on a bench block. I usually drive the pins out partially, just enough to remove the pinned component. This keeps the pins where they belong and prevents their loss or confusion as to which pin goes where. Finally, drive out the cylinder stop pin from right to left. Using tweezers or small needle-nose pliers, withdraw the cylinder stop from the frame.

Note that the cylinder stop coil spring is in a recess in the frame and seats in a notch at the rear of the cylinder stop. In this example, the spring was securely seated but in other H&A spur trigger handguns the spring may pop out with removal of the cylinder stop; just beware so that the spring doesn’t go off on a self-initiated adventure into the far reaches of your bench or shop.

The Dictator is now stripped down and ready for detailed cleaning and lubrication or replacement of one or more springs or other components. Note that parts are not widely available. Even if in stock at a firearm parts vendor, these parts were largely hand fitted during original factory assembly. You may well have to fabricate parts and prepare springs from a Wolff spring assortment, so take the cost of that



Above left: This H&A Dictator example has the serial number stamped into the barrel underside, the rear face of the cylinder, and the bottom left of the grip strap. Above right: The Dictator was but one of several model names that H&A applied to its spur trigger models.

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into consideration when quoting the work to make Great Granddad’s pistol functional again.

As is usually the case, assembly is in reverse order but take care to ensure that springs are seated properly and the trigger is precisely in place to facilitate installation of the trigger axis pin. The hand needs to be held back against the hammer for replacement into the frame and the hammer needs to be held forward a bit for the hammer’s “tail” to clear the frame at the rear of the hammer slot.

Reinstalling the mainspring is easy; just make sure the top of the spring is properly seated in the underside of the hammer. Bending the bottom of the spring forward using pliers, slide it into the frame and against its lower seat. Reinstall the grip panels. It bears repeating that these revolvers all had cast iron frames, have wide tolerances, poor metallurgical process control, and individual examples have more or less wear than others.

Hopkins & Allen revolvers were designed and manufactured to use black power cartridges. Despite the availability of modern low-power smokeless loads, it is recommended that H&A revolvers are not to be fired under any circumstances, even using black powder, due to many examples being very worn. Clean them up, lubricate them, even repair them for their owners, but for personal safety resist the temptation to fire them. Preserve them for the firearms history that they are. AG

RIFLES

The AR-7

Working the Charter Arms AR-7 Explorer rifles and variants.

BY MARK R. HOLLENSEN JULY 2020

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Well, in came another one. I was handed a small box with a Charter AR-7 rifle barrel and action inside. The conversation with the customer began with him saying “Well, I loaned this to my brother-in-law and when he gave it back to me, it was like this in this box.” Typically, my first question to the customer when handed a firearm that has been disassembled is, “Are all of the parts there?” And typically, I am immediately told “Yes sir.

I made sure they all got placed in that bag.” Essentially, my customer just told me that he took the rifle apart. No worries though. We just need to get her back together and functioning properly again. But wait. Working properly? This rifle is widely known as the “jamo-matic”, isn’t it? Or so I have heard over the years.

And that may be true, but my experience with these rifles has been most favorable, just so long as you work with the rifle by trying a variety of ammunition in it to see what it really likes to consume. And the same can be said for virtually any The parts are made of stamped steel. Also shown is the receiver side plate that was removed to

access the receiver fire control group. These magazines have sharp edges and corners, so you can easily cut your fingers or hand when filling it up with live cartridges.

But it works. This type of survival rifle has been in production since 1959 and has remained virtually unchanged. The barrel, receiver, and magazine can be stored inside of the butt, and it floats when dropped into the water. rimfire gun. Many have preferences and this one is no exception. First, let’s look at some historical information about this uniquely-designed rifle. Research shows that the AR-7 style rifles came into existence around 1959, being manufactured by the Arma Lite Company.

Originally, an engineer named George Sullivan worked with inventor Jacques Michault creating prototype aluminum rifles. Later, it was reported that George Sullivan met with Richard Soutelle, showing him what he had been working on, and that led to the creation of the Arma Lite Company around 1954. Their Chief Engineer then entered the picture—a former U. S. Marine by the name of Eugene Stoner. Yes, I think we all know who he is.

The company began their product line with firearms known as the AR-1 and the AR-3; however, neither ever entered full production, serving as conceptual prototypes. As you know, “AR” stands for Arma Lite Rifle. The first reported success by Arma Lite came around 1957 with a design called the AR-5, a bolt action takedown rifle chambered in .22 Hornet. This AR-5 design was purportedly the evolutionary beginning of the AR-7 rifle when it later went into full production in 1959.

The AR-7 rifle was introduced having a blowback bolt design, chambered for the .22 Long Rifle cartridge, and allowed for the barrel and receiver to be stowed away inside of the water-resistant butt stock that floats and fits inside a backpack. Around 1974, Charter Arms (The Charco Corporation) took over production rights of the AR-7 rifle until about 1990. Then, Survival Arms began making the AR-7 until Henry Repeating Arms Company and AR-7 Industries began manufacturing them around 1997 to 1998.

The rifle is still in production today.

THE AR-7 CONTINUED

ORIGINAL PAGE 10

The latter can be stored inside the slots accessed by removing the end cap (butt plate). There is also a slot for a magazine. The compact design makes this a very versatile little rifle. Also note the pin in the hammer (and hammer spring coil area) that must be seated into the small hole in the receiver side plate when reinstalling. The quick take down and butt stock stowage makes the AR-7 unique along with being stored sealed (but not air tight) from the environment.

I have found them to be fairly accurate, too, although the sights are crude and were never meant to be on the firing line at Camp Perry. This is a survival arm, made for when you just need “something” to help protect you, bring down some small game, or be used as a signal when lost. Periodic jamming can be experienced, but the rifle was never designed to function flawlessly for hundreds of thousands of rounds.

The component parts are stamped steel and fitment. Both legs of the hammer/trigger spring are retained by a small pin located at the rear of the trigger. That pin has notches on each side so that the spring legs stay in place. Look familiar? Moving the spring legs forward drops the hammer downward and free from the slot in bolt assembly. The hammer simply lifts out. tolerances are not ideal—at least for a one-hole tack driver—but they are practical for the occasional use the rifle may see.

I like the AR-7 for its handiness to slip into a canoe, pack, behind a car seat, or in a fishing bucket. One customer told me he stores 50 cartridges inside the butt stock so that he always has a box of ammo with him on excursions. Others have wanted a scope on theirs but that takes away from its ability to be stowed and protected from the elements. Concerning reliability, ammo selection is crucial. Rimfire cartridges are not all the same.

Variable bullet weights, slight variations of case cartridge dimensions, different bullet diameters, varying powder charges, different rim thicknesses, to name a few, all can contribute to poor feeding and reliability. Try a variety of ammo and stick with one that works well. I have found that CCI Mini-Mag High Velocity 40 grain copper-plated round nose or hollow points work well in Charter AR-7s but test in your particular rifle to be sure.

I did some research on the crosspollination of parts for the AR-7 rifles and it appears that internal working parts are the same. However, try to locate parts for the brand name you are working on first. Only after that turns up nothing should other brands be tried. The new Henry (US Survival AR-7) sports as sleeker “receiver to butt stock” look and has a Picatinny rail for a scope, laser, or red dot sight. I believe the rifle is still in production because it filled void within the firearms industry.

It has a purpose and the beholder can use their imagination on where they want to take the rifle for their personal needs. All you AR fans should look closely at the action components used in the AR-7 as you’ll quickly see how the AR-15 evolved from this particular rifle. Disassembly Although the owner’s manual does not encourage the owner to disassemble the receiver completely, it does have a photo showing the position of the parts installed in the receiver with the side plate removed.

That was helpful with the rifle on my bench arriving with every part in a plastic bag. Remove the side receiver plate, hit the internal parts with compressed air, and lightly lubricate the internal parts for easy cleaning. For gunsmiths, let’s begin by clearing. Remove the magazine and use the charging handle (2232) to pull the bolt (2230) rearward to confirm nothing is in the chamber. Note, the bolt assembly can not be locked to the rear.

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When reinstalling, make sure the action springs guide (far right) is not in a bind when back in the receiver. Operating the bolt rearward will help to properly align it and make adjustments. If out of alignment, it can prevent the bolt from being pulled all the way to the rear. The hammer needs to be “at rest” (fired) for disassembly. Chamber a plastic snap cap (I prefer not to dry fire a rimfire), remove the magazine, and pull the trigger.

Unscrew the barrel nut (2247), the large nut securing the barrel to the receiver. As you unscrew it, you’ll feel the barrel move forward. The bolt is under spring tension, pushing against the back of the barrel as you remove it. You can grasp the barrel with your weak hand, holding it rearward against the receiver while unscrewing the nut. Once the barrel nut is off, pull the barrel out from the face of the receiver. Remove the plastic snap cap.

Take note there is a small lug machined into the rear barrel shank that seats into a slot milled for it in the receiver face. This ensures the barrel is correctly installed. Since the barrel has a front sight, use that along with aligning the lug into the receiver slot to ensure that the barrel is going back on correctly. To remove the barrel nut (2247) from the barrel, drift the front sight blade (2222) out (left to right).

Once the front sight dovetailed blade is removed, the barrel nut slips off over the front sight base (no number listed). You do not need to remove the barrel locking nut

unless replacing or refinishing the barrel or replacing the nut itself. The front sight base is held into place with two screws; remove them now if you are removing the front sight completely. Set the barrel assembly aside. Remove the butt stock (2256). Unscrew the stock takedown screw nut (2260) to release the butt stock from the receiver.

The stock takedown screw assembly stays in the stock (pistol grip area) and doesn’t need to be further removed. If missing from the rifle, order the stock take down screw (2262), the stock take down screw nut (2260), and the stock take down screw nut roll pin (2328). Work the butt stock off the receiver (2233) once loosened. With the butt stock and barrel removed, turn your attention to disassembling the receiver and fire control components inside.

Lay the receiver (2233) right side down on the bench and remove the large screw present on the left side of the receiver. This is the receiver side plate screw (2250) and it will most likely have been installed in the receiver with thread locker at the factory. Once this screw is out, remove the receiver side plate (2235). You may need to pry the plate loose with a wooden or other non-marring dowel. Insert it into the magazine well and pry upward on the plate to loosen it from the receiver.

The small hole in the side plate is the hole that retains the left side hammer, spring, and hammer pivot pin (2244). As you work the side plate off, there will be some spring

tension from the hammer assembly on the plate. When reinstalling, make sure that the left side of the hammer pivot pin (2244) seats correctly into the small hole provided in the side plate just removed. It will help to pull the trigger rearward when reinstalling the side plate if you have difficulty seating it correctly.

With the side plate removed, you now can see all of the action parts retained inside of the receiver. Remove the magazine latch (2242). Use one finger to cover the magazine latch spring (2251) and then lift the magazine latch out. Lift out the magazine latch spring from its seat in the receiver. Next, lift the exposed hammer spring leg (2248) off the rear trigger pin, the hammer and trigger spring support pin (2322). Lift the trigger (2238) out from the receiver.

Both pins in the trigger—trigger pivot pin (2308) and trigger spring support pin (2322)—are loose and can be simply removed from the trigger. Keep an eye on these pins as they are small and can become lost. Also note the trigger pivot pin (2308) is simply. Once removed, pull the safety out of the receiver. This detent ball gives the safety positive stops when placed in the on and off positions.

Also note the circular cut in the middle right side of the receiver, where the bolt charging handle is removed once properly aligned.

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around pin and the hammer and trigger spring support pin (2322) has notches on each end of that pin used to retain both wire legs of the hammer spring (2248). Having an AR-15 flashback here? With the trigger removed, remove the ejector (2243). The ejector also has a loose pin called the ejector pivot pin (2308). Keep track of this small pin. Lift upwards and work the ejector out from the receiver. It may help to retract the bolt a little bit to get the ejector out from the frame.

From here we can now remove the hammer (2239), hammer and trigger spring (2248), and the hammer and trigger spring support pin (2322) as an assembly. To remove that assembly, move the two hammer spring legs forward and towards the front of the receiver and then pull the hammer downward so it clears the bolt assembly. Once clear of the slot in the bottom of the bolt, pull upward on the hammer assembly to remove it from the receiver.

Again, the hammer/trigger spring support pin (2322) is loose and can come out from the hammer. When reassembling the hammer assembly, align this hammer support pin with the small hole in the side plate to ensure the pin fits into that hole properly. Once correctly in place, the side plate can be seated without force. Again, I find by pulling the trigger rearward while installing

the receiver plate, the plate seats easily after properly aligning the hammer frame pin with that receiver plate hole.

Remove the bolt assembly (2314), which consists of the bolt (2314), two action springs (2252), the charging handle (2232), and the action spring guide (2253). To remove this assembly, use your weak hand fingers to depress the bolt rearward in the frame from the front of the bolt until you have aligned the charging handle (2232) with the circle cutout in the receiver. Once aligned, pull the charging handle out from the receiver and bolt.

Still holding the bolt in place, slowly release the bolt under spring tension until it can be pulled or dumped out from the face of the receiver. Make sure both action springs (2252) and the action spring guide (2253) come out of the receiver. Sometimes, the action spring guide will stick. Invert the receiver so that the front of it is pointing downward and tap the receiver on the bench to work the action spring guide out.

Clean up the sharp corners of this slot as the hammer (with the spring) uses this opening to access the rear of the firing pin. Taking off the burrs and edges will allow the hammer and hammer spring to move freely without snagging. Far Elevation is achieved by loosening the screw and moving the flat spring steel (plate) upward/downward. Windage is adjusted by

moving the top peep hole right or left. Secure this screw once sighted in. Crude, yet effective.

In this case, the rifle shot dead on at 25 yards with no more adjustment needed. To finish disassembly of the receiver, remove the half-moon-shaped safety snap ring (2330) located inside the rear of the receiver. Once that is removed, turn the receiver over and withdraw the safety sub assembly (2801) out from the right side. There is a safety ball detent (2329) that is pressed into the receiver under the safety sub assembly (2801). This should be left in place. Finally, remove the rear sight assembly.

If the sight is still installed on the receiver, use two strips of masking tape placed side by side on the rear sight and the receiver. Make a mark on both so when reinstalling the rear sight you can place it back exactly where it was before. To remove the sight, unscrew the large rear sight screw (2249) that holds the sight plate (2245) in place on the back of the receiver. Lift the metal sight plate with the peep hole off.

This is kind of funky to work with when sighting the rifle as the sight plate pivots around the screw when setting it up for proper windage and elevation. In this case, the rear sight was removed already, so I could not scribe the proper alignment via the masking tape fix. However, I have found that by simply centering the

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peep hole in the sight fixture milled into the receiver and securing it there puts you nearly dead on at 25 yards. To center the peep in this manner, visually center it in the milled sight slot in the receiver, looking through the opening from the front of the receiver. This allows you to get the peep hole nearly centered. Tighten the screw down. With the rear sight removed, this completes disassembly of the receiver.

Turning our attention back to the bolt assembly (2314), remove the firing pin (2237) by drifting the firing pin. Looking closely, notice the bolt assembly housing (opening) along the top of the receiver. Look for any burrs or sharp edges here as well to ensure the bolt moves freely in the receiver. pin roll pin (2327) out from left to right. The firing pin is loose in the bolt (no firing pin return spring) so only the firing pin will come out after removing this pin.

To remove the extractor (2231), drift the extractor roll pin (2326) out from the bolt from bottom towards the top of the bolt. Keep in mind there is an extractor spring (2254) nested in behind the rear of the ex-

tractor during removal, so keep an eye on it. That completes disassembly of the rifle. When reinstalling the bolt assembly, insert the bolt (2314), the two action springs (2252), and the action spring guide (2253) into the receiver all at once.

When replacing the bolt charging handle (2232), test the bolt to ensure it moves completely to the rear. The action spring guide (2253) may become turned or canted and will not allow the bolt to completely open without binding on the two coil springs. Make minor adjustments as needed with the end goal of having the action spring guide "fingers" fit into the two holes in the rear of the bolt (where the two action springs are housed) when the bolt is fully retracted.

The bolt should move rearward without any binding when moving it back and forth. Reassembly is in reverse. I typically covered reassembly tips where needed during the entire disassembly process. Unfortunately, there is not much you can do about the trigger pull weight due to the hammer spring being shared with the trigger spring.

But you can polish certain areas of the internal parts, concentrating on where the moving parts work up against one another.

One area I like to hit with emery cloth is the slot (corners) in the bolt assembly where the hammer interoperates. The slot was milled and no effort to remove burrs and sharp edges on the bolt in that area. Go over that lightly to round over the edges. This helps the hammer and hammer spring move cleanly through that slot when firing and cycling. Don't take too much off any part or you risk searching for a replacement. Beyond that, an extra magazine or two is always good to have on hand.

The Charter Arms magazines are not well refined and have sharp edges. They are also somewhat awkward to load. At the end of the day, this is a tried and true design that has continued to withstand the test of time. They are actually fun to both own and work on, and will always get you a curious look or conversation going when taking it to the local shooting range. AG

RESTORATION

Online Gun Auctions

A few words of advice for anyone chasing that “deal of a lifetime”.

BY PAUL MAZAN JULY 2020

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Anytime you are hunting for a used gun at a bargain price you had better go armed. Armed with knowledge of the gun, the maker, the mechanics, the variations, and what price is reasonable based on condition. The more you know, the better your chances of avoiding a costly mistake. I buy a lot of firearms online to use as the basis of my restoration articles so let me share some thoughts with you.

The safest places to pursue this risky business are your local shops where the friendly owners, and even most of the not-so-friendly ones, will have looked the gun over and put what they consider a fair price on it based on condition and Blue Book value. Unfortunately, that limits your choices and a specific model or caliber that you want may never come through a local shop. Taking your search to the next level of risk would be to start haunting gun shows.

If you're just starting out to collect examples of one type of firearm (for example, battle rifles of WWII, or L. C. Smith shotguns, or

whatever) you have a pret- A very beat up Browning .22. It functions and will make a great project. The price was right. A once in a lifetime buy at an online auction. Six-inch barrel with target hammer and trigger for \$500. ty good chance of finding something to fill the bill.

But, once your preferred treasure becomes more specific, you have to cast a wider net and the danger level increases. The firearms auction sites like Gunbroker, Guns America, and Auction Arms are relatively good places to search for a real treasure but honestly, at this point, you are buying a gun unseen and are relying on the seller's description and pictures to make your decision. The phrase “pig in a poke” comes to mind. My personal experience with these sites has been mostly positive.

The vast majority of the sellers do their best to present their merchandise fairly and will be happy to answer any questions you may have before you place a bid. That is not to say you will never get burned. If you are any-

where past the fifth grade, you have probably already learned that not everyone in this world is as honest as you and me, and sometimes, I'm not so sure about me!

By and large, but not always, the descriptions and condition of the firearm have at least been written by someone with a basic knowledge of what he is selling. He may fudge on the condition some or paint it as rare or highly desirable when it's not all he claims but, at least you stand a really good chance of getting what you paid for. If the gun was grossly misrepresented the auction sites do give you a place to complain and will try to help you and the seller come to some settlement of the issue.

If you area real adventurer, a decent gunsmith looking for a project, or a total fool like me, venture into the world of Internet firearms auctions. These are auctions run by auctioneers that sell anything and everything. This week they may

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I knew about the bad stock and rough bore but there was no mention of ruptured cases. A serious headspace problem with the 922 single shot caused every round fired in it to burst! This will add the cost of a reamer and relining tube to the total cost of the rifle. be selling a bunch of consigned guns while last week it was farm equipment and next week it may be antique Spacely Sprockets.

This is where the danger of not getting what you expected goes up to a level that makes the World Poker Championship look like a friendly game of Uno with the kids. There are several factors that make these auctions such a high risk. First, you are buying the item as is, where is. In other words, you bought it and it is yours.

Second, unless it is an Internet-only auction, you will be bidding against people that are on-site and have the advantage of having looked the gun over and seen its actual condition, peered down the bore, worked the action, examined the bumps, bruises, and scrapes, heard it rattle, and watched the rust dribble out of the action.

Third, you will be paying an "Internet premium" of 15 to percent. In other words, if someone on the ground wins the auction at a price of \$100, they pay \$100.

If you are bidding online from several A project indeed! states away, you will pay the \$100 plus the Internet premium, plus shipping, and probably insurance. The premium is supposed to cover packaging and labor. I don't mind a 10-15% premium to get something I could not get locally but anything more than 15% is a rip off. Think about that! The people on site that are looking at the gun in person decided it wasn't worth the price you just bid for it and they stopped bidding.

You, on the other hand, just paid more than they thought the gun was worth, plus the Internet premium, plus shipping! Oh yeah, you probably just made the deal of the century! Or maybe not! With absentee bidding set up like this, your chances of overpaying or getting well and truly burned are excellent. Given all this, why would anyone bid online?

Well, there are sevyou are looking for, a gun that is not worth the price paid in Alabama or North Dakota where the auction was held may be well worth

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Far This Stevens 44 was another project piece that turned out to be worse than I expected. The stock is battered, the bore is poor, and the metal has little finish left, but what really upset me was the chamber had been opened up with a hand drill! As you can see, the fired cases and chamber cast tell an ugly story. 25-20 Winchester case, a chamber cast of the Stevens, and an unfired .25-20 Single Shot.

When the .25-20 Winchester wouldn't fit in the Stevens 44 .25-20 Single Shot chamber, the previous owner "fixed" it with a hand drill. Note where the case meets the throat. The chamber was no longer even centered on the bore. the price where you live. That is not going to be true of the highly collectible guns like the 1911, Single Action Army, or Winchesters, but may be on a Gras or Mauser. Sometimes there is simply nobody on site that is interested in the gun you consider a real prize. As an example.

I bought an S&W 629 in .44 Magnum on an Internet auction for \$500. The gun was barely used and looked like it was right out of the box. For whatever reason, that day, at that auction, nobody but me thought it was worth that much. It doesn't happen often but it does happen. Another problem I encounter more often than not is that with these auction houses is that the person writing the description often doesn't know anything about guns.

I've seen a Single Action Army-style revolver listed as an 1873 Winchester that was clearly marked Uberti in one of the pictures of the item. That can work in your fa-

vor or against you. Again, from my own experience, I was looking at a bad picture of a cap and ball revolver and the only description was "Cap and Ball Revolver". I studied the rather dark photo and could make out that it had around barrel squared trigger guard and looked more like an oversized Navy than an 1860 Army.

The lights and bells went off in my head and I said, "It's a Dragoon!" I placed a \$200 bid on it and won! After paying shipping and the Internet premium, it came to \$260 and I still thought I had stolen a reproduction Dragoon. Imagine my surprise when it arrived and I discovered it wasn't a Dragoon. In fact, I had no idea what it was and had conduct a series of searches online until I discovered I had what appeared to be a new and unfired reproduction of the Dance Revolver.

The originals were made in Texas for the Confederacy and have features of both the Navy and the Dragoon in a revolver sized between the two and no recoil shields behind the sides of the cylinder to make it easier to cap when on horseback. Those area couple of the great deals I have made on auctions but there have been bad ones, too. A great and recent example of a bad deal was what was listed as a Steven 44 1/2 in .25-20.

Nobody was bidding on it so I threw out a lowball bid of \$250 knowing that would last about two seconds as soon as the live auction began. To my surprise, nobody else bid on the gun! I was pretty sure I was in trouble when I won the gun at that price

and my concerns were verified when it arrived. It wasn't a 44 1/2, it is a Model 44 with a heavy barrel that was originally chambered in .25-20 Single Shot, not the .25-20 Winchester that is commonly available.

An obsolete and hard-to-find cartridge in a model worth far less than the one advertised was bad enough, but adding insult to injury someone seems to have "fixed" the problem of not being able to chamber .25-20 Winchester in the gun by drilling out the chamber with a hand drill! That might not have been too bad if they had used an appropriate chamber reamer. But no, they had used a drill bit.

Not that it really mattered since the barrel looked like the sewers of Paris with pitting and only the occasional trace of rifling. Fortunately, I have the knowledge and the technology, I can repair it, I can make it better than it was. The beat-up stock can be refinished, the metal can be repolished and reblued, and the barrel can be lined and chambered. It can live again! But, I wouldn't exactly say it was a great deal.

I could go on with the good, the bad, and the ugly of gun auctions and buying online but it would be repetitious. These are the things you have to watch out for and should understand if you are tempted to dive into the world of Internet gun auctions. The deals really are out there. You need to be careful because not all of those deals are good deals! AG

MAINTENANCE & REPAIR

Marlin 1895 Magazine

Creating an extended magazine for the .45-70 1895 XLR Marlin.

BY CHARLIE BRIGGS JULY 2020

ORIGINAL PP. 17

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After over 30 years of 'smithin, you still never know what will come in next. Within a two week period I had two different customers bring in "blown-up" (or nearly so) guns! One was a modern S&W Sigma and the other an ancient bolt action 20 gauge. Fortunately, both were repairable, the owners were diplomatically educated as to what caused the problems, and how to avoid repeat performances. The Sigma had been fairly well disassembled and cleaned but reassembled incorrectly.

Turns out, the customer cleaned the pistol with Hoppe's No. 9 while drinking Jack Daniel's Old No. 7; thankfully not the other way around, but still unacceptable. The shotgun damage was largely caused by an ignorant shooter stuffing a 3" magnum shotshell into the seventy-year-old bolt action. Luckily, neither shooter was injured. Recently, things got really interesting (at least to me) with anew project.

A customer with a beautiful, laminated stock .45-70 Marlin X L Rand fourround carbine-length magazine wanted a custom full-length eight-round magazine for the additional capacity. Very cool, at least in my

opinion and particularly here in Florida where we're blessed (cursed?) with some damn good-sized wild boar. This would also be useful for anyone contemplating a trip to Alaska where brown bears can exceed 1400 pounds.

Such an improved firearm would even be great for brush or thick woods whitetail hunting as I have done in Georgia and Missouri. The customer's rifle is stainless so the first search was for a fulllength magazine tube in stainless. Oops, not available! So, my partner-in-crime, Mike Diedrich (Mike Diedrich Gunsmithing, Fix My Guns. com), located one in blued steel from Brownells but it was too long.

The length, we felt, could be adjusted, the blueing could be bead blasted away, and a Duracoat "stainless" finish could match (or at least be compatible) with the rest of the stainless 375" dovetail machined in the barrel for attaching the new magazine. 45-70 Marlin XLR with four-round carbinelength magazine. rifle. A longer magazine spring was also ordered from Brownells, The new

magazine tube had to be shortened slightly. Machine work on the barrel would also be required as well.

This necessitated filling the existing dovetail in the stainless barrel where the original magazine tube was attached with apiece of dovetail stock and filing to near invisibility. Anew 0.375" dovetail had to be machined in the barrel for attaching the new magazine. The bulk of the cut was made using a straight, 0.250" carbide end mill 0.085" deep. The straight cutter was used as it is more rugged and less expensive than the solid carbide dovetail cutter which followed.

Mike then switched to a 60° carbide dovetail cutter. Carbide cutters were selected to precisely cut the stainless but the manufacturer said it had to be run at 1100-1250 RPM compared to 700 RPM (maximum) for a high speed steel cutter. Mike is a perfectionist and the new dovetail was perfect! The customer loved the work and wants another of his lever guns to be modified similarly. For further information, visit Mike's website or contact me directly at cb-gunsmith@verizon.net. AG

PEOPLE & COMPANIES

Smith & Wesson M&P 40 Trigger Kit Installation

The trigger travel and pull weight can be significantly reduced on striker fired handguns with the installation of an aftermarket trigger kit. This is how I did it on a Smith & Wesson M&P 40.

BY GLEN CALVERT JULY 2020

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The Smith & Wesson M&P 40 handgun in this article had along trigger travel (7/16") followed by a 7.8 pound pull that released the striker after another 1/16" of travel. This is typical of older striker fired handguns. Gun manufacturers have improved the triggers on newer models. I have a Ruger LCP II that has a much better trigger than the original LCP. Aftermarket suppliers have seen the opportunity and offer kits to improve the trigger action on various makes and models.

One of those is Apex Tactical Specialties (Apex- Tactical.com). They offer trigger kits for the S&W M&P and Shield models. I installed the Apex M&P Aluminum Forward Set Sear and Trigger Kit. The kit includes an aluminum trigger with the safety blade in the face of the trigger; a striker block, spring, and

installation tool; four and five pound trigger springs; sear and spring; and a slave pin for installing the trigger pin.

This kit is designed to reduce the overall trigger travel by about 50% and reduce the pull to approximately four or five pounds. Installation I removed the magazine and made sure the chamber was empty. I removed the slide, then removed the recoil spring assembly and barrel, and installed the slide in a vise with padded jaws. The rear sight must be removed to access the striker block and spring. Before starting, I marked the location of the sight on the slide to maintain the zero.

The set screw in the sight has a 1/16" hex head and thread locker that makes it difficult to remove. If you're not careful, the screw

hex can be rounded out (if the wrench doesn't yield first) and we know where that leads. Heat is required to soften the thread locker. I did not want to put an open flame on the sight so I used the following method. I installed the longest 1/16" hex head wrench that I had, with the shorter leg in the screw and the longer leg pointed away from the slide.

The nozzle of a heat gun was held against the longer leg so the wrench could conduct the heat into the screw. I used a pair of pliers at the corner of the wrench to apply torque. After several minutes, I was able to remove the screw with little effort. I wasn't sure that the heat gun would work Far

SMITH & WESSON M&P 40 TRIGGER KIT INSTALLATION CONTINUED

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but it did and it didn't overheat the wrench. After the screw was removed, the sight was drifted left to right to uncover the thin washer underneath. This washer sets on top of the spring and striker block. The kit has a tool that fits in the dovetail on the slide and is used to contain the washer and spring when the sight is removed and installed. The original spring and striker block are removed and replaced with the new parts.

The new striker block has a larger radius that reduces the friction when lifted by the trigger bar. The new striker block spring is shorter which reduces the force to move the block. I checked the bore in which the block is seated to make sure there wasn't anything that would prevent it from moving freely. The washer is installed and held in with the tool while the sight is installed. After the sight was realigned with the slide, the set screw was installed with low strength thread locker.

The rest of the new parts are installed in the frame. The two roll pins are pushed out from either side with a 1/8" punch. The trigger pin is pushed out, from right to left; it has ahead on the left end. The takedown lever is removed by tipping it up and pulling to get it past the retaining wire in the locking block. Remove the locking block, making sure the takedown lever retaining wire doesn't fall off and disappear. Lift out the slide lock lever and trigger and trigger bar assembly.

The sear housing fits tightly in the frame and is gently pried up to remove it. The ejector sets on the left side of the sear housing but does not need to be removed. The sear is retained by a small pin and is pushed out (right to left on this gun) with a punch that retains the sear when the pin is out. Hold the sear in place while removing the punch. The sear, plunger, and spring are removed.

The new spring, the plunger, and the new sear are installed and held in place with the punch acting as a slave pin while the sear pin is installed. The trigger bar is removed from the trigger by pushing out the pin on the trigger (right to left) far enough to allow the trigger bar to be removed. The new trigger has the pin installed part way and it must be pressed in to capture the trigger bar. Apex recommends putting the trigger in a vise and closing the jaws to push in the pin.

There is a video on their website that shows the procedure. After trying unsuccessfully to tap the pin in while holding the trigger bar, I used their method. I put the trigger in a vise with smooth jaw plates. The new trigger has a V-shaped relief on the

SMITH & WESSON M&P 40 TRIGGER KIT INSTALLATION CONTINUED

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right side where the trigger bar is installed. I found that putting the trigger in the vise with the Vslot pointed straight down helped align the trigger bar. The end of the trigger bar is pushed to the bottom of the slot in the trigger and that aligns the hole with the pin. Make sure the trigger bar is oriented correctly; the trigger spring tang should be pointed to the left side of the trigger.

Tightening the vise slowly pushes the pin toward the trigger spring in the side lock lever for installation in the frame. The new trigger total travel is 1/8" and the pull weight is 4.2 pounds. the slot. Take your time and check to see if the bar is captured by the pin. It took a fair amount of force to move the pin. After

the pin has started into the bar, push it the rest of the way. The new trigger spring (small end) is hooked on the trigger bar tang and the other end slid into the trigger.

I used the 4 pound spring. The trigger is installed in the slide lock lever and the slave pin is used to keep the parts aligned during installation in the frame. The locking block is installed in the frame, making sure that the takedown lever retaining wire is in place. The trigger pin is installed, left to right, driving the slave pin out the right side. The sear housing is slid into the frame, pushing it forward and downward, making sure the end of the trigger bar goes under the sear.

The two roll pins and takedown lever are installed and the slide assembly is installed. A function check was performed and it showed that the trigger, sear and trigger safety were operating correctly. This handgun does not have a manual safety. The new trigger location is where the original trigger stopped after its initial 7/16" of travel and the new trigger pull is 4.2 pounds (compared to the original 7.8 pounds) with only 1/8" total travel. The trigger has a short, positive reset.

This trigger kit reduced the trigger travel by about 75% and the pull weight by about 50%, making the pistol easier to shoot accurately. It was well worth the investment. AG

FINISHING

Cold Bluing

How I used a cold blue liquid to make an old shotgun look like new.

BY GLEN CALVERT JULY 2020

ORIGINAL PP. 21-23

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My old Marlin 43 shotgun had the barrel's bluing faded to a brown patina and the magazine tube had areas worn to bare metal by the slide. Fortunately, the bluing on the receiver was still in good condition. I have used cold bluing for minor touchups such as scratches and refurbished screws but not on a large scale such as a barrel. After doing some research on the various brands, I chose Birchwood Casey Super Blue. Prep As with any refinishing project, proper surface preparation is key.

After removing the barrel and magazine tube, I cleaned them thoroughly with acetone to remove any oil or dirt. Alcohol (denatured or isopropyl) and brake cleaner will also work. Do not use a solvent that leaves a residue. I removed the old bluing with 400 grit sandpaper. Using a curved backer, I sanded along the length initially to get rid of the old finish. I then used 600 and 800 grit paper and sanded circumferentially to polish the steel.

A simple fixture Faded bluing on the barrel and magazine tube band (bottom). of two V-shaped blocks and a pair of dowels supported the barrel and magazine tube while sanding.

After polishing I cleaned the parts again with acetone. Cold Bluing Protective gloves and eye wear are required when using the cold blue liquid. You also don't want to touch the cleaned surfaces with your bare hands as it will leave oil that will likely show up on the finish.

While I'll refer to the barrel in the rest of the article, the magazine tube and the action bar were done in the same manner. I applied the bluing liquid with a 1" wide foam brush, putting on a heavy coat with plenty of overlap. It turns the bare steel a dark blue

COLD BLUING CONTINUED

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Instructions for use are on the label (not shown). immediately so it's easy to see the area that's been covered and any spots you missed. After 30 seconds, I rinsed the barrel with cold water, using a wet cloth to wipe it down. I used a gallon of distilled water in a five gallon bucket. Distilled water is not required but I didn't want to take any chances with tap water and its chlorine. After each application of the bluing liquid, I rinsed the part in cold water with the ends of the barrel plugged with corks.

The barrel has a magazine tube band that I used as a handle when holding the barrel. 1914 Flues Sx S I read "Ithaca Flues Shotgun" (April 2020) by Mark R. Hollensen with great interest. Not to contra- I dried the barrel with a cloth towel and then used a heat gun to get rid of any residual water. The

dried bluing is splotchy and uneven but that's OK. Four-ought steel wool (degreased with acetone if necessary) is used to scrub off the excess bluing and polish the finish.

If the finish still looks uneven, keep polishing with the steel wool. Clean again with acetone. I noticed that I had missed a few spots so I applied a second coat. After rinsing and polishing, the barrel color did not seem any darker but the finish was more uniform. I gave dict, but readers may be interested in how different two Flues model shotguns manufactured just two years apart can be. the barrel a third coat for the heck of it. The finish was then a very dark blue and very even.

After the final polish and cleaning, a coat of gun oil was applied to halt the bluing process and then wiped dry. A second light coat of oil

was added a few hours later. The new bluing on the barrel, magazine tube, and action bar closely matched the old bluing on the receiver. Cold bluing the old barrel and magazine tube made them look like new and the finish was comparable in color—but probably not durability—to a newer shotgun with its hot blued finish.

Cold bluing is not a replacement for hot bluing but for the everyday firearm and the do-it-yourselfer, it works very well. It's a simple process, it doesn't take much time, and the results are worthwhile. AG My Flues shotgun (SN 2434XX) built in 1914 is a 12 gauge model with "SMOKELESS POWDER METAL" engraved on both barrels forward of

the breech. Measurement revealed it's a 2 3/4" chamber. The individual I purchased the gun from told me he'd hunted with it for quite awhile and I've put plenty of shotshells through it, mostly shooting trap. I've disassembled my gun and replaced one firing pin. I meant to replace the other as well but that firing pin screw would not budge. I needed to replace the principle wood screw under the breech lever and lucked out when I purchased a one-pound bag of screws from Numrich.

In addition, the stock was about an inch short for me but I found a spacer on Numrich. Ideally you'd want to add it to the end of the stock, but I needed to cut the stock about an inch forward of the butt plate which added about 3/4" to the length of pull. The barrel chokes gauge at 0.707" and 0.712", which I thought strange, though both are in the modified to improved modified range. I can actually place a dime on top of the smaller bore and it's just snug enough to prevent it from falling through.

Author Mark Hollensen responds. Interesting! I suspect that they made the 2 3/4" chambers for the 12 gauge much earlier than the 16 gauge guns and this reflects that. I know folks continue to shoot Flues shotguns without problem. The greatest concern is the fact that shotshells made in that time period (before modern ammo came onto the scene) utilized cardboard wadding separating the powder from the shot. The cardboard lets gases pass by when firing allowing pressures further reduced in the bore.

Modern shotshells have a plastic wad that seals up the bores when fired, greatly increasing pressure from that alone since gas cannot escape past the wad before it comes out of the barrel. That is the primary reason I hesitate to shoot these guns and advise against shooting such old, classic arms. This is especially true if the bores have severe rust pitting inside of them.

Note, some of the old shotguns had the chambers lengthened when 2 3/4" shotshells took over the market, so there is always the possibility that the chambers were lengthened on your shotgun. It would be very difficult to tell if that is the case. Thanks for your information about your Flues.

READER FORUM

Reader Forum

BY AMERICAN GUNSMITH EDITORS JULY 2020

ORIGINAL PP. 23-24

Suppressors In Michigan, suppressors are becoming quite popular and I have received several requests for barrels cut to an over 16" length and then crowned and threaded. I have discovered Mark Bozek many garden variety (budget model) barrels demonstrate some bore "wandering" that is quite apparent more in the middle section while being rather concentric at each end. I have chosen to decline the work until I can definitively confirm parallel threading to the bore and not just to the exit hole or O. D.

If it were a muzzle brake, the matter would be of little concern. Since some suppressors are quite long, the accuracy of the alignment becomes more critical as the hot gasses of the propellant are pushing the base of the bullet past each baffle plate prior to exiting the suppressor. I would have to believe the more concentric we are the better. My sketches illustrate this further. As the drawings indicate (purposely exaggerated) the last few inches of the bore proper would determine the bullet path.

With a brake or other short attachment, the angle of the bore at the point of exit would be far less critical. A 6-8" suppressor would require the last baffle set and baffle exit to be in line with the last few inches of the wandering bore. Though not absolutely necessary to avoid baffle strike, uneven, off sided pressures on the bullet base as it clears each baffle would create, in my opinion, a much more dramatic shift in P. O. I. between unsuppressed and suppressed.

It would seem to me there would be some way to jig the barrel and turn the barrel so the bore is running dead nuts true regardless of the O. D. of the barrel or the angle created by the offset. This problem seems to present itself when the muzzle end is shortened to a legal BATFE length of greater than 16". It appears the bores run relatively true near their manufactured ends which would explain

ORIGINAL SOURCE PAGE

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why there is so little concern when purchasing a unit that has been threaded by the barrel manufacturer. It seems to raise its ugly head when barrels of unknown heritage are encountered and a cut, crown & thread are requested. If I could fixture the barrel in such away to ensure zero run out of the last few inches of the bore, I could be quite certain the suppressor would perform at it's highest potential. David Dumeah David Allen Dumeah Gunsmithing From Norman Johnson.

If the hole in your barrel is not straight, application of a suppressor could present an accuracy problem. I have not seen a crooked bore in many years. It would seem to me if your barrel is concentric, as cut off, there should be no problem in getting a well-centered thread. Wouldn't your lathe tail stock center your bore perfectly for uniform thread cutting? Perhaps the suppressor manufacturer can shed some light on this matter for you.

Scope Mounting for Accuracy First, thank you for providing outstanding information. I have enjoyed American Gunsmith for years. The article "Scope Mounting for Accuracy" (March 2020) was great! What I failed to identify or learn was which gun vise provides the best or easiest platform to achieve level and hold the firearm? Everything else was there and I follow many of these steps, plus I learned why I want to do things I may not be doing consistently.

Rick Fitzpatrick Prometeon Tyre Group Commercial Solutions, LLC Author David Manney responds. I use a soft jaw in my bench vise. I can rotate the gun and raise or lower the butt end to get it level. Then tighten it to hold while doing the rest of the work. I used a Tipton gun vise in the pictures to make it easier to take photos. The soft jaws are sold by Brownells.

Enhanced Buffer Tube Concerning AR-15 bolt carrier tilt, would an anti-tilt buffer tube such as the Enhanced Buffer Tube from Primary Weapons Systems (the kind that has lips supporting the BCG) mitigate tilt in a standard internal pistol AR-15, even though the anti-tilt buffer tubes were originally designed for use with external piston AR conversions? Dylan Paterson From Joe Carlos. I tried that buffer tube and it didn't begin to provide near enough lift. It gave me zero improvement. AG

SEARCHABLE ISSUE RECORD

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