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The proper use of French made hole closing punches.

All good staking sets have punches specifically design for hole closing. These are designed for watch pivot hole closing and could be used for clocks in a pinch. I, however, do NOT recommend them for use in clock pivot holes that are larger than the inside diameter of these punch holes. This makes most clock pivot holes much too big for using these punches and the reason for this file.

What I'm referring to are specific punches designed to close pivot holes and NOT prick or centering punches. The "purist" thinks this is a bad idea but I have found many uses for these punches.

The "quality" hole closing punches are made in France and very good and hard. Today some punches are coming out of India are crap but they will do the job but expect to replace the individual punches after a few uses or so.

To properly close pivot holes in this fashion, the clock must be taken apart (very few procedures can be done properly on an assembled movement, so please always take the movement apart and charge accordingly). The punches have a center pivot of sorts much like a center punch. This center is spring loaded and the surrounding metal is a convex punch.

You should use these punches in the case where the pivot hole is too close to the edge of the plate, where you cannot properly bush, or on the "C" shaped eccentric pivot hole found in many post 1950 400-day clocks. There other situations where the wear on the pivot hole (bearing) is "not quite" enough to bush but you believe that you should do something besides just clean, peg, and smooth broach (work harden) the pivot hole. Lastly, any small bridge pivot bearing hole where a bushing might compromise the integrity of the bridge.

If there is a pronounced egg shape to the bearing, then I bush. How pronounced is subject to interpretation.

Whether there is an oil sink or not you can tell if something is egg shaped. I suppose degrees of the misshaped bearing is in order but I do not like to get that specific. It's just too anal retentive.

Unlike most, I'm in favor of using dapping punches and hole closing punches which do the same thing. You could do this in place of most bushings but I only perform this if there is "slight" wear, I'd rather file the bearing in the opposite direction of the wear and then come in with the punch.

Please don't confuse the hole closing punch with center punches and I'll bet some do and I'll not reply to that ignorance.

When a round hole wears in one direction which all bearing do in clocks, one can remove the same amount of wear from the opposite side, by using a small round file. Then the "wear" will be uniform in two directions. The exception that jumps out at me is the verge bridge bearing and opposite plate bearing, which will wear in two directions, especially in recoil escapements.

By closing the hole to less than the diameter of the pivot, one can use a smoothing broach to obtain the exact desired bearing as one wishes. The bearing will be centered and have harder brass than before. In the future if someone dislikes the repair, then a well applied bushing will remove all of the area that was affected by the filing and closing.

Great care must be used when dealing with the inside of the plate. I avoid dapping punch because you will leave a concave "hole" and loose the "square" of the pivot shoulder and place. So only the hold closing punch on the inside of the plate using a light "hammer" touch.

If the bearing is an obvious egg shape then I'll bush rather than try to close.

The bottom line is the shape of the bearing. Movements that were made with lots of play will still have a round bearing and no egg shaping of that bearing. So I DON'T judge the bearing by the pivot, I judge it by the roundness or lack of it, in the hole itself.

Moving the train in the opposite direction will indicate which bearing to look at more closely but is not the definitive answer on whether or not to bush or close.

The pivot must be address first before anything is determined about the bearing. If it needs polishing or replacing, this must be done first so that you have a finished pivot in order to judge the bearing.

Choosing the "right" punch is important and I'll try to explain how to do that. I choose a punch where the punch's center enters the pivot hole (bearing) but does not pass all the way through. In order to do that, I choose a punch that will pass all the way through the hole and then select the next largest size and continue to "choose up" until the center of the punch does not pass all the way through.

To determine the angle of the wear you must observe the area of "play" inside the pivot hole. This wear will show up as an egg shaped pivot hole instead of a perfectly round pivot hole. Under most of these situations where you can actually see the egg shaped wear without magnification you should ALWAYS bush. But in cases where the wear is slight or close to the edge of the plate you may want to use the hole closing punch.

Wear will always be in the direction of force. What that means is that the gears are "pushed" in only one direction by the

next lower gear in the train gear. The word train is used to describe the set of gears in one functioning part of the clock. Such as the time train, the strike train and the chime train.

This "push" and a combination of dirt and lack of lubrication will start the wearing process. You can also "wiggle" the next lower gear in the train and observe the pivot hole while the clock is assembled with absolutely no power on the train. A pivot hole that needs attention will "wiggle" while you are moving the lower gear in the train back and forth.

Please remember that the above is for hole closing punches only and NOT centering punches. Centering punches have absolutely no place on clock plates for the purpose of closing pivot holes.

While punching does thin the plate slightly and you do have to smooth broach, it also work hardens the brass because of the impact. I've never done a study and have no scientific proof but I believe there is a "wash" between the thinning of the plates and the hardening of the brass.

You can close all sorts of holes using hole closing punches not just pivot holes. These holes could be round, square, rectangular, or whatever. If it's made of brass or bronze these punches can close them and keep the clock as original as possible.

Some say that it "marks" the plate with a round indentation and it does. But I say that this mark is small enough in diameter, that the mark will be cut away when the eventual bushing is used, sometime in the distant future.

Please allow me to quote from J. E. Coleman.

"There is a slight technicality involved in your question, since the "closing-hole punch" is a "punch". Your interpretation was quite correct, however, when we refer to a "punch artist", it usually means that some joker has used a pointed punch, not a regular closing-hole punch, to crowd the metal in by pinking it forward as many times as he can haphazardly space it around the bearing hole; certainly a botch job if there ever was one. Hole closing with orthodox centering punches (made for that purpose) is quite all right if accurately and properly done on holes that are slightly worn; one must exercise good judgment; always inserting a new bushing when the hole is worn to excess, or enough to raise a question as to the original center."

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