

Protecting Your Investment: The Care and Preservation of Firearms

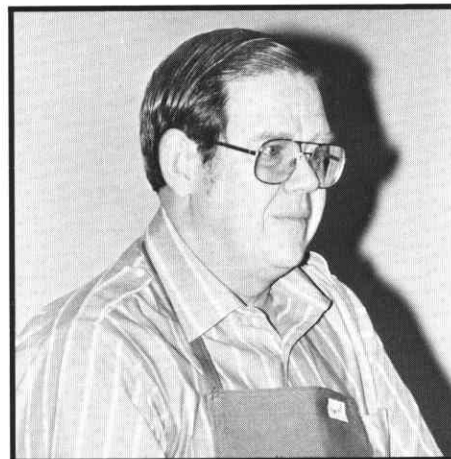
Ron Peterson

As collectors, we all believe that we are the owners of the guns, swords and knives that we collect, but in the long run, we are just their caretakers and barring some catastrophe, these items will be around long after we are gone. It is our duty to preserve them so that they can be passed on to the next generation in their best possible condition.

I am going to attempt to show how easy it is, with a little *PATIENCE*, to properly disassemble and clean most firearms. With few exceptions, firearms should be taken apart, cleaned and waxed so that they can be best protected for the future. The exceptions would be absolutely new condition firearms or character guns such as rawhide wrapped Indian guns. If possible, even these should have their wood removed for signs of active rust. Active rust means rust that is red in color or turns red in the presence of moisture. The place on a firearm most likely to rust is where organic material such as wood, ivory or pearl touches iron or steel. I have examined hundreds of collector firearms and about 40% of the time find some active rust under grips, lock plates, barrels and buttplates. This is especially true under the locks and breech end of barrels of muzzleloading guns and grip frames of handguns with pearl or ivory grips. If this rust is left untreated for a long period of time, it will begin to destroy the weapon from the inside out.

I recently examined 75 rifles that were collected in the 1920s and 1930s. They were all in very fine to new condition and yet over half had active rust beneath the wood. Because the owner had never removed the buttstock, one Ballard rifle with brilliant blue and case colors was so badly rusted that three eighths of an inch was missing from the back of the breech block! If this rifle had been properly cleaned and waxed 50 years ago, this would never have happened. The only way active rust can be stopped is by disassembling and cleaning the entire firearm.

When disassembling firearms the tool most *improperly* used by most collectors is a screw driver. They attempt to work on a collector's item worth hundreds or even thousands of dollars with a bargain basement screw driver which is made of soft material and doesn't properly fit the screw slot. By doing so they can damage the screw head or the screw driver can slip out of the slot and damage the finish on the metal or wood of the weapon. The most versatile screw driver is one with removable hardened bits, such as the type sold by Brownell's, Route 2, Box 1, Montezuma, Iowa, 50171. These are marketed under the name "Magna Tip" and can be purchased with up to 52



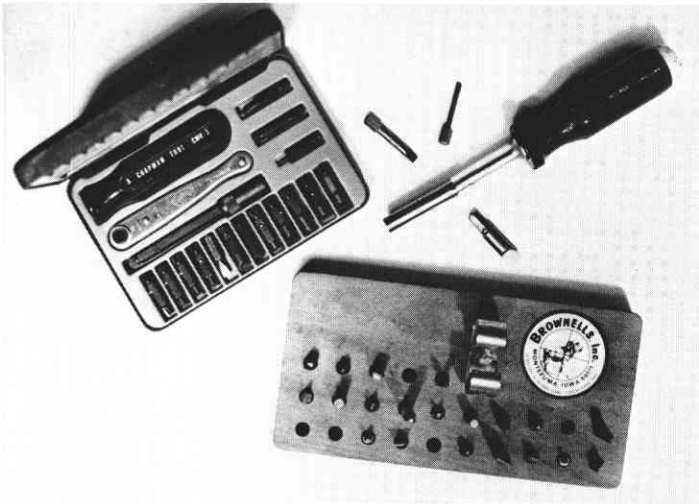
different bits. The shaft is magnetized to help hold the screw to the bit. This type of screw driver will work in all applications except where a very small shaft is needed to keep from scarring metal near the screw head. You may also need a screw driver with an extra long shank to remove stock bolts from certain rifles. With one of these removable bit screw driver sets and just a couple of extra screw drivers, you should be able to remove most screws without damaging the screw head. Whenever possible, a screw driver should always be used with downward pressure.

In addition to a quality screw driver, the most important tool a collector can own is a grinder. This can either be a small hand held Dremel tool or a larger bench grinder. The grinder is used to properly shape the screw driver bit so it will fit the screw slot. If the screw slot is below the surrounding wood or metal, the screw driver bit should be a fraction of an inch narrower than the screw slot. Also, the bit should be the same shape and width as the screw slot and reach and touch the bottom of the slot. This means that the screw driver bit should be fully touching the bottom and both sides of the screw slot before the screw is ever turned. If this is done properly, you will never have a damaged screw head. If the screw head is exposed, such as lock screws on some muskets, you can use a bit that is wider than the screw head so long as the bit touches both sides and the bottom of the screw slot. When using a wider bit, the shaft of the screw driver should be directly over the center of the screw head. With a proper fitting screw driver bit, most screws can be removed with no damage to the *screw's* original finish.

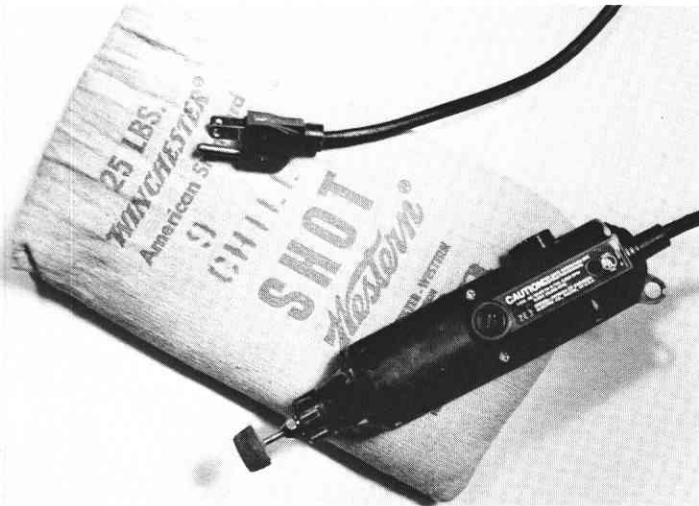
A useful tool to help in the removal of screws is a partially filled 25 pound bag of lead shot. When a gun is placed

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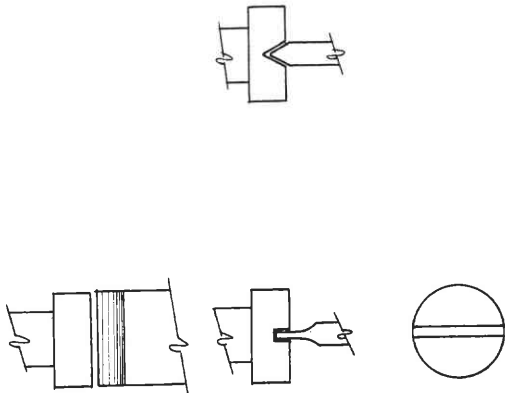
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Removable bit screw driver sets



Dremel hand grinder on 25 lb. bag of shot

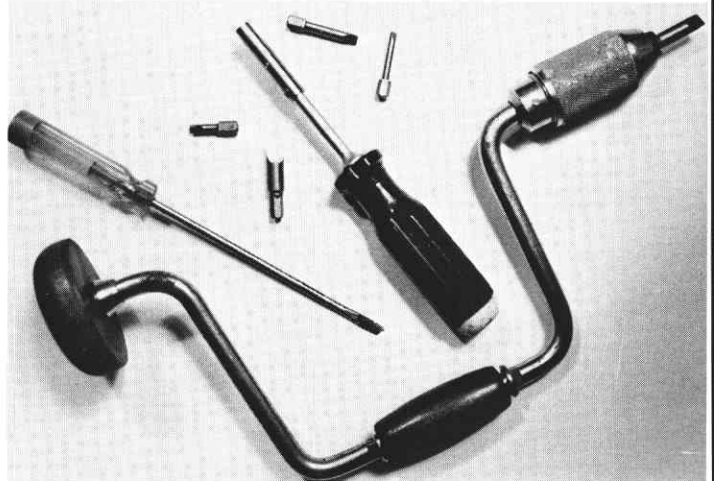


Proper screw driver fit to screw slot

on the bag of shot, the shot will conform to the shape of the gun, helping to hold it steady. If you are fortunate enough to have a bench vise, Brownells have Super-Hold Vise Jaw Pads which will hold any gun with very little pressure. This will enable you to remove most screws with downward pressure on the screw driver.

If you encounter stubborn screws that don't seem to want to budge, there are a few tactics that will usually remove them. First, try turning the screw in a little tighter and then backing it out. If this doesn't work, try inserting the removable screw driver bit into a carpenter's brace and, with downward pressure on the bit, most screws will turn loose. If this doesn't work, a drill press can be used: insert the removable screw driver bit into the chuck, then force and lock the bit tightly into the screw slot, then turn the chuck *by hand*. The locked downward pressure of the drill press keeps the bit from coming out of the slot. If these tactics fail to work, the application of heat and penetrating oil will loosen screws. For the penetrating oil to work you will need to heat the screw at one end and apply the penetrating oil at the other. This will draw the oil towards the heat. The best tool is a small butane torch which burns with a very fine point of flame that will let you heat the screw and not discolor the surrounding metal. If the screw is surrounded by wood, you will need to heat a rod and touch it to the screw. While the screw is hot, apply penetrating oil and let sit. Two or three applications will loosen most screws and they can be removed by one of the above methods. In rare instances, screws can be removed only by drilling them out. This should be done by a qualified gunsmith.

If you encounter a badly damaged screw slot, before trying to remove the screw, you can very carefullypeen the screw head to form a proper screw slot. This should be done with a flat bottom punch slightly smaller than one-fourth the size of the screw head. By very carefully tapping the punch with a light hammer, you can generally



Carpenter's brace with a quality and a "Dime Store" screw driver

move the displaced metal back to where it forms a proper slot. Of course, if you encounter screw slots that are full of dirt or corrosion, this should be scraped out before you attempt to remove the screw.

If your eyesight is not as good as it could be, a handy item is an illuminated magnifying bench light. With its florescent-lighted, five inch, 1-3/4 power magnifier on a 45 inch movable arm, you will be able to examine screw slots and screw driver bits for a proper fit. These lights have a working distance of approximately 13 inches and make it much easier to examine your work. An alternative to this light is an Opti Visor. This is a double magnifier on an adjustable headband that can be pulled down over your eyes to give you greater magnification. These can even be worn over glasses.

Once you have gained confidence in the proper use of a screw driver, you are ready to disassemble the firearm for cleaning. I suggest that you start with an inexpensive weapon for the first couple of times. As you are taking the gun apart, you should make a diagram of how the different parts come off and go back together. Also, the NRA publishes books with exploded drawings of many types of firearms. It is very important that you keep track of which screws go where. A helpful aid in doing this is a magnetic pad on which to place the screws in the order that you remove them.

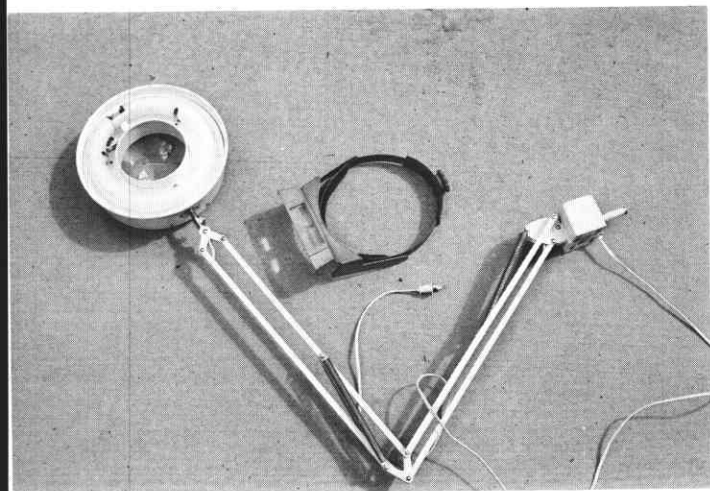
There is a saying in gunsmithing, "if it doesn't work, get a bigger hammer." This means that you should have at least three different weight ball peen or brass hammers. Ideal weights are four, eight and sixteen ounce hammers. If the gun you are disassembling has pins, you will need two punches to remove any pin. The first punch should have a very short shank with a flat tip the same diameter as the pin. Holding the punch perpendicular to the arm and using a light hammer, tap the pin so that it is at least one fourth of an inch below the surrounding surface. If the pin doesn't move, use the next heavier hammer until it moves. After



Various weight hammers and both types of pin punches



Nylon and brass tipped drifts



Illuminated magnifying bench light with an optic visor.



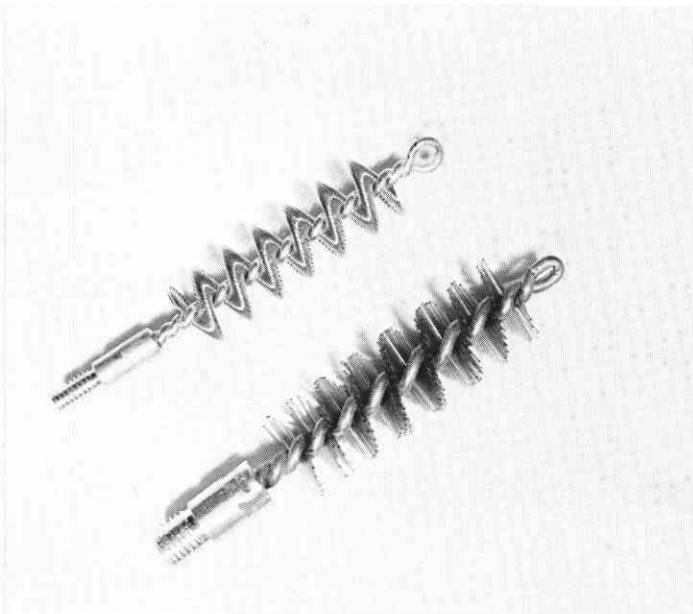
Musket lock plate screws in position for lock removal



Rawhide mallet removing side plate from Smith & Wesson No. 2 Army.



Spic & Span and rubbing alcohol



Stainless steel tornado and bristle bore brushes

the pin has moved, take a second punch with the shaft the same diameter and as long as the pin and drive the pin through. Always remember to keep the punch ends flat and hold the punch perpendicular to the pin. You will have to support the gun you are working on with enough clearance for the pin to come through.

You will need a couple of brass or nylon drifts (punches) for removing sights. Most sights are in a slightly tapered slot and need to be removed from left to right. This direction would be looking from the action towards the end of the barrel. Remember to always use the lightest hammer that will do the job. Too heavy a hammer will dent sights, pins and wedges, making them difficult to put back. You will also need a plastic or rawhide mallet for tapping out wedges or tapping locks and hammers back into place.

When removing grips or locks, back the screws part way out and gently tap on the screw heads. This will cause the grip or lock plate to move. Never try to pry off grips or locks as this will always do some damage. When removing locks, the hammer should be in the half cocked position. If the hammer is in the fired position, removing the lock will sometimes break wood out of the lock mortise. Unless you have the proper spring vise, I don't recommend disassembling locks.

When removing side plates, such as on No. 2 Smith & Wesson Armies, remove the grips and the side plate screw, then tap on the grip frame with a rawhide mallet and the side plate will pop loose. There is never a need to pry a side plate off of any weapon.

Once the gun is disassembled, you are ready to start cleaning. Where sights, forends, buttstocks and grips have been removed, you will see a build up on the metal that looks like rust. This is mostly old oil that has accumulated dirt over the years and dried into a hard mass. If this mass is not removed, it can absorb moisture and cause the surrounding metal to rust. This accumulated dirt is easily removed with hot water and Spic & Span. I must caution the use of hot but not boiling water and only Spic & Span. If you use boiling water or some other type of detergent, you can easily remove finish. The Spic & Span must be totally dissolved in the hot water before the metal parts are inserted. The proper amount of Spic & Span depends upon the amount of water. Use enough to turn the solution a medium green color.

If this is not done, the little grains of detergent will settle on the metal and remove tiny spots of finish. After soaking the metal parts for one half hour, scrub them with a stiff bristle tooth or scrub brush; then they can be removed and you are ready for the next step. I recommend cleaning screws one at a time so they go back in their proper place. I use the kitchen sink for smaller weapons and the bath tub for larger ones.

After you remove the metal parts from the solution,

most of the accumulated dirt will be dissolved and any spots left on the metal will be rust. This can be removed with a single edge razor blade. I slightly dull the blade by cutting strips of paper and then feel the edge to make sure that there are no nicks. Then I cover any rust spot with a heavy coat of oil and carefully work the razor blade at a flat angle, over the rust, cutting it off. By using a razor blade instead of steel wool, you will be able to work on only the rust and preserve the surrounding finish. If the razor blade begins to scratch the finish, sharpen it on a stone or use another blade. **I DON'T BELIEVE IN USING STEEL WOOL, EXCEPT #0000 WELL-OILED, TO REMOVE VERY LIGHT SURFACE RUST.** We have all seen firearms with a bright spot rubbed through the finish where someone tried to remove rust with steel wool. If a razor blade and oil had been used, this would not have happened. If you are uncomfortable about using a razor blade, a good substitute is Phos-Bronze #9 hard, about .050 thickness. This will remove rust without scratching blue finish and can be shaped to cover a larger area than a razor blade; it will leave a bronze residue which can be removed with solvent.

My recommendation of an oil for use in either removing rust with a razor blade, as a lubricant or as a protective coating, is **BREAK FREE**. This is available in most gunshops. I don't recommend using WD-40 on firearms with finish. I have had experience where WD-40 has caused bright case hardening colors to turn gray and certain types of blues have been dulled to a blue-gray finish.

Bores and deeply pitted areas should be thoroughly cleaned after they have been soaked in the Spic & Span solution. This is best done by using different types of stainless steel brushes. A stainless steel brush, similar to a tooth brush, should be used to remove rust from any deep pitting on the outside of the firearm. For the bores, first use a stainless steel Tornado brush. This type of brush has steel coils instead of bristles and will remove rust much quicker than a bristle brush. After the Tornado brush, use a stainless steel bristle brush to remove rust out of the bottom of rifling grooves. If you are cleaning a muzzleloader without the breech plug removed, use only a Tornado brush of the same diameter as the bore. If you use a bristle brush that is not smaller than the bore, it will become stuck when you try to pull it back out. A power wire wheel should never be used in removing rust from any firearm.

If you encounter areas of heavy pitting and don't want to brush them out too bright, putting the parts into boiling water will remove the oxygen from the rust, making it inert. Then you can cover the area with a protective coating such as wax to prevent any further rust action.

After thoroughly removing any visible rust with the razor blade, I then rewash the metal parts with hot water and Spic & Span. While the water is still hot, I remove the parts, rinse them in hot water, then thoroughly dry them.

If all rust has been removed and everything appears okay, I wipe down all the parts with rubbing alcohol. The alcohol will remove any trace of moisture left on the metal.

You will find this type of cleaning will greatly enhance the appearance of blue and, especially, case hardening. I recently cleaned a Sharps rifle which appeared to have 80% faded case colors. After cleaning in the Spic & Span solution, the rifle has 90% plus brilliant case colors. After case hardened parts are cleaned, you may want to protect them with a clear varnish. This varnish will help protect the colors from fading. The best product to use is Baking Lacquer #P-138 from the G.J. Nikolas Company, 2800 Washington Blvd., Bellwood, IL 60104, phone (312) 544-0320. This lacquer will have to be thinned with their reducer (P-138) from 50% to 80% before use. A little experimentation will be needed to get the right consistency. Before applying the lacquer to the case hardened parts, wipe them down with alcohol to remove any finger prints or oil. Apply the lacquer with a good quality one half inch brush, using strokes only in one direction. This lacquer dries very fast. After the parts have been coated, they need to be baked in an oven at 300 degrees for an hour and a half. Any screws that go through the case hardened parts will have to be coated so that they look the same. If your first attempt doesn't work properly, the lacquer can be removed with a brush, using Nikolas Vertical Stripper #8347, with no harm to the original case colors. Some guns you clean will still have original varnish on case colors and should not be re-coated.

You are now ready to wax the parts. The wax should be an acid free, hard paste wax of the type used on hardwood floors. A good product is Butcher's Bowling Alley Paste Wax (White Diamond) from The Butcher Company, Marlborough, MA 01752, phone (508) 481-5700. It is best to apply the wax in a thin, light coat to all parts including the wood, allow it to dry for 30 minutes and then polish. This will greatly enhance the appearance of both metal and wood. On pitted areas, you can use a pure carnuba wax, buffed into the pits with a slow moving wheel. This will leave a streaked appearance which you can remove with a rough cloth and will give the pitted area a much more pleasing appearance. The wax remains for a very long period of time and moisture that accumulates in the wood and other organic material cannot attack the metal.*

A substitute for wax is Houghton's Rust Veto #266 from the makers of Cosmoline. This is a solvent wax solution that can be painted, sprayed or wiped on. The solvent evaporates, leaving a clear, slightly sticky wax which will become harder with handling and will protect metal from rusting indefinitely. As this is available from the company only in 5 gallon quantities, small amounts are available from Robert Rubendunst, 6550 Baywood Lane, Cincinnati, Ohio, 45224, phone (513) 931-5689.

Any cleaning of the wood should be done very lightly. A small amount of the Spic & Span solution on a cloth can be used to remove some discolored spots. Over-cleaning can leave the wood with light spots. A tooth brush and the Spic and Span solution can be used to clean out checkering; this will leave the checkering light and it can be darkened, and the overly-cleaned area on the wood can be colored, with the proper color paste-wax shoe polish. The shoe polish colors and waxes the wood to a pleasing finish in one application. Shoe polish should only be used on the wood as it may contain acid that will harm the metal.

We have all seen guns that have become wet and were left in the trunk of a car for a couple of days. They will be covered with rust and may be badly pitted. If they had been cleaned and waxed, the damage would have been much less. I once purchased a small collection of excellent condition guns that were stored in a gun cabinet where a sewer line had broken and saturated the wood in the back of the gun cabinet. All the rifles and pistols that were near this wood were badly pitted even though the accident had gone unobserved for only three days. If these guns had been properly cleaned and waxed, the damage would have only been minor.

You are now ready to re-assemble the weapon. As you put the parts back together, try to put the same screws back into their original holes. Wood screws should have their threads waxed and always be put back into the same hole. Turn the screws in so they are snug but not extremely tight. If you encounter problems in re-assembly, a call to a fellow collector or a competent gunsmith will generally help solve the problem. With rare exceptions, you should never have to force things back together. If sights are loose in their slots, they can be tightened by placing a brass or steel shim of the proper thickness in the slot and then inserting the

sight. There is never a reason to peen a sight slot smaller

This cleaning process can take from four to six hours per gun. You may wonder why you should go to all the trouble of cleaning and waxing your guns. First, if your guns should be exposed to too much moisture or humidity, they will be much better protected by wax than by oil. Second, by totally disassembling your guns you will come to know them much better and it will help you recognize fakes or alterations in the future. Third, it will greatly enhance the appearance of both the metal and the wood. Finally, it will help you recognize a dirty gun that can be cleaned to increase its value.

There are times when a firearm looks as if it will clean to a better appearance but the rust will be deeper than you suspected and the metal will be pitted. This is especially true on nicked firearms, where the rust may travel underneath the nickel and, upon cleaning, the firearm will have less nickel visible than when you started. Gilded parts on firearms should only be soaked in the Spic & Span solution and not scrubbed. I would caution you to clean only inexpensive firearms the first few times that you try cleaning.

I wish you good luck in your cleaning and preserving efforts. If you encounter any problems, feel free to call me at (505) 255-8695 (work) or (505) 265-0352 (home). Remember, all this is possible with a little PATIENCE.

*Information on waxing courtesy of John Chalapis, 324 Windward Island Estates, Clearwater, FL 34630, phone (813) 443-0878.

Photos and drawings used in this article are by L. Frank Richey and Sam Pachanian.

Recommended Reading: *ANTIQUÉ FIREARMS, Their Care, Repair & Restoration* by Ronald Lister, and Chapter 28 of *THE COLLECTING OF GUNS* by James Serven.

Information on Phos-Bronze and Houghton's Rust Veto courtesy of Robert Rubendunst.



A group of visitors on the road to Kansas City, October 5th, 1988. Photo by Chuck Hatler, published by Paragon Products, K.C.Mo. and discovered by Roy Marcot.