Technical Stuff

The Squeaky Jewel Gets the --- Oil

By Tim Rymer

If you really want to stir up a heated discussion amongst a learned, dignified, highly respected group of people, just start talking in definitive terms about oiling watches or clocks. One friend attended the school that Omega teaches, and he can talk at length about the differences between what is allowed there and what is allowed on Rolex watches. There are like four or so types of oils and two types of fine grease that are called for on Rolex – I am not an expert at all on Rolex, but I can find you a disagreement on oiling one I'm sure. Fortunately, most antiques I work on, as well as watches only 30 or 40 years old, only knew one viscosity of oil and one grease. But "just a dab will do ya".

The jewels should not be lubed much, just a tiny bit. The "oil sink" should not be awash or even half filled. The challenge is to get the smallest bit on each friction point. Arctic explorers used to have their watches and instruments cleaned and then assembled dry to avoid having the oil freeze up. The watches will run in this dry state, but for how much longer than one expedition, I don't know. I can say that I have wound up the gear train of a clean and dry watch and it runs faster and quieter the second I add oil to the pivots. Modern synthetic oils now avoid freezing down to 44 degrees below zero, and the oil can take more heat than humans can stand. They meet "Mil Specs" for outer space, but I wouldn't want to be inspecting oils up there!

A damaged plate jewel in an older American watch that has its small brass or gold jewel settings held in by screws can benefit from a similar watch that is being "parted out". I try to keep a number of these in stock. Sometimes, one can find replacement parts in material supply cabinets still in the original package looked up in the suppliers' book – lucky you. That is the way watch repairers on the railroads did it when interchangeable parts were readily available from our domestic watch manufacturers! Then, if all else fails, one can find an unset jewel that fits the pivot in question, burnish open the metal that held the old jewel in, and re-fit a new jewel into the old setting. This is very tricky because sometimes there is not much of the original metal left to burnish over the edge of the new jewel to hold it in place.

A method of friction fitting a precision sized jewel to a newly reamed and slightly undersized hole in the plate is used on Swiss watches and some of the last produced American watches. Most major watch material houses had their own sizes of reamers, pushers, and jewels to use in your staking set. The staking set is a small "c" frame and rotating table with various holes in the table and all types of punches to put vertically through the frame. This tool is most commonly used to remove and replace balance staffs and other operations requiring "staking" or riveting items together.

Many of these tools came with or, an attachment could be purchased, to turn it into a jewelling tool as well. However, it just seems heavy and cumbersome when compared to the Swiss made Seitz system.

I prefer the Swiss made Seitz jewelling tool for its ease of operation, light weight, and accuracy. It makes it easy – sort of. Just follow these steps. The old jewel is removed from the plate, the shaft you need to jewel is measured, a jewel inside diameter is chosen, assuming that no reamer fits the old hole perfectly, the hole in the plate is gauged against the nearest size larger reamer, this reamer size then tells you what outside diameter jewel to select, then the plate is manipulated into the Seitz tool frame, a suitable hollow lower stump is chosen to allow the reamer to pass through, and the old hole is reamed out to fit the new jewel.

Then, after lightly chamfering any burr away from the new hole and providing the new jewel an easy start down into the new hole, a flat lower stump is chosen that supports the plates' perpendicularity, then a flat pusher is selected for the final operation.

The pusher is lowered towards the hole as a test. It must not hit any shoulders, banking pins, or any other obstruction before locating flat onto the plate. There is a micrometer setting at the top of the tool which is now screwed up or down to enable the pusher to just touch plus press a little on the plate when fully extended. The jewel you selected is now placed conical side down over the hole and pressed into place.

In summary, jewel replacement is an important part of a repairpersons' skill set. Many of the steps are tedious and micro–mechanical, but no quick modern method has replaced the time honored traditional methods. Sure you could break out the super glue and epoxy and try gluing jewels into their settings. The trouble is that those methods are semi–permanent and the problem of getting just enough where its needed, and none where it is not, looms large. One novel twist on an old method that I started doing that works well is applying shellac to the roller table and jewel in a wet state, rather than melting it. If you don't mind letting it dry overnight, it saves the hassle of filling the alcohol lamp, which always evaporates by the time you need it again, maneuvering the chip of dry shellac in place, and applying just the right amount of heat to melt it.

It has been 45 years since I started fixing watches as a teenager, and I still feel like a teenager when I find out some new (usually 100 year old or older) tool, process, or skill. But I really feel humble when I see how much more I have yet to learn. I feel a special responsibility to this hobby/work of restoring watches and clocks and enjoy teaching students one-on-one. I have already trained several people who are completely on their own now, perpetuating the skills to some degree.